

## **Presence and the hybrid design process in interior architectural education**

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This paper explores presence in design through student experiences in a design studio within the discipline of interior architecture. The main focus was to examine a means to heighten a designer's appreciation of experience in virtual environments, where virtuality is referred to from both digital and non-digital perspectives. The focus of the unit and its objectives are outlined before describing the projects, and attention will be focused on the main project before discussing outcomes, student feedback and potential for further research. The outcome of the study endeavors to contribute to current research on presence and its potential role in interior architecture.

**Keywords:** Presence, design process, 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].

Presence has been defined as a subjective experience of ‘being somewhere’, usually in the sense of being in a computer-generated or computer-mediated environment. It is a term more familiar to disciplines such as cognitive science, psychology, computer science, neuroscience and infomechatronics, than it is within architecture or interior architecture. In a traditional context, the term presence has been defined as a state of being present in a place or something felt or believed to be present. Thus, presence could indicate either a tangible condition when something or someone is actually present in the physical world, or may also connote a personal perception of the world (physical or virtual), embodied in a feeling or belief.

Many authors have reviewed the concept of presence and this paper does not attempt to reproduce or further review it. The term has been used in many different contexts and there are many descriptions of it [2] across various disciplines including sociology [3], psychology [4], communication [5], computer science [6], and engineering [7], and factors that influence presence are many and varied. However, whilst architecture and design have not traditionally used the term “presence”, much of the terminology within these disciplines replicates it in some form.

In the context of this paper, presence is taken to mean the feeling of actually being within a virtual environment as a representation of a real environment, so the designers 'think' themselves into that environment in order to design and evaluate it to produce a meaningful design. This paper positions this within presence research and 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 [8]; "reverie", identified by Bachelard [9]; and "flow", identified by Csikszentmihalyi [10].

Further to this, this research aims to examine the role of presence in the discipline of interior architecture. As Bermudez and Klinger [11] argue: "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" [11]. Therefore, the intent of this research is to investigate the relationship between presence and the design process. In this paper, the term "virtual" or "virtuality" is taken to mean as the digital mediated experience – mediating computer technology; as well as the non-digital virtual experience – dreams, imagination, fantasies and day-dreams.

This research used a case study approach to uncover what presence means within the design process and its outcome. This was done by using focus groups and grounded theory methodology to ascertain meanings from the outcomes. Focus group methods were used they do not rely only on a question-answer interview format, but on interaction and dialogue between participants, which was important, as it aided in the emphasis and development of ideas, themes, etc. in the context of design process and outcomes. The feedback given allowed the researcher to gain a greater understanding of the sense of presence that the students felt whilst in the design process.

Architecture, in its built form, holds the capacity to engage all the senses and Holl (1994) is one architect who emphasizes the importance of architectural experience and the power it has from mere function as shelter to the engagement of our sensory perceptions in the experience of the space. "Architecture holds the power to inspire and transform our day-to-day existence. The everyday act of pressing a door handle and opening into a light-washed room can become profound when experienced through sensitized consciousness" [12].

As technology becomes more complex architects and designers have implemented it within their practice and disciplines through various means including simulators such as flight and spacecraft simulators; widgets and cybrids used for visiting online museums such as the Van Gogh 'tour' through a virtual gallery [13]; and augmented reality for interior design, building and construction [14]. As more 'intelligent' and technologically sophisticated buildings are being constructed both in virtual and physical space, the risk is that architects and designers lose sight of the potential for designing for experience and human connection within the spaces and places that they create. Whilst these visualization tools are inherently important in terms of visual expression, client understanding and visual 'connection' with a project, it is as important to also utilize these tools to enhance experiential interior architectural

elements, translating those elements from virtual three-dimensional forms to physical built environments. How, then, can we exploit advanced digital technologies to enhance the experience of the spaces which we design, create and inhabit?

The practice and discipline of design has 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" [15].

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 for 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 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..." [16].

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." [15]. 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 [15]. 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?

## 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" [17]. A unit within the discipline of interior design was redeveloped to introduced a digital-dexterous process which explored a design approach through the cross-fertilisation of three-dimensional modeling and traditional methods such as hand drawing, rendering and perspective techniques. This paper refers to the combination of all techniques as the hybrid design process.

Students undertaking the unit were introduced to a core studio unit for second year students. The unit's original and explicit focus was on the design process, its practice, and their 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. However, the unit was updated to have an approach that was in contrast to previous studios, which had always taught 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 QUT, which formally introduced and encouraged students to explore the possibilities of 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.

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 expected the students to be able to holistically integrate three-dimensional and two-dimensional elements to achieve an innovative design resolution; to address and develop the experiential quality of interior spaces in an informed and sensitive manner; and to create an appropriate resolution in relation to user groups in response to local and global issues through the application of theory and research.

Several key questions were addressed over the semester which required the students to examine their sense of presence (experience) in a virtual interior environment from their perspective; how can the sense of presence inform the design of physical interior environments, and how they, 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. Examples of "personal presence" - realism, immersion and transportation [2]- were analyzed in lectures that were held weekly which included critical analyses of 'reverie' [18],

'flow' [10], and 'willing suspension of disbelief' [8]. Literature on architectural presence was also examined: 'architectural presence' [19], 'architecture of phenomenology' [12], 'transarchitecture' [20] and 'aura' [21].

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 presentation 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 what 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' through 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.

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: Seminars – 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, Hagia Sophia in Turkey, Centre Pompidou in France, the Vietnam War Memorial in the USA, and Halászbástya Castle in Hungary.

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 had 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 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); Boullée's Étienne Louis Boullée (1728-1799) and finally; The Fourth Grace (2002). The lecture series discussed the person-environmental relationships and how virtuality may fit within this relationship. 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 one makes 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. “...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” [22].

The students were then required to create and present a visual presentation connecting the above mentioned perspectives to the notions of virtuality and experience. This project was to encourage them 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 three-dimensional interior architectural space with little experiential quality. 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 that the project would fulfill the requirements for the unit objectives. However, rather than inhibiting the research, as was anticipated, the outcomes gave the author a greater insight into presence and experience within digital previsualized places and spaces. As the unit required structure and milestones, this project was undertaken and completed within nine weeks, where, each week, the students worked in a traditional studio environment as well as computer laboratory sessions. The traditional studio concentrated on “hands-on” activities: visual communication, design drawing, ‘reading’ physical environments and model making. 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 increased. These activities not only extended their skills 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' [15]. The decision to use a sphere as the only 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 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. Not only were they to design a space, but were also to consider it in its full capacity: name, identity, logo, place, location and topology.

The students then used 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. For instance, Studio VIZ, which is a popular architectural visualization package, offers many different ways to manipulate and add realistic mapping materials to an object as well as to produce fly-through animations. Initially the limitation of using only a sphere as a basis was a considerable challenge for students in the second year of their study; 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 much time with the students, seeking greater insight into why they appeared to be more drawn toward designing with digital tools that 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 feel a flow: my design isn't dictated by my drawing skills etc, but only by my imagination."*

As shown in examples of student outcomes 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 three-dimensional modeling 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 presence was evident in several designs and the ability to 'read' the space was apparent. In order to give a 'snapshot' of the outcome of the project, only two examples of students' work will be described briefly.

### **2.3.1 Student Project: The Mine**

This project was an 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', which is a state of daydreaming, giving 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 these miners spend weeks, months and years of life, primarily underground searching for an object of beauty, the diamond, desired worldwide, the student's concept was to give the actual users of the a place to 'escape' to; to allow a sense of beauty to permeate their mundane lives.

The space 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. 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".

### **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. 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. 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 attributed to, arousing a sense of emotional connection and curiosity.

## **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.

### **2.4.1 Participants**

Forty-two volunteer participants took part in the focus group and all responses were documented; 38 provided useful feedback for the overall study, and eight for this paper. All participants were students within the interior design discipline and had a good command of English which was the language used for the focus group. The questionnaire was to examine the sense of presence that the students may have experienced whilst designing their 'immersive' space and seventeen questions were asked in total with three main topics as an emphasis; presence, experience and design. The focus group was held immediately following a digital studio session. All responses were written by the students and some of these responses are quoted below.

### **2.4.2 Skill Sets**

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, i.e.

*"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.”*

### **2.4.3 Spatial Experience**

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.”*

### **2.4.4 Presence Application**

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?”*

In this case, consideration of the design and production (digital or dexterous) of an interior architectural space is the stimulation of imagination and experience of the individual ‘being there’ in a virtual space. Previous authors have already illustrated that concept of presence should be examined for practical and theoretical reasons and an enhanced sense of presence is central to the use, usefulness and profitability of new technologies, which are constantly changing the way we work, play, and dwell within our built environments. 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”*

## **2.5 Feedback**

At the end of the semester, analyses of the outcomes of the hybrid studio were undertaken by the lecturers and tutors of the unit, as well as the discipline leader, course coordinator, and Head of School, as is usual practice within the Faculty. Feedback was gained from internal and external moderators, and industry representatives. Overall, most feedback was positive regarding the high stand of work from students completing the second year of their undergraduate degree. Several senior members of international design firms indicated that the outcome of the hybrid design studio was of the highest standard of work that they had seen from interior design students at QUT. “The projects demonstrate an exploration of ideas and innovation. Most designs successfully illustrate refined and well developed schemes” [anonymous reviewer]. Other 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.

This valuable and object 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. 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 every 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 digital design tools as a means of previsualisation of glossy, high-tech, polished (and sometimes uninhabitable) spaces; the potential remains to use these packages with a consideration of the person and their relationship to the surrounding environment. Thus, if an interior architect, when employing digital tools to create a virtual environment, attains a sense of presence, there may be a greater potential to gain a significant insight into the end user's requirements.

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.

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