Considering the role of presence in the conceptual design of interior architectural environments

Marisha McAuliffe
Queensland University of Technology, Australia
{mb.mcauliffe@qut.edu.au}

Abstract

This paper reports on an educational setting used to explore presence within the interior architecture discipline through an interior design studio environment. An undergraduate studio subject was developed to integrate a hybrid design approach, where the main focus was to examine a means to heighten a designer's appreciation of experience in virtual environments. Initially the focus of the unit and its objectives will be outlined before describing the projects. Attention will be focused on the main project and the hybrid design process before discussing the outcomes, student feedback and potential for further research in the field. The outcome of the study aims to contribute to current research on presence and its potential role in the design process and end product in interior architecture.

Keywords--- Design, Presence, Interior Architecture.

1. Introduction

"The nature of designing is complex. Complexity is inherent because the object, building, landscape or environmental situation is not isolated but exists through relationships with people, activities and environmental components" [1].

Technology is advancing with ever-increasing rate and architects and designers are responding to modern technology by creating more 'intelligent' and technologically sophisticated buildings. On the other hand, it is through these advancements that designers face the danger of losing sight of designing for experience and human connection within the spaces and places that they create. Both traditional media (two-dimensional drawings and card models), and more recently, digital technology (virtual three-dimensional programs), are used as visualization tools in the architecture and design industries. Whilst these tools are still inherently important in terms of visual expression, client understanding and visual 'connection' with a project, it is as important to also utilise these tools to enhance experiential interior architectural elements, translating those elements from virtual three-dimensional forms to physical built environments.

Tang and Frazer [2] challenge previous design methodologies in computer-aided modeling by implementing a research programme "…based on the belief that the design paradigm is shifting and design methodology of the future is increasingly becoming different from today. The computational support for this paradigm must therefore match this shift by moving beyond specific passive tools to more holistic environments" [2]. They emphasize that these environments "…may reveal totally new working methodologies for designers and may even empower non-designers such as clients and users to participate in the design process in ways which were previously not possible" [2]. Their approach is to challenge traditional research concepts by researching and implementing three new paradigms: the generative paradigm, which is the development of generative and evolutionary systems in design exploration (the design process); the collaborative paradigm, which is the implementation of agent based collaborative design frameworks and systems to support the design team and: the complex form paradigm, which is "…the formulation of complex 3D forms and product data models using algorithmic and process data methods for design exploration and visualisation" [2]. Therefore, is there any reason why these design methodologies could not be exploited to include issues such as experience of the future inhabitants within the building?

The practice and discipline of the design disciplines have long relied on developing certain ways, qualities and methodologies of representation; especially traditional forms of representation, such as hand drawn perspective and sketching. Interior architects are required to learn to envision, then to represent spatial solutions using tools or mediums to represent their ideas so the client and end user can see the translation of them into some form of 'reality'. The very nature of interior architecture is about person-environment relationships and how we, as humans, interact with those spaces. Designing and the design process is about these complex relationships and includes "…the creation of spatially realized alternatives to a possible spatial solution" [3].

Traditionally, due to the potential cost of the design process, digital representation in the design development

stage of a project was rarely viewed as a viable option to pre-visualization, especially in small to medium-scale projects. However, as undergraduate students in such fields as interior design, architecture and landscape architecture become more proficient with software in modeling and presentation, it has become a more viable/economical option, especially for medium to large design firms. Whilst this has seen a dramatic increase – and indeed been welcomed by marketing companies - in what some see as a 'more realistic' representation of a designer's ideas, it has been argued that the use of digital design representation is too stylistic and even barren and repetitious. These critics argue that it is often difficult to translate the designer's ideas; that too little is left to the imagination: "…virtual models can appear too real. Buildings appear as if they are complete, inhibiting suggestions for improvements…" [4].

Cooke argues that design representation, as a form of virtual reality, does not seek to immerse the viewer "cyberspatially" the way that the individual expects to be immersed. The distinction between a 'virtual' (digital pre-visual) space and a 'cyberspace' is that "…it is the concern of virtual reality to simulate the unbuilt space, whether the viewer immerses themselves within it (virtually) or views it as much more of a complex and haptic interface, whereby it is viewed, but not experienced." [3]. He argues that in interior design practice, the use of digital design representation should be continued because "...how the space is visualized digitally should have no bearing on the success or the failure of a proposed scheme…" and that the digital image serves primarily as a medium for pre-visualization; a way in which to see a scheme, not for the experience of the proposed space [3]. However, is this the way that we see the (built) places of the future? Is it important that we 'connect' with, and have a 'relationship' with our built environments?

In a traditional context, presence, which was originally derived from telepresence, is a term that refers to the sense of 'being somewhere', usually in the sense of being in a computer-generated or computer-mediated environment. Therefore, presence could indicate either a physical or tangible state when an individual or object is actually present in the physical world, or it may also imply a personal perception of the world (physical or virtual), embodied in a feeling or belief. It is a term that more familiar to disciplines such as cognitive science, psychology, computer science, neuroscience and infomechatronics, than it is within architecture or interior architecture.

Many authors have reviewed the concept of presence and this paper does not attempt to duplicate or further review it. This paper draws on presence as a concept of 'being there' in 'another world' in traditional and non-traditional examples of which include the "willing suspension of disbelief", identified by Coleridge [5]; "reverie", identified by Bachelard [6]; and "flow", identified by Csikszentmihalyi [7]. The term has been used in many different contexts and there are many descriptions of it [8] across various disciplines including sociology [9], psychology [10], communication [11], computer science [12], and engineering [13], and factors that influence presence are many and varied.

Further to this, this research aims to examine the role of presence in the discipline of interior architecture. As Bermudez and Klinger [14] illustrate: "Healthy disciplines remain tolerant of a state of flux by constantly questioning the inclusion/exclusion, import/export, and collaboration/isolation to/from new ideas, new techniques, new disciplines, and new technology" [14]. Therefore, the intent of this research is to investigate the relationship between presence and the design process and its potential outcome. That is, if a designer attains a sense of presence through exploring a design using virtual environments there may be the potential to gain insight into, and design more appropriately for, the end user's requirements. It is important to note that this paper utilizes the term "virtual" or "virtuality" as the digital mediated experience – mediating computer technology; as well as the non-digital virtual experience – dreams, imagination, fantasies and day-dreams.

2. Design Studio

The design studio is both a physical place as well as a traditional way of teaching students in disciplines such as architecture, interior architecture, industrial design and landscape architecture. The design studio is usually structured and consists of "…programs, schemes, and parti to desk crits, pin-ups, and charrettes—language and behavior learned in the studio establish[es] the profession's cultural framework" [15]. These are all methods of designing, critiquing and providing feedback for students, especially in design projects.

A unit within the discipline of interior design was redeveloped to introduce a digital-dexterous process which explored a design approach through the cross-fertilisation of relatively new technologies such as three dimensional modeling; and traditional methods such as hand drawing, overlays, diagramming, rendering and perspective techniques to explore two dimensional and three dimensional planning and design. This paper refers to the combination of all techniques.

Interior design students within the second year of their three year undergraduate design degree were introduced to Interior Design 4, a core studio unit (subject) for second year interior design students. The cohort of 60 students consisted of 52 females and eight males, all below 40 years of age and had no previous interior design education. Approximately 10% of the class were undertaking work

experience in design practice during the course of the unit. The unit's original and explicit focus was on the design process and practice, and relevant contextual issues. Overall, it allowed for participation in a variety of design experiences and through these the students were encouraged to reflect, critically evaluate and consider alternative viewpoints and approaches through traditional methods as described above. However, the unit required an overhaul to have a relevant fresh 'real-world' approach that was in contrast to previous studios, which had always utilized more traditional and structured forms of design process and representation. This redevelopment was experimental in that it was the first design studio in the interior design discipline, at Queensland University of Technology (QUT), which formally introduced and encouraged students to explore the possibilities of digital two-dimensional and three-dimensional design packages – not only for pre-visualization, but also as a tool to push the traditional boundaries of the design process. Furthermore, to have a direct and more relevant approach, each student was encouraged to reflect on this statement:

> *"Life is a series of experiences that we often fail to perceive as a whole experience. Through great advancements in technology we now have the ability to design and construct 'intelligent' buildings that have an automated function for almost every activity. However, this new technology does not always allow for human harmony and 'connection' within the built environment. This studio aims to examine through your initial project, the sequences of experiences one can have within the built environment. Does experience in the built form matter, or not? Then in your final project you are to reflect upon this question: Are the experiences within your (virtually) designed space those that satisfy human nature, or is it an artificial environment that is far removed from the real world?"*

The underlying assumptions were that the projects within this unit would be an effective vehicle for students to explore and meet the unit objectives which included:

- To integrate holistically 3D and 2D elements to achieve an innovative design resolution
- To address and develop the experiential quality of interior spaces in an informed and sensitive manner
- To create an appropriate resolution in relation to user groups, and in response to local and global issues through the application of theory and research

There were also several key questions that were to be addressed, these were:

- What is the sense of presence (experience) in a virtual interior environment, from your perspective?
- How can the sense of presence inform the design of physical interior environments?
- How do we, as people in a physical world, relate to remote virtual environments?

2.1. Studio Projects

The redeveloped design studio aimed to investigate concepts of immersion or presence from an architectural or interior architectural perspective (Figure 1). Examples of "personal presence" - realism, immersion and transportation [8]- were analyzed in lectures that were held weekly which included critical analyses of 'reverie' [16], 'flow' [7], and 'willing suspension of disbelief' [5]. Literature on architectural presence was also examined, 'architectural presence' [17], 'architecture of phenomenology' [18], 'transarchitecture' [19] and 'aura' [20].
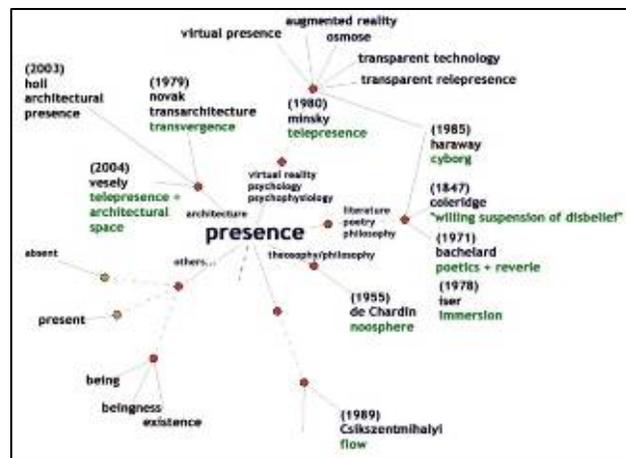

Figure 1: "Foundational" aspects of presence in an architectural context

Throughout the unit, students were to build on and advance their design skills and develop their multimedia and presentation skills through the use of 3D modeling packages such as 3D Studio Viz, and graphic packages such as CorelDraw and Photoshop. Employing these multimedia packages, the students were to design and represent a space that pushed the limitations of their own design thinking.

Within this studio environment the students were to consider their perception of presence and what aspects of a virtual environment contribute to it. They were also to reflect upon issues such as the role of immersion or perception of being 'enveloped' in a space. Through the process of the students' exploration and the examination of a variety of real and

virtual environments, they were to reflect on the possibility of 'entering into another world' thorough the creation of their own virtual environments.

The studio consisted of two projects aimed at presence and experience in interior architecture. The first project was a visual representation of spatial qualities and the second project was to design a space to house an immersive activity. In the second project the students were asked to use digital modeling tools to create, from a simple sphere or several spheres, an interior space to house the prescribed activity. It was up to the students to interpret and modify the object into a place of experience where the individual occupying the place could become 'immersed' in the place through the activities occurring within. They were asked to 'programme' the space by name, identity, logo, place, location and topology.

Overall, feedback from the students over the course of the semester indicated that they were most keen to learn to design using new forms of media. They were generally receptive to the concept of using hybrid skills and the response to this level of representational design was very positive. Whilst there were varying degrees of success in the outcomes of the exercise, several students in particular pushed the boundaries of their own sensibilities and representation to produce exceptional results. Although the first project will be discussed, the main project and its outcome will be the primary focal point for this paper.

2.2. First Project: Historical Perspectives

This project was designed to guide the students in building a framework around the notion of 'being in a virtual world' through the concept of existing environments. This process of exploring historical spaces in the context of 'being in another world' encouraged the students to 'experience' a space where the majority of them had never been to – for example, the Louvre or the Sagrada Familia.

The project required the students (in groups of three) to choose a historical movement or period and research key aspects of that period from three perspectives: philosophical, artistic and interior architecture, where an example of such from that period was to be discussed in depth. These three perspectives were to focus on the *experience*, or *potential experience* of a time, rather than on the *form* of the place or space. In order to position the aspects of virtuality and experience, many examples of historical spaces were given, exemplifying that there are numerous 'types' of virtuality including built, unrealized and imaginative spaces, such as the building of the People's Commissariat of Heavy Industry (1935); the Palace of Technology (1933); Boullee's Étienne Louis Boullée (1728-1799); The Fourth Grace (2002); and finally, several of Da Vinci's works. The lecture series discussed the person-environmental relationships and how

virtuality may fit within this relationship. Discussion included the notion that all that an individual knows about their world is through the experience of the places they inhabit, and the experience that the person may feel in a built or 'virtual' space is the connection or relationship that they make with a place or space; sometimes it may be a consciously constructed reference such as memory, or the place may evoke memories of another place in the individual's past. Johnson reinforces this point: "…Architecturally, the relationship between virtuality and place is a powerful tool. The use of personal and cultural historical or memory references, of imitation or mimicry in the delineation of new spaces, is certainly an important part of design" [21].

The students were then required to create and present a visual presentation connecting the above mentioned perspectives to the notions of virtuality and experience across three colour printed 297mm x 297mm squares. The purpose of this was to encourage the students to gain an understanding of the potential of spatial qualities, even if they had never entered the space they were researching. This also allowed the students an opportunity to examine presence in terms of people's physical and emotional engagement with reality and their environment, understanding that emotions are an essential part of how individuals experience their 'world' or 'reality'. This project's outcome was successful in that the students had time to reflect upon the spatial qualities of 'virtual spaces', rather than the use of software to produce a polished and refined 3D interior architectural space with little experiential qualities. As the main project is the focus of this paper, examples of the first project will not be discussed.

2.3. Second Project: 'Flow': The presence project

This project was intended to be an experimental study to gain an understanding of presence within the act of designing. Since this studio was a core unit within the curriculum, several modifications had to be made so the project would fulfill the requirements for the unit objectives, as listed above. However, rather than inhibiting the research, as was anticipated, the outcomes gave the author a greater insight into presence and experience within digital previsualised places and spaces. As the unit required structure and milestones, the project was undertaken and completed within nine weeks, where, each week, the students worked on this project both in a traditional studio environment, as well as computer laboratory sessions. In the traditional studio (referred to here as the dexterous studio where design activities are done 'by hand' and no digital skills are employed), the focus was on the development of design activities such as communicating within visual means; design drawing, plans, sections, elevations and details; reading physical environments, and model making.

Following the design development stage, typical design practice directly translates conceptual design concepts into two dimensional and three dimensional software packages to make the necessary changes and variations. However, in the digital studio, students were encouraged to experiment in all stages of the design process and self-edit with the software, as their skills and confidence in working in digital design increased. These activities not only extended their skills with digital design software, but also encouraged a more fluid and flexible design approach overall.

The brief for the studio was intentionally kept simple. From a simple sphere, or several spheres the students were to create an interior space to house an 'immersive' activity. That is, an activity where the individual becomes so immersed in the activity that they may possibly experience a sense of 'flow' [11]. The decision to use a sphere as the only permitted shape challenged the students to employ more complex design options. This was to encourage the student to work beyond the boundaries of their own design sensibilities as all too often, many students tend to limit their options – and indeed, choose an 'easier' option - by choosing common rectilinear shapes to produce an outcome for the design of a built space. The options for the 'immersive' activity included, but were not limited to; a performing arts centre; a digital design photographic studio; an interactive children's book store; a futuristic children's exploration centre; a music experimental production studio, and; a media arts and centre for moving image. Not only were they to design the space or place, but were also to consider the 'programme' of the place by name, identity, logo, place, location and topology.

The students then used different tools within various software packages to manipulate the sphere or spheres to interpret, modify and discover ways a simple object could be transformed into a space of experience where the occupant could become 'immersed' in the place through the activities occurring within. These students used an architectural visualization package which offered many different ways to manipulate and add realistic mapping materials to an object as well as to produce fly though animations. Initially the limitation of using only a sphere as a basis was a considerable challenge for the students; however, after several intensive studio sessions they began to see past their limitations to explore different means of design development and began spending longer hours in the computer laboratories outside studio sessions to work on their final outcomes. During these sessions, the author spent significant time with the students, seeking greater insight into why they appeared to be more drawn toward designing with digital tools than they would normally with traditional tools. One student commented:

> *"The sense of presence that I experience within my virtual environment that I create is 'real' to me, I find it so easy to design using computers, I feet a flow: my design isn't dictated by my drawing skills etc, but only by my imagination."*

As shown in examples of later in this paper, the end result from most students was a transformation of the spheres into resolved schemes which challenged preconceptions of space and place, and three-dimensional aspects were identified and developed through the careful planning of the activities that occurred within. These schemes showed innovation in the manipulation of the original shape to an integrated design, and many of the final presentations showed careful attention to the amalgamation of shapes, planes and objects. The experience of the user was evident in many instances, even for the students who did not choose to present fly-through animations for their final presentation. As one student commented in their final presentation:

> *"I believe my design to be a space in itself with no barrier of interiority or exteriority. I think the idea of using a sphere possibly developed this."*

As discussed above, considering that prior to this studio, the majority of students had had very little exposure to any form of digital design as the interior design course preferred traditional design tools and methodologies; the final outcomes were generally well considered, sensitively articulated and carefully thought out designs. As a student cohort, most of the schemes utilized their hybrid design skills to convey the potentials and possibilities for each individual space and what it may mean to 'experience' and 'dwell' within each designed environment. The sense of 'immersiveness' was evident in several designs and the ability to 'read' the space was apparent; two examples of students' work will be described below.

2.3.1. Student Project: The Mine

This project was a powerfully evocative space which explored notions of phenomenology through the design of an 'open air' restaurant above the diamond mines of South Africa, for the miners and their families. The student used phenomenological theory from Bachelard, who speaks of 'reverie', the impression of a flight from reality, beyond time and space: "…psychotropic images that stimulate the mind by drawing it along in an unbroken movement" [16]. Considering that the miners spend weeks, months and years of life, primarily underground searching for an object of beauty (the diamond), the student's concept was to give the actual users of the place to 'escape' to; to allow a sense of beauty to permeate their mundane lives.

The design was a series of 'dome-like' shapes, seemingly suspended in mid-air, resting lightly upon the earth with the fabric covering the lace-like shapes, giving an appearance of glowing ethereal shapes rising up above the stark, pillaged earth ravaged by the mines (Figures 2 and 3). The digital renderings for the final scheme presented a carefully thought-out design resolution, conveying a sense of engagement in the space in the final concept through the use of renderings and a high-resolution fly through animation. Following the presentation of the scheme, many students commented on the sense of being there "within the space". Several comments were that they could even "…smell a mixture of food and dust" and "…hear the gasps of amazement and wonder from people seeing this space for the first time out in the middle of the night desert, like stars in the sky".
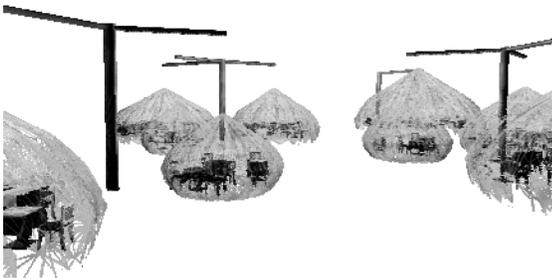
Figure 2: Final Scheme: "The Mine"
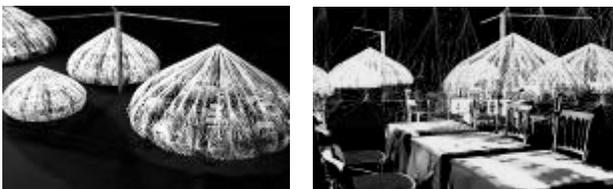
Figure 3: Views from exterior and interior

2.3.2. Student Project: The Rose Departed

This scheme focused on an art gallery space, designed to exhibit and celebrate the lives of women who had died from breast cancer. It was also intended to function as an educational exhibition about breast cancer and the people it affects. Although the space is simplistic, as are the geometric shapes that constitute the space, the feeling that the space evokes is far from unsophisticated. Rather, it focuses on the humanistic qualities of the space through a list of names and personal details of the deceased women scrolling down several screens positioned throughout the space with each woman's nominated piece of music playing in the background. Exhibited throughout the space are personal objects of everyday life, used by the women in the final stages of their lives. Included was sepia toned photography of the women, before and following surgery. Although this is

not a 'real' space, the visualization communicates both the loss as well as the remembrance of life. A visual cue, in the form of a larger-than-life ribbon with a Taoist saying engraved upon it [Figure 7], winds and directs the viewer through the space:

> *"Empty your mind, be formless, shapeless - like water. Now you put water into a cup, it becomes the cup, you put water into a bottle, it becomes the bottle, you put it in a teapot, it becomes the teapot. Now water can flow or it can crash. Be water, my friend."*

This quote comes from the teaching of "emptiness" in Buddhism where the mind does away with conceptualization by detachment. The stark structural half-sphere that arches high above the viewer's head and the net-like dome that the severe structural half-sphere is juxtaposed against almost appears to embrace and entangle the viewer at the same time, into the 'grip' of the space [Figures 8 and 9]. This is another scheme that drew the viewer into the space in the final presentation, in as much as one can sense a bond with the room and to the un-named women, who this space is a tribute to, arousing a sense of emotional connection and curiosity.

Figure 5: Final Scheme: The Rose Departed

Figures 6 and 7: Larger than life Ribbon and interior view

Figures 8 and 9: View from interior and exterior view

2.4. Discussion

Students were given six weeks to build up their skills using the software as well as develop their design resolutions before they participated in a focus group. This was to gain information about design, both from a dexterous and a digital perspective and students were not required to attend. It was a voluntary exercise and all responses were recorded from the 42 students participating in the session, with approximately 96% of the respondents being female. The questionnaire was loosely based on the Witmer and Singer questionnaire [22] and 17 questions were asked with three main topics as an emphasis; presence, experience and design. All responses were written by the students and some of these responses are quoted below. Some students' comments made explicit that their sense of presence depended on their ability to design with either dexterous *or* digital design skills and some students did not indicate a sense of presence using either skill set:

> *"When I'm actually designing a space I get to immersed in the client's experience within my design, I could be sitting there for 8 hours and not even realise. You imagine yourself in the space, your imagination is immersed and your body closes off to outside influences."*

The students' comments that specified that one skill set was easier to work with than the other included:

> *"…when drawing & creating I find that the rest of the world can disappear. When using the computer I find I am limited as I don't understand the program."*

> *"When I am faced with creating with pen & paper I find I struggle to experience a sense of presence because I am concentrating on the technique. With a computer I do not have this problem. It is easy to create, visualise & become immersed."*

Even though many of the students were not thoroughly familiar with the software the responses indicated that they still felt a sense of presence whilst designing their space:

> *"Yes, I see myself standing in the space looking around experiencing the environment. I feel like I'm there."*

Several students even indicated that they felt a sense of temperature in their space when asked how they could describe the sense of presence that they experience within their virtual space, typical responses were:

> *"More sensory, I feel the air temperature, the ground temperature, etc."*

> *"When completely immersed, I can feel the actual coolness or temp. of the space."*

With respect to applying the concept of presence to interior architecture and the design of such spaces, the feedback indicated that this was a key factor in the design of our environments:

> *"It is absolutely necessary. As the world develops & becomes more fast paced, people will become more removed from taking notice of the world around them. The only way to rectify this is to design with concepts of presence, provide room for surprise & rediscovery & reverse of desensitising."*

> *"Yes. Presence is in every other medium – why not?"*

This form of presence described by Lombard and Ditton as the illusion of being immersed within a non-mediated or mediated environment: the simulation of imagination and experience of the individual 'being there' in an imaginary space [8], and, in this case, consideration of the design and production (digital or dexterous) of an interior architectural space. Previous authors have already illustrated that concept of presence should be examined for practical and theoretical reasons and, as has been exemplified above, an enhanced sense of presence is central to the use, the usefulness and profitability of new technologies, which are either now changing or are expected soon to change many of the ways we work, play, or live. As several students succinctly stated:

> *"…that's why I design. I don't want to build a box, I want to create an experience."*

> *"Presence gives the space identity"*

At the end of the semester, analyses and moderation of the tangible outcomes of hybrid studio were undertaken by the lecturers and tutors of the unit, as well as the discipline leader, course coordinator, Head of School and Assistant Dean of Teaching, as is usual practice within the Faculty. Feedback from internal and external moderators, and industry representatives was positive regarding the high stand of work from students completing the second year of their undergraduate degree. Feedback from senior members in design industry indicated that the outcome of this studio was, to date, the highest standard of work that they had seen from interior design students at QUT and that the projects showed exploration of ideas and innovation; most aspects had been attended to successfully to generate refined and well developed schemes. General comments were that the process undertaken had produced schemes that were evidently innovative, rather than typical designs similar to examples of interior spaces illustrated in many common interior design magazines.

A Student Evaluation of Teaching (SET) and Student Evaluation of Unit (SEU) were undertaken so as to measure the pedagogical outcomes as well as student satisfaction of the unit. The feedback response was 72% and for quantitative feedback, the highest possible rating was 5.00. For student learning satisfaction the feedback rated teaching quality 4.55; for interest in learning and learning needs, 4.25; for the development of knowledge, understanding and skills, beyond the memorisation of content, 4.09; and for overall rating of unit, 4.00. Qualitative feedback included comments such as:

> *"…In previous three semesters, I felt like walking in the very very thick mist, because I didn't ask lecturers much. But you made a turning point for me in the end of the last semester."*

> *"Thanks for such a great semester! I've never finished the year on such a high!!! I have so much more confidence in my design skills now"*

> *"I felt like I've learnt more this semester in one unit than I have all of last year. Thank you".*

This valuable and objective feedback illustrated that students utilizing the hybrid design process produced designs that pushed the boundaries of traditional interior design and that the overall outcome of this hybrid studio showed innovative designs with a definite focus on the end user of the space.

Conclusion

In the last 50 years significant progress in design has been achieved in utilizing digital technology. This has been reflected in design research, which is dramatically influenced by evolving computer systems, forcing the introduction of new paradigms, which do not necessarily mirror conventional human approaches. [26] Much has been discussed about design methodology; especially since the First World War and traditional design methodologies are unquestionably important. This research does not aim to debunk design methodology but rather focuses on the potential to enhance it.

This paper has considered the juxtaposition of presence, experience and interior architectural environments within an educational context. It has presented the case for presence forming the focus for developing the designer's appreciation of real spaces through the experience of a virtual environment. Whilst this approach is not the only way to design and may or may not enhance the outcome, allowing for the sense of presence may contribute to the awareness of the environments that we create for people in the future.

Therefore, rather than utilizing design tools as a means of previsualisation of glossy, high-tech, polished (and sometimes uninhabitable) spaces; the potential remains to utilize these packages in a consideration of the person and their relationship to the surrounding environment. Thus, if a designer, employing a virtual environment attains a sense of presence there is greater potential to gain a significant insight into the end user's requirements. In terms of future research into this, several units within architecture, interior design and engineering design at QUT are currently being developed and taught utilizing the hybrid design process to examine the potential of presence in the design process and the resulting outcomes.

Although it is evident that much research on presence has been done in the context of psychology, virtual environments and digital technology, the potential for further research on presence and its impact on the design of interior architectural environments is significant. As this research takes a more speculative approach, it opens up the possibility of a new concept emerging of 'how designers design'. The future potential of this research indicates the possibility of a new theory in design methodology; this may then impact on changing the way we design interior architectural environments.

Acknowledgements

References

[1] D J. Smith, P.S. Sanders, N. Demirbilek and A. Scott. Designing together: a collaborative experiment in design methodology within a multi-disciplinary environment. In K. Holt-Damant and P. Sanders, Eds. *Proceedings Third International Conference of the Association of Architectural Schools of Australasia (AASA)*. 2005

[2] M. Tang, J. Frazer. Integration of Design and Technology – A Computational Approach. International Engineering and Product Design Education Conference 2-3 September, Delft, The Netherlands. 2004

[3] M. Cooke. Previsualising the Interior: Stylistic Representations of Virtual "Space" for multiple end users. In *Proceedings of the Theory and Practice of Computer Graphics pp. 185 – 192.* 2003

[4] http://www.pixcentrix.co.uk/pomo/arch/arch.htm in M. Cooke. Previsualising the Interior: Stylistic Representations of Virtual "Space" for multiple end users. In *Proceedings of the Theory and Practice of Computer Graphics pp. 185 – 192.* 2003

[5] S.T. Coleridge, S.T. Biographia Literaria, Volume II. London: William Pickering. 1847

[6] G. Bachelard, G., The Poetics of Space. MA, Beacon Press (trans. 1964) 1994

[7] M. Csikszentmihalyi. Flow: The Psychology of Optimal Experience. New York: Harper & Row. 1990

[8] M. Lombard, T. Ditton. At the Heart of It All: The Concept of Presence *JCMC 3* (2). 1997.

[9] S. Zhao. Toward a taxonomy of copresence. Paper represented at the *4th Annual International Workshop on Presence*. 2001

[10] J. Lessiter, J. Freeman, E. Keogh,, J. Davidoff. A cross-media presence questionnaire: The ITC-Sense of Presence Inventory. *Presence: Teleoperators & Virtual Environments, 10*(5\3) pp.282-298. 2001

[11] F. Biocca. "Is This Body Really "Me"? Self Presence, Body Schema, Self-consciousness, and Identity" In *The Cyborg's Dilemma: Progressive Embodiment in Virtual Environments, JCMC 3*(2) pp.295-302. 1997.

[12] M. Minsky. Telepresence. *Omni,* June. pp.45-51. 1980

[13] J. V. Draper, D. B. Kaber, J. M. Usher. Telepresence. *Human Factors* (40) pp.354-375. 1998.

[14] J. Bermudez, K. Klinger. "Digital Technology and Architecture" ACADIA Whitepaper. 2003

[15] http://archrecord.construction.com/features/digital/archives/0201da.asp

[16] G. Bachelard, *La poétique de la réverie*, Bibliothèque de philosophie contemporaine. PUF: Paris. 1968.

[17] D. Vesely. Architecture in the Age of Divided Representation: The Question of Creativity in the Shadow of Production. MIT Press, Cambridge, MA, US, and London, UK. 2004.

[18] S. Holl, J. Pallasmaa, A. Pérez-Gómez. Questions of Perception: Phenomenology of Architecture. A+U special issue, in English and Japanese (Tokyo: a+u publishing co. ltd. 1994).

[19] http://www.centrifuge.org/marcos/

[20] B. MacIntyre, J. D. Bolter, M. Gandy. "Presence and the Aura of Meaningful Places" *7th Annual International Workshop on Presence (PRESENCE 2004)*, Polytechnic University of Valencia, Valencia, Spain, 13-15 October 2004.

[21] B. R. Johnson. Virtuality and Place. Design Machine Group, University of Washington. ACADIA. 2002.

[22] B. G. Witmer, M. J. Singer. Measuring Presence in Virtual Environments: A Presence Questionnaire. In *Presence: Teleoperators and Virtual Environments, 7*(3), 225-240. 1998