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STUDY OF MEMORIALS

IDENTIFYING THE ROLE OF DESIGN ELEMENTS AND PRINCIPLES IN THE DESIGN OF MEMORIALS

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Abstract: Memorials are mainly concerned with memories related to events in history. Research shows that emotions and memories are strongly related. The memorials communicate tragedy or uncertainty and evoke aspiration and a sense of gratitude. Sensory experience plays a major role in memory. The paper studies how architects around the world and through time in history, have been successful in designing different memorials to evoke memories of the events that they are dedicated to. It aims to identify architectural and landscape elements and features used in the memorial design to evoke human memories, emotions, and experiences. The research analyses some of the well-known memorials across the world designed after world war I, to date through literature review, and analytical studies and tries to figure out similarities in design elements and principles that are applied by designers of these memorials. The paper limits itself to the analysis of two common emotions attached to memorials- **grief and pride**. The research concludes by identifying elements and principles that are mainly adopted by designers in the design of memorials to evoke the above-mentioned emotions.

Index Terms - Memorials, human emotions, memory, Design elements, and principles

I. INTRODUCTION

According to the Cambridge dictionary, “a memorial is a statue or structure established to remind people of a person or event” [1]. Memorials are places to highlight the importance of an event, person, or situation and they link the past to the present and also to the future and are the legacy of social groups and their collective memory, [2,3]. They are created to honor a person or event. Forms of memorials include works of art and public open spaces, that most of the time become landmarks of the city in which they are located. They evoke the feelings of the visitor through memory and associations they have with the event or the person. They also act as places that will sustain the collective associational value even to the future generations. ‘They are used as a tool to preserve the national memory of people’ [4]

During celebration and commemoration events, they promote several interactive activities, and on a day-to-day basis, they also act as recreational spaces which make them multidimensional. This interaction is an indirect way of transferring history and information among future generations and people of different cultures [5]. The elements of landscape and design create a tactile, intimate, physical relationship between people and place [6,7].

The research aims to analyze various memorials to identify common design elements and principles used in the memorial design that evoke human emotions and experiences. The study focuses on the relation between memorials and memory. It also investigates through comparative analysis different architectural elements and design principles used in memorials.

To carry out the above investigations, the authors of this research paper believe that memorials can be classified into three broad categories. The first one is memorials which can be related to the emotion of grief. The memorials are designed to commemorate

an event in history that has affected the collective memory of certain social groups of society, like the 9/11 attack, the German holocaust, etc. The second category is that of memorials related to the heroes of the nations who sacrifice their lives to serve their nation and the memorials evoke a sense of pride among the visitors. All war memorials come under this category.

The third one is memorials dedicated to appreciating the contributions done by individuals to the upliftment of society.

The paper concentrates only on memorials based on events in history, that is, the first two categories, and not on any person’s personal life or philosophies which is the third category.

MEMORIALS AND MEMORY

Memorials are mainly concerned about the memory and emotion related to events in history and the design of a memorial succeeds only if the emotions or sentiments related to humans are evoked in the majority of people since it is subjective and not all feel the same. Certain elements of design and design principles can be applied in the design of memorials to evoke a certain kind of emotion, can it be objectified, or, are every memorial unique, a mixture of different elements used harmoniously.[8]

In the face of tragedy or uncertainty, memorials can bind us together and strengthen our communities. In addition, they can remind us that being great is a worthy goal.

By using a variety of words, often interchangeably, to describe these wars, it is difficult to make sense of their history and make sense of our monument wars. Memory is as old as humankind. Therefore, words such as "monument," "memorial," and "commemoration" have their roots in another complicated word: "memory." Researchers from a wide range of disciplines examine memory, including historians, physiologists, physicists, sociologists, and philosophers. Memory studies' broader scope and their rapid growth in recent decades indicate how deeply memory affects all aspects of modern life.

METHODOLOGY

Memorials are associated with memories and designers through their design and use of certain design principles and elements to evoke the associated memory to the visitors

The research uses a Comparative analysis method to identify the major design elements and principles used in some of the famous memorials designed by great architects in different regions of the world and at different time frames from world war I till the present.

The memorials are classified based on the reason it is built and the emotion associated with them. Broadly the categories are **pride and grief**. Pride can also be associated with the **values of honor, courage, patriotism**, etc. (Memorials built as a tribute to soldiers, police, doctors, etc. for their selfless lives sacrificed for other people). Grief can be associated with **'feelings of absence, emptiness, and invisibility – expressions of disappearance'** [11] (Memorials built as a tribute to lost lives during terrorist attacks, catastrophic events, inhumanity, etc.).

The comparative analysis study of memorials is based on different parameters and they are elements in the design- **Columns, walls, floors, water, light, vegetation**, and design principles - **Axis, symmetry, hierarchy rhythm, and repetition**. Based on this comparison, inferences and conclusions are drawn. on whether there are common elements associated with certain feelings and emotions.

II. THE MEMORIALS

FIVE MEMORIALS ARE IDENTIFIED BASED ON THE EMOTION OF GRIEF AND FOUR FOR PRIDE.

MEMORIALS FOR GRIEF:

9/11 MEMORIAL:

It (Fig 1) is located in the state of New York America. It was designed by Israeli-American architect Michael Arad and built in the year 2006. 'The 9/11 Memorial is a tribute of remembrance, honoring the 2,977 people killed in the terror attacks of September 11, 2001, at the World Trade Center site, near Shanksville, Pennsylvania, and at the Pentagon, as well as the six people killed in the World Trade Center bombing on February 26, 1993'.[9] The memorial also has a museum where all the remaining towers are exhibited and also explains the tragedy.



Fig 1 -9/11 memorial-JIN S. LEE

HIROSHIMA MEMORIAL

The Hiroshima memorial (Fig 2) is located in Japan, It was designed by famous Japanese architect Kenzo Tange in the year 1954 to commemorate the first atomic bomb dropped 'targeting the intersection of bridges over the Honkawa and Motoyasu rivers. The bomb devastated Hiroshima within a radius of 5 km, resulting in 140,000-150,000 deaths by December of that year'. [10]



Fig 2. Hiroshima memorial- Flickr user: karma-police

JEWISH MEMORIAL

The Jewish memorial (Fig 3) is located in Germany, designed by Daniel Libeskind 'in the year 2001 it exhibits the social, political, and cultural history of the Jews in Germany from the fourth century to the present, explicitly presenting and integrating, for the first time in post-war Germany, the repercussions of the Holocaust [11]



Fig 3 Jewish memorial, Denis Esakov

NATIONAL MEMORIAL OF PEACE AND JUSTICE

The memorial (Fig 4) is designed by a Mass design group in the year 2018 for the "legacy of enslaved black people, people terrorized by lynching, African Americans humiliated by racial segregation and Jim Crow, and people of color burdened with contemporary presumptions of guilt and police violence". [12]



Fig 4 National memorial of peace and justice

The observations of the all the identified memorials for Grief are summarised in Tabular format below (Table 1)

Table 1-Memorials considered for study based on grief

MEMORIAL	LOCATION	BUILT YEAR	REASON	ARCHITECT	ASSOCIATED SPACES
9/11 Memorial	New York	2006	Honoring those who were killed in the 2001 and 1993 attacks.	Michael Arad	Museum
Hiroshima memorial	japan	1954	It is located at the center of the atomic blast and is dedicated to those killed by the explosion.	Kenzo Tange	Museum
Jewish memorial	Berlin	2001	The memorial Exhibits the social, cultural, and political, history-the repercussions of Jews of Germany-the Holocaust	Daniel Libeskind	Museum
National Memorial for Peace and Justice	America	2018	To the presumptions of guilt and police violence against The black people, terrorized by lynching. The humiliation of African Americans by racial segregation.	MASS design group	Sculpture park

MEMORIALS FOR PRIDE:

LIBERTY MEMORIAL

The memorial (Fig 5) was built in 1926 in Kansas City, Missouri, America, designed by H. Van Buren Magonigle as a tribute to the soldiers who fought in the world war I



Fig 5 -Liberty memorialPaul Brady

NATIONAL WAR MEMORIAL AND INDIA GATE

The iconic archway (Fig 6) and the memorial (Fig 7) both are dedicated to honoring the Indian soldiers who fought in armed conflicts. The India gate was designed by Edward Lutyens in 1931 and the war memorial was designed by Yogesh Chandrahasan in the year 2019.



Fig 6-India gate



Fig 7 National war memorial

UNKNOWN SOLDIERS MEMORIAL

The memorial (Fig 8) was built to honor Egyptians and Arabs who lost their lives in the 1973 October War. It was designed by artist Safi in the year 1975



Fig 8- Unknown soldiers memorial

VIETNAM VETERANS MEMORIAL

The memorial (Fig 9) was designed by Maya Lin in the year 1982 honoring service members of the U.S. armed forces who fought in Vietnam



Fig 9 Vietnam veterans memorial

The summary and the observations of the identified memorials for pride are computed in Tabular format below (Table 2)

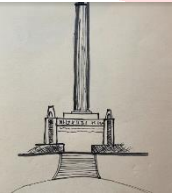
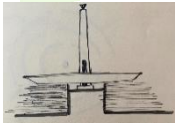
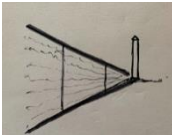
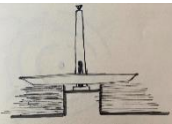

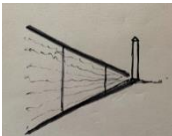
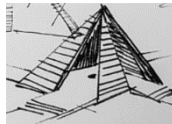
Table 2-memorials considered for study based on pride

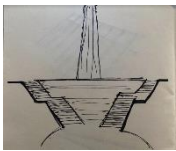



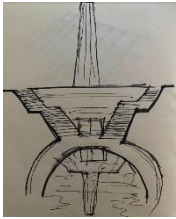





MEMORIAL	LOCATION	BUILT YEAR	REASON	ARCHITECT	ASSOCIATED SPACES
<i>Liberty Memorial,</i>	Kansas City, Missouri	1926	Tribute to the soldiers of world war 1	H. Van Buren Magonigle	-
National war memorial	Delhi, India	2019	Built to honor and remember soldiers of the Indian military who fought in armed conflicts	Yogesh Chandrahasan	Public Plazas
Vietnam Veterans Memorial	Washington dc, USA	1982	Honor service of the U.S. armed forces who fought in Vietnam	Maya Lin	-
India gate	Delhi, India	1931	Tribute to soldiers of India	Edward Lutyens	-
Unknown Soldier Memorial	Cairo. Egypt	1975	To honor Egyptians and Arabs who lost their lives in the 1973 October War.	artist Sami Rafi	-

III. ANALYSIS AND DISCUSSION

Analysis of the above-listed memorials are done to find the similarities and differences in design elements and principles used by the respective architects. The design elements considered as parameters are-Columns, walls, floors, water, light, vegetation, and design principle are -Axis, symmetry, hierarchy rhythm, and repetition. The comparative analysis method is adopted and is as shown in table 3 and table 4




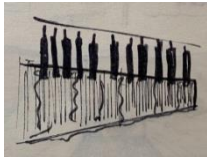


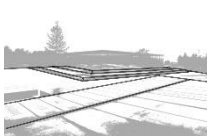




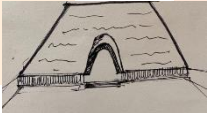


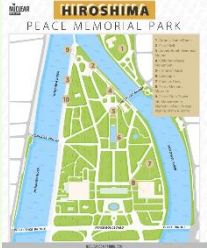


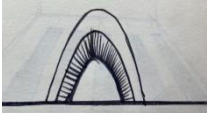
Table 3-Comparative analysis of memorials based on Pride

	Liberty Memorial,	National war memorial	Vietnam Veterans Memorial	India gate	Unknown Soldier Memorial	INFERENCE
COLUMN				-	-	Most of the memorials have a free-standing column or obelisk which has been used since the time of Egyptian civilization to depict sacrifice, pride, dignity
WALL				-		Walls are generally used to honor people who lost their lives with the inscription of their names

FLOOR				-		Floors in most memorials are used to create interest or to highlight the central element
LIGHT	-	-	-	-	-	Since all the memorials are built outdoor light doesn't play a major role
WATER		-	-	-	-	Water is rarely used as a feature for memorials associated with Pride
VEGETATION					-	Vegetation is part of most of the memorials which are used to accentuate the main element, -to give directionality
ARCH	-	-	-		-	The Romans used the arches as a memorial after any important events. most of them are associated with victory, pride, and dignity
DESIGN PRINCIPLE	AXIS SYMMETRY HIERARCHY	RHYTHM REPETITION SYMMETRY HIERARCHY	SYMMETRY DATUM	AXIS SYMMETRY	SYMMETRY	Symmetry is one of the design principles used commonly in all the memorials

As a result of the analysis, it is found that **columns** in the form of obelisks are the central design elements used to express the emotion of pride. Symmetry is the primary design principle that can be observed in the design of all the five memorials under the study. **Floor** and **vegetation** are used for the directionality and to accentuate the space. **Wall**, as an element is used to pay tribute in the form of an inscription of their names on it. **Light and water** are the elements that are least associated with these memorials.

Table 4-Comparative analysis of memorials based on grief

	9/11 Memorial	Hiroshima memorial	Jewish memorial	National Memorial for Peace and Justice	INFERENCE
COLUMN	-	-		-	Columns are rarely used to symbolize grief
WALL		-			The walls are not always used to honor people with their names, They are used with other elements like water and light to accentuate the space
FLOOR		-			In most memorials floor is used to honor the victims and also to showcase the pain suffered, by changes in texture and color
LIGHT	-				Light is used to show hope or drama in the space or highlight the space
WATER			-		Water is used as a symbol of peace which soothes the people who are grieving
VEGETATION					Vegetation plays a major role in all the memorials to make space divine, soothing, and a place for peace and worship
ARCH	-		-	-	Used as a focal point or datum
DESIGN PRINCIPLE	REPETITION DATUM	AXIS DATUM	RHYTHM	DATUM REPETITION RYTHM	Datum is a common principle used in memorials of grief which showcases another element in the background

Based on the analysis carried it is found that **datum** is the major principle that ties together all the other elements of design. The **vegetation** is used widely in all the memorials considered for study to make the space feel divine and soothing. **Water** as an element helps keep people calm and provides a symbol of peace and is the next widely used element in memorials of grief. The **floor** is varied conceptually and differs with each design, by changing the color and texture. **Walls** are used with other elements like light and water to accentuate the space. **Light** is another important element used in two of the four memorials' understudy, and it symbolizes hope and peace for grieving people. **Columns/arches** are not used as the central element of design as compared to memorials for pride.

IV. CONCLUSIONS

Memorials enable strengthening memory and keeping memories alive. The comparative analysis has resulted in the findings stated below.

The observations show that memorials of pride rarely have associated activity spaces in memorials for pride whereas associated other activity spaces such as museums and parks can be found in memorials for pride. **Symmetry** is the primary design principle that can be observed in the design of all the five memorials used to express the emotion of pride. It is found that **Datum** is the major principle observed in the design of memorials for grief. **Water** as an element helps keep people calm and provides a symbol of peace and is the widely used element in memorials of grief and is least associated with these memorials of Pride. The **vegetation** is used widely in all the memorials considered for the study of grief to make the space feel divine and soothing while it is used for the directionality and to accentuate the space in the memorials for pride. It is found that **columns** are the central design elements used to express the emotion of pride and are not used as the central element of design in memorials for grief.

Thus, this study has helped the researchers to recognise the importance of different elements and design principles, taking up the forefront, and evoking different emotions in the memorial design. In further research, using the same method of analysis of other memorials, the above findings can be tested for consistency.

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