

An investigation into the Impact of Architecture on Human Psychology

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Summary of Topic

This dissertation explores the impact that architecture has on human psychology and the behaviour of its end users. The research will introduce architectural concepts based on theory and practicality, to better understand the relationship between architecture and human psychology. Applying *Ten Books on Architecture*, a treatise written by Marcus Vitruvius and James Gibson's *Theory of Perception*, the dissertation will attempt to formulate a shared view on the relationship between architecture and human psychology, and thus, informing how architecture has the capability to stimulate and influence the behaviour of a person.

To examine the degree in which architecture has an impact on the psychology of its end user, the dissertation will be divided into two chapters, allowing for a well-balanced review:

Chapter 1: Architecture and Human Psychology is an analytical exploration into the terminology of both architecture and human psychology and its relation to one another. It studies two theory-based architectural concepts; a thesis into three important elements that should be recognised and included in the design of a building, and a theory of perception that explores the intricate relationship between our brain and the environment.

Chapter 2: Designing for Aesthetics investigates how the isolation of a building's rudimentary elements can change the user's visualisation of an architectural environment and allows for a differed interpretation. Through analysing a collection of historical and modern architecture, the dissertation will explore how the design of an architectural environment can have both positive and negative effects on human psychology.

Each chapter will explore the underlying relationship between the architectural environment and the psychological impact it has on its end user, by seeking to identify and understand both historical and modern social and psychological factors. It will also present a discussion outlining how architectural design has transformed the way in which the world perceives the architecture around them and the significance it has.

Introduction

The interaction between the architectural environment and human psychology human is substantial and largely evident today, yet, its importance is often overlooked and widely neglected within the design profession and amongst external sources. Furthermore, the cooperation established between architectural design and psychology is noted for being bidirectional to the significance of academic research. Even though accomplished architectural design has proven to have a definitive psychological impact on its end users, the function of our own human experience and peripheral nervous system also participates in how we choose to recognise successful architecture. The dissertation will aim to construct and develop an understanding of how the intricate relationship between architecture and psychology emerged and continues to progress in the climate we currently live in. The thesis will first examine how architectural design can impact the human brain, how the organisation and operation of the human brain and the body's neurological system impacted the early hunter-gatherers, and how society today influences the operation between body and mind. With the background information gathered, the dissertation will have explored the connection (both positive and negative) between the architectural environment, human psychological and our neurological system. Appealing architecture is critiqued, including buildings that stimulate the same impression of safety needed by the early hunter-gatherers, along with fundamental building elements that have important psychological foundation. In that manner, architecture that has not been prosperous will also be analysed, including the exploration into how poorly designed buildings have an impact on physical and mental health. Eventually, the significance of integrating the natural world into architectural design is examined.

The field of architecture has been societally categorised as decoratively beneficial to our built environment; in other words, an environment made up of construction and scenery where users undertake their daily functions. However, an impaired perception of architecture can unfortunately harm the validity of architectural design and hinder the field from obtaining any imperative funding and recognition that it is entitled to from the general public. Architecture began as a method for safety and harbour from the neighbouring natural landscape, and progressively developed into an intuitive, artistic and appealing art form. Even presently, the field of architecture is evolving, from a creative form of academia to a scientific area of psychological study, with resolute application concentrated on human well-being. As mentioned, the dissertation explains why examining the psychological impact of the architectural environment is significant on the sensitive and psychological well-being of users, as a result of its extensive dominance.

CHAPTER 1:

ARCHITECTURE AND HUMAN PSYCHOLOGY

“There is no doubt whatever about the influence of architecture and structure upon human character and action. We make our buildings and afterwards they make us. They regulate the course of our lives.” - Winston Churchill (Lockton, 2011).

Out-going, adventurous and full of wanderlust, these are just a few characteristics that we as human often define ourselves with having. But what can be surprising is the amount of time that we spend indoors. From the moment we are awoken by our buzzing alarm clocks, to the last blink at night, the average person, despite being occupied with work or studies etc, will spend a staggering 80-90% of their time in the comfort of the indoors. So, have you ever wondered what might shape our personality? A building's space, lighting, colour, acoustics and aesthetics certainly play an important part in the psychology of an individual. And, thus, establishing a relationship between architecture and human psychology.

Our satisfaction of any architectural environment, whether we like it or not, is dependent upon how we choose to perceive it. It could be the design features, ambiance, materials or even the furnishing that we become contempt with, but it could also be a place that has similar surroundings to one that we are already well acquainted with. Whether it be a public space, or our very own private space, if we are not comfortable within that environment, then our mind is not at ease. So, for any architect or engineer designing an architectural environment, it is of sheer importance that they keep in mind the psychological needs of the individual regarding their vicinity.

Over seventy years since Churchill pondered over the repair-work being made to the bomb-wrecked House of Commons, after the events of the First World War, we now know, that buildings and other larger architectural environments have come to affect our mood and

well-being on a significant scale, with our specialised brain cells now being accustomed to the articulate geometry and arrangement of the spaces we have come to inhabit.

So, what is the connection between architecture and human psychology? For us to further distinguish a relationship between architecture and human psychology, we first need to become acquainted with each term - starting with architecture. On a fundamental level, architecture as we know, is the complex practice of designing and constructing three important elements - form, space and atmosphere. Thus, providing man with a physical environment to live in. But architecture is more than that - it has become the art of creating a space, whether it be opened or closed, employed with a purpose to fulfil both practical and expressive needs. It is on a much deeper level, a permanent expression for human civilisation and a container for preserving human history and human thought.

It is, what Roman architect, Marcus Vitruvius, believed, the art that combines "*firmitas, utilitas, and venustas*" (i.e. *strength, functionality and beauty*) (Vitruvius, 2009). Written in approximately 20-30BC, in his book titled: *De Architectura*, also known as *The Ten Books on Architecture*, Vitruvius, described that these essential terms must be observed and incorporated when designing any architectural feat. A good building should therefore be, structurally stable, have appropriate spatial accommodation and have attractive appearance - thus, meeting a criterion of having both utilitarian and aesthetic requirements. *De Architectura*, is also one of the first written texts that draws on this relationship between the human body and that of a building.

Human psychology, however, is the scientific study of the human mind and its thought process, as well as the behaviour of human interaction within the environment. As human beings we are entirely different from each other, both physical and mentally, and so is our behaviour. Therefore, human psychology differs from other academic professions of its kind, existing not only in research labs, mental health offices and classrooms, but it is visible

to us all on a day to day basis. From the tangible environment, to the intangible, human psychology affects us as individuals. Human psychology can also be directly linked to architecture.

We of course can see the environment around us, since it is predominately evident to us visually. From the landscape and the form of the building, to the ambiance and functionality, human psychology is directly connected to architecture from a level of conscious to subconscious. It is through the complex interaction between our eye and brain, that the architectural environment has an influence on the human mind. This relationship between man and the architectural environment has been documented in an ecological theory of perception, by psychologist, James Gibson. Through which he observes that man actively engages with the architectural environment through both the use of movement and visual perception. Once recognised as a seen object or 'thing', the architectural environment is now an 'affordance' - an incentive that holds the capability to offer something meaningful to man and inspire them to actively respond and immerse themselves completely within the environment. As expressed by Gibson; *"a ledge affords sitting, air affords breathing and water affords drinking and bathing."* (Goldstein, 1981).

It is worth mentioning that even though Gibson's theory is established from a different field of study to that of Vitruvius's, it appears to correlate and support Vitruvius's De Architectura in disclosing the mutual relationship between man and his environment. Gibson acknowledges that the architectural environment is an incentive to encourage the user to react in conformity to the way in which they perceive the space. Therefore, it can be understood that the user is constantly in both physical and visual contact with the

environment, through an act of movement and a sensory use of vision. Hence, reverting to Vitruvius theory that architecture should have both utilitarian and aesthetical needs.

Churchill's poignant statement addressed to the 'English Architectural Association' in 1924, is ergo, strongly linked to Gibson's and Vitruvius's theories of the correlative relationship between man and his built environment. As pointed out, a habitable space, open or closed, is created and defined by its user, and morally from its architectural elements - stimulating a physical and psychological form of an individual's perception as to how a user should manoeuvre, operate and live within the space. However, from an architectural context, the end-user and the elements could be expressed as different objects within the same background. Whereby, the role of the architect is to design and arrange the space and meet architectural objectives appropriate of programmatic requirements, while the end-user will perform applicable activities influenced by these architectural elements and spatial aesthetics. Instantly, the visual perception of the end-user is critical to facilitate a conscious awareness and response to the '*affordances*' of the architectural elements.

However, the idea that architectural structure and design has the capability to influence human psychology can be challenged. After all, architecture for most, is just simply seen as a careful arrangement of barriers and slots, and a combination of horizontal and vertical surfaces. It was after the 18th century when opinions began to change. It had been argued that a complete theory of architecture, up to this point, that concerned itself with Vitruvius's three essential terms "*firmitas, utilitas, and venustas*" (Vitruvius, 2009) failed to have a legitimate value - when engineers started creating structures that were considered so boastful in defying the laws of gravity. And, new scientific findings caused more doubts as to the psychological, optical and acoustical elements of spatial accommodation, expressing

that the aesthetics of a building were “*altogether in the eye of the beholder*”. (Hungerford, 1878). Those who supported the claim quickly sought to make alterations to this well-established and age-old ideology, as they believed that the essence of architectural beauty is from the fulfilment of function alone.

A comparable relationship between man and the built architectural environment is noted by Dr Raymond Lucas, head of Architecture at the University of Manchester, who observed that creating the ‘ideal’ space is an unattainable and biased action between the balance of form and function. It is the verifiable truth that the lack in technological necessities restricts architects from designing structural prototypes from external computer sources and physical models and are often controlled by laws and limited budgets, explaining: “*Building design is complex, and it is impossible to predict everything about a space before it is built.*” (Gander, 2019). Essentially, Dr Raymond Lucas affirms that the influence that a structure has over an individual is therefore limited, adding: “*Buildings are never truly finished. They require constant maintenance and occupation in order to function well.*” (Gander, 2019).

But the truth is that the architectural environment has been greatly influential on the human psychology and visual perception since the beginning of mankind. The early hunter-gatherers of the ‘Palaeolithic-Age’ identified the enclosure of their caves as an area affiliated with safety and harbour in diverge to the outside and the unknown lands. More recently, in the latest age of postmodernist architecture, the configuration of architecture on human subconscious has matured into further advanced and precise elements, declaring itself in the embodiment of both daring and profound spatial arrangement, alternative material and colour.

By recognising the idea that architecture and design can encourage and modify the psychology of its user, one can then be enticed to the extent in which it came to be successful in accomplishing so; to what degree does the architectural environment affect the user's thoughts, perception and decision, and their senses? To what length do successful architectural elements drive individuals away from normality and steer them towards the extraordinary? The architectural environment affects our human psyche as much as we influence it to make it conform with the activities that we want to perform in specific spaces. In such context, the impact that architecture has on human psychology can contribute to several different methods that we can use to consider the many forms of demeanour and thus, obtaining well-functioning structures.

In the next chapter, the discourse will be an inherent investigation into the connection between architectural design and human psychology, by delving into how the isolation of a building's rudimentary elements can change the user's visualisation of an architectural environment and allow for a differed interpretation. The discourse will first concentrate on the theory of Cognitive Pattern Recognitive by Wenzhi Liao, and then focus and critique a collection of historical and modern architectural designs.

CHAPTER 2:

DESIGNING FOR AESTHETICS

The positive impact that good architecture has on human psychology can be easily recognised and is eminent on user well-being. Over time we have observed how architectural design developed according to the changing individualistic preferences of its users, as the discovery of new building materials and technique have come to influence a change in architectural style. While some trends were short-lived and quickly forgotten, others endured and prevailed over the centuries, with those even coming to shape some of the modern architecture we see today. But what divides these long-lasting architectural styles from those that diminish and disappear entirely as time goes on?

According to Don Ruggles (architect), there are three essential principles that comprise of a *“beautiful”* building; form, use and beauty (2018) - A comparable connection to the ideology of Marcus Vitruvius can be observed. Although we often consider the term *“beautiful”* as subjective, the sensation that is identified with the word is experienced on a universal level. When we see an object that is characterised as *“beautiful”* it generally provokes us to feel contentment, and the same can be said for architectural design. The feeling that we get is the direct reaction of hormones being dismissed from our brain. If we consider ‘form’ as being the singular principle of building design, or even a settlement where people commonly congregate with specified intent, then why would architecture have the capability to impact humans positively on a psychological level? The foundation of the answer can be found in studying and understanding how cognitive pattern recognition can develop architectural design and evoke human physiological response.

The buildings that can supply humans with the impression of contentment are those successful enough to combine architectural elements (such as pattern) that the complex human brain can easily identify as acquiring similar components to those settlements that

aided the early hunter-gatherers to exist and thrive over a millennia. Therefore, it is imperative to our brain when designing architecture to recognise which distinctive components are directly linked to those survival characteristics of the hunter-gatherers and why. To do so, we need to understand the different methods of cognitive pattern recognition.

Pattern has been a constant point of interest in architectural design, and we have strongly modified the element for our purpose to organise and prepare in advance. The human brain can identify and understand patterns with various methods. But what are these methods and why are they important? *Theory of Cognitive Pattern Recognition* (2008), by electronic lecturer and author, Wenzhi Liao, is an analytical ideology into the various methods of pattern: The first, recognised as '*feature matching*' is the complex process performed by our brain in which foreseen pattern information is pulled apart and divided into segments so that it can be measured for comparison to any previous stored data. The second, '*prototype matching*' is noted for being like the former method but instead of the brain comparing and matching pattern information, the aim is to connect foreseen information with specific components relating to a recognised model. (for example, you can compare the prototype method to the process of recognising a building as architecture, rather than just a building). The final method can be identified as '*template matching*'; it isolates specific parts of foreseen pattern information and matches it to the supposed template, rather than just the complete pattern. (Pi et al., 2008)

These patterns can symbolise coherence and arrangement; providing absence of disorder. When early hunter-gatherers were proficient in recognising a pattern and anticipating their next move, whilst roaming the open landscape, their prospect on existing were significantly

enhanced. Those same patterns that the brain identifies from the natural world as being so beneficial to the early hunter-gatherers, stimulates the same psychological response that we experience from the patterns that encompass the built architectural environment we see today. The opposite of pattern; disorder and uncertainty can have a negative influence on us psychologically without conscious thinking - it is something that all architects need to be aware of when designing a building. A protocol of survival since the evolution of man, the human brain has utilised and employed the recognition of pattern so efficiently that it has become something we subconsciously do on a day to day basis. And, even though our conscious mind is often unaware of the pleasure it can experience through pattern, our body is, and therefore we experience the same sensitive response the early hunter-gatherers felt.

Allowing a user to identify a literal object like an enclosure or a house is only one important role of pattern; it can also strongly impact appealing and thoughtful architecture through its aesthetic. Pattern is more commonly mentioned as *rhythm* in architecture; It can be the component that provokes the user's eye to glide along one focal point to another. (for instance, from one aspect of the house, i.e., room, to another). It manages to not only capture the attention of the user, but also, strengthens the appeal of the commodity.

Stephanie A. Clemons, author of *Interior Design* (2017), examines the four types of rhythm in the field of architecture: *Alternation*, the recurrence of an opposite combination; *Progression*, expanding or reducing the capacity of the element; *Repetition*, frequently reproducing a specific element; and *Transition*, applying a visual line so that the user's eye can repeatedly follow from one place to another. The buildings that combine genuine and elegant pattern or rhythm are considered more appealing because our brain has been shaped by evolution to recognise and correlate these elements with safety, protection,

survival and contentment. As we explored previously, the impression we get from these buildings result in the dismissal of hormones, which evokes us to feel comfortable and fulfilled. (Clemons, 2017).

With the background information gathered on the importance of pattern, the architectural accomplishment of several historical and modern buildings can be observed and understood. The most severally celebrated and admired buildings throughout architectural history have been those successful enough to recognise and consider pattern that resembles the natural world from which the hunter-gatherers explored and lived. *La Sagrada Familia* is one of Barcelona's most famous Basilica; designed by Spanish architect, Antoni Gaudi, the lavish and exorbitant cathedral has been under construction since 1882, and is not expected to be finished until 2026, due to its elegant and fine detail. The inspiration for the Basilica occurred from Gaudi's exploration of European forests and the bundle of trees it's comprised of. A hundred 78-foot-concrete pillars embrace each user upon entering the cathedral; like branches intertwining between tree canopies, the cathedral's pillars sever off and congregate into one another at the top of the ceiling. (see figure 1).

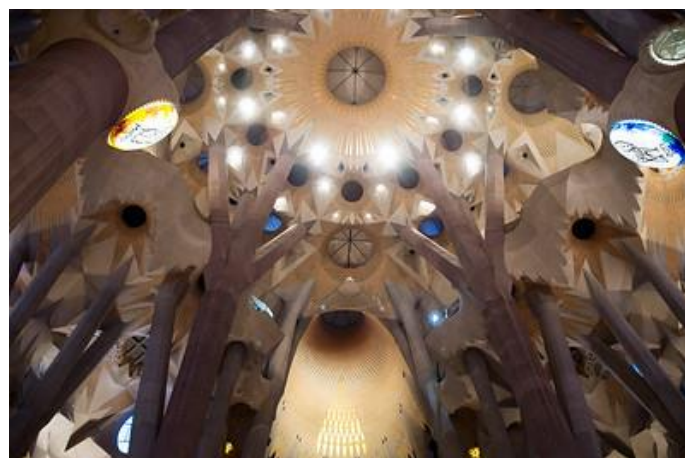


Figure 1. *La Sagrada Familia*

The elegant *Milwaukee Art Museum*, designed by Spanish architect, Santiago Calatrava, incorporates both the natural and urban characteristics of Lake Michigan, in which the building overlooks and dominates the ‘lifestyle’ of the lake; embodying the water and trees and boats and sails on the lakefront. (see figure 2). Although conceived expensive and complex, the construction of the building in 1957 demonstrates that architecture can often be influenced by observations made from the natural environment to create interesting structures composed of shape, function, and beauty.



Figure 2. Milwaukee Art Museum

Taichung, Taiwan is home to *The National Taichung Theatre*, designed by Japanese architect, Toyo Ito; resembles natural rock formation. First constructed in 2014, to provide a gentle and delicate relief from the bustling city, the building’s contemporary design, smooth rounded edges and earth-like colour tones were proposed to represent rocks in their natural environment. (see figure 3). With technological advancements, current computational tools enable architects to design 3D buildings in such a manner and replicate them on a larger scale with a more precise and rigorous outcome.



Figure 3. *The National Taichung Theatre*

Although different in form, but similar in concept, these three buildings are all recognised for their elegance and allure. The foundational reason for identifying these buildings as appealing is through our brain; the complex system can process the sensory information it obtains from the given buildings and compares it to those organic patterns found in nature that have been evolutionary valuable. However, pattern recognition occurs and develops on a subconscious level, and so, many end users are often unmindful of the behavioural and physiological source behind the awareness of architectural elegance. It can also be noted that a related physiological response can develop from buildings that are not as apparent in their resemblance to the natural surroundings. (Douglass, 2015).

Even though the psychological welfare of aesthetically pleasing architecture is generally more recognised in today's academic studies, albeit gradually, the negative effects of a poorly designed structure on human well-being had once been greatly noted and presented to society. A time when the long-established taught architectural elements ('form, use and beauty') were altogether abandoned and switched to concentrate on 'form, utility and craft'. After the Second World War, many Western countries including the United States experienced an ever-increasing demand for affordable housing and substantial institutions as a result of the growing population from the 'baby boom' pandemic. Thus, the urgency for providing stable and further efficient housing was set in notion. However, technological limitations can hinder the progression of architectural design and result in less detailed and modest buildings that focus on the lesser significant concept of 'form, utility and craft' as above-mentioned. This approach can lead to the procreation of small and unappealing (lack characteristics that trigger a user's gratitude) single-floor 'boxed' houses, like those constructed in the 1950's, that are considered impractical in terms of inadequate floor plan, space usage and dull aesthetics. (see figure 4).



Figure 4. Standard American Homes

Besides post-war suburban neighbourhoods that consisted of mostly modest and identical houses, the trend and progression of basic and unimaginative buildings were not exclusive to suburban homes alone. It can also largely impact and shape the industrial sector and the environment it built. The increase in the manufacture of building material can result in the opportunity to gain and access new building development and further products - where new and improved material can be simple and almost effortless to produce. These materials can introduce current architectural movements and open-up the world to new possibilities, like the 'Modernism' aesthetic that came to define the industrial building between the 1950s and 1990s (see Figure 5). Aluminium, concrete, glass, steel and synthetics are considered the dominant material applied to create the plain, modernist, box-like style.

However, through unappealing monochromatic colours, badly positioned windows, repeated architectural style and missing compelling detail an uncommon condition of sensory deprivation can form. Thus, a movement like 'Modernism' can be short of intellectual stimulation and effectively eliminate every prospect of human touch, further providing an inhospitable and belligerent environment that lacks the capability to create a positive psychological reaction or a sense of user well-being.



Figure 5. George Square Theatre

It will not be surprising then to acknowledge how an architectural trend or aesthetic can suddenly be changed and succeeded by a new eagerness for individualistic and curatorial freedom. This architectural ambition can surface and hold significance to the changing psychological considerations that occur from building to building. It is worth mentioning the elegance and well-established principles of the ancient architectural world are still notable and substantial in the characteristics of today's architectural environment. A resurgence in the 'Classical aesthetic' has introduced the importance that structure, and geometry has on the architectural landscape; with entablature (see figures 6 and 7), and colonnade (see figure 4) that offer platform raised buildings and austere-styled grand columns. Along with the reintegration of well-established 'Classical' structural components, the infrastructure of the architectural landscape reinstated material such as marble and granite that were used during the Classical period and presented the practice of man-made commodities that imitated those materials. In effect, the houses erected during the 'Classical' period, were often grander in stature and considerably more expensive. But, as a result, the gap between economic inequality widens and generates a greater societal dysfunction and an overall lower national happiness.



Figure 6. Free Trade Hall



Figure 7. Parthenon

In such a way that successful and prosperous architecture can have a positive impact on the psychology of humans, poorly constructed and designed buildings will have a negative impact. Since 1926, societal public health is a prominent Governmental issue; the powerful Supreme Courts of the Western World acknowledge and disclose that the public health protection of people is an essential and crucial responsibility for leading Governments. The declaration can present these local governments with the legal control to oversee land use, which can impact the architectural landscape and how we choose to perceive it. The World Health Organisation (WHO - for short) support and bolster the notion of protecting public health not just on a physical health issue but a societal well-being concern with the absentee of illness - both a mental and physical matter. In addition, the World Health Organisation demanded that leading Governments should not just control illness but should also act upon its prevention. (Jackson and Kochtitzky, 2010).

Although, the planning of major city and town infrastructure is necessary and imperative to public health protection, the architecture of individualistic and curatorial buildings that encompass and make-up the built environment within these places are just as essential. It has been revealed through recent psychological studies that damaged or destroyed

buildings, streets and neighbourhoods, and deserted and rundown houses can make users feel vulnerable, thus, conjuring our anxiety and inner fears. We have come to recognise that our feelings can trigger ingrained and natural survival instincts and help to revitalise our sensitive nervous system. (Reynolds, 2016).

A comparable relationship between the negative effects of a poorly designed structure and the well-being on its user can also be noted by biometric researcher and architect, Ann Sussman, and urban planning and design scholar, Justin B. Hollander, who examined the negative impact that poorly designed urban city infrastructure has on human psychology. In their book titled: *Cognitive Architecture: Designing for How We Respond to the Built Environment* (2014), Sussman and Hollander argue that people are typically considered healthier when the built environment around them consists of a range of local independent stores, rare spaces and unusual buildings, instead of the general concrete-built structures and repetitively mundane high-street stores that we commonly see; stating “*if you look at Boston City Hall the cortisol may rise in your cheeks; whereas when you look at neighbouring Old State House - you can’t help but feel happy.*” (Sussman, 2014). This approach to architectural design suggests that the more we learn and understand about human behaviour, the better we can prepare for it. Introducing new means of analysing present and modern architectural designs prior to construction will allow both the architect and engineer to predict the end-user’s future emotional response and experience.

Other academic professionals who have shown interest in the idea of cognitive architecture have studied and support Sussman and Hollander’s notion. Neuroscientist and design consultant, Collin Ellard, has investigated the intersection between psychology and poorly designed urban architecture; In 2011, Ellard conducted several experiments to measure how

a user's mind and physical body reacted to different types of places and spaces; after guiding a group of volunteers along two separate high-streets, he monitored and observed each of the participants skin electrodermal activity and their emotional response. His research found that those who walked through an environment consisting of generic chained stores resulted in a low level of excitement, whereas, participants who travelled through a welcoming environment comprised of refreshing and buoyant shops generated a higher excitement level. Expressing: *"the holy grail in urban design is to produce some kind of novelty or change every few seconds, otherwise, we become cognitively disengaged."* (Ellard, 2011). However, even too much disengagement can be displeasing from a psychological viewpoint and indicates that a modest supply of boredom can encourage periodic stress.

In summary, by studying the isolation of a building's rudimentary elements, such as pattern and rhythm, we can see how architecture and aesthetic design can have a considerable influence on human psychology and a user's emotional response. Well-designed architecture that concentrate on conclusively proved patterns theories, will have a much greater psychological impact on all those who experience it and evoke the delicate neurochemicals that makes the user feel the impression of contentment. Poorly managed buildings, like the 1950s 'Boxed' house, can make the end-user feel anxious and afraid by triggering their sensitive nervous system which is considered extremely harmful to their health and well-being. The broad range of rare and exceptional buildings and infrastructure can arouse a user's mind, whereas plain and tedious buildings can make them feel weary and discontent, which is scientifically proven to cause stress and impact the psyche of the end-user. In addition, exposure to negative building aesthetics on a continual basis can also

be harmful to the health and well-being on the user since the architectural characteristics can be an origin for deep-rooted and recurrent stress.

Today, we are fortunate enough to avert and amend this problem, by recognising and implementing the psychological research and technological advancements in architecture design at our distribution. Preferably, the development of new architecture on the landscape and infrastructure in towns and cities will thrive should they not willingly ignore and neglect these negative aspects but strive to correct and prevent them by integrating secure and able methods of elegant and appealing design.

Conclusion

At present, thorough examination has indicated that fine architectural design does have an apparent psychological advantage on human health that goes beyond the bare impression of an appealing and considerate look. Furthermore, we can now recognise and comprehend the connection between poorly designed and completed architecture and the negative psychological and well-being concern. Eventually, through research and practicality we have a greater awareness of the psychological and physiological reactions to architectural design from recognising the foundation of human evolution. Applying the awareness and observation we have gained with new technological equipment at hand, we can build architecture that is both visual appealing and psychologically valuable, more notably. With the increase in worldwide health issues, like anxiety, depression and stress, that are progressively invading the modern world, we can no longer afford to erect architecture that does not recognise and implement design elements noted for having invigorative and psychological advantages.

Moreover, it should be essential for society to reevaluate the impaired perception which has unfairly characterised architectural design as being a mere form of art, through withdrawing the significant validity it entitled to as an area of genuine societal advantages. If the general public is not aware of the positive psychological and invigorative influence of architecture identified by architects and psychologists, then the problems caused by inconsiderate designed architecture will never be discussed, and the area of architectural work might have to endure the absence of supplies imperative to enhancing the climate we find ourselves in. To conclude, the problem we face should be identified and accepted by society as an urgent and important matter.

Bibliography

Books

Clemons, S. A. (2017). *Interior Design*. Tinley Park, IL: The Goodheart-Willcox Company, Inc.

Ruggles, D. (2018). *Beauty, Neuroscience and Architecture*. Denver, CO: Fibonacci LLC.

Sussman, A. and Hollander, J. B. (2014). *Cognitive Architecture: Designing for How We Respond to the Built Environment*. New York: Routledge

Vitruvius, M. (2009). *Ten books on Architecture*. [Place of publication not identified]: General Book LLC.

Hungerford, M. (1878). *Molly Bawn*. United Kingdom: Dodo Press.

Journals

Goldstein, E. (1981). *The Ecology of J. J. Gibson's Perception*. Leonardo, 14(3), p.191-195.

Pi, Y., Liao, W., Liu, M. and Lu, J. (2008). *Theory of Cognitive Pattern Recognitive*. InTech Journals, p.433-463.

Websites

Author Unknown. (2016). *World War II/Post-War Buildings Styles*. [Online] Utah.gov.

Available at: <https://heritage.utah.gov/history/world-war-ii-post-war-building-styles>

[Accessed 9 November 2019]

Douglass, M. (2015). *Earth - Nine incredible buildings inspired by nature*. [Online] BBC.

Available at: www.bbc.co.uk/earth/story/20150913-nine-incredible-buildings-inspired-by-nature [Accessed 2 November 2019]

Ellard, C. and Montgomery, C. (2011). *Testing! Testing! A psychological study on city spaces and how they affect our bodies and minds*. [Online] BMW Guggenheim Lab. Available at:

cdn.bmwguggenheimlab.org/TESTING_TESTING_BMW_GUGGENHEIM_LAB_2013_2.pdf

[Accessed 23 November 2019]

Gander, K. (2019). *Terrible architecture is making you depressed*. [Online] The Independent.

Available at: <https://www.independent.co.uk/life-style/design/how-architecture-uses-space-light-and-material-to-affect-your-mood-american-institute-architects-a6985986.html>

[Accessed 20 October 2019]

Jackson, R. J. and Kochtitzky, C. (2010). *Creating a Healthy Environment: The Impact of the Built Environment on Public Health*. [Online] Sprawlwatch.org. Available at:

<http://www.sprawlwatch.org/health.pdf> [Accessed 13 November 2019]

Lockton, D. (2011). *Urbanism, Design and Behaviour: A Brief Review*. [Online] Available at:

<http://architectures.danlockton.co.uk/2011/09/12/architecture-urbanism-design-and-behaviour-a-brief-review/> [Accessed 2 October 2019]

Reynolds, E. (2016). *Could bad buildings damage your mental health*. [Online] The Guardian.

Available at:

cdn.bmwguggenheimlab.org/TESTING_TESTING_BMW_GUGGENHEIM_LAB_2013_2.pdf

[Accessed 14 November 2019]