

Impact of Built Shape, Forms and Spaces on Human Psychology

Shourya Jain^{1,*}, Shashi Saxena², Ankita Srivastava³

Abstract

Shelter is the essential component for human survival, yet they know more about the effects of environmental conditions on human health than they know about how a building's geometry affects the human brain. Typically, architects work on geometry to integrate the appearance of structures, but design-oriented geometry ignores human experience with respect to psychology and emotion. The psychological effects of architectural geometry on human senses, behaviors, and experiences are the main topic of this paper. Shapes and forms can convey a wide range of emotions and feelings, from harmony and balance to tension and discomfort, and they can be used to express complex ideas and concepts. In order to comprehend how they should design and what they should be concerned about throughout design, it is essential and vital to combine the senses, emotions, and experiences with conventional architectural design theories and methodologies.

Keywords: Architecture, form, shape, space, psychology

INTRODUCTION

The bridge between the natural and artificial worlds is architecture. Humans have the ability to detect and feel things through their sense of form, which helps in our understanding of the world and of ourselves. Allow yourself to imagine that the shape of the room where you are seated has been changed to a circle or any other shape. Will it alter the way the room feels? Will it be beneficial to relieve tension or fatigue? Or will your experience stay the same?

Shape affects relationships. [1] A circular table may promote group discussions among strangers, but a rectangle table with more than six chairs typically promotes separate dialogues. A circle has only one point of focus. Therefore, the overarching goal of this study is to investigate how people and architecture connect through studying the emotional and psychological influences that the architectural form and its internal spaces have on people's actions, feelings, and perceptions.

*Author for Correspondence

Shourya Jain
E-mail: shouryajain3041@gmail.com

¹Student, Department of Architecture, LNCT University Bhopal, MP India

²Professor, HoD, School of Architecture, LNCT University, MP India

³Professor, School of Architecture, LNCT University, MP India

Received Date: July 07, 2023

Accepted Date: November 08, 2023

Published Date: March 29, 2024

Citation: Shourya Jain, Shashi Saxena, Ankita Srivastava. Impact of Built Shape, Forms and Spaces on Human Psychology. International Journal of Architectural Design and Planning. 2024; 2(1): 9–17p.

Built form affects our emotions, conduct, and overall well-being in addition to serving as practical environments. Building geometry can either produce a feeling of harmony and balance or anxiety and confusion. Creating a feeling of location is one of architectural geometry's most significant influences on the human experience. Different building forms that are thoughtfully created and proportioned produce a sense of wholeness and identity. They might help one feel rooted in one place and give them a feeling of direction. On the other hand, a disproportionate form can be confusing and uncomfortable because they are disorienting.

METHODOLOGY

The present studies are on human psychology in the relationship between an explorer/spectator, built form, and space. It explores interconnected architectural psychology. Furthermore, this study also aims to define the types of form and space organization as well as the conceptual principles in architectural design. The paper also examines various buildings through a literature review that provides a better understanding of built form and spaces. The study investigates how forms enhance a building experience and the ability to influence human thoughts.

LITERATURE REVIEW

"We shape our buildings, thereafter they shape us"- Sir Winston Churchill.

Human are constantly and gradually influenced by the artificial environment, especially buildings that are designed by him itself.

The characteristic of objects is "form". [2] Things are, in a sense, living things. Even if someone is dead inside, their presence however affects people around them. Space is where events can occur and living things can exist. Buildings are spaces within and objects from the outside.

Certain places make you more anxious, while others make you feel calm, and you're not sure why. If natural forms are evaluated, they find out very quickly that they are derived from either of the two ideas that appear to be present in our surroundings: regular and irregular forms.

REGULAR FORM

Forms which are regular contain essential qualities that relate to one another in a predictable and orderly manner. They are generally stable in nature and symmetrical about one or more axes. The pyramid, sphere, cylinder, cone, and cube are examples of regular shapes. A square with four equal faces (Figure 1) is static by definition. It gets more dynamic as its length increases and takes precedence over its breadth. While linear areas promote mobility and may be divided into several zones, square and oblong spaces establish locations for activities.

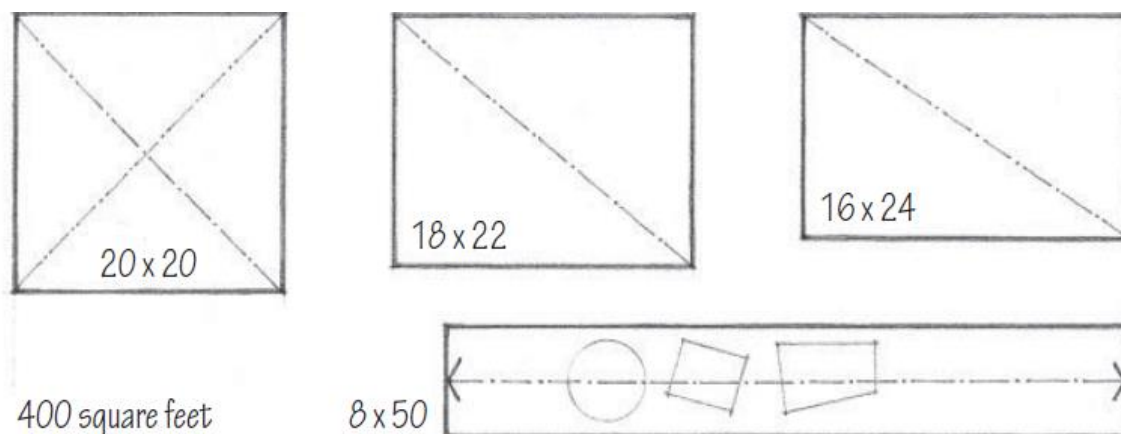


Figure 1. Functioning of space and nature of the activities to be accommodated will influence its form and proportion.

Source: Ching, F.D.K. (2007). *Architecture: Form, Space, and Order*.

You feel quick and periodic shifts in direction when you walk around a square. As shown in Figure 2 form sensation and perspective radically shift as the rectangle's proportions alter. It's not just that rectangular rooms are convenient to put things in; they need a lot of things to make them rooms living beings can live in. (Figure 3-4) They are both products of and fuel for a materialist culture.

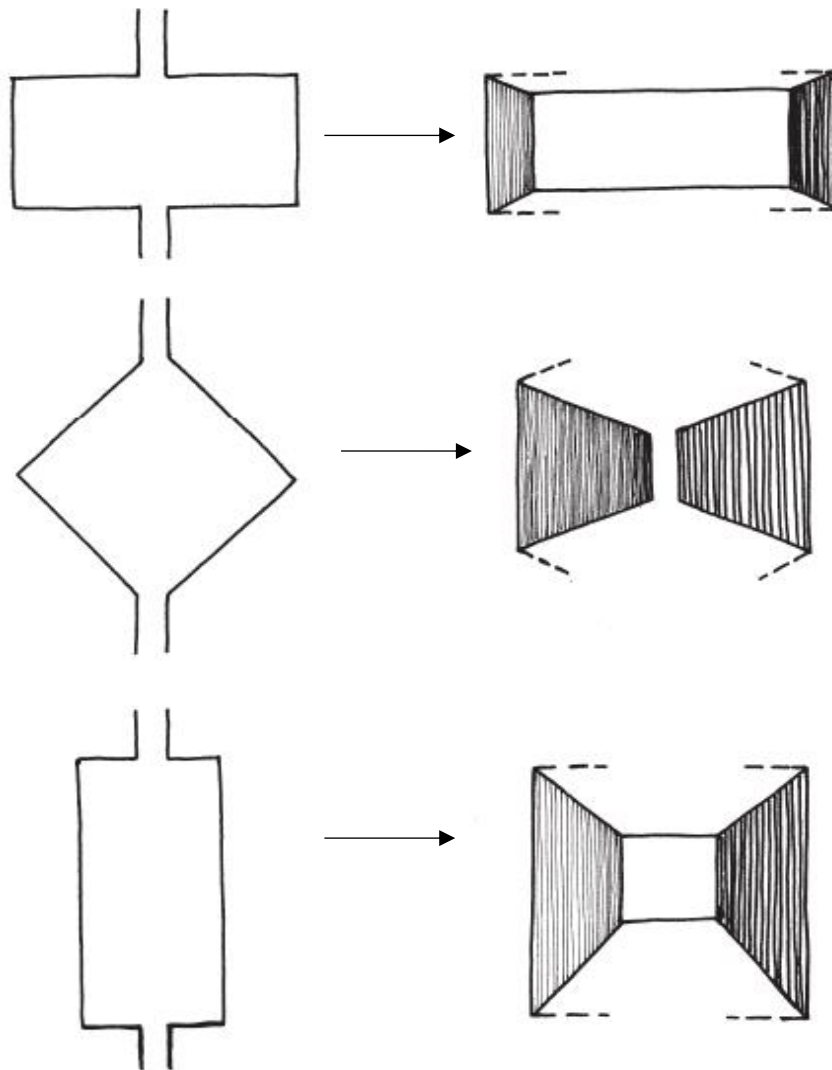


Figure 2. How we enter a rectangular space greatly impacts our impression of it.

Source: Christensen, T. (2015). *Places of Soul: Architecture and Environmental Design as a Healing Art*. North Atlantic Books

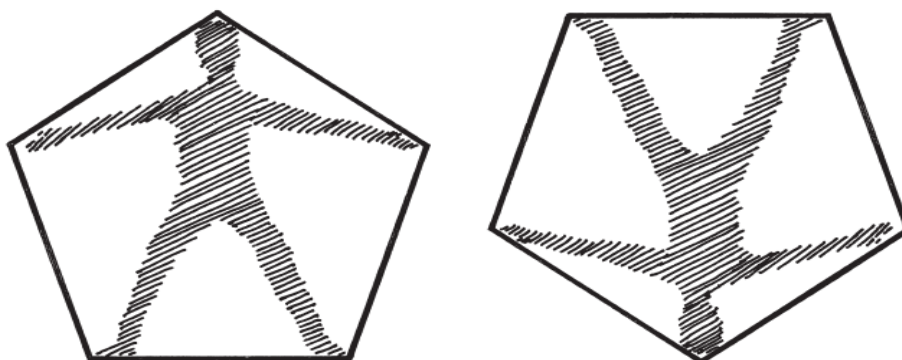


Figure 3. The pentagram: holy space or devil form?.

Source: Christensen, T. (2015). *Places of Soul: Architecture and Environmental Design as a Healing Art*. North Atlantic Books

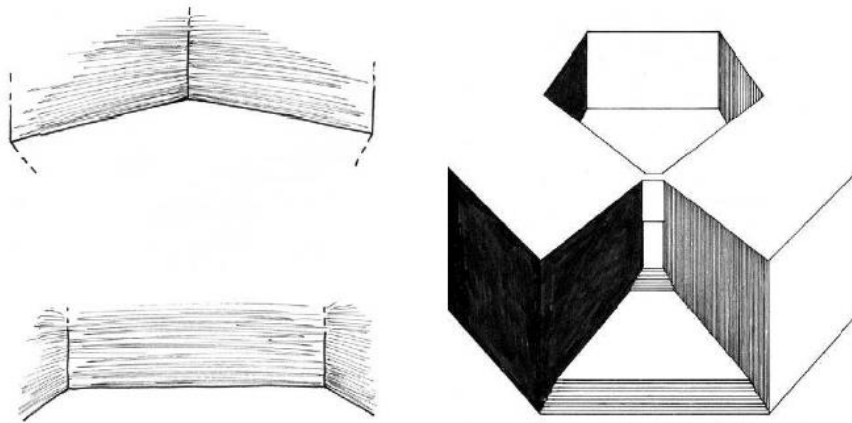


Figure 4. (a) When human enter a pentagram from the middle of a side, the enclosure is inviting (top); from one corner, however, the rear wall confronts us. (b) The devil's pentagram can be developed into a powerful fascist space.

Source: Christensen, T. (2015). *Places of Soul: Architecture and Environmental Design as a Healing Art*. North Atlantic Books

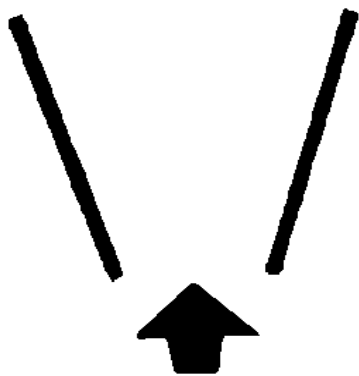


Figure 5. Invitation -Extension of access by invitation so that the greatest number of people may come close to the focus of exchange between interior and exterior spaces.

Source: Christensen, T. (2015). *Places of Soul: Architecture and Environmental Design as a Healing Art*. North Atlantic Books

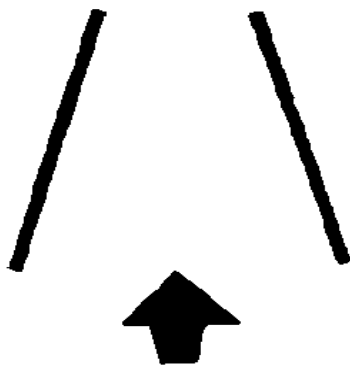


Figure 6. Initiation-Restriction of access by initiation to an inner sanctum where only a few are admitted, the greater number of people being kept at a safe distance from the sacred focus.

Source: Christensen, T. (2015). *Places of Soul: Architecture and Environmental Design as a Healing Art*. North Atlantic Books

By physically binding one or more subordinate forms to its volume, an additive form is produced, as opposed to a subtractive form, [3] which is created by removing a portion of its initial volume. The basic possibilities of grouping two or more forms are spatial tension, edge-to-edge contact (figure 5-6), face-to-face contact, and interlocking volumes.

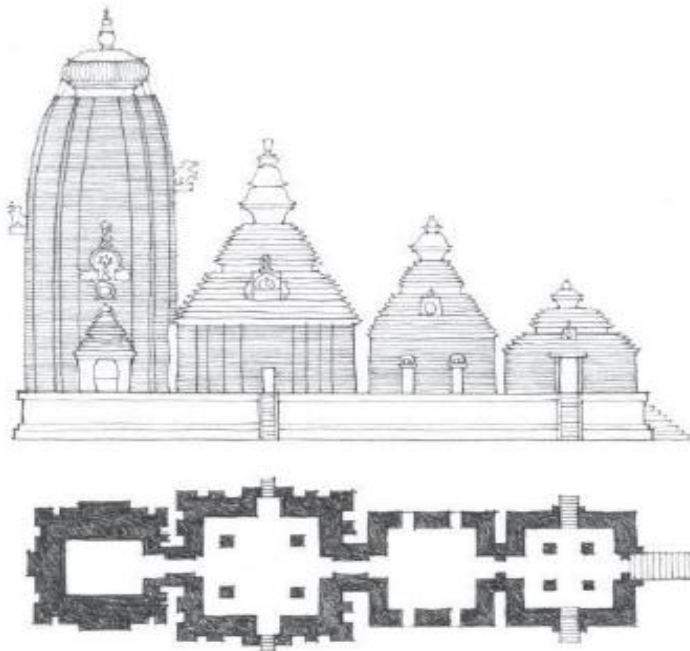


Figure 7. Lingaraja Temple, Bhubaneswar, India, c. AD. 1100.

Source: Ching, F.D.K. (2007). *Architecture: Form, Space and Order*. Hoboken New Jersey: John Wiley & Sons.

It had been found that in order to orient visitors through a place or focus their attention on specific aspects, linear forms can evoke a sensation of movement and direction. For example, the holy temple Lingaraja (Figure 7) to the god is hidden in the Calix of the northern Indian initiation temple, which is like to a tropical flower. The crowd remains constantly outside on the plazas and terraces, which are the province of the uninitiated before it in a series of halls for various ritual gatherings and dances.

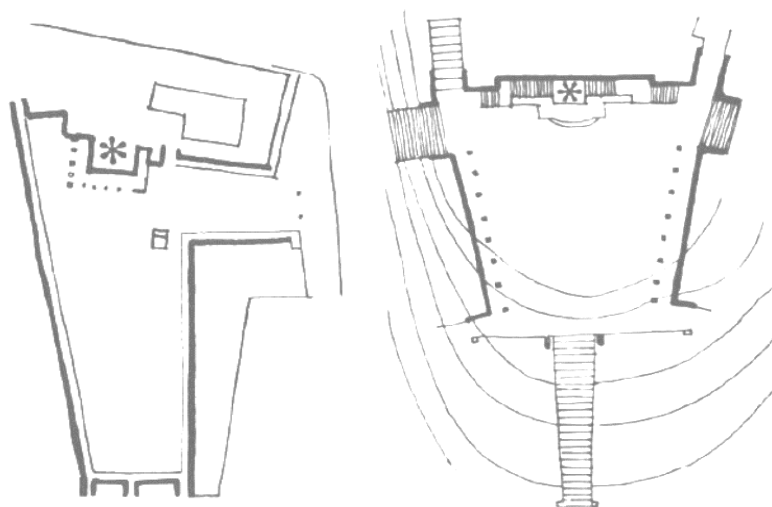


Figure 7. (a) In San Marco (Venice) the focus for both piazza (larger square) and piazzetta (smaller square) is the main entrance to the Basilica, (b) Piazza del Campitello. Rome. Its focus is the top of the stairs leading to the Palazzo del Senatore.

Source: Paul Jacques Grillo (1975). *Form, Function, and Design*. Dover Publications

This type of layout is characteristic of the Occidental civilization. It was the form preferred in medieval free towns for the numerous squares, large and small, which dotted the city-like living rooms for the community. [4] In medieval society, the town square was a stage permanently set for open-air markets, pageants, plays, and meetings of large crowds.

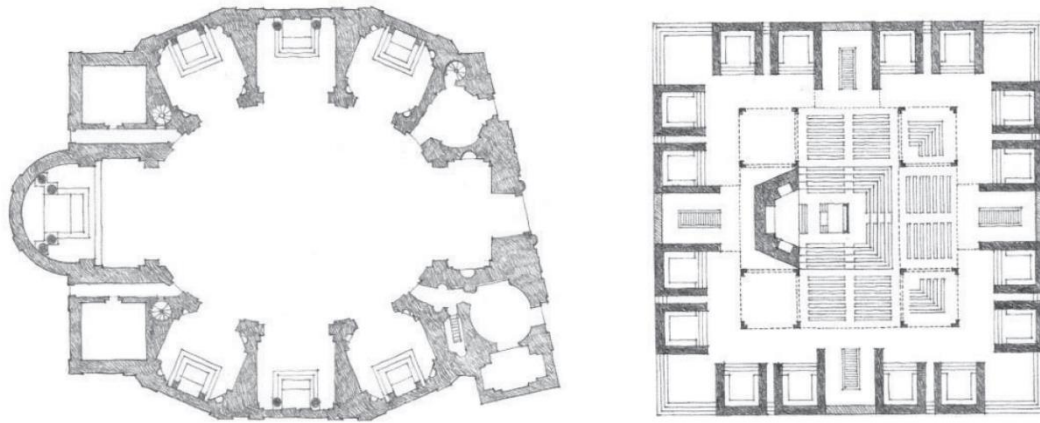


Figure 8. (a) Sketch of an Oval Church by Borromini, Genesis of San Carlo Alle Quattro Fontane (b) Hurva Synagogue (project), Jerusalem, 1968, Louis Kahn
Source: Ching, F.D.K. (2007). *Architecture: Form, Space, and Order*.

It can be noticed in above Figures 8, 9 that interior space enclosures in the shape of a U have a particular orientation towards their [5] open ends. These U-shaped structures can cluster together to create an introverted organisation around a core area.

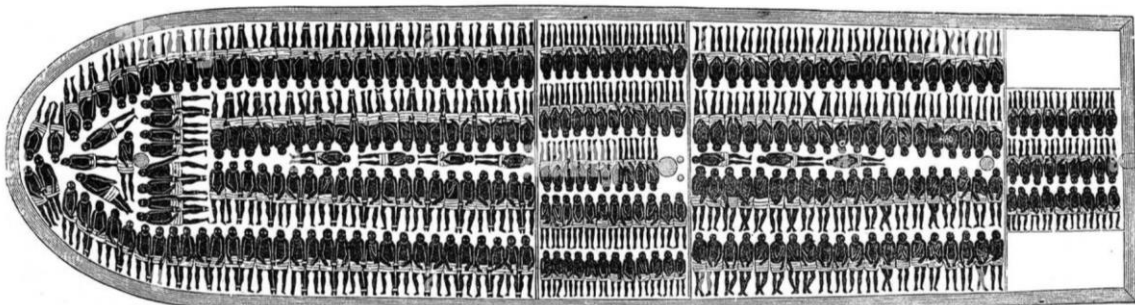


Figure 9. Floor plan of a slave ship showing the packing of negroes.
Source: Paul Jacques Grillo (1975). *Form, Function, and Design*. Dover Publications

Slaves are arranged in a military right-angle formation, whether they are within the hull of a slave merchant ship or in a small compound in Egypt. This grid formation (figure 10) is standard in a military camp is constructed from a rectangular grid of dead-end streets, representing the life of a slave that leads nowhere. [6] When the layout of our streets today is such a terrible reflection of our slavery to routine and indicates such a severe lack of freedom, how can human claim to be free?

IRREGULAR FORM

If the soles of shoes painted and walked across a building while the paint was still wet, it would be noticed that human trajectory is not a succession of straight lines, but a continuously curved line as it is try to keep clear of all obstacles that lie around us: walls, furniture, columns, etc.

Forms that are irregular have pieces that are inconsistently connected to one another and of various kinds. Compared to standard shapes, they are typically asymmetrical and more dynamic. [7] They

may be regular forms that have irregular parts eliminated by them, or they may be regular forms that have irregular elements combined with them.

Designing circulations within rectangular spaces will find dead spots around the square corners. By designing a curve instead. It is a substitute for the natural paths of human motion for these artificial right angles. The design then becomes the envelope of the orbital curves along which people move normally. The necessity for rounding off corners and designing slalom curves instead of sharp corners is evident in the design of paths and lanes. For instance, a lawn soon becomes mangy and bald inside the right angles and, as a next step, some kind of unfriendly fence is placed that spoils all the natural beauty of a green.

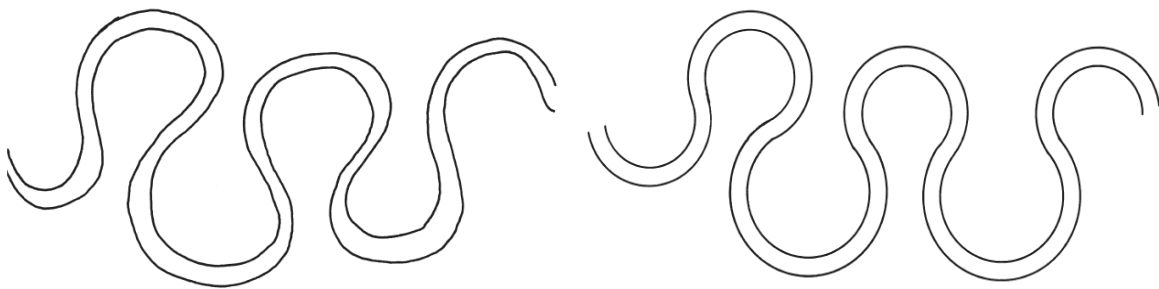


Figure 10. (a) The slower a river flows, its meandering form is more pronounced. (b) Meanders are not made up of regular circles.

Source: Christensen, T. (2015). *Places of Soul: Architecture and Environmental Design as a Healing Art*. North Atlantic Books

Natural curves (Figure 11-a) are more soothing and pleasant to human eye, on the other hand stiff rigid geometric curves (figure 11-b) looks harsh and stress one's thoughts.

Curved forms have been shown to evoke more positive emotions, such as happiness, calmness, and comfort, compared to angular or straight forms. This may be due to the fact that our brains tend to associate curves with natural and organic shapes, which can create a sense of relaxation and familiarity. [8] Research has shown that curved forms can enhance memory recall and retention. One study found that participants were more likely to remember information that was presented in a curved or circular format compared to information presented in a square or angular format.

Being in a building instantly begins the process of circulation, and whether we are aware of it or not, our bodies and movements are always in conversation with our structures. The two obvious parameters of movement are the passage of time and the object in space. Speaking of time, the fourth dimension explained by Einstein first comes to mind.

The irregular form asymmetrical zig-zag shape as shown in Figure 12 symbolizes the suffering and pain of the Jewish community. The structure is gloomy on the inside and allows just a few tiny rays of light to penetrate. These windows serve a number of functions. They indicate interaction with the outside world, but they also block any view that is not fractured, symbolising the shattered history of Jews in Germany.

Is it possible for a spectator who is the inside the building can feel or experience the form of building in Figure 13? Absolutely no, form encloses the space and space is the surface for activity. [9] These kinds of forms can be visually appealing from outside but it will not create sense for a user inside the structure. Hence form and space are interlinked to each other.

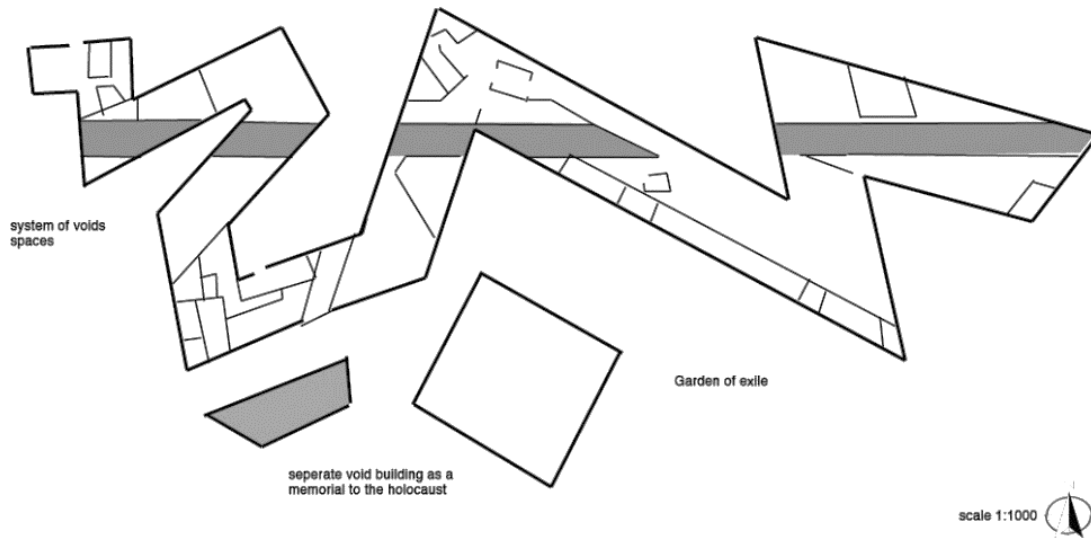


Figure 11. Plan of Jewish Museum.

Source: https://3.bp.blogspot.com/D5lJYP_sdY/U32aAWJmInI/AAAAAAAAADA/dF6J2mN4QYw/s1600/website-berlin-essay-ground-plan-1024x559.jpg



Figure 12. Building in the form of a shoe.

Source: Bored Panda - The Only Magazine for Pandas

RESULT AND DISCUSSION

This study recommends the application of behavioural sciences and their incorporation into theory and design practice in a more general manner. The lack of understanding of human behaviors, attitudes, and values is significant issue architects and planners must deal with when designing physical spaces. Using this approach, designers have the opportunity to incorporate the social and individual characteristics of people living in design processes by utilizing knowledge of human behaviour and the potential of behaviour science.

Non-rectangular areas, especially curved ones, both inside and outside, are favourable. Rectangular, [10] spaces enclose places better, but it is geometrically rigid that make the user experience dead. Buildings like workplaces, schools, and libraries can benefit from the order and stability that rectangular forms and spaces can provide. Curved shapes can create a sense of fluidity and movement, making them ideal for buildings that want to convey a sense of energy or dynamism. For example, museums or exhibition spaces may use curved forms to create a sense of flow through the space. [11] Angular shapes can create a sense of tension and excitement, making them suitable for buildings that want to convey a sense of drama or excitement. For example, sports stadiums or concert halls may use angular forms to create a sense of anticipation.

CONCLUSION

A plan is much more than just a flat, two-dimensional representation. Although humans can't constantly visualize the layout of a building, they can still experience it through movement and circulation. Human anthropometry standards are utilized in the design of buildings, humans are still viewed as stable objects, which gives the building a lifeless feeling.

According to the present findings, each have shape positive and negative impacts on human psychology. Form and space should be employed in accordance with the human sense and motion, not its aesthetic appearance.

REFERENCES

1. Ching, F.D.K. (2007). *Architecture: Form, Space and Order*. Hoboken New Jersey: John Wiley & Sons.
2. Hamlin, Talbot, ed. *Forms and Functions of Twentieth-Century Architecture*. Volume I. the Elements of Building. Columbia University Press, 1952.
3. Danica Stankovic; Vojislav Nikolic; Aleksandra Cvetanovic; Aleksandar Kekovic. Form in architecture and principles of design 2018; 1(11)-57-63; DOI:10.18503/2309-7434
4. Chang-Sung Kim, Kyung Wook Seo. The Architectural Expression of Space and Form Created by the Light in the Works of Alvaro Siza. *Journal of Building Construction and Planning Research*.2014; 118-131;DOI:10.4236/jbcpr.2014.22011
5. Stephen Temple. Geometry in Architecture as a Ground of Human Perceptual Experience. *The International Journal of Architectonic Spatial and Environmental Design*.2020; 2325-1670 (Online)
6. Cassidy, T. *Environmental Psychology: Behaviour and Experience in Context* Hove: (1997) Psychology Press.
7. Christensen, T. *Places of Soul: Architecture and Environmental Design as a Healing Art*. (2015) North Atlantic Books
8. Wasilah, W.; Hildayanti, A.; Hamzah, H. The Design of Space Based on Architectural Geometry. *Preprints* 2018, 201804.0291.V1;DOI:10.20944
9. Paul Jacques Grillo. *Form, Function, and Design*. (1975) Dover Publication
10. Paul Goldberger, *Why architecture matters*, (2009), Yale University Press
11. Hamlin, Talbot, ed. *Forms and Functions of Twentieth-Century Architecture*. Volume I. the Elements of Building. Columbia University Press, 1952.