

## TRAUMA CONCEPT APPLICATION IN ARCHITECTURE

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*(Received: May 5, 2024; Accepted for Publication: May 28, 2024)*

### ABSTRACT

Trauma refers to the psychological, emotional, or physical response to traumatic events. The concept of 'trauma' has appeared in all fields of science. It is no longer just a medical condition or theory, therefore, we cannot limit it to psychological studies only, and from here, the importance of researching this term more broadly appears in architecture. The research question is: What is trauma, its types, and related concepts in architecture? The study answered this question by reviewing previous studies in this field, which showed that architecture, like humans, can be traumatized, and the concept of 'trauma' has many types and purposes in architecture. Furthermore, it turned out that the concept of 'trauma' is theoretical and not measurable, which cannot be directly applied to architecture, and there is no detailed approach that clarifies the trauma application in architecture. It also turned out that trauma strongly relates to the concept of 'uncanny' which has a role in its achievement. The present study aims to solve the research problem that says: how can we achieve trauma in architecture through the concept of 'uncanny'? To solve this problem and fill this gap, we looked at the theoretical framework of the concept of 'uncanny' and its variables. The results showed that uncanny has many indicators: 'absence, semiotics, inhumanization, unhome, and lack of orientation'. Also, each has several secondary variables. The research methodology was identified to determine the ratio of use of each indicator of the 'uncanny' by architects to achieve trauma in architecture. On this basis, international case studies were identified as a measurement tool based on qualitative and quantitative methods to provide a wide range of analyses, supported by references. The results showed that each variable has a certain level of influence; the indicator of 'lack of orientation' is the most influential, and the indicator of 'unhomely' is the least influential. To conclude, the concept of 'uncanny' contributes to trauma achievement in architecture. Designers should follow the indicators of 'uncanny' outlined in the theoretical framework, with applying the proportions specified by the study results

**KEYWORDS:** Trauma, Uncanny, Absence, Semiotic, Inhumanization, Unhomely, Lack of orientation.

### 1. INTRODUCTION

This section covers various definitions of the term 'trauma', in addition to its roots in different fields of knowledge, starting from psychology to architecture.

Linguistically, around 1693, the term "trauma" referred to an injury to living tissue caused by an external agent. It also denotes a psychological or behavioral disturbance from severe stress or injury, and the lack of expectation of something (Merriam-Webster Dictionary). In physiological studies, the term "trauma" first emerged in the late nineteenth century. Martin Charcot laid the groundwork for the trauma theory, associating it with the impact of unbearable experiences that give rise to dissociative behaviors (Burke, 2015). Trauma survivors undergo a spectrum of emotions, including rage, terror, grief, guilt, confusion, anxiety, and depression. Traumatic experiences can range from serious accidents to involvement in wars, natural disasters like bush fires or floods, or instances of abuse. Ruth Leys, in her book "Trauma: A Genealogy," asserts that post-

traumatic stress disorder (PTSD) fundamentally revolves around memory dysfunction. The premise is that due to the emotions of terror and surprise induced by certain events, the mind becomes divided or dissociated, rendering it incapable of processing the psychic injury as ordinary awareness and cognitive mechanisms break down. Consequently, the individual struggles to recall and assimilate the distressing experience into their normal consciousness. The experience of trauma, fixed or frozen in time, refuses to be relegated to the past but is incessantly relived in a painful, dissociated, and traumatic present (Stoppani, 2016). Architecturally, the concept of 'trauma' first emerged in the critical position developed by Bernard Tschumi in the 1970s in his work on architecture and violence. According to Tschumi, Architecture can be traumatized, and the effects of trauma are reflected in its physical form. This gave rise to the concept of traumatized architecture, which refers to buildings that have been impacted by traumatic events such as wars, crises, and diseases, and how these events influence not only the physical structure but also its values and

languages. Tschumi also emphasizes that architecture must respond to trauma using specific strategies (Stoppani, 2016). Once again, the aftermath of events like 9/11 and the Hiroshima attack brought the concept of trauma to the forefront of architectural discourse. Architects proposed various theoretical projects to address the trauma inflicted by these events, not just on buildings but also on the role of architecture in society (Stoppani, 2016). Recently, the concept of "Form Follows Feeling," also known as Trauma-Informed Design (TID), has emerged, linking the fields of trauma and architecture. TID aims to design built environments based on principles of trauma-informed care, creating spaces where all users feel safe. Furthermore, there's a correlation between architectural design and responding to trauma caused by disasters and events, with architecture playing a role in healing through monuments and memorial buildings designed according to Sigmund Freud's psychological theory of trauma treatment (Grabowska, Sam, et al., 2021). In conclusion, the significance of this term has been demonstrated through its appearance in various fields of knowledge, including architecture. It is no longer merely a term or a medical theory and cannot be confined to psychological studies alone. Therefore, the research is motivated to explore it more broadly in architecture. The research question is: What is trauma in architecture? What are its types and purposes? Finally, what are its indicators in architecture

## 2. PREVIOUS STUDIES

The studies were selected based on concepts and theories primarily related to the concept of 'trauma', whether direct or indirect, irrespective of place, time, and architectural style.

According to Bernard Tschumi's work, architecture can experience trauma from events like war and crises, which is known as "traumatized architecture." This trauma doesn't physically harm the architecture itself but impacts its values and languages. Consequently, architecture needs to adjust to these traumas and respond to them with methods that express the impact of their wounds. As a result, the memorial architecture appears (Stoppani, 2016). This study confirmed that architecture can be traumatized, and appears in various types after its responding, such as memorial architecture and post-trauma architecture.

According to Bernard Tschumi, there are two cases of violence in architecture. The first involves bodies violating space, wherein their intrusion disrupts the ordered layout of architecture, leading to the creation of new and unexpected spaces through the fluid or erratic movements of the human body. The second form occurs when space violates bodies, as bodies disrupt the purity of architectural spaces. Examples include the violence caused by narrow corridors overcrowding large crowds or buildings

imposing symbolic or physical violence on users through rooms that are too small or too large, or ceilings that are too low or too high. While these techniques may initially evoke strange desires, they eventually become sadistic, impossible, and violent. Based on Benjamin, he suggests using the defamiliarization concept, which is the opposite of familiarization or security. Defamiliarization keeps things new and fresh, challenging our perceptions and expectations (Tschumi, 1996). Conclude that Bernard Tschumi indirectly linked violence to trauma in architecture and identified two types of trauma in architecture. The first is traumatic architecture to users, which shocks users, and the second is traumatic architecture by users. Tschumi indirectly refers to unconventional methods for achieving trauma, such as the concept of unfamiliarity.

According to the architect Lebbeus Woods, architecture and war are intertwined; architecture is war, and war is architecture. The concept aims to generate novel types of spaces that symbolize architectural wounds, emphasizing a profound comprehension of the trauma inflicted by war. Based on Woods, there are three principles of post-war restoration. The first one is to restore the damage to its previous condition. The second is to replace damaged structures with entirely new ones. These initial two principles are traditional and commonly employed in post-war cities. The third principle emerges, emphasizing that the post-war city should create the new from the damaged old. The familiar old must be consciously transformed by design into the unfamiliar new. Proposed here as a response to the disaster, this architecture utilizes forms inspired by war, embracing a rhetoric of explosion and destruction that resonates with the formal aesthetic of deconstruction architecture (Woods, 1993). Concluding that there is war architecture and post-war architecture, meaning that architecture must be traumatized by war and its response must involve creating the new from the damaged old. The reconstruction of old buildings should facilitate new ways and ideas of living. The architect focuses on the concept of unfamiliarity in post-war architecture.

Based on the author, there is a significant connection between museums, trauma, memory, and tourism. The concept of trauma is a fundamental aspect of memorial museums, as they showcase social history. This confirms the existence of a specific type of museum within the genre of trauma-memory-based museums, distinct from those focusing solely on art. Furthermore, an exploration of a new form of tourism and an uncanny form of popular culture is embraced as an extension of unconventional memorial museum design. Additionally, the author discusses the concept of dark tourism, which centers on sites associated with death, disaster, and tragedy (Cho Ling, 2010)

Arleen Ionescu focuses on the intersection of architecture, memory, and ethics. The concept of trauma is a central theme in the book, particularly in

the context of architecture, memorialization, and representation of historical events, specifically the Holocaust. Trauma is explored in the design of memorial buildings and monuments dedicated to the Holocaust, Architects like Daniel Libeskind and Peter Eisenman use architectural elements to evoke and engage with the traumatic history of the Holocaust. These architects focus on creating spaces that challenge viewers and provoke critical reflection on historical events. Furthermore, the concept of 'uncanny' is a recurring theme in the book. The uncanny refers to a feeling of discomfort or unease caused by something familiar yet strange or unsettling. The uncanny is explored in the design of memorial buildings, particularly those dedicated to the Holocaust. (Lonescu, 2014). Concluded that the concept of 'trauma' is utilized in the architectural memorialization process known as commemorative architecture. Drawing from the works of Peter Eisenman and Daniel Libeskind, their approach diverges from traditional forms of memorial architecture. As a result, they incorporate the concept of 'uncanny', which is frequently employed in memorialization in architecture.

This thesis explores the relationships between trauma and architectural forms and spaces in the field of contemporary art. means how artists use architectural elements such as forms and spaces in their works to examine modern concerns surrounding trauma. The main concepts in this article include how architectural form and space provide a framework for exploring contemporary trauma. It examines how the artists use architectural elements to examine feelings of uncertainty and anxiety related to trauma. The artists used the concept of 'uncanny' in their space design, which is utilized to create unsettling and strange architectural environments that provoke emotional responses from viewers. The works disrupt traditional notions of comfort and stability associated with architectural spaces (Burke, 2015). Concluding that trauma is achieved through some specific concepts such as the concept of 'uncanny'.

The main concepts in this article revolve around the transformation of the Boros Bunker-Berlin into a contemporary art space and the exploration of the interplay between history, architecture, and art. Some key concepts are presented in this article, such as trauma, the concept of 'uncanny', and memorial buildings. The concept of the counter-memorial is discussed, emphasizing how the bunker challenges traditional memorialization by reinterpreting traumatic histories through contemporary art. in addition to the concept of 'Uncanny': The uncanny atmosphere of the bunker is explored, focusing on the discomfort and unease that arise from the juxtaposition of familiar and unsettling elements within the space, creating a complex and eerie experience for visitors. The concept of the uncanny is present in the article through the description of the Boros Bunker in Berlin and its transformation into an

art space. The uncanny refers to a sense of discomfort or unease caused by something familiar yet strange or unsettling. The article describes how the artworks within the bunker interact with the architecture, creating a complex and sometimes eerie atmosphere (Schmidt, 2018). To conclude, art and architecture can be combined to achieve trauma in architecture, which leads to memorial architecture. To achieve this, various specific methods can be employed, such as the concept of the 'uncanny,' which refers to something that is outside of familiarity.

### **3. FINDINGS OF LITERATURE REVIEW**

Based on previous studies, architecture can be traumatized due to war, crises, and violence. The architectural response to these traumas produces new types of architecture named 'traumatic architecture, memorial architecture, post-war architecture, and post-trauma architecture'. Furthermore, the concept of trauma is utilized for various purposes in architecture such as commemoration, tourism, architectural pleasure, or renovation after the war. Studies suggested that trauma can be achieved through the concepts of 'uncanny and unfamiliar'. Additionally, the concepts of the uncanny and unfamiliar are considered the same meaning according to Walter Benjamin (Kim, 2015).

### **4. RESEARCH GAP**

All these previous studies, directly or indirectly, provide a good foundation for concepts related to trauma. However, they remain theoretical and do not outline a clear mechanism for achieving this concept in architecture. Additionally, while the studies suggest that the concept of 'uncanny' is most related to trauma, they do not clearly define its primary and secondary indicators for achieving trauma in architecture. This gap needs to be filled based on a theoretical framework.

### **5. PROBLEM STATEMENT**

Many projects have been explored in prior studies that incorporate trauma and its relation to the uncanny. However, there is no precise guideline for designers to achieve trauma through the concept of 'uncanny' in architecture.

### **6. RESEARCH OBJECTIVE**

The objectives of the research are to determine the primary and secondary indicators of the uncanny concept. In addition to determine the level of use of each indicator to achieve trauma in architecture.

## 7. THEORETICAL FRAMEWORK

This section discusses primary and secondary indicators of the concept of ‘uncanny’ to fill the knowledge gap.

### 7.1 Absence, Emptiness, and Nothingness

Emptiness is a negative build mass, described by Koolhaas as the ‘absence of the built.’ Conversely, nothingness results from the absence of architecture and defines an architectural program without construction. If nothingness also defines architectural space as a created program, it becomes equivalent to emptiness. These three concepts appeared in Koolhaas projects, which seem to have similar vocabulary and meanings. In theory and practice, it should be mentioned that this vocabulary enables us to understand architecture the other way around, which means the opposite of what is built (Şimşek, 2019). The architectural tool for these concepts is ‘void’. It is a powerful symbol that serves as a vehicle for narrative, emotion, and remembrance. The void must have some specific characteristics, such as large areas with no physical content. Many architects, including Libeskind, Le Corbusier, Bernard Tschumi, and Rem Koolhaas, employ this approach to express the ‘uncanny’ in their projects. They have addressed the architectural ‘void’ as a space without construction (Olivier, 2021).

### 7.2 Semiotics (indexicality and symbolism)

Indexicality and symbolism are concepts often discussed in semiotics and linguistics, and they both play significant roles in communication and meaning-making and uncanny achieving in architecture. (Violi, 2012).

#### Indexicality

Indexicality refers to a concept in semiotics and philosophy, particularly within the context of signs and symbols. It describes a relationship between a sign and its object that is based on a direct, physical connection or causal relationship. (Violi, 2012). Applying the concept of ‘indexicality’ to uncanny sites and memorial buildings offers a unique perspective on representation, emphasizing aesthetic and ethical dimensions. Unlike other memorials, trauma sites possess a distinct indexical quality, shaping their meaning and purpose. These sites maintain a real spatial connection with the traumatic events, defining their significance. There are two different approaches to using indexicality in the design: using symbols directly from the site of trauma, for example: Traces or images of the dead artifacts of the remains of the dead, because the dead are the only possible ultimate witnesses. Furthermore, using indirect symbols to represent a specific event or concept (Violi, 2012).

#### Symbolism

Signification refers to the process through which signs convey meaning, involving the relationship between a signifier (the form the sign takes) and its signified (the associated concept or meaning). It often involves interpreting signs within a cultural or

linguistic context. Symbolism in architecture involves using elements or design features to convey deeper meanings or ideas beyond their literal function. In his design of the Ohio Statehouse Holocaust Memorial, Libeskind aimed to create a star-shaped structure with tilted angled panels. This design represents a unique narrative of memory, honoring both the victims of the Holocaust and the American soldiers liberated from concentration camps (Tsiftsi, 2017).

### 7.3 Inhumanization

**1.1.1** In architecture, inhumanization involves prioritizing function or aesthetics over human needs and comfort. This neglect can lead to inadequate provision of natural light, fresh air, comfortable temperatures, and accessible amenities, resulting in unhealthy and unpleasant spaces that hinder human well-being. The artist Gregor Schneider represents the concept of ‘inhumanization’ through his work ‘Weisse Folter’. The work features corridors, cells, and rooms painted in a uniform color palette, with soundproofing materials in the ceilings and the scent of fresh paint permeating the space. Visitors were invited to explore the work individually or in pairs. Commentators have described the interior as clinical, starkly lit, unwelcoming, and alienating (Burke, 2015). The interplay of light and darkness, warm and cold, movement and stillness, proximity and distance, along with the intentional use or absence of sensory stimuli, evokes a range of unfamiliar sensations (Kim, 2015). In conclusion, it is possible to apply the concept of ‘uncanny’ through the concept of ‘inhumanity’ by using the techniques of light, darkness, and color in ‘inhuman’ way.

### 1.1.2 7.4 Unhomely

The unfamiliar concept suggests that as everyday spaces become familiarized without conscious awareness, we become more susceptible to their nature. Heidegger argues that we comprehend our world within a “referential totality”; our immersion in everyday routines leads to a lack of attention to the context of its elements. The uncanny then emerges unexpectedly and challenges our preconceived notions of architectural space. Benjamin suggests using the defamiliarization concept, which is the opposite of familiarization or security. Defamiliarization keeps things new and fresh, challenging our perceptions and expectations. This tension between defamiliarization and refamiliarization underscores the diversity of perspectives within architecture (Kim, 2015). Concluded that uncanny and unfamiliarity concepts are the same idea and effect in architectural and theoretical writings.



**Fig. (1):** Uncanny and unfamiliarity relationship (Researcher).

In the architectural terminology field, the links between the space of the home and the uncanny have

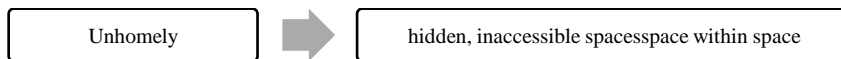
been explored widely, distinguishing between the self and the external world of power and social relations and finding particular traction around themes of homelessness, exile, and the uncanny (Burke, 2015). We conclude that there is a strong relationship between the area of the home and the 'uncanny', such that the uncanny has been defined as (unhome ) because of its strong relationship with home. The uncanny makes the previously familiar, unfamiliar in the space of home.



**Fig. (2):** unfamiliarity and unhomely relationship (Researcher).

We conclude that the three concepts (uncanny, unfamiliarity, and -unhomely) are the same idea and principle in theories

The artists Rachel Whiteread and Gregor Schneider, through their sculptural methods in the



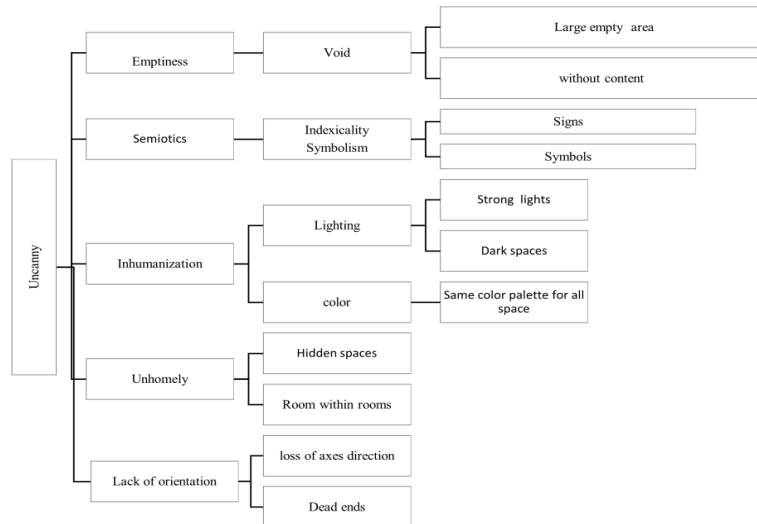
**Fig. (3):** unhomely applications (Researcher).

### 7.5 Lack of Orientation

'Lack of orientation' refers to a condition where individuals feel disoriented or uncertain about their direction or surroundings. It often involves a sense of being unable to establish one's position relative to familiar landmarks. The factors that contribute to a lack of orientation can include unfamiliarity with the surroundings, absence of recognizable cues or reference points, sensory deprivation, or intentional design features aimed at disorienting occupants, particularly in unfamiliar or complex environments. In architectural design, the deliberate creation of a lack of orientation can be used to provoke specific emotional responses and challenge conventional perceptions. the tight hallways and dead ends can make people feel even more isolated. This feeling of being cut off from the outside world reminds us of Heidegger's idea of feeling strange and uncanny in our existence. It's like realizing that even though we live in the world, sometimes it feels unfamiliar (Burke, 2015).

Ghost project and Haus u r, isolate, fragment, and subvert the spatial order and function of the room, presenting the room as an uncanny element within the architecture of the home. Ghost's formal dimensions evoke an interplay between solidity and spectrality, intensifying the sense of the 'dis habitability' of the room and recalling the 'unhomeliness' within the Freudian uncanny. Through the analysis of the Haus u r project by Gregor Schneider, it is evident that the design process involves 'rooms within rooms, walls in front of walls, ceilings underneath ceilings, or floors above floors,' originally conceived as a house inside a house. For viewers entering the house, the original internal structure is not visible, and hidden spaces resulting from the shifting of structural components have become inaccessible (Burke, 2015). Concluded that architects can employ concepts and techniques of unfamiliarity to create various types of buildings, such as memorials.

Libeskind's project, the 'Jewish Museum-Berlin,' utilizes architectural uncanny through the concept of 'lack of orientation.' Viewers find it challenging to orient themselves, creating a sense of unfamiliarity akin to being lost in one's own home. Access to the new museum extension requires entry through an underground passage from the original Baroque Museum. Visitors experience anxiety and a sense of disorientation before encountering a junction of three paths. These routes offer perspectives on the Jewish experience within the context of German history, emigration from Germany, and the Holocaust. Libeskind intended this spatial design to evoke the disorientation and instability faced by immigrants compelled to leave Germany (Jewish Museum Berlin n.d.). It is concluded that the principles of 'lack of orientation' are utilized in architectural projects to evoke architectural uncanny through the use of narrow corridors, dead ends, and lack of clear spatial cues. As a result, visitors are immersed in an unfamiliar experience.



**Fig. (4):** The process of transforming primary and secondary indicators of the concept of the uncanny(Researcher).

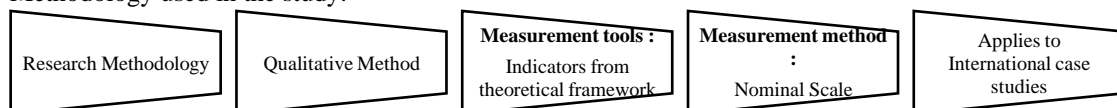
## 8. RESEARCH METHODOLOGY

### 9.

To transfer uncanny for achieving trauma in architecture, from theoretical to practical approaches, a practical section is required. The appropriate methodology in this study is the qualitative method. By applying the theoretical framework to the case studies. The analysis depends on architectural drawings from references. Research methodology summarized in these steps :

1. The primary and secondary indicators of the uncanny are figured out from the theoretical framework.
2. The findings of the theoretical framework will be applied to the qualitative approach, which consists of international studies.
3. Statistically analyzing results to draw the appropriate guidelines for trauma achieving in architecture through uncanny concept.

Methodology used in the study:



**Fig. (5):** The research methodology of the thesis (Researcher).

**Table (1):** Chosen indicators for the methodology (Researcher).

<b>Main indicator</b>	<b>Secondary indicators (measurement Indicators)</b>	<b>Points</b>
Emptiness	large Empty spaces Without Content	
Semiotics	Signs Symbols	
Inhumanization	Stark lighting Dark spaces Same color for whole space	
Unhomely	Hidden spaces Space within space	
Lack of Orientation	Dead ends Loss of axes direction	
Results		

**Table (2):** Evaluating signs of the qualitative methodology (researcher).

Empty Cell	The indicator is not available in the case study	
Empty Circle	The indicator is weakly available in the case study	○
Half filled Circle	The indicator is available in a medium form in the case study	◐
Full filled circle	The indicator is strongly available in the case study	●

**1.1.3** Quantitative data collection from case studies:

Converting the qualitative data to quantitative through coding by adding a numerical value.

**Table (3):** Converting qualitative data to quantitative (Researcher)

Empty cell		0
Empty circle	○	1
Half filled circle	◐	2
Full filled circle	●	3

**1.1.4**

**1.1.5** Qualitative method structure:

The international case studies will be analyzed according to a theoretical framework containing the

code, project name, the architect’s name, the main photograph of the project, the reference support, and finally, the primary and measurement indicators.

**Table (4):** Qualitative analyzing sheet ( Researcher)

<b>Uncanny / Analysis Sheet</b>			
Code:	Project Description /Reference Support		Main Project Image
Project Name :			
Architect :			
Place :			
Year :			
Main Indicators	Measurement Indicators	Graphical analyzing	P oints
Emptiness	Large empty Spaces		
	No content		
Semiotics	Signs		
	Symbols		
Inhumanization	Stark lighting		
	Dark spaces		
	Same color for whole space		
Unhomely	Hidden spaces		
	Space within space		
Lack of orientation	Dead ends		
	Loss of axes direction		
Uncanny Availability		Total Points	

**10. CASE STUDIES**

Previous chapters revealed that architects often incorporate the concept of 'trauma' through uncanny elements in specific project types such as museum buildings, memorials, and houses. Consequently,







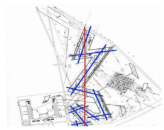
these building typologies were chosen on an international scale. Subsequently, 10 case studies were selected and labeled as ICS (International Case Study). Architects endeavored to achieve trauma through the concept of 'uncanny' in the design of these projects, as outlined in Table 4.1.

**Table (5):** Shown the international case studies information(Researcher).

Project Name	Project Designer
Jewish Museum Berlin	Architect: Daniel Libeskind
Villa Grimaldi in Santiago	Designer: Government
Nussbaum museum	Architect: Daniel Libeskind
Schneider’s Haus ur	Artist : Gregor Schneider
National Holocaust Monument	Architect: Studio Libeskind
Museum of Kurdish Culture Iraq	Architect: Daniel Libeskind
Holocaust Memorial	Architect: Peter Eisenman
Yad Vashem memorial in Jerusalem	Architect: Moshe Safdie
Danish Jewish Museum Copenhagen, Denmark	Architect: Daniel Libeskind
Ground Zero	Architect: Michael Arad Peter Walker

Table 4.1 shows an example of an international case study analysis, while the other cases can be found in Appendix.

**Table (6):** A sample analysis of an international case study (Researcher).

Uncanny / Analyzing sheet						
Code: ICS01	Project description /Reference support		Main project image			
Project Name :Jewish Museum Berlin	The uncanny manifests itself in the form of a physical and phenomenological "architectural experience In the Jewish Museum, the notion of absence is inscribed into the architecture and experienced by moving through it, The building is a storyteller, Both spiritually and physically, Libeskind wants to render the persecution and emigration of the Jews present. Quite paradoxically, he does so by materializing his absence.(Olivier,2021).					
Architect : Daniel Libeskind						
Place :Berlin						
Year : 1990						
Type : Museum						
Uncanny	Main Indicators	Measurement Indicators	Graphical analyzing		Points	
	Emptiness	Large empty Space	●			3
		No content				
	Semiotics	Signs			Random Windows Symbol Holocaust Wall ET Ga Large empty Space &Dead end	3
		Symbols	●			
	Inhumanization	Stark lighting	●		Large empty Space Stark lighting& Dark space	5
		Dark space	●			
	Inhumanization	Same color for whole space	○			
		Unhome	Hidden space	●		3
	Lack of orientation	Space within space	○	Loss of axes direction Hidden space		
Lack of orientation		Dead end	●			6
	Lack of orientation	Loss of axes direction	●			
Uncanny availability		Total Points		20		

1.1.6

11. RESULTS

In this section, all results will be founded with the help of the Excel program, the following are the final results of the research: the results trying to find these issues: What are the ratios of using each primary and secondary indicators ?

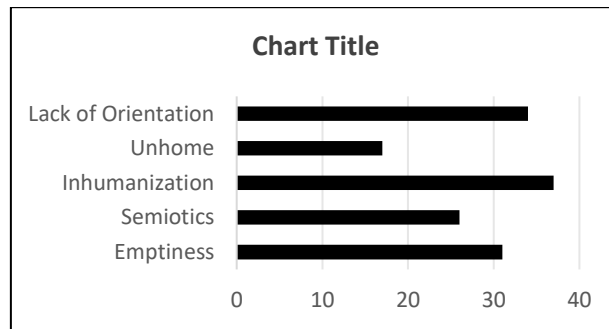


Fig. (6): The ratios of using the primary indicators of 'uncanny' among chosen projects (Researcher)

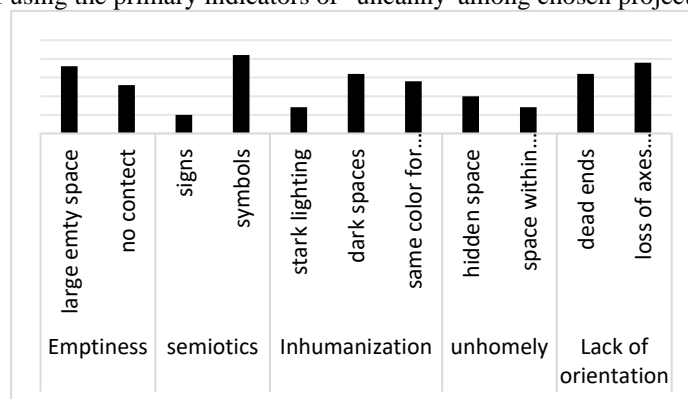


Fig. (7): The ratios of using the secondary indicators of 'uncanny' among chosen projects (Researcher)

10.1. Discussion of the Results

Among primary indicators of the 'uncanny'; the 'inhumanization' indicator is the most frequently employed among the various uncanny indicators, while the 'unhomely' indicator is less commonly utilized in the projects. At the same time, among the secondary indicators of the uncanny; the 'symbolism' indicator exhibits the highest rate of usage, while the 'sign' indicator demonstrates the least frequency of use.

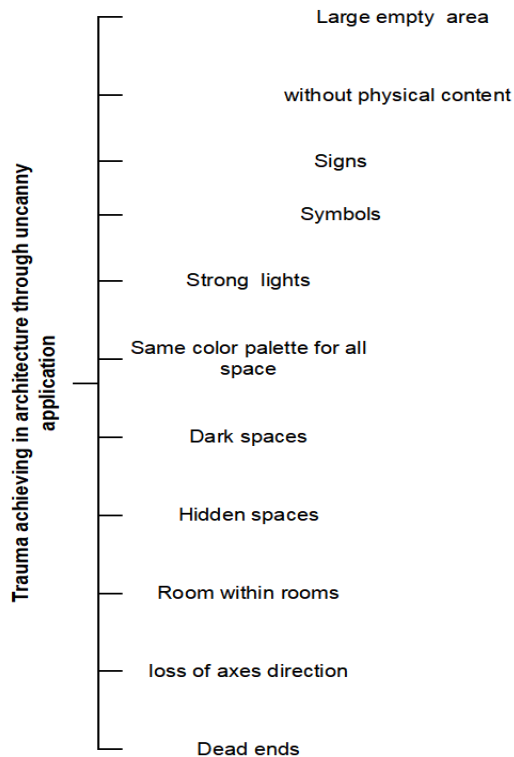
another applicable concept to achieve it. The previous studies showed that the uncanny concept has a strong relationship with trauma, so the study focused on the concept of 'uncanny'. This means that applying the uncanny concept in architecture leads to achieving trauma in architecture. The main indicators of uncanny for achieving trauma. The concept of 'uncanny' has many primary indicators: Emptiness, semiotics, inhumanization, Unhomely, and lack of orientation. Furthermore, each primary indicator has some secondary indicators.

12. CONCLUSIONS

11.1 Conclusion of the Theoretical Part

Trauma is a theoretical concept that does not apply directly to architectural design, so we need

So, designers can follow this guideline to achieve trauma in architecture through the concept of 'uncanny', as follow:



**Fig. (8):** Guideline for designers to achieve trauma through the concept of ‘uncanny’ ( Researcher).

### 11.2 Conclusion of the Practical Part

The results indicated that the primary indicators of the 'uncanny' are not equally utilized for achieving trauma in architecture. The ‘inhumanization’ indicator. At the same time, the secondary indicators of the uncanny do not have uniform usage rates. So, designers can use the results that sjoined in the ‘results section’.

### 13. RECOMMENDATIONS

These concepts may shape future studies by providing several titles to be searched as:

The role of trauma in memorializing architecture, Trauma, memory and identity in architecture.

post trauma aesthetics in Iraqi architecture.

- **Beneficiaries of the Study**

Because the vital path of trauma achieving in architecture can help future projects retain the memory and identity of cities, the following sectors could profit from the findings of this research and apply them in their instructions: Architectural curriculum, Municipality , Engineers Syndicates and Everyone interested in the memory of architecture, history, and identity.

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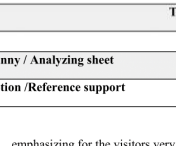
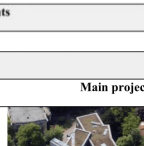
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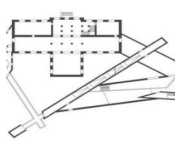

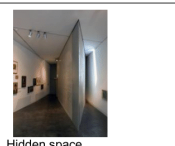
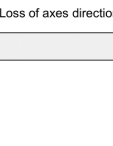
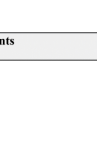


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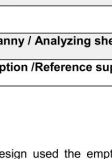
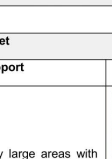
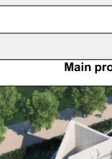

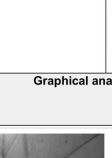
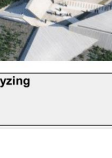
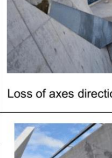




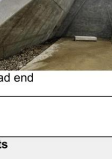
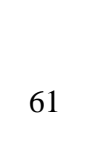

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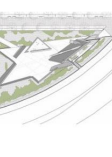









### Appendix : International case study analyzing sheets

Uncanny / Analyzing sheet					
Code: ICS01		Project description /Reference support		Main project image	
Project Name :Jewish Museum Berlin		<p>The uncanny manifests itself in the form of a physical and phenomenological "architectural experience In the Jewish Museum, the notion of absence is inscribed into the architecture and experienced by moving through it. The building is a storyteller. Both spiritually and physically, Libeskind wants to render the persecution and emigration of the Jews present. Quite paradoxically, he does so by materializing his absence.(Olivier,2021).</p>			
Architect : Daniel Libeskind					
Place :Berlin					
Year : 1990					
Type : Museum					
Uncanny	Main Indicators	Measurement Indicators	Graphical analyzing		Points
	Emptiness	Large empty Space			3
		No content			3
	Semiotics	Signs			5
		Symbols			
	Inhumanization	Stark lighting			3
		Dark space			
	Unhome	Same color for whole space			6
		Hidden space			
	Lack of orientation	Space within space			3
Dead end					
Uncanny availability		Total Points		20	

Uncanny / Analyzing sheet					
Code: ICS02		Project description /Reference support		Main project image	
<b>Project Name</b> :Villa Grimaldi		There is the empty swimming pool, which during the dictatorship was used to torture and kill political prisoners, a small wooden tower, a recent reconstruction of the original artifact, and a water tank for the villa that was transformed into a claustrophobic prison. In each of these places, a stone marker indicates what the place was used for,Other signs of what happened are in the rose garden , where each rose has a small terracotta pillar with the name of one of the women prisoners who disappeared at Villa Grimaldi(Violi, 2012).			
<b>Architect</b> : Libeskind studio , Davis Partnership Architects					
<b>Place</b> : Santiago, United States					
<b>Year</b> : 2006					
<b>Type</b> : Uncanny Site& Garden					
Uncanny	Main Indicators	Measurement Indicators	Graphical analyzing		Points
	Emptiness	Large empty Space			0
		No content			
	Semiotics	Signs			6
		Symbols			
	Inhumanization	Stark lighting			0
		Dark space			
		Same color for whole space			
	Unhome	Hidden space			0
		Space within space			
Lack of orientation	Dead end			3	
	Loss of axes direction				
Uncanny availability			Total Points		9












Uncanny / Analyzing sheet					
Code: ICS03		Project description /Reference support		Main project image	
<b>Project Name</b> :Nussbaum museum		In the case of Nussbaum museum, , emphasizing for the visitors very intense feelings through spatial "tightness" or "constraints," textures of materials, "journeys," and plays of light... (Tsiftsi, 2017).			
<b>Architect</b> : Daniel Libeskind					
<b>Place</b> : Germany					
<b>Year</b> : 1998					
<b>Type</b> : Museum					
Uncanny	Main Indicators	Measurement Indicators	Graphical analyzing		Points
	Emptiness	Large empty Space			6
		No content			
	Semiotics	Signs			1
		Symbols			
	Inhumanization	Stark lighting			5
		Dark space			
		Same color for whole space			
	Unhome	Hidden space			2
		Space within space			
Lack of orientation	Dead end			5	
	Loss of axes direction				
Uncanny availability			Total Points		19


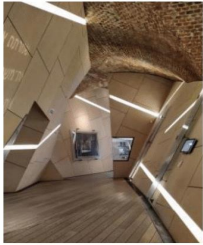
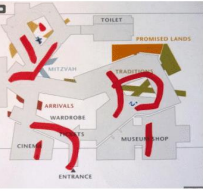
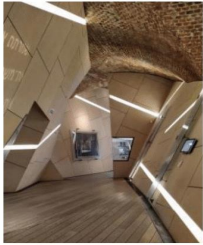
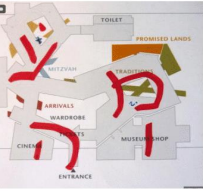
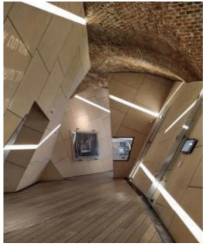
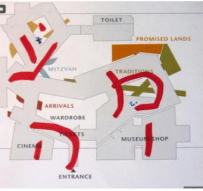
Code: ICS04		Project description /Reference support		Main project image														
Project Name :Haus ur		<p>The artist in the house interior spaces used the room inside room and hidden spaces in addition of using same color tones to whole of the space,and used specific meaningful symbols in his design.Burke,2015</p>																
Artist: Gregor Schneider																		
Place : Amsterdam																		
Year : 1985																		
Type : House Museum																		
Uncanny	Main Indicators	Measurement Indicators	Graphical analyzing		Points													
	Emptiness	Large empty Space				0												
		No content				3												
	Semiotics	Signs							7									
		Symbols							7									
	Inhumanization	Stark lighting										5						
		Dark space																
		Same color for whole space																
		Hidden space																
	Space within space																	
Unhome	Dead end																4	
	Lack of orientation	Loss of axes direction																
Uncanny availability		Total Points										19						





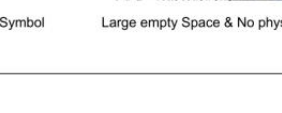
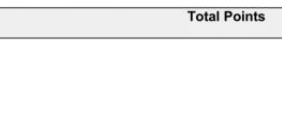
Uncanny / Analyzing sheet															
Code: ICS05		Project description /Reference support		Main project image											
Project Name :National Holocaust Monument		<p>Libeskind in his design used the empty large areas with dead ends and specific symbols in addition to narrow unreadable corridors.</p>													
Architect: Studio Libeskind															
Place : Ottawa, Canada															
Year : 2017															
Type : Monument															
Uncanny	Main Indicators	Measurement Indicators	Graphical analyzing		Points										
	Emptiness	Large empty Space				6									
		No content				2									
	Semiotics	Signs							2						
		Symbols													
	Inhumanization	Stark lighting													2
		Dark space													
		Same color for whole space													
		Hidden space													
	Space within space														
Unhome	Dead end													4	
	Lack of orientation	Loss of axes direction													
Uncanny availability		Total Points							16						

Uncanny / Analyzing sheet						
Code: ICS06		Project description /Reference support		Main project image		
Project name:Museum of Kurdish Culture		Libeskind in his design used the empty large areas with dead ends and darkness also he uses a specific symbols in addition to narrow unreadable corridors.				
Architect: Daniel Libeskind						
Place : Erbil, Iraq						
Year : 1925						
Type : Museum /Proposal						
Uncanny	Main Indicators	Measurement Indicators	Graphical analyzing		Points	
	Emptiness	Large empty Space			4	
		No content				
	Semiotics	Signs		Large empty Space &No content	Symbol	2
		Symbols				
	Inhumanization	Stark lighting			Sign	4
		Dark space				
		Same color for whole space				
	Unhome	Hidden space				1
		Space within space				
Lack of orientation	Dead end		Same color for whole space & Dark space &Dead end	Symbol	3	
	Loss of axes direction					
Uncanny availability		Total Points		14		

Uncanny / Analyzing sheet						
Code: ICS07		Project description /Reference support		Main project image		
Project name:Holocaust Memorial		Peter Eisenman used the cracks, narrow circulation paths, unreadable axes in his design.				
Architect: Peter Eisenman						
Place : Berlin						
Year :						
Type : Memorial						
Uncanny	Main Indicators	Measurement Indicators	Graphical analyzing		Points	
	Emptiness	Large empty Space			0	
		No content				
	Semiotics	Signs		Symbol		2
		Symbols				
	Inhumanization	Stark lighting				4
		Dark space				
		Same color for whole space				
	Unhome	Hidden space				0
		Space within space				
Lack of orientation	Dead end		Loss of axes direction	Dark space &Dead end	3	
	Loss of axes direction					
Uncanny availability		Total Points		9		

Uncanny / Analyzing sheet							
Code: ICS08		Project description /Reference support		Main project image			
Project name:Yad Vashem memorial		The designer used the large empty areas with darkness, also used photos and some Martyrs and symbols represent the war.					
Architect: Moshe Safdie							
Place : Jerusalem							
Year :							
Type : Memorial ,Museum							
Uncanny	Main Indicators	Measurement Indicators	Graphical analyzing		Points		
	Emptiness	Large empty Space	<input checked="" type="radio"/>			4	
		No content	<input type="radio"/>				
	Semiotics	Signs	<input type="radio"/>			2	
		Symbols	<input type="radio"/>				
	Inhumanization	Stark lighting	<input type="radio"/>	Large empty space&No content&Same color for whole space Stark lighting			5
		Dark space	<input type="radio"/>				
		Same color for whole space	<input type="radio"/>				
	Unhome	Hidden space	<input type="radio"/>			0	
		Space within space	<input type="radio"/>				
Lack of orientation	Dead end	<input type="radio"/>			2		
	Loss of axes direction	<input type="radio"/>					
Uncanny availability		Total Points		13			

Uncanny / Analyzing sheet						
Code: ICS9		Project description /Reference support		Main project image		
Project name:Danish Jewish Museum		The designer used the principle of disorientation and symbols refereed to war,also used darkness and column displacement.				
Architect: Daniel Libeskind						
Place : Copenhagen, Denmark						
Year : 2004						
Type : Memorial ,Museum						
Uncanny	Main Indicators	Measurement Indicators	Graphical analyzing		Points	
	Emptiness	Large empty Space	<input type="radio"/>			2
		No content	<input type="radio"/>			
	Semiotics	Signs	<input type="radio"/>	Large empty Space &Dead end &Hidden space	Loss of axes direction	0
		Symbols	<input type="radio"/>			
	Inhumanization	Stark lighting	<input type="radio"/>	Large empty Space &Dead end &Hidden space	Loss of axes direction	3
		Dark space	<input type="radio"/>			
		Same color for whole space	<input type="radio"/>			
	Unhome	Hidden space	<input type="radio"/>			2
		Space within space	<input type="radio"/>			
Lack of orientation	Dead end	<input type="radio"/>			4	
	Loss of axes direction	<input type="radio"/>				
Uncanny availability		Total Points		11		

Uncanny / Analyzing sheet					
Code: ICS10		Project description /Reference support			
Project name:Ground Zero		Main project image			
Architect: Michael Arad Peter Walker					
Place : England					
Year : 2002					
Type : Memorial					
The designer used two large empty holes with Martyrs names refereed to 11 September attack killed in America.					
Uncanny	Main Indicators	Measurement Indicators	Graphical analyzing	Points	
	Emptiness	Large empty Space	●		6
		No content	●		
	Semiotics	Signs	◐		5
		Symbols	●		
	Inhumanization	Stark lighting			2
		Dark space	○		
		Same color for whole space	○		
	Unhome	Hidden space			2
		Space within space	◐		
Lack of orientation	Dead end			0	
	Loss of axes direction				
Uncanny availability			Total Points		

### الخلاصة

تشير الصدمة إلى الاستجابة النفسية أو العاطفية أو الجسدية للأحداث الصادمة. لقد ظهر مفهوم "الصدمة" في جميع مجالات العلوم. لم يعد مجرد حالة أو نظرية طبية، وبالتالي لا يمكننا حصره في الدراسات النفسية فقط، ومن هنا تبرز أهمية البحث في هذا المصطلح بشكل أوسع في العمارة. يتمثل سؤال البحث في: ما هي الصدمة، وما هي أنواعها والمفاهيم ذات الصلة بها في العمارة؟ أجابت الدراسة عن هذا السؤال من خلال مراجعة الدراسات السابقة في هذا المجال، والتي أظهرت أن العمارة، مثل البشر، يمكن أن تتعرض للصدمة، وأن لمفهوم "الصدمة" العديد من الأنواع والأعراض في العمارة. بالإضافة إلى ذلك، تبين أن مفهوم "الصدمة" هو نظري وغير قابل للقياس، ولا يمكن تطبيقه مباشرة على العمارة، ولا توجد مقارنة مفصلة توضح تطبيق الصدمة في العمارة. كما تبين أن الصدمة ترتبط بشكل قوي بمفهوم "الغرابية" الذي يلعب دوراً في تحقيقها. تهدف هذه الدراسة إلى حل مشكلة البحث التي تقول: كيف يمكننا تحقيق الصدمة في العمارة من خلال مفهوم "الغرابية"؟ لحل هذه المشكلة وسد هذه الفجوة، تم دراسة الإطار النظري لمفهوم "الغرابية" و"متغيراته". أظهرت النتائج أن للغرابية العديد من المؤشرات: الغياب، السيميائية، اللانسانية، اللامألوف، وفقدان التوجه. ولكل منها عدة متغيرات ثانوية. تم تحديد منهجية البحث لتحديد نسبة استخدام كل مؤشر من مؤشرات "الغرابية" من قبل المعماريين لتحقيق الصدمة في العمارة. بناءً على ذلك، تم تحديد دراسات حالة دولية كأداة قياس استناداً إلى الأساليب النوعية والكمية لتوفير نطاق واسع من التحليلات، مدعومة بالمراجع. أظهرت النتائج أن لكل متغير مستوى معين من التأثير؛ كان مؤشر "فقدان التوجه" هو الأكثر تأثيراً، وكان مؤشر "اللامألوف" هو الأقل تأثيراً. في الختام، يساهم مفهوم "الغرابية" في تحقيق الصدمة في العمارة. ينبغي على المصممين اتباع مؤشرات "الغرابية" التي تم تحديدها في الإطار النظري، مع تطبيق النسب المحددة وفقاً لنتائج الدراسة >