

DISSERTATION

BEHAVIOR OF TOURISTS IN ARCHAEOLOGICAL SITES
(THE CASE OF JORDAN)

Submitted by
Mairna Hussein Mustafa
Natural Resources Recreation and Tourism

In partial fulfillment of the requirements
For the Degree of Doctor of Philosophy
Colorado State University
Fort Collins, Colorado
Fall 2005

UMI Number: 3200686

INFORMATION TO USERS

The quality of this reproduction is dependent upon the quality of the copy submitted. Broken or indistinct print, colored or poor quality illustrations and photographs, print bleed-through, substandard margins, and improper alignment can adversely affect reproduction.

In the unlikely event that the author did not send a complete manuscript and there are missing pages, these will be noted. Also, if unauthorized copyright material had to be removed, a note will indicate the deletion.

UMI[®]

UMI Microform 3200686

Copyright 2006 by ProQuest Information and Learning Company.

All rights reserved. This microform edition is protected against unauthorized copying under Title 17, United States Code.

ProQuest Information and Learning Company
300 North Zeeb Road
P.O. Box 1346
Ann Arbor, MI 48106-1346

COLORADO STATE UNIVERSITY

July²², 2005

WE HEREBY RECOMMEND THAT THE DISSERTATION PREPARED UNDER OUR SUPERVISION BY MAIRNA MUSTAFA ENTITLED THE BEHAVIOR OF TOURISTS IN ARCHAEOLOGICAL SITES (THE CASE OF JORDAN) BE ACCEPTED AS FULFILLING IN PART REQUIREMENTS FOR THE DEGREE OF DOCTOR OF PHILOSOPHY.

Committee on Graduate Work

Adviser

Co-Adviser

Department Head/Director

ABSTRACT OF DISSERTATION
THE BEHAVIOR OF TOURISTS IN ARCHAEOLOGICAL SITES
(THE CASE OF JORDAN)

One of the main problems facing the archaeological and heritage sites is the damage and negative impacts caused by the tourism development and visitors behavior.

Archaeological and heritage sites are resources of a special importance; they provide with the necessary information about the past, they give identity and pride to societies, and they have an economic benefit characterized by expenditures of visitors to these sites through the business of tourism. The fact that such resources are not renewable, makes losing them then a serious problem. Losing archaeological and heritage sites is caused by several factors, such as natural phenomena, tourism development and human behavior.

This paper deals with the factor regarding the behavior of tourists while visiting archaeological sites. The main objective is to understand the tourists' behavior by applying models from cognitive hierarchy, which proved to be an appropriate theoretical approach in previous research. Four archaeological sites in Jordan were chosen by the author to be the study areas. These sites differ in terms of their location from urban centers, size, facilities and amenities provided in them. The groups of domestic and international tourists were selected randomly in these sites, respondents were asked to fill a survey after their visit, whether within the sites or in rest houses and visitors' centers close to them. The sample of 512 individuals was gathered during July 2004. There were different kinds of analyses applied in this study, there were descriptive and reliability analysis, comparisons between the different groups of the study, factor analysis and

structure equation modeling. The study focuses on the explanation of behavior by norms, which are mediating the relationship between behavior and other variables. The study has shown that there is a relationship between norms and behavior, but it was not strong if compared to previous studies, such results might be related to not having well established norms regarding the problems of these sites, another factor might be the lack of knowledge about the real value of archaeological sites among different segments of societies. Such results initiate the necessity to increase the awareness among the individuals; this considers both archaeological and historical significance, as well as the acceptable behaviors to be taken while navigating in archaeological sites. Such objectives require then appropriate techniques for interpretation, and enforcement of laws and regulations in these sites, and not less important, to provide the sites with appropriate kinds of development and amenities, which controls the movement of tourists with providing a high quality experience, and have less impacts on these sites at the same time.

Mairna Hussein Mustafa
Natural Recreation Resources and Tourism
Colorado State University
Fort Collins, Co 80523
Fall 2005

ACKNOWLEDGMENTS

I would like to thank all the members in the graduate committee, Dr. Jerry Vaske my advisor, Dr. Maureen Donnelly, the co-advisor, Dr. Alan Bright and Dr. James Zeidler, for their understanding and support throughout the time of my study at Colorado State University, and while working on this project.

Thanks to all the supervisors and employees in the locations of the study, for all their assistance and facilitating the collection of the data for this work. I would like to acknowledge the Department of Antiquities and the Ministry of Antiquities and Tourism in Jordan for giving the permission to conduct this research and all the support they gave.

Thanks to all my friends and colleagues in the Department of Natural Resources Recreation and Tourism, as well as in Colorado State University for their encouragement and warm friendship.

Lastly, my very deep gratitude and thanks to my dear family, who always have been there for me, and believed that I can make it. Thanks to everyone for the support and sincerity.

TABLE OF CONTENTS

	<u>Page</u>
CHAPTER 1- INTRODUCTION	1
Problem Statement	3
The Case of Antiquities in Jordan	6
CHAPTER 2 - SITES OF THE STUDY	9
Amman Citadel	9
Roman Theater, Forum and Odium	28
Jesus Baptism Site	39
Jerash	74
CHAPTER 3- THEORITICAL FRAMEWORKS	98
Values/Value Orientations	99
Norms	103
Awareness of Consequences	108
Ascription of Responsibility	110
Models of the Study	111
CHAPTER 4-METHODS AND RESAULTS	118
Methods of Research	118
Sampling Techniques	119
Data Collection Procedures	121
Pre-field Activities	121
Actual Data Collection	122
Research Instrument	122

Analyses of the Study	127
Exploratory Factor Analysis	127
Reliability Analysis	130
Comparisons among the Different Groups of the Study	138
Confirmatory Factor Analysis	142
Structure Equation Modeling	148
CHAPTER 5: DISCUSSION AND MANAGEMENT APPLICATION	165
REFERNCES	174
APPENDICES	181
Appendix 1: The Survey Instrument (English)	181
Appendix 2: Descriptive Analyses for Responses to the Survey	186
Appendix 3: The Law of Antiquities in Jordan/1988	203

LIST OF TABLES

<u>Table</u>		<u>Page</u>
1	The distribution of visitors to the sites of the study for the sample	120
2	The distribution of nations groups in the sample of the study	120
3	The results for exploratory factor analysis	128
4	Reliability analysis for the index of Value Orientations	132
5	Reliability analysis for the index of Ascription of Responsibility	133
6	Reliability analysis for the index of Awareness of Consequences	134
7	Reliability analysis for the index of Personal Norms	135
8	Reliability analysis for the index of Social Norms	136
9	Reliability analysis for the index of Behavior	137
10	The descriptive analysis for the variable of Ecocentric Value Orientation	138
11	The descriptive analysis for the variable of Anthropocentric Value Orientation	139
12	The descriptive analysis for the variable of Awareness of Consequences	139
13	The descriptive analysis for the variable of Ascription of Responsibility	139
14	The descriptive analysis for the variable of Personal Norms	140
15	The descriptive analysis for the variable of Social Norms	140
16	The descriptive analysis for the variable of Behavior	140
17	The comparisons for the interactions between the site and groups by	141

	origins for the latent variables	
18	The final selected observed variables and their grouping under theoretical factors	143
19	The correlations among the latent variables in the confirmatory factor analysis	146

LIST OF FIGURES

<u>Figure</u>		<u>Page</u>
1	A map showing the sites of the study	8
2	Plans showing the location of Amman Citadel (with main features) and the Roman Theater	10
3	The Roman platforms and enclosures with the Umayyad buildings constructed in later periods.	14
4	Temple of Hercules (Climbing behavior)	15
5	The Byzantine Church	16
6	The Umayyad Reception Hall	18
7	The Market area and the façade of the Mosque	19
8	The inner area of the Mosque	20
9	The Umayyad Bath located to the east of the Reception Hall	21
10	A plan of Amman Citadel after the uncovering of the Umayyad city	21
11	Littering problems in the southeastern parts of the site	23
12	Littering and remains of small fires on the eastern side of the site	23
13	Parking next to the archaeological remains in the southeastern area of the site	24
14	The signage next to the Umayyad Reception Hall	25
15	The National Archaeological Museum in Amman Citadel Site	25
16	The office of Department of Antiquities in the Site of Amman Citadel	26
17	A View of the Roman Theater and Odeum from the southern wall of Amman Citadel	28

18	The seats of the Roman Theater	29
19	The stage area and the scaenae frons in the northern side of the Roman Theater	30
20	Museum of Folk Traditions	32
21	The Folklore Museum	33
22	The eastern façade of the Odeum	34
23	The Roman Theater and part of the market area and transportation center	35
24	Graffiti with a black marker on one of the stairs in the eastern side of the theater	36
25	Littering problems at front of the Roman Theater	37
26	Littering problems at front of the Roman Theater	37
27	Vehicles in the agora area and a worker from Amman Municipality as an effort to keep the area clean	38
28	A map shoeing the location of Jesus Baptism Site (Wadi al-Kharrar)	39
29	A map showing the main features of Wadi el-Kharrar	40
30	Elijah's Hill, a view from the south	41
31	The Northern Church and preservation works	42
32	The Greek inscription in the Northern Church	42
33	The Western Church	43
34	The Prayer Hall	44
35	The Channel to the northwestern corner of the Cistern	45
36	The Cistern in the Water System	46
37	The Southern Pool	47

38	The two Northern Pools	47
39	The Arch Church (Church of Pope John Paul II)	48
40	Another view of the Arch Church (Church of Pope John Paul II)	48
41	The protected piece of mosaic floor in Arch Church	49
42	Part of the mosaic floor of the Arch Church	49
43	Laura (Hermits Cells)	50
44	The Pilgrims' Station	51
45	Part of John the Baptist Spring	52
46	The Ancient Pool	52
47	One of the caves cut in the marl cliffs	53
48	A prayer niche inside one of the cave cells	53
49	Site of Saint Mary the Egyptian	54
50	The Byzantine Monastery	55
51	The First Church in the Byzantine Monastery	56
52	The inside area of the Third Church before covering the floor (2001)	57
53	The stairs put to reach the Third Church on the eastern side	58
54	The Wooden Shelter put above the Third Church for protection purposes	58
55	The inside area of the Third Church after covering the floor (2004)	59
56	The Fourth Church	60
57	The Visitors' Center	64
58	The Market Area in the Visitors' Center	64
59	The Restaurant in the Visitors' Center	65

60	The Restaurant	65
61	The VIP Lounge in the Visitors' Center	66
62	The VIP Lounge in the Visitors' Center	66
63	One of the Baptism Pools	67
64	One of trails in Wadi al-Kharrar	67
65	One of the desalination stations	68
66	A resting area next to the spring of John the Baptist	68
67	A trail leading to the River of Jordan	69
68	A resting area close to the Churches of John the Baptist	69
69	The Terrace erected next to the Jordan River	70
70	The Terrace erected next to the Jordan River	70
71	The flooding of the River during winter	71
72	One of the Religious Ceremonies in the site	72
73	A behavioral sign (No Smoking) in the site	73
74	A plan of the city of Jerash	74
75	Hadrian's Arch	75
76	Southern Gate	76
77	The South Theater	77
78	The entrance of Northern Theater	78
79	The inside area of Northern Theater	79
80	Oval Plaza	80
81	The end of the Oval Plaza and the beginning of the Cardo	80
82	The Sanctuary of Zeus	81

83	The inside area of the Temple of Artemis	82
84	Graffiti in the inside area of the le of Artemis	82
85	Southern Tetrapylon	83
86	The Umayyad Shops	84
87	The Nymphaeum	85
88	Northern Gate	86
89	Part of the Cardo with tents put for the preparation of Jerash Festival	87
90	The entrance of the Cathedral	88
91	Cathedral's Gateway	89
92	Shrine of St. Mary (graffiti problems)	89
93	The rest house next to the Southern Gate	90
94	The Museum of Jerash	91
95	The new sign in the Cathedral's area	93
96	The new sign in the Oval Plaza's area	93
97	The old Signs in the area of the Temple of Artemis	94
98	A trash can in the Colonnaded Street Area	95
99	Part of the sound and light system in Jerash	97
100	The cognitive hierarchy model	98
101	Results of the final Confirmatory Factor Analysis	145
102	The model of Value Orientations-Social Norms-Behavior/full mediation with the variables of littering and stepping on sensitive areas included in the behavior latent variable:	153
103	The model of Value Orientations-Social Norms-Behavior/full	154

	mediation with the variables of littering and stepping on sensitive areas not included in the behavior latent variable.	
104	The model of Value Orientations-Social Norms-Behavior/partial mediation with the variables of littering and stepping on sensitive areas not included in the behavior latent variable.	157
105	The model of Value Orientations-Social Norms-Behavior/partial mediation with the variables of littering and stepping on sensitive areas not included in the behavior latent variable.	158
106	The model of Awareness of Consequences and Ascription of Responsibility-Social Norms-Behavior with the variables of littering and stepping on sensitive areas included in the behavior and awareness of consequences latent variables.	161
107	The model of Awareness of Consequences and Ascription of Responsibility-Social Norms-Behavior with the variables of littering and stepping on sensitive areas included in the behavior and awareness of consequences latent variables.	162
108	The model of Value Orientations-Social Norms-Personal Norms	164
109	A Nabataean tomb façade in Petra	170
110	A graph of a Nabataean tomb façade in Petra with levels of damage	171

Chapter 1

Introduction

Archaeological sites are considered as a very important category of what is known as cultural resources and attractions (Richards, 1996). The importance of such resources comes from the fact that they create an important irreplaceable scientific source of information, which is related to the history and people who settled in an area, and so they have an interpretive and educational value (Henry, 1993). They have a social significance in terms of giving the personal and collective identity of the society; and it can not be ignored that they create a vital source of economy, as in the case of expenditures of visitors to these sites through the business of tourism (Timothy & Boyd, 2003).

This paper deals with the relationship between archaeological sites and tourism. The subject has two main perspectives to consider. One of them focuses on the case where tourism is among the main reasons to conserve the cultural heritage; it has been seen that heritage or archaeological sites that remain closed to tourists and visitors from the general public, usually tend to fall into decay, they are abandoned, looted and are exposed to some external factors as natural phenomena, and so they get degraded. That is combined with having no source of economy or fund used to provide the minimum level of maintenance and conservation; which then leads to the situation where the local communities lose their respect to such resources, as well as their symbolic value (Yunis, 2000).

The other perspective considers an actual problem, which is basically the physical damage and destruction of monuments and their surroundings, which is caused by the

unrestricted and excessive tourists' activities and navigation within the archaeological sites (Herrmann, 1989). This research aims at understanding the behavior of tourists in archaeological sites by applying theoretical models. Such approach will help to suggest appropriate solutions and management implications, which will minimize the negative impacts of tourism on archaeological sites. The document includes six chapters:

Introduction, The sites of the Study, Theoretical Frameworks, in addition to Methods and Results of Analyses, the paper ends with a brief discussion and some suggested management applications. This chapter is composed of two main sections. The first one presents the justification of the study, and the second section is a description of the archaeological sites from which the samples were taken, including their archaeological significance, their problems and tourism development at these sites.

Problem Statement

The study of impacts on archaeological sites occupies an important place within the groups of archaeologists, conservationists and all other professionals concerned with the protection of such resources, it is appropriate then to start with defining the concept of impact. The impact is a measurable change in the characteristic or property of the site, (as compared to the previous conditions of the characteristics or property of that object); Such impacts might be direct when caused by an action, which occurs at the same time and place (as in the case of picking artifacts), or might be indirect when caused by an action, but occurs later in time or farther removed in space (as when tourists touch decorative elements of monuments). Impacts also can be seen as discrete or continuous, and depends on whether the cause of change occurs only once, or reoccurs at intervals (Wildesen, 1982).

There are some causes or reasons behind such impact on archaeological sites; these causes are categorized into distinct groups, which might work in conjunction with each other; these groups include the *natural causes* or factors, such as erosion from water and wind, flooding, weathering, animal actions such as burrowing, vegetation, soil chemistry, earthquakes, volcanic eruption and fires. Another group includes *human actions*, such as looting or theft, vandalism, recreation (as by off road vehicles), noises and vibrations caused by traffic, ignorance and lack of awareness. There is another important group to consider, that is *institutional actions*, these include archeological excavation, agriculture, mining and quarrying, timbering, flood controls, transportation paths and roads, residential occupation, public utilities and industrial use of the land. Some other causes are categorized under *legal and regulatory procedures*, incompatible

laws, regulations and procedures (Henry, 1993). What we deal with here in this paper is the human action impact on archaeological sites, and more specifically those caused by the movement of tourists in archaeological sites.

In most cases, the change or the damage of archaeological sites is mostly due to the excessive visitors' pressure, especially during peak seasons; such impacts take the forms of wear and tear, littering, and vandalism. The wear and tear problems are the consequences of thousands of feet climbing and stepping on the architectural stones of the sites, such as stairs, paving stones and memorials (Evans & Fielding, 1998; Boyd & Timothy, 2003; Merhav & Killebrew, 1998). There is also the slow disappearance of decorative motifs and carvings, which is caused by thousands of hands touching these works of art. When such behavior takes place, the oils on hands hasten the erosion (Ryan, 1992). Littering is a big problem as well; especially the food wastes and some other materials that are carried by visitors to these sites as cigarette butts, food containers, cans and bottles; such materials ruin the ambiance of the site, and usually are expensive to clean up (Evans & Fielding, 1998; Boyd & Timothy, 2003; Merhav & Killebrew, 1998). For vandalism, it takes different forms, some of them are direct and immediate as cutting pieces of monuments, picking up artifacts as souvenirs, graffiti and using paint on monuments' surfaces in these sites. Others are indirect and their effect occurs as a cumulative process, as in the case of the moisture and condensation created by breathing, sweating and touching; these then cause negative impacts on the dialect surfaces and paintings (Rivers, 1998; Shackely, 1998, 2001). Crowding is considered as a serious problem, since people jostle to get a better view, or to take a good photograph, and in some cases, to get closer to touch the feature (Shackely, 2001).

The question now is: Why would we give concern to such impacts on archaeological sites? We have mentioned earlier in this chapter that there is an interpretative and educational value of the archaeological site, such value helps in understanding and reconstructing the history of the humans and places; this knowledge comes from the fact that the archaeological site gives information by its intact value, which means that the site features are not changed as possible. Such intact value is characterized by spatial and temporal relations among the soil layers, artifacts or finds, features and ecological evidence; all these help the archaeologist to identify the patterns that are related to human behavior and social processes (Henry, 1993).

There are two dimensions of the archaeological site, one of them is horizontal (spatial) or is identified by the space; the other dimension is vertical (temporal) through the time. The horizontal dimension is composed of activities occurring at the same time, the vertical dimension is based on the sequence through time, and these two dimensions are found in any archaeological site. There is a need though to consider that archaeological sites have many forms; which range from sites in the form of scattered artifacts, to the ones found by the most prominent remains as walled buildings and burial mounds. Considering these different forms of sites, the archaeologists base their information on thorough surface surveys to reconstruct the full human use of the landscape (spatial or horizontal). The other base of information is related to the stratification of archaeological layers (temporal or vertical); these layers accumulate according to the law of superposition, simply, it is where one layer overlies another, this means that the lower was deposited first; consequently, the excavated vertical profile shows a series of layers forming a sequence that has accumulated over the time, and so

helps in understanding the development and progress of human activity (Renfrew & Bahn, 2000).

By looking at these scientific bases, we recognize that any change that occurs in the archaeological site will affect the archaeological and historical interpretation of the site features, and that is how the impacts become a serious issue, since they disturb such intact units, and cause the loss of valuable materials that help us in reconstructing the past (Ryan, 1992). This initiates the necessity to have these impacts controlled, in order to sustain the educational and interpretative values of the archaeological sites.

The Case of Antiquities in Jordan

The archaeological sites in Jordan are numerous and various in terms of size and archaeological periods they are dated to; such big number of sites distributed throughout the country creates a great challenge to the official body of the Department of Antiquities in Jordan, this association is responsible of exploring, documenting, protecting and preserving the archaeological sites and monuments. There are many problems facing the antiquities in Jordan. Such problems are characterized by agricultural expansion, urban development and rapid population growth. These problems in addition to the high unemployment, the lack of awareness about the importance of archaeological remains, which occurs among large segments of the population, are all creating real threats to archaeological sites. Many people are still viewing archaeological sites as a source of economically valuable objects, and others still perceive the protection of archaeological sites as an obstacle or impediment to progress and development (Bisheh, 2001). Another important factor is the development projects, which might require the change of

landscape, and so finding these antiquities by people who might respond in an improper way, as by destroying, keeping or selling the antiquities, especially when other sources of income are not sufficient, and so trade with antiquities becomes the solution, as in the case of Ghor Es-Safi site, which is located to the southeastern shore of the Dead Sea, and has archaeological remains dated back to the Early Bronze Age and Byzantine Period (Bisheh, 2001; Politis, 2002).

There were great efforts done by the Department of Antiquities to educate individuals about the importance of archaeological sites. Such efforts are characterized by the lectures and activities conducted by the Archaeological Awareness Section, another procedure are by regulations that protect antiquities, and put penalties against any behaviors that might affect the archaeological remains (Appendix 3). Before the year 1967, the law of antiquities in Jordan was allowing the trade of antiquities with a license, which is issued and renewed annually by the Jordanian Department of Antiquities, but in that particular year, a new law was issued forbidding this action, with giving traders a chance to sell antiquities they have to the Department of Antiquities, or keeping them after documenting these antiquities in archives at the department. Although of the many efforts to make an estimate for the size of the problem, it is obvious that it is hard if not impossible to achieve such aim, and that is due to the fact that not all of the archaeological sites are documented or registered, because they are not discovered or visible yet, it should be considered also that many of these sites are discovered by coincidence, as in the case of development projects, such as opening roads or building, which indicates that they are not found by experts doing systematic excavations and documentary works, another important factor is that most of affected sites are located in

isolated and inhabited areas, consequently, they lack security monitoring and protection (Esh-Shami, 2002). The problem in this study is related to the behavior of visitors while navigating within archaeological sites. There are many efforts done by the Department of Antiquities, Jordan Tourism Board and the Ministry of Tourism and Antiquities in Jordan to inform the public and international groups about the significance and the importance of archaeological heritage, such contributions are seen through the educational programs, the media, and by the publicized information as in brochures and signs in these sites. Another form of effort is seen in some sites as in the case of Madaba, which form a good example of accesses and bridges used to protect the sensitive features (mosaic floors) from tourists' navigation.

There are though some problems observed in these sites, these problems are explained in details in the section describing the sites of the study, these sites were chosen to represent most of the problems facing archaeological sites in Jordan.

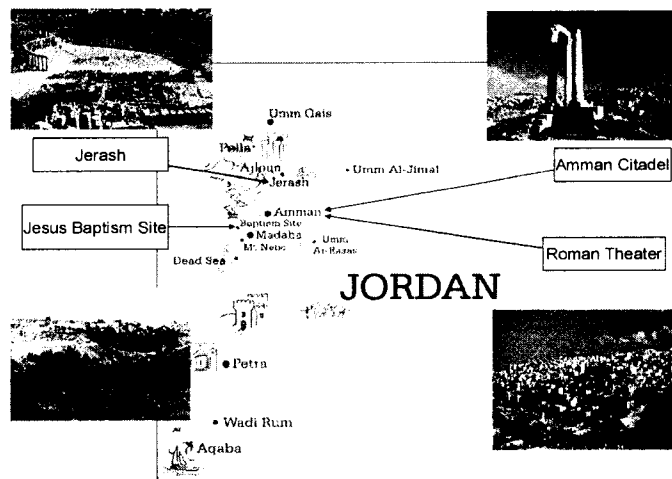


Figure 1: A map showing the sites of the study (Jordan Tourism Board 2004)

Chapter Two Sites of the Study

Amman Citadel

The Location: The site of Amman Citadel (Jabal al-Qala'a) is located between the two wadis (valleys) of Wadi Shari' al-Salt on the western side and Wadi al-Haddadeh on the eastern side, the site is centered on an isolated hill that is only linked to the surrounding areas through the high ground at the north western side, where there is a saddle to Jabal al-Hussein, the site has an altitude of (824-848 m) above the sea level (Northedege, 1992). The geological formation of the site makes it an excellent defensive site, which is due to being almost entirely surrounded by slopes on the different sides of the citadel; the site is also surrounded by fortifications that are dated to different archaeological periods.

The total area within the fortification walls is about 89,980 sq. m., this area is composed of three plateaus, one of them is known as the upper terrace, which is oriented toward the north west, and it measures (370x150 m), the other two are composing the lower terraces, of which one is oriented toward the east and it measures (330x100m), and another one that is toward the north west with measures of (350x80m) (Northedege, 1992). In the following section, a description for most of the archaeological features in the site.

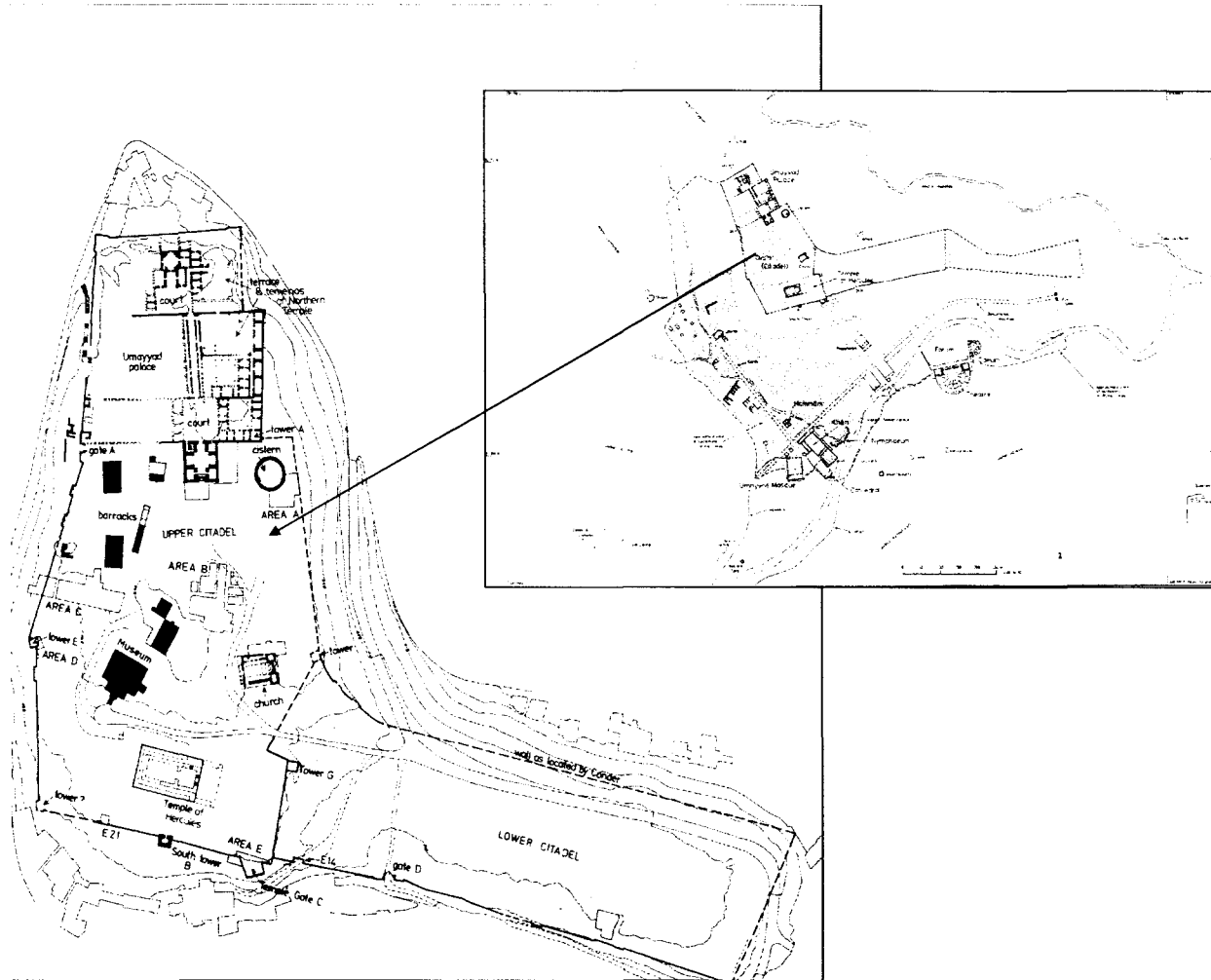


Figure 2: Plans showing the location of Amman Citadel (with main features) and the Roman Theater (Northedge, 1992)

The Archaeological Significance:

Neolithic Period: According to some excavations, there were some pottery sherds that were found in the southern parts of the citadel, and were dated back to the Neolithic Period (8000-6000 B.C.), but the occupation of the site during this period is still not clear yet (Burdajewicz, 1992).

Early Bronze Period: The Bronze Ages are at least the oldest occupational periods in the site of Amman Citadel. The evidence comes from the excavation of Area A done by Zayadine between 1975 and 1977. The excavations revealed a cistern or a storage pit coated with plaster, and some other architectural features that were dated back to the period of Early Bronze I (EBI: 3300-2950 B.C.), these remains were superstructured by some other features that were built during the Hellenistic and Early Roman Periods (Zayadine, 1977/8).

Middle Bronze Period: The Middle Bronze Age (MB II) can be seen through the fortification system found on the northern side of the site, more specifically beneath the Roman walls, a ram part with a sloping glacis and a retaining wall were found along the southern edge of the lower city (Area A), these remains were dated to the same period, which might indicate that the extent of the fortified zone of the MBII was exceptionally large, there were some Late Bronze (LB) pottery sherds that were found in the citadel, but they come from unstratified contexts and are not associated with any constructions, and so the fortification system of that period is not completely clear (Burdajewicz, 1992).

Iron Age Period: The Iron Age Period is considered as a significant period in Amman Citadel, there was a number of fortification walls and structures that are adjacent to the

Roman walls in the northern parts of the citadel, that is in addition to the southeastern corner (Tower L), and some sections in the southern line of fortifications of the site (Zayadine, 1977/8).

In that southeastern corner, the remains of a large bastion were found, there were several construction phases observed for this feature, the oldest is represented by some walls dated to the end of the Iron Age Period. There is also an underground reservoir or a cistern (16x6 m with a height of 7m) with a gabled roof, it was cut in the rock formation in the northern ends of the citadel, just below the Roman fortification wall, this reservoir has two entrances, one of them is from outside the site and of a ground level, and it is vaulted, the other entrance is from of an underground shaft. The Ammonite Palace is an important feature that belongs to this archaeological period, which is a large architectural complex, which is dated back to the 7th century B.C., and it is located in the southern part of the lower city in what is known as (Area A, Stratum 7). It consists of a large courtyard that is about 10m wide and more than 15 m long, it has a thick (30 cm) polished white plaster floor. The complex included several rooms that have different functions. A lot of important finds were unearthed in this area as pottery, a clay mask, Phoenician ivories, blue glass pendants, green glass goblets, fragments of bitumen from Dead Sea, four limestone double faced Hathor heads and many other finds as well. This feature was interpreted as an upper class residence (Burdajewicz, 1992).

Another important discovery was the tomb of Adoni-nur on the southern slope of the citadel, which is rectangular chamber cut in the rock, the tomb contained pottery; an Assyrian type pottery coffin; gold, silver and bronze jewelry; iron knives; iron and bronze arrowheads; beads and seals, of which three were inscribed, one of them mentioned the

name of a royal Ammonite official called Adoni-nur (Servant of 'Ammi-nadab), the tomb is dated to 650 B.C., which comes within the reign of Amminadab, the king of Ammon (the name of Amman in the Iron Ages/ Rabbath Ammon) (Burdajewicz,1992).

Roman Period: This era was identified by two main periods; the first period can be seen in the northern parts of the citadel, which are mainly the platform and the enclosures. The platform was created by changing the outline of the hill, it takes the form of a double trapezoid shape projecting from the hill, with measures of (78x126 m and 48x104 m), and it is surrounded by a monumental wall of rusticated ashlar masonry, with a thickness of 1.85 m and a height of 13.8m. For the double enclosure, it was built on the platform and is composed of two courtyards divided by a wall. The first courtyard or what is known as the first enclosure, is of a trapezoid shape (78x120-126 m), and is surrounded by three walls from the south, north and eastern sides. Both the eastern and southern walls are lined with rooms and built of plain dressed ashlar of .90 m wide. The northern wall is dividing the two enclosures, with being elaborately decorated, but it was partly cut away and badly weathered. The remains in situ, in addition to the fragments incorporated in the Umayyad Palace built later, all are evidences for having a series of podiums that contained rectangular pilasters cut in reliefs on the wall, between these podiums there were shell niches, the wall also included two gateways with widths of 2.5 and 3 m. This enclosure includes also a columned street with limestone blocks in .55 m rows that are laid parallel to the wall dividing the two enclosures.

The second enclosure or courtyard is of the same shape, and it has approximate measures of (48x104 m). With the exception of the dividing wall, none of the walls in the second enclosure are above the surface level. It is possible that some Roman blocks were

used as foundations for the later Umayyad buildings. For the function of these remains, Northedge (1992) assumes that the main purpose is possibly to include some main buildings that have disappeared, most probably a temple, he suggests two possible locations for the temple; one of them is in the second enclosure facing east, the other is in the western half of the first enclosure, also facing east with the columned way crossing the courtyard running in front. These Roman remains were to be later superimposed by the construction of the Umayyad Palace and the Reception Hall.



Figure 3: The Roman platforms and enclosures with the Umayyad buildings constructed in later periods (By the author, 2004)

Roman Temple of Hercules: From this temple, a large part of the podium (43.5x27.5 m), a fallen column, and the bases of three other columns are still preserved, as well as several architectural decorative pieces. There are two possible reconstructions of the original plan, one of them is a tetra style in antis, or as a hexastylum in antis peripterum (with a row of columns surrounding the cella). The cella itself faces the east with the measurements of (20.6x13.2 m), the antae of the pronaos were made of half columns and the outer walls of the temple were probably decorated with series of pilasters. The temple was erected within a rectangular terraced temnos, which is situated on the southeastern part of the acropolis. The dating of the temple comes from an inscription on a fragmentary architrave found in its vicinity; the temple was built during the reign of Marcus Aurelius and Lucius Verus (161-169 A.D.) (Bowsher, 1992; Burdajewicz, 1992).

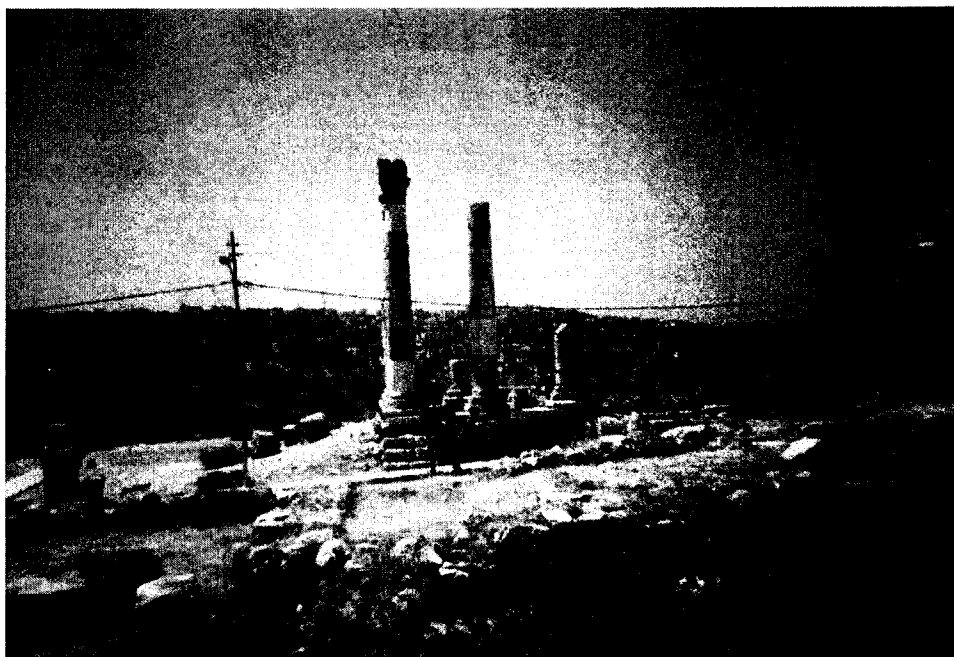


Figure 4: Temple of Hercules (Climbing behavior) (By the author, 2004)

Byzantine Church: It is located to the north of the Temple of Hercules, and it was dated to the fifth to sixth century A.D., the church has a basilical shape with the measurements of (20.30x12.30 m). The building was divided into a nave and two isles by two rows of columns. The isles were paved with stone slabs, while the central nave was covered with a mosaic floor of geometric and floral designs (Burdajewicz, 1992).



Figure 5: The Byzantine Church (By the author, 2004)

Umayyad Period: For the Umayyad Palace, it consists mainly of several residential units, which are distributed within the enclosures area. In the northern part of the palace, there is a throne room accompanied by the iwan and a patio, which are all surrounded by four residential units. In the southern part, the columned street is flanked by four residential units; the square located to the south of this street is also overviewed by two residential units from the east and the west, and by the entrance or the Reception Hall on the southern side. The traces of three more residential units were found on the western side of the palace complex (Alamgro & Arce, 2001). The residential units mentioned above are sharing the same plan in terms of the unroofed colonnaded courtyard in the center, and in being surrounded by a number of rooms; these rooms have entrances toward each other and toward the courtyard as well. The walls and columns are mainly from limestone, of which some is taken from the previous Roman buildings, the walls were covered with plaster. Some of these Umayyad residential units were used later during the Abbasid Period (Al-Hazaymeh, 1994).

The Umayyad Reception Hall is a cross-shaped structure; it was used as a waiting room before getting to the throne hall. This building is attached to the south side of double enclosure, it is well preserved and considered to be the most complete building in the site of Amman Citadel. The main building material is the local limestone, which was attached by mortar of lime and ash that gives a distinctive grey color, and in some parts by a water-proof plaster, which was mixed with chips of crushed pottery. The foundation of the hall consists of a bed of rubble placed on the bedrock in some places, and on a fill in some other. The walls are formed of ashlar on a rubble core; these were bounded together by mortar. The building is nearly a square (24.4x26.1m) with two main

entrances on the northern and southern sides. The interior part of the hall is identified by its cruciform shape; this interior area has an open square shaped court with a length of 10.3 m for each side. The arms of the cross are tunnel-vaulted on the north and the south, and semi-domed on the east and west, these arms measure (6.2x5.4 m) for each. The satellite spaces of the cross are formed of three tunnel-Vaulted rooms, while the north western corner is occupied by a spiral staircase that leads to the roof, and it is lit by two slit windows. The internal facades of this hall were decorated mainly with niches that had splendid decorated panels. These panels were carved with the various shapes of palmettes, trefoils, quatrefoils, vines, rosettes, and many geometrical designs (Northedge, 1992). The building was preserved and roofed with a dome as a reconstruction (Almagro & Arce, 2001)



Figure 6: The Umayyad Reception Hall (By the author, 2004)

The Mosque: Another important feature that belongs to the Umayyad Period is the mosque, which is approximately of a square shape with the dimensions of (30x31 m), the walls were built mainly of undressed stones, in addition to some dressed stones that were taken from other previous buildings, the floor and the eastern and southern sides were preserved by adding undressed stones, which were attached with a special mortar. The inner area of the mosque was divided by six rows of columns that cross the southern wall, and by eight rows that goes parallel with it, the southern wall includes the niche (Qebla) that penetrates the wall with one meter for depth, and two meters for width, the columns are of lime stone with a circular section and a square shaped base, some of them were replaced as a part of preservation. The mosque is distinguished with its water system, which consists of three channels that conjoin in the center of the mosque, in which a well is gathering the water running through these channels. The mosque has a staircase on the northern side forming part of the main entrance.



Figure 7: The Market area and the façade of the Mosque (By the author, 2004)



Figure 8: The inner area of the Mosque (By the author, 2004)

The Market area comes between the mosque and the reception hall; it includes two rows of eleven shops on each eastern and western sides of a colonnaded central area, the market structures and shops were dated to the Umayyad Period, three of these shops on the north eastern side were transformed into a mosque during the Fatimid Period. The Umayyad bath is located to the east of the Reception Hall, and as the baths of that period; it consists of an *apodyterium* or dressing room, a *frigidarium* or cold bath, a *tepidarium* or warm bath and the *caldarium* or hot bath (Almagro & Arce, 2001).

What makes this bath distinguished from some others of that period is the addition of the reception room as a new aspect that reflects the growth of aristocratic traditions (Besheh, 1974).

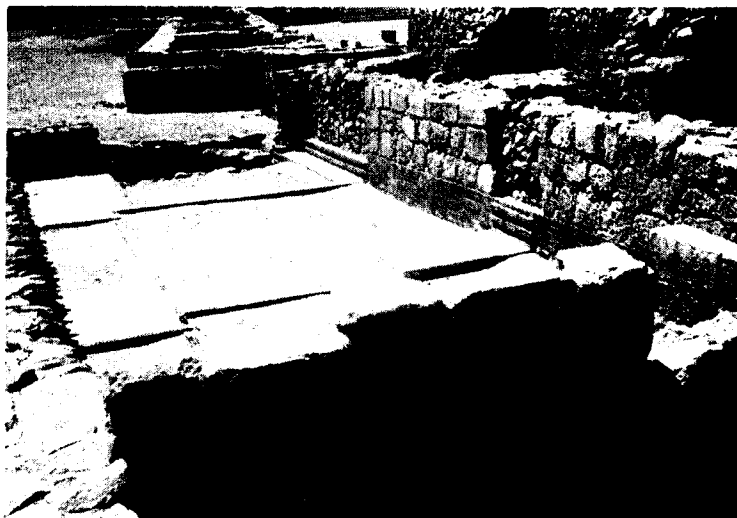


Figure 9: The Umayyad Bath located to the east of the Reception Hall
(By the author, 2001)

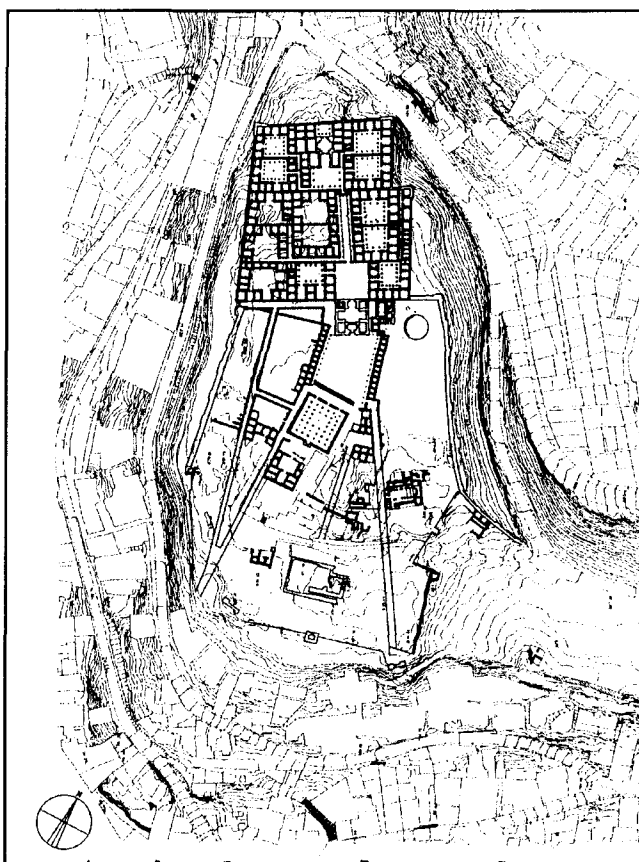


Figure 10: A plan of Amman Citadel after the uncovering of the Umayyad city
(Almagro & Arce, 2001)

Tourism Development and Problems: There are many other important features in the site, but they will not be mentioned here, it is more important to focus on the situation of the site as a touristic attraction. The case of Amman Citadel is distinguishable in many aspects, being rich with archaeological remains of different periods; having the National Museum located there, being located in a central area close to the downtown, in addition to being reachable by different means of transportation; all are factors that play a role in an attraction of both cultural and educational benefits. The existence of such remains that vary in terms of archaeological dating and functions make it ideal for educational programs. The site has been and still under continuous archaeological excavations and preservation processes by the Department of Antiquities, in order to explore its historical and archaeological significance, as well as to prepare it for visitation.

There are some problems affecting the site; being directly exposed to the residential areas in the southern and southeastern borders of the site, caused some serious problems of littering, specifically in the areas outside the southern fortification walls, though, the inside area of the site is protected by entrances and fencing, which keeps it then in a good condition.

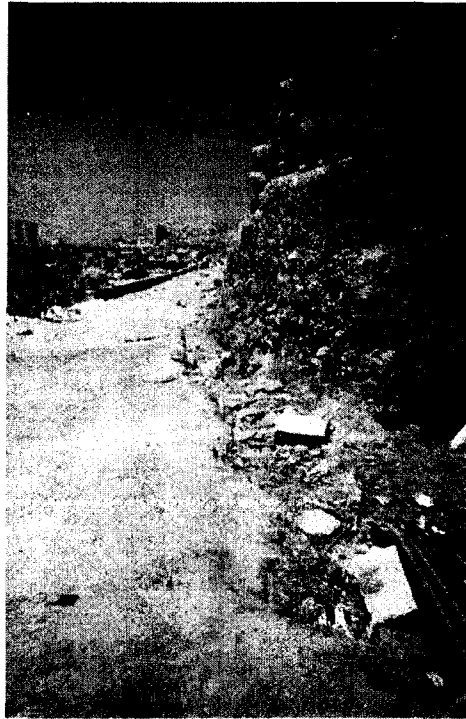


Figure 11: Littering problems in the southeastern parts of the site
(By the author, 2004)



Figure 12: Littering and remains of small fires on the eastern side of the site
(By the author, 2004)



Figure 13: Parking next to the archaeological remains in the southeastern area of the site
(By the author, 2004)

For the services and facilities provided within the site, there is an office that belongs to the Department of Antiquities, the National Museum of Antiquities, tourist police office, and a ticket shack. The site does not have an office for tourists' guides, and does not have toilets except for those inside the museum, and they are not enough for receiving the big numbers of tourists coming to the site. The site does not have any resting or seating areas, there is no distribution of any tourism brochures within the site, which might cause some interpretation problems. Trash cans are not that many in the site, but there is a good team that keeps the site clean, which is noticeable in the different areas. The site does not have parking lots, so the tourists' coaches and vehicles usually park in the outer roads leading to the site or in front of the museum. For the signage, there are many signs that clarify the different features in the site, some of them only include the name and the date of the feature, and some others have more information about the feature regarding the historical aspects and the architectural characteristics, such as those

put by the Spanish Archaeological Mission in Jordan inside and next to the Umayyad Reception Hall, but there is an absence of any signage regarding the behavior of visitors.



Figure 14: The signage next to the Umayyad Reception Hall (By the author, 2004)



Figure 15: The National Archaeological Museum in Amman Citadel Site (By the author, 2004)



Figure 16: The office of Department of Antiquities in the Site of Amman Citadel
(By the author, 2004)

An interview was done with Mr. Hosam Hejazeen, the Department of Antiquities' representative/archaeological supervisor of the site on the 5th of July 2004, in order to know the impact of tourism on the site. He mentioned that being located in the capital, with having all these archaeological features, are factors that initiated the concern to preserve and explore the site by the Department of Antiquities, and other agencies, and so being continuously funded for such purposes. For the tourism aspect, the area of the site is relatively small if compared to some other sites, and so the tour duration is short, not as some other sites Petra; the tourist in Amman Citadel usually navigates through the areas of the museum and the Umayyad city, in most cases, it takes about twenty minutes to finish this tour. There are several factors that motivate the tourists to visit the site, such as being close to many amenities and facilities as hotels and restaurants, the site is also close to the Roman Theater Site in the downtown, and easily reached by public transportation.

For tourists' behavior, Mr. Hejazeen mentioned that there are no problems, especially that their visits are usually short, a problem might be the lack of some facilities inside the site as resting areas. There is a problem caused by being close to some residential areas, where some problems regarding the behavior of individuals are noticed, for solving such problems, there are some future plans for buying and clearing some of these surrounding residential areas, but some financial issues play a role in having such objectives achieved.

For the efforts done to increase the awareness of individuals, there are some lectures and galleries conducted by the Section of Archaeological Awareness in the Department of Antiquities. And for the future, there will be some procedures regarding the preparations within the site, and to supply brochures issued by Jordan Tourism Board, which will focus on both the description of the site, and the awareness of individuals.

Roman Theater, Forum and Odeum

Location: One of the most significant remains in the capital of Amman is the area of the Roman Theater and the Forum, located to the south of Amman Citadel, this area was the heart of the Philadelphia (Roman Amman) and still till now, the site is full of life through the whole day, since it is located in the downtown, which is a central area full of lively market shops, that is in addition to being located near a transportation center, the area is crowded, most particularly during the evenings, when people spend their time within the theater or its surrounding areas, and mostly within the park located to the north of the theater and the forum.



Figure 17: A View of the Roman Theater and Odeum from the southern wall of Amman Citadel
(By the author, 2004)

The Archaeological Significance: The forum or agora is of a trapezoid shape with the dimensions of 100m on the south side, 48m on the west, and 50m on the east. The archaeological evidence shows two architectural phases, their dating comes from an inscription of a tristoön or a triple portico, and that is 189 A.D. (Northedge, 1992). The agora area is bordered with three sides, one of them is seven meters to the north of the scaena of the Odeum, it includes eight columns with Corinthian capitals and an architrave, the other side is to the west and is joining the first portico with an angle of 108 degrees, with a double column forming the corner of another portico, which is parallel to the scaena of the large theater. Another portico is also surrounding the agora from the east (Segal, 1993).

The theater is located on a slope to the south of the forum, it is composed of thirty-three row of seats and it accommodates about 6000 spectators (Northedge, 1992).



Figure 18: The seats of the Roman Theater (By the author, 2004)

The central area of the theater seating is composed of three main parts, which characterized by horizontal blocks (ima, media and summa caveae) hewn out of the hill side, that is different from the sides of the seating area, which are actually built and supported on by a complex of vaults, the seats in this theater are built of stone. There are sixteen rows of seats in each of the middle and upper blocks; they were divided by six *scalaria* into seven *cunei*, while there are only thirteen rows of seats forming the lower block. One of the interesting features seen in the theater is an *exedra*, which is located in the center of the upper seating block; it is formed by a broad house with two pilasters, and two pillars built against its façade; in the rear wall of this broad house, there is a semicircular niche flanked by square niches. Before the reservation work in the Roman Theater, both the stage area and the *scaenae frons* did not exist because of destruction that took place by the end of the 19th century A.D. (Segal, 1993).



Figure 19: The stage area and the *scaenae frons* in the northern side of the Roman Theater
(By the author, 2004)

When excavations took place, the lowest courses of the scaenae frons were found, the dating of this amazing feature became possible after the excavations conducted by al-Hadidi as a representative of the Department of Antiquities, where a coin that is dated back to the period of Marcus Aurelius was found in the foundations of the scaenae, and it belongs to the mint of 169-177 A.D. This evidence gives a terminus post for the scaena, which represents one of the last parts to be erected, while the terminus ante is the erection of the triple portico of the forum in 189 A.D. (Northedge, 1992).

The theater was preserved, and so it is still used for cultural events, the restoration brought back the life to the theater through the usage of white stone in the reconstruction, which retained the beautiful decorative elements of the stage and the orchestra. Two small museums were placed in the rebuilt vaulted corridors at the base of the theater.

One of them is located in the western corridor or original entrance to the theater, and that is the Museum of Jewellery and Costume, or what is also known as Museum of Folk Traditions, the museum includes an extraordinary group of clothing from different regions, they reflect what is worn by men and women in the last few decades, usually those of women are embroidered in colored cotton of different designs; veils and headgears are also seen with their decorative elements of sewn buttons and coins.

There is also jewellery in show cases; they include bracelets, anklets, pendant amulets and necklaces that were made at the beginning of the twentieth century. Part of this museum is a rectangular hall that consists of mosaics fragments from Madaba, and they date back to the Byzantine Period (5th and 6th Centuries A.D.), those valuable remains show a live picture of religious images, agricultural life and environment during that period.

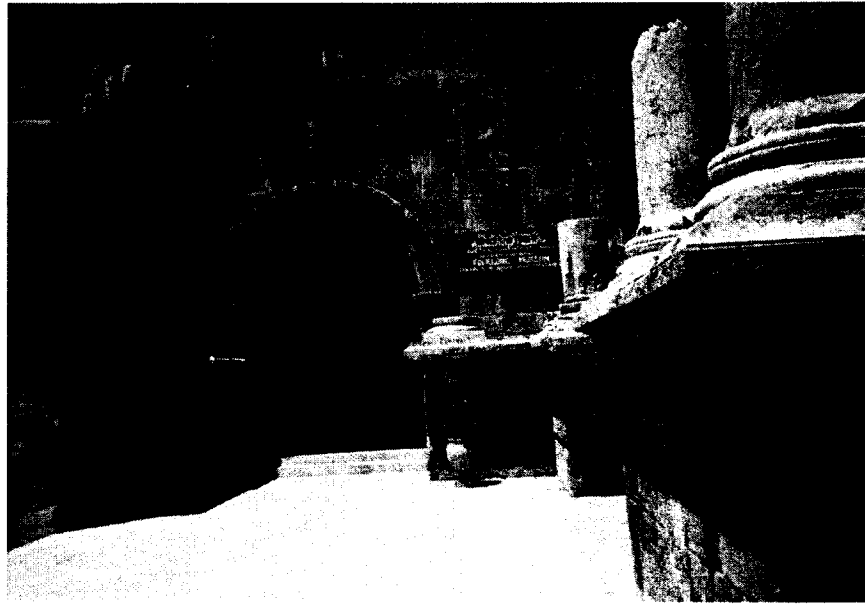


Figure 20: Museum of Folk Traditions (By the author, 2004)

The Folklore Museum is located on the eastern side of the theater, it houses a unique collection of traditional utensils and costumes, the panorama used to reconstruct the original images of time is realistic fascinating, especially with using the life-size mannequins in different positions, to form scenes of real life, such as the Bedouin wedding, weaving on a hand loom, women harem inside a traditional tent, which is made of goat skin, showing an old and an existing dwelling scattered through the land; the museum also includes furniture and house objects as round baskets made of braided straw (Casule, 2003).



Figure 21: The Folklore Museum (By the author, 2004)

The last feature to be discussed here is the Odeum, which is a smaller theater located on the east side of the forum or the agora, this building is dated back to the to the first half of the second century A.D., it has an external diameter of 38m, and a capacity of 500 spectators (Northedge, 1992).

The façade of the Odeum is facing the west and it has five entrances, the eastern side or the scaenae frons is joined to the western side with a vault, where its maximum diameter observed, the eastern side is flanked by two towers which formed the versurae. The inside area of the cavea is composed of two horizontal blocks of seating; the upper one is formed of seven rows of seats, while the lower one is of eleven rows (Segal, 1993).

The orchestra and the stage areas are well preserved, but the seats rows had partially disappeared, and they were later rebuilt as a part of the restoration work, the Odium is still used for some concerts and other cultural events (Casule, 2003).



Figure 22: The eastern façade of the Odeum (By the author, 2004)

Tourism Development and Problems: As a tourist attraction, this site is located in a central area that includes a transportation center, and big market area, which indicates being reachable and more affordable if compared to other historical sites, that is in addition to having a big number of rest houses, cafes, and restaurants surrounding the site, which are facilities needed by tourists as well as locals, who attend the area for the purpose of whether tourism or work.

There is also a small park located to the north of the agora, which includes some planted areas and seats, a number of souvenirs and crafts shops are located to the east of the site, which all give a full experience to the tourist or the visitor, and create a special sense of place, such sense comes from the fact that it was the center of the ancient Roman city of Philadelphia, Amman now, and it is still serving the same purpose as a place for all segments of society to meet and to go in their daily life.

Although of all of these advantages, some problems are observed, one of these problems is being close to a transportation center, which means having the archaeological remains exposed to a considerable amount of pollution caused by vehicles. Being so reachable, means having big numbers of tourists and visitors, this indicates being more exposed to impacts caused by their behavior.



Figure 23: The Roman Theater and part of the market area and transportation center
(By the author, 2004)

After visiting the site to gather the data and to collect information, it was noticed that the inside area of the theater is obviously clean, and the movement of visitors is partially controlled, considering that they spend a short time visiting the site, that is combined with having some employees that take tickets, and keep watching the visitors behavior, and check continuously the area of the theater. The visitors are free to climb and navigate in the theater area, which might need to be considered, and there is a little bit of graffiti in some spots, but the general condition is so acceptable.

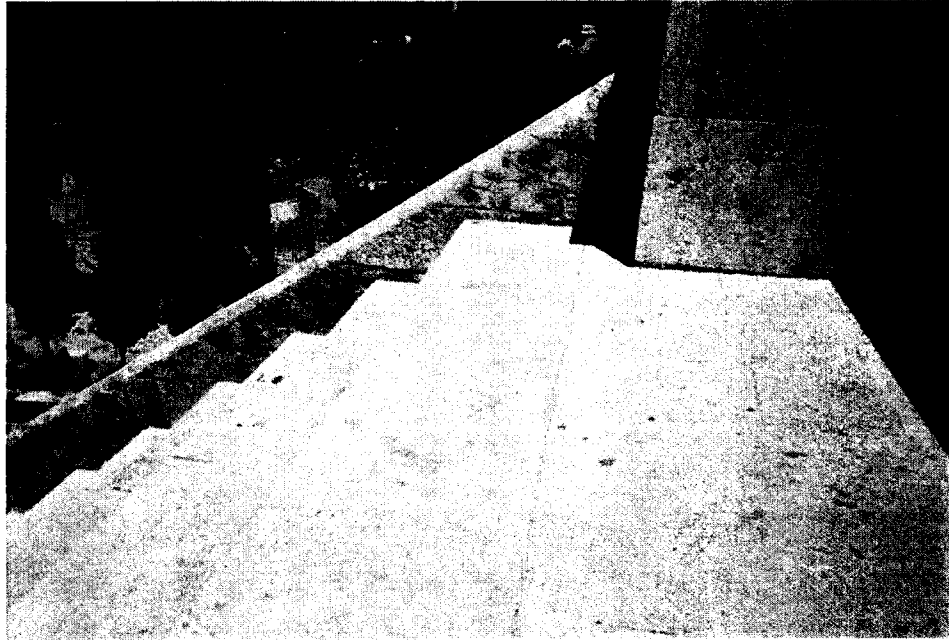


Figure 24: Graffiti with a black marker on one of the stairs in the eastern side of the theater
(By the author, 2004)

The problem actually is in the agora area, which is crowded during most of the day time, there are great efforts done by Amman Municipality to keep the area clean, but there are still some littering problems, and unfortunately some people use part of the paved area for parking purposes.



Figure 25: Littering problems at front of the Roman Theater
(By the author, 2004)



Figure 26: Littering problems at front of the Roman Theater
(By the author, 2004)

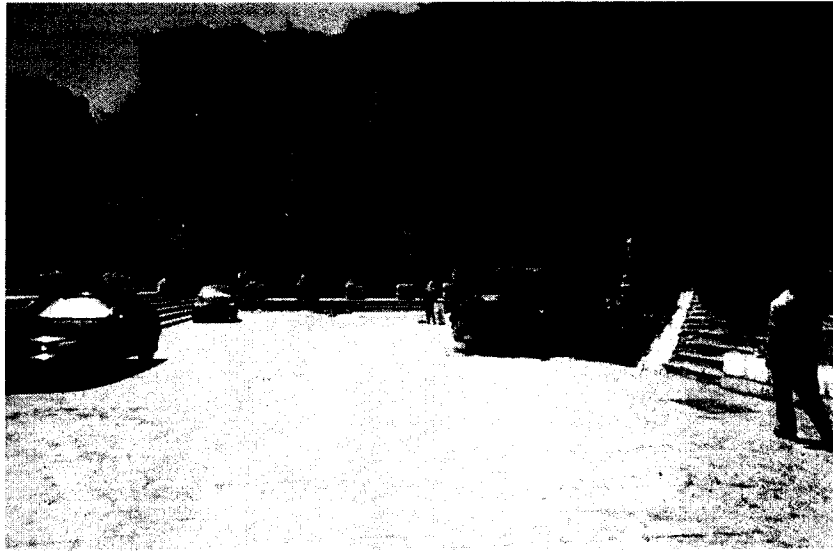


Figure 27: Vehicles in the agora area and a worker from Amman Municipality as an effort to keep the area clean (By the author, 2004)

For the services provided in the site, in addition to the two museums, there is a shack for tickets located within the agora, and a police supervision, but the interpretation part is not fulfilled, there is only one interpretative sign at the northern side of the theater, it includes very good information about the history of Amman in ancient periods and Umayyad Dynasty, that is in addition to some examples of archaeological discoveries that belong to this period and to the city as well, there are no behavior signs except for few ones inside the two museums to prevent touching any of the exhibited material.

Jesus Baptism Site

Location: Since the 4th century A.D., Christian pilgrims visited the region east of the Jordan River, which includes Saphsaphas (al-Kharrar), Wadi Gharabah, and Livias (Tell al-Rameh), on their way to Mount Nebo. Most pilgrims visited the Jordan River on their way from Jerusalem to Jericho, others crossed eastwards, visiting and describing the remains along Wadi al-Kharrar (Waheeb, 2001a). Wadi al-Kharrar is the modern name for what was mentioned in the ancient texts as “Safsafas”, which is depicted on the Madaba mosaic map of the Holy Land (6th century A.D.). The site is located on the eastern bank of the Jordan River, and to the west of the village of Al-Kafrain, and can be viewed from Jericho on the other side of the river (Waheeb, 2001b).

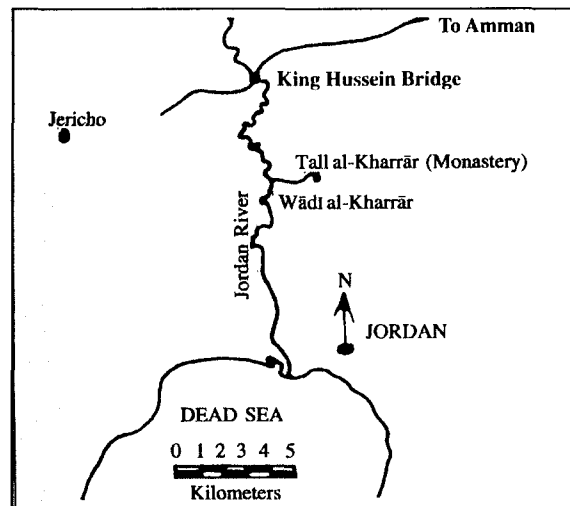


Figure 28: A map showing the location of Jesus Baptism Site (Wadi al-Kharrar) (Waheeb, 1999)

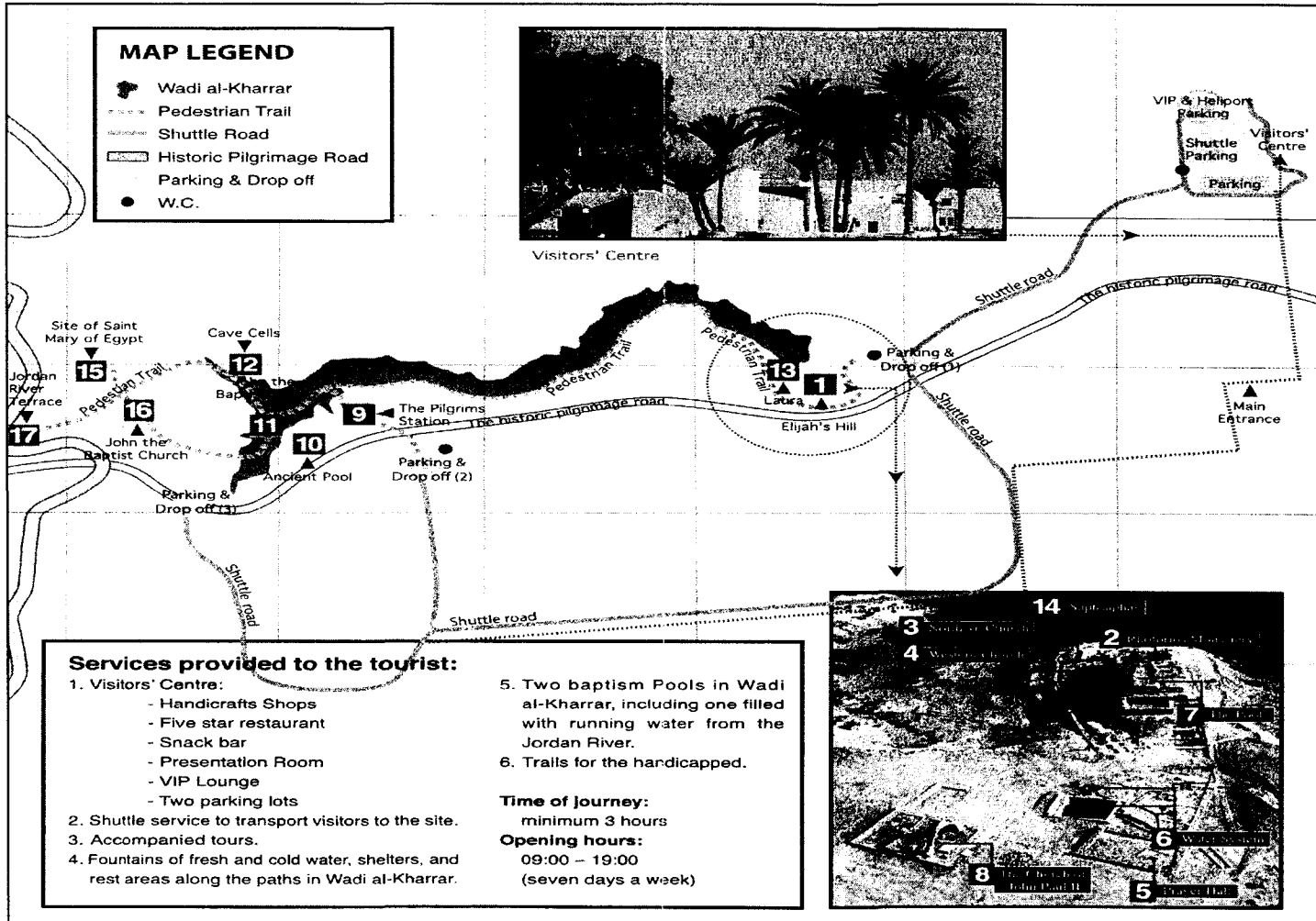


Figure 29: A map showing the main features of Wadi el-Kharrar (Jordan Tourism Board, 2004)

The Archaeological Significance:

There are several areas that form the whole site; these include Elijah's Hill, Churches of the River, Cells of the Monks and other features located between them. For Elijah's Hill, there is the great complex of the Byzantine Rhotorios Monastery, the complex is dated back to the (5th - 6th centuries A.D.), and it has several remains that reflect a continuous usage, these remains include a surrounding wall, living quarters for the monks who used to live in the region, a water system that is still in a very good condition, in addition to a number of churches; the entrance of this complex is located in the northern side of the surrounding wall (Waheeb, 2001) (Baptism Site Commission, 2005). The following is a description of the main features in this part of the site:



Figure 30: Elijah's Hill, a view from the south (Baptism Site Commission, 2005)

The Northern Church: The Northern Church is composed of two sections: a chancel screen (just in front of the altar) and a nave (the central part of the church). There are two entrances that lead to the inside area of the church, they are located in the northern and western walls. The floor was covered by a colored mosaic with a frame and cross marks with geometrical designs, and a complete Greek inscription, the text is: "By the help of the grace of Christ our God, the whole monastery was constructed in the time of Rhotorios, the most God-beloved Presbyter and Abbot. May God the Savior give him mercy" (Waheeb, 2001a).



Figure 31: The Northern Church and preservation works (By the author, 2004)



Figure 32: The Greek inscription in the Northern Church (Baptism Site Commission, 2005)

The Western Church: This Church is composed of two main parts. In the first part, an apse with a semi-circular shape was cut in the natural rock beneath the northwestern pool. This apse has lamp niches carved on southern and western sites. The interior of the church is found in some foundation remains located in front of the apse. The second part of the church is composed of four column bases built of well-dressed, square-cut sandstone blocks, creating a nave and two aisles. The dating of this building was possible by Byzantine pottery sherds that were found during the excavations (Waheeb, 2001a).



Figure 33: The Western Church (Baptism Site Commission, 2005)

The Prayer Hall: The structure is considered to be the earliest worshipping building at the site, there is a possibility that it dates back to even before the 4th century A.D. The building is of a rectangular shape that is built of undressed fieldstones; it is located near the south eastern corner of Tell al-Kharrar. There is a plain white mosaic pavement that covered the floor; the ceiling was probably made of wood (Waheeb, 2001a).

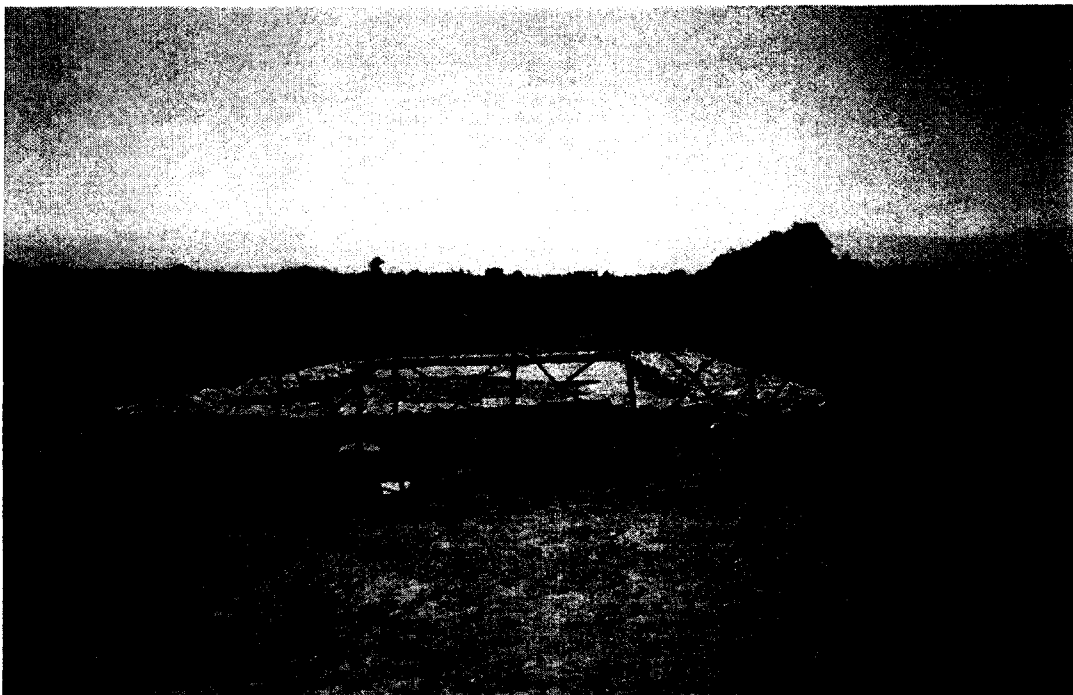


Figure 34: The Prayer Hall (By the author, 2004)

Water System: A water system that is composed of a well, a cistern and settling basins, is located between the prayer hall and the nearby small chapel. The cistern was carved in the natural lisan marl rock; it is the largest reservoir found at the site, and it dates back to 5th – 6th centuries A.D. Well-cut sandstone ashlar were used to construct the walls of this cistern, they were coated with a thick layer of lime, and then by a smooth layer of plaster to prevent any seepage, the pool was probably roofed by a vault system. The well in the system was fed by a channel, which is located to the northwestern corner of the cistern (Waheeb, 2001a).



Figure 35: The Channel to the northwestern corner of the Cistern
(Baptism Site Commission, 2005)



Figure 36: The Cistern in the Water System (By the author, 2004)

Three pools were found on Elijah's Hill, one of them is located on the lower southern slope, the pool has a rectangular shape, with an inner staircase on the eastern side, and four steps extending the full width of the pool. Pilgrims would descend by these steps into the pool to be baptized. The other two pools are located on the top of the northern edge of Tell al-Kharrar. They have a square shape; some ashlar were added to the southwestern corner of the northwestern pool in later periods, possibly to form a staircase to go down into the pool, The pools receive their water supply through aqueducts and they are dated to the early Roman period (3-4th centuries A.D.) (Waheeb, 2001a).



Figure 37: The Southern Pool (Baptism Site Commission, 2005)



Figure 38: The two Northern Pools (Baptism Site Commission, 2005)

The Arch Church (Church of Pope John Paul II): A rectangular church (or chapel) is located in the southern side of the hill; the church was built during the (5th – 6th) centuries AD, and used by pilgrims for praying and worshipping. The mosaic covering the floor has cross decorations, arches were used to support the roof, of which one was reconstructed. This church was named after His Holiness Pope John Paul II to commemorate his visit and blessing of the site on 20th March 2000 (Waheeb, 2001a).

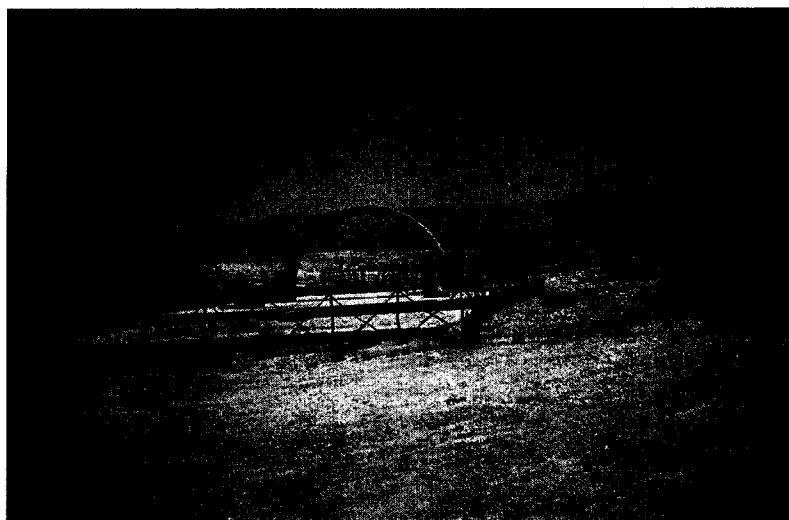


Figure 39: The Arch Church (Church of Pope John Paul II)
(By the author, 2004)

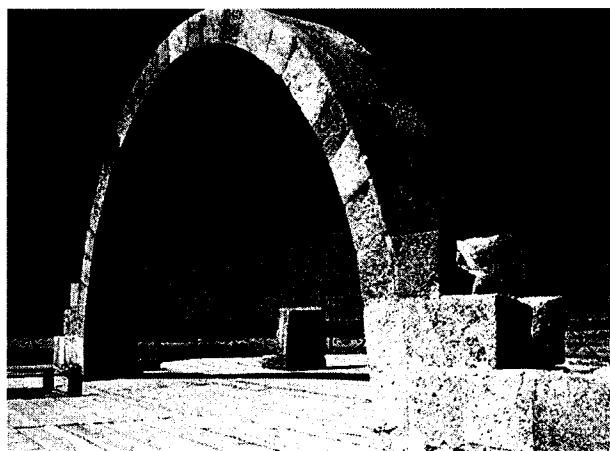


Figure 40: Arch Church (Church of Pope John Paul II)
(Baptism Site Commission 2005)

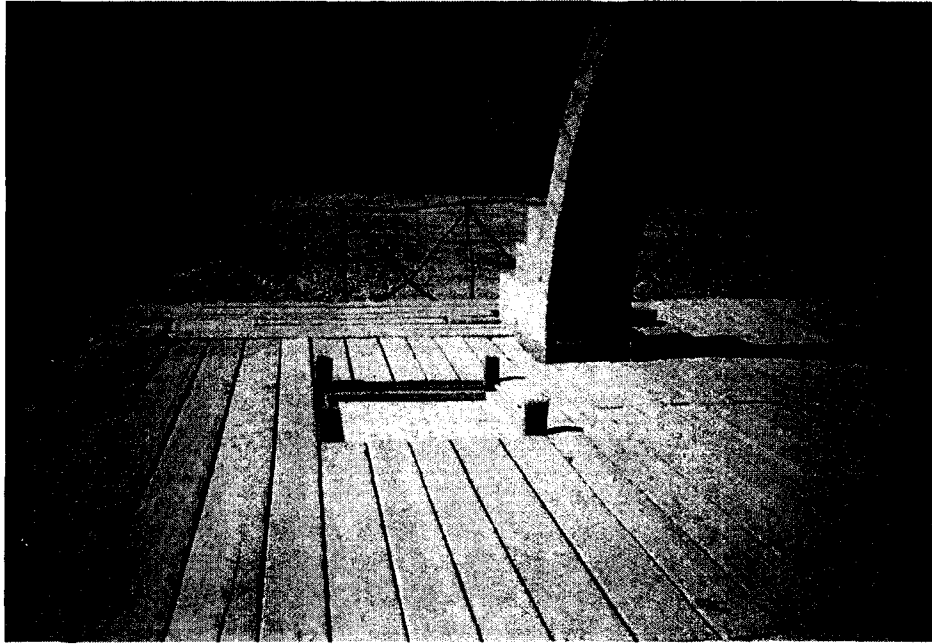


Figure 41: The protected piece of mosaic floor in Arch Church
(Church of Pope John Paul II) (By the author, 2004)

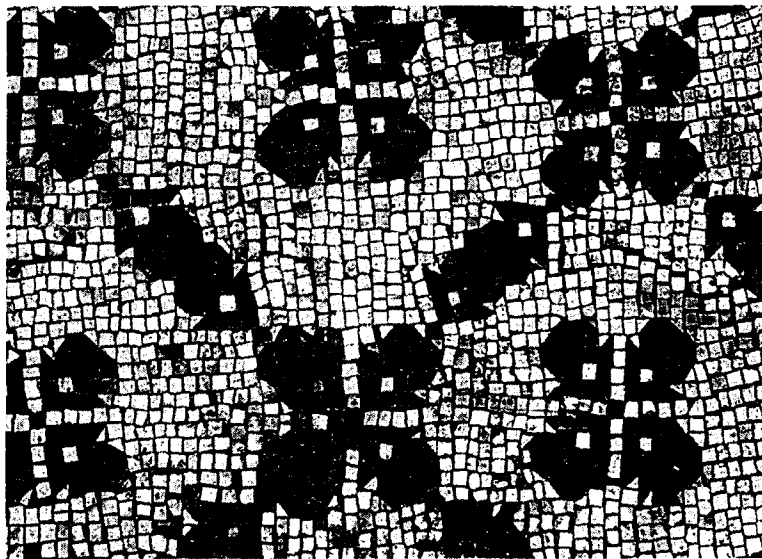


Figure 42: Part of the mosaic floor of (Church of Pope John Paul II)
(Baptism Site Commission 2005)

We move now from Elijah's Hill to other locations in Bethany beyond the Jordan.

Laura (Hermits Cells): Located about 300m to the west on the southern edge of Wadi al-Kharrar, the architectural remains of Laura (Hermits Cells) can be seen. They are formed by a small structure with foundations built from local fieldstones, while the upper courses were built from mud bricks. Wooden beams were probably used to roof the structure. It sounds that this structure was used by monks as living and prayer quarters, and for offering necessary services to the pilgrims visiting the site (Waheeb, 2001a).



Figure 43: Laura (Hermits Cells) (Baptism Site Commission 2005)

Pilgrims' Station: A pilgrims' station was built during the Byzantine period (5th – 6th centuries A.D.) between the Jordan River and Tell al-Kharrar. This feature contains a number of rooms surrounding an open courtyard, and was supplied with water by an adjacent pool (Waheeb, 2001a).



Figure 44: The Pilgrims' Station (By the author, 2004)

John the Baptist Spring: This feature was mentioned and described by travelers as flowing from a point near Tell Mar Elias (Elijah's Hill), and reaching the area near John the Baptist's Church. They referred to it as Aenon, and said that water of this spring was used for drinking and for baptism. Several structures and pools were built along the route of the fresh water (Waheeb, 2001a).



Figure 45: Part of John the Baptist Spring (Baptism Site Commission, 2005)

The Ancient Pool: A large pool was uncovered in an area called the Zor. It is a stone-built and plastered pool that measures (20 x 10 m). A built canal carried the water into the pool from a nearby spring to the north, and another canal took water out of the pool on the southern side. Archaeological finds from the pool dates the structure to the Byzantine Period (5th - 6th centuries A.D.), it is believed that the pool was used for group baptisms during that period since it could accommodate about 300 persons (Waheeb, 2001a).

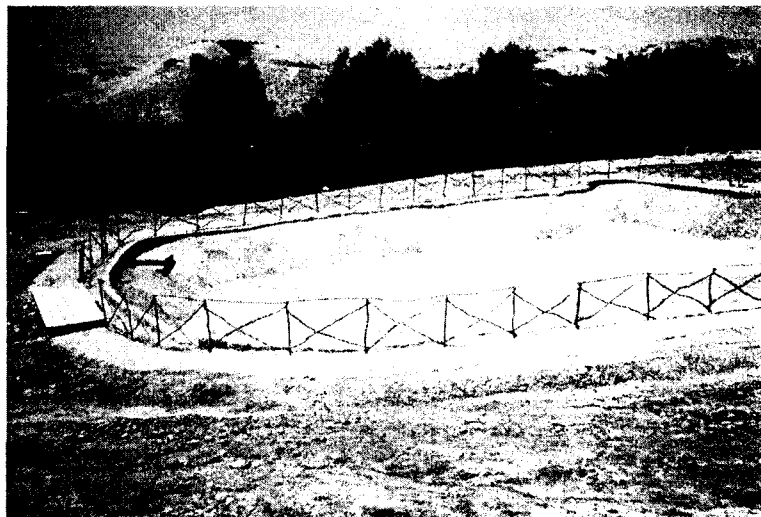


Figure 46: The Ancient Pool (By the author, 2004)

The Monks' Cells: Two cave cells were discovered in Wadi al-Kharrar. Monks used these caves located on the eastern side of the Jordan River as churches. These caves (cells) were dug into the upper layers of the lisan marl cliffs, and were used also as dwellings. Prayer niches were carved in the eastern walls of the two caves. It is possible that monks had to access these cells using ropes or ladders (Waheeb, 2001a).



Figure 47: One of the caves cut in the marl cliffs (By the author, 2002)

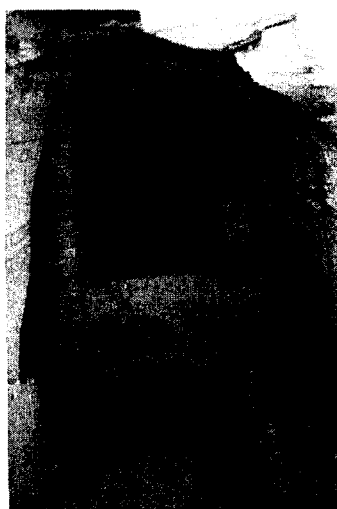


Figure 48: A prayer niche inside one of the cave cells (By the author, 2002)

Site of Saint Mary the Egyptian: One of the religious legends of Wadi al-Kharrar is related to Saint Mary the Egyptian, who had a disreputable life in Alexandria in her youth, later, she abandoned her life of sin during a visit to Jerusalem, to start a life of worshipping and to become a model of repentance. After consulting the Virgin Mary in Jerusalem, she heard a voice telling her: “Cross the Jordan and you will find rest”. She crossed to the east bank of the Jordan River, and had the last 47 years of her life in isolation, praying and fasting in the desert where she could be close to God. Before dying she met a monk named Zosima from a nearby monastery, he prayed with her and listened to her story. According to the story, Zosima buried her, with a lion that helped him to dig her grave with its paws (Waheeb, 2001a).



Figure 49: Site of Saint Mary the Egyptian (By the author, 2004)

The Byzantine Monastery: The site on the east bank of the river was built to commemorate John the Baptist's ministry and his baptism of Jesus. It is located at the traditional site where the baptism of Jesus is said to have taken place, and more particularly where Jesus is said to have left his clothes during his baptism. Excavations have unearthed the foundation of arches and walls, which is in addition to partially preserved mosaic and marble floors. Materials such as pottery, coins and marble floor tiles date the site to the Late Byzantine Period, between the 5th – 6th centuries A.D.

The Monastery is located 300 meters east of and 70 meters north of the present course of the river, it is composed of Pillared Hall (First Church), Lower Basilica (Second Church), Basilica (Third Church), Room to the south of the Basilica (mosaic pavement), a Staircase, four piers, Chapel (Fourth Church), and some later structures dated to Islamic Periods (Mkhijian & Kanellopoulos, 2003).



Figure 50: The Byzantine Monastery (Baptism Site Commission, 2005).

The Pillared Hall (First Church) is composed of a set of stone pillars running EW and NS, the structure has dimensions of 25.80 (E-W) by 25.15 (N-S) m, fieldstones of average size were used as a building material, and were bonded by gray mortar and plaster remains, ashlar of sandstones were used in building the outer sides of the pillars (Mkhijian & Kanellopoulos, 2003).



Figure 51: The First Church in the Byzantine Monastery (By the author, 2004)

The Lower Basilica (Second Church) is identified by its marble floors of geometrical shapes and various colors, and remains of the southern wall that are still visible, this church is tilting towards the west, which might caused the destruction by the floods from that side, based on this, it was assumed that the main course of the river was located to the west of this church, some falling ashlars are observed over the southwestern part of the marble pavement (Mkhijian & Kanellopoulos, 2003).

The Basilica (Third Church) has a minimum length of 27 m (N-S) and a width of 15.80 m (E-W), this building was partially built over the remains of earlier structures of Lower Basilica and Pillared Hall as a foundation, the inner and outer sides of the external walls are built of sandstone ashlar, the core is formed of a mixture of fieldstone and sandstone pieces, the roof was supported by piers of a rectangular shape, the nave of the church has a width of 5.12 m and the northern and southern isles are of a width 3.63 and 3.45 m respectively, there are some important features in the church as chancel screen with a rectangular apse (7.6 m long), and an altar in its center (0.80 m²) made of sandstone with some remaining marble slabs on its western and southern slabs.

There is a mosaic floor located to the west of the altar, this floor has tesserae of medium size, and it had motifs of different shapes as a vase with two handles and flowers. There are also remains of a marble floor to the north of the altar, the marble slabs were vanished, but their pattern impressions are still seen on the underlying mortar (Mkhijian & Kanellopoulos, 2003).



Figure 52: The inside area of the Third Church before covering the floor
(By the author, 2001)



Figure 53: The stairs put to reach the Third Church on the eastern side
(By the author, 2004)



Figure 54: The Wooden Shelter put above the Third Church for protection purposes
(By the author, 2004)

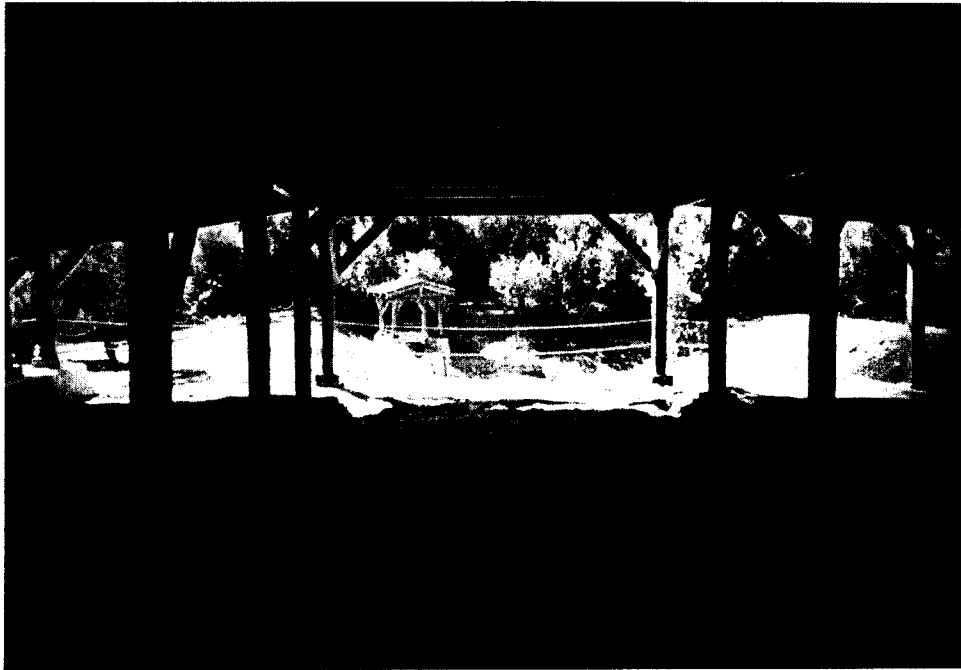


Figure 55: The inside area of the Third Church after covering the floor
(By the author, 2004)

There is a room (3.60 m wide) that is located to the south of the Basilica, the southern, eastern and western ends of the room are not defined, but the floor is covered with a mosaic floor, this floor has geometric designs with large colored tesserae, this room is not of a clear function but it seems to be an auxiliary to the basilica. The Basilica is in line with the staircase to the east that leads to the structure of four piers; the staircase has a total length of 31 m from the Third Church and has a width of 2.40 m with sidewalls 0.70 m wide to its north and south sides (Mkhijian & Kanellopoulos, 2003).

The Four Piers are located at the lowermost end of the staircase, three of them are still standing, and the fourth is almost vanished, they form the ends of an area of (9.25 by 9.25 m), the inner area is paved with large flagstones, the piers were built of sandstone ashlar on the outer sides and filled with fieldstone and sandstone pieces that are cemented with lime mortar, the surface of the lower parts was covered with a grayish plaster, and hundreds of cross marks incised all over the surface. After the destruction of the four piers at some point, a small chapel was built on the remains of one of the piers.

This chapel or Fourth Church is built from the same materials used in other churches, only the remains of sandstone wall on the northern and northeastern parts, the assumed dimensions of the structure are (5 by 3.05 m) an almost semicircular apse (0.95 m deep by 2.25 m wide) within the eastern wall (Mkhijian & Kanellopoulos, 2003).



Figure 56: The Fourth Church (By the author, 2004)

Tourism Development:

Considering all the previously mentioned discoveries in Jesus Baptism Site, and its importance; it was declared as an archaeological and religious destination with an area of 7 km², a commission was formed to manage the site and its development under the name of Baptism Site Commission, this is under the supervision of HRH Prince Ghazi Bin Mohammad, the Director of the Board of Directors of the Baptism Site Commission.

The construction of the infrastructure at the site started in 1999; it was characterized by a paved road leading to the site, in addition to the services of electricity, water and communication. There were also paths that were constructed among the different features and locations within the Baptism Site, these paths or trails are also suitable for the handicaps, these paths were built of stones in order to preserve the sense of place, and for preventing any negative environmental impacts. A Visitors' Center was built at the site, it included nineteen commercial and handicrafts shops, two restaurants, a presentation room, a museum, a clinic, in addition to a VIP lounge and management offices.

The site was also provided with parking lots and fountains of fresh and cold water, several shelters roofed by palm branches and resting areas are distributed along the paths in Wadi al-Kharrar. The site is also provided with two baptism pools; one of them is filled with running water from the Jordan River, this water is sent to desalination stations, and then used for baptism purposes in these pools, the water will be sent consequently to Wadi al-Kharrar, and then to the river of Jordan, in order to sustain the ecological balance of water resources in the site, these pools are also provided with platforms and tents for celebration purposes, as well as with chambers for changing

cloths. A terrace was built on the river side with a tent and a wooden platform with stairs to ease the access of visitors to the river, this facility was provided with a tent and a chamber for changing cloths for the purposes of baptism. As a part of the development, there were eight thousand pine trees that were planted to rebuild the vegetation of the area (Al-Madani, 2004).

The site is considered as a very good example for preventing the negative impacts of visitation, although of having many natural threats to the site, as flooding of the river in the winter and earthquakes, there are procedures taken by the archaeological team supervised by Mr. R. Mikhijian, an architect from the Department of Antiquities, who is in charge of all restoration processes at the site. An interview was done on July 28th 2004 with Mr. Mikhijian, in order to know the methods used to protect the site. He mentioned that the site is unique in many aspects, this includes the natural factors threatening the site, the building material, which is sandstone, such material is sensitive to weathering conditions as well as visitors impacts, and most of all, it is the evidence of a great religious event, which is the Baptism of Jesus the Christ; consequently, it requires a unique treatment. For the natural phenomena, the temperature and the high humidity are causing the plastered walls and mosaic floors (especially in Rhotorios Monastery) to crack, which might be also caused by earthquakes as well. Such factors will increase the chance of having pumps between the beddings and the external surfaces of plaster or mosaic, which will then cause their damage. The treatment of mosaics comes through several stages where parts of these surfaces are removed carefully, and then filling the pumps by a special mix of water and wood glue or any other appropriate material, and then putting the pieces back with the original design. This treatment is sensitive; all

different factors need to be considered, even the kind of shoe the preservation worker is wearing. For the plastered walls, a mix of water and straw is used to fill and cover the affected area; another procedure is adding wooden shelters in different locations above architectural remains. For the visitation, there are different procedures applied to prevent any negative impacts, one of these is surrounding the features with ropes or wooden fences to eliminate the access to the inside areas of such areas, this can be seen mainly in Rhotorios Monastery, where churches used to have problems of stepping on some sensitive areas, but the problem was solved in the very early stages by the technique of fences and ropes. Another method is seen through the trails designed to link the features with each others, which guarantee then a controlled movement within the site. There is also an example seen in the Church of Arch, where a wooden floor is covering the church except for a small section of the mosaic, so it can be observed without being stepped on by tourists. Also, the wooden bridges and paths surrounding the area of Elijah's Hill, they keep tourists in a controlled movement while viewing the different features of this area.

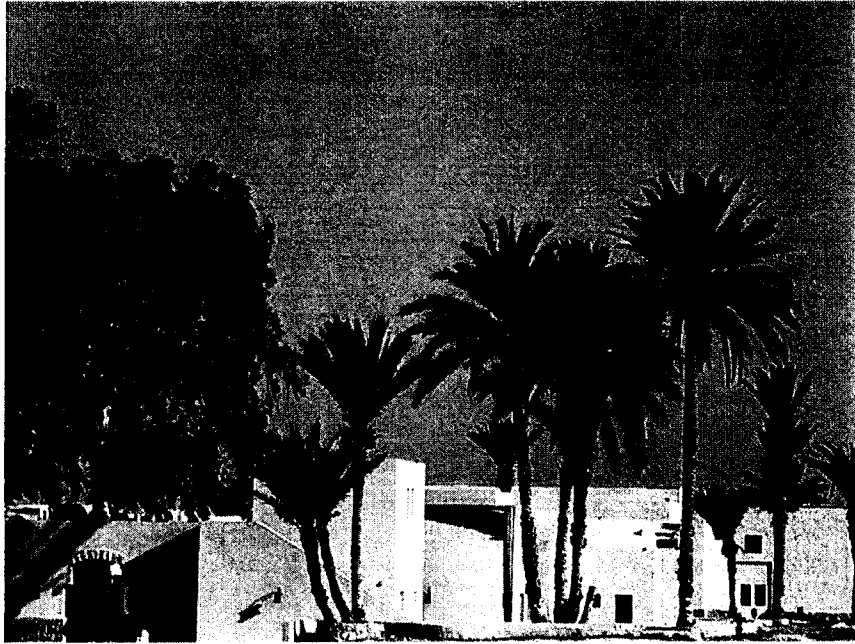


Figure 57: The Visitors' Center
(Baptism Site Commission, 2005)



Figure 58: The Market Area in the Visitors' Center
(Baptism Site Commission, 2005)



Figure 59: The Restaurant in the Visitors' Center
(Baptism Site Commission, 2005)

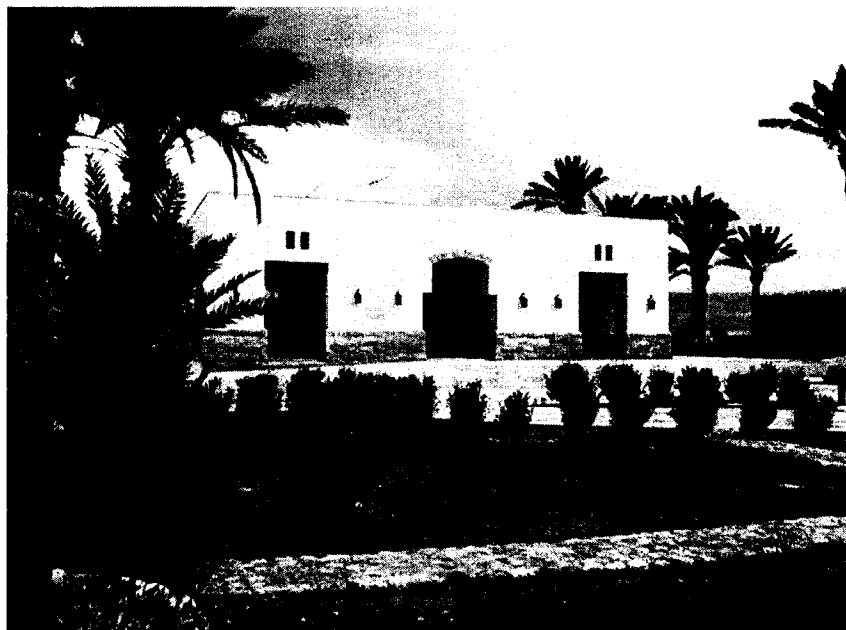


Figure 60: The Restaurant (Baptism Site Commission, 2005)



Figure 61: The VIP Lounge in the Visitors' Center
(Baptism Site Commission, 2005)

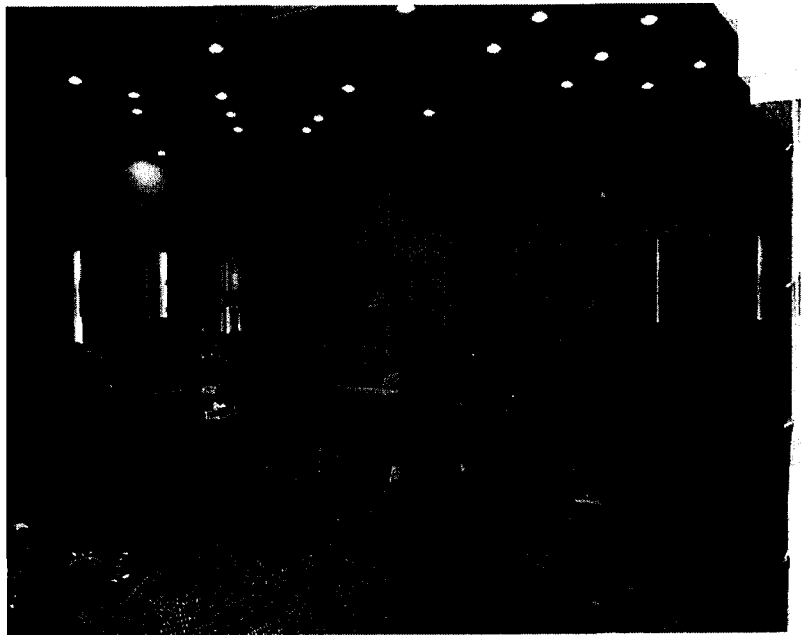


Figure 62: The VIP Lounge in the Visitors' Center
(Baptism Site Commission, 2005)

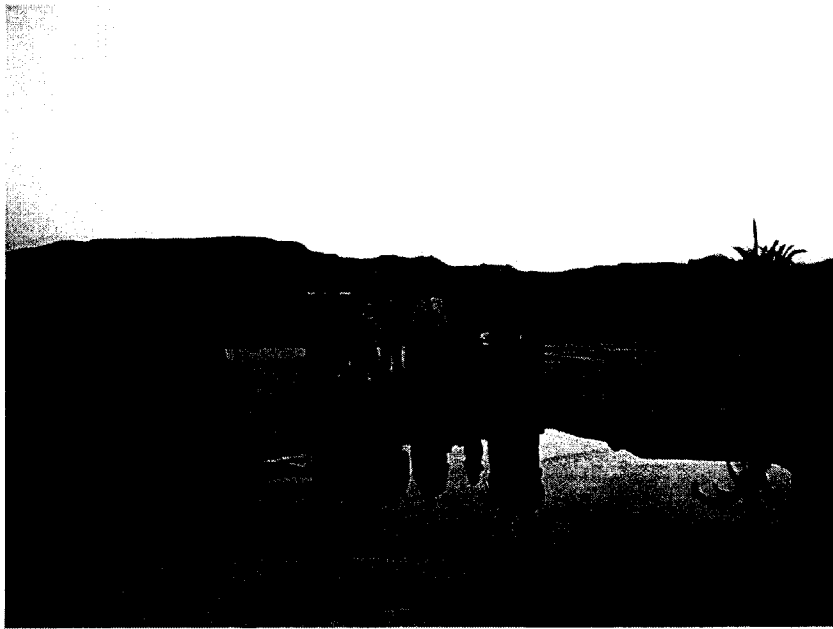


Figure 63: One of the Baptism Pools
(Baptism Site Commission, 2005)



Figure 64: One of trails in Wadi al-Kharrar (Baptism Site Commission, 2005)



Figure 65: One of the desalination stations (Baptism Site Commission, 2005)



Figure 66: A resting area next to the spring of John the Baptist (Baptism Site Commission, 2005)



Figure 67: A trail leading to the River of Jordan
(By the author, 2004)



Figure 68: A resting area close to the Churches of John the Baptist
(Baptism Site Commission, 2005)



Figure 69: The Terrace erected next to the Jordan River
(Baptism Site Commission, 2005)

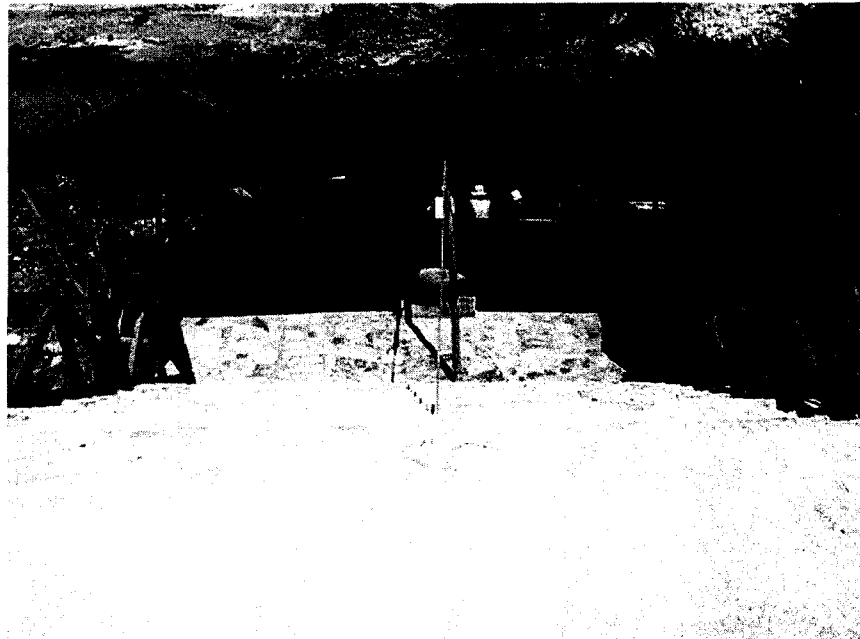


Figure 70: The Terrace erected next to the Jordan River
(Baptism Site Commission, 2005)



Figure 71: The flooding of the Jordan River during winter
(Baptism Site Commission, 2005)



Figure 72: One of the religious ceremonies in the site
(Baptism Site Commission, 2005)

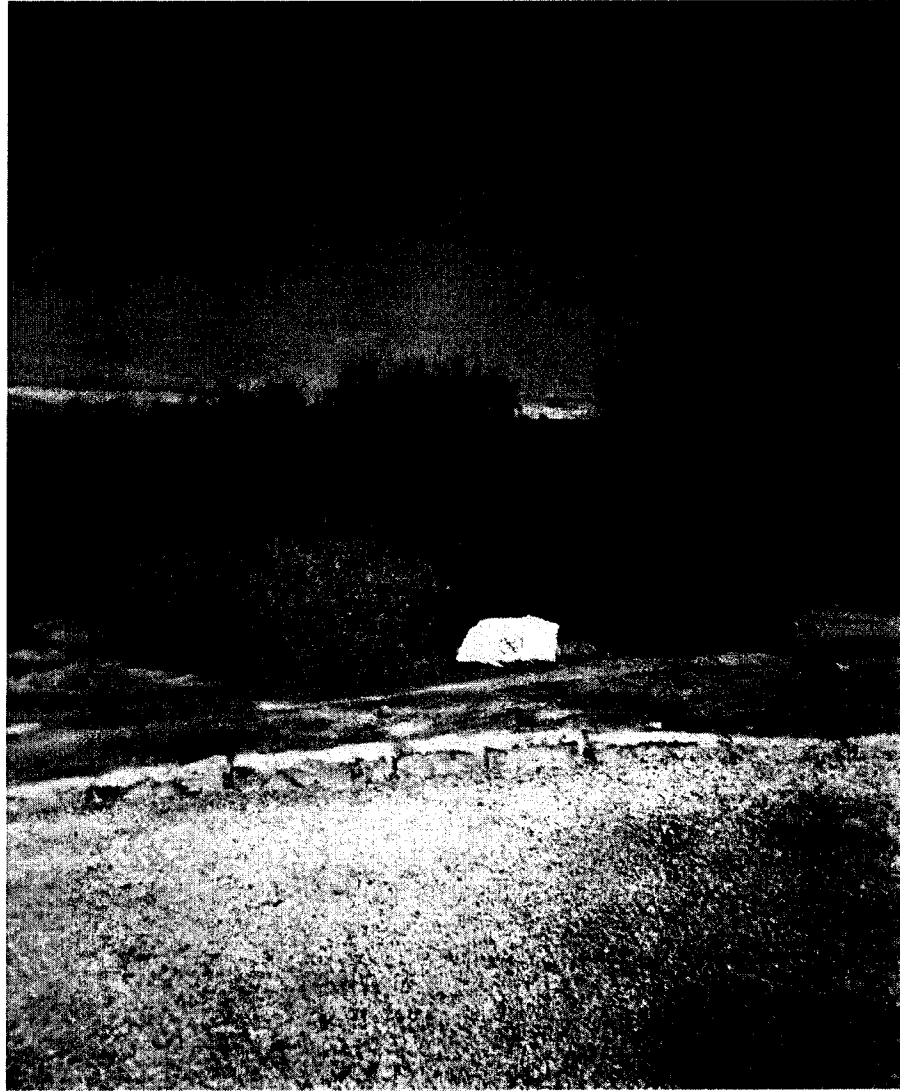


Figure 73: A behavioral sign (No Smoking) in the site
(By the author, 2004)

Jerash:

Location: The city of Jerash is located 34 km to the north of Amman, and it lies on the banks of the River Chrysorhoas (Wadi Jerash). The river crosses the city north to south at a height of 570 m above sea level (Applebaum & Segal, 1993). The city of Jerash is considered as one of the well preserved Roman cities in the region, and was one of the Decapolis cities during the Greco-Roman Period. The city is surrounded by a thick well built wall that still can be traced around almost the whole city. The wall is 3 m thick and extends for 3456 m; it encloses an area of 847,000 m² on both sides of the River Chrysorhoas. The wall has different heights according to the terrain, and is regularly broken at intervals of 17-22 m by 6 m² square towers integrally built into it. The alternating headers-and-stretchers technique was used in building the wall (Khouri, 1986). There are many features in the site, this section describes some of them.

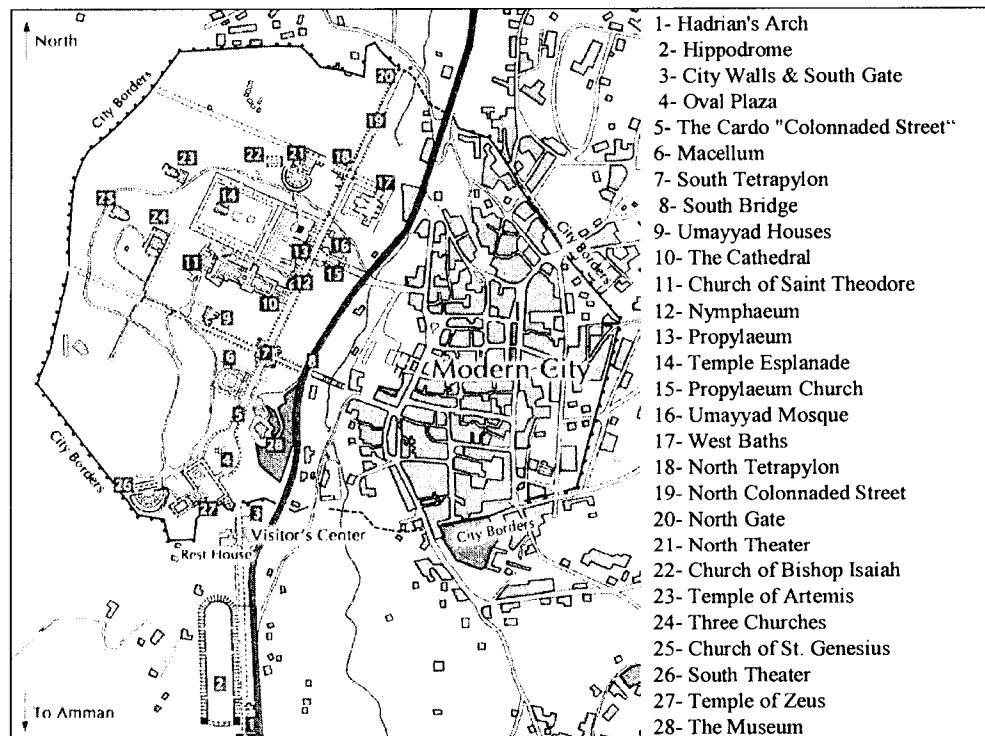


Figure 74: A plan of the city of Jerash (Casule, 2003).

The Archaeological Significance: The Following is a brief description of the main features in the city of Jerash.

Hadrian's Arch: It is the first feature seen by visitors who approach the city from the north, on the main road from Amman. The arch was built in the year 129/130 A.D. to honor the visit of the Emperor Hadrian, the date of this monument is observed on the dedicatory inscription on the northern façade of the arch (Khouri, 1986). The gate has a main passageway flanked by subsidiary passages, the facades have four engaged Corinthian half columns carrying an architrave and pediment (Applebaum & Segal, 1993).



Figure 75: Hadrian's Arch (Jordan Tourism Board, 2001)

The Hippodrome: This feature is located to the north of Hadrian's Arch; it functioned as a sporting and entertainment center at the city during the Roman Period. The Hippodrome has an elongated oval plan, it measures 244.5 m as an inside length and it has a varying width from 51.28 m in the northern side to 49.49 m in the southern end. The external dimensions are 261.42 m long and an average 76.08 m wide, the external walls stand with

a height of 10 m above the outside the ground level (Khouri, 1986). At its southern end were ten compartments from which the chariots started (Applebaum & Segal, 1993).

Southern Gate: The decoration and the design of this gate are similar to the ones in Hadrian's Arch, it has a large central passage way with a width of 4.20 m wide, and this passage is flanked by two smaller passage ways with a width of 2.32 m for each (Khouri, 1986).



Figure 76: Southern Gate (By the author, 2004)

The South Theater: The South Theater is one of the well restored public buildings in the city. The building of this feature started at the end of the first century AD and was completed in the early second century, and it has a capacity of 3000 people (Khouri, 1986). The theater is located to the west of the Temple of Zeus; the lower auditorium (ima cavea) was divided into four segments (cunei), and the upper (summa cavea) into eight. The theater has a capacity of about three thousand spectators; there are four exits (vomitoria) from the gangway (praecinctio) and two passages (auditus maximi) that leads

to the orchestra on each side of the theater. The façade (scaenae frons) behind the stage had two stories and three entrances (aula regia) and two hospitalia. The theater was built in the last decade of the first century A.D. (Applebaum & Segal, 1993).



Figure 77: The South Theater (Jordan Tourism Board, 2001)

The Northern Theater: This theater is located to the northeast of the sanctuary of Artemis and South of the Northern Decumanus, it is smaller than the South Theater and its cavea faces the north. The orchestra has vaulted entrances (aditus maximi) which are located behind the scaena frons near the wings (versurae). The upper cavea has eight cunei, the

lower four are reached by four vomitoria, the theater was built between 162 and 166 A.D.
(Segal, 1993).



Figure 78: The entrance of Northern Theater (By the author, 2004)



Figure 79: The inside area of Northern Theater (By the author, 2004)

The Plazas: There were several plazas in the city of Jerash. One of them is located to the near the city's South Gate and it has an elliptical shape. Another plaza has a round shape and is located at the intersection of the Cardo and the southern Decumanus. There is also a rectangular plaza located to the north of the North Theater and adjoins the northern Decumanus. The Elliptical or Oval plaza is mostly considered to be the main plaza or forum of Jerash, it has dimensions of 90 by 80 m, and the ellipse is surrounded by 160 columns with ionic capitals. The plaza was paved with stone slabs, and is dated back to the first century A.D. (Applebaum & Segal, 1993).

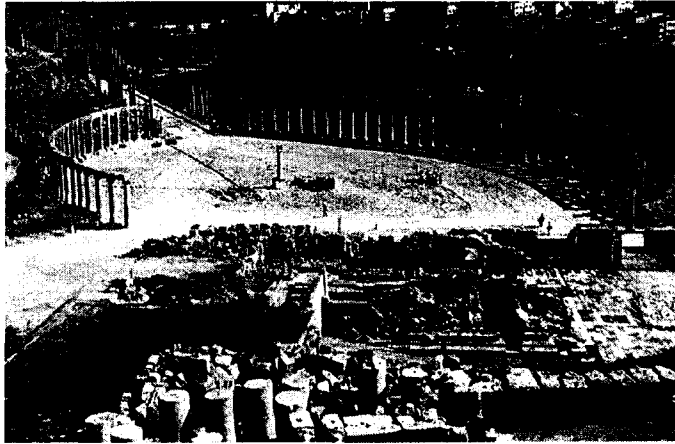


Figure 80: Oval Plaza (Jordan Tourism Board, 2001)



Figure 81: The end of the Oval Plaza and the beginning of the Cardo
(By the author, 2004)

The Sanctuary of Zeus: This sanctuary is situated on the city's southern hill, and to the east of the South Theater. This was apparently ancient Jerash's cultic site, since the sanctuary precinct and the theater constituted a single ritual complex. The sanctuary within the area between the temple and the Oval Plaza, the temple was built in the period (161-166 A.D.), it has a peripteral plan with eight columns in its façade and twelve along

its sides, and is build on a podium, this podium has a façade with pilasters that that flank a staircase (Applebaum & Segal, 1993).



Figure 82: The Sanctuary of Zeus (By the author, 2004)

Sanctuary of Artemis: The sanctuary was built in the honor of the goddess Artemis, the patroness of Gerasa, and was the center of the city. It was built in the second century A.D., and it is composed of five main parts: the Propylaeum (complex of gates) to the east of the *Cardo*, the Propylaeum to the west of *Cardo*, the Outer Court, the Temple Court and the Temple. For the Temple of Artemis, it stands in a court (124 m by 88 m), and is surrounded by colonnades. The podium on which the temple is erected has the dimensions of (40 m by 22.60 m with a height of 4.30 m). The Temple has a peripteral hexastylos: six columns in its façade and eleven along its length; between the columns of the colonnade in the temple's façade and the cella wall, another row of six columns was added to give the façade greater depth. The columns are of a Corinthian style and stand with a height of 13.20 m, the cella is 24.15 m long and 13.37 wide (Applebaum & Segal, 1993).

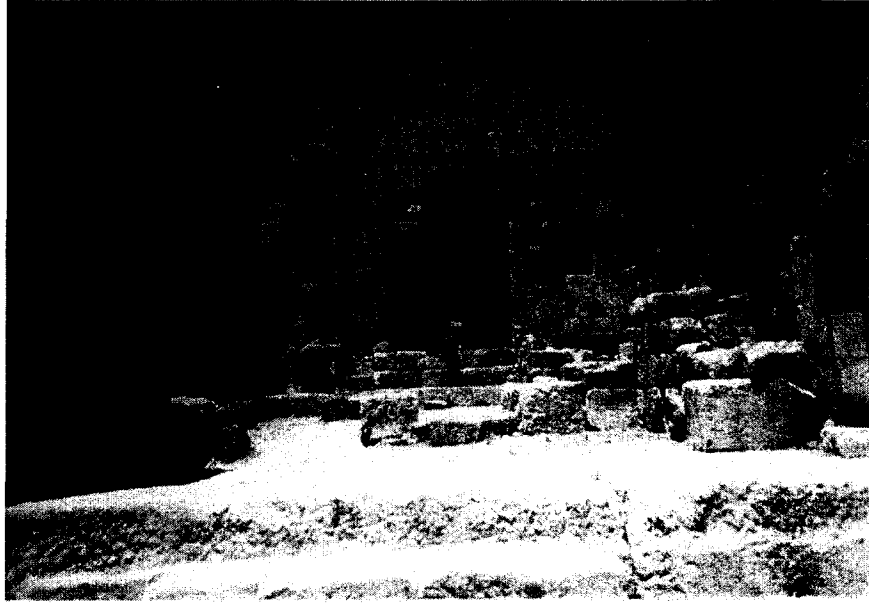


Figure 83: The inside area of the Temple of Artemis (By the author, 2004)



Figure 84: Graffiti in the inside area of the temple of Artemis (By the author, 2004)

Southern Tetrapylon: This feature is composed of four pedestals, each carrying four Corinthian columns bearing baldachins, and is dated back to the middle of the third century A.D., the tetrapylon is in a circular piazza, which is completely surrounded by an ornamental façade of columns, behind which shops were built at the beginning of the fourth century A.D. and were still used during the Umayyad Period (Applebaum & Segal, 1993).



Figure 85: Southern Tetrapylon (By the author, 2004)



Figure 86: The Umayyad Shops (By the author, 2004)

Northern Tetrapylon: It is located at the intersection of the Cardo and the north Decumanus; it is built of four piers with passages between them, and is roofed with a dome. It was probably dated to the third century A.D. (Applebaum & Segal, 1993).

The Nymphaeum: It is also the ornamental public fountain, and it is located to the west of the Cardo. This building faces the east and has a façade with two stories and a central apse, with niches and a Corinthian colonnade along its length. The first story is crowned with a lentil, but the upper story is topped with pediments. The Nymphaeum is topped with a semidome; in front of it are a pool and a portico (Applebaum & Segal, 1993).



Figure 87: The Nymphaeum (Jordan Tourism Board, 2001)

Northern Gate: The city's northern gate was built in the second century A.D.; it had a single entrance flanked by two storied pavilions with Corinthian columns (Applebaum & Segal, 1993). It had a single passageway with a width of 5.40 m and a height of 9.15 m as conjecturally restored. This structure seems to be built near the foundations of an earlier gate. There were Byzantine or later two large trapezoidal bastions on either side of the outer face of the north gate (Khoury, 1986).



Figure 88: Northern Gate (By the author, 2004)

The Cardo: The Cardo served as the architectural backbone of the city. It measures over 800 m from the Oval Plaza to the Northern Gate, it is paved and colonnaded throughout the period of its usage. The construction of this street started in the first century A.D., and then Ionic colonnades were added after finishing the street in the late 1st century or early 2nd century. Some Corinthian capitals were put as replacement for some columns in later periods. The Cardo is paved with diagonally laid limestone blocks, with an underground sewage system with a long drain underneath the length of the Cardo, the drain could be serviced through openings in the Cardo marked by round, stone man-hole covers. There are still grooves in the paving stones formed by centuries of use by the metal wheels of Roman traffic (Khoury, 1986).



Figure 89: Part of the Cardo with tents put for the preparation of Jerash Festival
(By the author, 2004)

The Church of Bishop Marianos: This church was built in 570 A.D. and is located 50 m north of Hadrian's Arch. It was suggested that this building was used for memorial services for the dead who were buried in the nearby tombs. It measures 13.5 m by 8.10 m on outside, the interior of the church includes a central nave and an apse to which were added a diaconicon in the northwestern corner, and a narthex or entrance passage that projects forward to the edge of the road connecting Hadrian's Arch with South Gate, the church also has a mosaic floor with geometric patterns and crosses (Khouri, 1986).

The Tombs: There were different kinds of tombs found on all sides of the city, the wealthier upper classes had elaborate and aboveground tombs or mausolea to honor their dead, an example is the Tomb of Germanus north of the city, also the tomb located near the visitors' center, and the foundations just before Hadrian's Arch. There more common

tombs built as chambers cut down into the rock, and have entrances through a flight of steps. Many of these tombs were found on both sides of the main road into Jerash, near Hadrian's Arch. They were also found on both sides the Church of Bishop Marianos and in the South-West Cemetery located to 250 m west of Hadrian's Arch (Khouri, 1986).

The Cathedral: The Cathedral and associated buildings were constructed north of the southern Decumanus and to the west of Cardo (Applebaum & Segal, 1993). These include the Cathedral's Gateway, Shrine of St. Mary, The Cathedral, South-West Chapel, Fountain, Glass Court and Church of St. Theodore (Khouri, 1986). This group of buildings was constructed on four terraces rising to the west. The approach from Cardo was by a monumental colonnade and by steps built in the second century A.D., the Cathedral is a basilica with an internal polygonal apse and a chapel to the southwest, the fountain court to the east forming its atrium, the cathedral is the oldest church known in Gerasa, and was probably built about 400 A.D. (Applebaum & Segal, 1993).

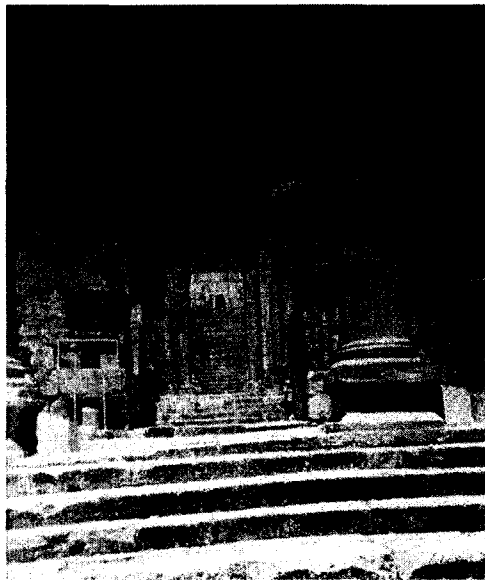


Figure 90: The entrance of the Cathedral (By the author, 2004)

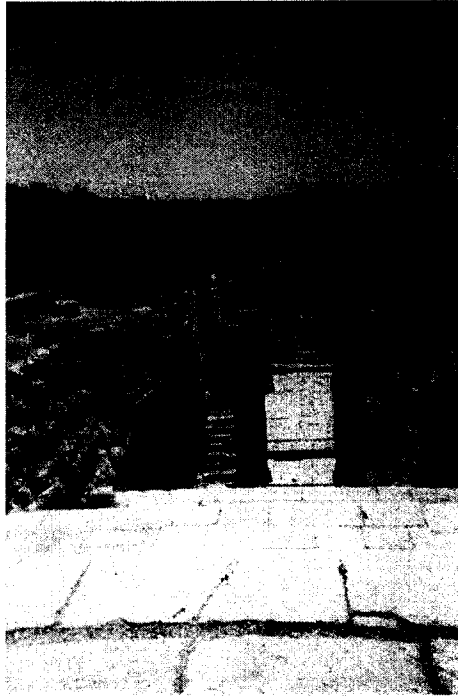


Figure 91: Cathedral's Gateway (By the author, 2004)



Figure 92: Shrine of St. Mary (graffiti problems) (By the author, 2004)

Tourism Development and Problems: The site of Jerash is considered as one of the most important tourism destinations in Jordan, therefore, several facilities and services were added to the site in order to prepare it for visitation. The site is provided with a visitors' center and police office, which is in addition to being accessible by public transportation. There is also a rest house and a ticket shack close to the Southern Gate, the site is also provided with a museum and a signage system, which will be discussed in other parts of this chapter, as well as a light and sound system that is used an interpretation technique, and to give a special historical sense during the visits.



Figure 93: The Rest house next to the Southern Gate
(By the author, 2004)

In order to understand the situation of the site and the impact of tourism development, the supervisor and representative of the Department of Antiquities Mr. Abd al-Raheem Abu Hazeem was interviewed on July 13th 2004. The interview started by answering the question about the factors behind the importance of the site as a tourism

destination, such factors included the richness with archaeological remains, there is an almost complete city, and there are still many features expected to be found. Also having an appropriate infrastructure for tourism as the visitors' center, police office and a museum, another important factor is being in a central location within the northern governates and accessible by the public transportation.

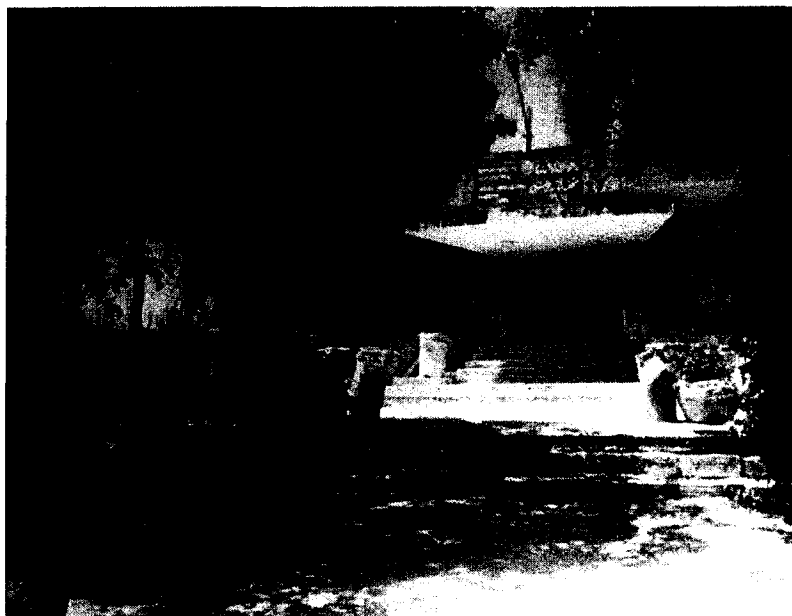


Figure 94: The Museum of Jerash (By the author, 2004)

For the impact of tourism on the site, there are two issues to be considered for presenting the archaeological sites to the visitor; one of them is technical in terms of the preservation, and the other one is recreational and it regards the promotion of the site. These issues might not be applied since there are some obstacles caused by nature and the behavior of visitors. The natural problems are not controlled but some protection techniques might be performed to decrease its effects. For the human behavior, there are direct impacts as in the case of vandalism, and indirect ones as exceeding the acceptable number of visitors, climbing theaters, or even stepping on floors, which will have visible

effects after a period of time. Such behavioral problems can be prevented or decreased by the role of the tourists' guide; he has the ability to inform the visitor about what is appropriate to wear in addition to prevent the visitor from accessing some sensitive areas.

It is also important not to ignore the trails and paths within the site and to visit the sites in organized groups led by guides to avoid any uncontrolled movements. A question was asked regarding the impacts of Jerash Festival on the site; such event takes place in the end of July and the beginning of August every year and attracts thousands of visitors, Mr. Abu Hazeem mentioned that the festival is a distinguished cultural phenomenon that helps in increasing the importance of Jerash, even though it might not be the main factor, a negative impact in his opinion might be that the visitor will come for recreation obtained by the art performances during the festival, and not mainly the antiquities and archaeological features in the city, which might effect his attention to the aesthetic values of such features, and consequently his behavior. Another question was regarding the absence of any behavior guidance in the brochure issued by Jordan Tourism Board, an answer was given regarding that excavations are not complete, and so not all of the features in the city are discovered yet, consequently, it is impossible to put a complete circulation plan for visitors; though, the interpretation regarding the archaeological description is improved, whether in the brochure or the signage system in the site, the old signs which included only the name of the feature and its date were removed, and were replaced with new ones with more clarifying features, such features include a map, more information about architectural elements and the date.

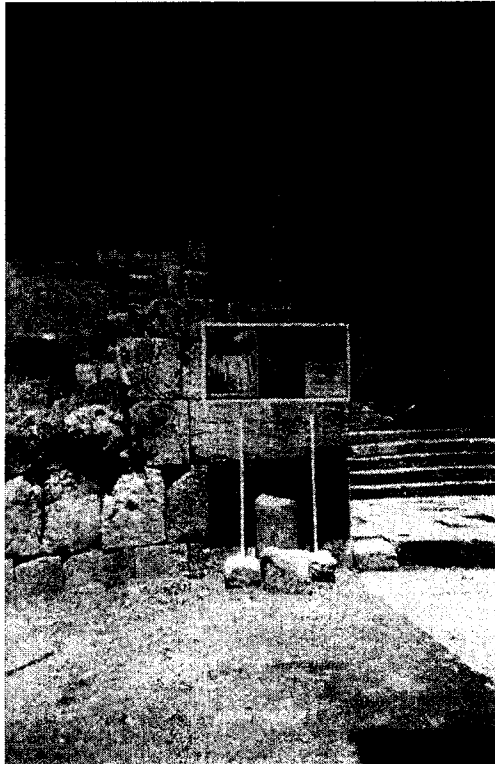


Figure 95: The new sign in the Cathedral's area (By the author, 2004)

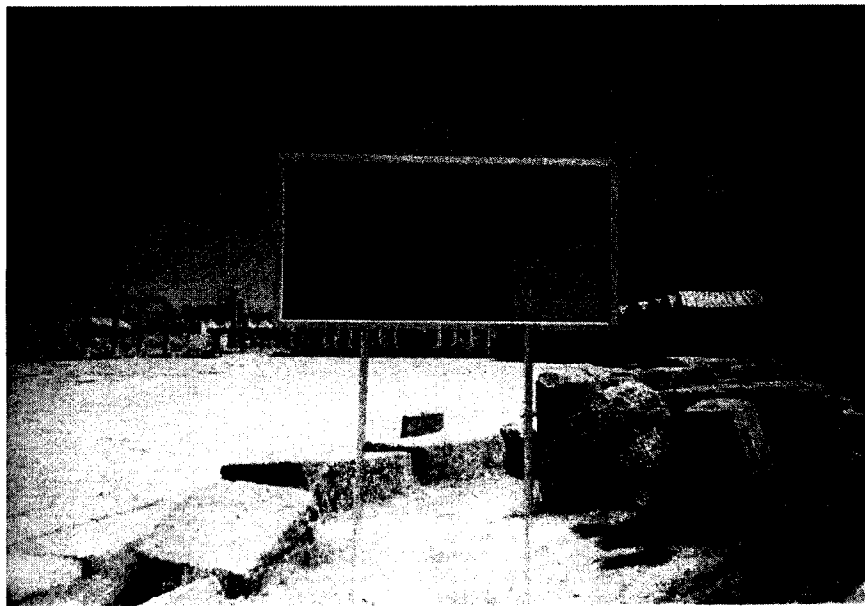


Figure 96: The new sign in the Oval Plaza's area (By the author, 2004)



Figure 97: The old Signs in the area of the Temple of Artemis
(By the author, 2004)

Such information is similar to the one in the brochure and considers the different levels of reading and ages, they were put in several places as the Oval Plaza and Hadrian's Arch. To achieve the goal of increasing the awareness of visitors about the significance of antiquities and their behavior, a section that belongs to the Department of Antiquities was established at the city of Jerash (as well as some other governates). There is a special team in this section that was trained to contact educational institutes and systems, in addition to other groups; such contact is based on putting programs that concentrates on behavior of groups and environmental problems. In this year (2004), with the participation of the Ministry of Tourism and Antiquities and Visitors, Center at Jerash, some lectures were given considering the problems of littering, as well as conserving the environment and pine forests. For the problems in the site, some littering is observed in some areas, this might be due to the lack of trash cans in these areas, but the awareness of individuals is the main factor to be considered in such case. To solve

such problem, a study was conducted to supply the site with trash cans that does not contradict with the scenic value with the place, that also involves being resistant to weather conditions and fires as well as the cost. There is a good cleaning team that has a great role in keeping the site in a good condition, which is in addition to monitoring and checking the site after any visits.



Figure 98: A trash can in the Colonnaded Street Area (By the author, 2004)

Another problem is climbing the archaeological monuments, which is not of a serious effect when controlled, the threat might come from schools' groups, since they are not easy to control, especially that some groups' supervisors might not differentiate between visiting an archaeological site and being in any other park. But such groups usually are possible to affect through different interpretation methods and techniques.

It should be mentioned that some tourists have the awareness and responsibility toward the archaeological sites, an example is the case when a tourist bought a pottery

lamp and a coin from an unlicensed individual, and then submitted these pieces to the office of the Department of Antiquities in Jerash, which reflects a positive behavior.

Another interview took place on the 13th of July 2004 with Mr. George Issa, the director of the visitors' center at the city of Jerash. The first question regarded the services provided by the center to the tourists; such services include giving information about the site as well as distributing brochures, there is a plan of the city with boards that include an archaeological and historical description, the service of providing tourists' guides is also provided. The center also includes some seating areas in addition to restrooms. There is a special market for souvenirs and crafts made by the local residents of Jerash.

There are plans toward encouraging the investment of the private sectors in developing the site, as well as projects that sustain the ecological systems of pine forests and other species, such projects involve providing such natural areas with facilities and services needed for tourism purposes. There is another important objective of enhancing the communication between the host local community and the locals, which will be accompanied with increasing the facilities provided in the site.



Figure 99: Part of the sound and light system in Jerash
(By the author, 2004)

Chapter Three Theoretical Framework

The explanation of the behavior of tourists in archaeological sites was based on the cognitive hierarchy. It was assumed that human cognitions range from general broad concepts (e.g. values / value orientations) to specific concepts (e.g., norms, attitudes) and behaviors. These cognitions reflect the processes individuals use in perceiving, remembering, thinking and understanding (Homer & Kahle, 1988; Eagly & Chaiken, 1993; Fulton, Manfreda, & Lipscomb, 1996). These mental activities are important determinants of behavior (Figure 80).

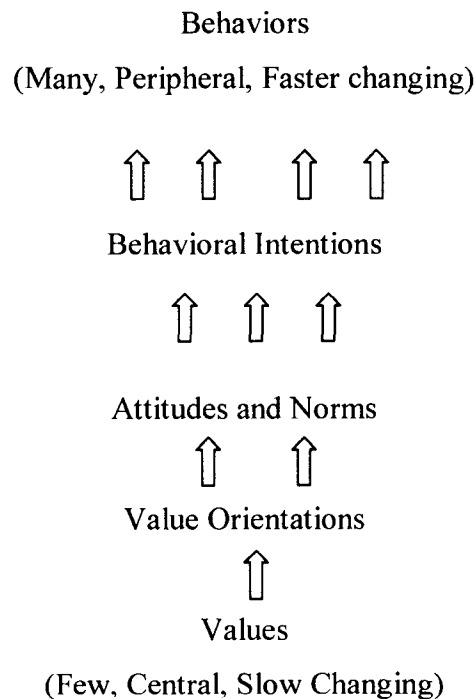


Figure 100: The cognitive hierarchy model
(Homer & Kahle, 1988; Eagly & Chaiken, 1993; Fulton, Manfreda, & Lipscomb, 1996)

Understanding the conceptual relationships among the variables increases our potential for understanding both legal and illegal human behavior. For example, individuals who value antiquities solely for personal economic gain may be more likely to deal in illicit trade. Alternatively, people who recognize the cultural and educational significance of such resources are more likely to promote preservation.

Major concepts in the cognitive hierarchy include: values, value orientations (i.e., patterns of basic beliefs), social norms, personal norms/ commitment toward antiquities and behavior. There were two additional concepts added and do not belong to the cognitive hierarchy, there are the concepts of Awareness of Consequences and Ascription of Responsibility.

Values/Value Orientations:

Values are defined as modes of conduct or desirable end states of existence (Rokeach, 1973). Others defined values as concepts that focus entirely on abstract ideals as freedom, helpfulness and equality (Maio et al., 2003). Another definition says that a value is a general idea that people share about what is good or bad, desirable or undesirable (Light et al., 1989).

Values are theorized to be widely held and shared among people within a culture, which leads to the fact that they do not explain much of the variability among the specific attitudes and behaviors of individuals (Fulton et al., 1996). This requires a new concept in order to understand the effect of general values on the more specific behaviors; this new concept is the cognition of basic beliefs, this variable serve to strengthen and give meaning to the fundamental values (Vaske & Donnelly, 1999).

These basic beliefs differ in their patterns of direction and intensity. These patterns are known as value orientations (Fulton et al., 1996). There were several studies that classified value orientations into groups according to the environmental concern involved. Stern et al (1993) suggested three categories of value orientations, these were Social-Altruistic: the concern for welfare of other human beings, Biospheric: the concern with non-human species or the biosphere, and Egoism: the self interest. It was suggested in this study that if each value orientation is present in a pure form, then it will produce an environmental concern under different conditions. For example, if environmental concerns were based on self-interest, an individual would favor positive actions toward the environment only if doing so would gain expected benefits, such benefits would outweigh the expected costs. If the individual concern was based entirely on the social value orientation, then an individual would bear personal costs to act in a good manner, this is only when doing so would protect other human beings. If the environmental concern is based entirely on the biospheric values, an individual would act with concerns about other species and natural environment. Someone motivated purely by the biospherical values would become involved in environmental issues when species extinction or habitat destruction is at stake, but would be relatively unconcerned when the effects are only on people. Of course, the egoistic, humanistic and biospheric value orientations toward the environments are not incompatible; they are more to be related to each other, it is supposed that many people's environmental attitudes reflect some combination of the of the three value orientations presented above.

There is another classification presented by Vaske & Donnelly (1999) in which they introduce two kinds of value orientations, these are the anthropocentric and the biocentric; the anthropocentric approach has a primary aim of allocating the natural resources to serve human needs and benefits. The biocentric one is different for elevating nature and species to the center stage. Simply, the egocentric and social altruistic value orientations mentioned in Stern et al (1993) can be looked at as anthropocentric approach, while the biospheric will be the same as the biocentric orientation.

Another interesting categorization of values comes from the study of (Manning et al., 1999) concerning national forests management; some values were aesthetic concerning enjoying the beauty of nature. Others were ecological in terms of protecting the nature for ensuring the well being and survival of humans. Recreational values concentrated on the participation in some activities requiring natural settings. Some values were therapeutic in terms of maintaining or regaining physical health or mental well-being. Another group of values was basically dealing with knowledge and experience; there were educational values for learning more about the nature.

Experiencing and seeing nature as ancestors did was under the category of historical/cultural category. Scientific values were also involved, and they were based on the opportunity given to scientists to study nature and ecology. There were also spiritual values concerning the spiritual meaning through contact with nature.

Intellectual values were obtained by being inspired by nature. The feelings of obligation to respect and protect the nature and other living things were categorized as

moral/ethical values. Finally, there were economic values concerning the use of resources of nature.

Based on all these studies, a continuum of value orientations was created to include different kinds of basic beliefs that might be applied to the relationship between individuals and archaeological sites; these value orientations ranged from the economic value of archaeological sites for generating incomes and jobs, moving then to being valuable in terms of creating a source of information to the two different groups of archaeologists and the public, that is in addition to the values regarding the rights of future generations to benefit from such resources. The other end of the continuum considered the right of existence and protection of these sites, especially if such rights are to be violated by tourism. What gives our scale a special and great importance, is what we mentioned in chapter one about the unawareness of the real value of antiquities and archaeological sites among large segments in the society; that consequently presents a case when such society's individuals do not have clear or well-formed attitudes toward such resources. As stated by Vaske & Donnelly (1999), when individuals do not have a well-formed attitude toward a specific object, the value orientations play a role in influencing the behavior directly, which is the case of antiquities, the unawareness of the real value of antiquities, makes people base their attitudes on economic benefits they gain from such resources, which reflects then the value orientation. Then, our scale might have the power and the ability to predict behavior of visitors in archaeological sites.

Norms:

The normative approach has proven to be useful in understanding the activities and behaviors in the different recreational settings and situations. The main objective regarding such interest was in the first place to create and develop some evaluative standards for managements; such practice is based on knowing to which degree some norms about activities and behaviors are shared among the group or even the society, and then predicting the acceptability toward management procedures (Kim & Shelby, 1998). It is appropriate then to start by defining norms and their applications. Many definitions were given to the concept of norm; norms were defined as the statement or rule within the group that specifies how members are expected to behave under some circumstances (Michener et al., 1986). Light et al. (1989) define a norm as a specific guideline for an action; it is a rule that says how people should behave in particular situations. It is made explicit as in written laws in some cases, but it is characterized most of the time by unspoken customs that people implicitly know and follow.

There are two distinguished kinds of norms that are shared among the members of any group; the injunctive norms involve perceptions of which behaviors are socially approved or disapproved, they can suppress the undesirable action by describing what most people disapprove, specify what is to be done, constitute the moral rules of a group, and they motivate to take actions by promising social rewards and punishment (informal sanctions) for them (Cialdini et al., 1991; Cialdini, 1996).

The descriptive norms focus on the perceptions of behaviors that are typically and already performed. They provide the evidence as to what will likely be effective

and adaptive action, that is if everyone is doing or thinking or believing it, then it must be a sensible thing to do or think or believe (Cialdini et al.,1991; Cialdini,1996).

Norms might be personal when they deal with expectations the individual holds about himself (Schwartz, 1977), or might be defined as social when shared by the members of a group (Vaske et al., 1986). This indicates that there is a voluntary conformity brought by socialization, but when such conformity is not voluntary any more, a different social mechanism of social control is used in order to convey these norms and expectations. These are known as sanctions. Sanctions are defined as reactions of approval and disapproval to behavior and appearance. Sanctions can be classified as formal and informal. The formal sanctions are usually definite and systematic laws or rules or regulations or even policies that specify the conditions under which people should be rewarded or punished, and they define the procedures for allocating rewards and imposing punishment, such as governments' laws. The informal sanctions are spontaneous and unofficial expressions of approval or disapproval, and they are not backed by the force of the law, such as showing anger by society members toward vandalism or any negative action (Ferrante, 1995).

There is an important aspect to be considered when discussing norms, and that is the evaluation of (individual or collective) behaviors by individuals, and that is in terms of having negative effects on the resources (Shelby et al., 1996); when such behaviors take place, there will be some clear sanctions when an individual violate some particular norms as littering or vandalism. Such mechanisms or sanctions might not be clear when it comes to doing a behavior that is not completely breaking the rules; such behavior might have a visible effect only when a collective behavior is

conducted by a group and after a period of time (as in touching the decorative elements or stepping on some areas in the archaeological site as applied to this study). Such situation integrates two main aspects of crystallizing the norm through the agreement about it by group members and intensity of normative standards (Heywood, 2002). Not all individuals see touching or stepping on features of archaeological sites as a violating behavior, or as an action that might cause serious problems as in the case of littering or using paint or creating graffiti on monuments, consequently, they do not completely share norms regarding such behaviors.

Since norms are shared by society members, and strongly influence their behavior, it might be difficult then to distinguish them from values. The individuals assess their behavior according to a broad abstract concept representing the value; the norms come as the rules that govern the behavior in particular contexts, which indicate that most of the norms are situational; they apply to specific circumstances and settings (Light et al., 1989).

The concept of norms is applied in a big number of studies, especially those that used “Norm Activation Model”. Schwartz (1968a) formed Interpersonal Norms items of hypothetical situations, respondents were facing a decision regarding personal actions they might take; the items formed three groups of considerateness, reliability and helpfulness, and they were measured on a scale from 1 Really ought not to 7 Clear and strong obligation not to do it. Measuring both Interpersonal Norms and Perceived Group Norms were measured in (Schwartz, 1968b). The interpersonal behavior was measured by the same incidents that were used to measure interpersonal norms. This time the respondents were asked to fill their expectations about the way a person is

expected to act. It was measured on a scale from 1 Definitely yes to 7 Definitely no. Perceived group norms were formed by hypothetical situations, the items of that variable asked the person about the group willingness to take the action; they were measured on a scale from 1 Strong obligation to do it to 7 Strong obligation not to do it with 4 as neutral. In the study by Hunecke (2001) concerning the travel mode choice, the subjective or social norm was measured by the subjectively perceived expectations of actions, which are taken by others. In the study about recycling (Hopper & Nielsen, 1991), the social norms were measured by questions that asked whether recycling is expected among neighbors and friends, the personal norms were measured by asking how much it is difficult for the individual to sort the recyclable materials, and the obligation felt for recycling. In the study by Bratt (1999), personal norms tested the agreement and the disagreement regarding statements of doing behaviors contributing to favorable and unfavorable effects on the environment. The social norms focused on the expectations of the respondent about the behavior of partners and children. In another study, personal norms were measured by statements such as the feelings of obligation toward environmental problems (Nordlund & Gravill, 2002).

The concept of norms was not necessarily present in some studies that applied the Norm Activation Model, and so the AC and AR concepts were to predict the behavior directly without the mediation of Norms. Personal norms were assumed to be activated already, this was tested by a question given to the pre-sample of 38 respondents, and it was concerning the tendency to do the yard burning when having a neighbor suffering from health problems. About 35 of the respondents have shown a positive norm, and so it was assumed that it is activated already. The same case is seen

in the study concerning the sewage dumping by boaters in Lake Powell (Vaske et al., U.D.). Norms were measured by the behavior commitment; which is measured by willingness to change activities and equipment, committing money, and using sanitation facilities every time the holding tank is full, and so norms were not included in the Norm Activation Model as a predictor of behavior.

It was mentioned that norms are functioning as evaluative standards of acceptable behavior or conditions in some specific situations (Shelby et al., 1996). This in addition to being shared among group members, were considered in creating the scale for measuring the social norms in this study. Our scale consists of three statements expressing the acceptable and expected behavior by guides, locals and tourists. The two other statements were considering the role of the Department of Antiquities in promoting for the importance and protection of archaeological sites. The personal norms/commitment toward antiquities items were also present in this study, and were focusing on the willingness of individuals to take some positive actions while visiting the archaeological sites.

Awareness of Consequences:

The verbal and overt behavior of an individual might be influenced by what that individual believes about the consequences following his actions or what has resulted or followed some particular actions in the past (Gross & Niman, 1975). Sometimes, individuals do not go through the process of assessing behavioral consequences as much as using the normative influence of a significant group or authority (Fishbein & Manfredo, 1997). The normative influence has been discussed previously, which makes it important then to know the concept of awareness of consequences and how it was applied in some theoretical contexts.

Awareness of consequences (AC) is defined as the tendency to become aware of the potential consequences of one's acts for the welfare of others during the decision making process and conducting some particular actions (Schwartz 1968a; 1977). The concept was measured in different ways in many studies that applied the Norm Activation Model. In Schwartz (1968a) for example, awareness of consequences was measured by thoughts and feelings running through the mind while people are facing decisions, these decisions were concerning interpersonal consequences and extent of such awareness.

In Schwartz (1968b), awareness of consequences was measured through some projective stories and then making decisions that have consequences for the welfare of others. The awareness of consequences concept was also presented in some cases by the importance of specific positive behaviors; a good example comes from Hopper and Nielsen (1991), where individuals were asked about the reasons that make recycling important. Another example comes from Bratt (1999), the assumed consequences were

measured by asking respondents about their perceptions of general environmental impacts of not recycling. Some studies considered both the general and specific cases of awareness of consequences. In Nordlund and Gravill (2002), awareness of consequences included both general issues for society, and more specific ones concerning the person himself. This was also seen in the study by Hunecke (2001) concerning the travel mode choice, measuring the concept consisted mainly of awareness of environmental global changes caused by humans as whole, and the awareness of global environmental changes as consequences of personal behavior.

Some studies concentrated on the consequences regarding specific issues or locations, this was observed in the study of waste yard burning (Van Liere & Dunlap, 1978), awareness of consequences was measured by the question of agreement about the yard waste burning as a cause of difficulty to breath by people of respiratory problems. In the study concerning the sewage dumping by boaters in Lake Powell (Vaske et al., U.D.), the awareness of consequences variable was measured by questions for the agreement about the impacts of the human waste to the water of the lake and its quality.

In the study by Stern et al (1993), the awareness of consequences was measured by the egoistic, social and biospheric benefits and outcomes of some actions. They were used to predict the willingness to act in a proenvironmental way (political action), in addition to paying an increase in the income tax and gasoline tax, so this money will be spent on environmental protection.

All these studies in most cases were showing that there is a strong relationship between both awareness of consequences and personal norms. There is a case when the

AC of one's own behavior might actually reduce the ability of personal norms to direct toward environmental friendly behavior. This happens when someone actually is holding a personal norm for a friendly environmental behavior, and then knowing that such behavior has no visible effect on the target, in other words, awareness of the effect of the individual behavior (not as the effect of a group action), this may weaken the ability of the personal norm to transform into behavior (Bratt, 1999). Which applies to the case of the study, some behaviors such as touching decorative elements and picking up artifacts might not have a visible effect unless done by a big number of individuals and after a period of time.

Ascription of Responsibility:

Ascription of responsibility (AR) is defined as the tendency to take one's own responsibility for the interpersonal consequences of his actions (Schwartz, 1974). There were different ways to measure this concept in previous studies; Schwartz (1968a) for example, measured AR by opinions and self descriptive items, which allude to actions with interpersonal consequences, and provide an explicit or implicit rationale for ascribing responsibility to actions away from the actor.

In the study by Van Liere & Dunlap (1978), AR was measured by the extent of agreement or disagreement about burning waste in yards, especially that people might not be able to get to the waste dump, and that it might be thought that it does not have a great contribution to the air pollution problem. In Vaske et al. (U.D.), the concept was measured by items about the feelings of respondents toward protecting the water quality, as well as their feelings about their actions, and if they are doing enough for reducing the pollution, in addition to how much they feel that their behavior can cause

water pollution, which implies then that ascription of responsibility is toward actions with recognized consequences.

In some cases though, the negative consequences are so obviously known, such case makes it hard for the individual to deny such consequences, actually, he tends then to deny his responsibility to such consequences (Van Liere & Dunlap, 1978). Such denial takes the form of shifting the blame to some other sources or by claiming that other alternative forms of behavior are not available (Heberlein, 1975). This might be the case of the vandalism and the theft of antiquities. Individuals might be faced with the necessity of doing some behaviors, which are degrading the archaeological sites, because these behaviors are the only means for income and economic survival, even if they know the consequences of such behaviors, and so it is both shifting the blame to hard economic situations, and claiming that alternatives for income are not possible.

Models of the Study

The cognitive hierarchy provides a general framework for evaluating variables and sub-models of interest to this dissertation. One of these sub-models is Schwartz's norm activation model.

Schwartz (1968a, 1968b, 1970a, 1974 & 1975) (Schwartz & Clausen, 1970) advanced the norm activation theory to account for inconsistencies between an individuals' moral norms and their behaviors. The moral norms are defined as those norms associated (while being activated) with some feelings as elicit guilt, shame, fear of sanctions in anticipation of violations or other feelings of virtue, pride or security when complying or adhering to such norms (Schwartz, 1968a).

People differ in the way they adhere to their norms; they violate the moral norms they hold on some occasions, but they comply with them on others; another case observed is the conformation of people to some of their norms but not to all of them. Schwartz (1968a) pointed out that such difference in adherence to norms might be related to opportunities, pressures or temptations to violate norms, also differences in strength with which the norms themselves are held. This approach can be applied to vandalism and negative behavior in archaeological sites, especially in some cases as poverty, loose restriction or being a tourist with few opportunities to visit that site; such cases might lead to acting in away that will satisfy the individual's needs to observe the aesthetic values of the site, and then not considering the negative impacts of behavior on the monuments in archaeological sites.

Schwartz proposed the Norm Activation Model to deal with such discrepancies between norms and behaviors, specifically in some helping and self sacrifice situations. Schwartz (1968a, 1968b, 1970, and 1974) focused on the situation when an individual is willing to make a decision that has to do with a moral choice, such as volunteering to be a bone marrow donor, and participation in a helping project targeting to help an association concerned with kids.

It is assumed that the relevant moral norms held by individuals are likely to be activated because of the feelings of elicit guilt, shame, fear of sanctions in anticipation of violations, or other feelings of virtue, pride or security when adhering to them; and then affect the behavior. When the individual does not consider such feelings, some particular moral norms will not be activated. A norm that is not activated is unlikely to have any significant impact on behavior regardless of its content or how strongly the

person holds it. Schwartz suggested two necessary preconditions necessary for activating a moral norm: the Awareness of Consequences (AC) and Ascription of Responsibility (AR). It was proposed by Schwartz that when the preconditions of AC and AR are fulfilled, then the person's moral norms are activated, and then may influence his overt behavior (Schwartz 1968a, 1968b, 1970, 1974 & 1975).

This model has been applied to littering (Heberlein, 1971, 1974); the purchase of lead free gasoline and conservation of energy (Heberlein, 1971; Heberlein & Black, 1974); conservation behavior (Black 1978); ecological behavior (Kaiser & Shimoda, 1999; Stern et al 1999), burning of wastes in yards (Van Lier & Dunlap, 1978); seashore environment and off-road vehicles (Noe et al., 1982); energy conservation (Black et al., 1985); recycling (Bratt, 1999; Ebreo et al., 1999; Hopper & Nielsen, 1991; Oskamp et al., 1991); political actions and payment of some taxes helping in protecting the environment (Stern et al., 1986, 1993); water pollution by human waste dumping (Cottrell & Graefe, 1997; Vaske et al., U.D.); the impact of constructing a pipeline (Blamey, 1998); mobility behavior (Blobaum, 2000); travel mode behavior (Hunecke, 2001); general social considerations for future consequences of proenvironmental behavior (Joireman, et al., 2001). It is noticed that Schwartz' studies were dealing with moral norms, but such norms were dealing with the relationship between the individual and society. For the studies dealing with natural resources, they deal with negative environmental consequences, which will consequently have an effect on humans, and are evaluated as good or bad by them (Van Lier & Dunlop, 1978; Heberlein, 1988). This indicates then that moral norms are still about individuals and societies. There was another approach suggested by Leopold (1949), there were three

ethical levels posited, man-man, man--society, and man-land. The concern was there is a shared value among the humans, which considers man-land relations that deals with productivity for human needs. There is a necessity to have a different value that is based on stability, diversity and integrity, which implies using ethical or moral criteria to evaluate acts affecting the natural environment; it leads then to the necessity to have a man-land-man ethic, and not just a land ethic.

AC and AR differ in the way and the extent to which they will affect norms; this depends on the kind of norms involved. In the situations where clearly defined and well established norms exist (e.g., helping behaviors), or sensitive environmental issues as littering and air pollution, AC and AR serve to activate the established norms. When norms for appropriate behaviors are evolving (e.g., regulations for environmental problems) AC and AR become prerequisites for a new norm.

The norm activation model used in this study attempts to explain visitor behavior at archaeological sites. Awareness of Consequences measured the degree to which individuals were knowledgeable about the consequences of specific behaviors while navigating through the archaeological site. Ascription of Responsibility involved feelings of obligation to protect and educate others about archaeological sites. These two variables were predicted to activate social norms were regarding the expectations about the actions taken by different groups of individuals and authorities. Consequently, the social norms will predict reporting some specific actions by tourists visiting archaeological sites.

Another model applied in the study is Value Orientation- Social Norm-Behavior; the model is based on the cognitive hierarchy. The model predicts that more

general values / value orientations affect the more specific attitudes, these attitudes concern particular objects and situations, the attitudes in turn will influence the behavior. Examples of this approach include participation in fishing, hunting and wildlife viewing (Fulton et al., 1996); voting for wildlife ballot initiatives (Fishbein & Manfredo, 1997); consumptive and non-consumptive recreationists (Tarrant et al., 1997); voting intentions toward wildland preservation (Vaske & Donnelly, 1999); and the explanation of hunting behavior in Vermont (Hrubes et al., 2001). This research shows that value orientations directly influence higher order constructs like attitudes and norms. In turn, attitudes and norms directly affect behaviors. The influence of value orientations on behavior is mediated by attitudes.

Stern et al (1993) proposed that value orientations predispose people to be sensitive to information about certain outcomes they value. Such outcomes might be concerning the benefit and safety of the individual and/or the society, or even the environment that has a special value to such group, which then relates to the fact that a group is the source of the subjective norm (as clarified in the section of norms in this chapter); this then leads to the model of Value Orientation-Norm-Behavior. Individuals assess their behavior according to the broad abstract concept of the value; the norm then comes as the rule that governs the behavior in particular contexts, the values are the broad and internalized standards used (Light et al., 1989).

Values do not account that much to the variability in specific behaviors since they are general and abstract, then basic beliefs are required to mediate between values and behavior, basic beliefs serve to strengthen and give meaning to the fundamental values. The basic beliefs are classified into value orientations; such classification is

based on their pattern of direction and intensity among them (Vaske & Donnelly, 1999). Value orientations become the broad base of the norm which then controls the behavior.

There is an application for such model that is found in Nordlund and Gravill (2002); there were two kinds of values in that study, one of them is self-enhancement value, which includes the concepts of social power, wealth, social recognition, and authority, self respect, ambition, influence, capability, and success. The other kind of values involved was the self-transcendence reflected by the group of equality, world at peace, unity with nature, wisdom, a world of beauty, social justice, broad minded, and protected environment. These all are abstract general concepts, the more specific concept in the model to follow values is value orientation, and the value orientations included ecocentric and anthropocentric basic beliefs, the awareness of environmental problems and personal norms were also included in the model.

Nordlund & Gravill (2002) found that the personal norms mediated the relationship between the group of (values, value orientations, and awareness of environmental problems) and the behavior.

The variables of self-transcendence values, value orientations, and awareness of environmental problems were significant in their relationship with the norms; the norms on the other hand were significant in their relationship with the proenvironmental behavior. This example shows that such model is empirically acceptable, and so can be applied in this study.

The last model in this study is Value Orientations-Social Norms-Personal Norms, the relation between social norms and a personal norm was tested in some

studies; such studies applied the Norm Activation Model (e.g., Hunecke, 2001; Hopper & Nielsen, 1991). Social norm was assumed to be a predictor of the personal norm, the personal norm then predict the behavior. For example, Hunecke (2001) examined travel mode choice; the subjective or social norm was one of three variables including awareness of consequences and feeling of guilt, these variables preceded the personal ecological norm in the model; social norms were subjectively perceived expectations of significant others function as intensifiers of personal norms. In the study about recycling (Hopper & Nielsen, 1991), the model tested the effect of social norm as being mediated through personal norms, which is in addition to the effect of both AC and AR on personal norms and behavior. The social norm was measured by questions about recycling as being expected among neighbors and friends, the personal norm regarded the difficulty for the individual to sort the recyclable materials, also the obligation felt for recycling.

Bratt (1999) measured the social norms as the expectations of the respondents about the behavior of partners and children, personal norms tested the agreement and the disagreement regarding behaviors contributing effects on the environment. It is logical to assume that when social norms are internalized or activated, they will lead to or work with personal norms held by individuals regarding how they should behave. In our case here, if the individual is expecting the tourists, locals and guides to act properly; and that Department of Antiquities will increase the efforts to promote for the protection of archaeological sites; this then will lead the individual to have positive expectations about his behavior, and then act in a proper way while visiting archaeological site.

Chapter 4

Methods and Results

This chapter explains the different stages of data gathering, in addition to the analysis used to get the results. There is a discussion about the methods regarding the sampling techniques used in selecting the sites of the study, followed by a section explaining data collection procedures, and the instrument of the research. The characteristics of the groups and analyses applied will be discussed; this will include the descriptive analyses of the different groups and then comparing them in terms of responding to the items in the survey. Analyses were conducted to explain the behavior of visitors in archaeological sites, including: reliability, exploratory and confirmatory factor analysis, and structural equation modeling.

Methods of Research

The Population and Samples of the Study

The population of interest included all visitors to the archaeological sites of Amman Citadel, Jerash, Jesus Baptism Site and the Roman Theater in the downtown area in the city of Amman. The visitors include both international and local tourists. Visitors were given the survey after their visit. The surveys were completed within the site (as in the case of the site in Amman Citadel and Roman Theater), in the rest houses, parks and restaurants located next to the sites (as in the cases of Jerash and Roman Theater), or in the visitor center of the site (as in Jesus Baptism Site and Jerash). Information on the number of visitors to the archaeological sites was obtained from the Statistics Department in the Ministry of Tourism and Antiquities (2004) in Jordan.

About 42,092 visitors were recorded in Jesus Baptism Site in 2003, the year the statistics were conducted; 105,734 visitors in the site of Jerash; 36,150 visitors at Amman Citadel (as recorded at the National Museum) and 37,350 visitors in the Roman Theater of Amman (as recorded by the Folklore Museum located at this site).

Sampling Techniques

There were two main strategies of sampling that were used in this research, the first one concerns selecting the sites of the study, in this case we concentrate on some characteristics of the sites that create external situation factors, which might then affect the behavior of visitors to these sites, these include location to urban centers and settlement areas, services and amenities in these sites (the detailed description of these aspects is in chapter 1 of this study). Such differences then require a strategy of a stratified sampling for sites, which indicates that the population is subdivided into a number of groups called strata, and then sampling is to be carried out independently in each stratum. The strategy followed is selecting the individuals in these sites, those are characterized by international and local or domestic visitors, and they were selected using a simple random sampling technique, such techniques implies that each individual in the group has the same chance to be selected for the sample (Som, 1996).

Some particular days in the month of July 2004 (When the actual survey was conducted) were selected randomly, during these days; the visitors were selected randomly on the sites or their surroundings.

Unfortunately, not all of the sites in the study differentiate domestic and international tourists when recording their numbers. The distribution of visitors in the sample is shown in Table 1.

Table 1: The distribution of visitors to the sites of the study for the sample

Site	Identification by group	Number of Visitors
Amman Citadel Site	International Tourists	60
	Domestic Tourists	46
	Total	106 (20.7%)
Jerash Site	International Tourists	54
	Domestic Tourists	51
	Total	105 (20.5%)
Jesus Baptism Site	International Tourists	36
	Domestic Tourists	22
	Total	58 (11.3%)
Roman Theater Site	International Tourists	75
	Domestic Tourists	168
	Total	243 (47.5%)
All the sites combined	International Tourists	225
	Domestic Tourists	287
	Total	512

The sample included 287 (56%) local or domestic tourists and 225 (44%) international tourists. For the variable of sex, there were 484 valid cases out of the 512 cases who filled the survey, the males were 354 (69.1%) of the sample while females had the total of 130 (25.4%). The sample of this study is distributed in terms of nations as the following table shows:

Table 2: The distribution of nations groups in the sample of the study

Nation (Group)	Frequency	Percent %
Local	287	56.1
African	1	.2
Arab	109	21.3
Asian	5	1.0
Europe	81	15.8
North American	26	5.0
Total	510	99.6

Data Collection Procedures

Pre-field Activities

1- *Pre-Surveying the students in Colorado State University for selecting the survey items:* since applying the models of the study to behavior of tourists in archaeological sites was not to be found in previous studies, then it was necessary to make a survey based on other sources as the studies about impacts of visitation on such sites and other different factors that might affect the stratification and features of them and so misinterpreting the historical and archaeological context. An initial survey was written including 6 indices of 80 items, the survey was given to 38 students from different countries living in (International House), a residential complex that belongs to Apartment Life/Housing and Dining Services at Colorado State University. The aim of such procedure was to select the most appropriate items for the final survey using reliability analysis and comments from respondents about the items and the extent to which they apply to the situation of the visits they had to archaeological sites in the past. The survey was written in English, and it was distributed and filled on site, filling the survey took an approximate time between 15 and 30 minutes.

2- *Gathering basic information about the areas:* this part of the study was based on gathering details for the features and archaeological periods of the selected sites, which is in addition the information regarding the tourism development projects and services provided in them. The information also included some field visits to these sites to see the impacts and problems these sites might be exposed to, this was documented with taking photographs for the current situations and problems in these sites.

3- *Interviews with sites' supervisors and selecting field assistants:* a number of interviews were done with managers and archaeological supervisors/preservation architects in order to know about the main problems and threats in these sites, tourists' behavior and future plans for preserving and developing these sites. These supervisors and managers helped also in taking some of these surveys and then giving them to tourists through the assistance of guides working in these sites and some employees in the visitors' centers.

Main Study Data Collection

The visitors were asked to fill the survey after or during their tour within these sites, usually on site or in rest houses or seating areas close to the site. Filling the survey took place during the month of July in the year 2004. After filling the surveys by tourists, all these surveys were marked immediately with the site name, an ID number for the individual, date and whether it was filled by a domestic or an international tourist in order to make some important comparisons possible, and to avoid missing some important information.

Research Instrument

The survey used here included seven groups that represent the theoretical concepts clarified in chapter 3, and demographic information, the groups include fifty variables when put together, the first group is the one of Awareness of Consequences; the items forming this index represent a number of actions that might occur in archaeological sites and their consequences, some of them represent problems with a smaller effect, when compared to the other ones, such as littering, which can be actually dealt with as reversible problem, in other words, it can be fixed with no severe effects if

it exists on the surface of the site and not in the stratification which is another case that we are not dealing with here. The other items are forming severe or seriously dangerous problems, which will leave their difficult if impossible effects to solve on the archaeological site and its features, these consist of problems as stepping on sensitive areas, picking artifacts, digging, painting and climbing. The explanation of such effects is discussed in the first chapter of this dissertation. This index was measured on a five-point scale (1 Strongly Disagree to 5 Strongly Agree), there were 8 items included:

Littering has a negative effect on archaeological sites, Littering has a negative effect on the aesthetic value of archaeological sites, Stepping on sensitive areas as floors and loose parts in archaeological sites will cause damage to them, Picking up artifacts (like pottery pieces) hinders archaeological information, Digging (even the first centimeters) of the archaeological site's surface will damage its archaeological value, Climbing on monuments causes damage to archaeological site, Touching decorative elements as carvings and inscriptions will ultimately cause them to disappear overtime and finally Painting destroys monuments' surfaces in archaeological sites.

The second index is related to the concept of Ascription of Responsibility, this one also was measured on a five-point scale (1 Strongly Disagree to 5 Strongly Agree), there were 4 items representing this concept and they were showing different ways of feeling responsible toward archaeological sites, these were: *I feel a strong responsibility toward protecting archaeological sites, I am responsible for protecting archaeological sites for future generations, I feel an obligation to educate others about the importance of archaeological sites and Protecting archaeological sites is the responsibility of every individual.*

The Value Orientation was another group in the survey; it consists of a number of basic beliefs that form a continuum, such continuum has two ends, one of them is dealing with the economic benefit related to archaeological sites, while the other one is concerning another kind of value, such value is dealing with interpretational and symbolic aspects related to such sites. These variables are as follows with being ordered according to the continuum mentioned here: *Archaeological sites are valuable only if they produce jobs and income for people, We should regulate tourism if it affects archaeological sites negatively, Sensitive sites should be protected even if that means restricting the number of visitors to the site, We should spend money to protect archaeological sites, Archaeological sites have the same rights as natural resources to be preserved, The real value of archaeological sites comes from creating a source of information to archaeologists, The real value of archaeological sites comes from creating places for education and Archaeological sites should be preserved for future generations.* These items were measured also on the same scale used for the two previous groups of variables, a five-point scale (1 Strongly Disagree to 5 Strongly Agree).

The fourth group in the survey is the one dealing with the concept of Social Norms, in this part a number of items representing cases that are preferred to occur in archaeological sites, these variables were measured on a five-point scale (1 Should Never to 5 Should Always), these variables ranged from norms concerning individuals to those related to authorities, these variables are as follows: *Guides should be more aware about the protection of archaeological sites, Tourists should be careful about their behavior within archaeological sites, Locals should be careful about their*

behavior within archaeological sites, The Dept. of Antiquities should promote more for protecting archaeological sites and The Dept. of Antiquities should give more information about the importance of archaeological sites.

In addition to the previously mentioned indices, the Personal Norms / Commitment toward Antiquities variable was measured here through a number of items that show the willingness of individuals to do some positive actions while visiting archaeological sites, there were 8 items here measured on a five-points scale (1 I will never do it to 5 I will do in all cases), these items are: *Avoid littering, Walk in designated accesses, Leave artifacts and archaeological finds without picking them up, Avoid climbing on monuments and features of the archaeological sites, Avoid painting in archaeological sites, Avoid digging (even the first centimeters) of the topsoil in a site, Tell any concerned authority about any finds outside your property and Tell any concerned authority about any finds inside your property.*

There was a group of variables composing the concept of Behavior, seven items were used here and they were measured on a five-point scale (1 I never did it to 5 I did it all the times); this part asked respondents about behaviors they did when they visited archaeological sites. The items were as follows: *Behavior of littering, Behavior of walking in designated accesses, Behavior of stepping on floors and loose parts in archaeological sites, Behavior of picking up artifacts as pottery pieces, Behavior of climbing on monuments in archaeological sites, Behavior of touching decorative elements as carvings and inscriptions and Behavior of using paint in archaeological sites.*

Demographic variables are forming the last section in the survey, they include:
Country of Origin, Age, Sex, Level of Education, Income, Occupation and Level of Living Place.

There were two open-ended questions in the demographic section in addition to those mentioned above, one of them was for the *Purpose of the Visit* and the other one was for any *Additional Notes*. (The Full survey is in Appendix 1).

The survey was written in two languages (Arabic and English), that was for the fact that locals and tourists from Arabic countries will use the Arabic version, while the one in English will be used by other international tourists.

Analyses of the Study

Exploratory Factor Analysis

Factor analysis is a technique that is used as a variable reduction method, which clarifies how the variables cluster or hang together (Stevens, 2002). The existence of clusters of large correlation coefficients between the subsets of the variables suggests that such groups could measure aspects of the same underlying dimensions. Such dimensions are called factors or latent variables (Field, 2000). The latent variables or factors are not directly observed, the information about them can be derived by noting their effects on observed or measured variables (Long, 1983). There are two kinds of factor analysis that were used in this study, Confirmatory Factor Analysis (Which is explained later in this chapter), and Exploratory Factor Analysis.

The Exploratory Factor Analysis is a theory-generating method more than being for theory testing (as in Confirmatory Factor Analysis). In such a method, variables are free to load on all factors created by the analysis (Stevens, 2002). SPSS was used for this purpose; such statistical package uses Principal Component Analysis and other methods to cluster the measured variables into factors; in this study Principal Component Analysis was used to get the results. In this case, a set of correlated measured variables is changed into a set of uncorrelated components or variables, these components are mostly with a smaller number, they are artificial variates designed to maximize the variance accounted for and not for interpretation purposes (Stevens, 2002). In this study, the orthogonal-
varimax rotation was used to extract the final factors. In such method, each factor tends to load high on a smaller number of variables and lower on some other variables by loading; it is meant that there is a Pearson correlation between the measured variable and

the factor (Field, 2000; Stevens, 2002). After applying exploratory factor analysis, it was found that it will give better results when deleting the items of stepping and littering in the indices of awareness of consequences and behavior, the results were as the following table shows:

Table 3: The results for exploratory factor analysis

The factors and their observed variables	Factor loadings	Eigen values	Variance %
Ascription of Responsibility		2.97	12.36
I am responsible for protecting archaeological sites for future generations	.839		
I feel a strong responsibility toward protecting archaeological sites	.829		
Protecting archaeological sites is the responsibility of every individual	.773		
I feel an obligation to educate others about the importance of archaeological sites	.757		
Personal Norms		2.88	12.00
Willingness to avoid climbing on monuments and features of the archaeological sites	.879		
Willingness to avoid painting in archaeological sites	.859		
Willingness to leave artifacts and archaeological finds without picking them up	.799		
Willingness to avoid littering	.771		
Behavior		2.81	11.71
Behavior of climbing on monuments in archaeological sites	.857		
Behavior of touching decorative elements as carvings and inscriptions	.840		

Behavior of picking up artifacts as pottery pieces	.807		
Behavior of stepping on floors and loose parts in archaeological sites	.786		
Social Norms		2.80	11.65
Tourists should be careful about their behavior within archaeological sites	.822		
Guides should be more aware about the protection of archaeological sites	.795		
Locals should be careful about their behavior within archaeological sites	.764		
The Dept. of Antiquities should give more information about the importance of archaeological sites	.712		
Value Orientations		2.50	10.43
We should regulate tourism if it affects archaeological sites negatively	.754		
Archaeological sites have the same rights as natural resources to be preserved	.736		
Archaeological sites should be preserved for future generations	.712		
We should spend money to protect archaeological sites	.686		
Awareness of Consequences		2.74	11.4
Climbing on monuments causes damage to archaeological site	.816		
Painting destroys monuments' surfaces in archaeological sites	.814		
Touching decorative elements as carvings and inscriptions will ultimately cause them to disappear overtime	.792		
Picking up artifacts (like pottery pieces) hinders archaeological information	.750		

Reliability Analysis

Since we assigned our variables into groups based on theoretical frameworks, it is important then to measure the internal consistency among the observed variables forming the latent constructs. The internal consistency is the estimate of reliability based on the average correlation among the items within a test. The size of the reliability coefficient is based on both the average correlation among the items (internal consistency) and the number of items (Nunnally & Bernstein, 1994). Cronbach's alpha is an index of reliability associated with the variation accounted for by the true score of the underlying construct. The alpha coefficient ranges in value from 0 to 1. It was indicated in some studies that 0.7 is to be an acceptable reliability coefficient but lower thresholds are sometimes used in the literature (Santos, 1999).

The reliability analyses were used with each theoretical group or latent variable items, some of these groups or indices had low overall Cronbach's alpha values, and so some items were to be deleted to improve the internal consistency.

The overall Cronbach's alpha for Value Orientation index is .66 for eight items, which might be acceptable, but we can improve this measure by deleting the variable of "Archaeological sites are valuable only if they produce jobs and income for people", this will increase the consistency to be .82 which is better for this scale, and so that variable was removed and not included in the analyses that followed.

The overall Cronbach's alpha for the five items of social norms is high with a value of .87, this value will go down if we delete any item, and so we will keep all the items in this index.

The overall Cronbach's alpha is strikingly high for the awareness of consequences; we have a value of .92, this value will be the same or slightly less if we delete any of the eight items forming the index, so we tend here to keep all of the items.

The Cronbach's alpha value is .87 for ascription of responsibility, and we consider this value to be high especially with an index that contains only four items. This value will go down if we delete any of these items, so we will keep the index with no changes.

The overall Cronbach's alpha is high for the personal norms/commitment toward antiquities index; we have a value of .89, this value will be the same or slightly less if we delete any of the eight items forming the index, and so all the items are kept in the index.

We notice that the overall Cronbach's alpha is .76 for the behavior scale, which is a high value, but it can be improved to be .87 by deleting the item of "Behavior of walking in designated accesses", and so the item was deleted from the behavior scale to end up with 6 items for the analyses that followed.

Table 4: Reliability analysis for the index of Value Orientations

The Item	Item Total Correlation	Alpha if Item Deleted	Cronbach Alpha
Archaeological sites are valuable only if they produce jobs and income for people	-.36	.82	.66
The real value of archaeological sites comes from creating places for education	.33	.64	
The real value of archaeological sites comes from creating a source of information to archaeologists	.42	.61	
Archaeological sites should be preserved for future generations	.67	.56	
Archaeological sites have the same rights as natural resources to be preserved	.64	.56	
Sensitive sites should be protected even if that means restricting number of visitors to the site.	.56	.57	
We should regulate tourism if it affects archaeological sites negatively	.49	.59	
We should spend money to protect archaeological sites	.60	.57	

Table 5: Reliability analysis for the index of Ascription of Responsibility

The Item	Item Total Correlation	Alpha if Item Deleted	Cronbach Alpha
I feel a strong responsibility toward protecting archaeological sites	.71	.84	.87
I am responsible for protecting archaeological sites for future generations	.80	.80	
I feel an obligation to educate others about the importance of archaeological sites	.67	.86	
Protecting archaeological sites is the responsibility of every individual	.72	.84	

Table 6: Reliability analysis for the index of Awareness of Consequences

The Item	Item Total Correlation	Alpha if Item Deleted	Cronbach Alpha
Littering has a negative effect on archaeological sites	.73	.91	.92
Littering has a negative effect on the aesthetic value of archaeological sites	.80	.91	
Stepping on sensitive areas as floors and loose parts in archaeological sites will cause damage to them	.81	.91	
Picking up artifacts (like pottery pieces) hinders archaeological information	.78	.91	
Digging (even the first centimeters) of the archaeological site's surface will damage its archaeological value	.80	.91	
Climbing on monuments causes damage to archaeological site	.67	.92	
Touching decorative elements as carvings and inscriptions will ultimately cause them to disappear overtime	.63	.92	
Painting destroys monuments' surfaces in archaeological sites	.69	.92	

Table 7: Reliability analysis for the index of Personal Norms

The Item	Item Total Correlation	Alpha if Item Deleted	Cronbach Alpha
Willingness to avoid littering	.66	.88	.89
Willingness to walk in designated accesses	.64	.88	
Willingness to leave artifacts and archaeological finds without picking them up	.69	.87	
Willingness to avoid climbing on monuments and features of the archaeological sites	.75	.87	
Willingness to avoid painting in archaeological sites	.79	.86	
Willingness to avoid digging (even the first centimeters) of the topsoil in a site	.78	.87	
Willingness to tell any concerned authority about any finds outside your property	.54	.89	
Willingness to tell any concerned authority about any finds inside your property	.47	.89	

Table 8: Reliability analysis for the index of Social Norms

The Item	Item Total Correlation	Alpha if Item Deleted	Cronbach Alpha
Guides should be more aware about the protection of archaeological sites	.74	.84	.87
Tourists should be careful about their behavior within archaeological sites	.74	.84	
Locals should be careful about their behavior within archaeological sites	.70	.85	
The Dept. of Antiquities should promote more for protecting archaeological sites	.71	.85	
The Dept. of Antiquities should give more information about the importance of archaeological sites	.63	.86	

Table 9: Reliability analysis for the index of Behavior

The Item	Item Total Correlation	Alpha if Item Deleted	Cronbach Alpha
Behavior of littering	.51	.72	.76
Behavior of walking in designated accesses	-.12	.87	
Behavior of stepping on floors and loose parts in archaeological sites	.56	.71	
Behavior of picking up artifacts as pottery pieces	.69	.69	
Behavior of climbing on monuments in archaeological sites	.69	.68	
Behavior of touching decorative elements as carvings and inscriptions	.68	.69	
Behavior of using paint in archaeological sites	.66	.70	

Comparisons among the Different Groups of the Study

Two-way Analysis of Variance was used to find if there is a significant effect of the interaction between being a local or an international visitor, and visiting one of the sites in the study. The variables of comparisons are the latent or theoretical variables created by the means of observed variables in each theoretical group. The variable of value orientations though was subdivided into two variables of ecocentric and anthropocentric value orientations. The ecocentric value orientation was created by the mean of the following four items: archaeological sites have the same rights as natural resources to be preserved, sensitive sites should be protected even if that means restricting number of visitors to the site, we should regulate tourism if it affects archaeological sites negatively, and we should spend money to protect archaeological sites. The anthropocentric value orientation was created by the mean of the following items: the real value of archaeological sites comes from creating places for education, the real value of archaeological sites comes from creating a source of information to archaeologists, and archaeological sites should be preserved for future generations. The following tables show the descriptive analyses of the created latent variables:

Table 10: The descriptive analysis for the variable of Ecocentric Value Orientation

Site	The Group by Origin	Mean	SD
Amman Citadel	International Tourists	4.44	0.52
	Domestic Tourists	3.84	0.87
Jerash	International Tourists	4.05	0.80
	Domestic Tourists	4.11	0.94
Jesus Baptism Site	International Tourists	3.63	1.00
	Domestic Tourists	3.98	0.48
Roman Theater	International Tourists	4.23	0.64
	Domestic Tourists	4.05	0.81

Table 11: The descriptive analysis for the variable of Anthropocentric Value Orientation

Site	The Group by Origin	Mean	SD
Amman Citadel	International Tourists	4.16	0.48
	Domestic Tourists	4.14	0.79
Jerash	International Tourists	3.96	0.85
	Domestic Tourists	4.04	1.01
Jesus Baptism Site	International Tourists	3.88	1.01
	Domestic Tourists	4.15	0.73
Roman Theater	International Tourists	4.21	0.70
	Domestic Tourists	4.17	0.75

Table 12: The descriptive analysis for the variable of Awareness of Consequences

Site	The Group by Origin	Mean	SD
Amman Citadel	International Tourists	4.47	0.49
	Domestic Tourists	4.11	0.63
Jerash	International Tourists	4.10	0.88
	Domestic Tourists	4.17	0.68
Jesus Baptism Site	International Tourists	4.14	0.54
	Domestic Tourists	4.07	0.62
Roman Theater	International Tourists	4.15	0.96
	Domestic Tourists	3.42	1.28

Table 13: The descriptive analysis for the variable of Ascription of Responsibility

Site	The Group by Origin	Mean	SD
Amman Citadel	International Tourists	4.49	0.65
	Domestic Tourists	4.05	0.82
Jerash	International Tourists	3.98	0.83
	Domestic Tourists	4.13	0.82
Jesus Baptism Site	International Tourists	4.42	0.56
	Domestic Tourists	4.49	0.31
Roman Theater	International Tourists	4.22	0.80
	Domestic Tourists	4.21	0.83

Table 14: The descriptive analysis for the variable of Personal Norms

Site	The Group by Origin	Mean	SD
Amman Citadel	International Tourists	4.04	1.12
	Domestic Tourists	3.35	1.44
Jerash	International Tourists	3.38	1.24
	Domestic Tourists	4.01	1.19
Jesus Baptism Site	International Tourists	3.70	0.85
	Domestic Tourists	3.72	1.00
Roman Theater	International Tourists	3.81	1.05
	Domestic Tourists	3.27	1.13

Table 15: The descriptive analysis for the variable of Social Norms

Site	The Group by Origin	Mean	SD
Amman Citadel	International Tourists	4.64	0.41
	Domestic Tourists	4.49	0.75
Jerash	International Tourists	4.28	0.92
	Domestic Tourists	4.52	0.85
Jesus Baptism Site	International Tourists	4.34	0.63
	Domestic Tourists	4.29	0.97
Roman Theater	International Tourists	4.52	0.63
	Domestic Tourists	4.48	0.74

Table 16: The descriptive analysis for the variable of Behavior

Site	The Group by Origin	Mean	SD
Amman Citadel	International Tourists	1.76	1.08
	Domestic Tourists	1.38	0.57
Jerash	International Tourists	1.79	0.74
	Domestic Tourists	1.58	0.97
Jesus Baptism Site	International Tourists	2.53	1.06
	Domestic Tourists	2.07	1.12
Roman Theater	International Tourists	1.39	0.49
	Domestic Tourists	1.70	0.85

The comparisons were then conducted to find if being a local or an international tourist combined with visiting a particular site will cause differences in the latent variables used in the study. It was noticed that none of the comparisons were significant when they were done for one of the variables of the origin of the tourist or the site (results are not mentioned here), but they were significant for most of the variables when these two variables interacted. It was noticed that the differences were significant for ecocentric value orientations ($F = 5.45, p = .001$), awareness of consequences ($F = 4.74, p = .003$), ascription of responsibility ($F = 2.96, p = .032$), personal norms ($F = 7.84, p = .001$), and behavior ($F = 5.66, p = .001$). But these comparisons were not significant for the variables of anthropocentric value orientations ($F = .65, p = .585$) and social norms ($F = 1.34, p = .261$).

Table 17: The comparisons for the interactions between the site and groups by origins for the latent variables

The Variable	F	p	Partial Eta squared
Ecocentric Value Orientation	5.45	.001	0.03
Anthropocentric Value Orientation	0.65	.585	0.00
Awareness of Consequences	4.74	.003	0.03
Ascription of Responsibility	2.96	.032	0.02
Personal Norms	7.84	.000	0.05
Social Norms	1.34	.261	0.01
Behavior	5.66	.001	0.03

Confirmatory Factor Analysis

In the confirmatory factor analysis, the researcher imposes some theoretical constraints regarding the relationship between the variables, this includes the pairs of factors that are correlated and which observed variables are affected by which common factors (Long, 1983). In such method, the number of latent variables or common factors is already determined, and the observed variables are fixed to load on a specific factor of factors, such procedures are based on theoretical or empirical foundations, and so it becomes possible to specify an exact factor model in advance (Stevens, 2002). This was applied in this study, there were 40 measured variables that were put to measure 6 latent variables, after applying the reliability analysis in the last section, the number of these measured variables drop to 38, and these variables as previously seen were assigned to indices according to theoretical bases. The objective then is to test the relationship between the measured or observed variables and the latent variables or concepts assigned to them. AMOS 5.0 was used for such purpose in this study. The application for such method comes in two stages; in the first stage, confirmatory factor analysis was used to test the relationship between the latent variable and its observed variables, which means involving only one latent concept or factor, the purpose is to get a better value for the chi-square and goodness of fit measures (they are explained in structure equation modeling section), and so concepts would work better in the final models, this is achieved deleting those variables that have low standardized regression coefficients on the factors (the results are not explained here, only the final selected groups of observed variables are mentioned). The final latent variables and their observed measures are as follows:

Table 18: The final selected observed variables and their grouping under theoretical factors

The Latent variable	The Items and their standardized regression estimates
Value Orientation	Archaeological sites should be preserved for future generations Archaeological sites have the same rights as natural resources to be preserved We should regulate tourism if it affects archaeological sites negatively We should spend money to protect archaeological sites
Social Norms	Guides should be more aware about the protection of archaeological sites Tourists should be careful about their behavior within archaeological sites Locals should be careful about their behavior within archaeological sites The Dept. of Antiquities should give more information about the importance of archaeological sites
Personal Norms	Willingness to avoid climbing on monuments and features of the archaeological sites Willingness to leave artifacts and archaeological finds without picking them up Willingness to avoid littering Willingness to avoid painting in archaeological sites
Ascription of Responsibility	I feel an obligation to educate others about the importance of archaeological sites I am responsible for protecting archaeological sites for future generations I feel a strong responsibility toward protecting archaeological sites Protecting archaeological sites is the responsibility of every individual
Awareness of Consequences	Stepping on sensitive areas as floors and loose parts in archaeological sites will cause damage to them Littering has a negative effect on archaeological sites Picking up artifacts (like pottery pieces) hinders archaeological information Climbing on monuments causes damage to archaeological site Touching decorative elements as carvings and inscriptions will ultimately cause them to disappear overtime Painting destroys monuments' surfaces in archaeological sites
Behavior	Behavior of littering Behavior of stepping on floors and loose parts in archaeological sites Behavior of picking up artifacts as pottery pieces Behavior of climbing on monuments in archaeological sites Behavior of touching decorative elements as carvings and inscriptions Behavior of using paint in archaeological sites

Another confirmatory analysis was applied, this was by putting all the latent variables and observed variables assigned to them in the analysis, and the aim is to test the suitability of the latent variables in grouping the observed variables. The standardized regression coefficients of the observed variables were all above .500, which indicates a good measure for their relationship with latent variables. The model ended with goodness of fit measures of (CMIN/DF=1.956; NFI=.915; RFI =.895; IFI = .957; TLI = .946; CFI=.956), (these measures are explained in the part of structure equation models).

The results are shown in the following figure:

Figure 101: Results of the final Confirmatory Factor Analysis:

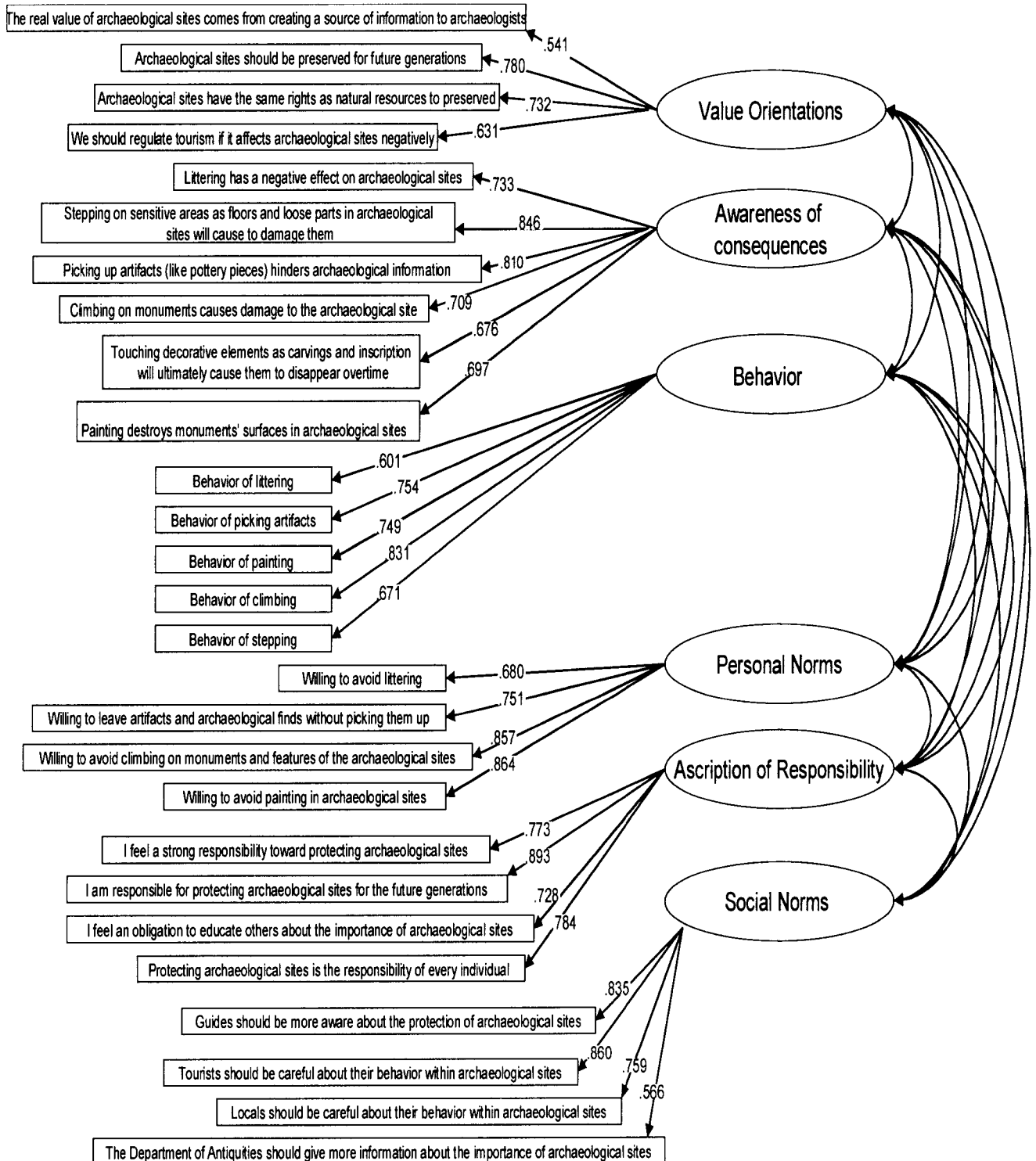


Table 19: The correlations among the latent variables in the confirmatory factor analysis

Variables	A.C.	A.R.	S.N.	P.N.	V.O.
A.C.	1.00				
A.R.	0.32	1.00			
S.N.	0.23	0.37	1.00		
P.N.	0.38	0.15	0.30	1.00	
V.O.	0.26	0.58	0.55	0.29	1.00
B.	-0.01	-0.10	-0.28	-0.001	-0.25

1. A.C. refers to the concept of Awareness of Consequences
2. A.R. refers to the concept of Ascription of Responsibility
3. S.N. refers to the concept of Social Norms
4. P.N. refers to the concept of Personal Norms or Commitment toward Antiquities
5. V.O. refers to the concept of Value Orientations
6. B. refers to the concept of Behavior

The correlations among these latent variables were to be found, the objective of such procedure is to find the strength of relationship among the theoretical concepts, which will give an idea about how these variables are related considering the models suggested in the study. One of the models suggested is (Value Orientation-Social Norms-Behavior) for the two cases of full and partial mediation. The correlations show that there is a substantial relationship between value orientations and social norms ($r = .55$), on the other hand, social norms were negatively and typically related to behavior ($r = -.28$), which also applies to the relationship between behavior and value orientations ($r = -.25$); this makes the partial mediation model more acceptable, but the other full mediation model was to be theoretically and empirically justified (as clarified in chapter 3), the structure equation models in the end of this chapter show that both models work, but the partial mediation model was to give better measures of fit, but the difference was slight so both of these models will be considered.

For the Norm Activation Model, we notice that awareness of consequences and ascription of responsibility were to have a typical correlation ($r = .32$), these two concepts were to have close to typical ($r = .23$) and typical ($r = .37$) relationships respectively, the

social norms correlated with the behavior with a negative and almost a typical relationship ($r = -.28$); but the awareness of consequences and ascription of responsibility were to have less than minimal and minimal correlation measures with the concept of behavior with being negative ($r = -.01$ and $r = -.10$ respectively); this actually makes the model acceptable and give results that go with the assumed relationships among the variables.

The last model discussed here is Value Orientation-Social Norms-Personal Norms model, as mentioned before, there is a substantial relationship between value orientations and social norms ($r = .55$), the value orientations variable was though to have a close an almost typical relationship with personal norms ($r = .29$), but it still less than the one with social norms, which makes the model worth testing besides other reasons considering the empirical evidences from previous studies as shown in chapter 3.

In order to check for the grouping of the variables, we use a method that is not based on any theoretical foundation, and so measured variables are allowed to cluster by their correlations and covariances, the extent to which the results of such analysis will fit with those of confirmatory analysis will prove the validity and suitability of the theoretical grouping suggested in this study, for such purpose we use the Exploratory Factor Analysis.

We notice from the results of the exploratory factor analysis that the observed variables were grouped in a way that resembles the theoretical foundations suggested for this study, which means that the grouping of these variables is supported, which indicates their appropriateness to be used in Structure Equation Modeling, which is the last stage of analyses in this study.

Structure Equation Modeling

Structure Equation Modeling (SEM) is a technique that is used to specify and estimate models of linear relationships among variables, which could be either measured or latent variables. This technique comes as a hypothesized pattern of directional and nondirectional linear relationships among these two kinds of variables.

The directional relationships are characterized by the directional influence of a variable on another; the nondirectional relation is simply the correlation among the variables (MacCallum & Austin, 2000). The SEM then captures the causal influences (regression effects) of the exogenous variables on the endogenous variables and the causal influences of the endogenous variables upon one another (Golob, 2001). This technique is a combination of factor analysis and regression or path analysis; the relationships among the factors or latent variables are represented by regression or path coefficients, the SEM implies a structure for the covariances between the observed or measured variables (Hox & Bechger, 1998). In this study, there were four structure equation models that proved to be significant in terms of the relationships among the latent variables or factors, also in terms of the standardized regression coefficients between the observed variables and their latent constructs. The last relationship might be present in the confirmatory factor analysis, but as MacCallum & Austin (2000) state in their study, the factor analysis indicates the correlational or nondirectional relationships among the latent variables, but does not include directional influences or relations as in SEM; and so the use of such method becomes a necessity. In addition to such relations, other important measures were used in order to check the suitability of such models for explaining the relationships among the variables, and to see if such

models fit the data, such measures are to be known as the Goodness of Fit Indices. One of these measures or indices is the Chi-square goodness-of-fit, which is a test that is used to assess the overall fit of a model and to compare it with other competing models; such statistics allows testing the null hypothesis that a given model provides a good or acceptable fit of the observed data (Long, 1983).

Such fitness considers the pattern of covariation of the observed variables. If the hypothesis is rejected, this means that the hypothesized model is not reasonable or does not fit with our data. This measure though has a problem of being sensitive to the sample size, and so with a large sample size, the hypothesis will be almost rejected (Stevens, 2002). For this, there were some other statistics to be used for assessing the overall fitness of data. Such measures include: RMR (the root mean square residual), the standardized RMR (SRMR), which ranges from 0 to 1, with values less than .05 to be interpreted as a good fit. There is also GFI (goodness-of-fit index), and AGFI, which is the adjusted GFI for the degrees of freedom in the model, and PFGI, which is the parsimony-adjusted goodness-of-fit index (PGFI) (Golob, 2001). We consider mainly the GFI measure; this index is roughly similar to the multiple R-squared values in the multiple regressions, which is based on the fact that it represents the overall amount of covariation among the observed variables that can be accounted for by the hypothesized model (Stevens, 2002). There is also the Tucker-Lewis Index (TLI) or what is known as the Non-Normed Fit Index (NNFI), and the Normed Fit Index (NFI), these measures adjust for the complexity of the model (Hox & Bechger, 1998). Such measure represents the increment in fit obtained by using the hypothesized model relative to the fit of the null model (Stevens, 2002). Another measure is the CFI (Comparative Fit

Index), such index compares the fit of the hypothesized model to a base line or a null model, the aim here is to determine the amount by which the fit is improved by using the hypothesized model instead of other models (Stevens, 2002). According to some studies, these indices depend somewhat on the sample size; the TLI is considered the best of them. The value of at least 0.90 is required to consider the model as acceptable, while a value of at least 0.95 is required to judge the model fit as good (Hox & Bechger, 1998).

In this study, we will be using the chi-square/df, NFI, TLI and CFI to measure the goodness of fit for the suggested models. Before we start discussing and explaining the models, it is needed to mention that there were models that included the measured variables of littering and stepping on the sensitive and loose parts in archaeological sites for the latent concepts of awareness of consequences and behavior, some other models though were not including these measured variables, this was explained by the results of the exploratory factor analysis, when the grouping of the observed variables was to give better results after deleting these two items; but we mentioned in the first chapter that littering and stepping on sensitive areas in archaeological sites are behaviors that are most often seen in such sites. It becomes necessary then to put models that consider these cases, so the models that included behavior or awareness of consequences were to be tested once with including littering and stepping observed variables and once with deleting them.

Model 1 (Figure 102) is discussing the Value Orientation-Social Norms-Behavior with full mediation, in this case the littering and stepping measured variables in the behavior index were included. The observed or measured variables were to have

significant and high standardized regression coefficients above 0.50; the regression coefficient between the latent variables of value orientations and social norms was 0.56 and was -0.24 between the social norms and behavior. The social norms' variance was explained with a percentage of 31.4% by value orientations, the social norms were to explain 5.8% of the variance in the behavior. The measures of goodness of fit were to give acceptable values, the measure of the chi-square/df (or CMIN/DF as put by AMOS 5.0) gave a value of 2.85, and other measures were as follows: (NFI = .928, TLI = .933 and CFI = .951), these measures then indicate that the model fits the data and explain the relationships among the theoretical concepts.

The model 1b (Figure 103) is discussing the Value Orientation-Social Norms-Behavior with full mediation, in this case the littering and stepping measured variables in the behavior index were deleted. The observed or measured variables were still to have significant and high standardized regression coefficients above 0.50; the regression coefficient between the latent variables of value orientations and social norms was 0.56 and was -0.31 between the social norms and behavior. The social norms' variance was explained with a percentage of 31.6% by value orientations, the social norms were to explain 9.5% of the variance in the behavior, the coefficients among the latent variables then have slightly increased. The measures of goodness of fit were to give acceptable values here as well, the measure of the chi-square/df (or CMIN/DF as put by AMOS 5.0) gave a value of 2.43, and other measures were as follows: (NFI = .950, TLI = .954 and CFI = .970), although the chi square/df measure decreased, the other measures of goodness of fit were to give higher estimates. These

measures then indicate that the model still fits the data and explain the relationships among the theoretical concepts.

Figure 102: The model of Value Orientations-Social Norms-Behavior/full mediation with the variables of littering and stepping on sensitive areas included in the behavior latent variable:

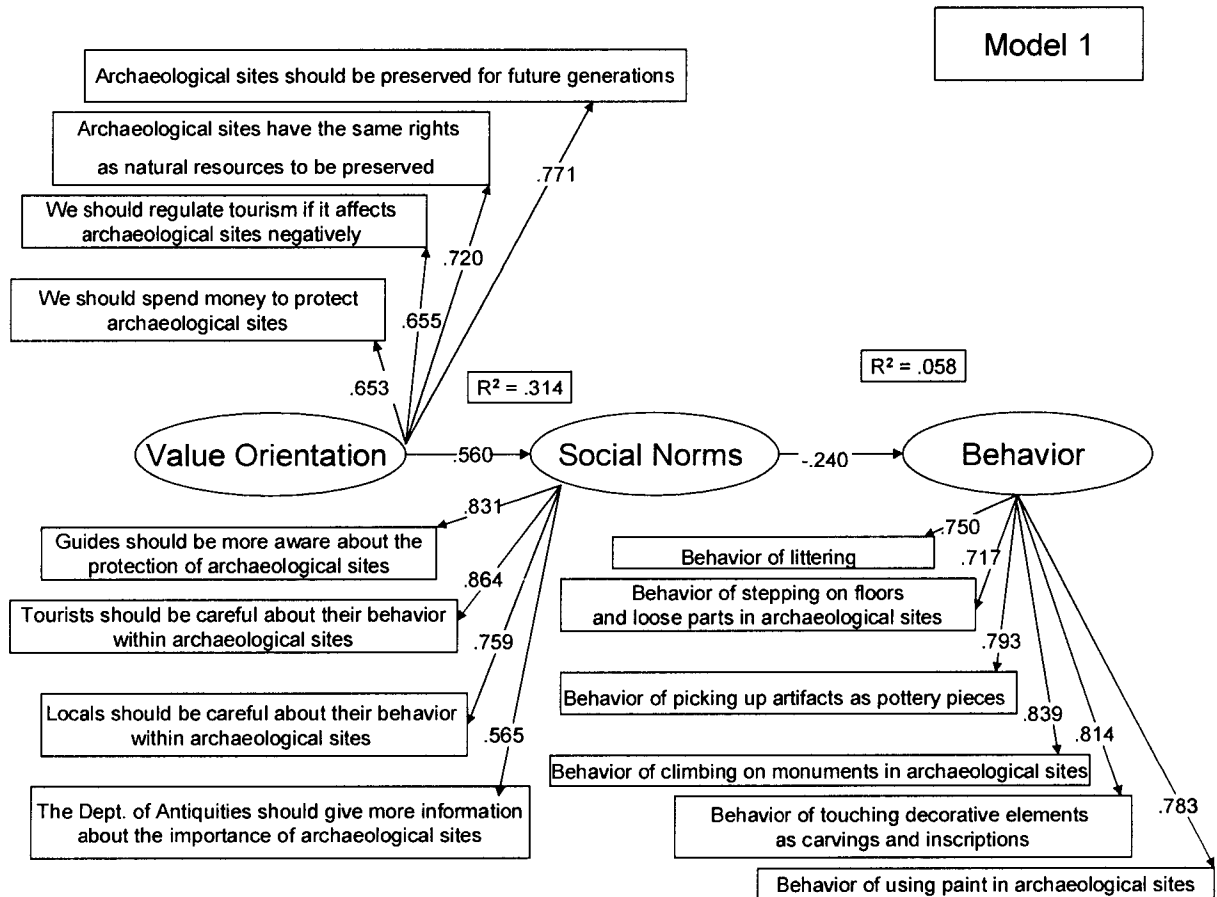
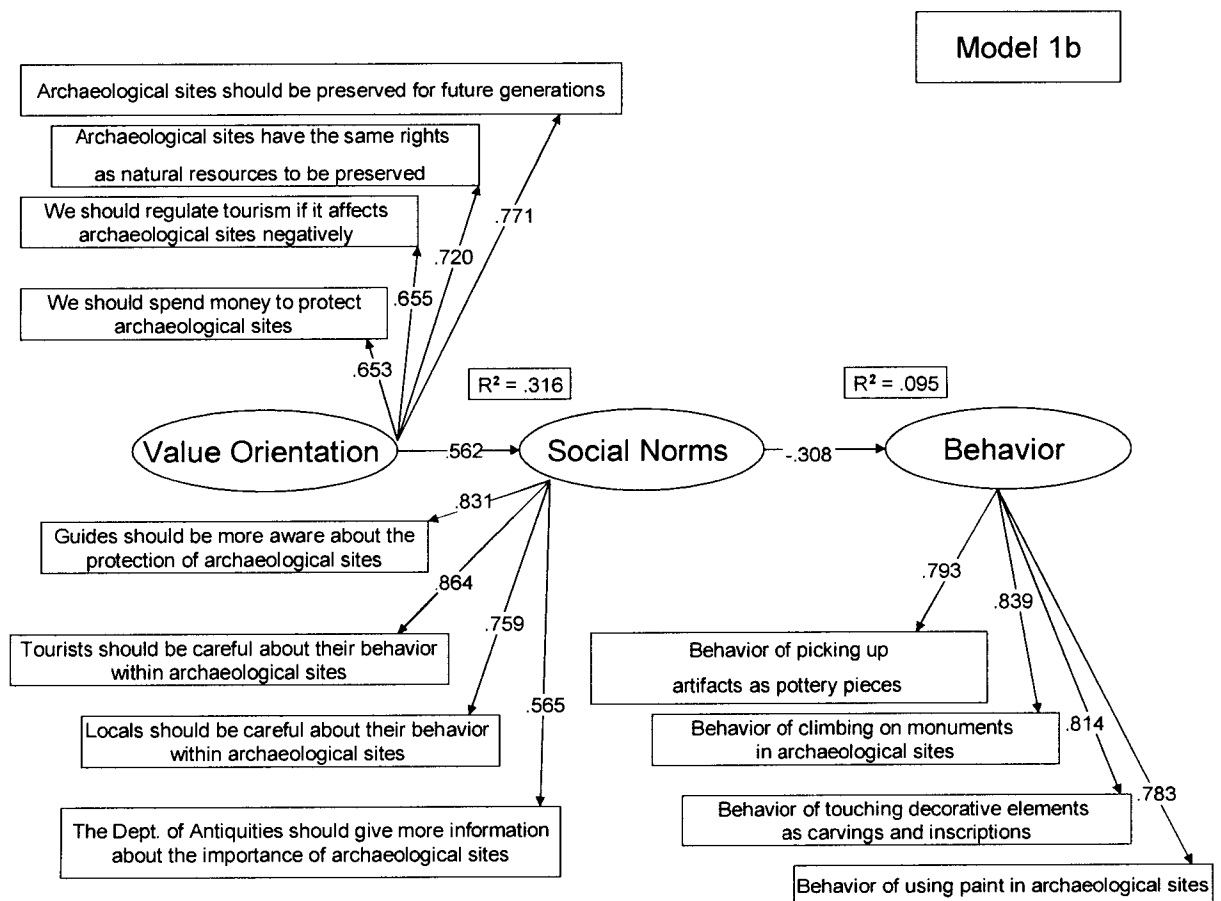


Figure 103: The model of Value Orientations-Social Norms-Behavior/full mediation with the variables of littering and stepping on sensitive areas not included in the behavior latent variable:



The second model (Figure 104) is discussing the Value Orientation-Social Norms-Behavior with partial mediation, in this case the littering and stepping measured variables in the behavior index were included. The observed or measured variables were to have significant and high standardized regression coefficients above 0.50; the regression coefficient between the latent variables of value orientations and social norms was 0.56 and was -0.15 between the social norms and behavior, the value orientation has a regression coefficient of -.14 with behavior. The social norms' variance was explained with a percentage of 31.0% by value orientations, the social norms and value orientations were to explain 6.8% of the variance in the behavior.

The measures of goodness of fit were to give acceptable values, the measure of the chi-square/df (or CMIN/DF as the input of AMOS 5.0) gave a value of 2.81, and other measures were as follows: (NFI = .930, TLI = .934 and CFI = .953), these measures then indicate that the model fits the data and explain the relationships among the theoretical concepts.

The model 2b (Figure 105) is discussing the Value Orientation-Social Norms-Behavior with partial mediation, in this case the littering and stepping measured variables in the behavior index were deleted. The observed or measured variables were still to have significant and high standardized regression coefficients above 0.50; the regression coefficient between the latent variables of value orientations and social norms was 0.56 and was -0.20 between the social norms and behavior, there was a coefficient of -.81 between value orientations and behavior. The social norms' variance was explained with a percentage of 30.9% by value orientations, the social norms and value orientations were to explain 11.1% of the variance in the behavior.

The measures of goodness of fit were to give acceptable values here as in the previous case, the measure of the chi-square/df (or CMIN/DF as put by AMOS 5.0) gave a value of 2.34, and other measures were as follows: (NFI = .953, TLI = .958 and CFI = .973), although the chi square/df measure decreased, the other measures of goodness of fit were to give higher estimates. However, these measures indicate that the model still fits the data and explain the relationships among the theoretical concepts.

Figure 104: The model of Value Orientations-Social Norms-Behavior/partial mediation with the variables of littering and stepping on sensitive areas not included in the behavior latent variable:

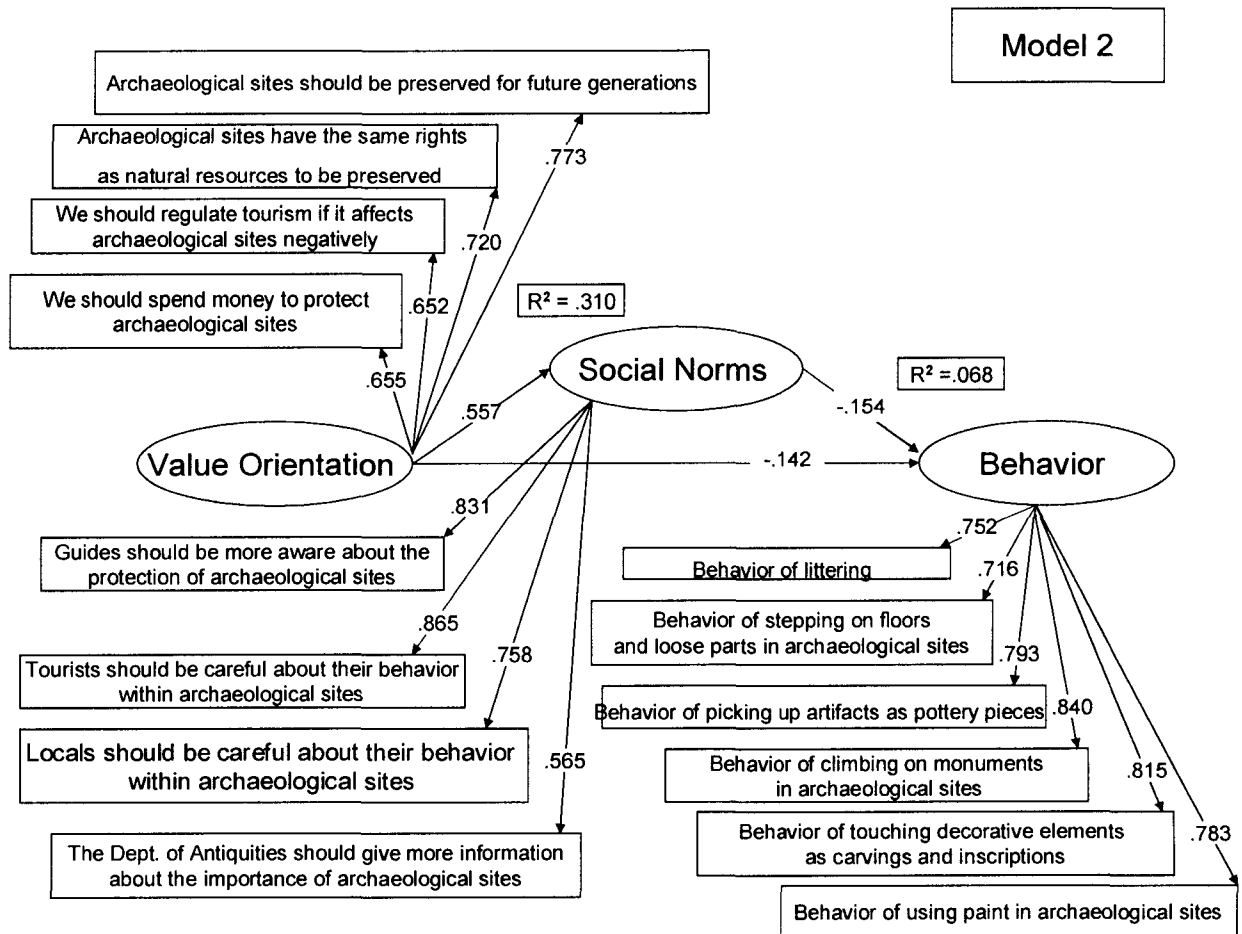
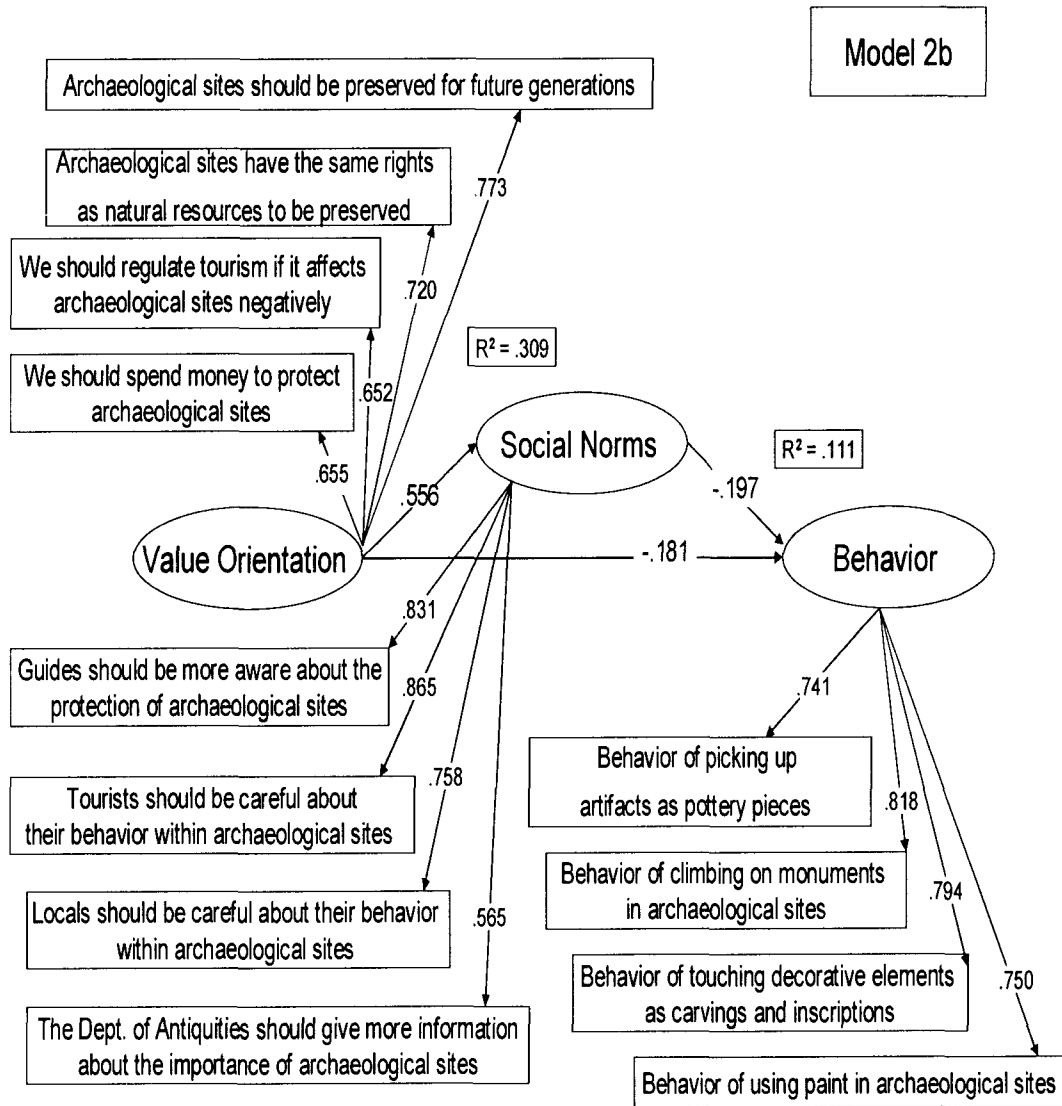


Figure 105: The model of Value Orientations-Social Norms-Behavior/partial mediation with the variables of littering and stepping on sensitive areas not included in the behavior latent variable:



The third model (Figure 106) is discussing the Awareness of Consequences and Ascription of Responsibility-Social Norms-Behavior theory, in this case the littering and stepping measured variables in the behavior and awareness of consequences indices were included. The observed or measured variables were to have significant and high standardized regression coefficients above 0.70 in almost all of the cases; the regression coefficient between the latent variables of awareness of consequences and social norms was 0.13 and was 0.40 between ascription of responsibility and social norms, on the other hand, it was -0.24 between the social norms and behavior, there was a close to substantial relationship between the awareness of consequences and ascription of responsibility ($r = 0.42$). The social norms' variance was explained with a percentage of 21.9% by both awareness of consequences and ascription of responsibility; the social norms concept was to explain 5.9% of the variance in the behavior. The measures of goodness of fit were to give close to acceptable values, the measure of the chi-square/df (or CMIN/DF as put by AMOS 5.0) gave a value of 3.44, and other measures were as follows: (NFI = .886, TLI = .896 and CFI = .916), these measures can still be interpreted as that the model fits the data

The model 3b (Figure 107) is also discussing the Awareness of Consequences and Ascription of Responsibility-Social Norms-Behavior theory, in this case the littering and stepping measured variables in the behavior and awareness of consequences indices were deleted. The observed or measured variables were still to have significant and high standardized regression coefficients above 0.70 in almost all of the cases; the regression coefficient between the latent variables of awareness of consequences and social norms was 0.08 and was 0.41 between ascription of

responsibility and social norms, however, it was -0.32 between the social norms and behavior, there was an almost substantial relationship between the awareness of consequences and ascription of responsibility ($r = 0.48$). The social norms' variance was explained with a percentage of 20.8% by both awareness of consequences and ascription of responsibility; the social norms variable was to explain 9.4% of the variance in the behavior. The measures of goodness of fit were to give better values here than in the previous case, the measure of the chi-square/df (or CMIN/DF as put by AMOS 5.0) gave a value of 2.71, and other measures were as follows: (NFI = .929, TLI = .936 and CFI = .953), although the chi square/df measure decreased, the other measures of goodness of fit were to give higher estimates. However, these measures indicate that the model fits the data better and explain the relationships among the theoretical concepts in a better way.

Figure 106: The model of Awareness of Consequences and Ascription of Responsibility-Social Norms-Behavior with the variables of littering and stepping on sensitive areas included in the behavior and awareness of consequences latent variables:

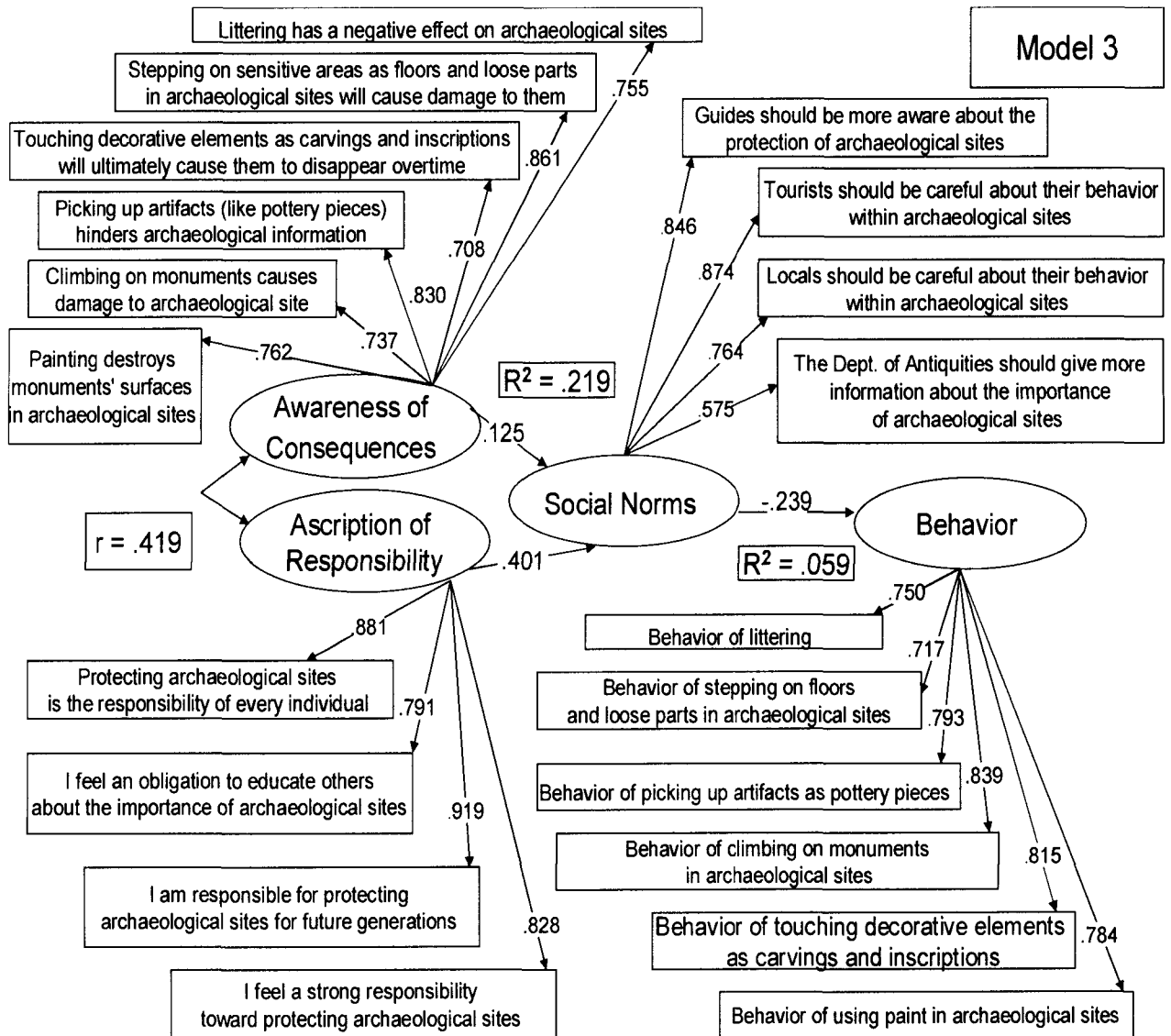
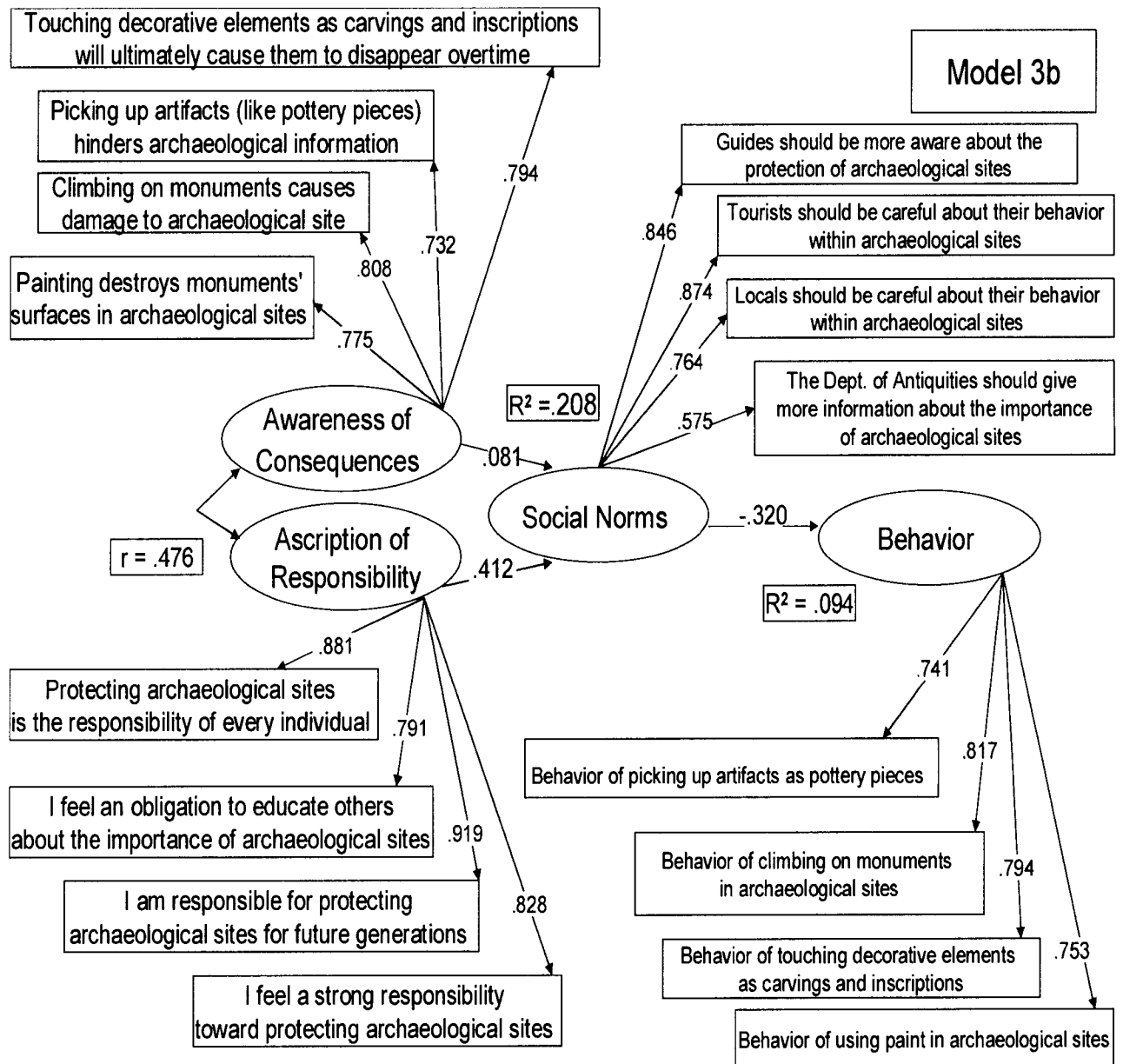
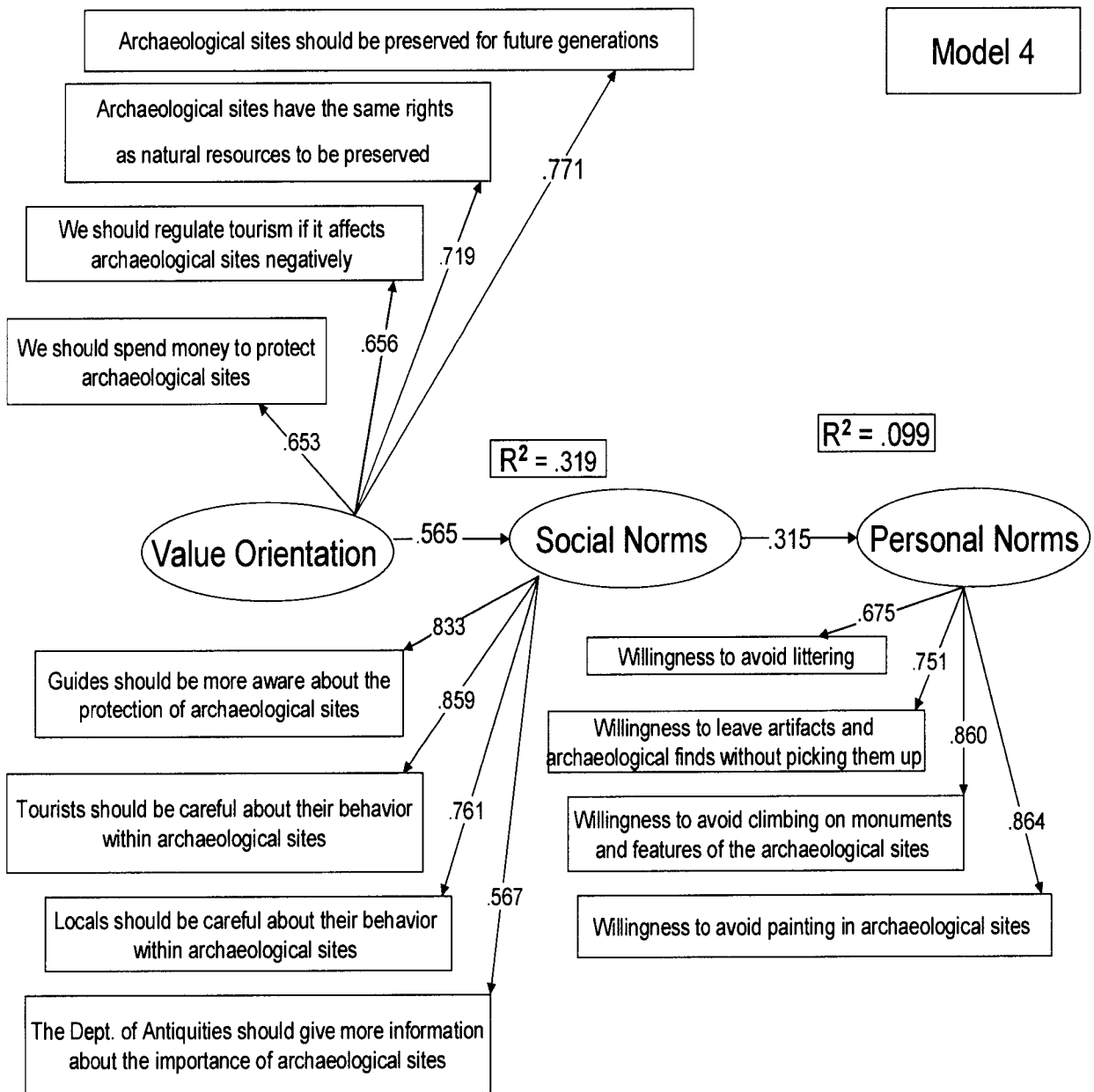


Figure 107: The model of Awareness of Consequences and Ascription of Responsibility-Social Norms-Behavior with the variables of littering and stepping on sensitive areas not included in the behavior and awareness of consequences latent variables:



The last model (Figure 108) is discussing the Value Orientations-Social Norms-Personal Norms with full mediation. The observed or measured variables were to have significant and high standardized regression coefficients above 0.50; the regression coefficient between the latent variables of value orientations and social norms was 0.57, and was 0.32 between the social norms and personal norms. The social norms' variance was explained with a percentage of 31.9% by value orientations, the social norms were to explain 9.9% of the variance in the personal norms. The measures of goodness of fit were to give acceptable values, the measure of the chi-square/df (or CMIN/DF as put by AMOS 5.0) gave a value of 2.90, and other measures were as follows: (NFI = .944, TLI = .943 and CFI = .962), these measures then indicate that the model fits the data in the study.

Figure 108: The model of Value Orientations-Social Norms-Personal Norms



Chapter 5

Discussion and Management Implications

The results of this research support the previous empirical research. The models used in this study have shown a relationship between the norms and the behavior of tourists in archaeological sites. For the models applied in the study, it was noticed that less than 10% of the variance of behavior was explained by norms. In previous research, it was noticed that such variance in the behavior was of a higher percentage. For example, in Schwartz (1968a): the variance of behavior explained by norms was 35-40%; 34% when the high level of AC interacted with the high levels of AR (Schwartz, 1968b); 17% (Hunecke, 2001); 34% (Bratt, 1999); 13% (Blobsaum, 2000), and 46% (Nordlund & Gravill, 2002). Such result might be due to the fact that norms regarding the behavior of tourists in archaeological sites are not well established within the groups of respondents, which is contrary to the cases of littering and mobility behavior. The problems of littering and mobility behavior, as well as their impact on environment are clear to big segments of societies, especially that they affect the human health and existence, which is not necessarily the case of archaeological sites. These sites might have a great educational value, but such value is not equally considered important among different social groups, which makes using such models in studying the behavior of visitors in archaeological sites questionable.

The solution for the problem of not considering antiquities important then becomes necessary, such solution starts from initiating or establishing strong norms by individuals, such norms are strongly related to the awareness of antiquities' value, which means that individuals should know that antiquities are valuable for being the evidence regarding the

past and the history of the region and the nation, and not only for generating money by being a tourist attraction, and that other individuals as present and future generations have the right as well to benefit from such resources, and that such cultural resources have the right to exist and survive as in the case of natural resources.

Such knowledge relates here to value orientation, which indicates then enhancing the way individuals value antiquities and the way they benefit from such resources, such enhancement comes through the promotion by media about the significance of antiquities, and the role of authorities in protecting them.

The impacts caused by visitors' behavior in archaeological sites should be considered. This then involves spreading more awareness among the segments of locals, tourists, and guides about the appropriate behaviors in the archaeological sites, and improving the role of the Department of Antiquities in promoting the importance of the archaeological sites, and its role in discovering and protecting them, especially that it was reported by some individuals who filled the survey, that the department needs to participate in more events and programs involving the community to increase such awareness, as well as the knowledge about the importance of antiquities.

When authorities show a real concern about antiquities (by preservation, development and promotion), individuals will consequently sense the importance of these cultural resources, and probably will increase their feeling of responsibility toward them.

Some individuals who filled the survey had a low score for the awareness of consequences index, which raises the importance of educating these individuals about their behavior while visiting the archaeological sites, and providing the necessary facilities that will prevent inappropriate behavior, as in the case of littering because of the absence of

trash cans, or uncontrolled movement because of having no definite paths or trails, especially that some individuals who filled the survey, had the problem of finding a clear access to site features as in Jerash and Amman Citadel. A vital procedure will be creating a good orientation system with better maps, and signage that includes both the navigation routes, and instructions about kinds of behaviors to be avoided, and the consequence they might have on the site.

When it comes to behavioral signage, there are many examples suggested by Ryan (1992); these signs might include reminders about the sensitivity or the fragility of the site or any of its features, reminding visitors that they belong to a group of thousands of visitors coming to the site annually, and so to do their part in avoiding some behaviors even if they have slight impacts, such as touching monuments. Another approach is to show how the feature was built and then how it is destroyed by visitors' behavior, as in the case of mosaic floors, mentioning that they were made by attaching tesserae (square-shaped stone pieces) to a special mortar with a special design, and that picking these stones will cause the loss of the floor. Reminding visitors that the site is still under excavation and archaeological exploration is also vital, especially if the misinterpretation of the history of the site will occur by inappropriate behaviors, as in the case of picking archaeological finds on surface. Another kind of signage might aim increasing the responsibility held by individuals, such aim can be achieved by asking the individuals to report any wrong action occurring in the site, or to ask people doing it to stop. This then will enhance the awareness of consequences and feeling of responsibility by individuals, as well as with personal and social norms.

For avoiding the negative consequences of visitors' behavior, it might be necessary to educate guides (who will then inform the tourists) about appropriate behavior, and some other details that might influence the site, such as wearing a special kind of shoe that will not affect the floors or pavements in the archaeological sites. This then can be followed by distributing a survey monthly or yearly as needed to measure the differences in responding to items that measure the awareness of consequences and the feeling of responsibility held by individuals, as well as the negative behaviors reported by them; evaluating the methods of interpretation in terms of the information and behavior guidance are also important, that is in addition to the satisfaction regarding the services and facilities provided.

Another implication is concentrating the numbers of visitors in certain areas for specific times, and so to eliminate their impact in the area of the archaeological site, this is gained by directing visitors to areas of particular interest. As proposed by Shackley (2001), this can be achieved by sign boards or stewards. One of the important implications is directing the attention of tourists from areas and features of a fragile or sensitive nature; this might be done by guidance or even by fences and roping around these portions of the site (as in Jesus Baptism Site), or if necessary, closing these areas temporarily or permanently, as suggested by Carlisle (1998). And most important of all, the establishment of well enforced laws and policies inside the archaeological sites, this will decrease any violations by individuals, whether for those living in the surrounding areas or the ones visiting these sites.

There is an urgent need to integrate the concept of carrying capacity or the threshold of concern, in order to solve the problems of impacts in archaeological sites, the

problems of being exposed to the direct movement of tourists, and heavy transportation causing exhaled gases, all lead to destruction and pollution that affect the surfaces of the monuments. Using the concept of threshold of concern or carrying capacity, is related to selecting appropriate measures to reduce the agents' impacts, and their cumulative effect on the archaeological features of the site. The concept of carrying capacity has two main aspects; one of them according to Manning (1999) is descriptive, which is related to the factual objective data concerning the relationship between the use of visitors and the impact on the resources. The other aspect is related to the perspective side of how much impact or change is acceptable. This indicates then having a measure of impact, which helps to know whether or not the condition of the site is in a serious danger, which might cause irreversible changes. According to Wildesen (1982), the measure of threshold of concern is basically given as a proportion that shows how much of the site is affected, and so deciding the extent of danger the site is exposed to. The question is how to get such proportion; we need then to go through a number of steps in order to get the necessary information regarding this measure, a good starting procedure is to gather all early to recent maps, in addition to aerial and other kinds of photos and illustrations of the site. This will help to understand the different stages of change the site went through, whether by natural processes, or the human development and activities. Since we specified our agents of impacts, we need then to know their extent, duration and degree of the influence. For doing so, the creation of a map or a top plan will be crucial to document the location of site features, and the accesses to them, their location to other different components of the area or the region, and the changes regularly taking place

considering natural and human causes, as well as by adding facilities or development for example.

Such procedure will help in comparing the condition of sites regularly, and then being able to relate any data or observation to the types and amounts of change taking place in the site. The next step is creating full illustrations including detailed top plans, sections and facade drawings, with showing all specifications considering building materials, material used in preservation, and marking the fragile remains in these sites. Doing this is necessary to document the different locations and extent of damage or changes on the features, to explain this point more, we refer to the method adapted by Fitzner & Bouchardiere (2000) for recording such damage, the damage was classified into scales according to the depth of weathering effects in centimeters, and then assigning those into ranges of intensity, this is followed by recording them graphically as what is shown in the following figures, which document a Nabataean façade from Petra in Jordan, where this approach was applied:



Figure 109: A Nabataean tomb façade in Petra (Fitzner& Bouchardiere, 2000)

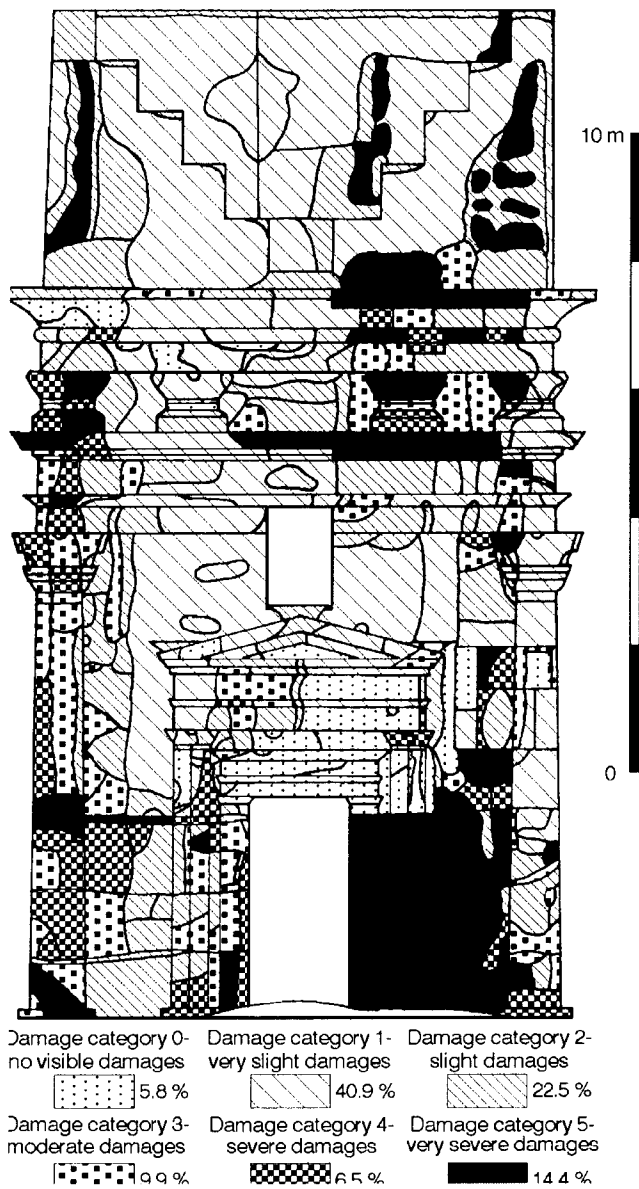


Figure 110: A graph of a Nabataean tomb façade in Petra, with levels of damage measured and documented (Fitzner & Bouchardiere, 2000)

As seen in the illustrations given, the intensity and categories of damages were reported graphically, that is a very convenient way to trace the condition of the monuments, and the proportion of degraded stone, mosaic floors, or any other surfaces in archaeological sites, and so deciding the amount of being exposed to external factors.

That requires establishing our scales of stone depth of irritation or erosion of the surface of the stone. In such cases some units of measures should be decided as irritation depth by millimeters, or area affected in a mosaic floor by sq. centimeters.

Another measure might be the color of stone or the surface, which can be measured by using the Munsil Chart of the soils colors and by photos in order to trace the change of the color of the stone on regular basis, especially for the problem of being located in crowded transportation areas.

Another measure will be monitoring the surface of the monuments, for example, the Roman stones were dressed and polished using chisels that still have impressions on the stone surfaces, some factors such as weather and human behavior of touching and stepping might help in the disappearance of these impressions, as well as the decorative elements, and so a regular check will help in monitoring the impacts of such factors on surfaces. This can be done by assigning specific measures for depth and size of these features, in addition to the use of detailed photos and drawings of the different features. Putting these measures will help us in defining the proportions or percentages of damage, and so deciding the threshold of concern when this damage is not tolerable.

Solving any economic problems in areas close to archaeological sites, which do not have enough resources of income, is a very crucial procedure, and so the value of archaeological sites will change. Instead of being materialistic through selling artifacts

and destroying sites by digging them, it will be a value that relates to being a source of information about the past.

It was noticed that there were significant differences in the two-way analysis of variance for most of the theoretical variables involved in the study, which involved being an international or a local tourist, and the site visited. Such significant differences might be due to the fact that some sites are located within urban centers, and so visited by individuals for being close to residence and work locations, and not necessarily only for their educational and cultural value, as in the case of Amman Citadel and the Roman Theater area. Another reason behind such difference might be the fact that some of these sites are provided with facilities and amenities that help individuals to behave properly.

Another factor is the fact that Jerash and Jesus Baptism Site are used for cultural events, which might give an impression that they are not fragile to visitation; such situation increases the importance of reminders about consequences of actions and their sensitivity. The comparison though is not easy to interpret since there are no clear profiles about groups of tourists by origin, and the way they evaluate antiquities and their actions, which then increases the importance to distinguish these groups by authorities when their visits are recorded in these sites.

REFERENCES

- Al-Hazaymeh, N. (1994). *The Umayyad Palace of Amman*, Unpublished Masters Thesis, Yarmouk University. (In Arabic)
- Almagro, A. & Arce, I. (2001). The Umayyad Town Planning of the Citadel of Amman. *Studies in the History and Archaeology of Jordan*, IIV, 659-665.
- Applebaum, S. & Segal, A. (1993). Gerasa. In *The New Encyclopedia of Archaeological Excavations in the Holy Land, Volume 2*, edited by Stern, E., 470-479. Simmon and Schuster, New York.
- Baptism Site Commission. (2005). Jesus Baptism Site. Retrieved August 1, 2004, from [http:// www.baptismsite.com](http://www.baptismsite.com).
- Bisheh, G. (1974). *The Umayyad Desert Castles*. Department of Antiquities of Jordan, Amman.
- Bisheh, G. (2001). One Damn Illicit Excavation after Another: The Destruction of the Archaeological Heritage of Jordan. In *Trade in Illicit Antiquities: The Destruction of World's Archaeological Heritage*, edited by Brodie, N., Doole, J. & Renfrew, C., 115-188. McDonald Institute for Archaeological Research, Cambridge.
- Black, J. Stanley. 1978. *Attitudinal, Normative, and Economic Factors in Early Response to an Energy-Use Field Experiment*. Unpublished Doctoral Dissertation, University of Wisconsin. Dissertation Abstracts International, 39, 436B
- Black, J., Stern, P. & Elworth, J. (1985). Personal and Contextual Influences on Household Energy Adaptations. *Journal of Applied Psychology*, 70, 3-21.
- Blamey, R. (1998). The Activation of Environmental Norms, Extending Schwartz's Models. *Environment and Behavior*, 30(5), 676-708.
- Blobaum, A. (2000). *Environmentally Responsible Mobility Behavior-The Effectiveness of Living Situation Characteristics and Ecological Norm Activation*. A paper presented in XXVII International Congress of Psychology in Stockholm, Sweden.
- Bowsher, J. (1992). The Temple of Hercules: A Reassessment. In *Studies on Roman and Islamic Amman, Volume 1*, edited by Northedge, A., 129-138. Oxford University Press, New York.
- Bratt, C. (1999). The Impact of Norms and Assumed Consequences on Recycling Behavior. *Environment and Behavior*, 31 (5), 630-656.

- Burdajewicz, M. (1992). Rabbath Ammon. In *The New Encyclopedia of Archaeological Excavations in the Holy Land, Volume 4*, edited by Stern, E., 1243-1249. Simon and Schuster, New York.
- Causle, F. (2003). Art and History of Jordan, Casa Editrice Bonechi, Florence, Italy.
- Cialdini, R.B. (1996). Activating and Aligning Two Kinds of Norms in Persuasive Communications. *Journal of Interpretation Research*, 1 (1), 3-10.
- Cialdini, R., Reno, R., & Kallgren, C. (1990). A Focus Theory of Normative Conduct: Recycling the Concept of Norms to Reduce Littering in Public Places. *Journal of Personality and Social Psychology*, 58, 1015-1026.
- Cottrell, S. & Grafe, A. (1997). Testing a Conceptual Framework of Responsible Environmental Behavior. *Journal of Environmental Education*, 29(1), 17-27.
- Eagly, A. & Chaiken, S. (1993). *The Psychology of Attitudes*. Harcourt, Texas.
- Ebreo, A., Hershey, J. & Vining, J. (1999). Reducing Solid Waste: Linking Recycling to Environmentally Responsible Consumers. *Environment and Behavior*, 31(1), 107-135.
- Esh-Shami, A. (2002). The Role of Department of Antiquities in Protecting Archaeological Sites and Preventing the Illicit Trade of Antiquities. *Athar*, 5, 53-55. (In Arabic)
- Evans, K. & Fielding, L. (1998). Giza (Egypt) The use of GIS in managing a World Heritage Site. In *Visitor Management: Case Studies from World Heritage Sites* edited by Shackley M., 82-99. Butterworth Heinemann, Oxford.
- Ferrante, J. (1995). *Sociology: A Global Perspective*, 2nd edition. Wadsworth Publishing Company, California.
- Field, A. (2000). *Discovering Statistics Using SPSS for Windows*, Sage Publications, London.
- Fishbein, M. & Manfredo, M. (1997). A Theory of Behavior Change. In *Influencing Human Behavior* edited by Manfredo, M., 29-50, Sagamore Publishing, Illinois.
- Fitzner, B., Heinrichs, K. & Bouchardiere, D. (2000). Damage Index for Stone Monuments. In *Protection and Conservation of the Cultural Heritage of the Mediterranean Cities, Proceedings of the 5th International Symposium on the Conservation of the Monuments in the Mediterranean Basin, Sevilla, Spain, 5-8 April 2000*, edited by Galen, E. and Zezza, F., 315-326. Swets & Zeitlinger, Lisse, Netherlands.

- Fulton, D., Manfredo, M. , & Lipscomb, J. (1996). Wildlife Value Orientations: A Conceptual and Measurement Approach. *Human Dimensions of Wildlife*, 1(2), 24–47.
- Golob, T. (2001). *Structure Equation Modeling for Travel Behavior Research*. Institute of Transportation Studies, University of California, Irvine, California.
- Heberlein, T. (1972). *Perception of Alternatives and Attribution of Responsibility for a Water Pollution Problem*, A paper presented at the Rural Sociological Society Annual Meetings, Baton Rouge, Louisiana.
- Heberlein, T. (1974). Beliefs about Sanctions, Norm Activation and Violation of the Anti-Littering Norm. (Unpublished Paper).
- Heberlein, T. (1975). Social Norms and Environmental Quality. A paper presented at the American Association for Advancement of Science Annual Meetings, New York.
- Heberlein, T. & Black, J. (1974). The Land Ethic in Action, Personal Norms, Beliefs and Purchase of Lead-Free Gasoline. (Unpublished Paper).
- Henry, S. (1993). *Protecting Archaeological Sites on Private Lands*, United States Department of the Interior, National Park Service, Cultural Resources and Interagency Resources Division.
- Herrmann, J. (1989). World Archaeology: The World's Cultural Heritage. In *Archaeological Heritage Management in the Modern World*, edited by Cleere H., UNWIN HYMAN, London.
- Heywood, J. (2002). The Cognitive and Emotional Components of Behavior Norms in Outdoor Recreation. *Leisure Sciences*, 24, 271-281.
- Homer, P. & Kahle, L. (1988). A Structural Equation Test of the Value-Attitude-Behavior Hierarchy. *Journal of Personality and Social Psychology*, 54 (4), 638-646.
- Hopper, J. & Nielsen, J. (1991). Recycling as Altruistic Behavior: Normative and Behavioral Strategies to Expand Participation in a Community Recycling Program. *Environment and Behavior*, 23, (195-220).
- Hox, J. & Bechger, T. (1998). An Introduction of Structural Equation Modeling. *Family Science Review*, 11, 354-373.
- Hrubes, D., Ajzen, I., & Daigle, J. (2001). Predicting Hunting Intentions and Behavior: An Application of the Theory of Planned Behavior. *Leisure Sciences*, 23(3), 165–178.

- Hunecke, M., Blobaum, A., Matthies, E. and Hoger, R. (2001). Responsibility and Environment, Ecological Norm Orientation and External Factors in the Domain of Travel Mode Choice Behavior. *Environment and Behavior*, 33(6), 830-852.
- Joireman, J., Lasane, T., Bennett, J., & Solaimani, S. (2001), Integrating Social Value Orientation and the Consideration of Future Consequences within the Extended Norm Activation Model of Proenvironmental Behavior. *British Journal of Social Psychology*, 40, 133-155.
- Kaiser, F., Shimoda T. (1999). Responsibility as a Predictor of Ecological Behavior. *Journal of Environmental Psychology*, 19 (3), 243-253.
- Khouri, R. (1986). *Jerash: A Frontier City of the Roman East*. Longman Group LTD, Essex.
- Kim, S. & Shelby, B. (1998). Norms for Behavior and Conditions in Two National Park Campgrounds in Korea. *Environmental Management*, 22(2), 277 – 285.
- Leopold, A. (1968). *A Sand County Almanac*, Oxford University Press, London.
- Light, D., Keller, S. & Calhoun, C. (1989). *Sociology*. 5th edition. Alfred Knopf, New York.
- Long, J. (1983). *Confirmatory Factor Analysis: A Preface to LISREL*, Sage Publications, London.
- Maio, G., Olson, J., Bernard, M. & Luke, M. (2003). Ideologies, Values, Attitudes, & Behavior. In *Handbook of Social Psychology* edited by Delamater J., 283-308. Kluwer Academic/Plenum Publishers, New York.
- Manning, R. (1999). *Studies in Outdoor Recreation: Search and Research for Satisfaction*, 2nd edition. Oregon State University Press, Oregon.
- Manning, R., Valliere, W., Minter, B. (1999). Values, Ethics, and Attitudes toward National Forest Management: An Empirical Study. *Society and Natural Resources*, 12(5), 421 – 436.
- MacCallum, R., & Austin, J. (2000). Applications of Structural Equation Modeling in Psychological Research. *Annual Review of Psychology*, 51, 201-226.
- Mkhijian, R. & Kanellopoulos, C. (2003). John the Baptist Church Area: Architectural Evidence. *Annual of the Department of Antiquities of Jordan*, 47, 9-18.
- Merhav, R. & Killebrew, A. (1998). Public Exposure: for Better and for Worse. *Museum International* (UNESCO Paris), No.200, 50 (4), Blackwell Publishers, Oxford.

- Michener, H., DeLamanater, J. & Schwartz, S. (1986). *Social Psychology*. Harcourt, San Diego.
- Newman, D. (1995). *Sociology: Exploring the Architecture of Everyday Life*. Pine Forge Press, California.
- Noe, F., Hull, R., & Wellman, J. (1982). Normative Response and Norm Activation among ORV Users within a Seashore Environment. *Leisure Sciences*, 5(2), 127-142.
- Nordlund, A. & Gravill, J. (2002). Value Structures Behind Proenvironmental Behavior. *Environment and Behavior*, 34(6), 740-756.
- Northedge, A. (1992). *Studies on Roman and Islamic Amman, Volume 1*, Oxford University Press, New York.
- Nunnally, J. & Bernstein, I. (1994). *Psychometric Theory*, 3rd edition, McGraw-Hill, New York.
- Oskamp, S., Harrington, M., Edwards, T., Sherwood, D., Okuda, S. & Swanson, D. (1991). Factors Influencing Household Recycling Behavior. *Environment and Behavior*, 23, 494-519.
- Politis, K.D. (2002). Dealing with the Dealers and Tomb Robbers: The Realities of the Archaeology of the Ghor es-Safi in Jordan. In *Illicit Antiquities, The theft of culture and the extinction of archaeology*, Neil Brodie and Kathryn Tubb, Routledge, London.
- Renfrew, C. & Bahn, P. (2000). *Archaeology: Theories, Methods and Practice*. 3rd edition. Thames & Hudson, New York.
- Richards, G. (1996). *Cultural Tourism in Europe*, CAB International, Wallingford.
- Ryan, J. (1992). *Preserving Cultural Resources Destruction: Taking Action through Interpretation*, United States Department of the Interior and National Park Service.
- Santos, J. (1999). Cronbach's Alpha: A Tool for Assessing the Reliability of Scales. *Journal of Extension*, 37 (2). (<http://www.joe.org/joe/1999april/tt3.html>)
- Shackley, M. (1998). World Cultural Heritage Sites. In *Visitor Management: Case Studies from World Heritage Sites* edited by Shackely, M., 1-9. Butterworth Heinemann, Oxford.
- Shackley, M. (2001). *Managing Sacred Sites*, Continuum, New York
- Schwartz, S. (1968a). Awareness of Consequences and the Influence of Moral Norms on Interpersonal Behavior. *Sociometry*, 31, 355-368.

- Schwartz, S. (1968b). Words, Deeds, and the Perception of Consequences and Responsibility in Action Situations. *Journal of Personality and Social Psychology*, 10(3), 232-242.
- Schwartz, S. (1974). Awareness of Interpersonal Consequences, Responsibility Detail, and Volunteering. *Journal of Personality and Social Psychology*, 30(1), 57-63.
- Schwartz, S. (1975). The Justice of Need and the Activation of Humanitarian Norms. *Journal of Social Issues*, 31(3), 111-137.
- Schwartz, S. (1970). Elicitation of Moral Obligation and Self-Sacrificing Behavior: An Experimental Study of Volunteering to be a Bone Marrow Donor. *Journal of Personality and Social Psychology*, 15(4), 283-293.
- Segal, A. (1992). Roman Philadelphia. In *The New Encyclopedia of Archaeological Excavations in the Holy Land, Volume 4*, edited by Stern, E., 1249-1251. Simmon and Schuster, New York.
- Shelby, B., Vaske, J., & Donnelly, M. (1996). Norms, Standards, and Natural Resources. *Leisure Sciences*, (18):103- 123.
- Som, S. (1996). *Practical Sampling Techniques*, 2nd edition, M. Dekker: New York.
- Stern, P., Dietz, Th., Abel, T., Guagnano, G. & Kalof, L. (1999). A Value-Belief-Norm Theory of Support for Social Movements: The Case of Environmentalism. *Human Ecology Review*, 6(2), 81-97.
- Stern, P.C., Dietz, Th. & Kalof, L. (1993). Value Orientation, Gender, and Environmental Concern. *Environment and Behavior*, 25 (3), 322-348.
- Stern, P., Dietz, Th., Abel, T., Guagnano, G. & Kalof, L. (1999). A Value-Belief-Norm Theory of Support for Social Movements: The Case of Environmentalism. *Human Ecology Review*, 6(2), 81-97.
- Stevens, J. (2002). *Applied Multivariate Statistics for the Social Sciences*, 4th edition, Lawrence Erlbaum Associates, Publishers, London.
- Tarrant, M., Bright, D. & Cordell, H. (1997). Attitudes Toward Wildlife Species Protection: Assessing Moderating and Mediating Effects in the Value-Attitude Relationship. *Human Dimensions of Wildlife*, 2(2):1-20.
- Timothy, D. & Boyd S. (2003). *Heritage Tourism*. Pearson Education, London.

- Van Liere, K.D. & Dunlap R.E. (1978). Moral Norms and Environmental Behavior: An Application of Schwartz's Norm-Activation Model to Yard Burning. *Journal of Applied Social Psychology*, 8 (2), 174-188.
- Vaske, J., Covey, D., Donnelly, M. (undated). A Norm Activation Model of Responsible Environmental Behavior. (Unpublished).
- Vaske, J., & Donnelly. (1999). A Value-Attitude-Behavior Model Predicting Wildland Preservation Voting Intentions. *Society and Natural Resources*, 12, 523-537.
- Vaske, J., Shelby, B., Graefe, A., Heberlein, T. (1986). Backcountry Encounter Norms: Theory, Method and Empirical Evidence. *Journal of Leisure Research*, 18:137-153.
- Waheeb, M. (1999). Wadi al-Khrrar Archaeological Project: The Monastery. *Annual of Department of Antiquities of Jordan*, XLIII, 549-557.
- Waheeb, M. (2001a). Wadi al-Khrrar Archaeological Project (al-Maghtas). *Studies in the History and Archaeology of Jordan*, VII, 591-600.
- Waheeb, M. (2001b). Excavations at Wadi el-Kharrar. *Bible and Spade*, 14(2), 43-53.
- Wildesen, L. (1982). The Study of Impacts to Archaeological Sites. In *Advances in Archaeological Method and Theory, Volume 5*, edited by Schiffer, M., 51-96. Academic Press, New York.
- Yunis, E. (2000). Cultural Heritage Tourism and Sustainable Development. In *Cultural Heritage and Tourism Development: A Report on the International Conference on Cultural Tourism*, World Tourism Organization, Madrid, Spain.
- Zayadine, F. (1997/8). Excavations on the Upper Citadel of Amman: Area A (1975 & 1977). *Annual of Department of Antiquities of Jordan*, XXII, 20-56.

APPENDIX 1: THE SURVEY INSTRUMENT

The Department of Natural Resources Recreation and Tourism in Colorado State University is conducting this study to understand the behavior of visitors in archaeological sites. Your participation and responses are totally voluntary; your responses will be anonymous.

Section 1: To what degree do you agree or disagree with the following statements about actions that take place in archaeological sites:

	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
Littering has a negative effect on archaeological sites	1	2	3	4	5
Littering has a negative effect on the aesthetic value of archaeological sites	1	2	3	4	5
Stepping on sensitive areas as floors and loose parts in archaeological sites will cause to damage them	1	2	3	4	5
Picking up artifacts (like pottery pieces) hinders archaeological information	1	2	3	4	5
Digging (even the first centimeters) of the archaeological site's surface will damage its archaeological value	1	2	3	4	5
Climbing on monuments causes damage to the archaeological site	1	2	3	4	5
Touching decorative elements as carvings and inscription will ultimately cause them to disappear overtime	1	2	3	4	5
Painting destroys monuments' surfaces in archaeological sites	1	2	3	4	5

Section 2: We would like to know your feeling of responsibility toward archaeological sites, please circle the response that shows your feeling about each of these statements:

	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
I feel a strong responsibility toward protecting archaeological sites	1	2	3	4	5
I am responsible for protecting archaeological sites for the future generations	1	2	3	4	5
I feel an obligation to educate others about the importance of archaeological sites	1	2	3	4	5
Protecting archaeological sites is the responsibility of every individual	1	2	3	4	5

Section 3: We should like to know about your willingness to do some actions when you visit archaeological sites, please show the extent to which each statement will describe this willingness:

	1 I will never do it	2 I will do it sometimes	3 I will do it whenever it is possible	4 I will do it most of the times	5 I will do it in all cases
Willing to tell any concerned authority about any finds within your property					
Willing to avoid littering	1	2	3	4	5
Willing to walk in designated accesses	1	2	3	4	5
Willing to leave artifacts and archaeological finds without picking them up	1	2	3	4	5
Willing to avoid climbing on monuments and features of the archaeological sites	1	2	3	4	5
Willing to avoid painting in archaeological sites	1	2	3	4	5
Willing to avoid digging (even the first centimeters) of the topsoil in a site	1	2	3	4	5
Willing to tell any concerned authority about any finds outside your property	1	2	3	4	5

Section 4: Please circle the answer that reflects the ways you think archaeological sites are important:

	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
Archaeological sites are valuable only if they produce jobs and income for people	1	2	3	4	5
The real value of archaeological site comes from creating places for education	1	2	3	4	5
The real value of archaeological sites comes from creating a source of information to archaeologists	1	2	3	4	5
Archaeological sites should be preserved for future generations	1	2	3	4	5
Archaeological sites have the same rights as natural resources to preserved	1	2	3	4	5
We should regulate tourism if it affects archaeological sites negatively	1	2	3	4	5
Sensitive sites should be protected even if that means restricting the number of visitors to the site	1	2	3	4	5
We should spend money to protect archaeological sites	1	2	3	4	5

Section 5: The following are situations that might be possible to exist in archaeological sites, how often you think these situations should occur? (Please circle your response):

	Should never	Should occur sometimes	No obligation	Should occur when possible	Should always
• Guides should be more aware about the protection of archaeological sites	1	2	3	4	5
• Tourists should be careful about their behavior within archaeological sites	1	2	3	4	5
• Locals should be careful about their behavior within archaeological sites	1	2	3	4	5
• The Department of Antiquities should promote more for protecting archaeological sites	1	2	3	4	5
• The Department of Antiquities should give more information about the importance of archaeological sites	1	2	3	4	5

Section 6: This section includes some actions that might be done by some individuals while visiting archaeological sites, please circle the response that reflects your behavior that you have been and still doing while visiting the archaeological sites, you might have done these actions without recognizing their consequences, or even feeling any kind of responsibility while doing them, and it is okay, we just need to know the situation in those sites, your responses will be treated as confidential and will not be tracked down:

	I never did it	I did it few times	I did it whenever it was possible	I did it most of the times	I did it all the times
Behavior of littering	1	2	3	4	5
Behavior of walking in designated accesses	1	2	3	4	5
Behavior of stepping on floors and loose parts in archaeological sites	1	2	3	4	5

APPENDIX 2: DESCRIPTIVE ANALYSES FOR RESPONSES TO THE STUDY

Littering has a negative effect on archaeological sites

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1 Strongly Disagree	76	14.8	14.9	14.9
	2 Disagree	12	2.3	2.4	17.3
	3 Neutral	17	3.3	3.3	20.6
	4 Agree	97	18.9	19.1	39.7
	5 Strongly Agree	307	60.0	60.3	100.0
	Total	509	99.4	100.0	
Missing	9	3	.6		
Total		512	100.0		

Littering has a negative effect on the aesthetic value of archaeological sites

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1 Strongly Disagree	57	11.1	11.2	11.2
	2 Disagree	9	1.8	1.8	13.0
	3 Neutral	12	2.3	2.4	15.4
	4 Agree	120	23.4	23.6	39.0
	5 Strongly Agree	310	60.5	61.0	100.0
	Total	508	99.2	100.0	
Missing	9	4	.8		
Total		512	100.0		

Stepping on sensitive areas as floors and loose parts in archaeological sites will cause damage to them

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1 Strongly Disagree	51	10.0	10.3	10.3
	2 Disagree	11	2.1	2.2	12.5
	3 Neutral	47	9.2	9.5	21.9
	4 Agree	158	30.9	31.8	53.7
	5 Strongly Agree	230	44.9	46.3	100.0
	Total	497	97.1	100.0	
Missing	9	15	2.9		
Total		512	100.0		

Picking up artifacts (like pottery pieces) hinders archaeological information

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1 Strongly Disagree	43	8.4	8.5	8.5
	2 Disagree	31	6.1	6.1	14.6
	3 Neutral	56	10.9	11.1	25.7
	4 Agree	176	34.4	34.8	60.5
	5 Strongly Agree	200	39.1	39.5	100.0
	Total	506	98.8	100.0	
Missing	9	6	1.2		
Total		512	100.0		

Digging (even the first centimeters) of the archaeological site's surface will damage its archaeological value

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1 Strongly Disagree	54	10.5	10.7	10.7
	2 Disagree	29	5.7	5.7	16.4
	3 Neutral	67	13.1	13.2	29.6
	4 Agree	174	34.0	34.3	63.9
	5 Strongly Agree	183	35.7	36.1	100.0
	Total	507	99.0	100.0	
Missing	9	5	1.0		
Total		512	100.0		

Climbing on monuments causes damage to archaeological site

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1 Strongly Disagree	43	8.4	8.5	8.5
	2 Disagree	44	8.6	8.7	17.2
	3 Neutral	84	16.4	16.6	33.7
	4 Agree	181	35.4	35.7	69.4
	5 Strongly Agree	155	30.3	30.6	100.0
	Total	507	99.0	100.0	
Missing	9	5	1.0		
Total		512	100.0		

Touching decorative elements as carvings and inscriptions will ultimately cause them to disappear overtime

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1 Strongly Disagree	42	8.2	8.3	8.3
	2 Disagree	55	10.7	10.9	19.2
	3 Neutral	53	10.4	10.5	29.6
	4 Agree	179	35.0	35.4	65.0
	5 Strongly Agree	177	34.6	35.0	100.0
	Total	506	98.8	100.0	
Missing	9	6	1.2		
Total		512	100.0		

Painting destroys monuments' surfaces in archaeological sites

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1 Strongly Disagree	39	7.6	7.7	7.7
	2 Disagree	24	4.7	4.7	12.5
	3 Neutral	45	8.8	8.9	21.3
	4 Agree	165	32.2	32.6	54.0
	5 Strongly Agree	233	45.5	46.0	100.0
	Total	506	98.8	100.0	
Missing	9	6	1.2		
Total		512	100.0		

I feel a strong responsibility toward protecting archaeological sites

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1 Strongly Disagree	10	2.0	2.0	2.0
	2 Disagree	15	2.9	3.0	5.0
	3 Neutral	57	11.1	11.3	16.3
	4 Agree	177	34.6	35.2	51.5
	5 Strongly Agree	244	47.7	48.5	100.0
	Total	503	98.2	100.0	
Missing	9	9	1.8		
Total		512	100.0		

I am responsible for protecting archaeological sites for future generations

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1 Strongly Disagree	10	2.0	2.0	2.0
	2 Disagree	17	3.3	3.4	5.3
	3 Neutral	59	11.5	11.7	17.0
	4 Agree	185	36.1	36.6	53.7
	5 Strongly Agree	234	45.7	46.3	100.0
	Total	505	98.6	100.0	
Missing	9	7	1.4		
Total		512	100.0		

I feel an obligation to educate others about the importance of archaeological sites

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1 Strongly Disagree	13	2.5	2.6	2.6
	2 Disagree	16	3.1	3.2	5.8
	3 Neutral	85	16.6	16.9	22.7
	4 Agree	197	38.5	39.2	61.8
	5 Strongly Agree	192	37.5	38.2	100.0
	Total	503	98.2	100.0	
Missing	9	9	1.8		
Total		512	100.0		

Protecting archaeological sites is the responsibility of every individual

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1 Strongly Disagree	9	1.8	1.8	1.8
	2 Disagree	15	2.9	3.0	4.8
	3 Neutral	35	6.8	7.0	11.7
	4 Agree	166	32.4	33.0	44.7
	5 Strongly Agree	278	54.3	55.3	100.0
	Total	503	98.2	100.0	
Missing	9	9	1.8		
Total		512	100.0		

Willingness to avoid littering

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1 I will never do it	136	26.6	26.9	26.9
	2 I will be doing it sometimes	37	7.2	7.3	34.2
	3 I will do it whenever it is possible	22	4.3	4.3	38.5
	4 I will do it most of the times	64	12.5	12.6	51.2
	5 I will do it in all cases	247	48.2	48.8	100.0
	Total	506	98.8	100.0	
Missing	9	6	1.2		
Total		512	100.0		

Willingness to walk in designated accesses

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1 I will never do it	44	8.6	8.8	8.8
	2 I will be doing it sometimes	64	12.5	12.8	21.6
	3 I will do it whenever it is possible	39	7.6	7.8	29.3
	4 I will do it most of the times	114	22.3	22.8	52.1
	5 I will do it in all cases	240	46.9	47.9	100.0
	Total	501	97.9	100.0	
Missing	9	11	2.1		
Total		512	100.0		

Willingness to leave artifacts and archaeological finds without picking them up

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1 I will never do it	100	19.5	20.4	20.4
	2 I will be doing it sometimes	43	8.4	8.8	29.1
	3 I will do it whenever it is possible	52	10.2	10.6	39.7
	4 I will do it most of the times	77	15.0	15.7	55.4
	5 I will do it in all cases	219	42.8	44.6	100.0
	Total	491	95.9	100.0	
Missing	9	21	4.1		
Total		512	100.0		

Willingness to avoid climbing on monuments and features of the archaeological sites

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1 I will never do it	109	21.3	22.3	22.3
	2 I will be doing it sometimes	47	9.2	9.6	32.0
	3 I will do it whenever it is possible	59	11.5	12.1	44.1
	4 I will do it most of the times	105	20.5	21.5	65.6
	5 I will do it in all cases	168	32.8	34.4	100.0
	Total	488	95.3	100.0	
Missing	9	24	4.7		
Total		512	100.0		

Willingness to avoid painting in archaeological sites

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1 I will never do it	144	28.1	28.8	28.8
	2 I will be doing it sometimes	27	5.3	5.4	34.2
	3 I will do it whenever it is possible	35	6.8	7.0	41.2
	4 I will do it most of the times	64	12.5	12.8	54.0
	5 I will do it in all cases	230	44.9	46.0	100.0
	Total	500	97.7	100.0	
Missing	9	12	2.3		
Total		512	100.0		

Willingness to avoid digging (even the first centimeters) of the topsoil in a site

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1 I will never do it	148	28.9	29.7	29.7
	2 I will be doing it sometimes	30	5.9	6.0	35.7
	3 I will do it whenever it is possible	28	5.5	5.6	41.3
	4 I will do it most of the times	81	15.8	16.2	57.5
	5 I will do it in all cases	212	41.4	42.5	100.0
	Total	499	97.5	100.0	
Missing	9	13	2.5		
Total		512	100.0		

Willingness to tell any concerned authority about any finds outside your property

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1 I will never do it	56	10.9	11.1	11.1
	2 I will be doing it sometimes	41	8.0	8.1	19.2
	3 I will do it whenever it is possible	76	14.8	15.0	34.3
	4 I will do it most of the times	93	18.2	18.4	52.7
	5 I will do it in all cases	239	46.7	47.3	100.0
	Total	505	98.6	100.0	
Missing	9	7	1.4		
Total		512	100.0		

Willingness to tell any concerned authority about any finds inside your property

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1 I will never do it	65	12.7	12.8	12.8
	2 I will be doing it sometimes	52	10.2	10.3	23.1
	3 I will do it whenever it is possible	54	10.5	10.7	33.8
	4 I will do it most of the times	102	19.9	20.2	54.0
	5 I will do it in all cases	233	45.5	46.0	100.0
	Total	506	98.8	100.0	
Missing	9	6	1.2		
Total		512	100.0		

Archaeological sites are valuable only if they produce jobs and income for people

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1 Strongly Disagree	160	31.3	31.4	31.4
	2 Disagree	177	34.6	34.7	66.1
	3 Neutral	52	10.2	10.2	76.3
	4 Agree	61	11.9	12.0	88.2
	5 Strongly Agree	60	11.7	11.8	100.0
	Total	510	99.6	100.0	
Missing	9	2	.4		
Total		512	100.0		

The real value of archaeological sites comes from creating places for education

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1 Strongly Disagree	20	3.9	3.9	3.9
	2 Disagree	23	4.5	4.5	8.5
	3 Neutral	76	14.8	15.0	23.4
	4 Agree	227	44.3	44.7	68.1
	5 Strongly Agree	162	31.6	31.9	100.0
	Total	508	99.2	100.0	
Missing	9	4	.8		
Total		512	100.0		

The real value of archaeological sites comes from creating a source of information to archaeologists

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1 Strongly Disagree	14	2.7	2.8	2.8
	2 Disagree	32	6.3	6.3	9.1
	3 Neutral	81	15.8	16.1	25.2
	4 Agree	213	41.6	42.3	67.5
	5 Strongly Agree	164	32.0	32.5	100.0
	Total	504	98.4	100.0	
Missing	9	8	1.6		
Total		512	100.0		

Archaeological sites should be preserved for future generations

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1 Strongly Disagree	13	2.5	2.6	2.6
	2 Disagree	7	1.4	1.4	4.0
	3 Neutral	37	7.2	7.3	11.3
	4 Agree	145	28.3	28.7	40.0
	5 Strongly Agree	303	59.2	60.0	100.0
	Total	505	98.6	100.0	
Missing	9	7	1.4		
Total		512	100.0		

Archaeological sites have the same rights as natural resources to be preserved

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1 Strongly Disagree	14	2.7	2.8	2.8
	2 Disagree	12	2.3	2.4	5.3
	3 Neutral	49	9.6	9.9	15.2
	4 Agree	168	32.8	34.1	49.3
	5 Strongly Agree	250	48.8	50.7	100.0
	Total	493	96.3	100.0	
Missing	9	19	3.7		
Total		512	100.0		

We should regulate tourism if it affects archaeological sites negatively

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1 Strongly Disagree	15	2.9	3.0	3.0
	2 Disagree	23	4.5	4.6	7.5
	3 Neutral	65	12.7	12.9	20.4
	4 Agree	192	37.5	38.1	58.5
	5 Strongly Agree	209	40.8	41.5	100.0
	Total	504	98.4	100.0	
Missing	9	8	1.6		
Total		512	100.0		

Sensitive sites should be protected even if that means restricting the number of visitors to the site

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1 Strongly Disagree	22	4.3	4.4	4.4
	2 Disagree	36	7.0	7.2	11.6
	3 Neutral	84	16.4	16.8	28.4
	4 Agree	172	33.6	34.4	62.8
	5 Strongly Agree	186	36.3	37.2	100.0
	Total	500	97.7	100.0	
Missing	9	12	2.3		
Total		512	100.0		

We should spend money to protect archaeological sites

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1 Strongly Disagree	29	5.7	5.7	5.7
	2 Disagree	25	4.9	4.9	10.6
	3 Neutral	58	11.3	11.4	21.9
	4 Agree	188	36.7	36.8	58.7
	5 Strongly Agree	211	41.2	41.3	100.0
	Total	511	99.8	100.0	
Missing	9	1	.2		
Total		512	100.0		

Guides should be more aware about the protection of archaeological sites

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1 Should never	18	3.5	3.6	3.6
	2 Should occur sometimes	19	3.7	3.7	7.3
	3 No obligation	22	4.3	4.3	11.6
	4 Should occur when possible	89	17.4	17.6	29.2
	5 Should always	359	70.1	70.8	100.0
	Total	507	99.0	100.0	
Missing	9	5	1.0		
Total		512	100.0		

Tourists should be careful about their behavior within archaeological sites

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1 Should never	11	2.1	2.2	2.2
	2 Should occur sometimes	19	3.7	3.7	5.9
	3 No obligation	28	5.5	5.5	11.4
	4 Should occur when possible	134	26.2	26.3	37.7
	5 Should always	317	61.9	62.3	100.0
	Total	509	99.4	100.0	
Missing	9	3	.6		
Total		512	100.0		

Locals should be careful about their behavior within archaeological sites

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1 Should never	6	1.2	1.2	1.2
	2 Should occur sometimes	23	4.5	4.6	5.8
	3 No obligation	26	5.1	5.2	11.0
	4 Should occur when possible	120	23.4	24.1	35.1
	5 Should always	323	63.1	64.9	100.0
	Total	498	97.3	100.0	
Missing	9	14	2.7		
Total		512	100.0		

The Dept. of Antiquities should promote more for protecting archaeological sites

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1 Should never	9	1.8	1.8	1.8
	2 Should occur sometimes	12	2.3	2.4	4.2
	3 No obligation	31	6.1	6.2	10.3
	4 Should occur when possible	116	22.7	23.1	33.4
	5 Should always	335	65.4	66.6	100.0
	Total	503	98.2	100.0	
Missing	9	9	1.8		
Total		512	100.0		

The Dept. of Antiquities should give more information about the importance of archaeological sites

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1 Should never	12	2.3	2.4	2.4
	2 Should occur sometimes	13	2.5	2.6	4.9
	3 No obligation	27	5.3	5.3	10.3
	4 Should occur when possible	117	22.9	23.1	33.3
	5 Should always	338	66.0	66.7	100.0
	Total	507	99.0	100.0	
Missing	9	5	1.0		
Total		512	100.0		

Behavior of littering

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1 I never did it	332	64.8	66.0	66.0
	2 I did it few times	93	18.2	18.5	84.5
	3 I did it whenever it was possible	26	5.1	5.2	89.7
	4 I did it most of the times	23	4.5	4.6	94.2
	5 I did it all the time	29	5.7	5.8	100.0
	Total	503	98.2	100.0	
Missing	9	9	1.8		
Total		512	100.0		

Behavior of walking in designated accesses

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1 I never did it	149	29.1	30.5	30.5
	2 I did it few times	120	23.4	24.5	55.0
	3 I did it whenever it was possible	66	12.9	13.5	68.5
	4 I did it most of the times	68	13.3	13.9	82.4
	5 I did it all the time	86	16.8	17.6	100.0
	Total	489	95.5	100.0	
Missing	9	23	4.5		
Total		512	100.0		

Behavior of stepping on floors and loose parts in archaeological sites

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1 I never did it	282	55.1	58.1	58.1
	2 I did it few times	87	17.0	17.9	76.1
	3 I did it whenever it was possible	48	9.4	9.9	86.0
	4 I did it most of the times	41	8.0	8.5	94.4
	5 I did it all the time	27	5.3	5.6	100.0
	Total	485	94.7	100.0	
Missing	9	27	5.3		
Total		512	100.0		

Behavior of picking up artifacts as pottery pieces

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1 I never did it	344	67.2	69.2	69.2
	2 I did it few times	78	15.2	15.7	84.9
	3 I did it whenever it was possible	26	5.1	5.2	90.1
	4 I did it most of the times	28	5.5	5.6	95.8
	5 I did it all the time	21	4.1	4.2	100.0
	Total	497	97.1	100.0	
Missing	9	15	2.9		
Total		512	100.0		

Behavior of climbing on monuments in archaeological sites

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1 I never did it	280	54.7	57.5	57.5
	2 I did it few times	108	21.1	22.2	79.7
	3 I did it whenever it was possible	39	7.6	8.0	87.7
	4 I did it most of the times	35	6.8	7.2	94.9
	5 I did it all the time	25	4.9	5.1	100.0
	Total	487	95.1	100.0	
Missing	9	25	4.9		
Total		512	100.0		

Behavior of touching decorative elements as carvings and inscriptions

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1 I never did it	260	50.8	52.5	52.5
	2 I did it few times	138	27.0	27.9	80.4
	3 I did it whenever it was possible	38	7.4	7.7	88.1
	4 I did it most of the times	37	7.2	7.5	95.6
	5 I did it all the time	22	4.3	4.4	100.0
	Total	495	96.7	100.0	
Missing	9	17	3.3		
Total		512	100.0		

Behavior of using paint in archaeological sites

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1 I never did it	399	77.9	80.0	80.0
	2 I did it few times	26	5.1	5.2	85.2
	3 I did it whenever it was possible	35	6.8	7.0	92.2
	4 I did it most of the times	19	3.7	3.8	96.0
	5 I did it all the time	20	3.9	4.0	100.0
	Total	499	97.5	100.0	
Missing	9	13	2.5		
Total		512	100.0		

APPENDIX 3: THE LAW OF ANTIQUITIES IN JORDAN/1988

The Antiquities Law **Law no. 21 for the year 1988** (Provisional Law No. 12 for the year 1976 – 1989)

Chapter One Definitions and General Provisions

Article 1

This law shall be cited as the antiquities Law, 1976, and shall come into force from the date of its publication in the Official Gazette.

Article 2

The following words and expressions shall have the meanings hereinafter assigned to them, unless the context otherwise requires:

- 1- Minister: The Minister of Tourism and Antiquities
- 2- Department: The Department of Antiquities
- 3- Director: The Director General of Antiquities
- 4- Antiquity:

A- Any object, whether movable or immovable, which has been constructed, shaped, inscribed, erected, excavated, or otherwise produced or modified by humankind earlier than the year 1700 A.D. including caves, sculpture, coins, pottery, manuscripts and all sorts of artefact that indicate the rise and development of sciences, arts, manufactures, religions, and traditions relating to previous cultures, or any part added thereto, reconstructed or restored at a later date.

B- Any object, movable or immovable, as defined in the previous subsection referring to a date subsequent to the year 1700 A.D., which the Minister may declare to be antique by order published in the Official Gazette.

C- Human, plant and animal remains going back to a date earlier than the year 600 A.D.

5-Archaeological Site:

A- Any area in the Kingdom which has been held as a historical site in accordance with previous laws.

B- Any other area which the Minister decides contains antiquities, or is associated with important historical events; provided such decision is published in the Official Gazette.

6- Immovable Antiquities:

Are the stable antiquities which are connected to the earth, whether constructed thereon or buried therein including those under inland and territorial waters.

7- Movable Antiquities:

Are the antiquities which are disconnected from the earth or from immovable antiquities and can be displaced without damaging it or damaging the antiquities linked therewith or the place where it was discovered.

8- Excavating:

Is the act of digging, exploring, and investigating with the aim of finding movable or

immovable antiquities. Accidental finding of antiquities does not constitute excavation.

9- Dealer:

Any person, whether natural or legal, who trades with antiquities.

10- The Season:

A certain period of the year within which it is conditional that excavations should proceed and terminate in accordance with the provisions of this law, excavations should proceed and terminate in accordance with the provisions of this law.

Article 3

A. The Department shall assume the following missions and responsibilities:

- 1- To execute the archaeological policy of the State.
- 2- To estimate the archaeological value of antiquities and sites and to evaluate the importance of each antiquity.
- 3- To administer antiquities in the Kingdom, supervise, protect, maintain, record, beautify the vicinities thereof and exhibit them.
- 4- To propagate archaeological culture and establish archaeological institutes and museums.
- 5- To excavate for antiquities in the Kingdom.
- 6- To assist in the organization of the various museums attached to governmental activities in the Kingdom; including historical, technical and folkloric museums.
- 7- To co-operate with local, Arab and foreign archaeological institutions for the service of national archaeological culture and consciousness; in accordance with current laws and regulations.
- 8- To supervise the possession and disposition of antiquities in accordance with the provisions of this law, and the regulations, decisions, and instructions which are issued in accordance there with.

B- The Director may decide that an antiquity is an immovable antiquity, if it is part of an immovable antiquity, or complementary thereto, connected with it, or ornamental to it.

Article 4

A- The Minister may, upon the recommendation of the Director, and in co-operation with the Department of Lands and Surveys, decided on the names and boundaries of archaeological sites, which are to be registered in the archaeological register for immovable antiquities; including the limitation of servitude's pertaining thereto.

B- Such decisions shall be notified to all authorities and governmental departments concerned and the archaeological sites shall be marked and their relative servitudes shall be recorded in the registers and maps of the Department of Lands and Surveys.

Article 5

A- The Government shall be the sole owner of immovable antiquities and no other authority shall by any means what so ever, appropriate these antiquities or raise any defences against the State by way of right of ownership, prescription or other defences.

B- Ownership of any movable antiquities, possession and disposition thereof shall

be governed by the provisions of this law.

C- Ownership of the land does not vest its owner with the right to ownership of the antiquities existing thereon and therein, or disposing with it, and does not entitle him to excavate for antiquities therein.

D- The Government may expropriate or buy any land or antiquity if it is in the interest of the Department to expropriate or buy it.

E- All the archaeological sites, hitherto registered in the name of the Treasury alone, shall be registered in the name of the Treasury/Antiquities. Likewise shall all unregistered archaeological sites which may be expropriated, or purchased, be registered.

Article 6

The Minister shall, with the approval of the Director, publish in the Official Gazette a list of the names and boundaries of the archaeological sites in the Kingdom. This list is to be exhibited at the office of the district, region, sub district, or village in which the archaeological site is situated. No land on such sites shall be sold, let or delegated to any authority without the approval of the Department.

Article 7

Any person who is in possession of any antique objects shall submit to the department, within a period of two months from the date of the coming in force of this law, a list containing the number and other details connected therewith and a short description of each of them.

Article 8

A- The Department may buy all or any, of the antique objects referred to in the previous article, and provided that their prices are all estimated according to the provisions of this law. The remaining antiquities which have not been bought by the Department shall remain in the possession of the owner, who shall have no right to dispose of them by any means whatsoever, except with the permission of the Department.

B- Any person may donate to the Department any antique objects in his possession, and such shall be preserved by the Department in its Museums in the names of the persons who donated them.

Article 9

It is forbidden to destroy, damage, disfigure or cause any harm to antiquities, including causing change in features, disconnecting and part thereof, altering it, sticking advertisements or attaching any plates to them.

Article 10

The Council of Ministers shall have the right to lend, exchange or donate antiquities to official, educational, or archaeological institutions and museums provided the Department of Antiquities has similar examples.

Article 11

The Director may determine the prices of books, publications, photos, maps,

reproductions, or casts which are issued by the Department or which fall under its control or within its scope.

Article 12

The Minister may, upon the recommendation of the Director, exempt any person, institution or organization from all taxes or prices provided for in this law.

Article 13

No permit should be granted for any construction project, including buildings and fences, unless a distance of 5 - 10 metres is left between them and any antiquity, according to the Director's decision.

Article 14

Notwithstanding the provisions of any previous law, it is forbidden for an rectory person, legal or natural, to excavate in any archaeological site; in search of gold or other objects buried therein.

Article 15

A- Any person, who discovers or finds any antiquity without being granted a license to excavate, or has knowledge of such discovery or finding, must give notice to the Director or the nearest General Security Centre within 10 days from the date of the discovery, finding, or having knowledge of it.

B- The Director may, within his discretion, grant a reasonable compensation to any person who discovers, finds or informs about any antiquity, according to the provisions of this law.

Article 16

A- Only the Department may excavate for antiquities in the Kingdom, and allow by a special permission organizations, committees, scientific societies, and archaeological missions to excavate; according to the provisions of this law, and after ascertaining their abilities and qualifications; provided the excavation is carried out according to conditions set by the Director.

B- Subject to the provisions of item (A) of the article, it is forbidden for any person, whether natural or legal, to excavate for antiquities in any location in the Kingdom, even if it were his own private property.

Article 17

A- the Department, or any party licensed to excavate, may excavate in government property or any other; on condition that the property is to be restored to the state in which it was before the excavation commenced, and the excavators shall be bound to compensate the owners of these properties for any damage caused to their property as a result thereof, and the Department shall guarantee such compensation and shall be made to stand security for it.

B- The compensation referred to in the pervious subsection of this article, shall be estimated by a committee consisting of three specialized officials, appointed by the Minister upon the recommendation of the Director.

Article 18

The Institution which has been licensed to excavate as well as the committees and missions delegated by them, shall be bound by the excavating instructions issued by the Department, and shall execute their work according to the arrangements and procedure specified by the said instructions.

Article 19

A- If an organization, licensed to excavate, or designated group delegated by it, violated the instructions issued in accordance with the provisions of this law, the Department may, in addition to the procedure determined by the law, stop the excavation immediately until the violation of the regulation is removed. The Minister may upon the recommendation of the Director, cancel the permit.

B- The Minister may, upon the recommendation of the Director, stop the excavation if he considers that the safety of the excavating mission or normal safety measures so demand.

Article 20

If the excavations do not start within one year from the date of the permit, or are stopped during two seasons within two consecutive years without reason; the Minister may, upon the recommendation of the Director, cancel the permit and may grant an excavation permit in the same area to any other organization without violating, by so doing, any rights to the first party whose permit is cancelled.

Article 21

All antiquities discovered during excavations carried out by any party shall be considered the property of the State. The Department may grant any licensed party some of the movable antiquities found in the excavation, in cases where other similar objects are found in the excavation where these were discovered, subject to the conditions and obligations imposed by the Department.

Article 22

The Department may exclusively, or in co-operation with any scientific party, excavate in any Arab or foreign country, if the Council of Ministers, upon the recommendation of the Minister, finds it necessary to do so in the public interest.

Article 23

Trading in antiquities is forbidden in the Kingdom, and all trading licenses are considered cancelled with the coming into force of this law.

Article 24

Subject to the provisions of article (23) of this law, it is forbidden to export movable antiquities abroad except with the consent of the Department, subject to the approval of the Minister allowing such sale or export.

Article 25

All those who previously dealt with antiquities, by virtue of a valid license, should hand over to the Department within two months from the date of the coming into force of this law, the registers provided for in subsection (1) of article 37 of the Antiquity law No. 26,

1968, provided they fulfil the conditions set forth in article 338 of the said law.

Article 26

A- The Department may buy some of all of the antiquities in the possession of the holder thereof, the price of which can be agreed upon with the Minister. If no agreement is reached, the price would be estimated by two experts; one of whom to be appointed by the Department and the other by the owner of the antiquities. If the two experts do not reach an agreement, they then should appoint a third expert as an umpire.

B- If the Department refrains from buying the antiquities, the owner may transfer its ownership to others; provided that such transfer takes place with the knowledge of the Department, and within a period not exceeding four months from the date of the notification of the Department's decision not to purchase the antiquity.

Article 27

A punishment by imprisonment of not less than one and not more than three years plus a penalty of 200 Dinars shall be imposed on:

A- Anyone who excavates without obtaining an excavation permit according to the provisions of this law.

B- Anyone who trades with antiquities.

Article 28

A punishment by imprisonment of not less than two months and not more than two years and a penalty of not less than thirty Dinars and not more than two hundred shall be imposed on:

A- Anyone who fails to submit to the Department a list of the antiquities in his possession on the execution of the provisions of this law, or fails to present a record of the antiquities in his possession within the period prescribed by this law

B- Destroys, damages, disfigures any antiquity, including the changing of its features, or separating a part thereof, or changing its figure or sticking any advertisement thereon, or placing plates thereon, or adding anything to its surface.

C- Falsifies any antique or attempts to forge it.

D- Forges an antique or deals with forged antiques without the permission of the Department.

E- Makes casts or reproductions of antiques and makes use of them without the permission of the Department.

F- Discovers or finds any antique, or has knowledge of the discovery or the finding thereof without reporting it according to the provisions of this law.

G- Presents any false record, or information, or incorrect documents or vouchers for the purpose of obtaining any license or permit according to the provisions of this law.

H- Refuses, or detains to deliver to the Department the antiquities which he has discovered or found; whether he is in possession of an excavation license, or not.

I- Exports or deals with any antique contrary to the provisions of this law; including hiding it or smuggling it.

Article 29

In addition to the penalties provided for in articles (27) and (28) of this law:

1- Any antiquities shall be confiscated, if the contravention is committed in connection therewith, and they become the property of the Department.

2- Any construction, building, or other things which have been constructed, made or planted, contrary to the provisions of this law, or any regulation issued there under, shall be destroyed and removed at the expense of the offender, including the cost of repairing any damage caused to the antiquity.

Article 30

For the purposes of fulfilling the provisions of this law and all regulations issued there under, the Director, his assistants, heads of sections, inspectors of antiquities, and the directors of museums in the Department shall be vested with the powers pertaining to prosecutors as provided for in the Code of Criminal Procedure in force.

Article 31

A reasonable pecuniary reward shall be granted to any person who:

A- Helps in the confiscation of any antique found or in circulation contrary to the provisions of this law, rules, regulations, instructions and decisions, issued there under.

B- Offers information which leads to the discovery of a violation to the provisions of this law, rules, regulations, and instruction, and decisions issued there under.

Article 32

A- The rewards provided for in this law shall be granted in the following manner:

1- By virtue of a decision by the Director if it does not exceed 50 Dinars, or by virtue of a decision of the Minister, upon the recommendation of the Director, if it exceeds 50 Dinars but does not exceed 100 Dinars.

2- By virtue of a decision by the Prime Minister, upon the recommendation of the Minister, if it exceeds 100 Dinars.

B- The rewards shall, in all cases, be estimated by the committee provided for in article (17) of this law or by any other committee which the Minister may appoint for the purpose.

Article 33

The Council of Ministers may issue any necessary rules for the execution of the provisions of this law including conditions and taxes for excavation, and any entry fees to museums and archaeological sites, museum guide permits, and the constitution of councils and advisory committees.

Article 34

The antiquity law No. 26 for the year 1968 is hereby repealed as well as any other law or legislation to the extent to which its provisions may be contradictory to this law; provided that regulations, decisions, schedules, and proceedings which were issued or taken under any law or previous legislation, shall remain in force until they are amended, repealed, or substituted, according to the provisions of this law.