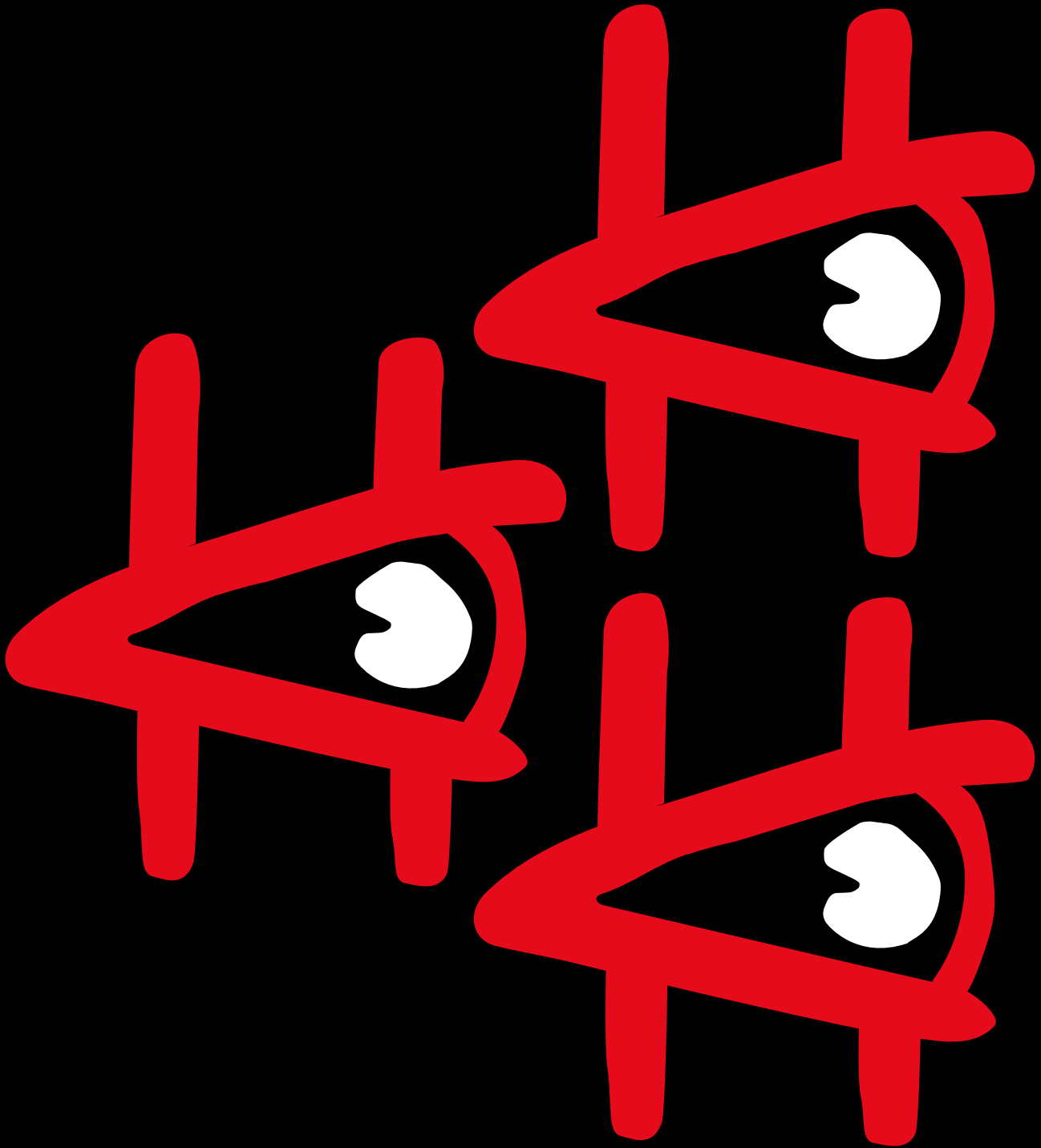


Unlocking the Emotional Power of Architecture

HUMANISE



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I think few people doubt that architecture can have a profound impact on our emotions. In this article, we explore the science behind this intriguing connection.



Take a moment to reflect on how buildings make, or have made, you feel. When was the last time that you entered an unfamiliar building and then experienced a strong, emotional response to its design?

The full range of emotions that buildings can invoke range considerably. For example: awe, when confronted with grand and majestic architecture; fear, in response to strange or eerie building atmospheres; curiosity, when encountering unusual or unconventional architectural forms; claustrophobia, in tight and confining architectural spaces; comfort, in a cozy and inviting interior; and confusion, when navigating a complex and poorly designed building, to name but a few. Most people will have experienced at least one of these sensations, at least once, as well as many, many more.

So, where does the essence of emotion reside within the architectural experience? Is it an entirely subjective and very personal response for each person, based on individual experiences, beliefs, and cultural backgrounds? In this scenario, people would bring their unique perspectives and emotions to a building, shaping their understanding of it.

Alternatively, is an emotional response to any building something entirely intrinsic to the building itself and not at all subject to personal interpretation? In this scenario, the building would have a fixed and objective 'meaning', as intended by the designer or architect and whose intentions are paramount. People's responses to a building would therefore be based on merely uncovering any such objective meaning, or simply feeling the predicted emotions, as envisioned and anticipated by the talented and insightful designer.

This question – are emotional responses to buildings subjective and individual or objective and universal – poses an interesting challenge to the architectural design profession. If emotions are solely determined by the viewer or inhabitant, then any efforts to design and shape building experiences would ultimately be utterly futile. Regardless of how meticulously architectural designers might attempt to craft their designs, there would always be those who would either love, or conversely those who would loathe, the resulting creation. Such strong positive or negative emotions would have very little to do with the building itself, indeed could be considered quite random, since they would arise from an entirely personal response. Beauty is, after all, in the eye of the beholder!

Let us instead consider the alternative: if emotions are intrinsic to the physical form of a building, then, in theory, architectural designers could strive to, and indeed succeed in, creating an architectural masterpiece that could universally captivate and enchant every beholder. There would not be a single person, in this scenario, who would feel anything other than overwhelming positive emotions in the presence of such an incomparable building.



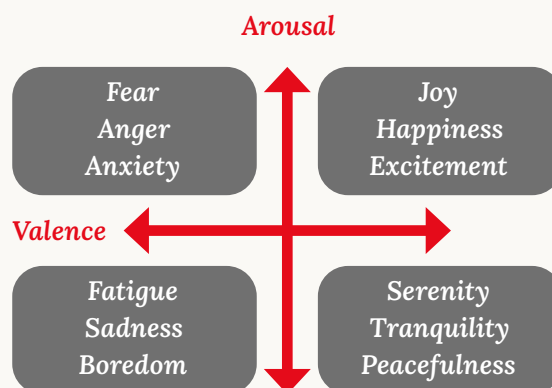
It is evident that these two perspectives starkly contrast in their understanding of how we emotionally engage with architecture. The reality is that no matter how exceptional a building might be, there will always be dissenting opinions, at least one nay-sayer who will dislike any 'masterpiece'. It becomes evident that people's emotional reactions to buildings fall along a spectrum, blending subjective experiences with intentional design elements aimed at eliciting specific emotional responses. In other words, emotions must reside somewhere between the viewer and the building itself.

This idea of emotions falling on a spectrum, either from subjective to objective or from positive to negative brings us neatly around to the concept of building 'soulfulness'. What exactly is meant by building soulfulness and how does this align with a discussion about emotion as a function of architecture?

When we consult a dictionary, the term 'soulful' is defined simply as being filled with emotion which is perhaps not terribly helpful. Let us, therefore, unpack this concept a little more. There are clearly two aspects to the idea of soulfulness; if we split the word into two parts, it becomes the word 'soul' combined with the word 'full'. Let us first consider the 'soul' part of the word. There is something about the idea of a 'soul', and – without going into a lengthy philosophical debate about the exact nature of a soul – it is unanimously agreed to be a positive and not a negative thing to have (consider the associations of its antonym, 'soullessness'). Therefore, there is something about the type of emotion that is inherent in this idea of soulful: that it is positive.

If we then consider the other part of the word, 'soulful', we arrive at the 'full' part. So, whatever the 'soul stuff' is, if something is considered 'soulful' then it must be full of 'soul'. It is not lacking or deficient in 'soul', but rather it contains an abundance of it! Therefore, the idea of soulfulness contains these two very different aspects. There is the type of emotion (clearly positive) and the depth or amount of it (lots and lots of it).

By coincidence, this is exactly how psychologists view emotion. Of course, being psychologists, they have slightly more complicated words for it. Psychologists, with their specialised terminology, refer to the emotional nature (positive or negative) as 'valence' and the amount of any emotion as 'arousal'. Valence encompasses a spectrum of emotions ranging from profoundly negative to exceedingly positive. Meanwhile, arousal indicates the degree of intensity of one's emotional experience. In this resulting matrix, every emotion can find its unique place, from pure elation and happiness to deep melancholy or fear.



The idea that emotion can have these two aspects is precisely how psychologists view emotion.

Type of emotion
(positive or negative) = Valence

The degree of amount of
the emotion = Arousal



Hence, a soulful building, when plotted on such a psychological map, would – most likely – reside in the quadrant of high valence and high arousal (eliciting emotions such as awe and wonder) but equally possible might be high valence and low arousal (inducing, say, feeling of serenity and tranquillity). A soulful building must therefore be any building that evokes any number of positive emotions, to differing degrees, but most likely resulting in a strong emotional response to the building. The concept of building soulfulness intrigues not only architects but also psychologists, cognitive scientists and neuroscientists, who are becoming increasingly fascinated by the intricate relationship between architecture and emotion.

Understanding the connection between the built environment and our emotional state begins with a closer examination of the human brain. Neuroscientists, armed with cutting-edge technology, can now capture the precise moment a single neuron fires, creating an electrical signal. Complex and exquisite maps of the brain's white matter connectivity have been constructed, revealing a vast network of interconnections. However, despite these advances, scientists still remain unable to bridge the gap between neural activity and the experience of emotions. We comprehend the existence of these neural processes, yet the intricacies of how they culminate in emotions like joy, peace or fear remain a mystery.

Nevertheless, the pursuit of knowledge persists, and numerous researchers are dedicated to unravelling the mysteries of our emotional response to architecture. Exploratory studies have already commenced, aiming to identify specific brain regions involved in these responses and to ascertain the architectural design features that elicit emotional reactions.

One fascinating discovery stems from the collaboration between neuroscientists and psychologists. Previous psychological studies had already demonstrated the positive effects of nature views on human well-being. Now, neuroscientists have validated these findings by identifying corresponding neural correlates in the brain¹. It is not merely subjective reports of feeling good; the evidence lies within the brain itself. Views of green spaces, trees and nature in general have a provable, tangible impact on our emotional state.

In a similar vein, psychologists have long explored the effects of curved shapes on human preferences, with studies dating back as far as 1908. These investigations often involved asking individuals to choose between curved and rectilinear objects, revealing a consistent preference for curves. However, when it comes to buildings, do we respond in the same manner? Is a building simply a scaled-up version of an object such as a teapot, or do we respond to buildings in an entirely different way? In a noteworthy research paper by Vartanian² and his colleagues, they made a fascinating discovery regarding people's perceptions of beauty in architectural spaces.



Through their experiments, focusing solely on interiors, they presented participants with a series of photographs showcasing different architectural features. These photographs included spaces with varying ceiling heights (as the researchers suspected that such factors might influence the participants' judgments) as well as more- or less-curved surfaces and forms. The researchers also deliberately selected photographs of spaces that ranged from highly open and expansive to more enclosed and intimate. They then asked the participants a series of questions: Did they find the spaces beautiful? Would they want to spend time in those spaces? And if they were present in those spaces, would they feel compelled to leave? In summary, the findings revealed that individuals were more likely to perceive spaces with curvaceous forms as beautiful and less likely to rate them as not beautiful.

Even more striking was the discovery that these curvilinear spaces activated the same region in the brain associated with the evaluation of beauty. This correlation between curvaceous spaces and the brain's response to beauty suggests a profound connection between the two.

Another notable study conducted by Alan Alexander Coburn and colleagues³ expanded upon these findings. In their research, they presented 200 photographs of interiors to participants, aiming to explore not only beauty but also other factors such as comfort, hominess (the feeling of a space being like home), and explorability. The analysis of people's responses to these images revealed that the 16 different characteristics that they explored (defined in advance) could be grouped into just three clusters, which combined together accounted for 90% of all aesthetic judgments.

These clusters were subsequently named coherence, homeness, and fascination. Coherence refers to how well-structured and understandable a space is, while homeness reflects the sense of a personal and homelike environment. Fascination pertains to the richness of detail in a scene and its ability to captivate and engage the viewer. Notably, these three aspects were found to activate distinct regions of the brain during the judgment process.

Building upon Coburn's work, Lara Gregorians further expanded the understanding of these factors⁴. Beginning with coherence, homeness, and fascination, she introduced two additional measures: spatial complexity and unusualness. Recognizing the importance of emotional depth, she also incorporated the concepts of arousal and valence, aiming to assess not only the judgment of, for example, 'unusualness' but also the emotional response to it (positive or negative) and the intensity of these emotions.



For example, for one person a highly unusual form might be intriguing, exciting and stimulating and yet for another person a highly unusual form might be unnerving, scary and discombobulating. In both instances, the person is responding emotionally to the 'unusualness' of the design, but with very different degree of positivity or negativity (valence).

By considering the emotional dimensions, Gregorians discovered that individuals were more likely to perceive pleasant spaces as coherent, homelike, and fascinating. Fascinating spaces also tended to evoke higher arousal and exhibited greater complexity and unusualness.

In summary, eight factors emerged that appear to significantly influence our emotional response to buildings: coherence, homeness, curvaceous forms, views of nature, fascination, unusualness, spatial complexity, and spaces for social interaction.

These findings hold immense potential for practical application in the field of architecture. Armed with this knowledge, we can create spaces that resonate with people's emotions and enhance their experiences. By incorporating curvilinear designs, integrating natural elements, fostering coherence and homeliness, and offering spaces that inspire fascination, architects can shape environments that evoke positive emotional responses and enrich the lives of those who inhabit them. They potentially offer a framework for architects and designers to craft spaces that inspire, uplift, and enhance the lives of those who inhabit them.

In light of the compelling evidence we've uncovered, it is abundantly clear that the relationship between architecture and human emotions is both profound and actionable. The insights presented here are not merely theoretical; they are a call to action for architects, clients and policymakers. There is undeniable scientific support for the transformative potential of our built environments to inspire, uplift, and improve the human experience. The onus now rests on all of us to harness this knowledge and make it a reality.

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References

1. Tost et al., 'Neural Correlates of Individual Differences in Affective Benefit of Real-Life Urban Green Space Exposure.'
2. Vartanian et al., 'Impact of Contour on Aesthetic Judgments and Approach-Avoidance Decisions in Architecture'.
3. Coburn et al., 'Psychological and Neural Responses to Architectural Interiors.'
4. Lara Gregorians et al., 'Architectural Experience: Clarifying Its Central Components and Their Relation to Core Affect with a Set of First-Person-View Videos'.