IJCRT.ORG ISSN : 2320-2882

INTERNATIONAL JOURNAL OF CREATIVE RESEARCH THOUGHTS (IJCRT)

An International Open Access, Peer-reviewed, Refereed Journal

Understanding The Multisensory Dimensions Of Architecture: A Journey Beyond Form

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Abstract: Architecture is commonly perceived through its dimensions, similar to various facets of human perception. As one of the most tangible and key elements of a building, the visual form significantly contributes to conveying the message, function, and the identity of a structure. However, the significance of architecture goes beyond the visual aesthetics, encompassing a range of fundamental sensory interactions including touch, smell, hearing, taste that focuses on immersive experiences rather than merely visual images or shapes. In the realm of contemporary architecture, the quest for visual impact is apparent. Designs frequently prioritize the visual allure within both 2D representations as well as 3D depictions. Although these are aesthetically captivating designs, they often give rise to a monotonous psychological experience that are devoid of the fundamental sensory engagements. This interplay between architecture and multi-sensory experience is significant, yet it is often unnoticed. Architecture encompasses more than just materials and form; it extends to people, their emotions, the spaces, connections between them and the memories. Our senses engage and react to the surroundings generating a sense of comfort and a profound connection with the spaces we inhabit. Each of the five senses employs distinct cues to explore the environment and possess a unique range of perception. This paper delves into the multi-sensory dimensions of space, subsequently affecting how individuals perceive their surroundings. It offers a comprehensive overview of how the spaces influence the human sensory experiences. Recognizing the inherent multisensory nature of perception is crucial to understand the diverse interactions between a physical environment and its occupants. By careful considerations of various senses, we can create spaces that not only function effectively but also create a very rich, meaningful, and comfortable experience.

Index Terms - Multisensory architecture, User experiences, Inclusive Spaces

I. INTRODUCTION

Architecture is a medium that extends far beyond the confines of structural dimensions. The visual form of a building stands as an essential element, its aesthetic appeal serving as a primary communicator of a structure's message, function, and identity. The architectural aesthetics presented to our eyes have held the spotlight for centuries. Yet, the narrative of architecture is far from monochromatic. It weaves an intricate fabric of sensory interactions, each thread offering a different note in the symphony of human experience. Architecture, at its core, is an immersive sensory encounter that transcends the mere visual. It encompasses touch, smell, hearing, and, intriguingly, even taste, playing a fundamental role in shaping ourperception of spaces. The interaction between these senses and the built environment is profound, creating a multi-dimensional relationship that extends beyond the mere appreciation of beauty. Architectural aesthetics, both

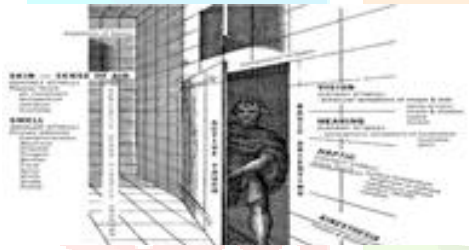
in two-dimensional representations and three-dimensional forms, captivate our senses and stimulate our emotions. These designs undoubtedly inspireawe and admiration, yet they can inadvertently lead to a one-dimensional psychological experience, lacking the profound sensory engagement essential for a truly holistic architectural encounter. Recognizing the inherent multisensory nature of perception is pivotal in understanding theintricate and diverse interactions between a physical environment and its inhabitants.

2 Aim: This research paper aims to redefine contemporary architectural by shifting the focus design paradigms to a holistic consideration of multisensory dimensions. By investigating the profound interplay between architectural spaces and human sensory experiences, the aim is to often-overlooked role of touch, smell, hearing, taste, and sight in shaping our perception of the built environment. The goal is to advocate for a more comprehensive understanding of architecture that transcends mere visual aesthetics, creating spaces that engage all facets of the human sensorium that lead to an inclusive architectural space

2.1 **Objective:** By emphasizing the multisensory nature of these interactions, the objective is to cultivate an inclusive design that integrates all senses. This inclusive approach seeks to transcend the mere functional aspects of architecture, aspiring to create spaces that foster profound connections between individuals and their surroundings. Furthermore, the study unravels the contributions of each sense, aiming to deepen our understanding of how sensorystimuli influence the perception and interpretation of architectural spaces.

2.2 Methodology The core of the investigation involves a comprehensive examination of literature study, and case studies assessing the role of senses in architecture. The literature review aims to study the viewpoints and theoretical frameworks concerning sensory aspects, as well as how essential architectural elements can prompt reactions. Subsequently, the analysis delves into and assesses instances of spaces and how they impact the user experience

3 Multisensory Architecture



Each sense contributes a unique element to the overall experience, creating a harmonious interaction between individuals and their surroundings. The chapter delves into the specific contributions of each sense — sight, touch, smell, taste, and hearing. Each of the senses combine to form a comprehensive sensory narrative within the architectural context.

Figure 1 Multisensory Architecture

3.1 Sight in Architecture

"What we see is what we believe." Architecture, in its contemporary state, has undeniably become dominated and controlled by the sense of vision. Before we engage in the tactile, auditory, or interact with an object, our judgments on its height, weight, scale, texture, and more have already been shaped through our sight. Fundamental design principles, including the Rule of Thirds, are rooted in this essential sense. Elements such as color, size, weight, order, and spatial arrangements are apprehended through this dominant sense.

Architect Tadao Ando constructed the Church of Light in Osaka, Japan, embodying a deep feeling of duality by contrasting light and dark, solid and empty.

Figure 2 Church of Light

3.2 Hearing in Architecture

Figure 3 Falling Waters

Whether situated in expansive open areas or enclosed volumes, various environmental factors collaboratively shape what is referred to as the "soundscape." Elements such as the presence of wind, air moisture, and ambient background sounds, intricately contribute to the auditory ambiance within architectural settings. The orchestration of sound within these spaces, guided by architectural design, material selection, and inherent environmental qualities, highlights the interconnected relationship between architecture and the auditory realm, exemplifying how the physical form of spaces functions as an instrument, conducting a symphony of sounds.

Designed by Frank Lloyd Wright, Fallingwater in Pennsylvania serves as an ideal examplefor the use of sound in architecture

Figure 4 Egaligilo Pavilion

3.3 Touch in Architecture

Touch is a fundamental aspect of building relationship with architectural spaces. General experiences - the nature of the materials, the softness of the surfaces, the warmth of the sun – contribute to creating sensible spaces. Designers use textures strategically to guide navigation, define spatial boundaries, and enhance the physical well-being of occupants. The tactile aspect adds a layer of intimacy, making spaces more comfortable and generating a deeper connection between individuals and their surroundings.

The architectural design of Hazelwood school in Glasgow is underscored by a deliberate consideration of touch, recognizing its pivotal role in shaping the overall sensory experience within the educational environment

3.4 Smell in Architecture

Figure 5 Botanical Gardens

The sense of smell emerges as a compelling yet often overlooked influence. Fragrances possess a unique capacity to stir memories, shape mood, and amplify the overall spatial experience. Architects deliberately integrate scents, be they natural or artfully crafted, to enrich the ambiance and emotional resonance of a place. Whether emanating from materials, greenery, or intentionally designed fragrances, these aromas contribute to the intricate sensory fabric of architectural spaces.

The deliberate inclusion of scents in design becomes a method of creating emotional memories, enabling individuals to recall spaces in ways beyond visual remembrance. In essence, integrating scents into architectural design becomes a nuanced means of shaping emotional connections and enriching the multifaceted ways individuals remember and engagewith a space.

3.4 Taste in Architecture

Figure 6 Second Dome | DOSIS

Taste, often an underexplored dimension, finds expression in the careful selection of materials, the culinary layouts of spaces, and the deliberate crafting ofatmospheres that engage the palate as much as they do the other senses.

The choice of materials plays a significant role in shapingthe taste of architectural spaces. From the rich texture of wooden surfaces to the cool touch of stone, the tactile sensations associated with materials contribute to the overall gastronomy of an environment

4 USER EXPERIENCE IN MULTISENSORY DESIGNS

Multisensory architecture profoundly influences the user experience by creating environments that are immersive, memorable, and inherently human-centered. A significant effect of multisensory architecture lies in its ability to evoke emotional responses. Spaces that are designed with respect to all the senses can evoke varied emotions and promote a connection between users and their surroundings. For example, the touch of natural materials,the smell of a certain fragrance, and a pleasant soundscape can create a mood that evokes calm, joy, and inspiration. This muted sense contributes to a better and richer user experience.

Multisensory design enhances spatial awareness and navigation. By using multiple senses, the user can better understand and navigate through space. General cues such as surface texture guide the user, while auditory cues provide spatial context. This important understanding contributes to comfort, safety, and livability

4.1 Based on Sight

The thoughtful use of color, form, and the arrangement of spaces serves as a crucial factor in eliciting emotional and cognitive responses. A well-crafted space incorporates visual cues to guide attention, create focal points, and establish a hierarchy that influences the natural flow of movement.

Colors in architecture act as powerful tools, evoking specific moods. Warm hues create a cozy atmosphere, while cool tones promote a sense of calmness. The interplay of light and shadow adds a dynamic dimension to spaces, altering our perception of their dimensions.

Tadao Ando's Church of Light in Osaka, Japan, is a prime example of how the strategic placement of windows and minimalist design can create a captivating interplay of light and dark. Notably, the cross's strategic placement on the east facade lets an abundance of natural light into the interior, turning the formerly dark area into a brightly lit building.

4.2 Based on Touch

The choice and utilization of surfaces, materials, and physical interactions play a pivotal role in defining the overall encounter with a space, cultivating a profound sense of intimacy and connection.

For example, the coolness of stone can provide a refreshing and invigorating sensation, the warmth of wood can evoke a sense of comfort and coziness, and the smoothness of glass can add a sleek and contemporary feel to the surroundings.

In Hazelwood School, Glasgow, deliberate consideration of touch is evident in the strategic use of materials with varying textures. The incorporation of textured wall panels in communal areas, made from materials like rough-hewn stone and textured fabric, that guide the students through the space. The use of cork wall coverings in designated collaborative spaces not only contributes to sound absorption but also introduces a uniquetactile quality.

4.3 Based on Hearing

Purposeful integration of sounds, whether stemming from the environment or deliberately crafted, molds the way a space is perceived. From the soft rustling of leaves in outdoor settings to carefully controlled echoes in expansive structures like cathedrals, architects curate distinctive auditory experiences. A notable illustration of this integration is found in Frank Lloyd Wright's Fallingwater in Pennsylvania, where the continuous sounds of a nearby waterfall augment the overall auditory atmosphere, seamlessly blending the boundaries between the interior and exterior environments. Positioned above a waterfall, this residence ensures that its occupants are constantly attuned to the movement and presence of the cascading water. The perpetual gurgling and rushing sounds of the falls provide a continuous auditory experience, though the waterfall itself is only visible at precise moments. By purposefully incorporating the sound of the river, the architecture and environment are harmonized, blurring the lines between indoor and outdoor areas.

4.3 Based on Smell

A prime example of olfactory design can be found in botanical gardens. Imagine a meticulously planned garden where a variety of fragrant flowers are strategically placed. As visitors meander through the paths, the subtle and evolving scents create a dynamic olfactory journey, enhancing their connection with the natural environment.

Moving indoors, the hospitality sector utilizes scent to leave a lasting impression on guests. Consider a hotel lobby where diffusers release carefully selected fragrances that complement the design aesthetic and reinforce the brand identity. The moment guests enter, they are enveloped in a distinct olfactory atmosphere that contributes to a memorable and immersive stay.

A particular fragrance can instantly trigger recollections of past experiences, connecting individuals to places they have visited or moments they have cherished. This sensory phenomenon reinforces the notion that architectural spaces, infused with distinct scents, can become timeless repositories of personal and collective recollections.

4.4 Based on Taste

The concept of taste in architecture extends beyond the physical sense of flavor to encompass the aesthetic, cultural, and experiential preferences of the occupants. Consider the architecture of a traditional cafe, warm wood textures, cozy seating arrangements, and soft lighting may be chosen to evoke a sense of comfort and tradition. The architectural design, in this instance, becomes a metaphorical representation of the expected taste experience.

The metaphorical taste in architecture also finds expression in the design of spaces associated with wellness and health, such as spas or fitness centers. A spa, for example, may incorporate elements such as calming colors, natural materials, and soothing lighting to create an environment that metaphorically reflects the taste of tranquility and relaxation.

5.Harmony In Diversity: Inclusivity In Multisensory Spaces

In multisensory architecture, inclusive design signifies a dedication to crafting environments that meet the varied needs and experiences of every individual, irrespective of their abilities or sensory preferences. This approach transcends conventional design approaches, recognizing that users engage with spaces through various senses beyond the visual.

5.1 Multisensory Integration: Promoting Inclusive Designs

A key facet of inclusive design in multisensory architecture is the intentional consideration of diverse sensory needs. By addressing touch, smell, hearing, taste, and sight, architects strive to create spaces that accommodate a wide spectrum of sensory experiences

5.1.1Vision

Visionary aspects involve the incorporation of textured surfaces and braille signage, providing non-visual cues for individuals with visual impairments and enabling confident navigation

5.1.2 Touch

Tactile considerations, as demonstrated in spaces like Hazelwood School in Glasgow, emphasize the intentional use of varied materials to stimulate the sense of touch. Varied textures not only guide navigation but also create a deeper connection between occupants and their surroundings, fostering a more inclusive and physically engaging environment

5.1.3 Hearing

Architectural designs prioritize auditory experiences, such as concert halls with optimal sound diffusion. This benefits all users, including those with hearing impairments who perceive music through vibrations. The intentional incorporation of acoustic elements contributes to an inclusive ambiance that transcends auditory limitations

5.1.4 Smell

Spaces like the National Orchid Garden in Singapore strategically use scents, accommodating diverse olfactory preferences. This multisensory approach contributes to a more inclusive environment by creating a distinct olfactory identity for the space. For instance, scents associated with nature or specific cultural

practices can evoke positive memories and enhance the sense of place, making the space more welcoming and relatable for a diverse range of individuals.

5.1.5 TASTE

Inclusive architectural designs for taste involve meticulous attention to the ambiance, spatial layout, and material selection. By integrating taste considerations into architectural design, spaces become more than functional entities; they become immersive environments that cater to the diverse preferences and experiences of individuals. This inclusive approach transforms the architectural experience, making it dynamic, engaging, and accessible to a broad spectrum of tastes and cultural backgrounds

6. SENSORY ANALYSIS: MULTISENSORY ARCHITECTURE, USER EXPERIENCE, AND INCLUSIVEDESIGNS

Sense	Multisensory Architecture	User Experience	Inclusive Design
Sight	Colors, forms, and spatial arrangement evoke emotions and guide attention.	Evokes emotions through color and form.	Accessible lighting and visualcues for diverse needs.
	Material textures guide navigation andcreate physical connection.	Enhances spatial awareness and navigation.	Clear signage and contrasting elements for wayfinding.
Touch	Fragrances trigger memories, shape moods, and enrich the spatial experience.	Provides a physical connection to the space.	Diverse textures for navigation, stimulation, and preference.
	The choice and utilization of surfaces, materials, and physical interactions play a pivotal role in defining the overall encounter with a space.	Enhances comfort and well-being.	Interactive elements for engaging diverse audiences.
Hearing	Purposeful integration of sounds, whether stemming from the environment or deliberately crafted, moulds the way a space is perceived.	Creates calming and therapeutic soundscapes.	Optimal acoustics and sound diffusion for varied needs.
	The soundscape within architectural settings intricately contributes to the auditory ambiance within architecturalsettings.	Improves focus and concentration with specific frequencies.	Noise control and designated quiet areas for individuals withsensitivities.
Smell	Architects deliberately integrate scents, be they natural or artfully crafted, to enrich the ambiance and emotional resonance of a place.	Triggers powerful memories and evokes emotions.	Diverse scents to cater to cultural and personal preferences.
	The deliberate inclusion of scents in design becomes a method of creating emotional memories, enabling individuals to recall spaces in ways beyond visual remembrance.	Improves mood, Enhances memory and creates a sense of place.	Controlled scent intensity anddiffusion.
Taste	From the rich texture of wooden surfaces to the cool touch of stone, the tactile sensations associated with materials contribute to the overall gastronomy of an environment.	Encourages healthy and mindful eating habits.	Culturally sensitive design elements and choices.
	Curating materials to evoke specific tastes, creating spaces that are a feast for the senses.	Reflects cultural identities and traditions.	Community engagement in thedesign process.

Table 1: *Sensory Design: Shaping User Experience & Inclusivity*

CONCLUSION

While the design journey has largely been guided by visual appeal, there is great potential inbringing other senses into the architectural conversation.

By paying attention to how spaces feel and sound, architects can create environments that offer a full sensory experience. This means everyone, regardless of their abilities, can movethrough and enjoy spaces freely, without any obstacles. This inclusive approach transforms the architectural experience, making it dynamic and engaging, where the touch of surfaces and the sounds around blend seamlessly with what we see.

Considerations such as tactile cues, audible signals, and well-designed layoutscontribute to an environment that is welcoming and accommodating for all.

Propose an emphasis on inclusive design principles, including multisensoryconsiderations, in architectural education.

Incorporation of tactile, auditory, and olfactory elements in architectural designs, reinforcing a commitmen to inclusive spaces.

To engage users in the design process, understanding their sensory requirements, and creating spaces that resonate with a broad spectrum of individuals

REFERENCES:

- Understanding Multisensory Architecture https://coa.gov.in/show_img.php?fid=148
- Multisensory Architecture https://whereisthenorth.com/multisensory-architecture/
- Architecture and Senses: How They Intertwine More Than You Thought https://thearchspace.com/architecture-and-senses-how-they-intertwine-more-than-you- thought/
- Architectural Spaces Designed to Stimulate Your Senses https://architizer.com/blog/inspiration/collections/the-architecture-of-perception/
- Architecture for a Full Spectrum of Senses https://www.archdaily.com/969493/sensory-design-architecture-for-a-full-spectrum-of- senses
- Multi-Sensory Architecture- Less Vision, More Senses https://www.re-thinkingthefuture.com/rtf-fresh-perspectives/a1048-multi-sensory- architecture-less-vision-more-senses/
- Why sensory design? https://www.cooperhewitt.org/2018/04/03/why-sensory-design/
- S Boucherit et al 2022 IOP Conf. Ser.: Earth Environ. Sci. 1113 012017 https://iopscience.iop.org/article