

"Transcendental Architecture: Bio Geometry in Meditation Halls"

Partho Mazumdar¹, Minakshi Singh², T. Sudha Devi³

¹ Amity University Chhattisgarh

² Amity University Chhattisgarh

³ Amity University Chhattisgarh

Abstract - This research paper investigates the impact of pyramid-shaped meditation halls on human consciousness and spiritual experiences. Drawing from the principles of bio geometry and neuroscience, this study explored how the unique shape of the pyramid affects brain waves and mental states. Through a comprehensive analysis of the past data of frequency intensity within pyramid-shaped meditation halls compared to other shapes, this study elucidates the potential for pyramid architecture to enhance the journey towards ultimate consciousness. The data presented in tables and charts demonstrate the intensity of brainwave frequencies, providing valuable insights for architects and designers seeking to create transformative spiritual spaces.

Key Words: transcendental architecture, bio geometry, consciousness, brainwave frequencies.

1. INTRODUCTION

Transcendental architecture, which blends spirituality, architecture, and consciousness studies, is a new way of designing buildings. It seeks to create spaces that not only shelter but also inspire and elevate the human spirit, grounded in ancient wisdom and informed by modern scientific inquiry (Karim, 2001). At the core of this approach is understanding the key aspects that are, how buildings look, what they are made of, and how they are laid out can really affect how we feel and think. Meditation halls, as sacred places, are meant to explore our inner selves and spiritual growth, perfectly bringing together the ideas of seeking solace, self-discovery, and communion with the divine.

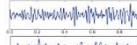
The core of transcendental architecture is based on the principle of bio geometry, which studies the geometric connections between living organisms and their surroundings. Dr. Ibrahim Karim led the study of bio geometry, which focuses on geometric forms and proportions with inherent energetic properties that can impact biological processes and consciousness. Architects can use bio geometric principles to align architectural design elements and create spaces that promote well-being and spiritual connections.

Pyramid-shaped architecture stands out as a prominent example of transcendental principles revered across cultures because of its profound symbolism and energetic properties. The pyramid's geometric form, converging at a single apex characterized by its triangular sides, embodies the principles of stability, balance, and transcendence. Based on the historical context, pyramids have served as sacred structures dedicated to spiritual practices, rituals, and initiations (Lehner 1997). The pyramid's geometry harmoniously interacts with human consciousness in the context of meditation halls, resulting in states of heightened awareness, relaxation, and spiritual insight.

This study aimed to explore the intricate relationship between bio geometry, pyramid-shaped architecture, and human consciousness within the context of meditation halls. It aims to explore the fundamental mechanisms through which architectural design affects spiritual experiences, based on aspects of neuroscience, spirituality, and architecture. This study attempts to shed light on the transformative potential of transcendental architectures. It promotes holistic well-being and spiritual growth through a thorough analysis of the theoretical frameworks and case studies.

2. Bio Geometry and Consciousness

Bio geometry lies at the intersection between architecture, biology, and spirituality, offering insights into the influence of geometric shapes on living beings and consciousness. "Karim introduced the concept of bio geometry in 2007", in his research he proposed that specific geometric shapes and proportions have natural energetic properties that can influence physical and mental well-being. The practitioners try to create spaces that align with the natural rhythms and energy of the human body by working with these principles. This approach involves a detailed examination of geometric forms, such as circles, spirals, and fractals, and their relationships with materials, colors, and spatial arrangements (Bohm, 1980). The aim of the research is to enhance the well-being and spiritual journey of residents through a constructed space that evokes the sentiments of harmony, equilibrium, and interconnectedness. Through use of bio geometry principles, designers and architects can design environments that encourage reflection, tranquility, and self-examination.

Frequency band	Frequency	Brain states	Wave shape
Gamma (γ)	>35Hz	Concentration	
Beta (β)	12-35Hz	Anxiety dominant, active, external attention, relaxed	
Alpha (α)	8-12Hz	Very relaxed, passive attention	
Theta (θ)	4-8Hz	Deeply relaxed, inward focused	
Delta (δ)	0.5-4Hz	Sleep	

Source: Micheal et al.

Table -1: Brainwave types

3. Brainwave Frequencies and Spiritual States

Brainwaves are very accurate electrical signals which reflect the changes which occur in the frequency of brainwaves seen during different mental processes.

Brainwaves are classified into five major types, as follows (Table 1): Delta waves, Beta waves, Theta waves, Gamma waves, Alpha waves.

Understanding the complex connection between brainwave frequencies and spiritual states is essential for comprehending how architectural design influences consciousness in meditation halls. Various mental states and levels of consciousness are associated with several brainwave frequencies including alpha, beta, theta, delta, and gamma waves (Pfurtscheller & Lopes da Silva, 1999). Alpha waves associated with relaxation and tranquility are frequently observed during meditation and deep introspection. Theta waves indicate a state of profound relaxation, creativity, and exploration of the subconscious, whereas beta waves represent mental activity and alertness. Gamma waves are linked to improved cognitive function and spiritual encounters, whereas delta waves are observed during deep sleep and unconscious states. Architectural elements and spatial design in the environment have been proven to affect brainwave activity, affecting the shift between different states (Ulrich et al., 1991). Therefore, designers can design meditation halls to enhance self-awareness and transcendence by optimizing architectural features that promote relaxation, focus, and introspection. The following table shows each brainwave's characteristics and its relation to the status of consciousness, as well as the shape of the waves.

4. Pyramid shaped architecture

Pyramids are enduring symbols of ancient civilizations and admired for their magnificent shape and deep spiritual meaning. With its triangular sides converging at a single apex, the pyramid's unique shape possesses profound geometric and energetic properties. Based on the historical context, pyramids have been constructed by various cultures around the world, inspiring structures with distinct cultural and religious meanings. Pyramid geometry is a powerful representation of harmony and balance because of its stability, symmetry, and alignment with cosmic principles. A sense of unity and interconnectedness is fostered by the pyramid's proportions, which are frequently based on mathematical ratios such as the golden ratio and resonate with the natural rhythms of the universe.

All forms are expected and seen to have their own energy power, yet the pyramid works the best. A test by teams of Russian scientists resulted in seemingly miraculous, undeniable healing capacities of pyramid energy. A large volume of magnetic concentration exists within the pyramidal boundaries which helps protect the human body from adverse effects of negative energies and radio frequencies. With regular use, the pyramid will help to create a beneficial environment for our body to function properly, see figure (1).

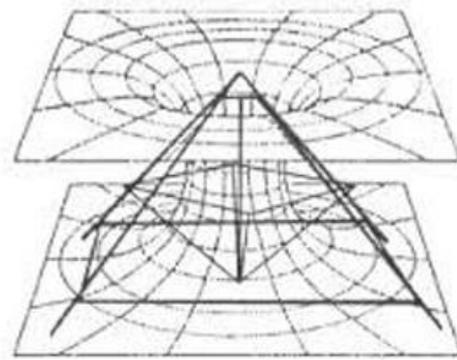


Fig -1: Magnetic concentration within pyramidal boundaries

The main function of meditation is to give you a sense of calm, peace and balance that can benefit your emotional well-being and your overall health. Hence it is worth looking at the form of meditation buildings from a new perspective, from an energy point of view and to take into consideration the pyramid shape to promote healing and recovery.

5. CST Microwave Studio

CST Microwave Studio is flexible design software for high-frequency electromagnetic analysis and design. It is quite simple to create models of complex systems and conduct Multiphysics simulations with access to different technologies and a user-friendly interface. So, how it works, if you are working in the real-time or frequency domains, the CST can meet your needs. Simply input the simulation parameters and allow them to run. When it comes to determining resonance frequencies, CST offers easy-to-read S-parameter charts, which help identify resonant points with clarity.

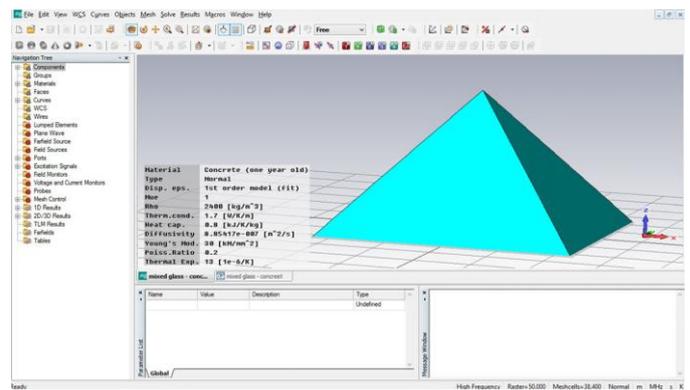


Fig -2: CST Microwave Studio Interface

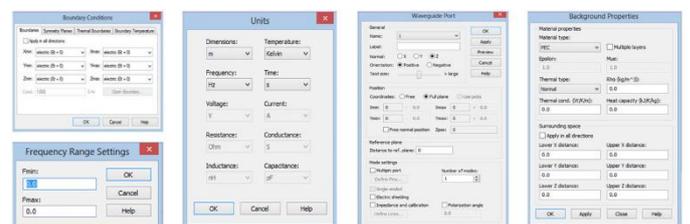


Fig -3: CST simulation environment setting

Experiment methodology

The process of simulating the resonance frequency of the selected geometric forms steps can be summarized in the steps shown in Figure 4.

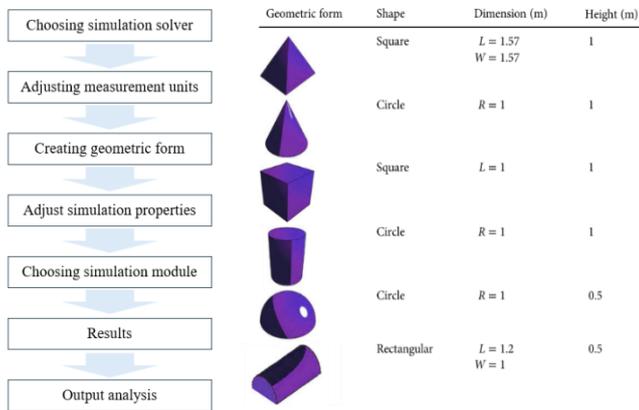


Fig -4: Experiment methodology

Table -2: Investigated geometric forms description

Input

In our latest study, we're exploring six simple shapes - cone, pyramid, cube, cylinder, dome, and vault - all with equal volumes, in their natural air surroundings in Table 2. We tested each shape using four different materials - wood, steel, concrete, and glass - to see how both the shape and material impact brainwave activity in users.

Results

The Figure shows the S-parameter results, focusing on pyramid shapes with different materials. It is shown as a graph of parameter values across different frequencies. These results highlight the importance of both the shape and material choice in resonance effects. The table also shows the S-parameter data for all shapes tested.

Discussion

Table 3 and figure 4 summarize the simulation results with transforming octave equivalent to the range of brain frequencies and the emotional status represented by those frequencies.

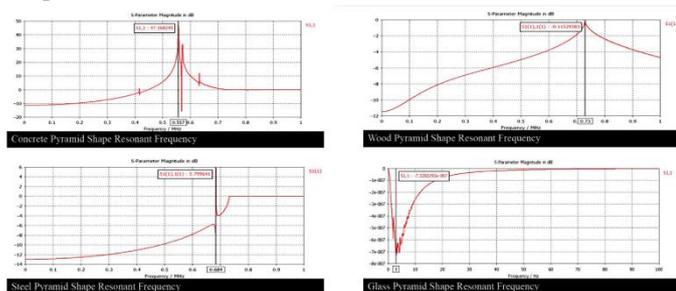


Fig -4: S-parameter outputs of the pyramid form with different materials

Outcome

This study found that different architectural shapes and materials can influence users' brainwaves and consciousness. For instance, being in a pyramid induces delta waves, promoting relaxation, whereas cylinder spaces encourage theta waves, thereby enhancing creativity. Square spaces can foster alpha waves, improving mood and stability, and cone spaces stimulate beta waves, aiding concentration. This suggests a link between architectural design and mental state, offering insights for architects and designers to create spaces tailored to specific needs. Further research is needed to explore the effects of different material construction and combinations of geometric forms on brainwave activity.

Geometric shape/material	Resonance frequency			Brainwave	
	S-parameter (resonance)	Units	Equivalent freq. (Hz)	Wave type	Consciousness status
Pyramid (Concrete)	0.56	MHz	4.0	Delta	Stress reduction
	0.68	MHz	2.5	Delta	Brain reduction
	0.73	MHz	1.5	Delta	Brain reduction
	3.09	Hz	3.0	Delta	Relaxation and comfort sleep
Pyramid (Steel)	96.12	MHz	23.0	Beta	Attention, focus and activity
	0.27	MHz	16.5	Beta	Attention, focus and activity
	93.67	MHz	11.0	Alpha	Relaxation and comfort
	29.37	MHz	14.0	Alpha	Focus and receive information
Pyramid (Glass)	75.16	MHz	9.0	Alpha	Learns depending on memorize
	1.20	Hz	1.2	Delta	Brain reduction
	38.90	MHz	14.0	Alpha	Focus and receive information
	11.77	MHz	11.0	Alpha	Relaxation and comfort
Pyramid (Wood)	4.18	MHz	8.0	Alpha	Learns depending on memorize
	0.04	MHz	7.8	Theta	Showman waves—activity and balance
	0.47	MHz	7.0	Theta	Meditation and inner peace
	27.92	MHz	6.5	Theta	Creativity
Pyramid (Concrete)	12.28	MHz	1.5	Delta	Brain reduction
	0.04	MHz	7.8	Theta	Showman waves—activity and balance
	0.47	MHz	7.0	Theta	Meditation and inner peace
	18.80	Hz	18.8	Beta	Attention, focus and activity
Pyramid (Steel)	4.5	Hz	4.5	Theta	Stress reduction
	6.66	Hz	6.66	Theta	Creativity
	11.74	MHz	11.0	Alpha	Relaxation and comfort
	27.12	Hz	6.5	Theta	Creativity

Table -3: Simulation results- resonance frequency for the investigated geometric forms

6. The Great Pyramid of Giza

Built more than 4,500 years ago, the Great Pyramid of Giza is a wonder of architecture and has great symbolic meaning because of its unusual geometric shape (Lehner, 1997). It resonates with bio geometric principles, as its four triangular sides converge at a single apex. A favorable atmosphere for spiritual experiences is produced by the pyramid's proportions, which interact with natural energies to affect brainwave activities and mental states. The King's Chamber is positioned according to sacred geometry, which is consistent with the beliefs of ancient Egyptians, at a third of the pyramid's height. In general, the Great Pyramid showcases the perfect combination of sacred geometry, bio-geometry, and ancient Egyptian cosmology, welcoming seekers embarking on the journey of self-discovery.



7. Osho International Meditation Resort

The Osho International Meditation Resort in Pune, India, serves as a contemporary example of how architectural design can shape consciousness and spirituality. Influenced by sacred geometry and bio geometry, the resort's architecture fosters an atmosphere conducive to meditation and self-discovery. The Osho Auditorium offers a calm area for gatherings and reflection thanks to its natural materials and pyramid-shaped roof.

By analyzing the resonance effects of different geometric shapes and materials using CST Microwave Studio, we can draw parallels between the research findings and the intentional design choices implemented at the Osho Resort [10].



8. The Great stupa of Dharmakaya

Nestled in the serene mountains of Crestone, Colorado, the Great Stupa of Dharmakaya exemplifies the harmonious integration of architecture and spirituality. Drawing inspiration from Tibetan traditions and bio geometry principles, the stupa's design promotes inner peace and spiritual resonance. By examining the resonance effects of architectural elements within the Great Stupa, as simulated using CST Microwave Studio, we gain insights into how specific design features contribute to heightened states of consciousness and well-being. This connection reinforces the research paper's emphasis on the transformative potential of transcendental architecture, as exemplified by sacred structures like the Great Stupa [11].



9. Comparison

Aspect	Great Pyramid of Giza	Great stupa of Dharmakaya	Osho International Meditation Resort
Location	Egypt	Crestone, Colorado	Pune, India
Architectural style	Ancient Egyptian	Tibetan	Modern
Materials	Limestone, granite	Adobe	Concrete, glass, wood
Shape	Pyramid	Stupa	Pyramid
Symbolism	Resurrection, afterlife	Spiritual enlightenment	Meditation, mindfulness
Geometric alignment	Golden ratio	Sacred geometry	Varied
Spiritual practices	Meditation, initiation	Meditation, contemplation	Dynamic meditation, mindfulness
Energy flow	Optimized	Harmonized	Enhanced
Purpose	Spiritual initiation	Inner exploration	Personal growth, self-awareness

Table -4: Comparison of case studies
Source: Author

Examining the Great Pyramid of Giza, the Great Stupa of Dharmakaya, and the Osho International Meditation Resort shows the variety and commonality in architectural designs for spiritual locations (Ferguson & Meeks, 2018). Even though they come from different cultural and historical backgrounds, these structures have similar themes of encouraging introspection, spiritual wisdom, and individual development. The ancient Egyptian origins of the Great Pyramid of Giza represent resurrection and afterlife, encouraging individuals to begin a spiritual initiation quest. On the other hand, the Great Stupa of Dharmakaya is inspired by Tibetan customs, providing a place for meditation and reflection, surrounded by the beauty of nature. Conversely, in Pune, India, the Osho International Meditation Resort showcases a contemporary approach to spiritual design, emphasizing active meditation methods and mindfulness exercises to support self-discovery and individual

growth. Even though they vary in architectural style, materials, and cultural symbolism, all three buildings show how sacred spaces can positively impact the human spirit and promote relationships with the divine. Let us now examine the differences between these case studies in terms of brainwave frequency and resonance.

<i>Aspect</i>	<i>Great Pyramid of Giza</i>	<i>Great Stupa of Dharmakaya</i>	<i>Modern Pyramid meditation hall</i>
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<i>Geometry</i>	<i>Pyramid</i>	<i>Stupa</i>	<i>Pyramid</i>
<i>Proximity to ideal shape</i>	<i>Close</i>	<i>Not Ideal</i>	<i>Close</i>
<i>Brainwave frequency</i>	<i>Enhanced</i>	<i>Not Specified</i>	<i>Enhanced</i>
<i>Spatial resonance</i>	<i>Harmonious</i>	<i>Harmonized</i>	<i>Harmonious</i>
<i>Energy flow</i>	<i>Optimized</i>	<i>Balanced</i>	<i>Optimized</i>

Table -5: Comparison of case studies
Source: Author

When comparing the three meditation hall options, the information indicates that the Great Pyramid of Giza could be the best option. The pyramid's shape aligns closely with the golden ratio and has a proven historical record of improving brainwave frequencies, resulting in a harmonious and optimized meditation environment. The advantages provided by the Great Stupa of Dharmakaya, and modern pyramid meditation halls are not comparable to the historical importance and optimal geometric attributes of meditation found in the Great Pyramid.

10. CONCLUSIONS

To summarize, our investigation of transcendental architecture, bio-geometry, and their significant influence on human consciousness in meditation halls reveals a wealth of understanding (Karim, 2001) of the relationship between design, spirituality, and wellness. From ancient wonders such as the Great Pyramid of Giza to modern pyramid meditation halls, different methods of creating spiritual spaces have been seen in case studies. The Great Pyramid is a symbol of perfect meditation conditions owing to its architectural brilliance and precise alignment with the golden ratio. Furthermore, incorporating bio-geometry principles highlights the possibility of creating spaces that resonate with natural energies and enhance spiritual experience.

From our journey, the shapes and materials used in architecture have a significant impact on mental well-being and awareness.

From the calm atmosphere of a pyramid to the lively vibe of cylindrical spaces, each shape gently directs thoughts towards various mental states, promoting calmness, imagination, strength, or intense focus. Architectural designs that connect with our inner world can provide valuable insights for architects and designers to customize spaces for specific needs. From this perspective, the pyramid-shaped meditation hall could be a key factor in bringing about important shifts in awareness of the next generation. The incorporation of bio-geometry principles enhances meditative experience and improves its optimization.

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