Actual Reality: An Alternative Approach to Post-Digital Representation

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In his essay "Architecture Enters the Age of Post-Digital Drawing", Sam Jacob advocates for a new method of representation that eschews the digital technology used to create photo-realistic renderings in favor of an approach that utilizes digital collage in order to embrace drawing as a work of fiction. While his criticism of photo-realism is valid, it is also arguable that a post-digital age in architecture should more heavily concerned with reality. An alternative method of representation is investigated that utilizes photographs of physical models that are digitally modified in order to emphasize the experiential qualities of architecture. Whereas Sam Jacob uses the zombie as a metaphor for a collage technique risen from the dead, the cyborg may be a more apt analogy for a post-digital method of representation that is focused on real world, but also open to embracing the potential of digital enhancements.

The paper explores the role of physical models, photography, and in some cases digital technology as a means to generate perspectival views by architects of the past and the present with the hope that these precedents can be utilized to inform an alternate post-digital era to the one Sam Jacob advocates. These techniques have been applied in a series of design studios focused on shifting the focus from external form and abstraction toward internal experience with an emphasis on reality. While this approach diverges from what students' expectations are for design, many have embraced the process and stated that the studio has helped to shape their view of the realm of architecture.

DEFINING POST-DIGITAL

Architecture and culture currently exist in a digital age where technology enables the creation of images (and even video) that appear virtually indistinguishable from our perception of reality. Within the profession of architecture, digital representation has advanced to the point where the ability to produce photo-realistic renderings that are indiscernible from actual photography is nearly ubiquitous. With this technology reaching its peak and digital representation trending in the direction of sameness, there are those within the profession searching for alternative modes and methods of representation to the photo-realism that has become so pervasive. In his essay "Architecture Enters the Age of Post-Digital Drawing", Sam Jacob writes:

"Instead of striving for pseudo-photo-realism, this new cult of the drawing explores and exploits its artificiality, making us as viewers aware that we are looking at space as a fictional form of representation. This is in strict opposition to the digital rendering's desire to make the fiction seem "real."

While one can argue that the merits of "pseudo-photo-realism" are dubious, the same argument could be made for methods of representation that carry architecture closer to the fictional and farther away from reality. In an age already saturated with digital images, where many value the instagram-ability of a space more than the experience of being there in person, perhaps it is time that architecture lent more credence to the reality of buildings

Figure 2. Top: Post-digital collage. OFFICE Kersten Geers David Van Severen. Bottom: Hybrid Perspective. Luis Lemus.

and their experiential qualities. As an alternative to both pho-torealism's ability to "make the fiction seem real" and the way Jacob's method of post-digital representation "explores and exploits its artificiality", it seems appropriate that a method of representation that claims to be post-digital be more engaged with the real world. This paper proposes a method of representation in architecture that asks students to explore the actual and investigate possible realities. These investigations utilize both physical models and digital technology in an effort to communicate the experience of architecture.

THE DIGITAL DILEMMA

Jacob provides a valid critique of digitally rendered photo-real-istic perspectives and their tendency toward being "blue-skyed, lush-leafed, and populated by groups of groomed and grinning clip-art figures, where buildings appeared with a polished sheen and lens flares propagated." At some point, the mentality of ev-erything-all-at-once became pervasive in these renderings. The focus was no longer an ideal building, but an ideal everything; an impossible standard for reality to live up to. The impulse to dress up a drawing in order to seduce an audience is not unique to today's photorealistic renderings. Part of the problem lies in the fact that current technology makes these renderings so easy that the urge for became too hard for many to resist, but the majority of the issue lies in the passive way the profession has utilized technology, allowing the digital to take over almost fully.

> "Despite our tendency to think of digital imagery in terms of smooth surfaces, fluid dynamic simulations and parametric models - virtual realities that can be generated *ex novo* in the computer - perhaps the most intense and lasting effect that the digital will have on architecture culture will be its capacity to bring attention once again to the real, through operating on its fragments in a postproduction space in order to generate alternative futures - what we could describe as a practice of engaged digitalism."

> —Jesus Vassallo, *Seamless: Digital Collage and Dirty Realism in Contemporary Architecture*

Jesus Vassallo's statement provides an optimism about the potential of digital technology to be instrumentalized in a way that informs design decisions rooted in reality. Architects should consider what aspects of digital representation are worth preserving. Instead of jettisoning a useful tool, there is an opportunity to utilize that technology in a critical manner.

If you remove the over-idealized additions of photorealism and focus on the buildings themselves, perspectival views still provide architecture's most convincing tool for communi-cating spatial qualities as they are experienced, especially to those outside of the profession. Transitioning from all digital representation to perspectives that are digitally enhanced provides an opportunity to introduce a more honest means

of representation that does not resort to fiction, be it pseudo-realistic (photo-real) or honest artificiality (Jacob's post-digital).

ZOMBIES VS CYBORGS

Jacob suggests zombies as a metaphor for the post-digital repre-sentation he promotes, and admittedly the notion of resurgent drawings re-animated and rising from the grave provides some intrigue. Unfortunately, these drawings, despite their colorful nature, don't quite seem alive. They are not lifeless in the sense that they are dead. Many are in fact quite compelling and beautiful. But, they appear lifeless in the sense that they are ambivalent to reality and lived architectural experience, and they seem tailored more for the digital realm's two-dimensional screens than for physical world around us.

As an alternative to the zombie, the cyborg may serve as a better candidate for post-digital representation in architecture. A method of drawing that embraces the inherent qualities of the real while harnessing the potential of digital technology seems more appropriate for our current age. This method of representation utilizes physical models constructed from actual materials, photographed from a human perspective, and augmented digitally. These digital enhancements enable the model to achieve things it could not otherwise do on its own, while still retaining its identity as a part of life rooted in reality.

SAARINEN'S STUDIES

Long before the rampant use of photo-realistic rendering techniques, Eero Saaarinen recognized that architectural drawings could be both seductive and misleading, especially when the elements surrounding the building are represented in an idealized state. In his account of working within the office, Richard Knight recalls Saarinen taking issue with the fact that "drawings can fool both the client and the architect who is intent on executing a beautiful drawing, when the challenge is to produce a beautiful building." This understanding of misplaced priorities initiated an effort to utilize large scale study models as a means to both develop their designs and communicate ideas with clients.

The models described in Knight's account were constructed from simple materials with the potential for flexibility and adjustment considered as a priority over craft and refinement. These models, typically ½" or ¾" equalling a foot, were used to study a myriad of architectural issues, but they primarily served as tools for generating a sense of how the space would be inhabited and experienced. Designers would arrange the parts, insert scale figures, look inside, and take photographs from a low angle in an effort to recreate a perspectival view of the interior.

Pierluigi Serrano, another individual working in the office, describes the increasing size of the study models as being "immersive experiences, overwhelmingly large, highly detailed". These models were large enough to peer inside and "simulate
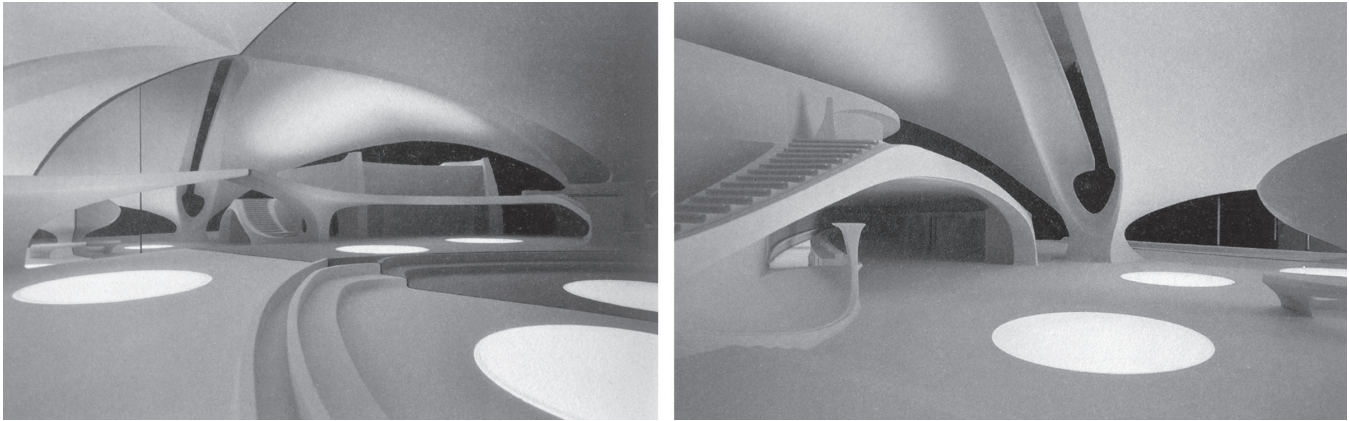
Figure 2. TWA Terminal Model. Richard Knight.

the experience of the architecture from the eye of the users." In order to focus their view, the designers even constructed periscopes they could utilize to capture specific views. At first glance, many of these images could be confused for the space they represent. They are remarkable in their ability to communicate the spatial qualities of the actual buildings they preceded and provide a pathway to perspectival views that is still viable and relevant today.

CONCRETE OBJECTS

> "All the design work in the studio is done with materials. It always aims directly at concrete things, objects, installations made of real material (clay, stone, copper, steel, felt, cloth, wood, plaster, brick). There are no cardboard models. Actually, no "models" at all in a conventional sense, but concrete objects, three-dimensional works on a specific scale."
>
> —Peter Zumthor, *Thinking Architecture*

Within the studio of Peter Zumthor, physical models, which he refers to as "concrete objects" go beyond the visual and communicate experience in a more haptic manner, integrating the sensual phenomena for which Zumthor's built work is renowned. This understanding of each model as analogy for an eventual reality is visible in the office's method of photographing these "concrete objects" in order to create rich perspectives of their interiors. The sensual qualities present in these images speak to Zumthor's interest in communicating the qualities of real things and materials, qualities that would prove difficult if not impossible to re-create via digital means.

Zumthor's approach to perspectival representation offers an example of how the use of models to generate perspectival views can communicate vision and values that are unique to a particular designer. The 5-Volume Set documenting the work of the office that was released in 2014 includes mostly completed work in the early volumes and projects not yet constructed in the latter volumes. In the documentation of the latter projects,

very few rely on digital tools and the digital work that is included is limited to two dimensional representation. Perspectival depictions that communicate the experience of these projects are accomplished via photographs of models. The approach to site, texture, materiality, and light in these models are uniquely those of Zumthor's office and show the potential of model photography to communicate unique architectural values as well as the experiential qualities.

CLARITY OF INTENTIONS

In addition to Zumthor, several emerging practices utilize a method of combining physical models, digital photography, and post-production as both a design tool and a method of communicating design intentions. LAB-OR and Ultramoderne (among others) stand out as two young offices employing similar techniques in order to communicate their respective values as designers with the former producing gritty high contrast images that demand a visceral response and the latter producing perspectives that speak to the precise yet playful nature of their work. While each office's approach is unique, in both cases the use of the physical model in combination with perspectival depth captured by the camera provides spatially accurate depictions of their vision.

This methodology of design and representation introduces a counter to the post-digital approach to drawing lauded by Sam Jacob. Whereas those post-digital works are "exploring and exploiting artificiality", the combination of physical models and photography seek to explore and exploit possible realities. While this technique of generating perspectival views through physical models produces a compelling image, the image itself is not the end game. The creation of these models and images are intended to explore the experiential qualities of space, light, and material textures as they would appear in an eventual reality.

MODEL AS ANALOGY

A common theme throughout Dalibor Vesely's *Architecture in the Age of Divided Representation* is the critical role played by proportion as "a key to the analytical, qualitative articulation
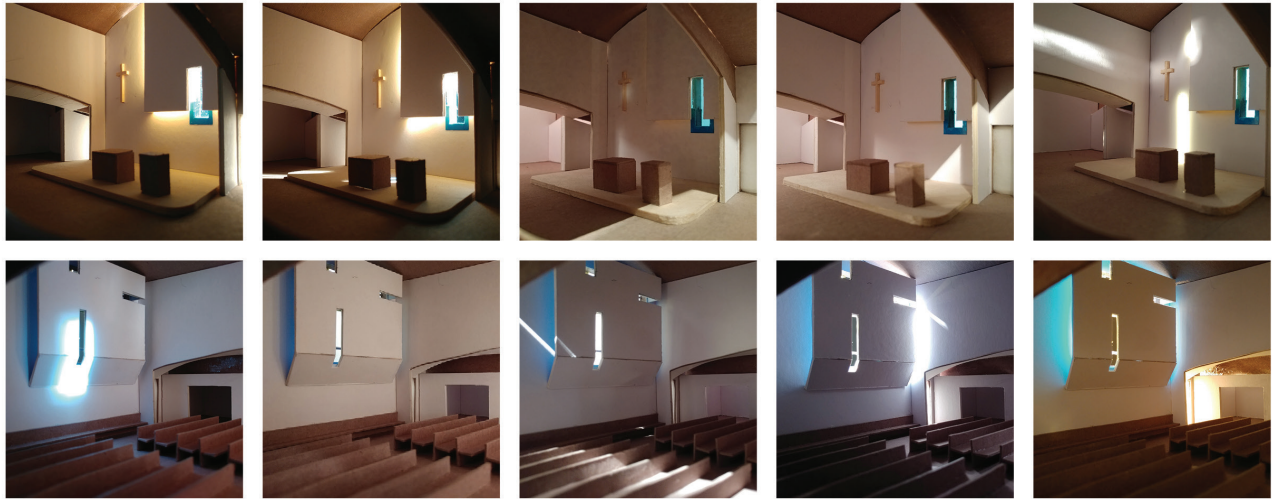
Figure 3. Model of Chapel of St. Ignatius. Anderson Yauripoma.

of reality and its representation." Vesely makes the important distinction that the concern for proportion in this case is not in creating harmonious spatial relationships between the objects being represented, but the accurate proportional relationship between what is being represented and what it represents in reality. Vesely defines this analogy as "a symbolic structure reflecting the resemblances, similarities, and eventually the balanced tension between sameness and difference between individual phenomena." While his discussion deals with perspectival drawings, the necessity of proportion holds true when applied to physical models as representations of architectural space.

In some ways, the physical model actually proves to be a more versatile representational tool than the perspectival drawing. The limiting factor of a perspectives fixed point of view does not exist in physical models, allowing a freedom of movement within and around the spaces it defines. The physical model also acts as an analogy in its ability to demonstrate the effects of natural phenomena. Light behaves in a similar manner within the space of a physical model as it would in a much larger space of the same proportions, illuminating surfaces and revealing textures. The black box of complicated ray-tracing software is no longer required and the presence of natural light is readily apparent in real time.

Most importantly, these models obey the same rules of perception as the spaces they are used to represent. As the scale of these artifacts increases and the requisite amount of detail is added, they can be used to generate perspectival views that mimic the experience of inhabiting an actual architectural space. This fact is especially helpful for beginning design students who may not yet be fluent in the language of two-dimensional drawing. For those just beginning to consider qualities of space, constructing models as analogies to reality

allows them to investigate possibilities with a tool whose language they already understand.

QUESTION OF SCALE
Shifting the focus and understanding of artifacts from their formal exterior to experiential interior requires a significant increase in the scale at which they are studied. This increase in scale enables a greater degree of articulation in the areas of material and texture as well as tectonic assemblies. The understanding of light and heavy and how the scale of a specific material contributes to a repeated module all aid the level of embodiment provided by a model. When addressed properly, these issues provide a degree of authenticity to the view of the interior that goes beyond the sensation created by peering inside a massing model at a smaller scale.

To push this shift in value further, the scale of the models are increased to the point that they begin to feel immersive when one looks into the interior. In order to create a quality approximation of an architectural reality, each model should provide enough depth to allow for the artifact to engage one's "peripheral vision, which enfolds the subject in space." Models constructed at a scale of ½" = 1'-0" begin to provide the desired effect but the exact scale of each model depends on what is being built and what it is intended to communicate. Students who remain unsatisfied with this level of ambiguity are given the following rule of thumb: something big enough to fit your head inside (or at least a small camera).

PRECEDENT PROJECTS
The studio introduces the use of large scale models as part of a precedent analysis during the student's second design studio. Each student selects their building from a curated list of projects, typically sacred spaces, where the presence

of natural light plays a key role. As part of the analysis, each student identifies a moment within the precedent which they model proportionally using a combination of floor plans, sections, elevations, and photographs. Engaging the precedent at this scale changes the way in which students look critically at qualitative elements within the building as they attempt to identify materials, textures, colors, and other elements that contribute to the atmosphere within the building.

Upon completion of the model, students observe how light enters the space, the effects that it has on the atmosphere, and how that atmosphere changes over time. Weather permitting, the students take the models outside and capture lighting conditions at specific times through a series of photographs. In other cases, the path of the sun is simulated using artificial light to re-create a similar effect. While natural light is preferred, the latter method provides the benefit of allowing students to observe change as if it were an artificial time lapse.

Students photograph these lighting conditions as part of an analysis of how light changes at various moments throughout the day. These images are compared to each other, as well as to professional photographs of the space in order to gauge how accurately the model re-creates the atmosphere of the building. In the comparison with the professional photographs, students attempt to determine the time of day when each shot was taken based on the intensity and presence of light. In some cases, this analysis leads to an interesting discussion of the ethics of a photographer's use of artificial light to create an idealized condition that would not exist beyond that photo.

The precedent analysis provides an introduction into the understanding of how light affects the qualities of an interior space and provides evidence of how lighting conditions change as the sun moves across the sky. While most students understand that the sun rises in the east and sets in the west, very few understand how the angle of the sun changes and the ramifications that has on natural light within a building. These concepts are introduced and then integrated as students transition from the precedent analysis into their own designs with the hope that they can begin to use the lessons learned as a design tool.

EXPERIENTIAL INVESTIGATIONS
As an initial step in the design process, each student creates a series of models that explore how a surface can be used to filter light as it passes from the exterior to an interior. The width and length of these studies can vary, but the constraint of depth becomes especially critical as students tend to default to punched openings within a surface that do little to modify the quality of light. While maximum depth is left up to the students, minimum depth is typically set at ½" with the added constraint that one should not be able to see through the surface when viewing it directly.

Students are challenged to go beyond the use of familiar shapes, figures, and patterns and to make design decisions based solely on how their artifact modifies the quality of light and creates an atmosphere. Initially, many students cannot resist the urge to create a surface that casts the shadow of a familiar symbol (Tadao Ando and Batman being invoked as precedents in these cases). Students develop and test multiple iterations that explore and experiment with the quality of light and the effect created prior to dealing with these questions at the scale of an architectural space.

The next phase of the project re-introduces the concepts of orientation in space and time and in more advanced cases materiality. A version of this project has been given in multiple semesters and at multiple programs with different requirements and constraints, but in each case the crux of the project remains the same: exploring how the concepts of light, space, and material contribute to the experiential qualities of architecture. Using the given dimension of a space at a specific scale, each student constructs a model of their own design that serves as an analogy for a real world interior space.

Students are told explicitly that their project will not be evaluated from the exterior. Instead, each design decision they make should be related to the atmosphere and experience created within the box. As the designs develop, students repeat the process of photographing the interior under different lighting conditions in order to replicate a series of perspectival views into the space over the course of a day. These
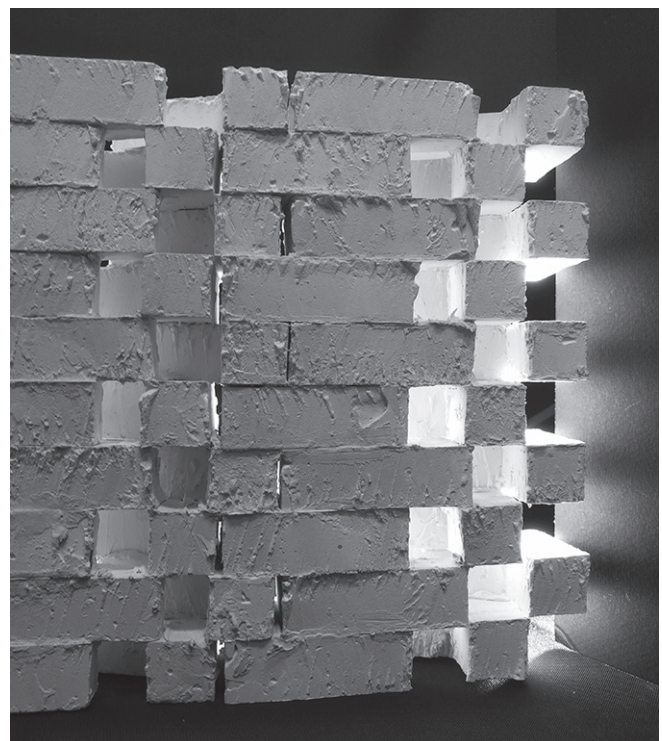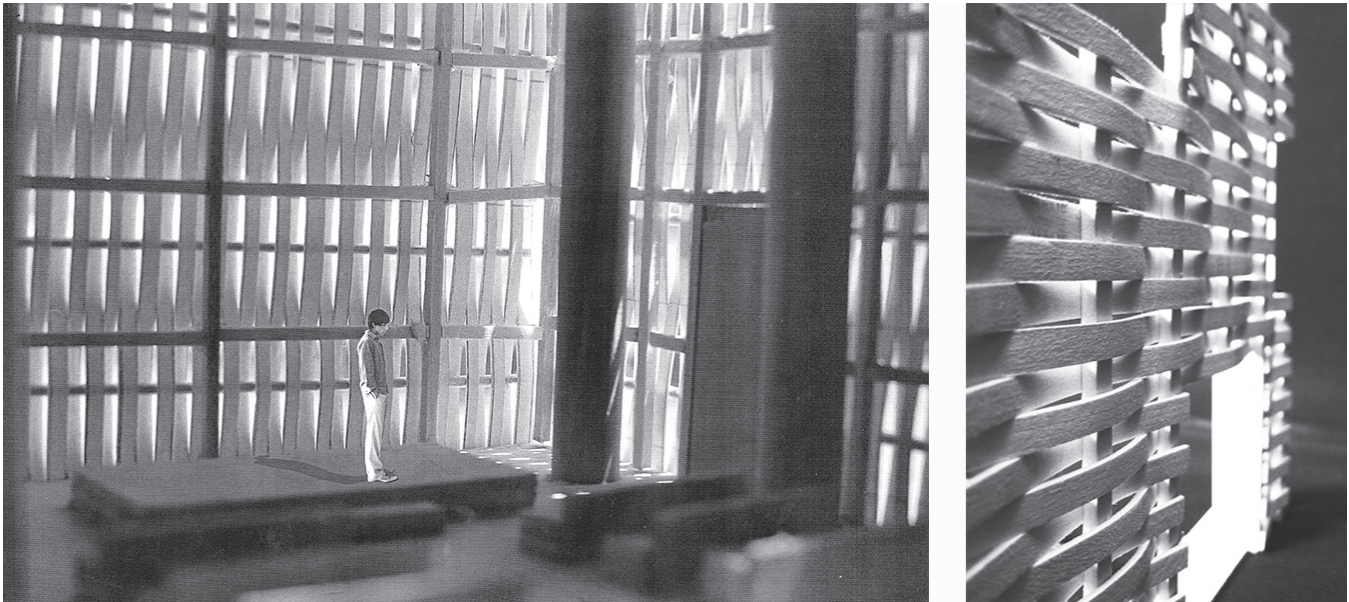

Figure 4. Light Filter. Sean Benson.

Figure 5. Sacred Space and Light Filter. Steven Bain.

perspectives vary in terms of intensity, gradients, textures, and overall atmospheric qualities. Students then use digital tools to augment these images with the addition of people, the shadows they cast, and experiment with contrast to further reveal material qualities.

AUGMENTING REALITY

For the majority of the students, the digital augmentation is the moment when the image of their model's interior becomes understood as architectural space. The addition of human scale figures reifies the image from a photograph of a model to a representation of something real. While these images never quite pass for reality, the students begin to understand the spaces they have created as less of an abstraction and more of a "plausible alternative" that people could inhabit. For many, this moment is particularly empowering in that it helps to create a bridge between the abstract exercises that are typical of first-year design studios and the students' expectations that they would be creating actual buildings.

The opportunity for students to explore and understand how light strikes a surface, reveals a texture, and illuminates an interior space help to expand students' sense of the realm and responsibilities of architecture. The majority of 1st year students enter into design studio intent on exploring unique forms and novel shapes. Few enter the program with an eye toward humanism and creating experiential qualities. While forms and shapes are still a driving force in their work, their reaction to these projects suggest that factors related to experience now warrant consideration in their design process as well.

A quote from one student exemplifies this as an outcome of the project:

> "Prior to this project, I had never considered the human experience, especially once inside a building, when designing a project. Designing had always been about how the building looks on the outside and how "fancy" the facade is. But seeing how light affects the human experience inside opened up a whole new side of design for me. Different light qualities at different times of day, different reflective and distillation techniques, and the effect of shadows were part of a new and excit(ing) avenue of design. The human experience aspect put a whole new meaning to design. Now a project was not just an object but a place, space that enriched the lives of those who entered. This was an exciting opportunity and a great responsibility."
>
> —Colin Tidwell

The statement from this student is fairly typical of those who shared their reactions to the work of the studio. While none of the students have sworn off aesthetic exploration, they all shared a belief in the importance of experiential qualities of architecture and state that it now informs their design decisions in addition to their concerns with form.

Architecture students are young and energetic and eager to explore complex ideas. While most enter this studio with the expectation that complexity will come in the exploration of complex forms, the production of these perspectival views and the complexity inherent in shaping light and creating

experiential qualities seem to satisfy that need for complexity, allowing this departure from form and shape to be accepted and in many cases embraced. The focus on representing experience, especially at an early stage, has the potential to shape students' perception of architectural design and shift their focus from external formal qualities to internal experiential qualities in a meaningful long lasting way.

The relevance of real world experiential qualities and atmospheres in the future of architecture and the future of society as a whole are yet to be determined. There is some hope that advocating for this issue in architectural education will provide some appeal to the emerging generation of architects. In order for that to take place, methods of post-digital representation will need to communicate the potential of an augmented reality, not in the sense of a real world overlaid with visible data, but in the sense of well designed architectural spaces accentuated with phenomenal qualities that enrich our experience and make being in the world a worthwhile endeavour.

ENDNOTES

1. Sam Jacob. "Architecture Enters the Age of Post-Digital Drawing." Metropolis, July 5, 2018, accessed January 15, 2020. https://www.metropolismag.com/architecture/architecture-enters-age-post-digital-drawing/.

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12. Vassallo, 175.