

## Article

# An Empirical Study to Understand Symbolic and Sensory Metaphors in Architecture: Case of Kyrenia/Cyprus

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**Abstract:** This article is a systematic investigation into the symbolic and sensory metaphors in architectural buildings. It presents definition and differentiation of symbolic (stereotype images) and sensory (architectural experience) metaphors. According to the semiotics model of architecture, they are tested empirically and the results are presented in order to understand their influence in architecture. In this regard, this paper designed a research method and adapted a novel semiotic model to investigate the relationship between sensory metaphors (architectural experience) and symbolic metaphors. The cases included six distinctive buildings and 30 subjects. Results demystified that buildings high in connotative qualities do not always connote positive architectural experience. A building with a high number of symbolic metaphors could create a high number of sensory metaphors but these sensory metaphors may not be necessarily positive feelings and experiences.

**Keywords:** architecture; metaphors; symbolic metaphors; sensory metaphors; architectural experience

## 1. Introduction

The creation of metaphors in architecture is a rising research subject which presents significant research results. After Jencks' [1] speculations, buildings with "high aesthetic and structural qualities", often referred to as "iconic", which stand out due to their distinctive and extraordinary design that distinguishes them from neighbouring buildings, are found to generate a greater number of metaphors [2]. Therefore, aesthetic and structure qualities of a building have a direct influence on the building's metaphors. In this kind of cases, society responds to the building by creating metaphors.

In previous studies, Uluğ found out that iconic buildings produce more symbolic metaphors. To test this, he investigated the Semiotic Model of Architecture [2]. However, it is important to emphasise that Uluğ's research is only focussed on the metaphors as stereotype images (symbolic metaphors) and it does not investigate the metaphors that reflect the architectural experience (sensory metaphors). The Semiotics Model of Architecture mainly divided buildings' meaning into primary functions (denotations) and secondary functions (connotations). The primary function was related to the tangible aspects such as the actual use and its aesthetic and structural qualities. In contrast, the secondary function was related to the intangible aspects such as design concepts, ideologies, and metaphors that arise from societal interpretation. His model discussed two types of connotations in architecture. These were "design concepts of the building" and "metaphors of the building". The research method was an experimental study that tested whether subjects could produce symbolic metaphors for the iconic buildings by presenting them only with the images of the buildings [2].

On the other hand, Lee [3] examined the sustainable embodied experiences in the built environment by reinterpreting five historical architectural cases through embodied cognition. The paper focused on body metaphors (embodied experiences) that could be associated with symbolic and sensory metaphors (image metaphors) since it requires body experiences. The paper suggested using conceptual metaphors to understand architectural



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history through experiential metaphors of the body across different historical periods. It was only focused on the design concepts of the building (conceptualisations). Additionally, Lee [4] studied the emotional relationship between spatial environments and the human body, focusing on the interior experiences of architecture. The paper discussed the works of phenomenological architects Peter Zumthor and Kengo Kuma, analysing how their designs improve the quality of interior experiences and emotional engagement. However, this research was limited to a review of existing knowledge and did not include experimental studies.

From the theoretical and philosophical point of view, Pallasmaa [5,6], McCarter [7,8], Holl et al. [9], Agamben [10,11], Tschumi [12], Eisenman [13,14], Deleuze [15,16], Frampton [17], Pérez-Gómez [18,19], and Bachelard [20,21] found a deep interconnection between sensory and symbolic dimensions.

This research paper realised that there are less experimental studies that focus on the sensory side of the metaphors at the same time as symbolic metaphors which come out of connotations of people. Therefore, this paper is a further development on the semiotic model of architecture and it attempts to divide only the metaphors of the building in two as symbolic and sensory metaphors by applying the aesthetic theory of Lang. He classified the aesthetic theory as formal, symbolic, and sensory aesthetics. Formal aesthetics focus only on the visual and structural elements and design principles of the building such as symmetry, proportion, order, harmony, balance, etc. Symbolic aesthetics studies the meaning and the associations which building forms convey and sensory aesthetics studies how people physically and emotionally engage with the building and the built environment [22]. In this research, Uluğ's denotations (actual use and aesthetic and structural qualities) and Lang's formal aesthetics were excluded, with the focus placed entirely on discussion of metaphors, which is about the intangible aspects of the building. Understanding the relationship between symbolic and sensory metaphors can offer valuable new insights into the semiotics of architecture.

This research paper hypothesises that distinctively designed buildings significantly impact on the feelings and experiences of local residents (society) in the cities where they are situated. These buildings which stand out due to their identifiable (remarkable) architectural features within the existing urban context are believed to arouse a range of sensations and emotions (sensory metaphors) among the society who live around them. This research aims to examine how such buildings influence the experiences of those in their immediate vicinity with an empirical study. Therefore, a semiotic model is adapted in order to investigate the aesthetic responses of the residents. Applying two relevant components of the aesthetic theory of Lang into the image metaphors as symbolic and sensory metaphors and structuring "Semiotic model with symbolic and sensory metaphors" is the novelty and the research contribution of this paper. In this regard, the paper aims to answer the following questions:

1. What influence do buildings rich in symbolic metaphors have on the creation of sensory metaphors? In other words, do the buildings rich in symbolic metaphors also produce sensory metaphors?
2. What is the contribution of symbolic metaphors (stereotype images) in architectural experience (sensory metaphors)?
3. How do these buildings, designed to be distinctive, affect the feelings and experiences of the local residents in the cities where they are situated?
4. What sensations and emotions (sensory metaphors) do these buildings evoke for the people who live around them?

This paper is structured as follows: the next section focuses on the literature review of metaphors, with the definitions of symbolic and sensory metaphors, as well as the critical perspectives and philosophical concerns in terms of semiotic position of architecture. The subsequent section addresses the research methods and materials with detailed definitions of the cases, the semiotic model of architecture with symbolic and sensory metaphors, case

study analysis and findings, and discussion and the comparison of findings. Finally, the conclusion and future recommendations are presented.

## 2. The Literature Review

### 2.1. Metaphors

Metaphors spread in the studies of speech, text, and signed language [23,24]. It was also seen in different fields such as music, dance, and visual media, architecture, and the built environment [25–27]. In architecture, metaphors were used by architects in the design processes [28–33], as well as being used as a language to discuss the building before, during, and after its construction [34–41].

They structured the human conceptual system and were used as a tool both by architects and users to operate between creators and readers. Metaphors were a mental guide and an eye-opener to understand and use the built environment [42]. Metaphors were related to the subjectivity of the individuals [43]. They had the ability to affect communication and affect the way people think, what they perceive, and how they represent “experiences” in their mind [24,43–45]. In other words, metaphors were based on perceiving a thing similar to another [24]. Metaphors could be associated with the “referent” of Jencks [46] and the “interpretant” of Peirce (1914) [47]. Metaphor was a device of the poetic imagination for most people and the rhetorical flourish—a matter of extraordinary rather than ordinary language [24].

At the same time, metaphors were defined as “image metaphors”. Lakoff [44,48] defined image metaphors as metaphors that function to map one conventional mental image onto another. These contrast with metaphors which map one conceptual domain onto another, often with many concepts in the source domain mapped onto many concepts in the target domain.

This paper found a relation between the “image metaphors” and “aesthetic theory” of Jon Lang. Lang’s aesthetic theory could be classified into three main dimensions as follows: formal, symbolic, and sensory aesthetics, as mentioned before. Formal aesthetics emphasise the visual and structural components of a building. In contrast, symbolic aesthetics deal with the meanings and associations that architectural forms convey, while sensory aesthetics investigate how interpreters physically and emotionally interact with the buildings and their surroundings [22]. In our research, we focus on the sensory and symbolic dimensions in order to develop the Semiotic Model of Architecture, which provided a sufficient foundation to reveal symbolic and sensory metaphors.

Aesthetic and structural qualities of a building may lead not only to the creation of symbolic metaphors but also sensory metaphors. For this reason, symbolic aesthetics and sensory aesthetics could be the components of the image metaphors of the building. Resembling an object (the sign) to another symbolic object (physical to physical) could be considered as the field of symbolic aesthetics. The building (the sign) generalised over specific geometric shapes [48,49]. On the other hand, resembling an object to an emotion or a sense or a feeling (physical to nonphysical) could be considered as the field of sensory aesthetics. Aesthetic emotions (sensory metaphor) are the emotions that could appear when a person perceives, evaluates, and interprets a stimulus for its aesthetic appeal [50]. The investigation adopted the components of “aesthetic theory” with “image metaphors” as symbolic and sensory metaphors. These components were clarified with examples in the subsequent section of the research.

#### 2.1.1. Symbolic Metaphors

Symbolic metaphors could be associated with the physical variables of a building. A building which was symbolised could take any other physical form, such as a sign, image, object, etc. [51]. For instance, the analogy of the Swiss Re Head Quarters building to a gherkin, egg, rocket, and bullet could be an example of a symbolic metaphor. On the other hand, the analogy of the Ascent building to a zebra, iceberg, spiral staircase, and wave could be an example of a symbolic metaphor [2]. The linking of a building (physical)

to another physical object or image could be defined as a symbolic metaphor. Physical variables of a building, such as materials, spatial configuration of buildings, nature of pigmentation, and lighting [22] could result in the generation of physical metaphors.

Symbolic aesthetics were not defined by physical attributes and the individual's internal representations [22,52,53]. Shiner [54] claimed that symbolic functions (symbolic aesthetic) plainly concern architectural meanings, whether viewed in terms of "exemplification", "allusion", or "in some other way". Symbolic aesthetic was based on the emotional quality and hedonic value of a design. It was intangible, content of the features evaluates semantic and iconic or symbolic connotations in the built environment, and it was associated with the meaning of the environment that gives people pleasure [22] or it could be identified as human responses to the content of forms [55]. The recognition of these meanings, consciously or subconsciously, were related to people's attitude and feelings about the environment and about themselves [56].

For instance, the style, the structural form, patterns, ornaments, spatial organisation, materials, colours, etc., could carry a symbolic meaning in architecture. Specific forms and shapes had associational meaning themselves. For instance, classical motifs represented democratic ideals, simple and clear shapes without ornamentation represented machine aesthetics and modernism, and the emerging complexity of shapes represented post-industrial society. On the other hand, materials were not chosen only for their technical properties but also for the connotations they provide. A material included not just its visual appearance but also auditory, tactile, and, in certain cases, olfactory properties [22].

### 2.1.2. Sensory Metaphors

Sensory metaphors are the main highlight of this research paper, which give the opportunity to express abstract concepts by linking to direct bodily experiences (senses) with the physical world [8,41]. Sensory metaphors are about how buildings make people feel. In this case, a building could take the form of emotions instead of objects.

Sensory aesthetic was related to the sensations received from the environment. It involved the arousal of one's perceptual systems, multidimensionality, and resulted from the colours, odours, sounds, and textures of the environment [22,57].

Sensory aesthetic initiated what could be called a "subjectivization" of beauty [58]. Sensory aesthetics had a direct impact on the senses (sense organs) [59]. The senses in interpreting and sensing the environment aesthetically were classified as the sense of smell (olfactory), the sense of hearing (auditory), the sense of touch (tactile), the sense of taste (gustatory), and the sense of seeing (vision) [57,60]. The sense of seeing was the ability of the eyes to see the objects. It was the ability to perceive colour, depth, and brightness. On the other hand, the sense of smell and taste were the two other senses of the sensory nervous system. There were fewer studies because it was difficult to evaluate both olfactory and gustatory systems. These evaluations were decided by each individual's subjective impressions, and these senses cannot be measured objectively [61]. The sense of hearing was the ability to perceive sounds through an organ, such as an ear, by detecting vibrations as periodic changes in the pressure of a surrounding medium [62]. The sense of touch was a fundamental form of nonvisual perception, one that played a crucial role in nearly all of our sensory experiences [63]. It was unlike many of the other senses, more plausibly taken to be inherently multisensory, given the diversity of its constituent systems and forms of experience. In addition, it seemed to have unique and philosophically interesting connections to exploratory action and bodily awareness. The touch sense was thought to be one of the first senses to develop; touch occurs across the whole body using a variety of receptors in the skin [64]. The sense of taste system was the sensory system that was partially responsible for the perception of taste and flavour [65]. Taste is the perception produced or stimulated when a substance in the mouth reacts chemically with taste receptor cells located on taste buds in the oral cavity, mostly on the tongue [66].

As a result of all these statements, a comprehensive appreciation of aesthetics was achieved through the integration sensory inputs [67]. The visual form of a sign (formal

aesthetics) should experiment with the sensory aesthetic components [68]. Moreover, Rush argued that the aesthetic experience of architecture involves a multisensory and immersive experience, including the volumes, textures, and sounds that impact the overall feeling of a building as one moves through it [55].

## 2.2. Critical Perspectives and Philosophical Approaches to the Semiotic Role of Architecture

This part of the literature review examines the critical perspectives and philosophical concerns in terms of the semiotic position of architecture. In addition, Table 1 presents all the theories with the theorist as a summary.

**Table 1.** The table includes the theories, sensory metaphors, symbolic metaphors, and the relationship between sensory and symbolic metaphors (Source: Author).

Theorist	Sensory Metaphors	Symbolic Metaphors	Relationship between Sensory and Symbolic Metaphors
Juhani Pallasmaa	Multisensory, touch, sound, vision, emotion, body	Cultural, existential, atmosphere, presence	Sensory as foundation for symbolic; atmosphere and presence evoke symbolism
Steven Holl	Phenomenology, light, materiality, perception	Multisensory, enhanced understanding	Sensory enhances symbolic understanding
Giorgio Agamben	Potentiality, open-endedness, interpretation, engagement	Fluidity, ambiguity, ritual	Sensory allows multiple interpretations; fluidity of meanings
Bernard Tschumi	Movement, events, disjunction, fragmentation	Dynamic relationship, narrative, form–function	Sensory movement creates dynamic narrative and symbolic meanings
Peter Eisenman	Deconstruction, fragmentation, provoke, challenge	Abstract forms, conceptual frameworks, intellectual	Sensory provokes intellectual engagement revealing symbolic meanings
Kenneth Frampton	Local context, materiality, tectonic expression	Local symbols, cultural continuity, identity	Sensory rooted in local context enhances symbolic cultural identity
Gilles Deleuze	Affect, sensation, perception, transformation	Becoming, transformation, fluidity, multiplicity	Sensory transforms perceptions, producing fluid symbolic meanings
Jacques Derrida	Deconstruction, différance, play of meaning	Textuality, ambiguity, instability	Sensory experiences challenge fixed meanings, revealing symbolic instability
Alberto Pérez-Gómez	Phenomenology, perception, embodiment	Historical, cultural, poetic	Sensory perception intertwines with cultural and historical symbols
Gaston Bachelard	Poetic imagination, reverie, intimate spaces	Archetypes, memory, dreams	Sensory experiences evoke archetypal and symbolic imagery
Robert McCarter	Phenomenological Experience, Sensory Engagement, Tectonic Expression	Symbolic Identity, Cultural Continuity, Narrative Architecture	Integration of sensory richness with cultural and symbolic narratives

Pallasmaa's theories highlighted that the symbolic and sensory dimensions of architecture could not be separated but were deeply intertwined. A building's sensory qualities could increase its symbolic meaning and vice versa. As he explained through theory and practice, an architectural experience was a multisensory one with touch, sound, visibility, emotion, and bodily presence constituting associated experiences in the case of the built

space. Sensory experiences were the ground level for symbolic meanings, but neutrality such as atmosphere and presence conditions were also deeper forms of cultural and existential symbolism [5,6].

In addition, Holl's architectural philosophy proved that sensory and symbolic dimensions were interrelated and mutually reinforcing. For instance, the engagement of the senses could lead to a deeper understanding of the symbolic meanings of architecture. The sensory experience of a space could evoke memories, associations, and emotions that increase its symbolic significance. One of them involved bringing his interest in phenomenology to his architectural practice, emphasising the role that light and materiality play for perception. Sensory experiences, according to Holl, increased symbolic understanding and enabled a different mode of architectural engagement based on observation, as his multisensorial experience in architecture shows [9]. Agamben's theories also suggested a deep interconnection between sensory and symbolic dimensions.

Agamben believed that rich sensory experiences could influence the symbolic meanings attached to spaces. Such spaces designed with potentiality in mind could offer sensory richness, which allows for multiple interpretations. Although Agamben did not concern himself primarily with architecture, it could be collected from his theory the exciting possibilities of what space could do. From these limitations in the way architecture manifested sensory encounters, Agamben recommended that what is yielded by embodied and empirical engagement with works of architecture should be "undetermined" or open to interpretation—this entailed fluid (since they are not figured out) symbolic resonances, which existentially emerge through participation as well as cultural rites practiced through time [10,11].

Tschumi emphasised the dependence between sensory and symbolic dimensions as well. He argued that the dynamic experience of moving through and interaction with a space could generate symbolic meanings and sensory experiences could contribute to this evolving interpretation (narrative). Unlike traditional architectural regulations, Tschumi introduced a novel approach that highlights the importance of events and experiences in activating architectonic spaces. They postulate that he prepared a dynamic interaction of movement, form, and function with sensory impressions arising from motion and disjunction to become new meanings in an emergent symbolic narrative [12].

Eisenman was known for his deconstructivist approach. He also incorporated semiotic and philosophical ideas into his design. He believed that fragmented forms and abstract geometries challenge conventional perceptions. In this sense, he stated that sensory experiences should stimulate intellectual relationships and decipher the symbolic senses imputed to architecture in its form-making conception. According to his perspective, the relationship between sensory and symbolic meanings in architecture is one of complexity and interdependence [13,14].

On the other hand, Frampton highlighted the significance of local context, materiality, and tectonic expression in architecture in the Critical Regionalism concept. Sensory experiences with strong ties to local contexts were seen by Frampton amplifying the symbolic meanings attached to cultural continuity and identity [17].

Additionally, Deleuze's theories proposed the similar understanding as Pallasmaa and Holl et. al. He discussed that sensory and symbolic dimensions in architecture were deeply interconnected. For example, if a building engages multiple senses and provokes strong affects, interpretants (humans) could generate rich sensory experiences which contribute to the symbolic complexity of the building. Deleuze also discussed that sensory experiences (dynamic and affective) and the symbolic meaning of a building could change over time and proposed to architects to design adaptable and flexible spaces which accommodate this ongoing transformation [15,16].

In addition to such a premise and returning once more to the symbolism of architectural endeavour, Derridean deconstructionist philosophies (essentially meaning *différance* in terms of the lack of or gaps between elements) spoke through architecture theory, stressing that symbolic meanings were inherently unstable and ambiguous. According to

Derrida, sensory experiences in architecture resisted fixed interpretations and allowed for a continual reformulation of symbols [69,70].

Pérez-Gómez integrated historical context and phenomenology into his architectural theories and focused on embodied perception and cultural poetics. He discussed that sensory experiences were intertwined with cultural and historical symbols [18,19].

Bachelard emphasised how sensory experiences evoke archetypal and symbolic imagery with the investigation of the poetic imagination and intimate spaces in architecture. His works presented that there is a deep connection between sensory perception and symbolic meanings [20,21].

On the other hand, McCarter focused on the integration of sensory and symbolic dimensions in design. He emphasised contextual and experiential characteristics of architecture. He argued that a building should engage not only the eye but also engage the body to create spaces which were felt as much as they were seen. He believed that architecture should respond to its cultural and historical context [7,8].

Consequently, the collections of the reviewed theories show that there is a deep interconnection between sensory and symbolic metaphors in architecture. Sensory experiences not only improve the aesthetic and functional qualities of the built environment but also bring the production of symbolic metaphors. These metaphors are often changeable (flexible), evolving (changing), interpretable (subject to personal and cultural interpretations), and reflect the complex and dynamic nature of architectural experience.

### 3. Research Methods and Materials

This research structured a research methodology for the empirical study. This research paper selected six distinctive buildings which were constructed in the last 10 years and they are the most outstanding and distinctive structures with their aesthetical, structural, and spatial configuration and material qualities in the city of Kyrenia, Cyprus. They were constructed following recent changes in construction regulations (commissions) in the field of building heights and have become identifiable due to their distinctive appearance. Unlike other structures in the city, they often do not align with the architectural context of their surroundings. Since these buildings have distinctive aesthetic qualities compared to other buildings within their architectural (urban) context, they were selected to investigate their impact on subjects. So, it is important to highlight that the local cases were especially selected in order to investigate the subjects' architectural experience in reality because the researchers needed to conduct direct observations. This choice was made to ensure accurate and relevant data collection for the research paper. For that purpose, the designed research methodology comprised a site visit of each building, which means that the subjects were taken to the exact location of the buildings individually and given the opportunity to interpret. Therefore, they were not manipulated by others' views and experiences.

In this regard, the applied research method with 30 subjects collected a significant amount of data to investigate the defined research questions. In this research, 30 subjects (15 male and 15 female) were randomly selected, representing diverse professional backgrounds (nonarchitects). The subjects were categorised into four sectors: 1. Construction Sector, 2. Business Sector, 3. Civil Servants, and 4. Education Sector. The distribution of subjects across these sectors provided a comprehensive view of perspectives related to the research's focus. Additionally, the subjects' age demographics were considered, revealing a broad range of representation. Specifically, the age groups were as follows: 20–29 (7 subjects: 23.3%), 30–39 (14 subjects: 46.7%), and 40–69 (9 subjects: 30%).

The number of buildings and subjects were limited because the application of the research method is very time-consuming. Approximately, application of the method on one subject for the six buildings consumed 150 min. Therefore, completing the case studies with 30 people consumed a minimum of 75 h. In this way, this research methodology managed to reveal the positive and negative architectural experience of the selected subjects and clarified the research questions.

The research method was created by the researchers and it was seen that the results gave significant data. In the first stage of the research method, the subjects were taken to the site visits and they were interviewed in front of the buildings individually. Visits of the six buildings were conducted according to the route sequence. As a single interview question, they were asked to define “what does the building look like?” In this regard, the subjects created symbolic metaphors in order to link buildings with other physical objects for all of the selected six buildings.

In the second stage of the research method, the subjects were asked to define “how do they feel around the building?” In this regard, the subjects created sensory metaphors in order to link buildings with nonphysical feeling. Their comments were noted and recorded individually. The interview audio recordings were transcribed and then thematic coding was applied to analyse the data by the researchers. To enhance the clarity of the thematic coding, the data were converted into statistical formats with spreadsheets (see details in Figures A1 and A2 in Appendices A and B), resulting in the creation of tables and pie charts. Both researchers independently conducted and verified the data analyses to ensure the reliability of the results. The obtained data gave the opportunity to compare the defined symbolic and sensory metaphors. The sensory metaphors were classified by using a measure (scales of the affective quality attributed to places), which was created by Russell and Pratt [71]. The details of this classification are explained in the case study analysis and findings section. Graphical analyses of the case studies were created in the understanding of this classification, which gave the opportunity to understand the relationship between symbolic and sensory metaphors.

The following sections provide photographs and detailed descriptions about the selected six distinctive buildings (see Table 2), including their names, actual function, height, aesthetic structure qualities (façade design), as well as vertical circulation to help the readers in gaining a deeper understanding of the buildings. A map is provided to show the location of Kyrenia and the case study (CS) building locations within the city (see Figure 1). Additionally, aerial photographs are also added to reveal buildings within the existing urban context. It is important to highlight that these descriptions were not presented to the subjects.

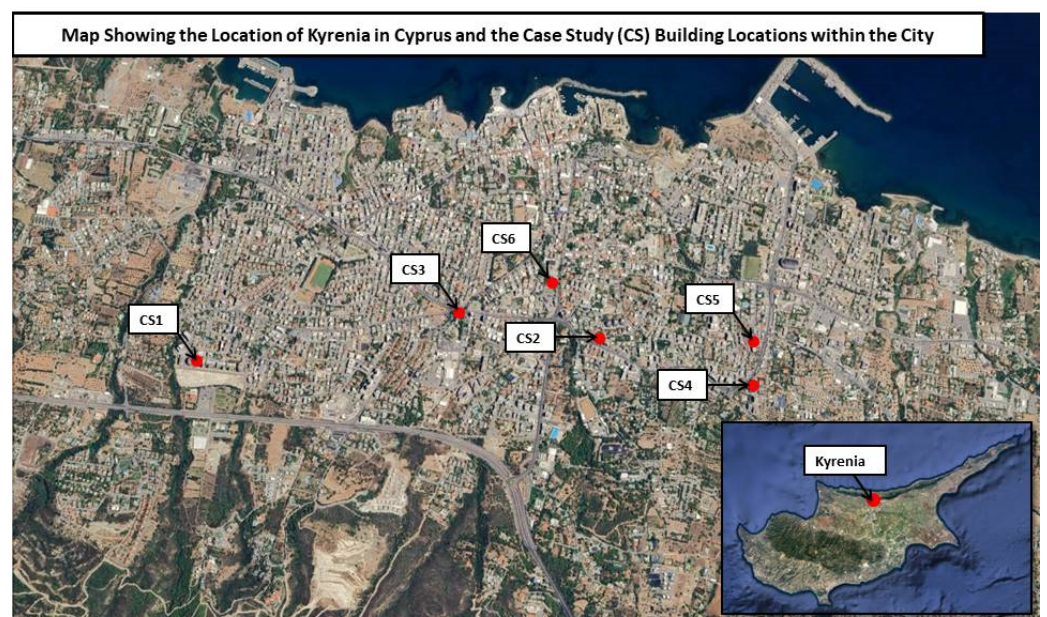
**Table 2.** This table includes the Akacan Elegance Residence, Nurel 21 Bee Tower, Magic Tower, Magic Plus, Perla, and Avrasya Gold with detailed architectural information about its characteristics (Source: Author).

Building Name	Actual Function	Height	Aesthetic and Structure Qualities	Vertical Circulation
Akacan Elegance Residence	Residential	10 storey	Balconies with concave and convex shapes or wave-like design Wooden aluminium composite panels on vertical elements and balcony railings	Elevator and stairs enclosed in dark glass framing, visible from the outside
Nurel 21 Bee Tower	Residential and Commercial	9 storey	Special-production material with hexagon texture, metal frame appearance Horizontal aluminium shading devices on east and west façades, wooden aluminium coatings under balconies	Inside
Magic Tower	Residential and Commercial	9 storey	Glass surfaces with iron sun shading elements which applied to the south, east, and west façades	Inside
Magic Plus	Residential and Commercial	10 storey	Terraced north façade towards sea-view direction Gigantic pergola creating a communal semi-open space on top terraces	Inside



Table 2. Cont.

Building Name	Actual Function	Height	Aesthetic and Structure Qualities	Vertical Circulation
Perla	Residential and Commercial	10 storey	Glass exterior surfaces and glass balcony railings Two blocks: main block with interlocking ellipses, north block terraced towards sea, open area between blocks for common use	Middle ellipse for vertical circulation system
Avrasya Gold	Residential and Commercial	9 storey	White aluminium composite panel coatings on balcony parapets, grey painted surfaces Glass balustrades on some parts	Inside



**Figure 1.** A map showing the location of Kyrenia in Cyprus and the case study (CS) building locations within the city. (Source: Author).

### 3.1. Case Study 1: Akacan Elegance Residence Building

Akacan Elegance Residence can be categorised as a residential building, which is 10 storeys high. The building form is composed of two cylinders on the edges and four rectangular prisms/blocks aligned in the middle. Vertical circulations (elevator and stairs) are used to connect rectangular prisms to each other and dark glass framing is used for the vertical circulation systems. There are 362 flats with different plan solutions and the total area of the project is 18,693 square meters. The façade has gained movement with the concave and convex type of balcony design (waves). Additionally, the building has been aesthetically enriched with wooden aluminium composite panel covers. Wooden coatings are applied both to the vertical elements and to some parts of the balcony railings at the cylindrical forms and to the north façade balcony railings of cuboids (Figure 2).



**Figure 2.** Akacan Elegance Residence (Source: Author).

### 3.2. Case Study 2: Nurel 21 Bee Tower Building

The building can be categorised as a residential and commercial building which is 9 storeys high. The ground floor consists of two shops. It is designed as 3-bedroom apartments on each floor above the shops. The architectural geometry of the building is a rectangular prism (cuboid). Edge corners of the building and the last floor parapet walls are covered with a special production material that is very similar to the aluminium composite panels in order to give the look of honeycomb (hexagon texture). It looks like a metal frame dressed on a reinforced concrete structure. Horizontal aluminium shading devices are designed to the east and west façade of the buildings. Wooden aluminium coatings are applied under balconies (Figure 3).



**Figure 3.** Nurel 21 Bee Tower (Source: Author).

### 3.3. Case Study 3: Magic Tower Building

Magic Tower is a 9-storey building which is a residential and commercial building. The ground floor consists of three shops. There are two two-bedroom apartments and eight 3-bedroom apartments in the building. Building geometry can simply be defined as a rectangular prism. The façade of the building facing south, east, and west directions is designed as glass surface as well as being covered up with iron sun-shading elements. It is created both for privacy and protection from direct sunlight (Figure 4).



**Figure 4.** Magic Tower (Source: Author).

### 3.4. Case Study 4: Magic Plus Building

Magic Plus is a 10-storey residential and commercial building. The ground floor consists of shops and there are 2-, 3-, and 4-bedroom apartments starting from the first to the last floor. The building is designed in a triangular shape that follows the contextual axis. The north façade of the building is terraced towards the sea view and a gigantic pergola is designed on top to create a communal semi-open space for the users. The building has a clustered geometry that emerges as the combination of a rectangle and a triangle (Figure 5).



**Figure 5.** Magic Plus (Source: Author).

### 3.5. Case Study 5: Perla Building

Perla is a 10-storey residential and commercial building. The project consists of 77 residential flats. The building has a curved geometry and it has curvilinear balconies around the flats. The building consists of two separate blocks and the space between the two blocks has been left as an open area for common use. The main building block is developed from interlocking three elliptical forms. The middle ellipse is used for a vertical circulation system. One of the elliptical blocks is placed to the south and the other to the north direction. The north façade block is terraced towards to the sea view. The second building block has an elliptical form and is designed as detached from the main building blocks. All exterior surfaces of the building are made of glass. Additionally, glass material is chosen as the balcony railings (Figure 6).



**Figure 6.** Perla Building (Source: Author).

### 3.6. Case Study 6: The Avrasya Gold Building

The Avrasya Gold is a 9-storey residential and commercial building. There are 27 2-bedroom apartments located starting from the first floor to the last floor. Four shops are designed on the ground floor and underground car parking is located at the basement floor. The building is formed from the triangular shape of the site and it has a reinforced concrete structure system. The building has an irregular building geometry. White aluminium composite panel coatings are used on the balcony parapets, which creates a flowing appearance. Additionally, glass balustrades are preferred in some parts of the building and other surfaces of the building are painted in grey colour (Figure 7).



Figure 7. The Avrasya Gold (Source: Author).

#### 4. The Semiotics Model of Architecture with “Symbolic and Sensory Metaphors”

This section of the research paper explains how the symbolic and sensory metaphors integrated into the semiotic model of architecture (Figure 8). The building (the sign) could mainly be studied under two main headings: concrete and abstract properties in the study of semiotics. The concrete properties of the building could be associated with the “signifier” of Saussure [72], the “primary function” of Eco [73,74], “denotation” of Saussure and Eco, and the “representamen” of Peirce [47]. Concrete properties were about the function and physical form of the building. Concrete properties could be divided into two sub-headings. These were the actual function and formal aesthetics (aesthetic and structure qualities) of the building.

On the other hand, the abstract properties of a building could be associated with the “signified” of Saussure [72], the “secondary function” of Eco [73,74], “connotation” of Saussure and Eco, and the “interpretant” (sense made of the sign) and “object” (conceptual ideas) of Peirce [47]. Abstract properties dealt with the things that did not exist in the real world and could not be touched. They were not concrete and physical structures. Abstract properties of the building could be divided into two sub-headings. These were the conceptual metaphors (design concepts and design process) and image metaphors (meanings, thoughts, and understanding) of the building [24,49,75,76]. Conceptual metaphors were

about the metaphors that map complex conceptual structures in a source domain onto conceptual structures in a target domain [49].

Moreover, conceptual metaphors were classified into three typologies as structural, orientation (directional), and ontological metaphors [8,54]. Conceptual metaphors were the ideas produced by the architects during the design process [77]. Concepts showed the way a problem is represented depends on the theory, expectation, and proposition to deal with the problem [77,78]. This paper is aware of conceptual metaphors and they could become part of the model, but they were not investigated for this research paper.

On the other hand, “image metaphors” differed from conceptual metaphors [49]. They were generated after the construction of the building was completed (post-design experience phase). They were suggested to be categorised as symbolic metaphors (physical to physical) and sensory metaphors (physical to nonphysical), which came from the aesthetic theory of Lang [22]. As mentioned before, this research paper established a connection between image metaphors and Lang’s aesthetic theory, which categorised aesthetic into three key components: formal, symbolic, and sensory. Formal aesthetics deals with the visual and structural aspects, symbolic aesthetics studies the meanings and associations conveyed by architectural forms, and sensory aesthetics explores how individuals physically and emotionally interact with the built environment. The focal point of this research paper was to develop the Semiotic Model of Architecture with Symbolic and Sensory Metaphors. The following heading reveals how the cases were analysed with “the Semiotic Model of Architecture with Symbolic and Sensory Metaphors”.

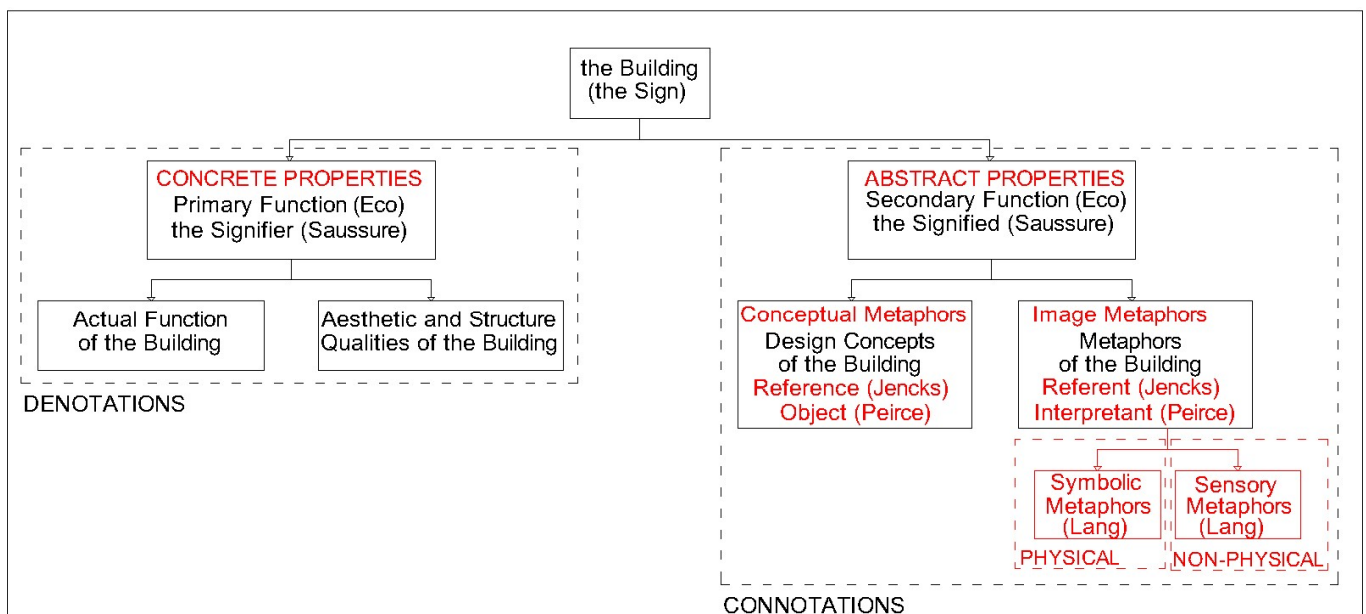


Figure 8. Metaphors were integrated with Lang’s symbolic and sensory aesthetics (Source: Author).

## 5. Case Study Analysis and Findings

As a result of the experimental research, it was observed that subjects generated various sensory metaphors. For this reason, the research used the “Scales of the affective quality attributed to places measure” of Russell and Pratt [71] to define, classify, and to make the recorded sensory metaphors more comprehensible, as defined in the research method section. Russell and Pratt used the measure for testing the built and natural environments. The measure was formulated by 40 items in total and had 8 scales. Four scales were positive senses (arousing, exciting, pleasant, and relaxing) and four scales were negative senses (sleepy, gloomy, unpleasant, and distressing). After the investigation of the method and application of case studies, the authors realised that the subjects could create neutral experiences as well apart from positive and negative. Therefore, neutral senses classification was included into the classification system. The sensory metaphors were

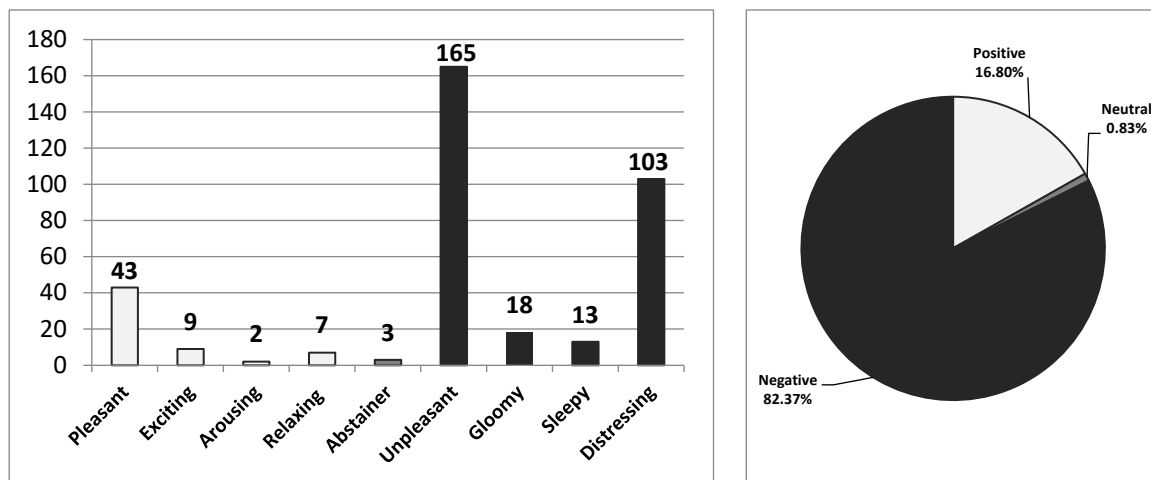


obtained from the transcription of the 30 subjects and they were classified under the three listed titles (positive, neutral, and negative sensory metaphors) according to the measure of Russell and Pratt. This gave the opportunity to measure and understand the subjects' architectural experience on the selected case studies. These findings were transformed into statistical data, which are represented by pie charts and graphical illustrations. Accordingly, the statistical results are discussed to understand the relationship between symbolic and sensory metaphors.

### 5.1. Analysis of Akacan Elegance Residence

In the case studies of Akacan Elegance Residence Building, 58 different varieties of symbolic metaphors and 89 symbolic metaphors in total were produced by the subjects. The main symbolic metaphors which were above the average value were Great Wall of China—4, sea waves/water waves—6, cruise ship—2, ship—2, hotel—8, dormitory—9, train and wagons—2, wall/dam—2, residence—2, Berlin Wall—2, and stack of buildings—2.

On the other hand, 163 different varieties of sensory metaphors were produced by subjects. Of these, 33 were positive senses, 1 of them was a neutral sense, and 129 sensory metaphors were classified as negative senses. In total, 363 sensory metaphors were produced and 61 of them were positive (pleasant—43, exciting—9, arousing—2, and relaxing—7), 3 of them were neutral (abstainer—3), and 299 sensory metaphors were negative (unpleasant—165, gloomy—18, sleepy—13, and distressing—103). This means that 16.80% were positive senses, 0.83% were neutral senses, and 82.37% were negative senses out of total number of sensory metaphors (Figure 9). The authors have listed the metaphors that were above the average value as a result of these vast numbers of sensory metaphor findings (Table 3).



**Figure 9.** Positive, neutral, and negative sensory metaphors in the Akacan Elegance Residence (Source: Author).

**Table 3.** List of the sensory metaphors above the average value for Building 1 (Source: Author).

Positive Sensory Metaphors						
Pleasant	Pleasant/Nice	5	Beautiful	9	Security	5
Exciting	Impressed	3	Creative	3		
Arousing	Dynamic/Energetic	1	Powerful	1		
Relaxing	Living space feeling	2				
Neutral Sensory Metaphors						
Abstainer	Not bad	3				

Table 3. Cont.

Negative Sensory Metaphors						
Unpleasant	Insufficiency (green space)	15	Disappointment	6	Insufficient	4
	Not aesthetics	8	Negative feelings	4	Not luxury	3
	Very bad/awful/worse	6	Unpleasant	7	Dislike	3
	Inconsistency	7	Exaggerated	3	Irrelevant	5
	Disrespectful	5	Disorganized	3	Cheapness	3
Gloomy	Pessimism/Depressing	3	Closed	7		
Sleepy	Doesn't feel warm/Cold	3	Soulless	4	Neglected	3
Distressing	No sense of refreshment	4	Complexity /Confusion	6	Narrowness	3
	Stuck ness & Denseness	8	Not peaceful	3	Crowded	7
	Not suitable for family life	4	No privacy	3	Nested	4
	I don't want to live	12	Too close	6	Intensity	3
	Uncomfortable	6	Separately	3		

### 5.2. Analysis of Nurel 21 Bee Tower

In the case studies of Nurel 21 Bee Tower Building, 39 different varieties of symbolic metaphors and 71 symbolic metaphors in total were produced by the subjects. The main symbolic metaphors which were above the average value were beehive—3, honeycomb—8, square box—5, rectangle—3, conventional/normal building—9, narrow and tall building—2, tower—3, fish scale—2, concrete pile—3, snakeskin appearance—2, and crocodile skin—3.

On the other hand, 122 different varieties of sensory metaphors were produced by subjects. There were no positive senses, 4 of them were a neutral sense, and 118 sensory metaphors were classified as negative senses. In total, 323 sensory metaphors were produced and 0 of them were positive (pleasant—0, exciting—0, arousing—0, and relaxing—0), 4 of them were neutral (abstainer—4), and 319 sensory metaphors were negative (unpleasant—218, gloomy—19, sleepy—19, and distressing—63). This means that 0% were positive senses, 1.24% were neutral senses, and 98.76% were negative senses out of the total number of sensory metaphors (Figure 10). The authors have listed the metaphors that were above the average value as a result of these vast numbers of sensory metaphor findings (Table 4).

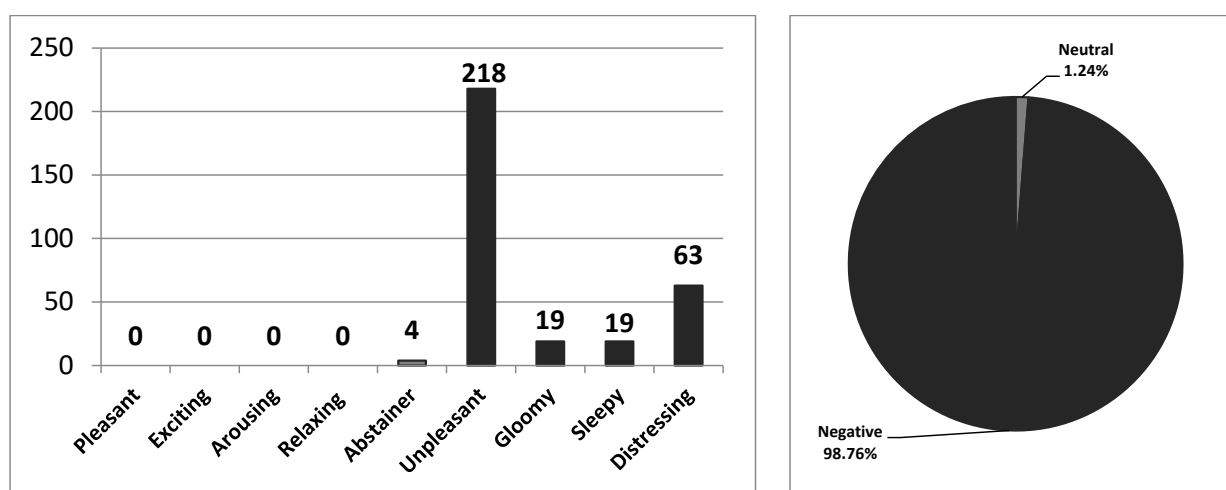


Figure 10. Positive, neutral, and negative sensory metaphors in the Nurel 21 Bee Tower (Source: Author).

**Table 4.** List of the sensory metaphors above the average value for Building 2 (Source: Author).

Positive Sensory Metaphors						
Pleasant						
Exciting						
Arousing						
Relaxing						
Neutral Sensory Metaphors						
Abstainer	Mediocre/Medium	1	Funny/Sarcasm	1		
Negative Sensory Metaphors						
Unpleasant	Completely different/Opposite	20	Horrible/Hateful	4	Deficiency	4
	Very bad/Awful/Worse	15	Inconsistency	8	Repulsive	4
	Ugly (feeling of ugliness)	5	Not aesthetics	7	No beauty	3
	Poor quality (cheapness)	4	Deceitfulness	3	Dislike	17
	Negative feelings	4	Unpleasant	12	Ordinary	3
	Disappointment	12	Irrelevant	13	Unripe	3
	Incompleteness	3	Deception	6	Failure	3
				Not fit	3	
Gloomy	Unprepossessing/Unattractive	2	Pessimism/Depressing	2	Unnoticeable	2
	Not attractive/not interesting	3	Gloomy	3	Sad	2
Sleepy	Doesn't feel warm/Cold	7	Neglected	5	Soulless	2
Distressing	I don't want to live	15	Complexity/Confusion	3	Pale	7
	Stuck ness & Denseness	3	Staleness	4	Dirty	4
	Old/Decrepit	3	Rusty	3		

### 5.3. Analysis of Magic Tower

In the case studies of Magic Tower Building, 33 different varieties of symbolic metaphors and 75 symbolic metaphors in total were produced by the subjects. The main symbolic metaphors which were above the average value were business centre—3, a building/box wrapped in a spider web—7, prison—9, cage—8, fire escape—4, metal pile/iron pile/aluminium pile—8, and construction bridge of an uncompleted building construction—8.

On the other hand, 211 different varieties of sensory metaphors were produced by subjects. Of these, 13 were positive senses, 1 of them was a neutral sense, and 197 sensory metaphors were classified as negative senses. In total, 482 sensory metaphors were produced and 15 of them were positive (pleasant—11, exciting—4, arousing—0, and relaxing—0), 1 of them was neutral (abstainer—1), and 466 sensory metaphors were negative (unpleasant—315, gloomy—33, sleepy—11, and distressing—107). This means that 3.11% were positive senses, 0.21% were neutral senses, and 96.68% were negative senses out of the total number of sensory metaphors (Figure 11). The authors have listed the metaphors that were above the average value as a result of these vast numbers of sensory metaphor findings (Table 5).

**Table 5.** List of the sensory metaphors above the average value for Building 3 (Source: Author).

Positive Sensory Metaphors		
Pleasant	Beautiful	2
Exciting	Creative	2
Arousing		
Relaxing		

Table 5. Cont.

Neutral Sensory Metaphors						
Abstainer	Mediocre	1				
Negative Sensory Metaphors						
Unpleasant	Ugly (feeling of ugliness)	4	Inconsistency	12	Deception	3
	Visual (Image) pollution	3	Awful/Terrible	3	Deficiency	3
	Poor quality (cheapness)	3	Meaningless	9	Dislike	12
	Piecemeal/Brokenly	4	Not aesthetic	7	No beauty	5
	Distorted the image	4	Disorganized	5	Random	4
	Lacking in aesthetics	3	Unpleasant	11	Unripe	4
	Negative feelings	3	Very bad	16	Repulsive	3
	Disappointment	10	Irrelevant	15	Blocking	3
	Quite different	20	No integrity	5	Useless	3
	Incompleteness	5	Cheapness	4		
Gloomy	Gloomy	2	Closed	6	Sad	6
	Doesn't arouse curiosity	2				
Sleepy	Cold/Distant	4	Neglected	2		
Distressing	Complexity/Confusion	19	No living space	2	Trapped	8
	I don't want to live	8	Entangled	2	Dirty	5
	Uncomfortable/Disturbing	2	Noisy	3	Unclear	2
	Stuck ness & Denseness	2	Chaotic	7	Rusty	2
	Chaos	2	Captivity	2	Scary	2
	Irregular/Warped	2	Unhappy	2	Nested	2

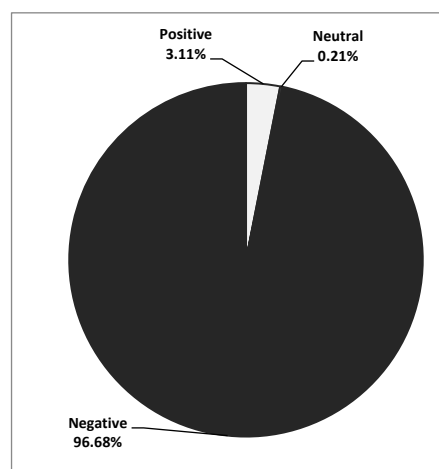
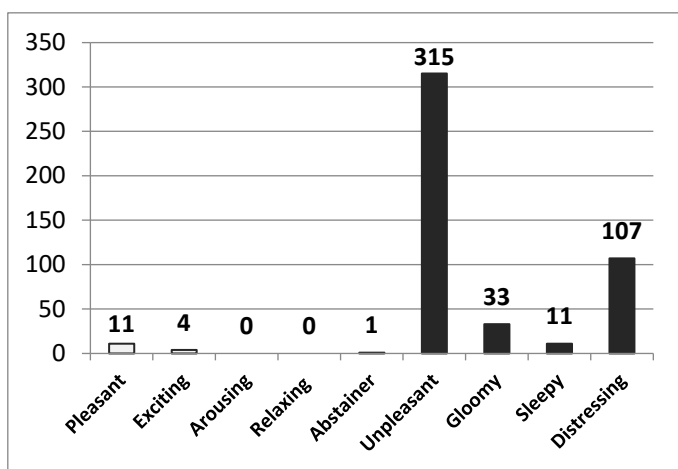


Figure 11. Positive, neutral, and negative sensory metaphors in the Magic Tower (Source: Author).

5.4. Analysis of Magic Plus

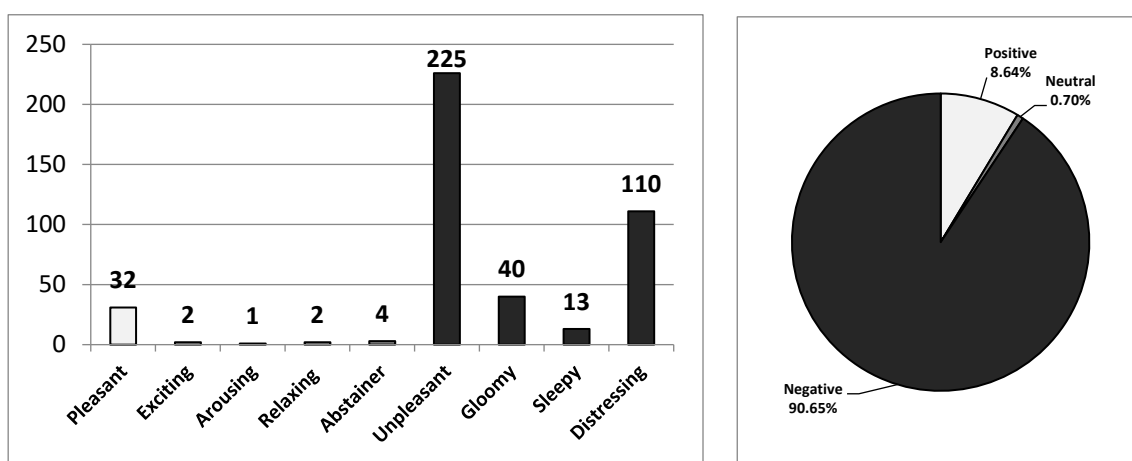
In the case studies of Magic Plus Building, 24 different varieties of symbolic metaphors and 44 symbolic metaphors in total were produced by the subjects. The main symbolic metaphors which were above the average value were staircase/stairs—9, cruise ship—5, concrete pile—4, monster—4, business centre—2, and dormitory—2.

On the other hand, 189 different varieties of sensory metaphors were produced by subjects. Of these, 23 were positive senses, 3 of them were a neutral sense, and 163 sensory metaphors were classified as negative senses. In total, 429 sensory metaphors were produced and 37 of them were positive (pleasant—32, exciting—2, arousing—1, and relaxing—2), 4 of them were neutral (abstainer—4), and 388 sensory metaphors were negative (unpleasant—225, gloomy—40, sleepy—13, and distressing—110). This means that 8.64% were positive senses, 0.70% were neutral senses, and 90.65% were negative senses out of the total number of sensory metaphors (Figure 12). The authors have listed the

metaphors that were above the average value as a result of these vast numbers of sensory metaphor findings (Table 6).

**Table 6.** List of the sensory metaphors above the average value for Building 4 (Source: Author).

Positive Sensory Metaphors						
Pleasant	Pleasant/Nice	3	Consistency	2	Luxury	3
	Beautiful	7				
Exciting	Different energy	1	Impressed	1		
Arousing	Well-maintained	1				
Relaxing	Living space feeling	1	Sincerity/warmth	1		
Neutral Sensory Metaphors						
Abstainer	Didn't feel anything	1	Medium beauty	1	Not bad	1
Negative Sensory Metaphors						
Unpleasant	Not compatible	5	Not aesthetics	7	No beauty	5
	Don't meet my expectations	4	Negative feelings	7	Dislike	10
	Didn't find what I expected	3	Deficiency	6	Bad	5
	Insufficiency (green space)	24	Unpleasant	3	Irrelevant	7
	Disappointment	11	Inconsistency	11	Deception	4
Gloomy	Gloomy	3	Closed	10	Boring	3
	Not attractive	3				
Sleepy	Cold/Distant	3	Neglected	2	Soulless	4
Distressing	I don't want to live	11	Old/Decrepit	3	Intensity	7
	Stuck ness & Denseness	8	Not peaceful	3	Crowded	4
	Uncomfortable/Annoying	4	Narrowness	5	Noisy	5
	Complexity/Confusion	6	Suffocated	3	Not calm	3
	I don't want to buy	3	Distressed	5		
	Chaos	4	Staleness	4		



**Figure 12.** Positive, neutral, and negative sensory metaphors in the Magic Plus (Source: Author).

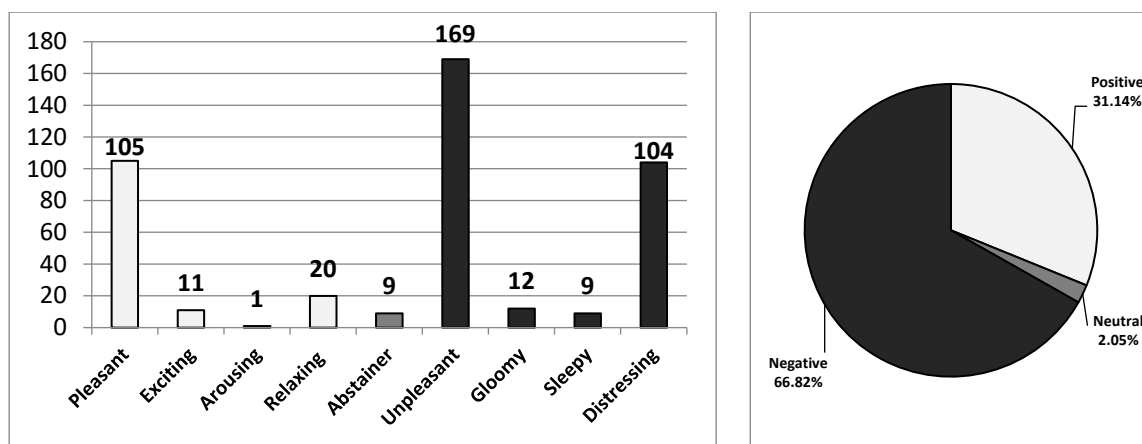
5.5. Analysis of Perla by Özyalçın

In the case studies of Perla by Özyalçın Building, 46 different varieties of symbolic metaphors and 74 symbolic metaphors in total were produced by the subjects. The main symbolic metaphors which were above the average value were cruise ship—13, steamboat—2, concrete pile—2, glass pile—3, butterfly wing/butterfly—3, hotel—4, aquarium—3, business centre—2, kitchen robot—2, dormitory—2, and prison—2.

On the other hand, 208 different varieties of sensory metaphors were produced by subjects. Of these, 64 were positive senses, 7 of them were a neutral sense, and 137 sensory metaphors were classified as negative senses. In total, 440 sensory metaphors were produced and 137 of them were positive (pleasant—105, exciting—11, arousing—1, and relaxing—20), 9 of them were neutral (abstainer—9), and 294 sensory metaphors were negative (unpleasant—169, gloomy—12, sleepy—9, and distressing—104). This means that 31.14% were positive senses, 2.05% were neutral senses, and 66.82% were negative senses out of the total number of sensory metaphors (Figure 13). The authors have listed the metaphors that were above the average value as a result of these vast numbers of sensory metaphor findings (Table 7).

**Table 7.** List of the sensory metaphors above the average value for Building 5 (Source: Author).

Positive Sensory Metaphors						
Pleasant	Good feelings	6	Pleasant/Nice	6	Liked it	8
	Consistency	3	Beautiful	10	Aesthetic	4
	Very beautiful	7	Integrity	4		
Exciting	Attractive/remarkable	2	Creative	2		
Arousing	Well-maintained	1				
Relaxing	Spaciousness	4	I want to live	3	Peaceful	2
Neutral Sensory Metaphors						
Abstainer	Not bad	2	Neutral	2		
Negative Sensory Metaphors						
Unpleasant	Unpleasant (laundry)	9	I would not prefer	3	Dislike	6
	Not compatible with nature	11	Scratched my eyes	3	Bad	8
	Insufficiency (green space)	9	Inconsistency	4	Dirty	4
	Ugly (feeling of ugliness)	8	Unpleasant	5	Huge	3
	Negative feelings	7	Not aesthetics	4	Not fitting	5
	Disappointment	6	Uncompleted	5		
	Visual pollution	4	Disorganised	3		
Gloomy	Closed	2	Sad	3		
Sleepy	Neglected	3				
Distressing	Not suitable for living space	5	Stuck ness & Denseness	8	No privacy	6
	Stuck side to side (Too close)	3	Complexity/Confusion	3	Crowded	3
	Uncomfortable/Annoying	3	Doesn't feel secure	3	Too close	4
	I don't want to live	13	Not peaceful	3	Nested	3



**Figure 13.** Positive, neutral, and negative sensory metaphors in the Perla by Özyalçın (Source: Author).

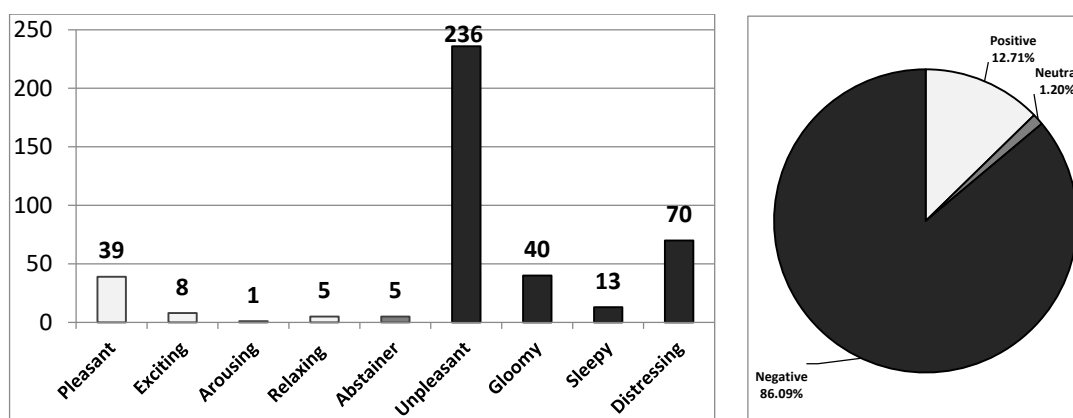
### 5.6. Analysis of the Avrasya Gold

In the case studies of Avrasya Gold Building, 38 different varieties of symbolic metaphors and 49 symbolic metaphors in total were produced by the subjects. The main symbolic metaphors which were above the average value were Darth Vader's Helmet (Star wars)—4, concrete pile—4, stadium—2, business centre—3, and sea wave—2.

On the other hand, 174 different varieties of sensory metaphors were produced by subjects. Of these, 28 were positive senses, 3 of them were a neutral sense, and 143 sensory metaphors were classified as negative senses. In total, 417 sensory metaphors were produced and 53 of them were positive (pleasant—39, exciting—8, arousing—1, and relaxing—5), 5 of them were neutral (abstainer—5), and 359 sensory metaphors were negative (unpleasant—236, gloomy—40, sleepy—13, and distressing—70). This means that 12.71% were positive senses, 1.20% were neutral senses, and 86.09% were negative senses out of the total number of sensory metaphors (Figure 14). The authors have listed the metaphors that were above the average value as a result of these vast numbers of sensory metaphor findings (Table 8).

**Table 8.** List of the sensory metaphors above the average value for Building 6 (Source: Author).

Positive Sensory Metaphors						
Pleasant	Pleasant/Nice	3	Consistency	2	Liked it	5
	Aesthetics	2	Beautiful	8		
Exciting	Creative	5				
Arousing	Dynamic	1				
Relaxing	Living space feeling	3				
Neutral Sensory Metaphors						
Abstainer	Not bad	2	Neutral	2		
Negative Sensory Metaphors						
Unpleasant	Insufficiency (green space)	23	Incompleteness	4	Deficiency	9
	Ugly (feeling of ugliness)	5	Poor quality (cheapness)	3	Dislike	9
	Deception/Deceitfulness	3	Disorganized	5	Irrelevant	9
	Disappointment	11	Inconsistency	7	Unpleasant	10
	Negative feelings	8	No integrity	3	Messy	3
Gloomy	Not interesting	2	Dull/mat	3	Sad	5
	Soulless	2	Gloomy	3	Pale	5
	Closed	2				
Sleepy	Unnecessary/idle	4	Neglected	5		
Distressing	Complexity/Confusion	7	Not shiny	3	Dirty	7
	I don't want to live	8	Rusty	9	Noisy	3
	Staleness	5				



**Figure 14.** Positive, neutral, and negative sensory metaphors in the Avrasya Gold (Source: Author).

## 6. Discussion and Comparison of Findings

The interplay between symbolic and sensory metaphors in architecture is a field of investigation which creates a connection between concrete (tangible) and abstract (intangible) properties of human experience. This research paper is built on the foundation theories of semiotics in architecture and examines the dichotomy of metaphors as symbolic (stereotype images) and sensory (embodied experiences).

Figure 15 is a general representation of all symbolic and sensory metaphors of the six analysed cases. As seen in the graphical representation, all of the buildings are connotative and they are able to create metaphors. However, the findings in the sensory metaphors reveal that the buildings' architectural experience is significantly negative. The percentage of negative sensory metaphors in three of the buildings is higher than 90%, the other two are higher than 80%, and one of them is higher than 65%. On average, they created 86% negative sensory metaphors so this means that the subjects did not experience positive feelings when they visited the buildings.

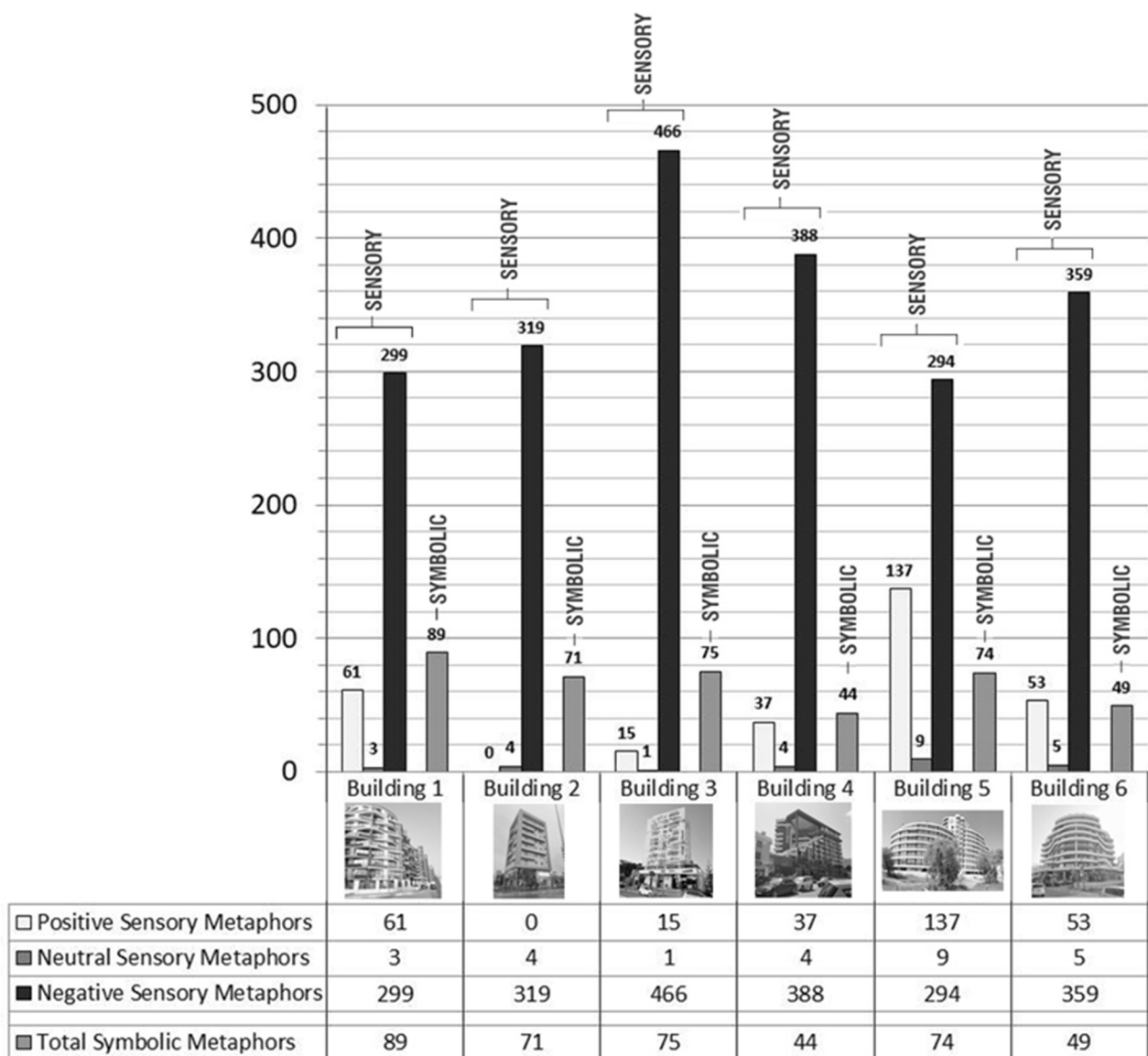


Figure 15. Comparison of the findings (Source: Author).

In discussions from the theoretical point of view, Pallasmaa [5,6] highlights the multi-sensory engagement with architecture, where buildings are experiences through all senses,



not just visually. He supports the idea that the true essence of architecture lies in its ability to arouse deep sensory experiences which resonate with the human body. The findings statistically demonstrate that subjects created sensory metaphors with Pallasmaa's views, indicating that buildings with high aesthetic and structural qualities arouse strong, often negative (unpleasant) sensory metaphors. In other words, the research found that a building rich in the number of symbolic metaphors can create a rich number of sensory metaphors but these sensory experiences are not necessarily positive. These findings emphasise that, if architects concentrate on aesthetical qualities, they may disregard user experiences in the design process. In this kind of design behaviour and approaches, the design concepts may not synthesise human-centred design experiences.

On the other hand, Holl's phenomenological approach to architecture also finds resonance with the findings which focus on the lived experience of space. He supports the importance of special configuration, materiality, and light in meaningful architectural experiences [9]. The empirical data demonstrate that, while high aesthetic and structure quality buildings generate numerous metaphors, they are often negative in their sensory dimension. This suggests that the experiential quality of these buildings may not align with the expectations or needs of local subjects, highlighting a potential disjunction between the architectural goal and lived reality. At this point, it can be emphasised that there is a contradiction and inconsistency between the ideal created by the architect during the design process and the ideal of real life experiences.

Tschumi's theory of the event-space relationship (architecture is seen as a stage for events) sheds light on the findings. He claims that the sensory experience of a space is deeply connected to the events [12]. This research found that studied buildings do not positively engage with the subjects. This situation, where subjects do not feel a sense of belonging to these buildings, may occur due to insufficient consideration of the interactions that these buildings are intended to support. This offers a necessity for a more integrated architectural design approach which considers both symbolic and sensory dimensions.

Furthermore, Eisenman's deconstructivist approach [13,14] that emphasises fragmentation and reinterpretation presents another view point to examine the results. His theory is related to creating spaces that are open to multiple interpretations, which are against the traditional concepts of form and meaning. However, the findings show that such an approach may lead to negative sensory responses, particularly when the design does not resonate with existing architectural context.

Additionally, Agamben's concept of "threshold" as a space of transformation resonates with the dichotomous nature of symbolic and sensory metaphors [10,11]. His approach is reflected in the findings that such buildings, which are symbolically rich, can fail to provide positive sensory metaphors.

Moreover, Frampton's theory on critical regionalism argues that architecture should respect local conditions and cultural contexts [17]. This research paper shows that the buildings with high aesthetic and structural qualities in Kyrenia, which are influenced by iconic buildings, often aimed to establish a more global architectural language beyond their contextual characteristics, leading to negative sensory metaphors. As a result, this can lead to a diminished sense of belonging for those experiencing the buildings, reducing the positive feeling of attachment. Therefore, architecture should be connected in its context to create meaningful and positive experiences for residents.

On the other hand, the findings align with Pérez-Gómez's humanistic view that architecture should create positive and meaningful experiences [18,19]. However, iconic buildings often diverge from human-centred design, focusing instead on global reputation and fame [79]. This drive for recognition can create a conflict between the design ideals and user experiences. As a result, the negative sensory metaphors associated with these buildings contribute to a diminished sense of belonging and this reveals that they ignore the human-centred design approaches. Instead, their aesthetic is frequently inspired by global iconic cases, lacking in symbolic messaging and failing to resonate with users on a deeper, more personal level.

Bachelard's concept draws attention to intimate connection between individuals and their environments [20,21]. Similar to the view point of Bachelard, McCarter emphasises the importance of context in architectural design. He argues that buildings should respect their specific context [7,8].

Briefly, the research demystifies that negative sensory metaphors show that such buildings fail to create intimate and positive attachments. This emphasises the necessity for architects to consider the cultural, social, and environmental context to create spaces that connect positively with residents. In the light of the theories discussed, this research paper contributes to a growing body of knowledge which identifies the complexity of architectural experience. Therefore, the findings reveal that buildings with rich symbolic metaphoric qualities do not always represent positive sensory metaphors.

## 7. Conclusions

Consequently, the Semiotics Model of Architecture has been updated by categorising the types of building metaphors. In this regard, this paper defined and investigated these two types of metaphors, which are symbolic and sensory. Additionally, a comprehensive empirical method has been created and it was applied to six different distinctive buildings. The empirical approach gave the opportunity to analyse the relationship between symbolic and sensory metaphors.

This research method gave significant research findings to understand the relationship between the symbolic and the sensory metaphors. Also, this paper established a research method, which is an important contribution. This method can be used in future research studies to further investigate architectural connotation values. In this regard, it can be applied to any building to systematically analyse the symbolic and the sensory metaphors. Analysing both symbolic and sensory metaphors provides valuable insights into subjects' architectural experiences. Classifying sensory metaphors using scales that assess the affective quality of places highlights how these measures reflect satisfaction and overall architectural experience. This approach helps in understanding the relationship between sensory perceptions and the emotional impact of architectural designs. As a conclusion, this paper emphasises the necessity of human-centred design in architecture. As noted, these distinctive buildings, inspired by iconic structures and global trends, can connote negative sensory metaphors. Therefore, adopting more human-centred design approaches is significant to ensure that architectural design resonates positively with societies.

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**Conflicts of Interest:** The authors declare no conflicts of interest.

## Appendix A

CASE STUDY 3: MAGIC TOWER BUILDING																																	
LIST OF SYMBOLIC METAPHORS	S1	S2	S3	S4	S5	S6	S7	S8	S9	S10	S11	S12	S13	S14	S15	S16	S17	S18	S19	S20	S21	S22	S23	S24	S25	S26	S27	S28	S29	S30	TOTAL	PERC.(%)	
Business Centre						1								1													1					3	10.00%
A building/box wrapped in a spider web	1		1			1	1					1							1	1												7	23.33%
Prison									1		1						1			1	1	1	1			1	1				9	30.00%	
Cage									1		1		1							1				1		1	1				8	26.67%	
Fire escape				1			1								1								1								4	13.33%	
Metal pile / Iron pile / Aluminum pile					1	1												1	1			1		1			1			1	8	26.67%	
Construction bridge of an uncompleted building construction						1									1	1		1			1	1		1					1		8	26.67%	
Concrete pile						1																						1			2	6.67%	
Railway / Rail		1																									1				2	6.67%	
Match box																										1					1	3.33%	
Technokot (Technological building)												1																			1	3.33%	
Parquet		1																													1	3.33%	
Dormitory building					1																										1	3.33%	
Rust pile																												1			1	3.33%	
Looks like unfinished, stopped and fenced off									1																						1	3.33%	
Looks like ripped billboards														1																	1	3.33%	
It's like something made of iron over reinforced concrete																									1						1	3.33%	
It's like patches on the fabric						1																									1	3.33%	
Clothes drying rack (clothesline)									1																						1	3.33%	
Looks like spaghetti has been spilled on it									1																						1	3.33%	
Frame													1																		1	3.33%	
Puzzle														1																	1	3.33%	
It's like a hole was drilled on the grates																			1												1	3.33%	
Something with three parts (grill grill)																				1											1	3.33%	
Checkered notebook																							1								1	3.33%	
Like the white of green stuff wrapped to protect constructions																								1							1	3.33%	
It's like dressing the old lady in an evening dress																									1						1	3.33%	
Madhouse																												1			1	3.33%	
The murderer who murdered the environment																												1			1	3.33%	
Paper building																													1		1	3.33%	
Labyrinth / Maze																														1	1	3.33%	
It's like it was randomly wrapped with white duct tape																														1	1	3.33%	
Mummy																														1	1	3.33%	
33	1	2	1	1	2	6	2	3	2	0	2	2	2	3	3	1	1	4	3	3	2	3	4	4	1	4	7	2	0	4	75	7.58%	

Figure A1. Spreadsheet table analysis with thematic coding of Case Study 3: Magic Tower Building for symbolic metaphors with details (Source: Author).

## Appendix B

CASE STUDY 3: MAGIC TOWER BUILDING																														PERC. (%)	% of total senses (total senses)			
LIST OF SENSORY META- PHORS	S1	S2	S3	S4	S5	S6	S7	S8	S9	S10	S11	S12	S13	S14	S15	S16	S17	S18	S19	S20	S21	S22	S23	S24	S25	S26	S27	S28	S29			S30	TOTAL	
<b>POSITIVE SENSES</b>																																		
<b>Pleasant</b>																																		
Beautiful											1	1																			2	6.67%	3.11%	
Liked it											1																				1	3.33%		
Successful												1																			1	3.33%		
Aesthetical												1																			1	3.33%		
Similarity												1																			1	3.33%		
interconnected												1																			1	3.33%		
Strong												1																			1	3.33%		
Innovative												1																			1	3.33%		
Technological												1																			1	3.33%		
Convenience											1																				1	3.33%		
Exciting																																3		9.00%
Stylish												1																			1	3.33%		
Creative				1									1																		2	6.67%		
Interest				1																											1	3.33%		
<b>Positive Senses Total</b>	15	3.11%																																
<b>NEUTRAL SENSES</b>																																		
<b>Pleasant &amp; Unpleasant</b>																																		
Mediocre																															1	3.33%	0.21%	
<b>Neutral Senses Total</b>	1	0.21%																																
<b>NEGATIVE SENSES</b>																																		
<b>Unpleasant</b>																																		
Bad images												1																			1	3.33%	96.68%	
Bad			1													1															2	6.67%		
Very very bad			1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	16	53.33%			
Awful / Terrible																1											1	1		3	10.00%			
Doesn't feel good																				1	1									2	6.67%			
Makes you think (in a bad way)																					1									1	3.33%			
Habitual																									1					1	3.33%			
Ordinary																						1								1	3.33%			
Extra ordinary															1															1	3.33%			
Not aesthetic															1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	7	23.33%			
Dislike		1	1						1	1		1			1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	12	40.00%			
Dislike / Unpleasant		1			1	1			1			1		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	11	36.67%			
It looks like an insult to the word "aesthetic"				1																										1	3.33%			
Ruined the aesthetic																										1				1	3.33%			
Tasteless									1																					1	3.33%			
Huge		1																												1	3.33%			
Exaggerated																1														1	3.33%			
Weird									1																					1	3.33%			
Uncharacterized										1																				1	3.33%			
Featureless / Ordinary																					1									1	3.33%			
Repulsive												1	1	1																3	10.00%			
Ugly																					1									1	3.33%			
Blocking									1														1						1	3	10.00%			
Shocked																										1			1	3.33%				
I couldn't believe																										1			1	3.33%				
Words are inadequate																												1	1	3.33%				
Despondency													1																1	3.33%				
Shame																										1			1	3.33%				
Disappointment		1	1				1	1		1	1							1	1							1			10	33.33%				
Not promising																								1					1	3.33%				
Ugly (feeling of ugliness)				1	1							1																	4	13.33%				
Scratched my eyes		1		1																									2	6.67%				
Clare																						1							1	3.33%				
Not pleasing to the eye									1			1																	2	6.67%				
My eyes are tired			1																							1			2	6.67%				
Visual pollution / Image pollution									1																		1	1	3	10.00%				
I don't want to see																										1	1		2	6.67%				
I didn't want to look for a long time																											1		1	3.33%				

Figure A2. Cont.

I don't think people would want to see this														1	1	3.33%	
Distorted the image		1	1	1						1						4	13.33%
No beauty										1	1	1				5	16.67%
Not aesthetics		1				1	1								1	3	10.00%
Dissatisfied								1								1	3.33%
Didn't find what I expected						1	1									2	6.67%
Not reached to the target													1			1	3.33%
No good vibes								1								1	3.33%
I'm not positive																1	3.33%
Negative										1						2	6.67%
Negative feelings														1	1	3	10.00%
Different / opposite (dissimilar)		1				1	1	1	1	1	1	1				12	40.00%
Quite different		1	1	1	1	1	1	1	1	1	1	1	1	1	1	20	66.67%
No similarity		1	1							1	1			1	1	8	26.67%
Not same						1				1	1				1	4	13.33%
Not the same as the plan																1	3.33%
Different than plan																1	3.33%
Nothing is same													1			1	3.33%
Unapplied																1	3.33%
Inconsistent		1														1	3.33%
Contradiction																1	3.33%
Completely opposite																1	3.33%
Contrast																1	3.33%
Contradictory																1	3.33%
Irrelevant		1	1			1	1	1	1	1	1	1			1	15	50.00%
Improper																2	6.67%
Unconnected / unattached																1	3.33%
Inconsistency		1	1	1	1	1	1	1	1	1	1				1	12	40.00%
Not adapted to the environment																2	6.67%
Makeshift / Temporary																1	3.33%
Like Askew																1	3.33%
Disconnection															1	1	3.33%
Harms the environment																1	3.33%
Not fit																2	6.67%
I wish it wasn't done																1	3.33%
Inappropriate																1	3.33%
Dishonesty																3	10.00%
Deceit																1	3.33%
Deception																1	3.33%
Mis presentation																1	3.33%
Deficiency																2	6.67%
Incompleteness																5	16.67%
Uncompleted/Unfinished																1	3.33%
Deficiency																3	10.00%
Unripe																4	13.33%
Insufficient green space																1	3.33%
Not compatible with nature																1	3.33%
Piecemeal / Brokenly																4	13.33%
Split																2	6.67%
Separate																1	3.33%
No integrity																5	16.67%
Disorganized																5	16.67%
Not tidy																1	3.33%
Jerry-built																1	3.33%
Rushed																1	3.33%
Sloppy																2	6.67%
Inferiority																3	10.00%
Cheapness																4	13.33%
Tackiness																2	6.67%
Low quality																2	6.67%
Old / Decrepit																2	6.67%
Not straight																1	3.33%
Not successful / unsuccessful																1	3.33%
No aesthetics																1	3.33%
Useless																3	10.00%
Meaningless																9	30.00%
Nonsense																1	3.33%
Pointless																2	6.67%
Aimless																1	3.33%
Unqualified																1	3.33%
Incompetence																2	6.67%
Unplanned																1	3.33%
Unsolved																1	3.33%
Random																4	13.33%

Figure A2. Cont.

Unconsciously										1	1	3.33%			
Inaccurate										1	1	3.33%			
Dirty	1	1		1	1		1				5	16.67%			
Not clean									1		1	3.33%			
Unconsciously										1	1	3.33%			
Unnecessary	1									1	2	6.67%			
<b>Gloomy</b>												9.04%			
Sad	1	1	1				1			1	1	6	20.00%		
Not artistic									1		1	3.33%			
Gloomy										1	1	2	6.67%		
Blackness											1	3.33%			
Deflated		1									1	3.33%			
Unnecessary	1										1	3.33%			
Not interesting										1	1	3.33%			
Doesn't arouse curiosity										1	1	2	6.67%		
Closed					1	1		1	1	1	1	6	20.00%		
Blocking											1	3.33%			
Boring									1		1	3.33%			
Depressive Atmosphere										1	1	3.33%			
Annoying										1	1	3.33%			
Depressive											1	3.33%			
Straight/ Monotonous										1	1	3.33%			
Dull / mat						1					1	3.33%			
Not shiny		1									1	3.33%			
Not different									1		1	3.33%			
Not attractive (not interesting)											1	3.33%			
Uninviting										1	1	3.33%			
Unnoticeable / Didn't get my attention											1	3.33%			
<b>Sleepy</b>												5.24%			
Squalidity			1				1				2	6.67%			
Neglected			1								1	3.33%			
Staleness						1					1	3.33%			
Cold / Distant		1	1							1	1	4	13.33%		
Dereliction						1					1	3.33%			
Does not feel warm										1	1	3.33%			
Uncompanionable											1	3.33%			
<b>Distressing</b>												5.24%			
I don't want to live		1	1				1	1		1	1	1	8	26.67%	
I wouldn't want to be inside										1	1	3.33%			
Not comfortable											1	3.33%			
No living space											1	2	6.67%		
No feeling of home										1	1	3.33%			
I would definitely not buy						1					1	3.33%			
I don't want to buy										1	1	3.33%			
Crowded										1	1	3.33%			
Low quality of life						1					1	3.33%			
No sense of solidity						1					1	3.33%			
It's about to break (Insecurity)											1	3.33%			
Doesn't Give Trust											1	3.33%			
Chaotic		1	1			1				1	1	7	23.33%		
Complexity (Confusion)		1	1	1	1	1		1	1	1	1	1	17	56.67%	
Confusing		1									1	3.33%			
Tangled Up		1								1	2	6.67%			
Complexity (Confusion)										1	2	6.67%			
Difficult to understand						1					1	3.33%			
Entangled						1	1				2	6.67%			
Irregular / Warped										1	1	2	6.67%		
Ambiguous										1	1	3.33%			
Hazy										1	2	6.67%			
Unclear										1	1	3.33%			
Chaos (Confusion)										1	1	3.33%			
Uncomfortable/Annoying/Disturbing/Displeasing											1	2	6.67%		
Very disturbing										1	1	3.33%			
Longing										1	1	3.33%			
Trapped										1	1	1	1	8	26.67%
Captivity										1	2	6.67%			
I don't want to be behind bars										1	1	3.33%			
My freedom is restricted / No freedom										1	1	3.33%			
Captivity										1	1	3.33%			
No freedom											1	3.33%			
Not calm										1	1	3.33%			
Rusty										1	2	6.67%			
Unhappy / Unhappiness										1	1	2	6.67%		

Figure A2. Cont.

Jitters		1		1	3.33%
Scary		1	1	2	6.67%
Terrifying		1		1	3.33%
It's like falling on me (Scary)		1		1	3.33%
Not suitable for family life		1		1	3.33%
Not peaceful				1	3.33%
Stuckness & Denseness		1	1	2	6.67%
Restrictedness	1			1	3.33%
Nested		1		1	3.33%
Too close	1			1	3.33%
Naked			1	1	3.33%
Not sincere				1	3.33%
Suffocated		1		1	3.33%
Narrowness			1	1	3.33%
Noisy	1		1	1	3.33%
<b>Negative Senses Total</b>	<b>466</b>	<b>96.68%</b>			

**Figure A2.** Spreadsheet table analysis with thematic coding of Case Study 3: Magic Tower Building for sensory metaphors with details (Source: Author).

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