

A COMPREHENSIVE ANALYSIS OF THE NATURAL AND CULTURAL SETTINGS OF THE LANDSCAPE ARCHITECTURE IN THE ROMAN CITY OF JERASH “GERASA”“THE REVIVAL OF THE NATURAL AND CULTURAL SETTINGS”

El -Khalili Mohammad / Jordan

Assistant Prof., Hashemite University, Queen Rania Institute of Tourism and Cultural Heritage ,Department of conservation science, Zerqa – Jordan

Introduction

Landscape Architecture is a new discipline but its origins dated back to the earliest periods of human life in which from the Mesopotamian, Egyptian, Classical Ages and so forth human effects of alteration, reshaping and even destruction in his surroundings could be seen clearly from city's building, large fields harvesting and ...etc, but one of his most creative and skilled works was the subtle understanding of the landforms in which he observed the formation of the landscapes tried to exploit them for his own needs, and then he started to think how he could engage his man-made features with natural areas to get the highest potential values of this relationship to produce later landscape-based architecture (Landscape Architecture).

I tried in this research to take the path of analyzing the landscape and urban planning and trying to clear the relationship between them and how they combined together in order create what is called landscape architecture, actually, I have conducted a theoretical study for landscape architecture in general and for the sake of realizing how could we get mature and harmonious landscape architecture. This topic is so complex in terms of theoretical analysis of the exploitation of landscapes and how the ancient man did the best to alter, change, reform and create ecosystem via landscape architecture. My case study is concentrated in the Roman city of Jerash as it could be one of the best models of studying such a discipline in which the manifestation of the elements of a harmonious landscape architecture especially in the case of Artemis complex could be clearly seen. Indeed, it is the best example that could show us the intelligence of the human in dealing with his environment and how did he express his own way of thinking and belief, in addition we will see how this complex have the greatest dominance over the whole landscape of Jerash in its scale, open architecture, physical and visual features, and the gentleness of its placement on the landscape of Jerash that

finally created a united composition in the entire landscape architecture.

Landscape Architecture

Nowadays there is a growing tendency to study the changes and effects on the environment therefore the efforts are driven toward studying topics related to our surrounding environment and nature, this subject since the ancient times was the dominant topic in the life of nations in terms of their settlement, occupation and even existence, and in this research I am interested here to present the topic of "Landscape Architecture" in a wide perspective, but before starting to indulge ourselves in this field we should first understand what do we mean by Landscape Architecture, it is the art of planning and designing the open-air environment, especially with reference to the harmonious fitting of buildings, roads ...etc into the landscape.

Landscape formation and Landscape Architecture

When studying landscape architecture we should know the principles and basics of site selection in order to insert Architectural features, we do know that civilizations were normally successive and the large cities were previously originated from small villages but this is not to say that site selection is always the consequent action of previous occupation but it is originally that the topography itself is the main factor of the site selection in which site characteristics themselves may suggest the best use of land, in general principles of site selection is referred to religious, human, geographic, strategic, social and political ...etc factors. for example when we observe the existence of a hill that is somewhat higher than its surroundings we may naturally feel that this hill has a distinctive and special status or position, it could be religious or strategic characteristic, and this is also true when we observe the existence of a valley or a river that crosses any place in which it may reflect strategic, military,

Section I: Defining the setting of monuments and sites:
The significance of tangible and intangible cultural and natural qualities
Section I: Définir le milieu des monuments et des sites-
Dimensions matérielles et immatérielles, valeur culturelle et naturelle

or even urban organizing perspective, what do we note here that the other dominant factor of site selection is the function desired from those selected areas, so when we need to construct a defensive tower we definitely choose a higher place, from our brief discussion we can realize that the landscape from the human perspective should be a functioning landscape that can serve most of the human needs, this was the basis of the landscape architecture in which the subtle human understanding of the landscape guided him into the best ways of dealing with it, therefore he started to change, alter, add or even damage the landscape to serve his own needs by combining his man-made installations with an altered, reproduced and managed landscapes to create finally a wise combination of all that into a more purposeful and utilizing created environment. Moreover because of having an immense amount of diverse landscape features we can conclude that it is therefore that the villages and cities are also diverse responding to those features in which those villages and cities were established on.

Urban Design within the Landscape

The successful design of a harmonious landscape requires an intellectual work of combining various parts to create a feeling of a unified whole, which is originally rose from problem solving, for instance when we have a steep sloping and we want to instill some plants we may use cutting and filling for the slope. We can suggest here six main elements that can create a harmonious landscape, in which they can be applied in the urban design and the establishments of an integrated environment of natural and man-made features, those elements are: *Simplicity, variety, emphasis, balance, sequence, and scale*. *Simplicity* breeds elegance, simple lines, forms and functional designs are always more interesting than complex hard-to-digest designs that do not allow a proper focus of attention. In other words, simplicity means subtle combinations of elements to create appeal while solving a functional need. By *varying* the forms, texture, and colours we prevent boredom, in landscape architecture we should keep careful balance between repetition and variety, while too much variety can result in confusion. Since variety creates strong contrast, it should be used sparingly. Emphasis is a mean of drawing attention to important features while less important features take a subordinate role, this is often accomplished by variety of forms texture and colours. Emphasis requires variety, since emphasis should hold the viewers attention to longer than anything surrounding it. If the landscape unbalanced one of the views will dominate causing the others to be lost to the composition. Subconsciously, we look for *balance* in

everything we view. Balance can be symmetrical, in which case the elements on either side of an axis are exactly alike, or it can be asymmetrical, with unlike elements of equal weight on each side. Weight can be either physical or visual. Symmetrical balance is achieved by using the same features of form, texture, and colour on each side, so one side forms a mirror-image of the other side. For the viewer's eye to move over a landscape in an orderly fashion to each point of emphasis a *sequence* must be established, the sequence can be created by progression of form, texture or colour. It can also be made up of combination of each. The general scale in landscape architecture is somewhat relative and it might be thought of as proportion. Relative scale is a feeling about the way one unit relates to another in size. Humans tend to relate the size of an object to their own form. Objects that relate well in size to the human forms are considered normal, larger than normal scale tends to frighten us while smaller scale is subservient we feel we are in command. It is necessary to apply the principles of design and our basic elements of unity and harmony so that colour, texture, and form can be unified in a pleasing composition. The general urban design and landscape architecture should be weighed carefully and therefore the national landscape of the site and our urban designs can be integrated into one mass.

Now when a decision has been made regarding emphasis for any structure with the landscape, the visual strength of that structure may originate in any of the three physical characteristics or in a combination of two or more. Moreover anything special and different in the landscape creates emphasis by its greater variety, this is strongly achieved by applying the landscape embellishments including, water features, plants, sculptures, obelisks, etc, and those features are not just a landscape accessories but also a significant part in the process of creating emphasis and most important in the emergence of a supreme dynamic and vital environment in the designing of a landscape architecture as well as with no doubt to its significant role in the process of creating a unified composition of the whole landscape architecture.

The key factor in landscape architecture is urban designing in which it is closely linked to both architecture and planning, yet is a quite distinct subject area. The main concern of urban design is the design and structuring of public space in cities, towns and also in the smaller settlements that comprise urban regions. The main actors in urban design are the square, the street, and the buildings that make up the public face of our towns and cities, so it is significant to know their role in urban design, the way in which they are arranged within the landscape architecture. We should recognize also that urban planning is the

Section I: Defining the setting of monuments and sites:
The significance of tangible and intangible cultural and natural qualities
Section I: Définir le milieu des monuments et des sites-
Dimensions matérielles et immatérielles, valeur culturelle et naturelle

organization of land uses, transportation and infrastructure networks both for efficient functioning and the creation of a pleasant and well-ordered environment.

Buildings and Spaces within Landscapes

In our analysis of the landscape architecture we should know who is the dominant feature within the landscape in which it could be buildings or spaces, spaces made useful, comfortable, relaxing, and stimulating contribute much to enjoyable living. In urban design we have two main concepts in dealing with architecture, in the first concept the town or city is visualized as an open landscape into which buildings have been introduced as three-dimension objects, pieces of sculpture sitting within a parkland. The second concept is of a town or city where public space, that is, the streets and squares appear to be carved from the natural landscape itself. Unity can be founded in architectural landscape by applying the right ways of urban design in which it is dependent upon the form and the layout adopted in a specific landscape form and the consistency with which it is developed. Unity in the landscape architecture is the subtle result of the successful methods applied by the urban design.

Buildings are the dominant feature in an integrated environment of landscape architecture, thus its appearance within the landscape is highly significant since it forms simultaneously with the public spaces and the natural landforms the whole appearance of landscape architecture and reveal if it is a unified whole or a disparate parts. However, spaces are the dominant player in the general arrangement of buildings in a landscape in which they have a great emphasis as being empty parts or open areas, therefore squares and streets as a key factors in cities and towns development, in other words we can say that squares and streets should receive more attention when analyzing the landscape architecture. Squares and plazas are also important elements for city design it is possibly the most important way of designing a good setting of public and commercial buildings in cities. A square or a plaza is both an area formed by building and an area designed to exhibit its buildings to the greatest advantage.

Jerash (Gerasa)

Jerash or Gerasa is one of the major cities in northern Jordan, it is located about 40km north of the capital Amman. It was inhabited since the Neolithic period until now, but the city's prosperity was mainly achieved during the Roman

Period although it was founded at the time of the invasion by Alexander the great in the 4th century B.C., some scholars suggest that the city was established as a military camp, strategic post and for commercial reasons, in which cities founded or expanded for this reason afterwards developed as urban communities, moreover a union of ten cities was established during the Hellenistic period it was called the Decapolis, Jerash was one of those ten cities, it is actually its main urban development was during the Roman period in which we will discuss its importance for the general formation of Jerash architectural landscape.

Geography of the Area

The geography of Jerash city is characterized by its diversity since it bisected by a river called " Chrysorhoas" (Golden River) it runs from north to south crosses the body of the city forming separated areas of diverse features, it is then worth to be called the Golden River since it functionalized the use of the land and ideated solutions in urban planning and development in this natural context. The eastern part is some what steep and flattish which contained the Gerasian's residential area, the western part of the city is the dynamic part in its topographic and architectural features; it consists of two main dominating hills, the first one in the south and the bigger sloped one that occupies the north and the central part of the city, parallel to the river in the western side there was some what a flattened area in which the Romans established the main arterial street (Cardo Maximus).

Urban Planning and the Landscape Architecture in Jerash

The Romans transformed the separated and uneven terrains of Jerash into a spectacular urban design and outstanding landscape architecture. What had been produced finally was a new generation of universal cities adopting the codes of the Romans keeping some of the local principles and cultural identities. If we carefully analyzed the urban fabric and their placement in Jerash we will recognize that the architectural arrangement followed the typical concepts of ancient planning and topographical conditions, by the contribution of those two factors in urban planning what the Gerasians produced was a set of integrated and harmonious mass of landscape architecture. The Romans developed a standard urban design which was based on a regular grid pattern, the developed plan with square or oblong perimeters and two dominated, centrally intersecting axis (Cardo and Decumanus) *see fig(1)* . In our case here in Jerash the actual

Section I: Defining the setting of monuments and sites:
The significance of tangible and intangible cultural and natural qualities
Section I: Définir le milieu des monuments et des sites-
Dimensions matérielles et immatérielles, valeur culturelle et naturelle

urbanization and organization of the land began in the fourth and third century B.C. when the area near the camp hill was inhabited by the Greeks, the topography of the city was conditioned by the river Chrysorhoas, in the western part there was a flat area located between the huge extended terrain in the northwest and the smaller terrain closed to the river this flat area extends from north to south parallel to the river, this natural formation in the topography of Jerash inspired the Romans to exploit this area by installing an arterial road (Cardo) running in this area from north to south, it forms the main axis of the city in which the other buildings and facilities were installed accordingly. In addition to two other main roads intersecting at right angles with the Cardo and continuing across the river on bridges to connect the residential area east of the river, The southern gate of the city leads obliquely onto an oval plaza, which forms the end of the arterial north-south street, this plaza or forum was originally a natural depressed area between two main hills, the Zeus complex raised to west hill and the camp hill to the east so the Romans built a colonnaded forum following the natural outline of this depressed area. We can observe here in the two examples; the streets and the forum, how did the Romans exploited the depressed area in the city to accommodate a comfortable circulation and public space for the city, the axial road (Cardo) running through the town gave certain amount of unity and also linked the majority of the public buildings.

The most dominating parts in the city of Jerash are Zeus and Artemis complexes both of them are spectacular religious buildings that have a dominating overview on the land, actually, the location of the sacred buildings, the natural landscape of the city and its surroundings, and the existence of many necropolises on the site, all were major factors in creating the urban form of Jerash. The camp hill and the place of the sanctuary of Zeus represent the earliest Hellenistic settlement in Jerash and the beginning of its urban morphology, the first pathway to be constructed or laid out was the south street located between the two hills. The hill on the south western side of the forum probably was as the city's acropolis or more correctly its arx. The city's major temple (Zeus Temple) was situated here overlooking the residential area. Although Zeus had been worshipped in this sacred hill since the Hellenistic period, the surviving remains are of the Roman period (first to second century B.C.). This complex consists of three main terraces in which they tried to exploit the lands potentiality by creating terraces and staircases according to the original landscape.

The Artemis Complex

The Romans finest example in the manifestation and application of the concepts of landscape architecture, and urban planning can be observed in the complex of Artemis it is thought to date from the 2nd century AD, when Jerash was at the height of its wealth and splendor, they wanted to apply their principles of urban design while exploiting the land potentialities in creating a divine complex of landscape and architecture this is also as we will see later, tried to represent the mythology in this complex. For understanding the landscape architecture of this Complex we will trace the sacred way, imitating what Romans were doing in the process of ascending toward the temple of Artemis and then to discover the principles that we have discussed before in our theoretical study of the Landscape Architecture. The harmonious relationship between the architecture and the landscapes stemmed from the embodiment of the goddess (Artemis) presence in the temple. *See fig (2).*

The Romans had their ideas of creating vistas for viewing the landscape and for the appreciation of their monumental, colossal architecture. Temple of Artemis stand on at the top of the west dominated hill which occupy the central part of the city that presented it as the most imposing structure in the whole city of ancient Jerash. It shows how did the Romans skillfully applied their own concepts of architectural design in the creation of an integrated and superimposed structure of vistas and fabrics in addition to the full employment of mythology, religious believes, and rituals in the complex. They made a full use and utilization of the landscape potentiality of the same time allowing the expression of grandeur and propaganda. Artemis complex consists of the east and west propylaea, the alter terrace, the Temenos, and the temple, dominated the shape of the city, *see fig (3).* The Romans exploited the natural terrain and its uneven property for the creation of a logical sequence in a linear organization of many open spaces and architectural elements, they are all arranged with combination of the six elements that finally produced the harmonious landscape architecture which combines the man-made components with the natural ones, these elements are Simplicity, variety, emphasis, balance, sequence, and scale, in which they were employed creatively providing flexibility in the architectural space and the various architectural elements, they are all set upon a natural context of the terraced land. Indeed, the complexes is fully set on a main axis with a sequence of elements linked together a long with a successive vistas and changing levels of a ground which can be interpreted as ascending to heaven since all the approach system was aimed to transmit the human in the processional way to reach the temple of Artemis that is located on a scared place differing from the public area which definitely needs a

Section I: Defining the setting of monuments and sites:
The significance of tangible and intangible cultural and natural qualities
Section I: Définir le milieu des monuments et des sites-
Dimensions matérielles et immatérielles, valeur culturelle et naturelle

special means to be reached.

The sacred way started after crossing the north bridge of the city (the former location of old Roman domestic area), now disappeared and it is ended in monumental staircase and triple gateway this gate marks the beginning of the scared route and provides honor and specialty to the route (both disappeared) which gave onto along colonnaded square with 8.10 meter wide while the cardo is seven meters this demonstrates that the sacred way is more important than the cardo since it holds religious characteristics and serves huge number of worshipers. After that we have the east propylaea, (propylaeum plaza), a trapezium-shaped space adorned with recesses, fountains, columns and pillars, which a strides the cardo creating a dynamic expanding space able to visually overcome the gab created by the cardo which separates the square from the propylaea opposite, actually, from triple gateway till the end of the trapezium-shape there is a gentle increase in the ground level, conveniently the pavements of the square and the propylaea are at the same levels the end of the flared trapezium matches exactly the second propylaea which stands behind four gigantic columns of the colonnade along the Cardo leads into the richly carved triple entrance gateway decorated with niches, pilasters and carved floral motifs. Propylaea, the scared way ascended a monumental staircase composed of seven flights of steps enclosed by high walls. Land was turned into structure and facilities intended for public utility, trade and worship, this slope was treated by grading in which they cut the slope creating a new space supported by a retaining wall and after that erecting double story parade of shops which forms the bearing structure of the terraces about 14m above the cardo, the terraces which is reached by along staircase (seven flight of seven steps) raising through the backfill. The staircase led to the alter terrace and then many steps are required to carry people from the alter terrace. So we have seven flights with width of about 19m. The temple of Artemis was designed to be hidden and enclosed when one approached it from the staircase within the scared way. The Temenos is like a closed square which has the tendency to frame the temple of Artemis rather than leave it isolated, and also it contains the open air alter terrace, where religious ceremonies were celebrated. The temple of Artemis stands on a solid podium with two walls projecting eastwards to flank its main entrance stairway. There were six columns in the front and six in back, and eleven columns in each side.

The harmony in landscape architecture: (Artemis complex)

The subtle employment of simplicity, variety, emphasis,

balance, sequence, scale in the erection of Artemis complex made it a masterpiece of landscape architecture characterized by its strong physical elements and the vivid visual attraction, the intelligence in this complex rises from the logical arrangement and the vigorous management of the viewers eye in which we will see now how did the Romans clearly controlled the influx of worshipers who entered the scared way and ascending toward the temple of Artemis all of this was achieved by the six elements we have mentioned before. From the general design of the complex we can realize that it was established in organic manner in which from the beginning of the sacred way and up toward the sanctuary of Artemis every physical and visual component is gradually change in terms of levels, bigness, embodiment, embellishment and the increase of vistas site, but bearing in mind that the main concept here is the control of the viewer's attention. First of all simplicity in the complex of artemis was achieved by its subtle design in which simple lines, forms and functional elements all combined together to produce simplicity that it is more interesting than complexity. Indeed, simplicity in the complex creates appeal while solving a functional needs, it is also achieved by repetition that each unit of the sacred way has a repetitive elements at the same time differing from the elements used in other following units, in addition simplicity makes the movement on the structure more comfortable, but repetition should be controlled by the second element which is variety. Variety is highly observed in the complex that each step forward reveals for the viewer more and more visual and physical features, at the same time preventing boredom, here in the this complex variety is achieved by the rich forms, designs and embellishments used to add a sense of holiness and grandeur to the complex using variety to make each part of the sacred way differ from the other unit and designs to find the best solutions for connecting those parts together by applying emphasis at the triple gate is the main feature in which the emphasis is highly observed, but once you enter it, the second court and trapezium-shaped plaza with there new features, they draw the attention of the viewer, and in each step when you are leaving any unit, the second unit has more emphasis enough to draw you up toward it, this is clearly seen when some one leaves the trapezium-shaped plaza toward the west propyleum that has more emphasis, actually we know that the trapezium-shaped plaza is richly decorated with various elements but there is no contradiction between it and the west propelya because when two or more unities can be seen at the same time, the viewers brain recognize instantly the emphasis that is more important and the eye rests on that point for a period of time, this also demonstrates that the problem of counter axial force of the cardo was creatively controlled if not entirely erased by the

Section I: Defining the setting of monuments and sites:
The significance of tangible and intangible cultural and natural qualities
Section I: Définir le milieu des monuments et des sites-
Dimensions matérielles et immatérielles, valeur culturelle et naturelle

use of emphasis with both the trapezium-shaped plaza and the great scaled and attractiveness of the west propylea integrated with each other to draw the attention of the viewer upward to the west propylea while embalming the cardo or even isolate it from the whole system. See *fig (4)*

One of the most dominant elements in the Artemis complex is the high sense of balance and this was achieved by the full symmetry of the of the complex around the main axis of the sacred way in which the physical and visual elements on either side of the axis are exactly alike, in other words one side forms a mirror image of the other side. Scale is also a significant element for harmony it is how employed in the complex to create the sense of greatness and holiness to the complex as moving toward the temple the scale is increasing considerably here the large scale is the commander of the view in relation with the human scale so it appears somewhat frightening, but the important point here that not contrast the part of the complex with each other but to contrast the whole complex with the entire urban fabric of Jerash, we observe here that the complex controls the whole landscape architecture is its special axis, scale, open space architecture in addition to its special landscape context. Now all of the physical and visual features are established with the use of the last element which is sequence the gentle sequence of the complex units made the viewers eye to move easily over the landscape in a high sense of order to each point of emphasis, anything starting in the sequential progress will create a point of emphasis thus ending the sequence. All of the units are elaborately combined cohesively with the full exploitation of the basic elements we discussed before after all that the whole complex is extra-ordinary in its position in the landscape, and its physical and visual features which makes it the dominant monument of the landscape architecture. See *fig (5)*.

Mythology in Landscape Architecture

As we know that mythology played a great role in the life of the Romans not only in their minds but also it is demonstrated to be applied to their physical remains in which they employed mythology and their religious beliefs about gods and goddesses in the case of Artemis complex, they highly tried to represent the main characteristics and beliefs about Artemis in the complex, first of all because Artemis was described in mythology as she tends to live on mountain, goddess of hills and forest, her temple was erected on the highest place in the city to make her power covering all the city, in addition she protected also the whole land, the streets, the rivers and the inhabitants. For the sake of all these beliefs about Artemis her complex was out of

principle of urban planning, proportions and scale so the complex occupied the entire hill and it has the largest open space architecture in Jerash if not in the whole region which could be interpreted as propaganda for her cult. As being protector to the streets her complex and sanctuary are surrounded from all sides with the most important streets (Cardo and Decumanus) more one the sacred way in its physical and visual features is grandeur and greater than the main axial street cardo, in addition, Artemis is well known of her virginity and being a huntress in the wild in which this was achieved by occupying the highest place in Jerash as well as placing her temple in a very huge open space (Temenos) that also emphasizes her virginity. Also Artemis was combined in mythology with her virgin nymphs therefore this was achieved in landscape architecture by placing the Nymphaeum close to the lower part of the complex and it is opened toward the Cardo Street.

Finally, we can say that the city of Jerash should be described as the city of Artemis in which her existence and dominance is obvious by the ability to see her temple at the top of the hill from any place in Jerash, moreover any new addition to the city was referred in plan to the complex, for instance the addition of the Hadrian Triumphal Arch was set in its plan with the central axis ran from the middle gate toward the sanctuary of Artemis at the top of the complex, this shows how was the inhabitants highly believed that Artemis can protect them from any new comers or intruders. The combination of all the previous elements in addition to the balance between the human-made features and the natural features are the main factors in the process of creating harmony and unity in the Artemis complex and make its whole design a united whole in which we have seen that it consists of many units, each performing specific duty in the process of controlling the viewers eye but finally united together in addition to the natural landscape to provide the ideal environment that is clearly define their own beliefs and thoughts about their goddess Artemis.

Conclusion

I have taken the topic of landscape architecture from the historical perspective of dealing with landscape especially in my case study about The Complex of Artemis that could form a fertile context of conceptuality, ideation, and innovation in terms of urban planning, design, and landscape architecture in which we can observe there the creative management of the slopes and the astonishing solutions for alteration and full exploitation of this natural formation. This demonstrates the advanced process of combining urban planning and design in the natural landscape in which the

Section I: Defining the setting of monuments and sites:
The significance of tangible and intangible cultural and natural qualities
Section I: Définir le milieu des monuments et des sites-
Dimensions matérielles et immatérielles, valeur culturelle et naturelle

Romans successfully installed their own infrastructures with full respect to the natural formation of the landscape; this produced finally an integration and harmony in the landscape architecture. I think that more future studies for the landscape architecture of Jerash and more careful analysis of its urban design can provide us with new information about the process of urban design and the creation of classical cities within the natural context. At last I do hope that this research will help to add new ideas in the body of knowledge and for the progress in our life.

Abstract

Our case study is concentrated in the Roman city of Jerash as it could be one of the best models of studying the subject of natural and cultural settings in which it is characterized by harmonious and integrated natural and cultural settings, Jerash is a fertile context of conceptuality, ideation and innovation that could show us the intelligence of the human in dealing with his environment and how did he express his own way of thinking and belief, in addition we will see how the religious, spiritual, and mythological aspects had the greatest dominance over the whole setting in Jerash in terms of scale, open architecture, physical and visual features, and the gentleness of its placement on the landscape that finally created a united composition in the entire setting of the city.

Actually, the original cultural and natural settings of Jerash began to be invaded by the modern city, therefore this study aims to identify the current threats facing the natural and cultural settings of the city, in which we made a proposal for a comprehensive treatment and curative management for the impinged new buildings and the revitalization of the disturbed natural and cultural settings of the ancient city Jerash.

References

1. Leroy Hannebaum, *Landscape Design, A practical Approach*, 1981, Reston
2. Cliff Moughtin, *Urban Design, Street and Square*, 2001, Oxford
3. Barghouti, Asem, *Urbanization of Palestine and Jordan in Hellenistic and Roman Times, Studies in the History and Archaeology of Jordan I*, Department of Antiquities of the Hashemite Kingdom of Jordan, Amman, 1982
4. Parapetti, R. "The Architectural Significance of the Sanctuary of Artemis at Gerasa". *Studies in the History and Archaeology of Jordan I*, Department of Antiquities of the Hashemite Kingdom of Jordan, Amman, 1982
5. Sitte, Camillo, *City Planning According to Artistic Principles*. Trans. by George R. Collins and Cbristjane Crasemann Collins. *Columbia University Studies*. Random House, New York, 1965.
6. Seigne, Jacques, "Jerash romaine et byzantine: developement urbain dune yule provinciale orientale." *Studies in the History and Archaeology ojiordan IV*, Department of Antiquities of The Hashemite Kingdom of Jordan, Amman. In cooperation with: Maison de l' Orient Mediterranéen, universite Lumier, Lyon 2, 1992.
7. Annabal Jane Wharton, *Refiguring the post-classical city: Dura Europos, Jerash, Jerusalem, Ravenna*. Cambridge University Press, 1996.
8. Ian M. Barton, *Roman public building, Exter UK* 1995.
9. Jack E. Ingels, *Landscaping principle and practices*, NewYork, 1997.
10. Robert Graves, *the Greek Myths*, Barcelona, 2000

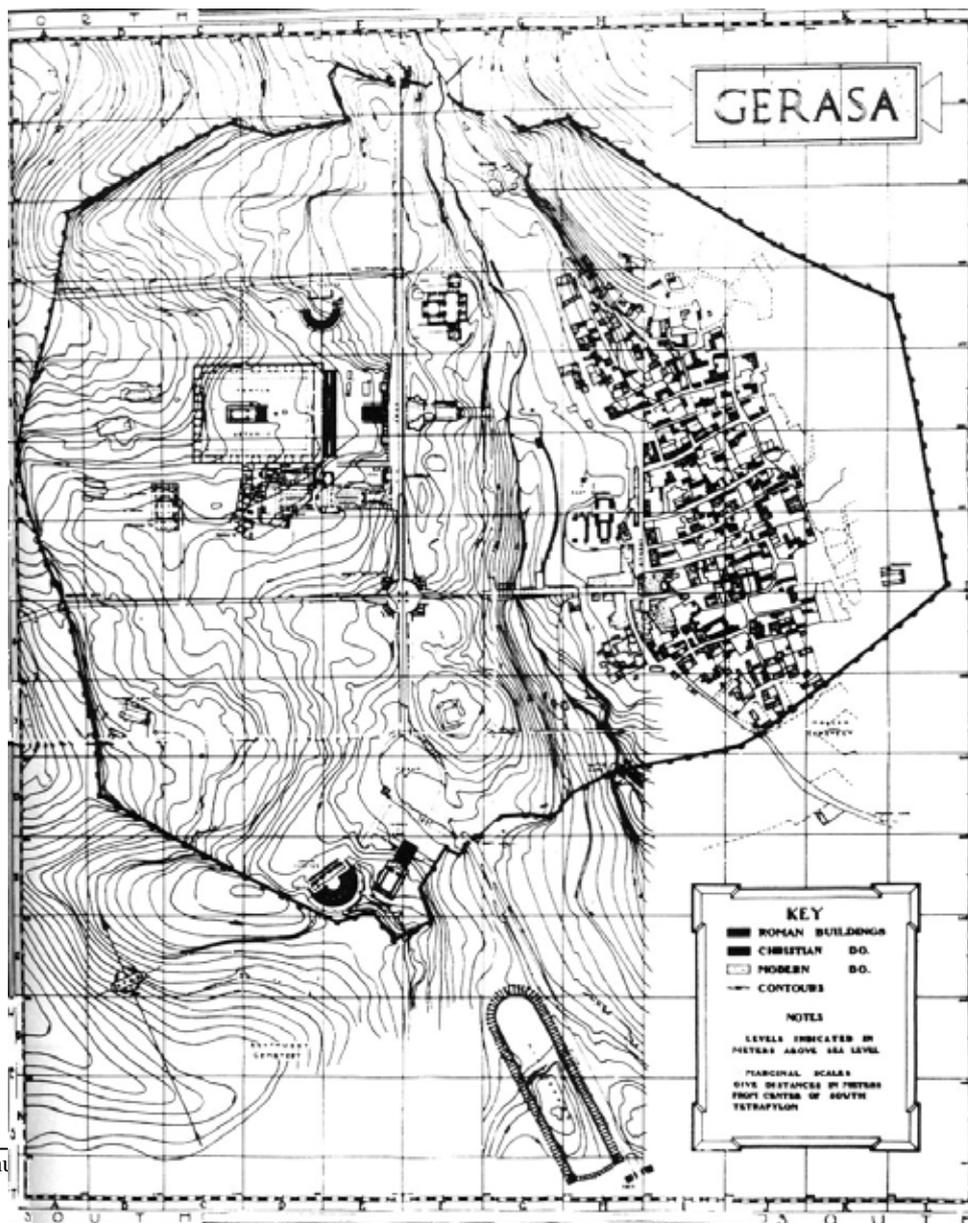
Section I: Defining the setting of monuments and sites:
The significance of tangible and intangible cultural and natural qualities
Section I: Définir le milieu des monuments et des sites-
Dimensions matérielles et immatérielles, valeur culturelle et naturelle

11. Lesley Brown, the New Shorter Oxford English Dictionary on Historical Perspective Vol.1 (1527).
12. Florence Dupont, Daily Life in Ancient Rome, UK, 2000
13. Frank Sear, Roman Architecture, UK, 1992

A COMPREHENSIVE ANALYSIS OF THE NATURAL AND CULTURAL SETTINGS OF THE LANDSCAPE ARCHITECTURE IN THE ROMAN CITY OF JERASH “GERASA”“THE REVIVAL OF THE NATURAL AND CULTURAL SETTINGS”

El -Khalili Mohammad / Jordan

Assistant Prof., Hashemite University, Queen Rania Institute of Tourism and Cultural Heritage ,Department of conservation science, Zerqa – Jordan



Section I: Defining the setting of monuments and sites:
The significance of tangible and intangible cultural and natural qualities
Section I: Définir le milieu des monuments et des sites-
Dimensions matérielles et immatérielles, valeur culturelle et naturelle

Fig .1 General Plan of Jerash

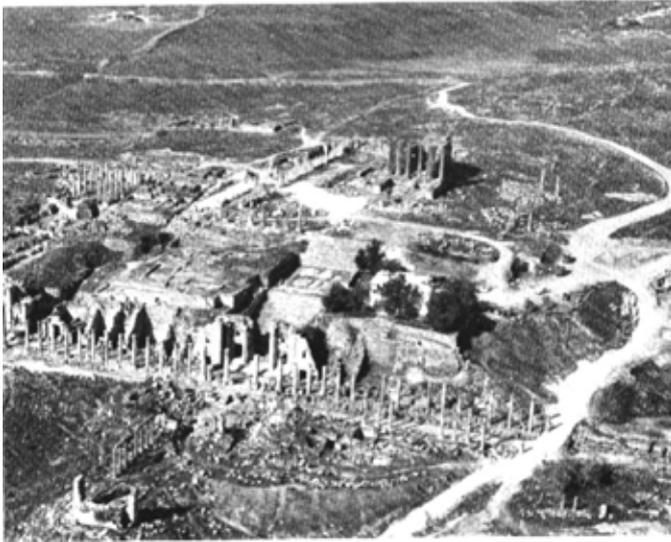


Fig.2 General View of Artemis Complex

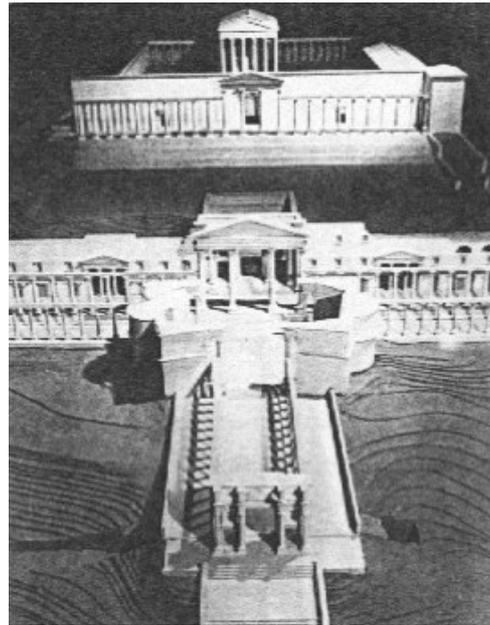


Fig .4 Reconstruction of the Artemis Complex



Fig .3 General View of the Complex from the Eastern Side

Section I: Defining the setting of monuments and sites:
The significance of tangible and intangible cultural and natural qualities
Section I: Définir le milieu des monuments et des sites-
Dimensions matérielles et immatérielles, valeur culturelle et naturelle

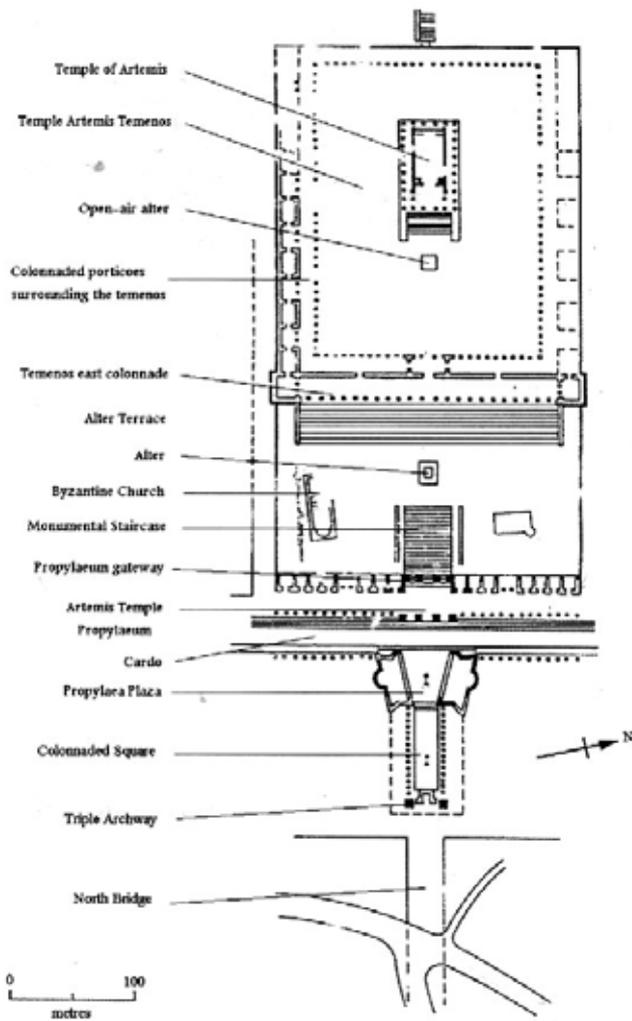


Fig .5 General Plan of the Artemis Complex