# BEAUTY AND TRANSCENDENCE:
## Four Ideals for the Secular Age

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## INTRODUCTION

We live in a day and age in which the built environment plays a critical role in either nourishing or diminishing cognitive, behavioral, spiritual, and emotional health and well-being. "More than ever before," argues Juhani Pallasmaa, "the ethical and humane task of architecture and all art is to defend the authenticity and autonomy of human experience, and to reveal the existence of the transcendental realm, the domain of the sacred."[1]

Finding beauty and the sacred in a secular age is difficult, especially when considering the cultural milieu that is drowning in narcissism, consumerism, and hedonism. Likewise, the agnostic and atheistic philosophies that dominate both modern culture and our schools of architecture doesn't help the situation. "Our built environment speaks of a culture that has banished the sacred to the periphery of our modern lives," explains Karsten Harries.[2]
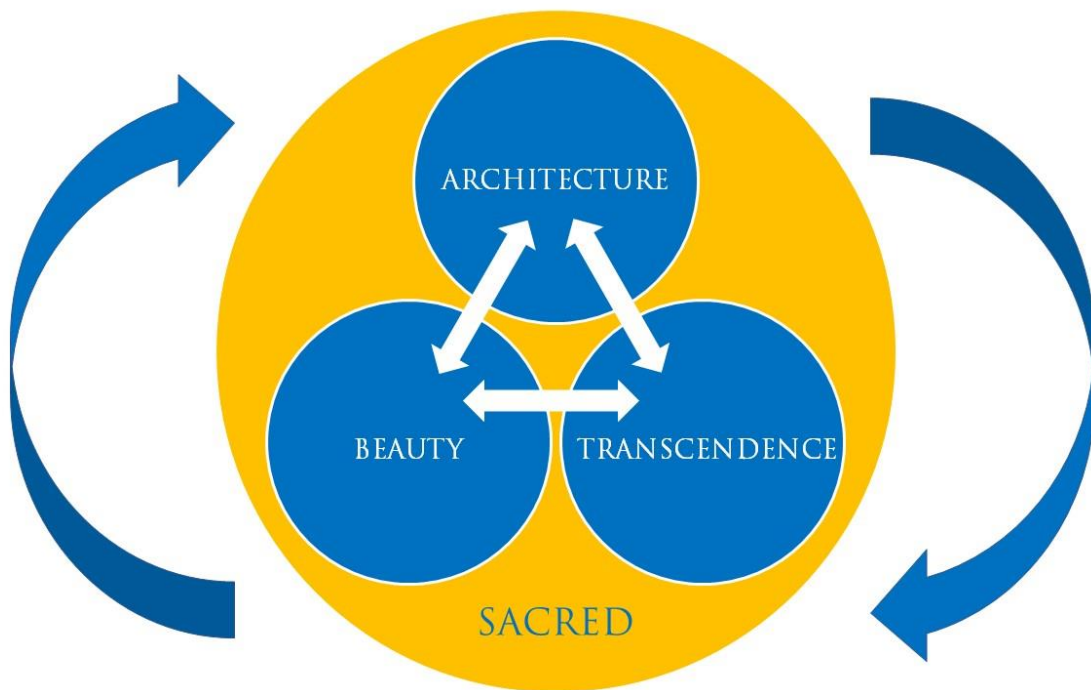


*Figure 1. Diagram illustrating the relationships between architecture, beauty, transcendence, and the sacred.*

While this may be the case, Charles Taylor argues that the secular age forces individuals to confront notions of belief and unbelief.[3] Thus, it is our unique privilege living in a culturally diverse and predominantly democratic world that enables us to choose for ourselves based on evidence, history, and faith rather than popular ideologies.

In addition to the belief and unbelief paradox of the secular age, we find yet another conundrum. Philosophers and theologians tend to agree that beauty and transcendence are inextricably linked to the sacred (Fig 1). The transcendent is tied to the eternal that goes beyond the ordinary profane world. Likewise, beauty gives us hope of the perfected heavenly realm. Yet all three of these qualities tend to be rejected by our contemporary culture and profession. Many have come to embrace an architecture of ugliness and absence instead of beauty and transcendence. This has continued our downward spiral towards a desacralized, profane world. But why?

In his book titled *Beauty*, the philosopher Roger Scruton argues that many in our contemporary culture have a "desire to spoil beauty, in acts of aesthetic iconoclasm."[4] Yet, beauty is existential in nature, and we have an innate human need for it. "Our need for beauty is not something that we could lack and still be fulfilled as a people. It is a need arising from our metaphysical condition, as free individuals, seeking our place in a shared and public world," explains Scruton. He continues:

> It is a need arising from our metaphysical condition, as free individuals, seeking our place in a shared and public world. We can wander through this world, alienated, resentful, full of suspicion and distrust. Or we can find our home here, coming to rest in harmony with others and with ourselves. The experience of beauty guides us along this second path: it tells us that we are at home in the world, that the world is already ordered in our perceptions as a place fit for the lives of beings like us. But…beings like us become at home in the world only by acknowledging our 'fallen' condition…Hence the experience of beauty also points us beyond this world…the feeling for beauty is proximate to the religious frame of mind, arising from a humble sense of living with imperfections, while aspiring towards the highest unity with the transcendental.[5]

From this perspective, the human experience of beauty is more than existential; it is ultimately tied to both transcendence and the sacred. Likewise, both art and architecture stand "on the threshold of the transcendental," argues Scruton.[6] Perhaps this is because significant "architecture makes us experience ourselves as complete embodied and spiritual beings," explains Juhani Pallasmaa.[7]

When ordinary people (especially non-trained architects) observe how things appear, they make judgements of what they deem beautiful or visually pleasing. Whether we are looking at art or architecture, our reactions can vary based on our socio-cultural backgrounds (e.g., age, gender, education, etc.). Scholars often refer to this as the phenomenology of aesthetic experience. Not surprisingly, architects will often see the world differently than others precisely because they are trained to see the world in a certain way. They are taught how to make judgements of what is good or bad design.

Most visual preference survey's reveal that people typically like traditional architecture over its modern counterpart. In the 2020 National Civic Art Society survey by the Harris Poll, for instance, 72% of Americans (n=2,039) preferred traditional federal buildings over modern ones.[8]

Likewise, in the 2007 American Institute of Architects survey (n=2,214) only twelve of the "150 Favorite Buildings" were described as "modern-looking." The majority of Americans who participated strongly preferred traditional style buildings (Gothic, Greek, and Roman revival).[9] If a clear majority of people prefer traditional architecture over modern designs, then why are schools not teaching students to design buildings that will give them more clients and job security? Part of that answer is rooted in significant philosophical and ideological changes that took place in architectural education at the beginning of the 20th century with the modern movement's attempt to obliterate all ties to history and the past.[10]

## FOUR IDEALS FOR THE SECULAR AGE
Applying these lessons to the secular age we ask: how can architects attempt to transcend the mundane and ordinary through beauty? Can the domain of the sacred be revealed through beauty? How might these principles be taught to the next generation of architects? I seek to answer these difficult questions by examining four ideals that might help us address beauty and transcendence in architecture. These can be summarized as follows: 1) design with beauty, 2) defend the authentic, 3) build for time, and 4) inspire the spirit.[11]

### Aesthetics: Design with Beauty
The ocular-centric nature of architecture connects it directly to aesthetics, but designing with beauty in mind is not typically taught in schools of architecture. Architectural education has instead celebrated the creative process by teaching students to cultivate their imagination and refine their craft. If the first step towards transcending the mundane and revealing the domain of the sacred is through beauty, we must ask the following questions. What is beauty? How do architects design with beauty? And how do we teach it to the next generation of designers?
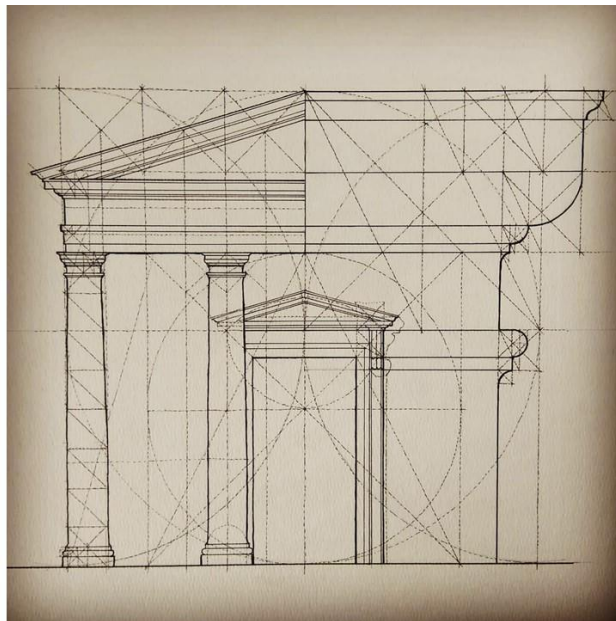


*Figure 2. Drawing of a Tuscan column capital and temple front illustrating proportional relationships between the whole and the part.*

*Defining Beauty*

The ancient Athenian culture around 450 BCE counted beauty among the ultimate values of society. Their architects worked closely with artists, sculptors, and master builders to develop an "aesthetic system with the express purpose of creating an experience of beauty. The result was the Parthenon on the Acropolis in Athens," claims Nir Buras.[12] Around 400 years later, the Roman architect Vitruvius explains that "good" architecture must possess three things: *venustas* (delight, beauty, aesthetics), *utilitas* (commodity, function, usefulness), and *firmitas* (firmness, strength, structure).[13] Then Alberti emerges in the Renaissance to revive several earlier objective definitions of beauty by Aristotle and Plato with these words: "I shall define beauty to be a harmony of all the parts, in whatsoever subject it appears, fitted together with such proportion and connection, that nothing could be added, diminished or altered, but for the worse" (Fig.2).[14]

Looking to the past, Alberto Perez-Gomez reminds us that Renaissance cosmology believed that "number and geometry were a…link between the human and the divine." Others influenced by Newtonian transcendental thought argued that by observing the "immutable, mathematical laws…of natural phenomena," architects would be able to design with beauty and thereby approach divinity.[15] Therefore, the question we ask ourselves in the 21st century is whether these relationships of parts and whole can still be considered a good definition of beauty. Is beauty an objective, measurable quality of things possibly in the "brain of the beholder"? Or is beauty subjective and a product of the observer's perception in the "eye of the beholder"?

*Beauty and the Brain*

Breakthroughs in evidence-based design, neuroscience, aesthetics, and environmental psychology are holding architects to a higher level of accountability regarding architecture's effect on well-being vis-à-vis the experience of beauty. For instance, some neuroscience research is confirming that beauty is not in the eye of the beholder as was once thought, but instead in the biological brain of the beholder. Cultural norms do not play as much of a factor as some philosophers and contemporary artists would have us believe. Ugliness (as manifested in fear, disgust, and repulsion) is located in a different area of the brain than something that gives us pleasure. According to neurobiology research by Semir Zeki and Yael Reisner, fMRI brain scans are revealing that when people listen to beautiful music or look at beautiful images a singular part of the brain is activated known as the medial orbito-frontal cortex (mOFC-A1).[16] Thus, beauty is experienced mechanically through our senses.

Similar to Roger Scruton's philosophical arguments for the human need for beauty, science is demonstrating that we also have a neurobiological need for beauty as it nourishes our emotional brain. "In our daily activity," explains Reisner and Zeki, "we search for and seek to satisfy that quality; in simpler terms, we seek the beautiful to nourish the emotional brain since, from a neurobiological point of view, all areas of the brain must be continually nourished in a way that corresponds to their specific functions." They continue:

> The experiences of pleasure, reward and desire are central to activity of the emotional brain, and specifically of field A1 of the mOFC. When one considers that decision-

making is also linked to activity there, one reaches the inevitable conclusion that beauty must be a guiding characteristic in all designs that aim to enhance human experience. Hence, whatever other demands go into architectural design, beauty must be a central element. Its experience adds to the health of its individuals and thus to society's wellbeing. It is not a luxury, but an essential ingredient in nourishing the emotional brain.[17]

Thus, if architects have a desire to enhance the human experience, designing with beauty must be a top priority and guiding characteristic for architectural design. It should never been viewed as merely a luxury, but rather a vital quality needed for human health and well-being.

Fractal patterns, proportions, and geometries are tied to the universal perception of beauty in architecture for several reasons. According to Risner and Zeki, the "universality of architectural beauty…probably lies in satisfying inherited brain concepts of proportion, harmony and geometric relationships that are more formally expressed in mathematical terms."[18] This appears to vindicate the objective definitions of beauty articulated by Alberti and Aristotle. This should not come as a shock, since several studies have revealed that looking at fractal structures can reduce physiological stress in human beings.[19] Professor emeritus of Biology at Harvard, explains that humans have an innate "tendency to focus on life and lifelike processes." The term "biophilia" can be used to describe these tendencies, since humans have the "urge to affiliate with other forms of life."[20]
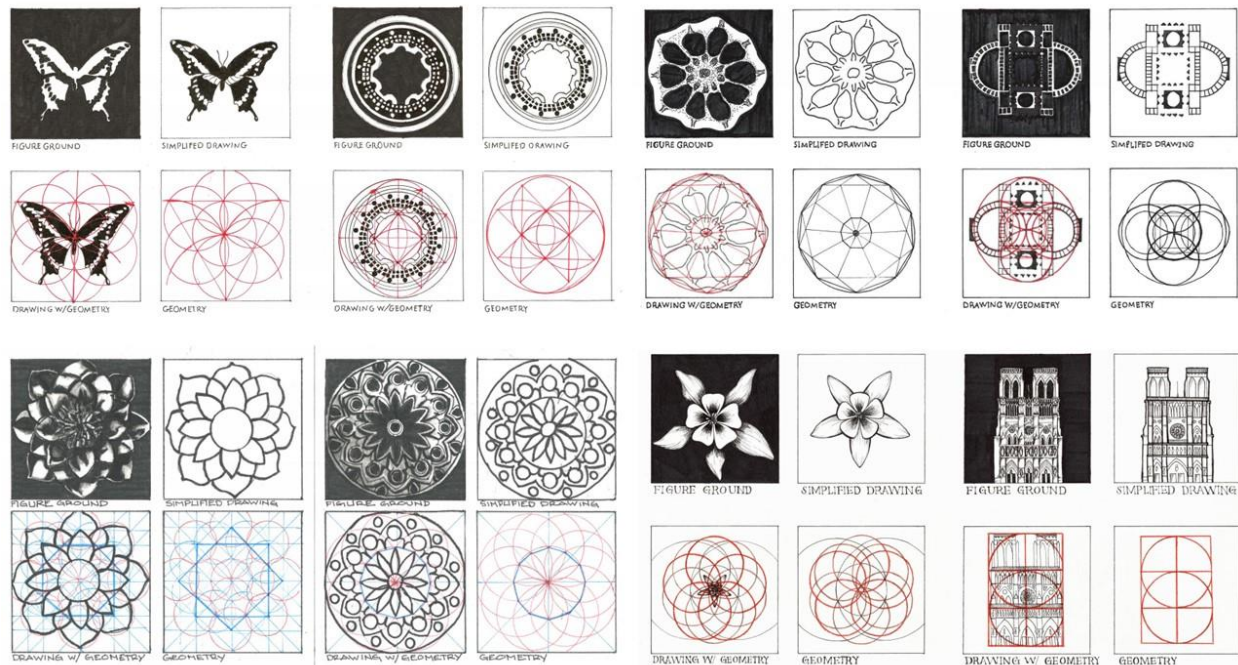


Figure 3. Archetypal geometry drawings of both natural and manmade objects.

*Nature as Design Guidebook*
Similar to the ancient Greeks, the ultimate guidebook for design becomes nature itself (Fig.3). As the math educator Michael S. Schneider explains: "Nature itself rests on an internal

foundation of archetypal principles symbolized by numbers, shapes, and their arithmetic and geometric relationships…from the smallest subatomic particles to the largest galactic clusters, crystals, plants, fruits and vegetables, weather patterns, and animal and human bodies."[21] Consequently, early design education should begin by grounding students in timeless and tested design principles, patterns, proportions, geometry, and spatial relationships inherent in both nature. The ancient worldview believed that nature was part of the divine creation by the god(s). Consequently, these principles were imitated in the physical forms of vernacular, traditional, and classical architecture in both east and west. According to Juhani Pallasmaa, "The aspiration to fuse the cosmic and the human, divine and mortal, spiritual and material, combined with the use of systems of proportion and measure deriving simultaneously from the cosmic order and human figure, gave architectural geometries their meaning and deep sense of spiritual life."[22] If architects want to design meaningful buildings that nourish human neurobiological health, they must continue to learn these principles throughout their education, especially when attempting to design religious projects.

The only way we can restore meaning to architecture and design with beauty in mind is to slow down and study the patterns of creation. In the words of Roger Scruton, "When you pause to study the perfect form of a wildflower or the blended feathers of a bird, you experience an enhanced sense of belonging. A world that makes room for such things makes room for you." In fact, our "aesthetic interest" in natural beauty, he argues, has a "transfiguring effect" because the "experience has a metaphysical resonance" with us. "In the experience of beauty the world comes home to us, and we to the world," Scruton concludes.[23] For the believer, the universal patterns found in nature are vestiges of divine design, the fingerprints of the all-wise architect of the cosmos.

**Culture: Defend the Authentic**

The second ideal for the secular age, demands that architects evaluate their ethical and professional duties of building in ways that affirm the authenticity of human experience and honor the cultural diversity found in the traditions we have inherited. Building off definitions from anthropology and the social sciences, culture is often described as the values, symbols, behaviors, beliefs, customs, and traditions of a racial, religious, or social group. These are often manifested in language, cuisine, dance, music, art, and architecture. Architectural educators should strive to teach their students about the importance of cultural diversity by helping them appreciate other perspectives, traditions, beliefs, customs, and places. We can help them see beyond their own worldview by cultivating their empathic imagination, increasing their compassion for the building user, and promoting humility to learn from other traditions.

Good architectural design is not obsessed with newness and distancing itself from the past; instead, it builds upon the past to further its connections to history and tradition. One of the ways in which we can teach students these principles is by measuring and drawing buildings that are part of our shared heritage. These processes become a form of embodied learning whereby the proportions, details, and unique features become internalized through a process of seeing, feeling, and drawing. With that embodied knowledge of the past in their bones, designers are equipped to imitate and blend in with the rich cultural memory and architectural tradition. "Any serious study of architecture (and art in general)," advocates Demetri Porphyrios,

"soon shows that the real difference between the great and the lesser architect is that the former imitates the principles of a great heritage, unlike the latter who copies the mannerisms of his predecessors or of his contemporaries."[24]

*Genius Loci versus Zeitgeist*

As we learn from anthropology, culture is both a verbal and nonverbal language. When we look for culture in the built environment there is usually a unique *genius loci* (or spirit of place) that can be found around the world. To demonstrate this point, one needs to only look up the most highly visited buildings in a particular city to get a sense of place. A quick internet search of the most popular places to visit in Paris, Beijing, or Washington, D.C., for instance, reveal that each geographic location in the world has a unique signature and sense of place. Whether we are in France or China, each location is composed of a distinct architectural tradition, tectonic language, materiality, and historical context. Consequently, the spirit of a place is rich in tradition and history because of human memory and lived experience. As Juhani Pallasmaa explains: "Tradition is an astounding sedimentation of images and experiences, and it cannot be invented; it can only be lived. It constitutes an endless excavation of layered, internalized and shared myths, memories, images and experiences. Tradition is the site of the archaeology of emotions."[25] Good architecture not only reinforces and perpetuates tradition, it defends and maintains the authenticity of culture and place.

Some architects chose to deliberately ignore the spirit of a place, however, together with its historical context and tradition. When architects adopt a *zeitgeist* design methodology that is "of its time" instead of "of its place," their buildings typically stand in stark contrast to the existing historical fabric of the city. By deliberately seeking to distance themselves from the past, architects communicate a disrespectful message to humanity. Their buildings proclaim a message that is in favour of "novelty, ephemeral pleasurability, consumable iconographic individualism, and unmediated industrial production." Such an approach to design, argues Demetri Porphyrios, leaves human beings "yearning for an authentic culture."[26]

While zeitgeist buildings may grab one's attention through an architecture of contrasts, the theatrical, showy, and flashy demonstration of panache typically lack depth and meaning. In response to critics who accused him of "practicing showy architecture," the world-renowned architect Frank Gehry responded by giving the audience of journalists the middle finger. He then boldly declared that "98% of everything that is built and designed today is pure sh*t. There's no sense of design, no respect for humanity or for anything else. They are damn buildings and that's it."[27] Although the arrogant architect didn't place his own buildings in the mix, Gehry's zeitgeist approach to design which ignores the past and its historical context suggests otherwise. According to Pallasmaa, "An artistic image which does not derive from this mental soil [of tradition] is doomed to remain a mere rootless fabrication, a quotation from the encyclopedia of formal inventions, and destined to wither away without being able to refertilise the soil and continuum of a renewed tradition, and thus become itself part of it."[28]

JEWISH MUSEUM
BERLIN, GERMANY

MILITARY HISTORY MUSEUM
DRESDEN, GERMANY



*Figure 4. Results of using 3M Visual Attention Software on photographs of the Jewish Museum in Berlin (left) and the Military History Museum in Dresden (right). Continual blue glow on lower heatmap images illustrate areas of subconscious interest.*

*Assessing Newness and Tradition*

Neuroscience and other biometric tools are further revealing why preserving a sense of place is important for the secular age. Architectural design that neglects its context not only disrespects the culture of a place, it may also cause negative affects on the public's health and well-being. An illustration of the difference between deliberate randomness and coherent design can be seen at the Jewish Museum in Berlin. The museum's formal entrance uses the older Baroque palace, the former Collegienhaus. Compared to the modern addition by Daniel Libeskind, both designs stand in stark contrast to one another. Using eye-tracking emulation software on photographs featuring both buildings, a heatmap reveals where human attention will fixate the longest. Our eyes are drawn immediately to the older Baroque façade and its more comprehensive, ordered, harmonious exterior design; meanwhile, the randomness of jagged slits of windows against a metal-paneled skin doesn't hold our attention (Fig.4).

We find a similar result when we perform a comparable eye-tracking test at the Bundeswehr Military History Museum in Dresden. A historic neo-classical armory building from the late nineteenth century once again features a modern addition by Daniel Libeskind. In the form of a transparent arrowhead, explains the architect, the "design boldly interrupts the original building's classical symmetry." According to the architect, "The façade's openness and transparency is intended to contrast with the opacity and rigidity of the existing building." Consequently, Libeskind claims that the "iconic form created a significant national landmark and invigorated the surrounding civic space."[29] Using the eye-tracking emulation software on the façade, however, reveals a contradictory finding. A bold, flashy architectural move by the architect for the new addition may shock us at first, but it does not hold our attention as human

beings nor invigorate the subconscious brain. Instead, our attention is drawn to the hierarchy and order of the original neo-classical composition (Fig.4).

*Losing a Sense of Place*

Why is defending authentic culture and the sense of place important? It is precisely because our culture is "in danger of losing its sense of place," argues the philosopher Karsten Harries. "Just as human beings need to locate themselves in space, so they need to locate themselves in time, find their place in time." He continues, "If there is to be genuine dwelling we must be able to defeat the terror of time, to genuinely situate ourselves in time: that is, we must discover our home, not just in space but in time."[30] Maintaining our sense of place should be the architect's top priority. "Architectural meaning is always contextual, relational and temporal," explains Juhani Pallasmaa. "Great works achieve their density and depth from the echo of the past, whereas the voice of the products of superficial novelty remains feeble, incomprehensible and meaningless."[31]

An architecture aimed at transcendence and beauty, therefore, requires us to teach designers to honor and preserve the spirit of a place, its culture, traditions, memories, and history. We study architectural precedents to learn from the past and address design challenges in a culturally and contextually sensitive way. Architects must approach the design process with empathy, compassion, and humility so they might build upon the past and preserve the embodied history of architecture. As Pallasmaa reminds us: "The first responsibility of the architect is always to the inherited landscape or urban setting."[32]

## Technology: Build for Time

The third architectural ideal for the secular age takes a critical look at how technology can improve the longevity of a building's lifespan. We should promote creative problem solving by equipping students with the technical skills to address the needs of the 21st century while at the same time teaching our students to think about building for time as a truly sustainable practice. The digital-information age has provided architects with incredible tools, such as augmented reality, parametric design, and building information modeling (BIM). If we put too much faith in such tools, however, it can lead us away from the sacred.

*Technophilia versus Technophobia*

Some designers have fallen in love with computerized design processes (a sort of technophilia). As a result, some modern buildings tend to read as repulsively plastic, unreal, immaterial, digital, or sharp-edged. Architecture that follows this trend tends to miss the point. "The task of architecture is not to shock, critique, amaze or entertain," explains Juhani Pallasmaa, "but to provide us with our foothold in the realm of the real, and thus lay the foundation for a critical position to culture and life."[33] On the other end of the spectrum, however, architecture marked by too much simplicity, efficiency, density, or uniformity turns into another form of industrialized kitsch.

As a result of such a cautionary stance towards technological design tools, some may accuse these arguments of being anti-progress or technophobic. On the contrary, architects should fully embrace using technical tools in the creative problem-solving task of architectural

design, but their timing is critical. Design educators, for instance, should encourage students to resist the urge to immediately jump into a computerized design process by continuing to use their hands. Such a posture is backed by neuroscience, since the early years of the architect require important hand, eye, mind neurological connections. This is not to say that innovative digital tools are to be completely rejected, but they should be viewed as means to an end instead of ends in themselves. Sometimes this may involve a process of physically sculpting clay models of ornamental motifs and details for plaster casts. Instead of reducing skilled labor through the sole reliance on machine fabrication, future architects should be taught about the importance of incorporating branches of traditional crafts and trades into their designs. Designers must remember all the hundreds of surrogate hands that work to bring the architect's vision to life.[34]

*Historic Preservation and Adaptive Reuse as a Sustainable Practice*
Instead of succumbing to the aesthetics of speed, newness, consumerism, and innovation, architects should focus on the durability of time-tested materials and assemblies, the long-term function and re-use potential of buildings, and the embodied energy of materials used for construction. This dialog is catching on at some of the top institutions around the country, such as the Harvard Graduate School of Design. It held a seminar in Fall 2021 titled "Thicker" that questioned the all-too popular technique of using all-glass curtain walls in modern design. From a sustainability standpoint, it reassessed older and thicker energy efficient facades found on historic structures as a viable solution.[35]

Building with time in mind, architects will also consider the adaptive reuse potential of historic structures instead of tearing them down. Using the existing building stock for new purposes is one method. We can see exemplified in the reuse of Michigan's oldest fire department built in 1929 that was transformed into a new boutique hotel. Likewise, instead of tearing down Utah's 1924 Ogden Union Station, it was converted into a series of museums in the 1970s. In the words of Roger Scruton, "when it comes to beautiful architecture function follows form. Beautiful buildings change their uses; merely functional buildings get torn down…In other words, when we take beauty seriously, function ceases to be an independent variable, and becomes absorbed into the aesthetic goal."[36] With this perspective in mind, both historic preservation and adaptive reuse of existing buildings is actually a viable strategy for sustainable design.

Any new construction has not only a footprint in space but in time. Architects need to think about what legacy their contemporary buildings will leave on those to come. Some have argued that architecture should be thought of as the "archaeology of tomorrow."[37]  As important as ruins are in communicating meanings and messages across time, architects should instead think of the continual use of their buildings across time. Can I design a building that is so beautiful that it transcends the necessity of its demolition by others wanting to find a new purpose for it? Consider John Ruskin's task to the architect:

> Therefore, when we build, let us think that we build forever. Let it not be for present delight, nor for present use alone; let it be such work as our descendants will thank us for, and let us think, as we lay stone on stone, that a time is to come when those stones

will be held sacred because our hands have touched them, and that men will say as they look upon the labor and wrought substance of them, 'See! this our fathers did for us.'[38]

Consequently, architects need to build for time by thinking of their projects in terms of generations instead of decades.

**Well-Being: Inspire the Spirit**

"Architecture is called to do a lot more than to guarantee the public health, safety and welfare of building users," argues Julio Bermudez. "At its highest, architecture has the ability to turn geometric proportions into shivers, stone into tears, rituals into revelation, light into grace, space into contemplation, and time into divine presence."[39] In order for architects to inspire the human spirit in the secular age, they must focus on creating environments that enrich the human experience by nourishing cognitive, spiritual, behavioral, and emotional health and well-being.

*Ritual-Architectural Events*

As it relates to the realm of the sacred, architectural environments are likewise a powerful experiential tool for inspiring the human spirit. According to the late comparative historian of religion, Lindsay Jones, significant spiritual experiences or events in architecture are comprised of three key players: 1) the architects who produce the built forms (architecture), 2) religious specialists who choreograph ceremonial occasions (ritual), and 3) human participants who come with their expectations and beliefs (people). When these combine under the correct circumstances, a "ritual-architectural event" occurs.[40]

Ritual-architectural events are powerful, extraordinary, and transformative experiences in architecture. They are especially successful at transforming, affecting, or changing one's human understanding of the world. Changes can be metaphysical, sociopolitical, psychological, religious, or pedagogical in nature.[41] Thus, architecture affects the triad of body, mind, and spirit similar to concepts found in eastern religions.

Recent breakthroughs in neuroscience, however, have confirmed this on deeper levels. Our aesthetic experiences of architecture, for instance, are tied to our behavioral, emotional, and cognitive processes. Whenever we are confronted with visual stimuli, our brains must quickly determine if it is threatening or rewarding. Environments that are threatening can cause us to be distracted, anxious, stressed, or reduce our productivity. On the other hand, an environment that is rewarding will cause us to be more creative, collaborative, focused, resilient, and positive. Consequently, we know that the architect's decisions matter a lot!

*Evidence-Based Design*

To illustrate the critical nature of design decisions on human health and well-being, we will explore several case studies and their importance for an evidence-based approach for architecture. An important study was performed by Roger Ulrich in 1984 to see if a patient's view out of a hospital window affected their recovery time after surgery. It was concluded that patients with a view of nature recovered faster than those with a view of another building.[42] As a result, an architect seeking to apply evidence to the design process for a new hospital or another type of healing space might carefully orient the building so that windows have views to natural elements.

Spiritual environments should be the first in promoting psychological and emotional healing from the stresses of life. As a result, designs should strive to reduce stress and increase comfort. In a 1986 NASA study, skin conductance measurements were used to measure people's physiological responses to different artistic images as they performed different mental tasks. The study revealed that looking at an image with an abstract, random, non-fractal pattern increased stress by thirteen percent. On the other hand, images with fractal patterns decreased stress. The dense forest scene resulted in a three percent decrease while the savannah landscape reduced stress the most by forty-four percent.[43] Similar lessons could also be applied to buildings. Using fractal-patterns on the façade or interior design of a room could help reduce stress and promote healing.

Debates about the role of ornamentation, stained glass, and statuary in sacred spaces have been ongoing for hundreds of years since Saint Bernard of Clairvaux and Abbot Suger. Some continue to argue that contemplative spaces should be minimalist in nature, often citing the sermons of Mies van der Rohe that "less is more" or Adolf Loos that "ornament is a crime." Architects seeking evidence to inform their design decisions on this matter should consider several studies. Participants in a study by the Canadian psychologist Donald O. Hebb were isolated in cubicles and experienced varying forms of sensory deprivation. After four hours of isolation, some participants found difficulty in rational thinking. Others even experienced hallucination after forty-eight hours.[44] Likewise, the CIA has been known to use other forms of sensory deprivation, such as placing individuals in completely white rooms or in total darkness, as a form of "enhanced interrogation techniques" which some deem as a form of torture.[45] Other studies using eye-tracking emulation software conclude that both minimalist and monotonous buildings do not attract our unconscious attention.[46] "Our eye has to be attracted first to fixate on a building's façade, and only then can the brain apply analytical techniques to process the visual signal," explains Nikos Salingaros. "If something does not draw our gaze instantly and unconsciously, then it has no meaning for life."[47] If these types of environments can be damaging to our health, why do some architects still insist on designing minimalist all-white architectural environments for homes and worship spaces?

Architectural designs that possess fractal patterns, proportions, and geometries based in nature will resonate with us and hold our attention. Applying the same eye-tracking simulation methods from earlier to analyze religious structures will reveal this point. Chartres Cathedral, the Baltimore Cathedral, and the National Shrine of the Immaculate Conception in Washington, D.C. both hold our visual attention. Since these structures are also tied to natural beauty and transcendence, they are more prone to inspire the human spirit. Contrast these buildings to the fragmented and wandering visual gaze caused by modern expressionist religious structures at the Cathedral of Christ the Light in Oakland, California and the Parish Church of Santa Monica in Spain. The absence of visual attention is revealing for a number of reasons but may allude to other factors (Fig.5). "For many talented agnostic architects, the goal may be an architecture of absence rather than transcendence," explains Duncan Stroik. "This is because the concept of transcendence in architecture implies belief in an invisible reality that is not materially quantifiable."[48] Thus, place-centered well-being is achieved by learning from the past and using the latest breakthroughs in modern science to enable us to design environments that enrich the human experience and promote cognitive, behavioral, and emotional health and well-being.
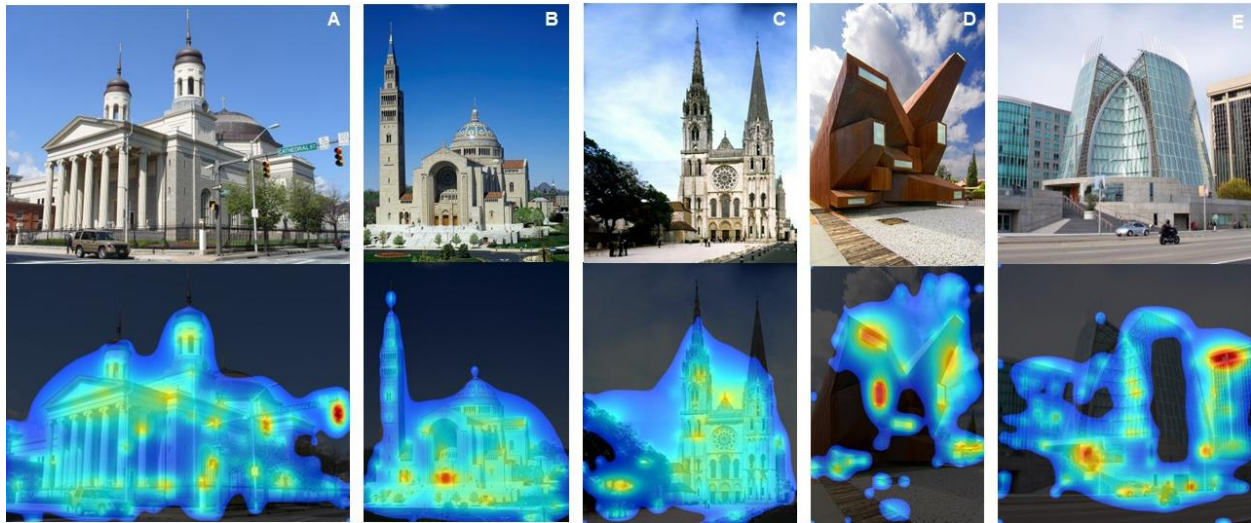
*Figure 5. Results of using 3M Visual Attention Software on photographs of the Baltimore Cathedral (A), National Shrine of the Immaculate Conception (B), Chartres Cathedral (C), Parish Church of Santa Monica (D), and the Oakland Cathedral of Christ the Light (E). Continual blue glow on lower heatmap images illustrate areas of subconscious interest.*

## CONCLUSION

"The sacred continues to need architecture if it is not to wither; Architecture needs the sacred if it is not to wither." explains the philosopher Karsten Harries.[49] In this paper, we have learned that beauty and transcendence are woven not only into the tapestry of the sacred, but have a symbiotic relationship with architecture.

Designing with beauty will connect us back to nature's fractal patterns, geometries, and patterns. It will also remind us of the cosmological understanding of divine design and the supreme Architect of the universe. Defending the authentic helps put us on a journey to project culture and the spirit of place. It enables us to cultivate our empathic imagination, increase our compassion for the building user, and refine our ability to create a durable, useful, and beautiful environments. Building for time is more than a sustainable strategy. It is tied to the sacred stewardship of designing for future generations and cherishing our shared heritage by adaptively-reusing existing buildings. Lastly, inspiring the human spirit begins when we apply evidence-based design to architecture in hopes of promoting cognitive, behavioral, spiritual, and emotional health and well-being.

By focusing on the four ideals for the secular age, future architects can begin the process of restoring architectural ties to transcendence, beauty, and the sacred. These relationships make Juhani Pallasmaa's charge to architects to "defend the authenticity and autonomy of human experience, and to reveal the existence of the transcendental realm, the domain of the sacred," even more vital for the future of the profession.[50]

## NOTES

[1] Juhani Pallasmaa, "Light, Silence, and Spirituality in Architecture and Art," in *Transcending Architecture: Contemporary Views on Sacred Space*, ed. Julio Bermudez (Washington, DC: Catholic University of America Press, 2015), 32.

[2] Karsten Harries, "On the Need for Sacred Architecture: 12 Observations," *Design Philosophy Papers* 8, no. 1 (2010): 7.

[3] Charles Taylor, *A Secular Age* (Cambridge: Harvard University Press, 2009), 20-21.

[4] Roger Scruton, *Beauty: A Very Short Introduction* (Oxford: Oxford University Press, 2011), 144-45.

[5] Ibid., 144-46.

[6] Ibid., 156.

[7] Juhani Pallasmaa, *The Eyes of the Skin: Architecture and the Senses* (Hoboken, NJ: John Wiley & Sons, 2005), 13.

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[10] See arguments in the forthcoming article Brandon R. Ro, "The Sacred and Profane: Thoughts on Architectural Education and Pedagogy," *In_Bo Journal: Ricerche e Progetti per il Territorio, la Città e l'Architettura* 13, no. 7 (2022).

[11] Three of these four ideals were briefly outlined in an earlier work focused on technology's role in architecture. See ———, "Technological Modes of Making Architecture," in *Proceedings of the 2020 Intermountain Engineering, Technology and Computing (IETC) Conference* (Orem, UT: IEEE, 2020). The current paper presents new material that expands the ideals with a focus on their implications for transcendence, beauty, and the secular age.

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[14] Leon Battista Alberti, *The Ten Books of Architecture: The 1755 Leoni Edition* (New York: Dover, 1986), bk VI, ch II, p.113.

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[16] See Yael Reisner and Semir Zeki, "Beauty in Architecture: Not a Luxury - Only a Necessity," *Architectural Design*, no. 5 (2019); Ishizu Tomohiro and Zeki Semir, "Toward a Brain-Based Theory of Beauty," *PLoS ONE* 6, no. 7 (2011); Semir Zeki et al., "The Experience of Mathematical Beauty and Its Neural Correlates," *Frontiers in Human Neuroscience* 8(2014).

[17] Reisner and Zeki, "Beauty in Architecture: Not a Luxury - Only a Necessity," 19.

[18] Ibid.

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[22] Juhani Pallasmaa, *The Embodied Image: Imagination and Imagery in Architecture* (Chichester, United Kingdom: John Wiley & Sons, 2011), 23.

[23] Scruton, *Beauty: A Very Short Introduction*, 55-56.

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[25] Pallasmaa, *The Embodied Image: Imagination and Imagery in Architecture*, 138.

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[30] Karsten Harries, *The Ethical Function of Architecture* (Cambridge, MA: MIT Press, 1997), 226.

[31] Juhani Pallasmaa, "Newness, Tradition and Identity: Existential Content and Meaning in Architecture," *Architectural Design* 82, no. 6 (2012): 18-20.

[32] Ibid.

[33] Pallasmaa, *The Embodied Image: Imagination and Imagery in Architecture*, 123.

[34] Juhani Pallasmaa, *The Thinking Hand: Existential and Embodied Wisdom in Arthitecture*, Ad Primers (Chichester, U.K.: Wiley, 2009), 63.

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