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The Second Season of Archaeological Excavations at Umm Qais "Gadara", 2012

Mahmoud al-Roussan
Khaled al-Bashaireh

The Department of Archaeology at Yarmouk University, supported by the Department of Antiquities, completed its second season of excavations at the archaeological site of Umm Qais "Gadara" during the period between 17/6 and 27/7/2012. Excavations were supervised by Dr. Mahmoud al-Rousan in cooperation with Dr. Lamia al-Khouri and Dr. Khaled al-Bashaireh. These excavations aimed at providing the students of the Department of Archaeology training on archaeological field methods. Excavations were carried out in the eastern and the western parts of area (Z) that had remained unexcavated during the first season (2011). Seven squares in the eastern part and four squares in the western part were opened.

The work started with the removal of debris layers of dust, fallen architectural stones and decorated marble fragments of earlier structures, and broken pottery dating back to the Roman, Byzantine and Islamic periods (Umayyad, Abbasid, Ayyubid and Mamluk periods).

The most prominent finds of this season include:

1) Part of a north-west wall of a room which appeared in H7, I7 and J7 squares. The wall was built of reused limestone and basalt stones from earlier buildings and of fragments of broken columns. It is probable that this wall was built over earlier large structures of the Byzantine or Roman period.

2) A residential unit of small size which is located in OA9, OA10, OB9 and OB10 squares and was dated back to the Umayyad and Abbasid periods based on the pottery and a piece of Islamic Dirham uncovered from these squares.

3) Semi-demolished walls of 1 to 2 rows of reused stones of limestone and basalt located in the middle and eastern parts of the excavated area.

4) Part of a room paved with trimmed stones that appeared in the north-eastern half of OA10 square. The one-row north wall of this room is plastered with lime-plaster. In addition, the remnants of two basalt columns were laid in the middle of the room. The function of the two columns is still unclear since the excavations were not completed. After the removal of the balk between the OB9 and OB19 squares, a second wall of two rows appeared opposite to the north wall of the room. The method used in the building of the stones indicated that this wall was built inaccurately and randomly. It should be noted that these three walls (east, north, and west) formed a medium-sized room of a residential unit. The room and its extension were probably of Umayyad or Abbasid period based on the uncovered pottery.

5) OB9 square showed the remains of a small room where its northern wall was built with limestone stones. This room has a small and primitive semi-circular structure probably prepared for the storage of wood or animal dung, and three ovens of different sizes and thick clay walls, probably used for baking and cooking (Fig. 1).

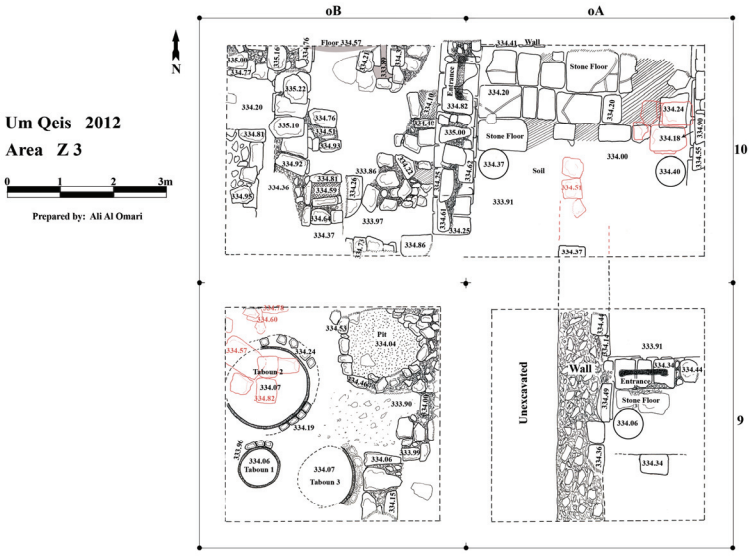

Fig. 1: Parts of the residential structure.

The Early Stage of the Excavated Area

Digging in K7 square, located at the eastern part of the excavated area, at a depth of around 125 cm, another architectural feature appeared. This feature represents the remains of a large circular building which extends into J7 square (Fig. 2). The floor of the building is paved with stones. Excavations in these squares were not completed due to the limited time; however, we hope to continue our excavations in the eastern, western and southern parts of this building in order to explore all of its remains which might represent the remnants of a church or a Roman temple built on the southern side of the colonnaded street.

The H6, H5, and J6 squares were full of debris and did not contain architectural structures. The debris comprised remnants of columns and column bases which were probably broken by earthquakes or intentionally broken and used in leveling the main area of the circular building during later periods.

The Major Finds

The prominent finds of this early period of the excavated area were the ornate marble fragments uncovered from the debris. The marbles are similar in color to the marble used in building and decorating Gadara's structures which was exported from outside the region. A number of coins were also uncovered from this stage and will be sent to the archaeometry laboratory for cleaning and preserving them. In addition, oil lambs with plant decorations were uncovered and dated back to the Roman and Byzantine periods.

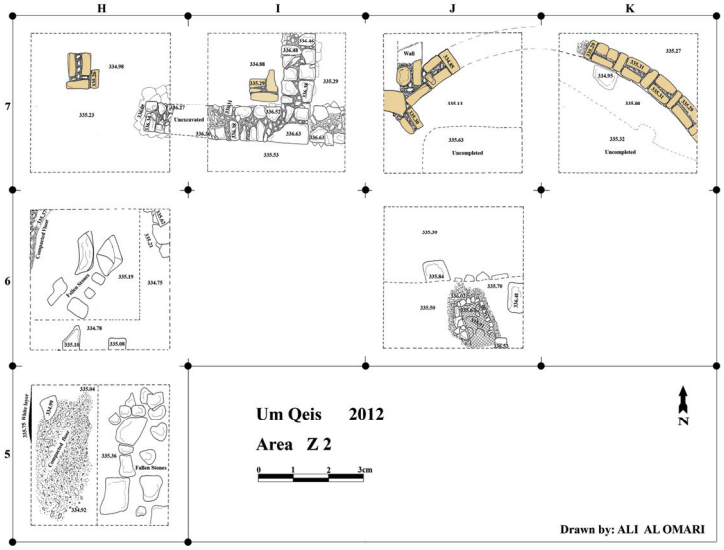

Fig. 2: A plan shows the semi-circular structure.

PROVENANCING ARCHAEOLOGICAL MATERIALS THEORIES AND ASSUMPTIONS

KHALED AL-BASHAIREH

Attempts to establish geographical or/and geological provenances of materials used by ancient man have a long history. The archaeometric goal of provenance studies is to locate the geographic and/or geologic source that provided the raw materials for building or manufacturing and carving an artifact (Rapp 1985). So, provenance is not the workshop or place of the production of artifacts, but it is the quarry, mine, or geologic layer that provided these raw materials. I will be using two terms in this short essay that carry this meaning, provenancing and sourcing. Provenience, which is used by some archaeologists to mean sourcing, has different meaning; it is the context in which the artifact was uncovered.

What Sort of Materials Have Been the Subjects of Sourcing?

A wide range of archaeological materials were subjected to provenance studies; therefore, I thought a lot of how to classify them and I found that they can be divided into: lithic and mineralogical, organic, and man-made materials (Goffer 1980; Rapp and Hill 1998; Herz 2001; Tykot 2004). In general, lithic and mineralogical materials include any kind of minerals, sedimentary, igneous or metamorphic rocks. Several kinds of stones are common in the archaeological record and were used for different purposes since antiquity. Basalt, chert and obsidian were used as flakes and blades (Williams-Thorpe 1995); marble, basalt, granite, hard sandstone and limestone, and quartzite were used for carving figurines and statues, grinding, mortars and building materials (Herz 2001); while turquoise was used for ornaments (Goffer 1980). Production processes affect the shape of stones, while their chemical and internal structures do not vary. Stones are subject to an extensive provenance studies because of their availability and stability during their production. So, the main lithic materials that were sourced include: obsidian, chert, marble, quartzite, granite, basalt, sedimentary carbonates (limestone, dolostone), sandstone, and turquoise.

The main organic materials that are sourced are amber and bitumen. Amber is a soft fossil resin of different colors (yellow to red) derived from coniferous trees. Ambers can be classified into three groups depending on their content of succinic acid and sulfur groups: succinites, high sulfur amber and retinitis (Lambert 1997; Herz 2001). Amber was used since prehistoric times for ornaments when people believed that it was a sunlight solidified by sea waves (Goffer 1980). Bitumen is a petroleum product that oozes from the earth as a tarry material. Use of bitumen goes back to 36,000 years, stone tools from Umm-el-Tlel in Syria were recovered containing bitumen residues (Lambert 1997).

Man-made materials include pottery, glass, and metals. These materials are not found in nature, their manufacture needs systematic procedures beginning with, for example in pottery, the selection of the raw materials, preparation and mixing, shaping, decoration, then firing. As we will see later, because of

these processes, sourcing of man-made materials is more problematic than the other two groups mentioned above.

Theories and Assumptions of Sourcing Archaeological Materials

The general theory to artifact sourcing is to build a database of distinct physical or/and chemical properties (or fingerprints) of all possible sources of the samples under investigation, analyze the samples for the same properties and then correlate and assign a source to which these samples belong (Malyk-Selivanova, *et al*. 1998; Rapp and Hill 1998; Herz 2001). In order to build such a database, all of the possible sources should be identified; therefore, the regions surrounding the location of the samples should be surveyed geologically in order to locate and map probable sources and determine their limits. It is worth saying that in some regions (and for specific materials), basic databases are built and ready for use. Databases of trace elements, petrographic features, and stable isotopes of oxygen and carbon of white marble of the Mediterranean region are well established (Herz 1987; Gorgoni, *et al*. 2002).

A successful process for sourcing a material should satisfy some general assumptions, although the degree of satisfaction might vary from one material to another. Herz and Garrison (1998), Wilson and Pollard (2001) and Tykot (2003) discussed these assumptions in detail:

First, all possible sources must be located.

Second, the most necessary assumption, the physical or/and chemical characteristic (fingerprint) of the source was carried without any change into the finished object (artifact).

Third, the fingerprint in both of the source and artifacts can be measured with sufficient precision using appropriate analytical methods.

Fourth, the fingerprint must vary between the geological sources.

Fifth, the fingerprint available must be uniform throughout the artifact, over the quarry, and hopefully within the limits of a mining or quarrying district.

Sixth, the fingerprint was not affected after deposition of an artifact or during its exposure to air and water. In case of provenancing an altered artifact after deposition, the alteration must be detectable and measurable.

Seventh, the raw materials were not mixed during transportation, production processes, or by recycling of material as in metal production.

Eighth, observed patterns of trade or exchange of artifacts should be interpreted in terms of human behavior.

I think, I should add one more important assumption; the extension of the source is limited. Sourcing in the case of unlimited quarries will have no meaning, since one looks for a certain place from which the artifact was brought.

Major Problems

One of the main problems in assigning a fingerprint for a certain material is the overlapping of the sources' fingerprint values. In general, more sources imply more overlapping between these values. This, for example, could explain the fact that one single fingerprint can not discriminate the provenance of a marble artifact (Al-Bashaireh 2011), since marble had many sources in antiquity which makes it difficult to separate them. On the contrary, obsidian has limited number of ancient sources; therefore, it is not too much difficult to provenance obsidian artifacts (William-Thorpe 1995). A second problem is that the artifacts did not retain the fingerprint during their manufacture processes or after their deposition, such as metals and pottery. I like the way in which Rapp and Hill (1998), and was touched by Killick (2001), classified provenancing of archaeological materials

into three groups depending on the difficulty of this process.

Lithics, minerals, native copper, and amber are easily provenanced because they do not require chemical processing during their carving into artifacts which could alter their chemical properties. Archaeological materials such as pottery, that require several production steps, including quarrying the clay and temper, sieving, mixing of clay and temper, shaping and then firing are difficult to be provenanced. It is difficult to find a clear fingerprint that passed from the raw materials to this new product (Whitbread 2001; Wilson and Pollard 2001). The third group includes materials made through more advanced processes and changes, like the ores of copper which need mining, smelting with fuels and fluxes which splits the materials into copper metal and slag, while in other cases they were also recycled and alloyed. Thus, all of these processes complicate their provenance determination. In addition to this problem, the corrosion of metals after deposition and the rarity of ore deposits make tracing a fingerprint in a metal back to the raw material not easy. Therefore, researchers searched for other fingerprints like isotopic composition that passes through the artifacts without changes.

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Master Theses

Defended at the Faculty of Archaeology and Anthropology

2012/2013/2014

The Tribal Social Structure and Communities Development An Anthropological Study of the Mansheat al-Ghiath Village-North East Badia

Abdullah al-Sardiah

Supervisor: Dr. Mohammad al-Tarawneh

This Study discusses the tribal social structure and development of the village of Mansheat al-Ghiath-Northern East Badia- in order to determine the main problems and difficulties facing development processes in the region and propose suitable strategies for economic and social developments of the village.

The study used some anthropological approaches to investigate the social structure of the tribal community focusing on the kinship system traditions, economic and political relations and the status of the education and health. The study showed that dominates these formats from the monotony and slow rhythms in the field of social change, and dominated by traditional nature, they dominated formats tribe traditions and values and subject to the existing political authority.

The study found that the tribal social structure has impacted negatively in advancing development processes in the region and limited the optimum exploitation of resources and development potential available and the state's economic projects and services. It also weakened the contribution of the government's efforts in the development of society and the role of the residents in the development process.

The Coins of Abbasid Caliph al-Mu'tadid Billah (279-289H/892-902D) Found in Various Jordanian Museums and Private Collections A Descriptive Comparative Study

Nasri al-'Azzam

Supervisor: Prof. Dr. Zeidoun al-Muheisen

This thesis aims at analyzing the coins that have been issued by the caliph al-Moa'tathed bi-llah al-Abbasi (279-289 H/ 892- 902). The study examined forty-six *dinars* and forty-five *dirhams* which cover three phases of the reign of al-Moa'tathed bi-llah al-Abbasi. The first represents the coins that were issued by al-Mou'tathed bi-llah during his time of rule under the name Ahmed bin Mouffaq. The second represents his control after being a caliph, while the third includes coins issued by the revolutionaries, and those that were

issued by the governors of the regions by the name of the caliph al-Mou'tathed bi-llah.

The research included a brief study about the political, economic, cultural, and religious conditions of the Abbasid country during al-Mou'tathed bi-llah's reign, showing its effect on the coins issued that time. The research pointed out the technical and minting methods for issuing the coins, the sources of silver and gold, the important striking centers and the slogans that appeared on the Islamic monetary system and names that goes back to that time.

The Analysis of Animal Remains from the Iron Age of Tell Abu al-Kharaz, Seasons 2008, 2009 and 2010

Asma al-Lboon

Supervisor: Dr. Abdel-Halim al-Shyiab

The thesis studies animal remains, dating back to the Iron Age I and II, excavated from Tell Abu al-Kharaz, during 2008, 2009 and 2010 seasons. Through the study, the researcher was able to classify and analyze (2389) animal bone samples belonging to the following species: sheep, goats, cattle, gazelles, horses, pigs, and carnivores (dogs and cats). Sheep and goats were predominant in that period, constituting a range of circa 84.9%, while cattle were ranked second with 14.3%, followed by carnivores - dogs and cats - with 0.29%, horses with 0.08%, gazelles with 0.04%, and pigs with 0.02%.

The researcher concluded that people of Tell Abu al-Kharaz depended first on sheep\goat for meat, followed by cattle. Also, the results showed that the animals had been in good health with the exception of fractures, and with no appearance of disease in the bones. As is clarified in the study, the community of Tell Abu al-Kharaz preferred to consume male meat, which is reflected by the appearance and the dominance of young in the studied sample. The epiphysis was separated from the diaphysis of the animals, and the community of Tell Abu al-Kharaz relied highly on males in their food of sheep, goats and cows. This practice allowed them to maintain reproduction among their domesticated animals.

The study found that burns were visible on animal bones in multiple colors, which showed that people were cooking food on high temperatures. The study then did not show any damage to the bones. Cut marks were clear on some bones that had been diagnosed. Random cracking remained on some samples, which leads us to the occurrence of bone marrow absorption in the .site, and especially on the long bones

Military Organizations Nabataean [sic] through Archaeological Discoveries

Bahaeddin al-Hawari

Supervisor: Prof. Dr. Zeidoun al-Muheisen

This study examined Nabataean military organizations during the period 312 BC - AD 106. It was divided into four chapters: the first chapter dealt with a historical overview of the Nabataeans until their annexation by the Romans. The second chapter dealt with the Nabataean army. The third chapter talked about military leadership and its importance in achieving victory. The fourth chapter indicated that the military organizations of the Nabataeans not only included the Nabataean army but also the defensive structures found within cities that entered under the Nabataean's control at that time. This chapter also talked about the Nabataean defensive sites. This study identified most of the sites where the Nabataeans established defensive fortifications intending to protect the borders and sites within their Kingdom.

Decorations on Classical Period Sarcophagi and their Religious Implications in Northern Jordon

Mohammad Albashtawi

Supervisor: Prof. Dr. Zeidoun al-Muheisen

The researcher worked to the study the problem of decorations on Classical period sarcophagi and their religious implications in northern Jordon. The first chapter studies the burial customs in the Classical period. The second and third chapters study the emergence of sarcophagi and the development in the ancient Near East and Greek - Roman civilizations. The fourth chapter studies the sculpture in the Greek and Roman periods. Finally, the last chapter, the fifth, studies the subject art forms and religious symbols that appeared on the classic sarcophagi from northern Jordan. In the conclusion, the researcher identified four main models of the sarcophagi that emerged during the Classical period in northern Jordan, which led him to divide them into sub-models through the human and divine figures and different animal ornamentation. These forms carried with it dimensions and symbolic thinking associated with this region and its faith, which in turn was influenced by the ideas of religious symbols both Greek and Roman.

Religion in the Southern Levant during the Iron Age I

Salam al-Waked

Supervisor: Prof. Dr. Zeidan Kafafi

This study is divided into five chapters. Chapter one gives a historical background of the political entities of the Southern Levant based on Mesopotamian texts, the local written literary sources and the Old Testament.

The Second Chapter tackles the evolution of religion from the Paleolithic until the Late Bronze Age, and points out the link between religion, art and burial customs. Man worshiped animals and represented them in the form of statues and paintings in caves and shelters. In later, advanced stages, he built temples to practice religious rituals, which varied through the ages. Man also buried the deceased with various artifacts, expressing thus his belief in life after death.

Chapter Three includes an historical overview of the religion in the southern Levant during the Iron Age I: the monotheistic divine religion and a polytheistic human religion

The Fourth Chapter discusses the temples that have been discovered in the southern Levant.

Chapter Five addresses the Canaanite deities: male gods, like El and Baal, and feminine gods, like Asherah/ Astarte and Anat. Some of these deities were of Mesopotamian or Egyptian origin. It also discusses the significant role of priesthood in the Canaanite temples.

Lower Jaw Geometric Properties of the Late Bronze Age People of Tell al-Husn and the Byzantine People of Yasileh

Bouran Obeidat

Supervisor: Dr. Mohammad Alrousan

The aim of this study was to reconstruct the paleodiet of the people of the Tell al-Husn site during the Late Bronze Age and those of Yasileh site during the Byzantine Period, depending on the analysis of the biomechanics of the lower jaw of twenty-nine samples taken from these sites in Jordan, using computer

tomography. A statistical analysis (SPSS) of the data was made. The results show an IX/IY ratio between the two sites was 0.612 and no differences among males and females in the two sites.

This result suggests a possible similarity of cultural behavior in the food process and subsistence strategies in the same region for two different periods.

Roman Pottery in the Tombs of Tubaktis

Classification and Description Study

Khadija Teeka

Supervisor: Dr. Lamia al-Khouri

This thesis presents a typological and descriptive study of 53 pottery objects that were found in a number of tombs dating to the Roman period at the archaeological site of Tubaktis. This site is located in Libya, about 210 km east of Tripoli, and about 825 km west of Benghazi. Samples were collected from four tombs: Aldafnih (1), Aldafnih and (2), Aldafnih (3), and Yider. Samples were selected from a huge amount of pottery assemblage taking into consideration the importance and diversity of their forms.

Some objects bear seals in the Latin alphabet, appearing especially often on the Terra Sigillata objects. These seals refer either to the place of manufacture or to the name of the manufacturer. Samples were divided into the following five groups: table and cooking ware, storage ware, urn ware, lamps, and unguentaria.

The study is divided into an introduction and four chapters. Chapter I: the introduction addresses the geographical and historical background of the city of Tubaktis. Chapter II deals with the tombs at Tubaktis, its burial customs and practices in addition to a summary of some of the tombs that were discovered in the city and its surroundings. Chapter III deals with Roman pottery in general and the pottery objects that were included in this study.

Chapter IV reviews the study of the technical characters of the selected objects, their description and classification of the assemblage included in the study. The study included a comparative review of similar pieces that were found in different parts of the world.

The study came to the conclusion that the pottery objects at Tubaktis showed a variety of forms. It also clarified some points concerning the economic, religious and social life of the inhabitants of the city in the Roman period.

An Anthropological Study about the Reality of NGOs in Dir Alla Province

Wael al-Khatib

Supervisor: Dr. Mohammad al-Tarawneh

National NGOs have created a reflection impossible to ignore in the nature and structure of the prevailing relations between conventional institutions at Dir Alla society, and this study came as a response to these reflections, and from a desire to understand and interpret the nature of variables that took place in this local community. In addition, this study aims at understanding the relation between these NGOs movement and activity with the government institutions it works with, and addresses the developmental side for the work of CBOs in Jordan in order to present an historical overview to understand the reality about public work in Jordan.

This study has found that the large number of NGOs resulted from the absence of the developmental and social welfare role of governmental institutions, which are considered the duties of these institutions;

NGOs have contributed to causing changes in the life of local communities, and also have contributed to the process of reorganizing the tribe within modern contexts and concepts, where these NGOs are considered a modern mean founded by the tribe to communicate with bureaucratic governmental institutions and international donor organizations; some of the activities related to the tribal divan are practiced inside these NGOs, in addition to that the elections of the NGO committees take place according to the traditional social practices that take place in municipal and parliamentary elections.

A lot of social powers seek to take control over the management of these NGOs through playing central roles in the power relations, and attempt to establish coalitions and pressure groups, especially with the growing of the new public leaderships, like activists, retired officials, and former deputies; in the middle of this movement toward occupying a strong position within the hierarchy of the power relations, government institutions seek to gain equal power by providing grants for these NGOs, and imposing laws to govern the work of these NGOs.

Femoral Cross Section Geometry from Archaeological Sites of Queen Alia International Airport (QAIA) and Wadi Faynan, Jordan Biomechanical Study

Bassam al-Husein

Supervisor: Dr. Abdel-Halim al-Shyiab

The aim of this study is to explore the activity pattern between males and females using cross sectional properties of the femur. Due to the fact that there are different activity patterns between males and females, it is expected that there will be differences in some biomechanics attributes. Examined were twenty-nine femurs of adults of both sexes in the site of QAIA and twenty femurs of adults of both genders in the site of Wadi Faynan, with a total sample of forty-nine femurs, twenty-one female femurs and twenty-eight male femurs. Osteometric boards were used to measure the length and the mid-shaft of each femur. A CT-scan was used to measure the cross sectional femoral diameter of the mid-shaft at the cortical and medullary areas, and both of them also measured anterior-posteriorly and latro-medullary. The ellipse model method (EMM) was used to estimate the contours of the medullary and cortical areas. Analysis of variance (ANOVA) one way was used to assess the significance of the difference between males and females using the ratio of bending rigidity in the Anterioposterior (AP) plane to the bending rigidity in the Mediolateral (ML) plane. The higher the ratio (AB/ML) increases resistance to external loading. The ANOVA tests show that there is a significant difference between males and females in Ix/Iy, TA, MA, CA, Ix, Iy, CA/TA%; and all p values are $< .05$. Our study revealed that loading patterns in males were more generalized and mainly exerted torsional dynamic loads rather than loading in a single plane. The total study sample has a low level of mobility evidenced by low values of mobility index, which is lower than 1. Males have more level of activity pattern than females. The mobility index could be used to compare different cultural populations but it is limited when used between males & females.

The Analysis of Human Skeletal Remains from Tell El-Husn

Yasmeen al-Taani

Supervisor: Dr. Abdel-Halim al-Shyiab

This research was conducted to study some human skeletal remains dated back to the Bronze Age found in Tell El-Husn north of Jordan. 1090 out of 1356

bones were analyzed (80.4%), only 9 males and 5 females could be identified. These remains were studied in an attempt to reconstruct the community biologically. Ages, sexes, heights, ethnicities, and diseases were estimated.

Through the analysis of sutures the ages were estimated between 31 to 52 years. Due to the lack of complete bones, only four lengths were found in the range of 166-169 cm for 3 males and 160 cm for one female, which indicate good health. Analysis of the general shape of the skull showed that the inhabitants have medium skulls (skull index is 76.89%), high skulls (length height index is 78.14% and breadth height index is 102%), medium faces (upper facial index is 53.7%), narrow noses (nasal index is 45.6%), and narrow eyes (orbital index is 85.32%). These values are only applicable for the Caucasians.

No evidence was found to the existence of dangerous diseases like tuberculosis and leprosy. In addition, the evidence showed the existence of diseases caused by everyday activity and food habits like anemia, arthritis, dental wear, and cut marks on bones. Analysis showed that 19 bones had arthritis (1.7%), 22 bones had bone deformity (2%), 9 bones had anemia (0.8%), 5 skull pieces had holes (0.5%), 6 mandible pieces had dental wear (0.55%), 2 mandible pieces had abscesses (0.18%), and 4 bones had cut marks (0.36%).

The Impact of Changing Social Value Systems on Jordanian Women's Work in Light of Globalization: An anthropological Study in Irbid Governorate

Hadeel Asharaireh

Supervisor: Dr. Mahmoud al-Na'amneh

The main objective of this study was to identify the role of globalization in changing the social value system, and its direct and indirect impact on the trend of woman's work. It focused on the changes in the various realms: economic, social, scientific and technological developments that have taken place in Jordanian society as a result of the intertwined process of globalization. Moreover, the study focused in particular on change in the family structure of society and how this change has influenced the role, status, and work of women.

The study results showed that globalization and its accompanied scientific and technological developments have greatly influenced various aspects of Jordanian society and culture, and this has led to differences in the behavior of individuals to fit these changes in order to keep up with the global culture which is characterized mainly by consumer practices.

The study is divided into five chapters. The first one introduces the research problem. The second chapter reviews the literature. The third chapter presents the ethnographic data which were collected through the fieldwork research, in addition to discussing the main social, cultural and economic changes which have taken place in the research society. The fourth chapter includes the analysis of the ethnographic by discussing the relationship between the various economic, social, and cultural changes, while the last chapter presents the main findings of this study.

Traditional Houses in Sinfha Village, Tafila: An Ethnoarchaeological Study

Wael al-Hajaj

Supervisor: Dr. Mahmoud al-Na'amneh

External courtyards are considered important architectural components as they represent a complementary element in the form of a residential unit. Various activities also are performed in these

spaces, which together reflect the general lifestyle of a people.

The main objective of this study was to investigate the courtyard in the traditional buildings of Sinfha village, which is located in Tafila governorate in Southern Jordan, and to examine the various forms and cultural functions of these courtyards. The study employed an ethnoarchaeological framework, which relied on a number of field techniques such as in-depth interviews, the symbolic-analytical approach, in addition to participant observation.

The study consists of four chapters. The first chapter presents the research problem and examines the theoretical framework cmploying the ethnoarchaeological approach and its historical development; the second chapter introduces the research site, Sinfha village, and the third chapter's special emphasis is on its traditional architecture; and the last chapter analyzes the various cultural forms and functions of the courtyard.

The study showed that there is a correlation between the courtyard shape and the economic, social and cultural changes of the local community.

Anthropological Study for the Use of Public Space in Communal Parks in the City of Irbid

Islam Bani Irshaid

Supervisor: Dr. Mahmoud al-Na'amneh

This study surveys public space in the city of Irbid through concentrating on the social, economic, political and behavioral patterns inside communal parks since they are considered to be Anthropological spaces that provide an appropriate environment for social practices and interactions.

This study was conducted in the communal parks of the southern neighborhood in Irbid as part of Greater Irbid Municipality. It lasted for nearly a year, during which many field observations and interviews with a group of visitors from both sexes and different ages were recorded.

Consequently, the study has showed that there is an array of social, economic, political and behavioral factors that led to the existence of different forms of interactive relations between the components and the visitors of the communal park, resulting in observable activities within the scope of the so-called public space.

This study consists of four chapters: the first chapter includes an introduction, the problem and the questions that are related to the study. The second chapter exhibits an ethnographic overview of communal parks in the city of Irbid. Chapter three inspects the relationship between communal parks and the economic, social, political and behavioral patterns and its impact on the visitors of the parks. The fourth chapter examines the roles of communal parks as a public space through analyzing the field of the study, its functions and the consequences of these analyses.

A Comparative Study of the Ammonite, Moabite and Edomite Deities in Jordan

Dong Hee Han

Supervisor: Prof. Dr. Zeidan Kafafi

Co-Supervisor: Dr. Omar al-Ghul

The literary sources and archaeological evidence prove that the Ammonites, Moabites and Edomites worshiped their own deities. This study examined the literary sources offering divine names of the Ammonite, Moabite and Edomite deities. Uncovered inscriptions, ostraca and written

sources among the Ammonites, Moabites and Edomites were examined. Most of the written sources contained the divine names which were also found as personal names.

First of all, the main deities of the Ammonites, Moabites and Edomites were assumed and identified. The main roles of their deities were clarified by adjective meanings and verb analysis.

In each territory of Ammon, Moab and Edom, several sanctuaries were excavated. Male and female figurines as well as bull figurines which are considered as main deities of Ammon, Moab and Edom were found.

Through a parallel study of these figurines, the main features of the deities were induced. The characteristics of the deities were described and the probable shapes of deities were assumed. The main roles of their deities were clarified by its unique features.

Eventually, the divine names, usages and features among the Ammonites, Moabites and Edomites were arranged and compared in a table.

Methods of Conservation and Restoration of Cracks Affected on the Painting Ground Layer of Oil Paintings Implemented on a Canvas Support: An Applied Study on One Selected Painting

Ahmed Bani Issa

Supervisor: Dr. Abdel Rahman Elserogy

Co- Supervisor: Dr. Mahmoud al-Quda

This study deals with the restoration methods of cracks affecting the painting ground layer of oil paintings implemented on a canvas support. The methods are applied on one of the selected paintings. The selected painting was examined using Light Transmission, Scanning Electron Microscope, Ultraviolet Radiation, Fourier Transform Infrared Spectroscopy and an X-ray Diffraction Analyzer. Restoration of the cracks was made using various materials such as water, alcohol, natural glue gel to paste, re-application of the filler on the painting ground using calcium carbonate ($CaCO_3$) and natural glue gel, and the application of smearing colors through using water acrylic colors, and Varnish layer of Paraloid B-72. The most important result was that the most important causes of cracks in oil paintings are the factors surrounding the paint such as temperature, humidity, the intervention of human activities and incorrect restorations.

Structural Analysis and Damage Assessment of an Ottoman Bridge in Jordan Toward its Conservation

Qusai al-Waked

Supervisor: Prof. Dr. Ziad al-Saad

This study focuses on the diagnostic analysis of decay and damage and the structural analysis of a 20th-century Ottoman railway bridge located in the Hejaz railway network between Zarq'a station and Marka station. It analyzes the static behavior and the seismic vulnerability of the bridge. The static structural behavior and the dynamic properties of the bridge have been evaluated using the finite element modeling technique, where the nonlinear behavior of masonry has been taken into account by proper constitutive modeling in order to understand the actual structural behavior of Ottoman masonry arch bridges.

The mapping of the weathering forms show that water and soluble salts have been the main causes of physical, chemical and biological damage to the bridge. Human ignorance and negligence have significantly contributed to the deterioration of the bridge.

The condition assessment study of the bridge including both the structural analysis and mapping of weathering and damage forms is an essential step toward the formulation of a comprehensive conservation and rehabilitation plan for this important cultural asset.

Mapping Palestine and the Politics of Archaeological Research since the 19th Century until the Middle of the 20th Century

Afaf Zeyadeh

Supervisor: Prof. Dr. Khalid Abu Ghanimeh

This thesis concerns the politics of archaeological research of Palestine since the 19th century until the middle of the 20th century. Since the invasion of Napoleon Bonaparte of Egypt and Palestine's coastline (1798-1801), the region has witnessed deep historical transformations, which contributed to reshaping Palestine. Those transformations were prompted by the competition between the imperial great powers, specifically Great Britain and France, in order to control trade routes connecting the Mediterranean and the Red Sea with India. Under these circumstances, the map went hand in hand with imperialism.

The study demonstrates that the archaeological research, from the very beginning, was engaged with politics in the colonization scheme. It used the discourse of the *Holy Land* to compile the modern map of Palestine with its boundaries and place-names. In other words, this study revealed the process in which the archaeological research played a critical role in the "invention" of an old-new Israel on maps and in reality.

Anthropology of the Book in Jordan Transformations and Prospects

Hadeel Megdady

Supervisor: Prof. Dr. Abdul Hakeem al- Husban

The study aims to investigate book status in Jordan, its spread, sectors reading books, and it also aims to study and analyze changes occurring in the book market during recent decades. It also investigates changes occurring in the book market in light of modern information systems, analyzing reading topics, habits and what types of people are the most likely to utilize modern information tools and analyzing reading habits among the Jordanian community.

Data were gained from studying the social studies dedicated for the book and reading in the community of Jordan taken from libraries, editors, exhibitions and small bookshops found on streets، and from interviews with the owners of those bookshops both in Irbid and Amman. The researcher also performed interviews with students, workers and retired people. A questionnaire was also distributed.

The study results show that the spread of books is only available in the universities. The southern region is the least populated with bookshops. The study also shows what titles and subject are of concern for males and females and for age category. The study presents four types of developments that affected the book market: technological development and political status, the rise of electronic books, the economic crisis which had a large negative effect on the book market, and the regressive education system in Jordan.

The Current Status of the Jordanian Museum Administration

Mohammad al-Rawi

Supervision: Prof. Dr. Hussein Ali Ibrahim

The study aims to investigate the status of the Jordanian museums and their structural administrative procedures compared to the ICOM standards.

The study investigated four museums: the Museum of Irbid (Dar al Saraya), Um Qais Museum, the Museum of Jordanian Heritage, Yarmouk University and the Museum of Archaeology and Museum of Heritage at the University of Jordan.

It studied the museums' sections, storage methods, show rooms, monitoring systems, the development and administrative structure of these museums and their forms of communication.

The study recommended to follow the basic rules and a comprehensive strategy in the organization of museums according to standards of ICOM.

Conservation plan for Seera Castle in Aden City, Yemen

Taha Esmail

Supervisor: Dr. Mustafa al-Naddaf

This study aims to create a conservation plan to protect, treat and manage Seera Castle that is the most famous Castle and heritage site in Aden and Yemen in general.

The study focuses on the documentation of structural elements of the Castle and determines the characteristics of the building materials. In addition determines the factors and forms of deterioration of Seera Castle.

Many tests were applied to determine the physical and mechanical properties (porosity, density, water uptake under atmospheric pressure and under vacuum) and the mineralogical characterization of materials of the building and their damage.

These tests used the following analytical techniques: X–ray diffraction, Optical microscopic and compressive strength.

According to the condition of the materials of the Castle, the study provided a conservation plan that agrees with the international codes to conserve the historical buildings. The Plan comprises two strategies: preventive and interventive treatments. Preventive strategy aims to stop and to control the causes of damage on the Castle. While Intervention treatment aims to repair and treat the forms of decay on the Castle which must be kept to a minimum level to retain the values of the Castle.

The Dirhams of the Mamluk Sultan "al-Nasir Muhammad Ibn Qalawuun" in the Light of al Husn Hoard – North Of Jordan

Muhammad Obeidat

Supervisor: Prof. Dr. Salih Sari

The aim of this study is to increase the knowledge of coins in general, and Mamluk coins of al-Nasir Muhammad Ibn Qalawuun, in particular, as well as to help clarify some issues that related to the period of the reign of Sultan al-Nasir Muhammad from all political, economic, social and technical sides. This study was based on the theoretical approach, the curriculum taxonomic through the classification of coins into categories according to their weights, then photographing and drawing coins which had

errors when they were minted, after that making a comprehensive description process to the specie such as its measurement (weight - diameter - thickness) and writings on both minted faces (obverse and reverse), in addition to emerged decorations.

What distinguishes this study is that it exclusively represented denominations of silver coins of Sultan al-Nasir Muhammad in various categories. This representation helps to give a clear image and illustration of many topics related to Mamluk coins in general, and al-Nasir Muhammad coins, in particular, where many new stripes and models of al-Nasir Muhammad coins have been recognized.

About the weights of al-Nasir Muhammad silver coins in its various categories, it was shown that there is a clear contrast between them. In addition to that, many coins have increased in weight by comparing them with the known legal and standard weight of dirham which reached 2.975g. This shows that the concern with these coins was in weight not in counting. There is also a clear contrast with the thickness of those coins too, as well as their diameters. The results of chemical analysis of the coins came close in the degree of purity, ranging between 92.967% - 96.021%.

Development of a Systematic Approach for the Detection of Copper-Based Coins Counterfeiting

Mohammad Rababah

Supervisor: Prof. Dr. Ziad al-Saad

The research aims to develop an essential systematic approach that can be applied by museums for the detection of coins faking based on solid scientific evidence. It combines physical and chemical methods in an integrated manner. Coins will be subjected to a series of tests starting with simple ones. Coins fail to pass the preliminary simple tests will be judged as fake with no further testing required. Coins pass these tests will be subjected to the next level and continue in a systematic way as long as they pass the sequential tests. Coins fail to pass any of the tests will be judged as fake. Authentic coins are expected to pass all the tests.

A collection of 23 forged and authentic Byzantine copper coins was subjected to the following tests in a sequential manner: stylistic analysis includes (observation and verification of inscriptions and figures on observe and reverse), physical analysis (weight, diameter, Specific gravity and magnetization), manufacture method analysis, chemical composition analysis of the minted coins.

The results showed that eight coins were found to be fake. The results indicate that this approach of authentication is effective and therefore it is recommended that it can be adopted and used by museums.

Laser Cleaning of Museum Artifacts An Applied Study

Maha el-Bakri

Supervisor: Dr. Abdel Rahman Elserogy

Co-Supervisor: Dr. Wasef al-Sakhayneh

Cleaning is regarded as one of the critical steps of the conservation process and ensures stabilizing and discovering the hidden details on the surface of an artifact. It is worth mentioning that it is very important to choose suitable techniques and tools to avoid damage and unwanted incidents during the cleaning process especially with fragile and irreplaceable artifacts. The current thesis is the first work in Jordan that applies Q-switched Ruby Laser technique for cleaning various

archaeological samples that typically show encrustation and corrosion. Tests were Laser cleaning that has shown good results as a cleaning tool in many material categories in conservation work.

The study is divided into five chapters; Chapter 1 includes an introduction, aims of the study, and a review of related literature. Chapter 2 includes a brief of the general principles of laser physical concepts, compares between the characteristics of the light of laser and conventional sources, illustrates the components of laser device in detail, and highlights some types of industrial laser. Chapter 3 includes the major cleaning methods in conservation field with a brief history of laser discovering, and the principle of laser cleaning process and mechanisms. Chapter 4 describes the samples and Q-switched Ruby laser and explains the applied work and the limitations of the study. Finally, chapter 5 includes the conclusions of this study with some recommendations for future researches.

New Issue

Chemistry of Archaeological Human Bones

Author: Prof. Dr. Abdulla al-Shorman.
Publisher: Deanship of Scientific Research and Graduate Studies, Yarmouk University, 2013.

This textbook is an application of the multidisciplinary approach in anthropology and archaeology. The author stresses treating the extracted chemical data from archaeological bone in a wider context to include archaeology and culture. In other words, this textbook would also be beneficial to classical anthropologists and archaeologists. In this regard, a chapter was designed to introduce the effect of pathology on bone chemistry, which is truly a guide to beginners in the field of paleopathology.

The rest of the chapters entail one element at a time, its chemical information, isotopes, uses in bioarchaeology and the theoretical background. A researcher who is interested in paleodietary reconstructions may then refer to more than one chapter of the book. A book with chapters by element is better than a book with chapters by subjects as the latter needs to elucidate more on the importance of each subject coupled with a literature review, while a reader needs to access the point directly and can formulate later his own thesis and reviews.

News of the Faculty

Conferences, Workshops and Projects

Prof. Dr. Abdel-Hakim al-Husban

Prof. Dr. al-Husban participated in the XIIth International Conference on the History and Archaeology of Jordan, Berlin-Germany, 5-11/5/2013. He presented a paper entitled *Reconciling local narratives and archaeological discourse: an empirical study to the site of Um Qais*.

Dr. Abdelraheem Ahmad

Dr. Ahmad participated in the XIIth International Conference on the History and Archaeology of Jordan, Berlin-Germany, 5-11/5/2013. He presented a paper entitled *Characterization of natural and consolidated stones from Jordan with non-destructive ultrasonic technique and physico-mechanical methods*.

Prof. Dr. Hani Hayajneh

Prof. Dr. Hayajneh participated in the workshop, "Towards a national strategy for safeguarding intangible cultural heritage" organized by the Jordanian Ministry of Culture, Amman, in 5/11/2012. He presented a paper entitled, *Challenges of safeguarding intangible cultural heritage in Jordan*.

7-10/11/2012: Prof. Dr. Hayajneh participated in a workshop under the title, "On the right track? Review meeting on UNESCO's global strategy: strengthening national capacities for safeguarding intangible cultural heritage". Beijing, China.

10-13/4/2013: He conducted an epigraphical survey in the North-East Badia, Jordan (Wadi Salhub-Qattafi Project). This project is financed by the Deanship of Scientific Research at Yarmouk University.

28/4/2013: He was invited as an expert of Intangible Cultural Heritage by the Saudi Heritage Preservation Society and the Permanent Delegation of Saudi Arabia at UNESCO to participate as a consultant in the First Assessment Workshop on the ICH of Saudi Arabia, Riyadh-Saudi Arabia.

5-11/5/2013: Prof. Dr. Hayajneh participated in the XIIth International Conference on the History and Archaeology of Jordan, Berlin-Germany. He presented a paper entitled *The Gods Mlkm, Kms and Qws in an Ancient North Arabian inscription from southeast Jordan and some thoughts on the relations of Jordan's Iron Age polities with the desert fringe*.

Prof. Dr. Hayajneh spent the period from June to August 2013 as Visiting Professor at Centrum fuer Mittel- und Nahost- Studien, Philipps-Universität, Marburg, funded by Alexander von Humboldt Scholarship for Experienced Scholars.

12/7/2013: He was invited by the Institute of Cultures and Languages of the Near East, Friedrich-Schiller-University in Jena-Germany, to present a lecture under the title *New epigraphical research in Jordan*.

8-9/9/2013: He participated in the Round Table "Burial customs in Bilad ash-Sham from Roman to Islamic times", held at the University of Jordan, Amman. The title of his paper is *Camel burials and the concept of resurrection in Arabia before Islam as reflected in the epigraphical sources, archaeological remains and Arabic tradition*.

31/10–3/11/2013: He participated in the Third Humanitarian Forum, Baku, Azerbaijan, organized by Azerbaijan's Ministry of Foreign Affairs. The title of his paper is *The dynamic between cultural diversity and intangible cultural heritage.*

Prof. Dr. Khalid Abu Ghanimeh

15-19/12/2012: Prof. Dr. Abu Ghanimeh participated in the 1st International Conference on the Prehistoric Ages of the Arab World, organized by Cairo University-Egypt. He presented a paper entitled *Deities forms through sculptures in the Pre-Pottery Neolithic of Bilad ash-Sham*.

Dr. Khalid al-Bashaireh

9-13/7/2012: Dr. al-Bashaireh participated in the 21st International Radiocarbon Conference- Paris- France. He presented his research entitled *The construction of Qasr el-Bint, Petra, Jordan: new AMS radiocarbon dates, preliminary results*.

5-11/5/2013: He participated in the XIIth International Conference on the History and Archaeology of Jordan, Berlin-Germany. Dr. al-Bashaireh presented a paper under the title *Chronological reconstruction and radiocarbon dating organic inclusions of mortars from house XVII-XVIII in Umm el-Jimal, eastern Jordan, preliminary results*.

Prof. Dr. Nabil Bader

29/5-1/6/2013: Prof. Dr. Bader participated in the meetings of the Steering Committee of MEDINA project, held in Saint Joseph University, Beirut-Lebanon.

5-11/5/2013: He participated in the XIIth International Conference on the History and Archaeology of Jordan, held in Berlin-Germany. He presented a paper entitled *Inscriptions from Som in northwest Jordan*.

Dr. Nihad al-Shabbar

15-19/12/2012: Dr. al-Shabbar participated in the 1st International Conference on the Prehistoric Ages of the Arab World, organized by Cairo University-Egypt. She presented a paper entitled *Interpreting the Pre-History Ages for the school's students*

through exhibitions in the Museum of Jordanian Heritage.

Dr. Omar al-Ghul

5-11/5/2013: Dr. al-Ghul participated in the XIIth International Conference on the History and Archaeology of Jordan, held in Berlin-Germany. He presented a paper entitled *A new Aramaic ostraca from Tall Deir Alla*.

Prof. Dr. Zeidan Kafafi

15-19/12/2012: Prof. Dr. Kafafi participated in the 1st International Conference on the Prehistoric Ages of the Arab World, organized by Cairo University-Egypt. The title of his research is *Divinity in the Neolithic agricultural societies: 'Ain Ghazal as a study case*.

12-13/11/2013: He participated in the conference "The development of early settlements in arid regions", held at Aqaba-Jordan and organized by the German Archaeological Institute in Berlin. He presented a paper entitled *The fringes of the arid regions: prehistoric settlements in central Jordan*.

Prof. Dr. Ziad al-Saad

5-11/5/2013: Prof. Dr. al-Saad participated in the XIIth International Conference on the History and Archaeology of Jordan, held in Berlin-Germany. He presented a paper entitled *Illicit excavations and trade in antiquities in Jordan*.

News of the Faculty Members

Prof. Dr. Nabil Bader was appointed as Dean of the Faculty of Archaeology and Anthropology for the next two academic years.

Dr. Ma'en Omoush was appointed as an Acting Head of the Department of Archaeology.

Dr. Mohammad Alrousan was appointed as an Acting Head of the Department of Anthropology.

Dr. Wasef Sakhaineh was appointed as an Acting Head of the Department of Conservation and Management of Cultural Resources.

Dr. Ahmad al-Ajlouni was appointed as an Acting Head of the Department of Epigraphy.

The following Faculty members were promoted to the rank of Associate Professor:

Dr. Ayman al-Shboul, Department of Anthropology.

Dr. Khaled al-Bashaireh, Department of Archaeology.

Dr. Atef al-Sheyyab, Department of Archaeology.

Dr. Mahmoud al-Na'amneh, Department of Anthropology.

Other News

Prof. Dr. Zeidan Kafafi finished his sabbatical leave at the Queen Rania Institute for Tourism and Heritage in the Hashemite University.

Dr. Lamia al-Khouri spent the academic year 2012/2013 in a sabbatical leave to the University of Michigan-Ann Arbor, USA. She went on unpaid leave for the academic year 2013/2014.

Dr. Omar al-Ghul went on a sabbatical leave to the Faculty of Archaeology and Tourism, the University of Jordan, for the academic year 2013/2014.

Dr. Mohammad al-Tarawneh finished his leaving on loan for the Jordanian Hashemite Fund for Human Development.

EXHIBITIONS

The Exhibition of
The Italian Restoration Projects

In cooperation with the Italian Embassy in Amman, the Museum of Jordanian Heritage at the Faculty of Archaeology and Anthropology held the exhibition entitled *The Italian Restoration Projects* in Qusair Amra and other sites in Jordan and outside. The exhibition was opened on 25/3/2014 with the attendance of the Italian Ambassador to Jordan Mr. Patrizio Fondi.

From the Exhibition of the Italian Restoration Projects.

The Exhibition of
Images from the Decapolis

In cooperation with the Greek Embassy in Amman, the Museum of Jordanian Heritage at the Faculty of Archaeology and Anthropology held the exhibition entitled *Images from the Decapolis in Jordan*. It was opened on 15/5/2014 with the attendance of the Greek Ambassador to Jordan Mrs. Maria Luiza Marinaki.

The Greek Ambassador at the Exhibition.

The Third Personal Exhibition of
Mr. Husein Deebajeh

Mr. Husein Deebajeh organized his third personal exhibition entitled *The Decapolis in Northern Jordan.* The Exhibition was held between 25/2-1/3/2012 in Salonika, Greece, with the cooperation of Greece Archaeological Museum. It was attended by the Jordanian diplomatic staff in the city.

Mr. Deebajeh at the Exhibition.

RETIREMENT

Below is al list of retired colleagues of the Faculty of Archaeology and Anthropology:

- Mrs. Sana' Hammouri.
- Mr. Sabri al-Momani.
- Mr. Ali al-Omari.
- Mr. Ridwan al-Rousan.