



UNIVERSITÀ
DEGLI STUDI
FIRENZE

SAGAS
DIPARTIMENTO DI STORIA,
ARCHEOLOGIA, GEOGRAFIA
ARTE E SPETTACOLO

Co-organized with:



Under the Patronage of HRH Prince El-Hassan bin Talal

14th International Conference on
the History and Archaeology of Jordan

ICHAJ 14

**“Culture in Crisis: Flows of People,
Artifacts & Ideas”**

21st – 25th January 2019

Florence – Italy

PAPER ABSTRACTS BOOKLET



In partnership with
UNESCO



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ICHAJ 14

"Culture in Crisis: Flows of Peoples, Artifacts and Ideas"

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Introduction

1. Under the Patronage of HRH Prince El-Hassan Bin Talal, the Department of Antiquities of Jordan and the University of Florence organized the 14th International Conference on the History and Archaeology of Jordan. HRH Prince El-Hassan Bin Talal is the founder of this conference which is organized every three years started in 1980 in Oxford University. ICHAJ is becoming a prestigious and important event for the scientific community of archaeologists, historians and researchers who, at an international level, are interested and working in Jordan.

So far, ICHAJ has been hosted at these places:

1980-Oxford (UK)

1983-Amman (Jordan)

1986-Tubingen (Germany)

1989-Lyon (France)

1992-Irbid (Jordan)

1995-Torino-(Italy)

1998-Copenhagen (Denmark)

2001-Sydney (Australia)

2004-Petra (Jordan)

2007-Washington (USA)

2010-Paris (France)

2013-Berlin (Germany)

2016-Amman (Jordan)

In the closing ceremony of ICHAJ 13 that was held in Jordan at Princess Sumaya University for Technology, it was announced that 14th International Conference on the History and Archaeology of Jordan will be held in Florence, Italy, HRH Prince El Hassan Bin Talal passed a statement that ICHAJ 14 should focus on a theme "Culture in Crisis: Flows of People, Artifacts & Ideas", where UNESCO should play an active role in protecting cultural heritage and its people in the areas that are facing serious army conflicts.

It's certainly true that cultural heritage is in danger of destruction, looting, or illicit trafficking in many places around the world. It's also true that new types of threats to cultural heritage have

developed in the last few decades. These include: the easier movement of goods across national borders via online marketplaces like eBay, the spread of global banking, the outbreak of war and other forms of political instability and poverty, and the widespread availability of heavy machinery and explosive. The world is changing at a rapid pace, and research as well as academic training must keep up with these challenges. Cultural heritage is about identity, knowledge, and the future, as well as the past.

2. Observing the program and the set of abstracts that follow, a dynamic and original picture emerges for amplitude and objective systematicity between the complex of a rich and articulated archaeological research on a potentially extraordinary scenario for a long chronological period (with some analogy, in this respect, with Italy and certainly not many other districts) and a 'laboratory' where, on equally extraordinary contexts, innovative or even experimental forms of international archaeological research are experimented. It is a scenario that characterizes this 14th Florentine ICHAJ edition as the apex of a trend that structurally characterizes, in increasing terms for participations both in contributions and authors, a cultural event that, in the sector and at this level, objectively places Jordan alongside very few other countries.

The ICHAJ, therefore, returns to Italy 24 years after the Turin edition, which made an important contribution to the insertion of the Jordanian archaeological reality into a Euro-Mediterranean network to which the organizer Giorgio Gullini had dedicated himself with his Center for archaeological research and excavations for the Middle East. The choice of the Scientific Committee (unanimously) of the Florentine setting as the seat of this return can be attributed to the recognition of the growing role and interest of Italian culture, not only archaeological, for the enhancement (between science and conservation) of the Jordanian heritage (not just stones, not just men ...) and the specific role, which now appears irreplaceable, that the courageous and generous country that is Jordan, is developing; and also the contribution that the culture and history of a place like Florence, even by recent tradition, can give to this difficult phase to a nearby region (as its history can testify). A more occasional element we would like to think was also constituted by the role (methodological, merit, but in particular 'public') that the Mission of the Florentine University, 'Petra medievale', could represent in its uninterrupted 33 years of activity, thanks to the 'sympathy' (I would say in the Greek sense ...) with which the DoA has supported and supported us (with the GDs I remember well one by one: Adnan al-Hadidi, Ghazi Bisheh, Safwan al-Tell, Fawwaz al-Khraysheh, Ziad al-Saad, Faris al-Hmoud, Monther Jamhawi, Yazid Elayyan, ...).

For these reasons we tried to give the Florentine event also a national dimension, directly involving all the Italian archaeological missions supported by the MAECI; a presence that finds a moment of visibility in the small but accurate exhibition that exemplifies a work that for years has affected the entire chronological period of the long archaeological history of the country that hosts us, the Hashemite Kingdom of Jordan. While among the sponsors who joined the organizers (Dpt of Antiquities of Jordan and the University of Florence, with the collaboration of CAMNES), are the main local institutions (Municipality of Florence, Tuscany Region), the Ministry of Foreign Affairs and the Agency of Development and Cooperation and UNESCO).

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Cultural continuity rather than thematic, among the last ICHAJ, is certainly not random: from 'Trasparents borders' (ICHAJ-XI, a theme that was already at the centre of our reflections: 'The Transjordan' conference in XII-XIII cc and 'The frontiers of the medieval Mediterranean', Florence, Palazzo Vecchio-Palazzo Strozzi, 5-8 November 2008 and Exhibition 'From Petra to Shawbak, Archeology of a frontier', Florence, Palazzo Pitti, 2009) to Ethics in Archeology (ICHAJ-XIII) form the background of the theme that we are called to debate in Florence. In fact, ICHAJ 14 will devote much of its program to the discussion and development of new proposals and methodologies on the conservation and enhancement of cultural heritage, in Jordan and in other international contexts. A moment in which such a setting will emerge clearly, will be during the 'Special Event' (January 24th, 2019), promoted by Prince S.A. Hassan bin Talal to whom we owe the same foundation of the ICHAJ, organized by the Presidency of the Regional Council - sponsored and supported by MAECI and UNESCO - open to the public and, for the first time in the forty-year history of the 'ICHAJ, also addressing issues outside the national borders; the main focus will be the situation of prolonged crisis in the region and on the role that objectively and under different aspects, is being played by Jordan, aimed at contributing, as the only country at peace in the region, and ensuring continuity to the international attention on the cultural heritage of the area, with an important Italian support; in fact, interventions by protagonists of archaeological research in Syria, Iraq, Libya are planned.

Welcome to Florence, therefore, to everyone: a city whose hospitality has been possible, so to speak, and made perceptible also through the dislocation of the works that will take place in some places not so monumental, but representative, at the highest level, of the values that the history of this city has been able to render to the civilization of Europe, of the Mediterranean and of humanity itself.

Welcome, in particular to those coming from the land of Jordan and the Arab regions: part of the history of this city has in fact shared its events with the nearby Arab and Islamic East, leaving traces in its monuments, its arts, its archives, as only Venice, in Europe, was been able to do.

Welcome to Florence, for an experience that is both scientific and personal, possibly without a solution of continuity between these two dimensions, both to be interpreted, according to the genius loci, in terms of a fully understood humanism.

The ICHAJ 14 Organizors:

1. *Department of Antiquities of Jordan*
2. *University of Florence, Chair of Medieval Archaeology*

Committees and Staff

STEERING COMMITTEE:

HE Minister of Tourism and Antiquities
 Mr. Yazid Elayyan, HE Acting Director General of the Department of Antiquities
 Mr. Fabio Cassese, HE Italian Ambassador in Jordan
 Mr. Fayiz Khouri, HE Jordanian Ambassador in Italy
 Mr. Dario Nardella, Mayor of Florence
 Mr. Eugenio Giani, President Tuscany Region Council
 Prof. Luigi Dei, Rector of The University of Florence
 Prof. Guido Vannini, Dir. of the School of Specializz. of the Univ. Florence

SCIENTIFIC COMMITTEE:

Prof. Guido Vannini (Chair), Director of the School of Specialization of the University of Florence
 Prof. Zeidan Kafafi, Yarmouk University
 Dr. Monther Jamhawi, Jordan University of Science and Technology
 Dr. Barbara Porter, American Center of Oriental Research_Amman
 Dr. Omar Al-Ghul, Yarmouk University
 Prof. Fawzi Abu Danneh, Al-Hussein Bin Talal University
 Prof. Shaher Rababah, Hashemite University
 Dr. Khairieh Amr, Independent Researcher
 Prof. Michele Nucciotti, Florence University
 Prof. Lorenzo Nigro, Rome University (La Sapienza)
 Prof. Andrea Polcaro, Perugia University
 Prof. Giovanna De Palma, Istituto Superiore per la Conservazione ed il Restauro
 Dr. Roberto Gabrielli, Institute for Technologies Applied to Cultural Heritage-CNR
 Prof. Basemah Hmarneh, Vienna University
 Prof. Stephan Schmid, Humboldt University
 Prof. Saba Fares, University Toulouse II Jean Jaurès
 Prof. Bethany Walker, Bonn University

ORGANIZING COMMITTEE:

Mr. Yazid Elayyan, HE Acting Director General of the Department of Antiquities
 Dr. Monther Jamhawi, HE Former Director General of the Department of Antiquities
 Dr. Ahmad Amaireh, Dean of Madaba Institute for Mosaic Art and Restoration
 Mahmoud Sobuh, Assistant Director General for Administrative Affairs
 Aktham Oweidi, Director of Excavations and Surveys Directorate
 Hanadi Al Taher, Director of Studies and Publication Directorate
 Samia Khoury, Director of Museums Directorate
 Ghassan Al Dier, Director of the Director General Office
 Arch. Shatha Mubaideen, Engineering and Conservation Directorate
 Prof. Michele Nucciotti, Florence University
 Prof. Elisa Pruno, Florence University

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ITALY ORGANIZING COMMITTEE:

Chiara Molducci (General Coordinator)

Lapo Somigli

Chiara Marcotulli

Francesca Cheli

Raffaele Ranieri

Andrea Biondi

Laura Lazzerini

SCIENTIFIC SECRETARIAT:

Dr. Guido Guarducci

Dr. Stefano Valentini

CONFERENCE STAFF:

Benedetta Pacini

Dimitri Pizzuto

Gemma Alfonso

Diletta Bigiotti

Leonardo Squilloni

Giacomo Enrico Ponticelli

Sofia Vagnuzzi

Chiara Santini

Miriam Leonetti

Arianna Lobina

Martina Rodinò

Anna Maria Nardon

Silvia Valisano

Julia Maczuga

General Program

(The final updated and detailed program will be delivered during registration)

MONDAY, JANUARY 21ST						
Palazzo Vecchio, Salone dei Cinquecento Piazza della Signoria						
10.00-12.30	PLENARY OPENING SESSION					
8.00-14.30	University of Florence, Via Capponi 9 - REGISTRATION					
12.30-13.30	University of Florence, Via Capponi 9 - WELCOME RECEPTION APERITIVE					
15.00-17.00	AFTERNOON SESSIONS					
	UniFi – Via Capponi Room 5	UniFi – Via Capponi Room 13	UniFi – Via Capponi Room 14	UniFi – Via Capponi Room 16	UniFi – Via San Gallo Aula Magna	UniFi – Via San Gallo Aula Magna
	<i>History and Archaeology of Jordan</i> CLASSICAL PERIODS 1	<i>Science, Methods and Technology in Archaeology 1</i> LANDSCAPE STUDIES	<i>Public Archaeology and Social-Economic Development 1</i> AWARENESS AND EDUCATION	<i>History and Archaeology of Jordan</i> BRONZE AND IRON AGE 1	<i>History and Archaeology of Jordan</i> BRONZE AND IRON AGE 1	<i>History and Archaeology of Jordan</i> PETRA AND NABATEANS 1
TUESDAY, JANUARY 22ND						
9.00-10.40	MORNING SESSIONS (A)					
	UniFi – Via Capponi Room 5	UniFi – Via Capponi Room 13	UniFi – Via Capponi Room 14	UniFi – Via Capponi Room 16	UniFi – Via San Gallo Aula Magna	UniFi – Via San Gallo Aula Santa Apollonia
	<i>History and Archaeology of Jordan</i> MIDDLE AGES AND OTTOMAN PERIOD 1	<i>History and Archaeology of Jordan</i> PETRA AND NABATEANS 2	<i>History and Archaeology of Jordan</i> PREHISTORY 1	<i>History and Archaeology of Jordan</i> BRONZE AND IRON AGE 2	<i>History and Archaeology of Jordan</i> CLASSICAL PERIODS 2	<i>Science, Methods and Technology in Arch. 2</i> LANDSCAPE STUDIES AERIAL AND HISTORICAL PHOTOGRAPHY FOR ARCHAEOLOGY
10.40-11.10	COFFEE BREAK					
11.10-12.50	MORNING SESSIONS (B)					
	UniFi – Via Capponi Room 5	UniFi – Via Capponi Room 13	UniFi – Via Capponi Room 14	UniFi – Via Capponi Room 16	UniFi – Via San Gallo Aula Magna	UniFi – Via San Gallo Aula Santa Apollonia
	<i>History and Archaeology of Jordan</i> CLASSICAL PERIODS 3	<i>History and Archaeology of Jordan</i> PETRA AND NABATEANS 3	<i>Public Archaeology and Social-Economic Development 2</i> AWARENESS AND EDUCATION/ILLEGAL TRAFFICKING	<i>History and Archaeology of Jordan</i> MIDDLE AGES AND OTTOMAN PERIOD 2	<i>History and Archaeology of Jordan</i> BRONZE AND IRON AGE 3	<i>Science, Methods and Technology in Archaeology 3</i> LAND RESOURCES MANAGEMENT
12.50-14.30	LUNCH BREAK					
14.30-16.30	AFTERNOON SESSIONS					
	UniFi – Via Capponi Room 5	UniFi – Via Capponi Room 13	UniFi – Via Capponi Room 14	UniFi – Via Capponi Room 16	UniFi – Via San Gallo Aula Magna	UniFi – Via San Gallo Aula Parva
	<i>History and Archaeology of Jordan</i> CLASSICAL PERIODS 4	<i>History and Archaeology of Jordan</i> MIDDLE AGES AND OTTOMAN PERIOD 3	<i>Public Archaeology and Social-Economic Development 3</i> CONSERVATION AND SITE MANAGEMENT 1	<i>History and Archaeology of Jordan</i> BRONZE AND IRON AGE 4	<i>History and Archaeology of Jordan</i> PREHISTORY 2	<i>Science, Methods and Technology in Archaeology 4</i> STRUCTURAL ANALYSES AND NEW TECHNOLOGIES
WEDNESDAY, JANUARY 23RD						
9.00-10.40	MORNING SESSIONS (A)					
	UniFi – Via Capponi Room 5	UniFi – Via Capponi Room 13	UniFi – Via Capponi Room 14	UniFi – Via Capponi Room 16	UniFi – Via San Gallo Aula Magna	UniFi – Via San Gallo Aula Parva
	<i>History and Archaeology of Jordan</i> PREHISTORY 3	<i>History and Archaeology of Jordan</i> MIDDLE AGES AND OTTOMAN PERIOD 4	<i>Public Archaeology and Social-Economic Development 4</i> CONSERVATION AND SITE MANAGEMENT 2	<i>History and Archaeology of Jordan</i> BRONZE AND IRON AGE 5	<i>Jordan in Global Histories: The Land of Peace 1</i>	<i>Science, Methods and Technology in Archaeology 5</i> 3D DOCUMENTATION AND VIRTUAL REALITY APPLICATIONS
10.40-11.10	COFFEE BREAK					
11.10-12.50	MORNING SESSIONS (B)					
	UniFi – Via Capponi Room 5	UniFi – Via Capponi Room 13	UniFi – Via Capponi Room 14	UniFi – Via Capponi Room 16	UniFi – Via San Gallo Aula Magna	UniFi – Via San Gallo Aula Parva
	<i>History and Archaeology of Jordan</i> PREHISTORY 4	<i>History and Archaeology of Jordan</i> MIDDLE AGES AND OTTOMAN PERIOD 5	<i>Public Archaeology and Social-Economic Development 5</i> LOCAL COMMUNITY ENGAGEMENT	<i>History and Archaeology of Jordan</i> BRONZE AND IRON AGE 6	<i>Science, Methods and Technology in Archaeology 6</i> BIG DATA & INFORMATION TECHNOLOGY	<i>Jordan in Global Histories: The Land of Peace 2</i>
12.50-14.30	LUNCH BREAK					

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WEDNESDAY, JANUARY 23RD						
AFTERNOON SESSIONS						
	UniFi – Via Capponi Room 5	UniFi – Via Capponi Room 13	UniFi – Via Capponi Room 14	UniFi – Via Capponi Room 16	UniFi – Via San Gallo Aula Magna	UniFi – Via San Gallo Aula Parva
	<i>History and Archaeology of Jordan</i> PREHISTORY 5	<i>Science, Methods and Technology in Archaeology 7</i> CHEMICAL ANALYSES	<i>Public Archaeology and Social-Economic Development 6</i> LOCAL COMMUNITY ENGAGEMENT, MUSEUM & COLLECTION	<i>History and Archaeology of Jordan</i> PETRA AND NABATEANS 4	<i>History and Archaeology of Jordan</i> MIDDLE AGES AND OTTOMAN PERIOD 6	<i>Science, Methods and Technology in Archaeology 8</i> ARTIFACT STUDIES
Istituto degli Innocenti Piazza della Santissima Annunziata, 12 - Salone Brunelleschi, Sala Poccetti						
20.30-23.30	ICHAJ 14 GALA					
THURSDAY, JANUARY 24TH						
Teatro della Compagnia Via Camillo Cavour, 50/R						
10.30-13.00	SPECIAL EVENT Culture in Crisis with the participation of HRH Prince EI-HASSAN BIN TALAL					

THURSDAY, JANUARY 24TH						
University of Florence - Via San Gallo, 10						
13.00-14.00	LUNCH BREAK					
14.00-15.40	WORKSHOPS					
	UniFi – Via San Gallo Aula Magna <i>Sustainable Cultural Heritage Through Engagement of Local Communities Project (SCHEP)</i>	UniFi – Via San Gallo Aula Parva <i>Endangered Archaeology in the Middle East and North Africa (EAMENA). Culture in Crisis - the role of digital documentation in heritage protection and management</i>				
15.40-16.00	COFFEE BREAK					
16.00-17.40	WORKSHOPS			POSTER SESSION		
	UniFi – Via San Gallo Aula Magna <i>The new discovery of the Bayt Ras Tomb</i>	UniFi – Via San Gallo EST 48 49 - antecedent Aula Magna				
14.00-16.00	MINI TOURS					
FRIDAY, JANUARY 25TH						
9.00-10.40	MORNING SESSIONS					
	UniFi – Via Capponi Room 5 <i>History and Archaeology of Jordan</i> PREHISTORY 6	UniFi – Via Capponi Room 13 <i>Science, Methods and Technology in Archaeology 9</i> ETHNO-ARCHAEOLOGICAL METHODOLOGIES	UniFi – Via Capponi Room 14 <i>Public Archaeology and Social-Economic Development 7</i> MUSEUM AND COLLECTION			
	COFFEE BREAK					
Aula Magna del Rettorato - Piazza San Marco, 4						
12.00-13.00	PLENARY CLOSING SESSION					
13.00-14.00	FAREWELL APERITIVE					

Conference Venues



Map of the historic center of Florence with the ICHAJ 14 venues

(1) PALAZZO VECCHIO - Salone dei Cinquecento

Piazza della Signoria, 1st floor
museiciviciorentini.comune.fi.it

Palazzo Vecchio is the City Hall of Florence and it overlooks the Piazza della Signoria with its copy of Michelangelo's David as well as the gallery of antique and Renaissance statues in the adjacent Loggia dei Lanzi.

Palazzo Vecchio, or Palazzo della Signoria, has been the symbol of the civic power of Florence for over seven centuries. Built between the end of the 13th century – by Arnolfo di Cambio, the architect of the Duomo and the church of Santa Croce – and the beginning of the 14th century to house the city's supreme governing body, the Priori delle Arti and the Gonfalonier of Justice.

The solid, massive building is enhanced by the simple tower with its clock, called Tower of Arnolfo, and over time it has been subject to a series of extensions and transformations.

Duke Cosimo I de' Medici moved his official seat to the Palazzo della Signoria in May 1540, signalling the security of Medici power in Florence. When Cosimo later moved to Palazzo Pitti, he officially renamed his former palace the Palazzo Vecchio, the "Old Palace". Cosimo commissioned Giorgio Vasari to build an above-ground walkway to join the two palaces, the Vasari corridor, from the Palazzo Vecchio, through the Uffizi, over the Ponte Vecchio to the Palazzo Pitti.

From 1865 to 1871 it was the seat of the Parliament of the Kingdom of Italy – when Florence was the Capital city – while today it houses the Mayor of Florence and various municipal offices.

The Salone dei Cinquecento is an imposing hall with a length of 52 m and 23 m broad. It was built in 1494 by Simone del Pollaiuolo, on commission of Girolamo Savonarola who, replacing the Medici after their exile as the spiritual leader of the Republic, wanted it as a seat of the Grand Council (Consiglio Maggiore) consisting of 500 members. Later the hall was enlarged by Giorgio Vasari so that Grand Duke Cosimo I could hold his court in this chamber. During this transformation famous (but unfinished) works were lost, including the two frescoes representing the Battle of Cascina by Michelangelo, and the Battle of Anghiari by Leonardo da Vinci. The Salone is decorated by a large number of statues by Renaissance masters, including the original "Genius of Victory" by Michelangelo (c. 1532); the famous frescoes made between 1555 and 1572 by Giorgio Vasari and his workshop to celebrate Florence victories over Pisa and Siena, decorate the upper part of the walls.



Date: 21 JANUARY 2019
 Time: 10:30-12:30
 Event: PLENARY OPENING SESSION

(2) SAN GALLO / FENZI - Palazzo Fenzi-Marucelli

Via San Gallo 10
www.sagas.unifi.it

The Palazzo Fenzi-Marucelli is currently home to the Department of History, Archaeology, Geography, Fine and Performing Arts of the University of Florence (SAGAS).

It was built in the 16th century for the Castelli family by Gherardo Silvani – an Italian architect and sculptor, active mainly in Florence and other sites in Tuscany during the Baroque period – and it was later enlarged by the Marucelli family. In 1829 it was bought by Emanuele Fenzi in order to house his bank and his family. He was Senator of the Grand Duchy of Tuscany and later of the Kingdom of Italy, a leading Italian banker, iron producer, concessionaire of the Livorno-Florence railway (*Strada Ferrata Leopolda*) and other railway enterprises, merchant for exportation of Tuscan products, and landowner.

Among many other Baroque architectural features such as ornate ceilings and marble sculptures, the Palazzo Fenzi has a wide variety of frescoes, some of which by the painter Sebastiano Ricci (1659-1734). The series of frescoes on allegorical and mythological themes, on the ground floor of Palazzo Fenzi, were executed during his stay in Florence from 1706 to 1707 and are considered among his masterpieces.

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"Culture in Crisis: Flows of Peoples, Artifacts and Ideas"

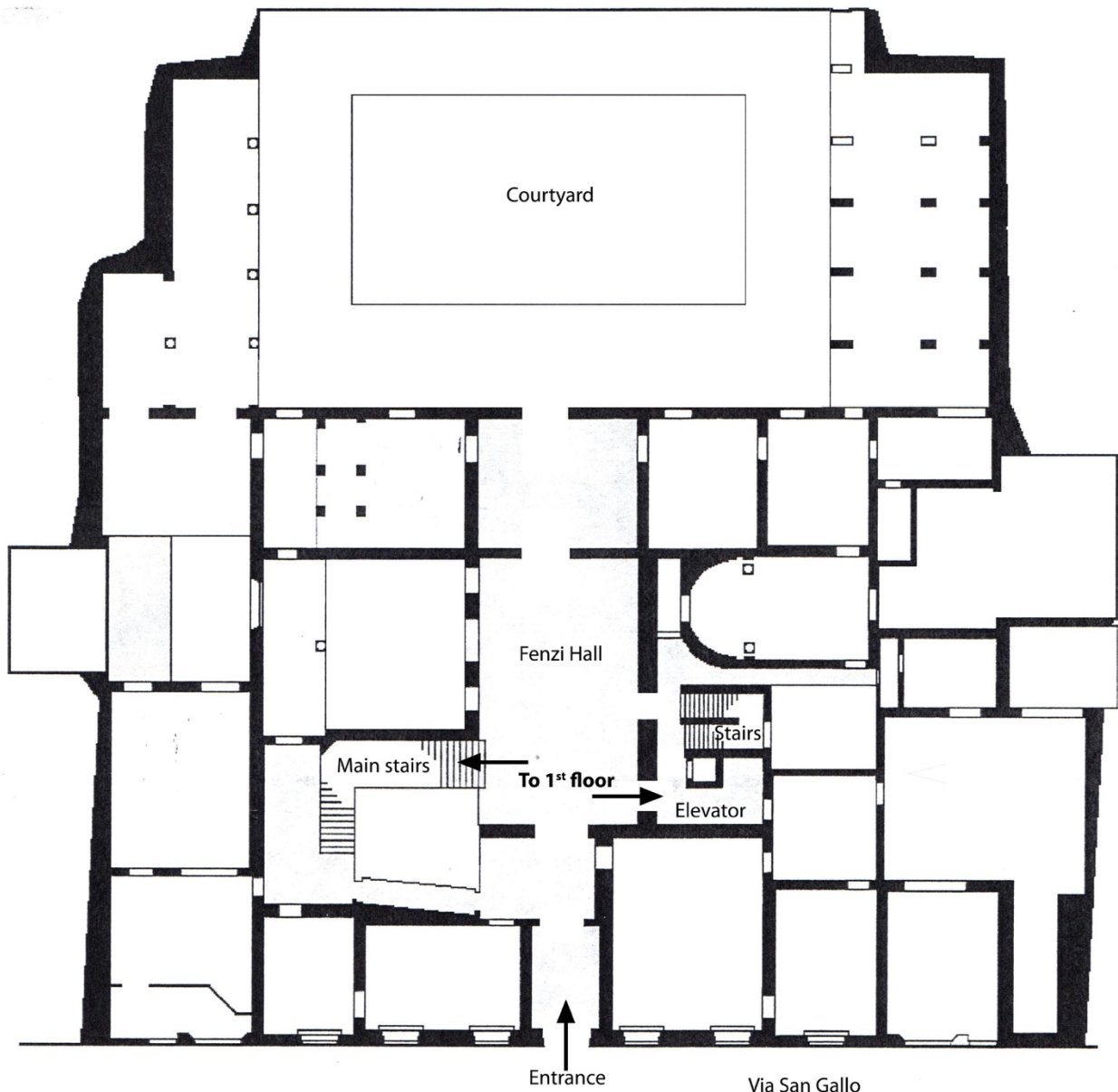
The large ballroom on the first floor, the present-day "Aula Magna", was completely renovated by the architect Giuseppe Martelli and adorned by Vincenzo Marinelli with mythological friezes on the upper part of the walls and was a sought-after venue for Florentine, Italian and international nobility during the second half of the 19th century.



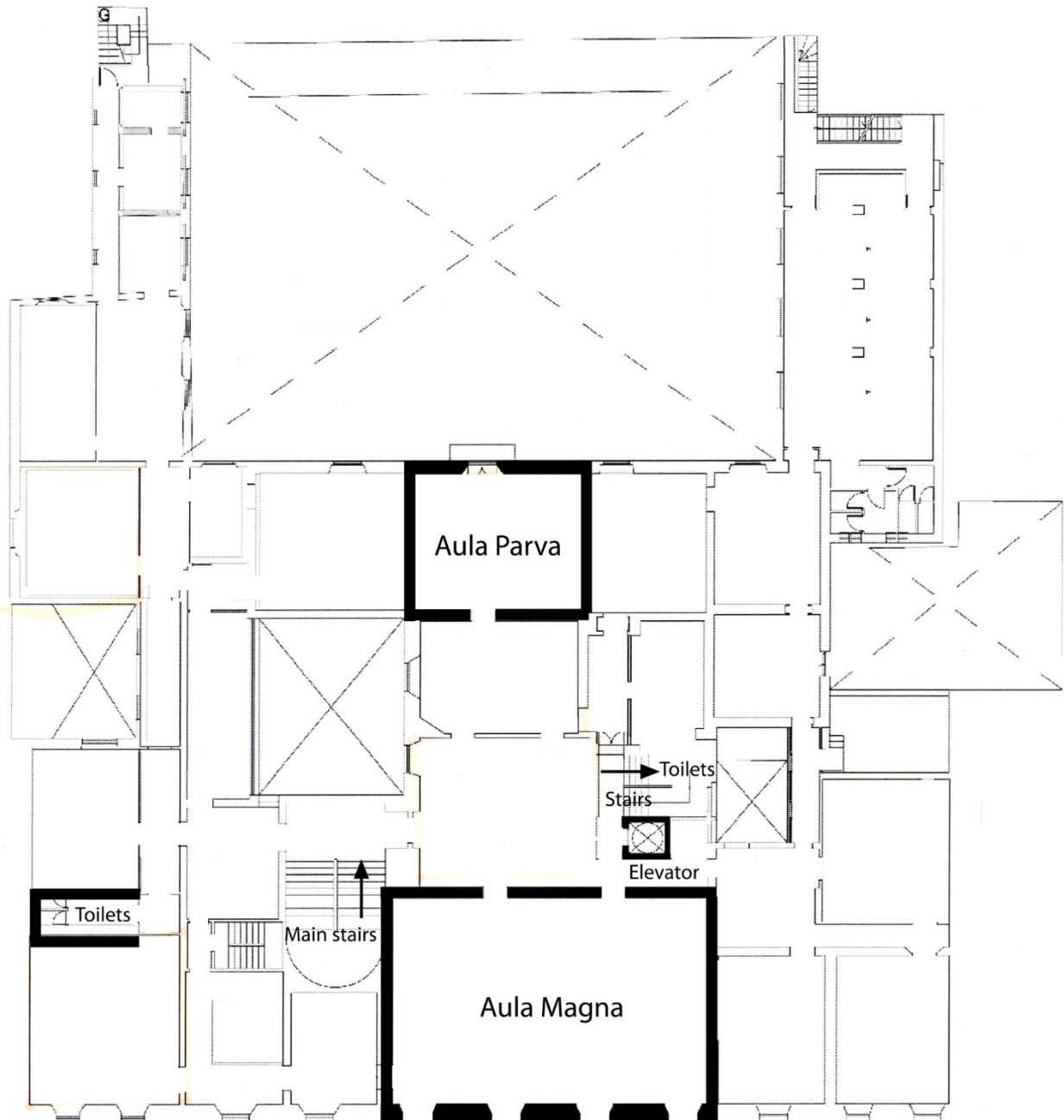
Date: 21-25 JANUARY 2019

Time: see ICHAJ 14 PROGRAM

Event: ICHAJ 14 ACADEMIC PROGRAM / WORKSHOPS



Plan of SAN GALLO / FENZI: Ground floor



Plan of SAN GALLO / FENZI: First floor

NB: Publisher stands & Poster Session are located between Aula Parva and Aula Magna

(3) CAPPONI - Palazzina de' Servi

Via Gino Capponi 9

(www.sagas.unifi.it)

The also called "Palazzo dei Servi" or "Palazzina de' Servi" is currently home to the Department of History, Archaeology, Geography, Fine and Performing Arts of the University of Florence (SAGAS).

It is located between the fourteenth century complex of the Convent of Santissima Annunziata and the Botanical Garden of the University of Florence (founded in the 16th century and it can be considered the third oldest in the world). The Palazzina was designed by Niccolò Tribolo in the mid-16th century and extensive renovations through the centuries have made architectural changes to the original structure. Its history is therefore intertwined with that of these two historical institutions, the former religious, the latter botanical. It was built as an annex to the convent and in 1810 was transformed in neo-classical style by the architect Luigi De Cambray Digny to accommodate the new bishopric.

With the annexation of Tuscany to the Kingdom of Italy, the northern part of the monastery of Santissima Annunziata and the "Giardino dei Semplici" (that means "garden with plants with medicinal virtues") passed under the management of the municipality, while during the period when Florence was capital of Italy (1865-1871) the Palazzina dei Servi was occupied by the State for use of the War Department. These offices were vacated in the 1870s and passed to the University who set up laboratories for the faculty of Chemistry, Physics and Physiology. The National Museum of Anthropology was also sited there.

On the initiative of Hugo Schiff (1834-1915), founder of the modern academic structure of the University chemistry section, extensions to the building to enable a more modern arrangement of chemistry laboratories and a new form of educational experimentation were planned. During the course of these changes it was decided instead that the building should house the faculties of History of Art and the Performing Arts, with the aim of conserving every trace of the rich historical stratigraphy of the building thus restoring dignity to the whole architectural complex.

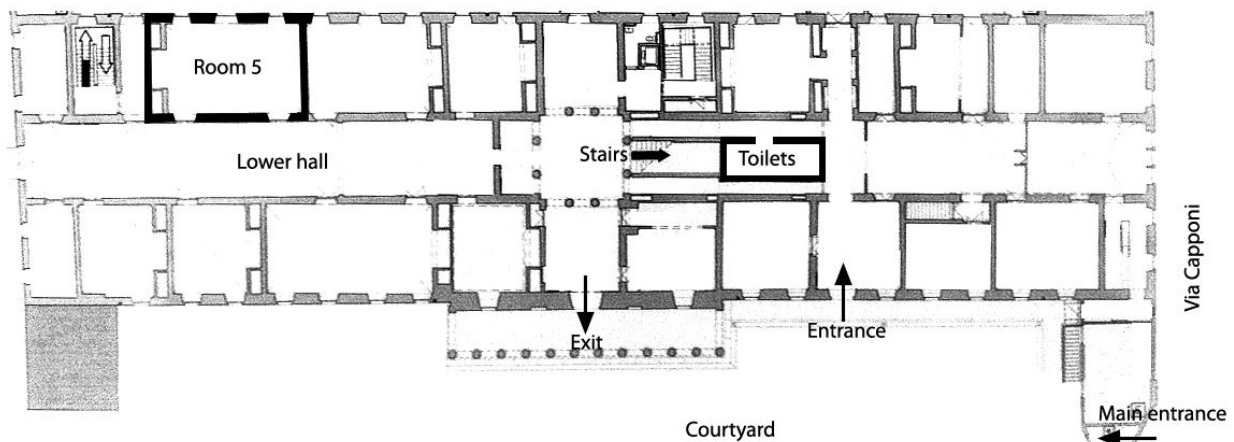
The recent restoration of all these characteristic elements allowed a return to a comprehensive vision of the architectural space and the renovation of corridors, the vestibule and the monumental staircase brought unity to the whole building.



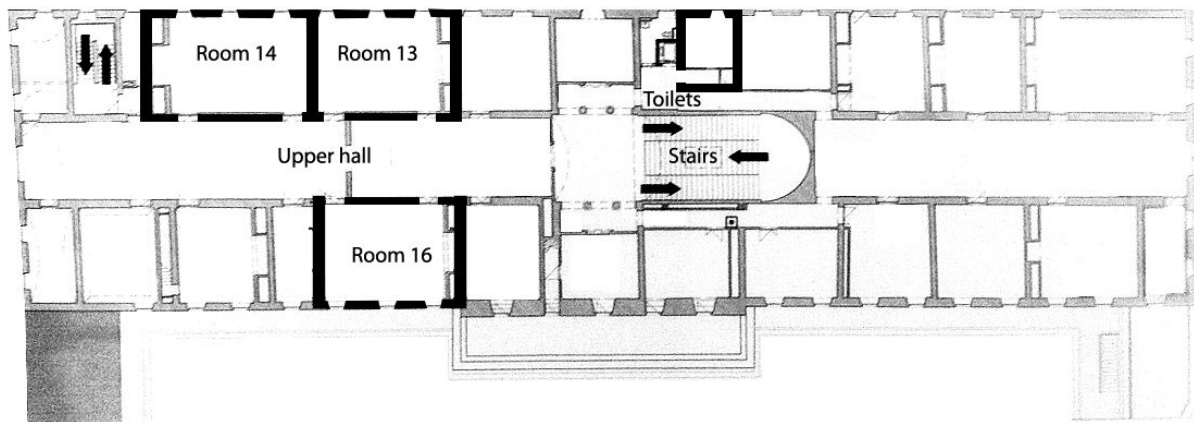
Date: 21-25 JANUARY 2019

Time: see ICHAJ 14 PROGRAM

Event: ICHAJ 14 ACADEMIC PROGRAM / ITALIAN MISSIONS EXHIBITION



Plan of CAPPONI: Ground floor



Plan of CAPPONI: First floor

(4) UNIVERSITY OF FLORENCE RECTORATE BUILDING - Aula Magna

Piazza San Marco 4

(www.unifi.it)

The headquarters of the University of Florence is located in a building formerly used as a grand-ducal stable with the buildings of the Natural History Museum, belonging to the University itself, in particular the Museum of Botany and the Museum of Geology and Paleontology.

Here in the 15th century some lion cages had been moved at the expense of the Florentine Republic and after 1429 the construction of a "Collegio della Sapienza" – a school to welcome fifty young people, half foreigners and half Florentines – commissioned by Niccolò da Uzzano, a politician of the supreme court of Florence, and under the patronage of the Arte dei Mercatanti (Guild of Merchants) was started. The building was designed by the painter Lorenzo di Bicci (1350-1427), but the work did not see the light soon, as many of the money left by Niccolò were diverted by the Republic to finance wars and other needs.

In the 19th century it belonged to the army, which then sold it to the University of Florence.

In the building today are located the rectorate, the main hall, the administrative services department and a secretariat. A bust with a plaque on the façade in Piazza San Marco recalls Cesare Battisti (1875-1916), a graduate of the Florentine University and a famous patriot, journalist, geographer, Italian socialist and irredentist politician.

The building has two courtyards, in the main one there is a small garden and in the secondary one there is the entrance to the Museum of Mineralogy. Among the monumental environments stand out, in addition to the auditorium decorated with frescoes of the period of Florence as Capital city, the staircase in neoclassical style, the hall of the university Senate and the small historical library.



Date: 25 JANUARY 2019

Time: 12:00-14:00

Event: PLENARY CLOSING SESSION

(5) ISTITUTO DEGLI INNOCENTI - Salone Brunelleschi

Piazza della Santissima Annunziata 12

(www.istitutodegliinnocenti.it)

ICHAJ 14

"Culture in Crisis: Flows of Peoples, Artifacts and Ideas"

The Istituto degli Innocenti in Florence has worked uninterruptedly for over six centuries, to help children and families: founded at the beginning of the 15th century, it was the first secular institution dedicated to taking in orphaned children. The old hospital, "Spedale degli Innocenti", was designed by Filippo Brunelleschi and enriched over time with works of art by many other famous artists.

The architectural complexes were commissioned and financed by the Arte della Lana (Wool Guild). The refectory, cloisters, dormitories, infirmary, nurses, rooms and porticoes were purposely balanced by Brunelleschi to create a harmonious and rational hospital architecture. Later, they were enlarged and decorated with frescoes, thus documenting the on-going activities of the institution and the favour of the reigning dynasty of the Medici.

The "Spedale degli Innocenti" is more than an architectural milestone. Today the Institute's activities include establishing and testing educational and social services, studying the condition of children and promoting children's rights and culture, in line with the UN Convention on the rights of the child. The commitment to protect children and their rights, updated as culture and society develop, has always been supported by donations from private citizens, associations and companies, confirming a widespread participation in the Institute's mission.

Today this precious historical and monumental complex is also the home of the Museo degli Innocenti, a museum that houses works, among others, by Botticelli and Ghirlandaio (www.museodegliinnocenti.it).



Date: 23 JANUARY 2019

Time: 20:30-23:30

Event: ICHAJ 14 GALA

(6) TEATRO DELLA COMPAGNIA

via Cavour 50

www.cinemalacompagnia.it

It is an historical building now turned into a theater. The architectural project, commissioned to Adolfo Natalini by the Fondiaria – an Italian insurance company – in 1984, involved the transformation of the pre-existing cinema "Modernissimo" (created in 1921) into a theater hall to be used as a permanent venue for the Teatro Regionale Toscano (regional theater of Tuscany). The works ended in 1987 and they were characterized by the respect of the original building and its historical stratifications, giving emphasis to the pre-existing architectural elements, as for example the longitudinal axis of the boundary wall of the former garden of Palazzo Bastogi – a 18th century palace. Thanks to the Tuscany Region the theater reopened in 2006 as "Cinema La Compagnia" and became the home of short films and Florentine cinema festivals.



Date: 24 JANUARY 2019

Time: 10:30-13:00

Event: ICHAJ 14 SPECIAL EVENT *Culture in Crisis Affected Countries*

Paper Abstracts

SURVEY OF MOST COMMON DETERIORATION TYPES AND FACTORS OF ARCHAEOLOGICAL COLUMNS IN JORDAN

Muhammad Al Absi

Department of Antiquities of Jordan

Jordan is an open museum with about 24,000 registered and 100,000 expected archaeological sites. Many types of columns were found in archaeological sites surrounding ancient Forums and roads. These columns suffer from various types of deterioration, whether in materials or structure, due to mix of natural and human factors. In order to minimize conjecture and emphasize sympathetic conservation, International organizations such as ICOMOS and Getty institute attempt to classify deterioration type – in particular stone deterioration- to help conservators cope with a number of longstanding conservation problems. This research aims to take a broad and critical look at the present state of archaeological columns, with a focus on common types of deterioration, decay or problems that affect negatively its structure, to give a strategic overview of column conservation field and to identify areas of strength and weakness on where further research should be focused. The study is based on an analysis of the columns' deterioration types were found in four archaeological sites mainly; Jerash, Amman, Um Qais and Petra, and some other cases in Jordan. A combination of image-based and non-image-based techniques (evaluation form, maps, reports and articles) were used to collect initial data, and followed by comparative analysis considering international scientific publications and case studies, to identify problems and determine solutions. The results show that structural decay, erosion, pollution and moist issues are the most types of deterioration have been detected, whereas the most reasons impact archaeological columns negatively are bad previous restoration, vandalism and lack of periodic maintenance.

Keywords: Archaeological Columns, Survey, Deterioration, conservation, Jordan

TWO NEWLY DISCOVERED MARBLE STATUES OF APHRODITE FROM PETRA'S NORTH RIDGE

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University of Georgia

Michael Morris

Sculpture and Architecture Conservator

Megan A. Perry

East Carolina State University

In 2016 excavations by the Petra North Ridge Project discovered two imported under life-size marble statues of Aphrodite amidst 4th century AD domestic debris. The pair, which may have been displayed as a pendant group in the private bath of a villa urbana near where they were found, constitutes unprecedented and well-contextualized examples of domestic marble statuary in Petra and are among the most important marble sculptures to have been found in Roman Arabia in recent decades. While both statues of Aphrodite share the well-known Capitoline type pose, the goddesses' costumes and supporting Eros figures provide different narratives that frame and characterize the central iconic image. Interestingly both statues display extensive repairs and are notably different in technique, style, and polychrome finish: one displays subtle pigment mixtures in combination with gilding, while the other has a more simplified graphic painting style. Style and technique suggest dates around the first century AD for one and the third century for the other, respectively. The North Ridge Aphrodites not only provide new evidence for long-standing questions about the imported material and workshop production of marble sculpture in the Roman Near East, but they also present a unique opportunity to explore important broader historical and cultural perspectives, including the domestic display of marble statuary in the region and the diverse cultural responses to it, the adoption of Hellenistic Roman domestic practices among the extra-Mediterranean elite, and the fate of such statuary in the changing circumstances of Petra and Roman Arabia in late antiquity.

Keywords: Aphrodite, Petra, marble, sculpture, polychromy

LABORATORY EVALUATION OF SALT CRYSTALLIZATION INHIBITOR AND DISTILLED WATER TO PREVENT THE DESTRUCTION OF MONUMENTAL STONES IN PETRA - JORDAN DUE TO SALT DAMAGE

Yazan Abu Alhassan

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Salt weathering is considered one of the most decisive contributors to the weathering of monumental stones since large parts of our cultural heritage were built from stone. Therefore, inhibiting or limiting the crystallization of these salts is an important step towards the preservation of our cultural heritage. In the past, a desalination of stone by using distilled water has been applied in order to mitigate the impact of salt weathering, with considerably different success. A fairly new field of research is the use of salt crystallization inhibitors/modifiers. It has attracted interest for improving desalination as well as for reducing aggressiveness and damage potential of salt weathering mechanisms. Sandstone samples from the archaeological city of Petra were examined, in order to evaluate the effectiveness of stone treatment with distilled water and crystallization inhibitor as a method to improve desalination of salt-loaded sandstone. Comparing the extraction of salts from stone samples with traditional methods using distilled water and by the application of a crystallization inhibitor, it can be concluded that using sodium ferrocyanide as a crystallization inhibitor for both preventive measures of salt weathering and extraction of salts, is superior to using a pure water to mitigate the salt-induced damage to porous materials. In addition, crystallization inhibitor has the ability to extract the salts from the depth of the samples up to their surface in the form of harmless efflorescences rather than harmful subflorescences.

DEVELOPMENT AND PROMOTION OF THE TOURIST SITE OF UMM EL-JIMAL

Yousef Abu Ali

Department of Antiquities of Jordan

The objective of this study is to propose a developmental and promotional plan for the site of Umm El-Jimal as a tourist destination and to preserve and sustain the cultural and historical potential of the site. And the importance of this study comes due to the missing plans that were not conducted before. The site consists of a Nabataean temple, Byzantine governor's house, barracks, churches, water system and domestic houses. This study presents a comprehensive study of the various resources that the site has and the possibility of using these resources in tourist development without affecting the environmental, social and economic components of the tourist system of the site. Likewise, this project endeavors to suggest strategies to protect and restore the site, and create an efficient administration of the cultural resources of Umm El-Jimal that can ensure integration of the local people in the management of the site, and, therefore, their socio-economic benefit from this culturally-rich site. To achieve these goals, the study uses available written literature and the published results of field research on Umm El-Jimal, in addition to observations collected in the course of many field visits by the author. The study suggests the following: the enhancement of the infrastructure of Umm El-Jimal, qualification of personnel and professional training to deal with tourists and tourism, encouragement of local tourism through lectures, seminars, videos, and the adoption of an ideal tourist marketing and promotional policy.

NEOLITHIC MASS HUNTING GAME TRAPS ("DESERT KITES") AND RELATED HUNTERS' CAMPSITES IN THE SOUTHEASTERN BADIA OF JORDAN

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Investigations in the framework of the South Eastern Badia Archaeological Project allowed recently the discovery of the first evidence of "Desert kites" in the southeastern desert of Jordan, away from their main concentration area in the basalt

Harra landscape. Following this preliminary recognition, excavations undertaken during resumed fieldwork in Jibal al-Khashabiyeh area, located at 90 km east of the Jafr Basin, provided valuable information allowing to clarify the architectural layout and to confirm the hunting function of these Late Prehistoric mega structures. These results provided moreover the first indisputable evidence pushing back the use of these sophisticated hunting strategies to the Neolithic period (Final PPNB). In parallel, a number of sites evidencing a homogeneous techno-cultural entity have been identified in close spatial connection to the "Desert kites". They are characterized by exceptionally rich lithic assemblages, which provide elements of comparison with other techno-complexes of the southern Levant's arid margins. These flint scatters are linked to structural remains of sub circular dwelling units. Work in progress indicates that these sites constitute hunting campsites directly related to the "Desert Kites" in a Final PPNB chronological timeframe. The identification of this first occurrence of occupation remains associated to the "Desert kites" constitutes an unprecedented discovery in the near eastern arid margins, and an invaluable opportunity for a better understanding of these mass-hunting strategies, and their socio-cultural background, in a Neolithic chronological context.

Keywords: Desert kites, Southeastern Jordan, Arid margins, Neolithic, Mass hunting

THE NABATEAN FLOOD CONTROL SYSTEM AT WADI MADRAS, PETRA, JORDAN

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Petra Development and Tourism Region Authority, Wadi Musa, Jordan

Wadi Madras/Wadi Hraimieh is the ephemeral stream tributary that feeds the Siq and Treasury area of Petra from the south. It covers an area of about 5km², and ranges in elevation from 1400 m down to 1020m at the confluence with the Siq. The distance from the Siq to the top of the drainage basin is about 3km. Geologically, the drainage area can be divided into the Upper Cretaceous Limestone upper drainage basin (down to an elevation of about 1250m) and the Palaeozoic Sandstone lower drainage basin. Due to frequent flooding of Petra, largely coming from this drainage basin, the Nabateans devised an elaborate flood control and water management system here. This included a system of dispersed terraces in the upper drainage basin, as well as a system of check dams, dams, cisterns, canals and terraces in the lower drainage basin. Due to long negligence, the system has fallen into disrepair and many of its elements are longer recognized. With a grant from the US Ambassadors Fund, our team is working to document and understand the archaeological, engineering and hydrological aspects of the site. The project will then move towards rehabilitation and restoration of key components of the system. Along with that, the local community will be trained in the optimal practices of building and maintaining flood control terrace systems. The results will be monitored through observation and stream gauges. Expansion of the results to the other tributaries feeding the ancient city will ensure optimal protection from flood hazards.

Keywords: Petra, flood control, Nabatean technology

A COMPREHENSIVE CONSERVATION PLAN AND 3D RECONSTRUCTION AT UMM QAIS, JORDAN

Farah Abu Naser
Department of Antiquities of Jordan

This study monitored and examined the surrounding environment and the major problems that facing Umm-Qais "Gadara"; which it's location in the hills above the Jordan Valley affects the deterioration of the architectural monuments of the site. The study is distributed within three monuments: Nymphaeum, basilica-terrace and five-aisled basilica, using different methodologies such reviewing previous researches, publications and previous interventions. The second program involved detailed recording of the temperature, relative humidity and carbon dioxide using Gemini Tinytag plus. And finally create a 3D-models and 3D-reconstructions. This research showed that the surrounding environment condition caused a deteriorated in the structures; the unexpected change in temperature and relative-humidity had the greatest impact. The fluctuation in temperature led to granular disintegration and break out the stone. The high relative-humidity led to crystallization of salts on surface; moreover the low relative-humidity led to irregular cracks and weakness the stone hardness. In order to suggest some solutions that could contribute in improvement the site and develop tourism strategy, the author recommends some points such developing an environmental plan to control the surrounding condition and create 3D-Models in other locations in the site. Weathering problems should be controlled by studying all the monuments problems, in order to find all the common damage, after that develop a reservation plan to keep the remaining of the monuments in Umm-Qais.

Keywords: Weathering-effect, Plan, Conservation, Umm-Qais, 3D-documentation

WHAT DOES THE ARCHAEOLOGICAL EVIDENCE TELL US ABOUT PETRA AND ITS HINTERLAND?

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This paper presents the results of the archaeological evidence which was collected by the author from the hinterland of Petra. Little is known about the cultural, economic, social and political relations between Petra and its hinterland. The results of the different fieldwork projects, surveys and excavations, the author initiated or participated in indicates that the hinterland of Petra was always in direct connection with Petra at all levels. A major road network guaranteed and facilitated this connection, the flow and exchange of ideas and material culture between the two sides. The archaeological evidence shows also that the hinterland of Petra played a role in its prosperity. The markets of Petra appear to have encouraged farmers to cultivate their lands with different types of crops, vegetables and fruits. Therefore, it is not unreasonable to assume that the upper class of Petra enjoyed the wine produced in its countryside considering the number of wine presses. The monuments of Petra seem to have inspired the inhabitants of its hinterland and made them trying to match the quality of architecture in the capital. Finally, it is quite safe to say that the hinterland of Petra does reflect the development the city had witnessed during its flourish.

Keywords: Petra, Nabataean, hinterland, agriculture, architecture

SUNDIAL DISCOVERED IN AMMAN CITADEL 2009

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Friends of Archaeology & Heritage Society

Amman Citadel has the largest archaeological remains in the core of the city. To the west of a Roman paved road, discovered by Husam Hejazeen and Yazid Olyan (2005-2007), running in the style 'bat steps' up to the Hercules temple a Sundial was discovered. The occupants of this Byzantine complex, occupied from more than 1600 years ago reused the architectural elements present from different periods. This artifact containing the sundial failed to be reused. It was a technological tool used for measuring time. The craftsman using a well dressed stone on the Roman-Byzantine style; technique carved an accurate design in both shape and measurements. The sundial has to be situated either in a high position or in the center of a complex so as to observe the time by the position of the shadows formed on the sundial by the vane. The bronze vane was fixed in the center of the hemispherical stone in the upper horizontal position but unfortunately it is not present. It is the work of a professional engineer and/or astronomer requiring accurate drawing, carving and measuring. The study will focus on the discovery of the sundial and the scientific ways of using rays from the sun for measuring time.

CHALCOLITHIC RITUAL POTTERIES FROM HARRAT JUHAYRA 1 AND 2, SOUTHERN JORDAN

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Sumio Fujii
Kanazawa University

Harrat Juhayra 1 and 2 are Chalcolithic composite sites at the northwestern corner of the Jafr basin, southern Jordan, consisting of an elongated settlement and an extensive burial field, respectively. The former contains a dozen rectangular dwellings, whereas the latter is composed of some dozens burial/ritual features including rectangular ossuaries with a tail-like features, independent tail-like features, and enclosures. Several spoon-shaped pottery vessels, probably used for some ritual, were found in situ at an enclosure (Feature 123) and a dwelling (Feature 256). Similar products have been attested at a few contemporary sites in the Jordan Valley, suggesting that common ritual was shared in the wide range of the Chalcolithic southern Levant. This paper briefly reviews the research outcomes at the composite sites and discusses the archaeological implications of the unique ritual vessels in a broader context.

Keywords: Chalcolithic, ritual pottery, enclosure, Southern Jordan

CONNECTING THE JORDAN VALLEY WITH THE TRANSJORDANIAN HIGHLANDS: RESULTS OF THE WADI SHU‘AIB ARCHAEOLOGICAL SURVEY PROJECT, 2016–2018

Alexander Ahrens
German Archaeological Institute, Damascus

The Wadi Shu‘aib Archaeological Survey Project (WSAS) was initiated in 2016. It focus-ses on a thorough survey and reevaluation of all archaeological and historical sites in the Wadi Shu‘aib, ranging from the Neolithic to the Ottoman Period, starting from south of the city of as-Salt in the west of the Transjordanian Plateau down to the city of Shuna South located in the Jordan Valley. The wadi itself is a broad and deep natural feature that links these two specific regions. The microclimatic diversity in the two regions connected by the Wadi Shu‘aib also presents a strong and striking contrast, with an abundant precipi-tation and natural aquifers located in the north-eastern part of the wadi along the western edge of the Transjordanian Plateau, and a dry, semi-arid climate in the riparian zone of the southern Jordan Valley. The wadi thus serves as a “transit zone,” not only geographically and climatically, but also culturally and political-historically. In the course of three successive survey campaigns, a large number of archaeological sites were thoroughly recorded for the first time. Additionally, small scale targeted excavations were conducted at the site of Tell Bleibil, located close to the alluvial fan of the Wadi Shu‘aib in the south-eastern part of the Jordan Valley. Soil samples for radiocarbon dating were taken at five different locations along the northern site of the tell, which features a collapsed section with exposed stratified remains in situ. The samples analyzed give datum lines for the chronology and occupational sequence of the site.

Keywords: Jordan Valley, Transjordanian Plateau, Wadi Shu‘aib, Survey

RECENT RESEARCH INTO THE BRONZE AGE AND IRON AGE BURIAL CAIRNS OF JEBEL QURMA, EAST OF AZRAQ

Peter M.M.G. Akkermans
Leiden University, Faculty of Archaeology

Some 130 km East of Amman beginsel Jordan’s barren basalt desert, part of which is the Jebel Qurma range. This area is an extensive and rugged basalt massif, with steep-sided, basalt-covered prominences and rocky dissected plateaus. The Jebel Qurma area is highly arid, with an average annual precipitation of less than 50 mm. Despite the rather uninviting appearance of Jebel Qurma, the region has an astonishingly rich archaeological and epigraphic record, including very large numbers of stone-built installations and innumerable pieces of rock art and texts in ancient North Arabian script. There are also many hundreds of burial cairns, preferentially located on remote high plateaus and the summits of the basalt mounds. Until very recently, virtually nothing was known about the burial cairns of the Jebel Qurma area and about those of Jordan’s basalt desert at large. This picture is now dramatically changing, due to the current research by the Jebel Qurma Archaeological Landscape Project (under auspices of Leiden University, The Netherlands). Entirely new and exciting insights are being received on ancient burial practices in the basalt desert. Several dozen cairns have been meticulously excavated by now, ranging from low and roughly circular heaps of stone about 1,5 m across and 1 m high to impressive tombs up to 12 m in diameter and 2,5 m in height. The cairns give evidence of a dazzlingly complex history

of use and reuse over the ages, and come in various types: ring cairns, tower tombs, cist graves, rectangular cairns, etc. The largest cairns appear to consist of two tombs built on top of each other. The oval, corbelled burial chamber inside the tombs yield human skeletal remains as well as burial gifts in the form of jewelry and weaponry. Both radiocarbon dates and Optically Stimulated Luminiscence (OSL) dates indicate that the majority of the tombs dates between the 8th century BC and the 3rd century AD. One cairn field, however, appears to date to the late 3rd millennium BC. This lecture will present the newest archaeological insights on the burial cairns and their date, construction, content, and use over the centuries. The newly excavated cairns provide, for the first time, a unique insight into the treatment of the dead in Jordan's North-Eastern basalt wasteland in antiquity.

ECCLESIASTICAL MARBLE TRADE IN JORDAN DURING THE BYZANTINE PERIOD: CASE STUDIES DISCUSSION

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This paper investigates the source of marble elements uncovered in situ from churches at different archaeological sites, north Jordan including Abila, Rihab and Hayyan Al-Mushrif. The churches were dated constructed during the Byzantine period. The investigations were based on physical, mineralogical-petrographic and geochemical analyses using optical microscopy, X-ray diffractometry, Electron Paramagnetic Resonance, and mass spectrometry. Analytical results were compared with the main reference databases of known Mediterranean marble quarries exploited in antiquity. Proconnesus-1 from Saraylar (Marmara, Turkey) is the most likely primary source of marble, while Proconnesus-2 from Çamlık (Marmara, Turkey) is a minor source. The results show clear evidence that the major marble trade during the Byzantine period was Asia Minor (Turkey). It is likely that the low cost, availability of ecclesiastical products of standard sizes, large labor forces and advanced transportation methods were the principal reasons for the success of Proconnesus (or Marmara) in supplying ecclesiastical marble for the construction of new churches arising from the spread of Christianity during the Byzantine period.

Keywords: Ecclesiastical marble, Proconnesus, Marmara, Asia Minor, Byzantine period

THE ASSYRIAN CONTACTS WITH THE JORDAN VALLEY DURING IRON AGE II

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The paper tackles the Assyrian contacts with the Jordan Valley during Iron Age II, based on a hitherto unpublished bulle. The piece carrying cuneiform writing was uncovered at Tall Damia in the central Jordan Valley during excavations of the joint Jordanian-Dutch expedition of the Settling the Steppe project. The archaeological context in which the bulle was found points to the 8th century BCE. This date agrees with the information we have from the Assyrian royal inscriptions and from the Old Testament about the Assyrian invasion of the southern Levant at that time. The resulting Assyrian influence is amply attested in the material culture of the Jordan Valley, as manifested in the architecture and pottery uncovered in sites, such as Deir 'Alla. However, this bulle remains the only evidence for cuneiform writing from the Iron Age in Jordan. The paper will offer a reading, transliteration and translation of the text on the bulle. The subsequent commentary will seek to put the find in its historical and economical contexts, investigating the various possibilities that brought the bulle to Tall Damia. The Assyrian military and political expansion might seem an apparent reason for this, but there are also enough reasons to believe that commercial contacts might have carried the document down to the Tall. Actually, such contacts between the southern Levant and Mesopotamia probably were always extant and did not begin in the 8th century BCE.

Keywords: Jordan Valley, Tall Damia, Contacts with Mesopotamia, Regional Trade, Assyria

THE ROMAN TOMB (MAUSOLEUM) OF DHIBAN

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Basem Mahamid

Department of Antiquities of Jordan

It is located in the Dhiban, about 35 km south of Madaba. The historical site of Dhiban is very important as it includes architectural features representing different periods of time as human settlement began in the site since ancient times. This tomb was discovered to the east of Tell Dhiban on the main road. According to Roman law, the tombs were built outside the walls of the city and may have been near the Roman Street. The mausoleum is nearly similar to the cut-rock tombs, but it is irregular. It is located in a large, almost rectangular cave, consists of a central outer room leads to three side rooms and a central room. In this paper I will present the mausoleum in terms of architectural, historical and archaeological aspects. Rehabilitation of this monument to be a touristic landmark in the area of Dhiban.

Keywords: mausoleum

DISCONTINUITIES (PHYSICAL, EMOTIONAL AND COGNITIVE) AND CULTURAL HERITAGE IN JORDAN: ILLICIT TRAFFICKING OF ARCHAEOLOGICAL OBJECTS

Abdel Hakim Al Husban

Faculty of Archaeology and Anthropology - Yarmouk University - Irbid

Archaeologists agree that Jordan's history is considered as one of the oldest and richest ones in the world. It is characterized by a unique cultural heritage and a huge cultural and religious diversity. That is why the number of archaeological sites is countless. Archaeologists are talking about tens of thousands of archaeological sites in Jordan. Despite this colossal and huge number of archaeological sites in Jordan the scientific, economic, social and symbolic benefits or opportunities obtained from these archaeological sites are limited. The reasons laying behind this weak or limited benefit from the country's rich and valuable cultural heritage can be reduced to many technical, administrative, bureaucratic, political and socio-cultural obstacles and problems. In my paper I argue that one of the most important problems preventing Jordan from a better utilization of its resources in the fields of cultural heritage is the nature of the negative relationship between the local communities living around the archaeological sites and the archaeological sites themselves which is characterized by some sort of apathy, indifference, lack of information on the site and even some sort of physical, emotional, and cognitive ruptures and discontinuities with these sites. The general feeling of the population is that those sites do not belong to them but to other peoples and cultures who used to invade their lands across history. Consequently, different forms of alienation, hostility and aggressiveness against the archaeological sites and objects including the illicit trafficking of archaeological objects are widespread as a result of this negative and problematic relationship between the Jordanians and their heritage.

TOURISM IN JORDAN REALITY AND STATE IN THE LIGHT OF ARAB SPRING CASE STUDY: JERASH AND PETRA

Duha Al Hwayan

Department of Antiquities of Jordan

This research aims to study the reality and the state of Jordanian tourism in light of the challenges prevailing the region. The research problem lies in the impact of the so-called Arab Spring and the Arab revolutions on the decrease number of visitors and tourists, and its role in changing the visitor point of view about the security in the country. After study and research; these problems were caused by the administrative and marketing problems that Jordan tourism suffers from the beginning of the Arab Spring. Theoretical and practical methods have been used in the research. The practical framework is presented through questionnaires that have been distributed on visitors of the site to see their point of view of the site and the services provided therein, also the impact of the Arab Spring on tourism in Jordan and the reality of tourism. Likert scale were used to measure strengths and weaknesses to find out the problems that tourists and visitors faced.

TESTING NEW LUMINESCENCE DATING TECHNIQUE FOR THE WIDE SPREAD TERRACES STRUCTURES IN PETRA REGION

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Catreena Hamarneh

German Protestant Institute of Archaeology, Amman

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On the wide stretches of mountain environment of Petra region, ancient Nabataean engineers established a complex and extensive system of terraces and dams to harvest and redirect rainfall water. This complicated hydraulic structure has been always dated based on surface pottery, but the question of chronology and the length of use of these structures was always an archaeological debate. In this work, we will date directly, for the first time, terraces structures from Petra using a recently developed luminescence technique for rocks; which determines the last time rock surfaces were exposed to light. This work employs a very new procedural and mathematical technique based on measuring luminescence signal bleaching by sunlight at varying levels deep in rock surfaces, the principle of the method relies on the fact that when a rock surface is exposed to light, any charge trapped in meta-stable sites in the minerals in the rock (especially quartz and feldspar) is released. After burial, this charge begins to build up again as a result of exposure to natural ionizing radiation. The stored charge is measured in the laboratory as luminescence and divided by the rate of storing charge (dose rate) to give the period of burial (Sohbati et al., 2011; Freisleben et al., 2015). The technique has solved many chronological questions for different archaeological sites in the Levant area where organic matters for C14 dating is not available (Sohbati et al., 2015, al Khasawneh et al, a & b, 2018).

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Keywords: OSL dating, terrace, Petra

TOWARDS A STRATEGIC APPROACH FOR SUSTAINABLE URBAN REGENERATION OF JERASH CITY CENTER

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Many historic cities in recent decades experienced redevelopment often related to culture, tourism and technology. Such applications may offer the potential for creating more sustainable and livable cities. Particularly, in old industrial districts, new politics, strategies and funds have been used for the re-utilization of old industrial sites. This paper discusses Jerash City through detailed analysis of sustainable urban regeneration approaches. Unemployment, low education, poor health condition and bad condition for the built environment have been considered. A detailed study was performed to obtain all information needed regarding the district. In order to build a regeneration model for Jerash city center, the problems of the central area of Jerash City were defined, and then a set of criteria was established for urban regeneration policies that involves the social, economic, institutional, and environmental aspects. Cultural activities should be evaluated as substantial regeneration tool to attract skilled personnel and capital investment. Also, they should be seen as a tool to enhance city's urban image, quality of life and competitiveness in relation to other cities. Solutions were suggested upon the assessment and were discussed by the community representatives and other local government departments. The research concluded that integrated and comprehensive regeneration strategies are required for revitalization of historical city Centre of Jerash.

Keywords: Challenges, Community Participation, Jordan, Sustainability, Urban development

ASSESSMENT OF INTERPRETATION & PRESENTATION METHODS IN ARCHAEOLOGICAL SITES IN MADABA

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Jordan has a great diversity of cultural heritage sites are of national and international significance like Madaba that known as the "City of Mosaics " because of the sheer number of mosaics which have been found in the area, This study highlights the presentation and interpretation that carried out by Friends of Archaeology & Heritage in cooperation with the stakeholders in Madaba by exploring Madaba Visitor center as a case study to evaluate the success of Presentation & Interpretation techniques in the case study in order to evaluate the extent to which visitors and the local community benefit from such project and evaluate the interpretation methods from the visitors perspective in addition to augment the ability of the archaeological sites staff to deal with interpretation tools. This study assesses the interpretation techniques that applied in Madaba Visitor center by comparing it with the international interpretation standards. The assessment is primarily based on questionnaire to assess if these techniques were successful or not and the extent to which they are possible for application in other sites in Jordan. The purpose of this study is to Build visitors' emotional attachment to the site by enhancing the sense of the place real events by that time together with a good amount of information that gives the visitor the chance to live and feel an unforgettable experience of the place. The second idea is how to design a useful interpretation plan that could be implemented on all archaeological sites.

Keywords: Presentation, Interpretation, assessment, Madaba, Jordan, techniques

M/LPPNB HUMAN SKULLS AND YARMOUKIAN FINDINGS AT TELL ABU SUWWAN: RESULTS OF THE 2016 EXCAVATION SEASON

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The site was excavated during the University of Jordan 2005-2008 and 2014-2016 field seasons, directed by the author. The probable size of Abu Suwwan is ca. 10.5 ha (26 acres) therefore, it is considered to be one of the Neolithic Megasites in Jordan. The discovered architecture and a high number of diagnostic pieces of lithics and the carbon dating suggest that the site was occupied continually from the Middle Pre-Pottery Neolithic B (MPPNB) to the Yarmoukian (Pottery Neolithic) period. The site contains a "Grill Building" plan with a long chronological sequence. It resembles the Cayonu Tepesi architecture in Eastern Anatolia. Moreover, the site produced a ritual mudbrick area which contained several burials and thirteen skulls, two of them were plastered. While the Yarmoukian pottery and arrowheads were found during the first six seasons only in disturbed contexts, the seventh season revealed the first in-situ contexts in the southern part of Area B. This discovery finally confirmed the existence of the Yarmoukian occupation already indicated by some radiocarbon dates obtained during the previous seasons.

Keywords: Neolithic, Yarmoukian, PPNB, Megasites, Plastered skulls
THE SOUTHERN JORDAN IN THE NOTITIA DIGNITATUM. A HISTORICAL – GEOGRAPHICAL APPROACH

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The study of the history and geography of Jordan during the Byzantine period is still in need of further research. This study aims at shedding light on researching and analyzing geographical locations in the southern Jordan region mentioned in the military document Notitia Dignitatum dated to the end of the fourth century A.D. and the beginning of the fifth century A.D., through a historical and geographical methodology to analyze the names of the sites mentioned in the document based on the Byzantine gazetteers, and compares them with various Byzantine sources. The document provides clear and accurate information on the posted of Byzantine military garrisons in various locations in southern Jordan such as: Robatha, Toloha, Arieldela, Bir Madhkure, Zadocathae, Zoarae, Ailae, Admatha, Tarba, Sabaiae, Areopolis and other sites. The study of the document shows that the history of the majority of the Byzantine military units posted in southern Jordan is mostly returned to the Roman period, i.e. during the period of the military and administrative organizations carried out by the Roman Emperor Diocletian (284-305 A.D.), as well as the extraction of sufficient information to form a clear picture of the degree of contribution Arab military units in the defense of the borders of the Byzantine state,

especially that most of these military units posted in areas near the main centers such as military garrison in Byzantium near the entrance to the city of Petra, which feels that internal security is the goal of these garrisons.

Keywords: Southern Jordan, Byzantine period, Notitia Dignitatum, Byzantine sources, Military sites

A STUDY OF PARA-BIBLICAL TEXTS OF THE DEAD SEA SCROLLS

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As the world celebrates 70 years since the discovery of the Dead Sea Scrolls, Arab scholarly work in this field is still of little or no significance. On the other hand, western scholars studied these texts from a specific religious and cultural perspectives, and largely neglected the broader cultural and geographical context in which they were written. The current paper introduces a two-year project - funded by the Scientific Research Fund - which is part of a comprehensive long-term plan that aims to study the non-biblical texts of the DSS, and train young Jordanian researchers to participate in further work in this area. This study, in which the presenter is a main investigator, will put these texts within their broader linguistic, religious and cultural contexts. This project constitutes the initial phase in which twenty-five texts of the so-called "Rewritten Bible" of the DSS will be studied. These texts are of the type that belongs to the broader genre named "Para-Biblical Texts", which accounts for about a quarter of the total number of manuscripts discovered in the caves of the Dead Sea region. The ultimate goal of this study is to render a volume of the twenty-five "Rewritten Bible" texts comprising lexicographical research on the languages used in these texts (Hebrew and Aramaic) in which linguistic evidence of other languages of the same period, such as Nabataean, Palmyrene, and Ancient North Arabic will be considered. The work will also examine the Arabic-Islamic historical and religious sources in order to determine how they rendered the biblical narratives and characters mentioned in the "Para-Biblical texts".

Keywords: Dead Sea Scrolls, Hebrew, Aramaic, Sectarian Jewish Writings, Para-Biblical Texts, Re-written Bible

NEOLITHIC REMOVED SKULL: AN INTERPRETATIVE PERSPECTIVE

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Bayt Ras Project / SCHEP

The removal of skulls is documented for the first time in the Levant during the Natufian period (9000 years BC.), and spread to the end of the Pre-Pottery Neolithic B (PPNB) (8500 – 6000) BC. When this practice was discovered for the first time by Kathleen Kenyon, it was interpreted as a sign of ancestral worship. This study will analyze and discuss the characteristics of socio-cultural community in the southern Levant through the study of skulls found in the southern Levant; the collected data from literature review was made in order to clarify other interpretations for the removal of skulls from that era and this has led to another innovative explanation other than that of ancestral worship. The new interpretation is supported by direct and indirect physical and intangible evidence such as spatial distribution of collective skulls caches, linked with plaster statues, creation of memory, the social construction of identity and its relationship to the issue of abandonment that have occurred in some areas of southern Levant during the (PPNB) period, and why the skull was specifically removed. The evidence showed that the skulls do not all belong to elder males but also to male and females of different ages. This result is contrary to the idea that worship was only associated with older males and other interpretations related to social phenomenon.

Keywords: Neolithic, Removed Skull, Ancestral Worship, Identity, Burial Practices, socio-cultural community

AN ARCHAEOLOGICAL AND CHEMICAL STUDY OF AYYUBID/ MAMLUK GLAZED AND PAINTED POTTERY SHERDS FROM AL RABBAH, JORDAN

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This paper aims to study fifty Ayyubid/ Mamluk glazed and painted pottery sherds from Al Rabbah Archaeological Site in Southern Jordan. That were found during an archaeological excavation season in 2004. The pottery fragments were

divided according to the color of the glaze and the style of its manufacture into four groups: yellow glazed pottery, brown glazed pottery, green glazed pottery, and painted clay pottery. Chemical analysis was also conducted for the first time of four samples using Synchrotron Radiation X-ray Fluorescence Spectrometry (SR-XRF) Technique. Furthermore, the semi-quantitative analysis of the elements MnO, Cl, P₂O₅, Na₂O, MgO, TiO₂, K₂O, Fe₂O₃, PbO, CaO, Al₂O₃, SiO₂, and L.O.I has been carried out in order to identify and characterize the elemental composition: i.e to determine their provenance. This was compared with some of Ayyubid/ Mamluk pottery, which was found in the archaeological sites in Jordan. This was achieved by obtaining information on their similarity and clustering. Based on the raw materials for ceramic production, the glazing method, and the technique of industry, the results of the chemical analysis provided persuasive evidence that Al Rabbah pottery sherds have least two different sources of provenance and types. The first was an external indicating that the Sherds were imported. The second type was extracted from the area surrounding Al Rabbah Site, which confirms that it was local industry.

Keywords: karak, Al Rabbah, Ayyubid/ Mamluk pottery, Archaeometry, Chemical analysis, Synchrotron Radiation X-ray Fluorescence Spectrometry (SR-XRF), semi-quantitative, MnO, Cl, P₂O₅, Na₂O, MgO, TiO₂, K₂O, Fe₂O₃, PbO, CaO, Al₂O₃, SiO₂, L.O.I.

THE USE OF 3D TECHNOLOGIES IN CULTURAL HERITAGE INTERPRETATION AND PRESENTATION: A CASE STUDY FROM JORDAN

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Today 3D technologies represent necessary instrument for professional cultural heritage preservation, interpretation and communication to the wider public. In this study 3D models have been used for the documentation and reconstruction of a number of important monuments in two famous Greco-Roman Decapolis cities, namely Gadara and Gerasa. 3D laser scanning and image-based modelling techniques were used to generate 3D models of a number of key monuments in the two cities. The 3D modeling technology proves to be an effective instrument for the interpretation and presentation of these monuments, particularly those that are poorly preserved due to the adverse effects of nature and human. The generated digital replicas can be used as a tool for the interpretative hypotheses of archaeologists and as an effective medium for a visual description of the cultural heritage.

Keywords: 3D technologies, Cultural Heritage, Jordan, Decapolis, interpretation

DOCUMENTING THE VISIBLE ARCHITECTURAL REMAINS OF KH. BRAQ (GREATER PETRA AREA): A NEW JOINT PROJECT BETWEEN THE AL-HUSSEIN BIN TALAL UNIVERSITY (MA'AN, JORDAN) AND THE UNIVERSITÉ LIBRE DE BRUXELLES (ULB)

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Univeristé Libre de Bruxelles (ULB)

Khirbat Braq is one of the major Nabataean sites in the Greater Petra area. It lies 6 km east of the Nabataean capital, on the western ridge of the limestone massif (Jabal Shara) overlooking Petra. It includes perennial springs feeding the city and ensuring part of the water supply of downtown Petra through well surveyed water channels. The presence of this critical spring explains the development of an important sanctuary during both the Nabataean and Roman periods and a long-term occupation of the area. After the initial description of N. Glueck, the site remained unexplored despite of the accidental apparition of sculpture discovered at Kh. Braq during the 20th c. (Parr 1960). Complementing a first excavation project carried on in the 1990's by S. Farajat, M. Marahla and H. Falahat on a late Islamic house of the site.

A documentation field season was carried out in Kh. Braq in April 2018 providing a first general description and top plan of the visible remains. This complements usefully our knowledge of interactions between downtown Petra and the Jabal Shara area from antiquity to the present day.

MANAGEMENT PLANNING AS A PARTICIPATORY AND CONSULTATIVE PROCESS: THE EXAMPLE OF THE PETRA INTEGRATED MANAGEMENT PLAN

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Petra was inscribed as a World Heritage Site in 1985 and has been the subject to a number of operational and management plans since 1968. None of these plans could be fully endorsed or become operational, thus the site continues to face a number of challenges.

The need for a comprehensive management plan for the property was specifically expressed in the World Heritage decision 37 COM 7B.50, 4b. For this reason, the Petra Development and Tourism Region Authority and the Department of Antiquities of Jordan joined efforts to initiate the development of an integrated management plan for the site under the technical guidance of the UNESCO Office in Amman.

Consultation represented an integral part of the process of preparing the management plan. Managing the consultation process is central to achieving workable results. It is therefore essential that it is sufficiently planned for, organized and transparent to all concerned stakeholders. The consultation structure shall be maintained throughout the implementation of the management plan as a useful tool for dialogue that is key for the management of the site. The consultation structure was organized around the following topics: local community partnerships, law and legalities, conservation, archaeology, geology and hydrology, infrastructure management, nature conservation, visitor services, interpretation and museums, tourism, planning and land use, risk management, sustainability and eco development, education and data management. As part of this study, the methodology utilized for the development of the integrated management plan will be presented placing particular emphasis on the consultative and participatory process adopted.

Keywords: management plan, World Heritage Site, participatory, consultation

THE CONSERVATION AND RESTORATION OF AL- QATRANEH FORTRESS PROJECT

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Al-Qatraneh Fortress is one of the Ottoman Fortresses in Jordan, located in the Town of Qatraneh/ Karak, 90 km south of Amman on the desert road between Amman and Aqaba. Al-Qatraneh Fortress was built to serve the pilgrims as it is situated at the Shami Hajj rout and the connecting roads between Sham and Hijaz in the 15th century AD, during the reign of Sultan Sulaiman Al-Qanuni and it was passed by many famous travelers. The Fortress is a rectangular building with dimensions of 23m*17m and height of 10.5m. The Qatraneh Fortress has recently been subjected to sabotage and excavation at its foundations, the external façades and in the interior rooms. This led to a differential settlement in the

foundations, which resulted in the appearance of vertical and horizontal cracks on parts of the exterior facades of the Fortress. Therefore, the department of Antiquities of Jordan in collaboration with the local community started a project of restoration and conservation for the walls of the Fortress through its specialized cadres to rebuild, repoint and consolidate the deteriorated parts of the Fortress. This project aims at sustaining and preserving this heritage from vandalism, making this site eligible for tourism. Additionally, it aims at raising awareness and responsibility in the community by providing them with jobs opportunities. The work of the restoration and conservation project in Al-Qatraneh Fortress included the reconstruction of the missing stones, reinforcement and repointing of internal and external walls, and the main facade with the entrance. The restoration of the citadel will be completed by creating a path for visitors with interpretation panels narrating the story of the site. The project is based on two main methods: the first is the analytical methodology resulting from the sensory detection of the site and the documentation of the reality of the current situation using architectural drawings, photography and the use of a system to monitor the structure and cracks using the TM30 surveyor in addition to numbered glass rulers. While the second method is through the preparation and implementation of an action plan for the maintenance and restoration that relies on the mixture of lime similar to the old mixtures existing in the site after the analysis and the study of the components and characteristics of old mixtures, taking into account the international standards and covenants.

Keywords: vandalism, local community, conservation, Qatraneh fortress, Jordan.

THE AYYUBID AND MAMLUK KHANS AT AQABA

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This paper presents the results of the new archaeological excavations at Khans al-Aqaba, located 350 km south of Amman, in Jordan. These excavations have revealed that the earliest occupation at Aqaba was in the 9th-12th centuries and that the earliest khan was likely constructed in the second half of the 12th century. However, the current castle layout most closely reflects the plan of the later Mamluk khan at Aqaba that was originally built ca. 1515. This Ayyubid khan subsequently underwent several re-buildings and restorations during the Mamluk and later periods until it assumed its present appearance during the last century. The paper will focus primarily on the Khan of Aqaba during the Mamluk period. In addition to describing the architectural elements of the khan and their functions and various modifications, I will also discuss the Mamluk and Ottoman Inscriptions, parts of which have been recently revealed, which provide important information on understanding the history of the khan during these periods.

A RARE ABBASID DIRHAM FROM 200 A. H.

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The aim of this study is to focus on the methods used to study coins, because understanding these methods and applying them is necessary to extract as much information as possible. Coins are like a field of information, and for more than two thousand and five hundred years they have been an essential part of our civilization, documenting the life cycle of different cultures and civilizations. Coins provide us with official information because they were issued by different authorities and supremacies, not personal issuance and this fact makes them an important source of information. This is why my study of this dirham emerged. The dirham that bears the name of the city of mintage "the al-Ma'mun city soor", the names of Talha zo-lyameenain and harb bin Issa, and that was dated for the year 200 A.H Under the Caliphate of Caliph al-Ma'mun (198 - 218) A.H.

EXCAVATED, DOCUMENTED, AND STORED/ EXHIBITED. IS IT SAFE NOW?

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The Jordan Museum

Archaeological objects are made of different materials, and they react to the same store/exhibition environment differently. Organic materials may deteriorate faster and severely under the same circumstances that basalt may survive.

Very limited experiments have been done so far on the best practice on how dry and high the temperatures should be inside archaeological storages and exhibitions in Jordan. Most of the buildings hosting archaeological exhibitions were either built too long time ago or were built to serve another purpose and later on were converted into archaeological museums. Controlling the environment of a storage or an exhibition 24/7 requires very high resources that are not available for most of institutions. This study conducted on the facilities of the Jordan Museum is measuring the differences in temperature and humidity between the exhibitions and the storage on one hand and the out temperatures and humidity. In addition, this study is focusing also compares between using the silica gel as a humidity controller and the dehumidifier devices in a sealed and un-sealed environment. The questions were: using each of the above techniques, how long time does it take until the desired climate inside the cabinet is reach? How long does it control the environment until it needs a further intervention? How sealed should the cabinet be in order to reach the desired environment, and if this is different or the same when the cabinet is un-sealed? Obtained results will be presented in the coming ICHAJ conference taking place in Florence in January 2019.

Keywords: Archaeological objects StoragesExhibitions, Microenvironment

ST. JOHN THE BAPTIST' CHURCH IN RIHĀB: EPIGRAPHY AND HISTORY

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The excavation carried out in St. John the Baptist's church in Rihāb (North-East Jordan) has uncovered an important series of Greek inscriptions. There are two sets of texts. The first group, on mosaic floors, commemorates the laying of pavements in the late sixth and early seventh centuries AD at the expenses of the common fund of the village and at the expenses of the church authorities. It also mentions the names of the rivers of Paradise, the months of the year and the Resurrection. The second group includes a series of epitaphs from the Roman period, engraved on the many blocks reused in the building. All these inscriptions were recently studied within the framework of a close partnership between the Mafraq Branch of the Department of Antiquities and the Jordanian-French team of the 'Greek and Latin Inscriptions in Jordan' ('Inscriptions de la Jordanie'). This paper will show their contribution to our knowledge of the rise of Christianity within a rural community in the civic territory of Bostra in Roman Provincia Arabia.

Keywords: Rihāb, Greek epigraphy, Roman Provincia Arabia, Bostra, Christianization

A POWER-BASED READING OF THE MUSLIM BUILT ENVIRONMENT IN THE MIDDLE EAST. AN IBN KHALDUNIAN PERSPECTIVE

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Built environments are the production of the dominant ideologies of their civilizations. Historically, the built environments of the classical age reflect the rational perfectionist ideology of their age; they are characterized by their timeless style that is recurring in most of the classical cities including the Ten Decapolis Cities in the Middle East. They are non-democratic, centralized built environments that reflect the classical power dominance. Likewise, the mediaeval architecture reflects the dominant ideology of the church and its belief in the sacred. The Islamic built environments are of no difference; they reflect the dominant ideology of their civilization and mainly that of Islam. However, Islamic built environments witnessed several deviations due to, among other reasons, the actual political structure. The paper investigates the impact of the political changes upon the structure of Arab Muslim cities in the Middle East. To link cities' morphology with the political changes in Islamic history, the paper adopts Ibn Khaldun's interpretation of the Islamic political history, focusing on his theory of the three types of cyclic governments that has successively ruled Muslims. The paper develops a framework that links government-types, principles of rights in the Islamic legal system, decision making process, and accumulation of building experiences through analyzing the decision making process in the garrison towns of al-Basra and al-Kufa, transformed towns such as Damascus and created towns such as Wasit and Samarra. The main ideological characteristics of Islamic built environments will be deducted from the investigation, based on the concepts of power and rights.

Keywords: Islamic Built Environment, Government type, Decision making process, Power, Rights

EL-KHDARI ARCHAEOLOGICAL AND EPIGRAPHIC SURVEY PROJECT: THE FIRST SEASON 2017

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The authors conducting their first field season of an archaeological and epigraphic survey project in the El-Khderī region that is located in the North-Eastern Jordanian Badia (the Harrah). This region is characterized by the presence of a huge number of Safaitic inscriptions and the lack of permanent settlements. The available archaeological evidence suggests that the region was occupied by pastoral nomads who depended merely on a mobile subsistence pattern. During the first season of explorations that was conducted in El-Khderī more than 2000 Safaitic texts and rock-arts were recorded, 51 archaeological sites, Nabataean inscriptions, Greek inscriptions, early Arabic inscription, early Islamic inscriptions, and a number of pre-historic circular and irregular structures scattered were found and documented. This paper will present the most important results of the survey, specially the new finds of inscriptions, and rock drawings. Many Safaitic texts talking about relations with Nabataeans, an early Arabian inscription were found which is very important in the chain of north Arabic writing development, early Islamic inscription dated to the reign of the Khalifat Hisham Bin Abdelmalik (AH 108), and the amazing find of a ship drawing accompanied with a Safaitic inscription which appear for the first time in the Safaitic drawings

Keywords: Archaeology, Epigraphy, Survey

PRE-OASIS CULTURE IN THE NORTHWEST ARABIAN PENINSULA (MID-HOLOCENE QULBAN BNI MURA JORDAN)

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Water is playing an important role in the past and present in demography and civilizations. It is concentrate around water and shrinking far away from water. Qulban Bni Mura witnessed one of the most important water management systems and strategies in the north west Arabia. the climate change of the mid - Holocene in the north west Aribia during the transition to the aridity left behind water management systems and strategies. The paleo - environment, paleo - climate and climate changes have been effected on the water resources of the north west Arabia. This forced the people to establish water management systems and strategies adapt and deal with the extreme environmental conditions and less water in the north west Arabia. The water management systems and strategies was developed through the time, and proved technically to be Compatible with the topography and the geology of the north west Arabia. This contribution is shedding the light on the water management systems and strategies of the chalcolithic pre-oasis culture of the north west Arabia, Furthermore It will clarify and mentions the water use, the land use, geological and hydrological experiences of pre - oasis people which gave them the ability to choose and build the right water management systems referring to the topography and the geology of the area.

Keywords: mid- Holocene, paleoclimate, water management, shepherd culture, water use. geoarchaeology, hydroarchaeology

THE PALEOENVIRONMENT OF SHISHAN MARSH I, A LOWER AND MIDDLE PALEOLITHIC SITE IN THE AZRAQ OASIS, NORTHEAST JORDAN

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The Levant played an important role in the dispersal of early human populations out of Africa and contributed to the overall Late Pleistocene population dynamics of Syro-Arabian deserts. However, the paleolandscapes of the Paleolithic record in Jordan are not well studied. This paper summarizes the ongoing joint palaeoenvironmental and archaeological research at the Lower and Middle Paleolithic site of Shishan Marsh 1 (SM1) located in the Azraq Oasis in northeast Jordan. Thus far research has focused on environmental reconstruction, faunal remains, lithic technology, blood residues preserved on the lithic artifacts, and site formation processes. Together, the results of these analyses help to better understand the Paleolithic record of Jordan and how it relates to the broader archaeological records of the Levant and the Arabian Peninsula. We also address the implications of our results for understanding the behavioural and cognitive capabilities of Middle Pleistocene hominins.

Keywords: Lower Paleolithic, Middle Paleolithic, Paleoenvironment, Fauna, Lithics, Protein Residue, Site Formation, Azraq, Hominin Dispersals

WADI KHUNEIZIR ASTONISHING DISCOVERIES 2018. UNKNOWN TOMBS FROM THE EARLY BRONZE AGE AND NABATAEAN PERIODS

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Very little is known about the antiquities of Wadi Khuneizir. During Burton MacDonald's survey of the area in 1985-1986 site number 108, Rujm Khuneizir, was singled-out of interest for the Iron Age II and recommended for excavations, but none has ever taken place. Recently though, rescue excavations conducted by the Department of Antiquities staff from the Southern Ghawrs revealed some astonishing finds: well-built tombs with remarkable funerary goods dating to the Early Bronze Age and Nabataea periods. The Early Bronze Age tombs were shallow (perhaps due to soil erosion), rectangular and built of adobe bricks, funerary architecture hitherto unknown. Human bones were well-preserved and collected. Many pottery vessels helped to date the burials to the EBII period. Further to the west, and at a much deeper level, over two metres down, were well-preserved shaft burials undercut to the east and covered by adobe bricks and stones like to those found by Politis at Khirbat Qazone in Ghor al-Mazra'a. The bodies were similarly wrapped in textiles and leather body-bags. Although no objects were found in the graves themselves, 1st-2nd century A.D. pottery fragments (including fine Nabataean painted bowls) in their shafts and vicinity helped to date the burials to late Nabataean times. Both these groups of tombs represent unique finds at Wadi Khuneizirah which was not known before. It is therefore imperative to preserve this site and conduct further archaeological investigations and excavations there in order to put these discoveries in cultural and regional context. The Iron Age in the area also needs understanding.

Keywords: Khuneizirah, Southern Ghawrs, Early Bronze Age, Nabataean tombs

HISTORICAL PHOTOGRAPHS AND ARCHAEOLOGY: THE CASE STUDY OF K.A.C. CRESWELL'S PHOTOGRAPHS OF THE AMMAN CITADEL

Stefano Anastasio

MiBAC-Superintendency of Florence

There is currently an increasing interest in XIX and early XX century photo-archives dedicated to archaeological subjects. Photo-archives are actually becoming a key tool for research. This is the reason why it is probably the right time for the archaeological community to think about methodology and to define consistent procedures for studying historical photographs. More specifically, it would be useful to share standards and common practices on the systems for publishing data. The present paper deals with a case-study, i.e. the Amman Citadel. A significant group of photographs, taken between the 1860s and the 1930s at this site, allow us to underscore the main research targets that can be reached by studying these documents: historical photographs are fundamental to understand the changes that have occurred over the last 150 years as regards the state of monuments and the surrounding landscape, the provenance of many artefacts and the stratigraphic reading of ancient buildings that still stand today, as well as to acknowledge the existence of modern conservation interventions. Special attention will be paid to a small but significant group of photographs, taken in the early XX century by K.A.C. Creswell at the Amman Citadel. Creswell's photographs are presently held in several archives, in the United States, Great Britain, Italy, and Egypt. The author will focus on a yet unpublished set of photographs currently held at the Berenson Library of Villa I Tatti in Florence.

Keywords: Historical photographs, Amman Citadel, Islamic architecture

IMMERSIVE TECHNOLOGY, CULTURAL HERITAGE, AND PUBLIC HUMANITIES, AND 'VIRTUAL PETRA'

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Digital technologies allow for increasingly immersive engagement with archaeological sites. Photogrammetry, 3D Modeling, and Virtual Reality work together to allow individuals to walk through a site without ever leaving home, allowing artifacts and ideas to flow across borders and around impediments. Since 2016, and with the support and collaboration of the University of Iowa's School of Art & Art History, Digital Studio for Public Humanities, and the Iowa Center for Research by Undergraduates, I have focused on developing interactive 3D models of Petra's monumental tombs and structures. These models are derived from thousands of high-resolution photographs as well as plans and measurements. They are then processed into fully interactive virtual environments. This paper will present examples of this work, focusing on the Siq Camel Relief, Tomb 70, and the Block and Medallion Relief; it will also engage the possibilities that these technologies provide for research and public engagement. They are important documentary tools, and they are also experimental platforms wherein the feasibility alternative reconstructions can be tested. They allow for easy collaboration between scholars around the world, and provide students with an experiential perspective on Petra. These immersive environments are also crucial ways to communicate and preserve Jordan's cultural heritage to the wider public, especially to those who would not otherwise be able to visit Petra because of financial hardship, physical disability, or political restriction. These models and virtual experiences may also encourage tourism in Jordan through increasing public exposure. *I will bring examples and a VR Headset to ICHAJ.

Keywords: Petra, Photogrammetry, 3D Modeling, Virtual Reality, Digital Humanities

A MULTIFACETED DEATH: FUNERARY PORTRAITURE IN ROMAN JORDAN

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Funerary portraiture was a widespread phenomenon in the Roman Empire, one that assumed many forms and expressions across provinces and throughout centuries. Funerary portraits and their accompanying epitaphs are indeed among the most eloquent testimonies to ancient lives. In Roman Jordan, more than two hundred funerary portraits are documented from the Early Imperial period in Petra (the Obelisk Tomb, the Turkmāniyyah Tomb, the Urn Tomb, the Soldier Tomb and the Silk Tomb) to the second and third centuries CE in the Decapolis (and particularly in Gadara-Umm Qeis, Gerasa-Jerash, Abila-Qweilbeh, Pella-Tabaqat Fahl, Capitolias-Beit Ras, Philadelphia-Amman and a number of rural settlements surrounding these cities). Building on the recent research of eminent scholars such as Thomas Weber, Alix Barbet, Robert Wenning, Guntram Koch and Fawzi Zayadine, this paper will seek to illustrate the wide array of formats that was available to patrons (sarcophagi, stelae, frescoes, busts, loculus slabs, reliefs and tomb façades) and the iconographic spectrum used to convey the deceased's qualities, values, aspirations and social standing (funerary banquet, 'arm-sling' pose, portrait

bust, 'philosopher' costume, conjugal harmony and religious piety). This set of documents will be explored in light of the corpus of funerary portraiture from the Roman Near East (Syria, Palestine and Phoenicia) and the broader Roman world, in an effort to grasp artistic filiations and local idiosyncrasies. Particular attention will also be given to the commemorative and religious purposes of funerary portraits, through an examination of their architectural setting in the tombs.

Keywords: Roman, Portrait, Funerary, Sculpture, Petra, Decapolis

THE SITE MUSEUM AND INTERPRETATION CENTRE OF AL-HALLABAT COMPLEX: PRESENTATION AND MANAGEMENT OF CULTURAL HERITAGE AIMED TO SOCIAL DEVELOPMENT

Ignacio Arce

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The Site Museum and Interpretation Centre of al-Hallabat Complex represents, within the context of the long-lasting project of excavation, restoration and presentation of the Hallabat complex, a unique and pioneering experience of presentation and engagement of the local community. Developed on the strategy of the "Heritage for Development Program", it was envisaged to preserve and present the Cultural Heritage, understood not only as a tool for socio-economic development, but also of empowerment of the local communities and for the reinforcement of their identity. This strategy allows the appropriation of the monuments by these local communities, thanks to a thorough understanding of the immaterial values embodied in that Material Cultural remains, thanks to the didactic program implemented in the Interpretation Centre and Site Museum, and which make it meaningful to the visitor and the local community itself. The results achieved represents a model of intervention on the assumption that Heritage preservation is a process and never a result. Accordingly, it must be seen as a sustainable mechanism that must evolve and adapt to the changing necessities of the community and of the preservation itself of the site to become fully meaningful. This paper would present the strategy behind the intervention, the results achieved so far (including the state of the art presentation initiatives implemented: 3D reconstruction models, didactic videos, musealization of architectural remains, etc), and the projects still to be developed (Augmented reality and virtual immersive experiences, Cooperative development, training of Educators and teachers, transfer of knowledge, etc).

Keywords: Site Museum, Interpretation Centre, Public Archaeology; Heritage for Development program; appropriation of Cultural Heritage and empowerment of local communities; Immersive and augmented reality

ON THE ARCHITECTURAL VISUAL AND BUILDING CULTURE OF THE GHASSANIDS/JAFNIDS (FROM ARABIA FELIX TO ARABIA PETRAEA).

Ignacio Arce

SABE, German-Jordanian University

The mere existence of an Architectural Visual Imagery and a Building Culture of the Ghassanids/Jafnids, has been recently denied by some scholars on the basis of an apparent lack of evidences, when should be assumed by any researcher that this is by no means an evidence of absence... This attitude recalls that we find in the early stages of the research on Early Islamic architecture half a century ago, when many Umayyad buildings, lacking dedicatory inscriptions and a thorough analysis and understanding of the material evidence, were often attributed to the Byzantine or to the brief Sassanian occupation of the region. The disparate catalogue of building types, techniques, materials used in their construction, etc., misled some researchers to these conclusions. Due to similar assumptions, and to a still not fully developed research on this issue, some authors have reached to the aforementioned conclusions, which I intend to challenge, as part of a debate which by no means can be considered closed nor settled. As a result of the research conducted on the last decade on the transitional period between the end of the Roman rule and the advent of Islam (focused on the material culture, and specifically on the building techniques, the architectural typology and the physical transformation and change of use of several structures), it has been possible to gather a remarkable amount of information that can be translated into an in-depth knowledge on these issues. This has allowed to establish well founded hypotheses that defy the aforementioned mainstream ideas regarding this debate. The aim of this paper is to present these hypotheses and the material evidence that supports them. These hypotheses have far reaching consequences regarding the understanding of this period and the role played by the Arab elites on the key historical events of this period, and on the image, self-consciousness, and the identity of these elites, closely linked to their geographic and cultural origins in Arabia Felix.

Keywords: Ghassanid /Jafnid Visual Culture; Architectural imagery; Late antiquity; Arab elites; Umayyads; Yemen and the Levant

THE ROLE OF SMART TOURISM TOOLS IN HERITAGE CITY CONTEXT

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Smart cities promise solutions to sustainable development and a high quality of life with a smart management of city resources, Cultural Heritage considered as an existing resource that should be protected, preserved and promoted to be a part of the components of a Smart City, which is built on economic, tourism, and recreational aspects. The study provides a critical review of Smart Tourism tools by particularly looking into emerging practices of smart heritage policies as exemplar smart cities initiatives. The study will shed light on the international strategies adopted by the smart cities in approving the smart techniques and historical context by the smart tourism tools. The study methodology adopts a mixed approach of qualitative, descriptive, comparative methods. Data collected will be used in the attempt of creating a detailed image of the tools used in the Smart tourism in the Smart City context. The current tendency there is to turn heritage city of Amman into a smart one. Amman city was chosen as a case study to emphasize that heritage is the key to the future development and thus create smart heritage city of Amman in smart tourism context.

Keywords: smart city, smart heritage, smart tourism

USING OPTICAL EMISSION SPECTROSCOPY (OES) AND ATOMIC ABSORPTION SPECTROSCOPY (AAS) IN THE ANALYSIS OF ARCHAEOLOGICAL ARTIFACTS

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The purpose of this paper is to show how the archaeologist can extract the maximum possible amount of full information about the chemical composition of some artifacts, and to achieve this it is important to analyze the 3 types of elements (major, minor and trace) from available material by adopt a wide-ranging multidisiplinary techniques like: Optical Emission Spectroscopy (OES), Atomic absorption spectroscopy (AAS).

This paper will discuss the principle of work and the experimental procedures for using Optical Emission Spectroscopy (OES) and Atomic absorption spectroscopy (AAS) in the analysis of archaeological artifacts and the advantages and limitation for them.

This paper also will show why the importance of the extensive use of physical methods arises in comparison with the standard wet chemical methods.

Keywords: OES: Optical Emission Spectroscopy, AAS: Atomic absorption spectroscopy

SURVEYING THE VILLAGES: A FIRST SYSTEMATIC APPROACH TO THE ARCHAEOLOGICAL CONTEXTUALIZATION AND THE CULTURAL TOURISM DEVELOPING OF THE RURAL SETTLEMENTS IN THE MUNICIPALITY OF SHAWBAK

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The paper presents some preliminary results of a first archaeological reading of the small villages surrounding the castle of Shawbak (Abū Makhṭūb, Al-Juhayyir, Al-Maquairia, A-Mansura, Al-Jāyyah, Bir_Khidad, Shammākh and Ṣṭhān) with the aim of focusing, using both Light and Public Archeology, on the role of the historical-archaeological research in planning an informed and conscious tourist development. Written and archaeological clues, in facts, allow to plausibly

hypothesize that the villages could preserve important material evidence of Medieval period: especially Al-Jāyyah could be related to the ruins of the Ayyubid town of Shawbak, built by the heirs of Saladin around 1190s. So, the Italian archaeological Mission "Medieval Petra" is carrying on a systematic study of the villages since 2010, in the occasion of the "Shawbak Tourist Masterplan" project, developed with the Municipality of Shawbak and partly funded by European Union (2010-2015). In the last two archaeological campaigns the investigations focused on implementing the geographical documentation, starting from geo-referencing some important landmarks of the surroundings: hotels, restaurants, mosques, springs, monuments ecc. Moreover, we are working on the systematic analysis of the housing complexes of the Al-Jāyyah village and, accordingly to the methodologies of Light Archeology, we are documenting every building from their typological and topographical features to their building techniques. The study of the historical landscape of Shawbak is important both for better understanding the diachronic settlement dynamics related to the castle and to develop a sustainable tourist communication strategy, for respecting the cultural and social peculiarities of this area.

Keywords: Medieval landscape, Light Archaeology, Rural settlements, Archaeological survey, Geographic survey, Cultural Tourism, Archaeological Tourism, Public Archaeology

THE ROLE OF JORDANIAN MUSEUMS IN ACTIVATING NATIONAL AWARENESS

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Jordan has a unique cultural heritage characterized by richness and diversity. According to the Jordanian Department of Antiquities, there are more than 100,000 archaeological sites in Jordan, dating back to successive periods and civilizations. In contrast to the ancient treasures of Jordan, which is the nucleus of tourism and civilization, the economic and social benefits is still very limited. This has gone beyond that and has led to the practice of some attacks on archeological sites such as:

- Throwing waste in the sites.
- drawing on the walls of the archaeological site.
- robbery and ruin the Antiquities.

it is necessary to study the causes of these phenomena which led to these attacks, and we should start working on activate the role of museums to preserve these sites which highlights the identity of the Jordanian society by raising awareness through programs for Jordanians especially:

- School students
- Workers in the fields of archeology and tourism
- local community, especially around archaeological site

In order to inform them and increase their awareness of the importance of these properties and the importance of preserving them. It is a cultural heritage and a source of income for the Kingdom. So, citizens should be made aware of the importance of dealing with tourists.

Outreach:

- Organize a training workshops " Representation of the life of the old man, drawing one of the pieces in the museum".
- Engage students in guiding role.
- Organizing competitions for students "best article, questions and answers".
- Narrative the history of Jordan through the museum's collection.
- Periodical journal and electronic page for museums and sites.
- Increase awareness of students through morning school radio.
- A moving Heritage exhibition in the cities.
- Organize school trips to archaeological sites
- Involvement of students in excavations models.

CONSERVATION WORK BASED ON RAPID CONDITION ASSESSMENT: IS IT REALISTIC?

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The conception of conserving and managing an archaeological site is usually challenging. These issues become more challenging when dealing with archaeological sites in the scale of the world heritage site of Petra, or The Roman City of

Jerash. Condition assessment is a central part of good management practice for stone whether the stone is part of a functioning building, a ruin or an ancient monument. The current paper aims to present a comprehensive scheme that is capable of sitting priorities of conservation work in large heritage sites. The presented scheme is a very effective system in terms of scientific evaluation, cost and time efficiency. It is mainly based on fieldwork evaluation of the main decay features within studied monuments, structure size, structure decoration and accessibility as well tourism importance. The scheme is a very promising one to be applied in Jordanian heritage site such as Petra and Jerash and other related sites.

MUSHASH 163: A SETTLEMENT OF THE LATE PPNA/ EARLY PPNB IN THE NORTHWESTERN BADIA

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The early Neolithic site of Mushash 163 is located near the early Islamic "desert castle" Qasr Mushash and has been the subject of archaeological research since 2014. It is a small settlement with numerous round buildings, of which a total of six units have been completely or partially exposed. In addition to solid buildings of the "semi-subterranean" type, which characterize the older settlement phase, smaller building structures can be found in a somewhat more recent construction phase. The latter have various features that may have a symbolic character. A special complex forms a burial with stone vessel offerings, which was covered with stone slabs and probably was located outside a building. The thirteen 14C data previously available for Mushash 163 consistently show the period between 8800 and 8400 calBC, which means the settlement dates to the end of the PPNA (9800-8600 calBC) and the EPPNB (8600-8200 calBC). The absolute data is also supported by the chipped stone industry, which include numerous Khiam and Helwan points. Various lithic tools from the surface, such as bifacial daggers, show, moreover, that the place was used also later, i.e. in the 8th to the 7th millennium BC. Flora and fauna consist exclusively of wild species. These include pistacia and wild cereals, as well as ovicaprids, cattle and gazelles. Mushash 163 is one of the very few places of the EPPNB in Jordan and is geographically an important link between marginal and optimal zones, i.e. between the eastern Badia and the highlands east of the Jordan valley.

Keywords: Early Pre-Pottery Neolithic B/EPPNB; Khiam points, Helwan points, settlement; Badia

IT'S IN THE PIPELINE: THE CHRONOLOGY OF CERAMIC PIPELINES IN THE PETRA GARDEN AND POOL COMPLEX

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The Petra Garden and Pool Complex (PGPC) is laid out on the city's southern terrace, one component of a palatial complex overlooking the Colonnaded Street. The existence of a monumental pool and ornamental garden in the midst of a desert landscape sent an unambiguous message of prosperity and conspicuous consumption of water in an arid environment. Excavations have uncovered elements of a complex hydraulic system -- stone channels, underground canals, filter basins, cistern, castellum divisorium, and pipelines -- from different stages of the site's history. How does the chronological sequence of the hydraulic system reflect the evolution of the PGPC from its initial construction at the end of the 1st century BCE through its transition to an agricultural field during the Byzantine period (4th-5th century CE)? What do the additions and alterations to the hydraulic system tell us about the changing nature of the site and its need for water distribution? This paper looks to the ceramic pipelines in the PGPC for insight into these questions. A systematic study of the archaeological context and typology of each of the PGPC pipelines in conjunction with excavated pipelines elsewhere in Petra and its immediate environs proves useful for identifying chronological stages of the PGPC hydrology and its functions. However, the effort to identify a broader regional typology with published pipes from contemporary sites such as Humayma, Legio, Jalame, Casaerea Maritima, Lejjun, and Hippos-Susita proved a challenge, illustrating the nature of ceramic pipe production as a localized industry.

Keywords: Petra, Nabatean, Roman, hydraulics, water

WADI AGLAT WINERY IN LITTLE PETRA, A MODEL FOR THE NABATAEAN WINE PRODUCTION IN THE BEIDHA – BA'JA AREA

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Petra National Trust

Surveys and the mapping of Wadi Aglat west of Little Petra from 2010 – 2016 have revealed the existence of an extended winery there. The most frightening feature discovered is a dam with a height 5 m, closing the outlet of Wadi Aglat into Wadi Beidha. The construction of this dam reduced the gradient of the wadi bed, leading to the deposition of the sediments required for the plantation of the vines. The actual topography of Wadi Aglat hence proved to be a completely man-made landscape. After having been backfilled, the area was terraced for the plantation of the vines. In the wadi bed a sequence of 11 terrace barriers dammed up the runoff water to the level of the terraces for irrigating the vines. Two extended presses in the western and the eastern section of the wadi assured an efficient wine making. A farmstead, built on a hill in the center of the western section, was the administrative center of the winery. It may be stated that the winery in Wadi Aglat is the most elaborate model of terrace agriculture in the Petra area and furthermore it bears witness for a long-term planning and investment in the field of agricultural production. The cooperation between the Wadi Aglat research study and the Ba'ja Survey Project of Miami University in 2017 has led to the identification of the entire wine production area in the Petra region during the Nabataean period. Further cooperation with the university L'Orientale at Naples is thought to shed light on the possible origin of the Nabataean know-how of wine making in the region of Mt. Vesuvius.

Keywords: Wine Making, Terrace Agriculture, Man-Made Landscape, Know-How Transfer, Royal Administration of Agricultural Production

FROM KHAN TO ENCAMPMENT. EXPLORING THE PILGRIM STOPOVERS IN JORDAN ON THE MEDIAEVAL AND OTTOMAN DARB AL-HAJJ TO MECCA

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As an offshoot of the Project "Fallahin and Nomads in the Southern Levant", which notably examines the impact of roads on population dynamics, literary, archaeological and cartographic data were collated to reconstruct the Mediaeval "Syrian" route, the Darb al-Hajj al-Shami, running from Damascus to Mecca and bisecting Jordan lengthwise (7th-15thcenturies). It incorporated stretches of the Iron Age and Nabatean Kings' Highway and of the Roman Via Nova Traiana. It was subsequently replaced further east into the desert by the Ottoman route (16th-early 20thcenturies), probably planned by Sinan, the famous architect of Sultan Suleiman the Magnificent as a global project of civil engineering (road, bridges and forts) with strategic aims, also shared by the Hijaz Railway (1910-1918). The two roads were followed in 2014 and 2016, from Ramtha on the Syrian border southwards to Mudawwara on the Saudi Arabian frontier (425 kms), section by section, between historically-attested stopovers. Using RAF aerial photographs of 1953, and applying British methods of Historic Landscape recording and interpretation, access from the main Hajj road or by secondary paths was plotted, the extent of each of the six Mediaeval and twelve Ottoman camps determined, their limits defined and main features recorded (hearths, traces of tents, enclosures for the thousands of camels, donkeys, mules and horses of the Hajj caravan, cisterns), with the aim of reconstructing the moulding of the natural landscapes of Hajj pilgrim resting-places in Jordan into "sacred landscapes" viewed holistically - à First in Islamic Landscape Archaeology.

Keywords: Darb al-Hajj, pilgrim, encampment, Mediaeval, Ottoman

JORDAN'S PLACE IN LATE PREHISTORY

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Since the 1990s research on the later Neolithic and early Chalcolithic of the southern Levant, and of Jordan in particular, has surged forward; previously undocumented regions now have ongoing research projects, and older research is being reevaluated. Perceptions that in late prehistory, Jordan was either mostly empty or just a lesser, more backward copy of the more "advanced" peoples in Syria are looking more and more like an artefact of research history rather than an accurate understanding of the region at the time. Research in locales that are now arid or underwater is revealing that we have heretofore had a very incomplete picture. Because so much of this knowledge is recent, and because modern nation-state borders and geopolitical upheaval often make cross-border projects tricky if not impossible, much of this new

research exists in isolation from its fellows; though researchers of course often know of other projects, synthesizing what this all might mean in aggregate has been difficult. This paper will also include a brief mention of some of the major new insights from southern Levantine and northern Arabian late prehistoric archaeology, and how they have changed our perceptions of the period in Jordan. It will then propose some possibilities for a more integrated way forward, including connectivities and disconnectivities; not only vis-a-vis how we conceive of the peoples and materiality of the Late Neolithic of the entire Southern Levant, but for how we the archaeologists who study them communicate with one another, as well.

TRAINING IN ENDANGERED ARCHAEOLOGY METHODOLOGY FOR THE JORDANIAN AND PALESTINIAN HERITAGE STAKEHOLDERS

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This paper will introduce the 'Endangered Archaeology in the Middle East and North Africa' (EAMENA) project, funded by the Arcadia and the Cultural Protection Funds (CPF) to document archaeological sites in the Middle East and North Africa and assess the threats to them. It is a partnership between the Universities of Oxford, Leicester, and Durham, established in 2015.

A significant element of the project is to transfer the knowledge and skills through a training programme for 140 archaeologists from Jordan, Palestine and five other countries; over 40 Jordanians and Palestinians, mainly staff of the antiquities services and research centres are being trained. The trainees learn the EAMENA methodology for interpreting satellite imagery, using the EAMENA database developed and assessing the risks to, and condition of, the sites discovered. This paper will explore the approach, the success and feedback from the training courses so far undertaken. In particular it will analyse the success of the condition of grant that each trainee has to create 100 (new) archaeological records on the EAMENA database, before they can obtain their certificates. The trainees have selected different study areas for site recording and monitoring, in different archaeological contexts, to examine the multiple types of threats and disturbances affecting each area; and this included field visits as well. The results of this work and documentation will help improve our understanding of each site with a view improving the site preservation, management and presentation. The paper will conclude with next steps for this project, including discussions about national heritage inventories.

Keywords: Endangered Archaeology in the Middle East and North Africa, satellite imagery, threats, documentation, training, database, inventory

A CAVE TO LIVE AND PRAY: TOPOGRAPHY OF MONASTIC HERMITAGES IN THE VALLEYS OF NEBO

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The aim of this paper is to analyze the general lines of a new oriented topographic survey of the Nebo hermitages, integrating the data of the previous mapping performed by the archaeologists of the Studium Biblicum Franciscanum. The area of Nebo is well defined in written sources as a monastic landscape. Indeed, in addition to the large coenobium, located on the top of Ras Siyâgha, there are many cells carved into the rocky slopes of the mountain. These hermitages were conceived as places to escape the temptations of the city in search of the Christian Hesychia, in union with God and in harmony with the creation. During the fourth century CE, this form of spiritual retreatment spread widely along the banks of the river Jordan, where monks began to develop small monastic structures adapting this landscape to their specific needs.

The main goal is therefore the understanding of the landscape as a physical environment in the context of human behavior. It will be possible not only to reflect on the genesis of these structures, but also on their spatial location, internal organization (i.e. articulation of the rooms, disposition of the facilities), interactions with rural villages and the mutual

relations with the other coenobitic structures of Jordan. Finally, it will be possible to understand the aspect of their occupation after the transition to the rule of the Umayyad caliphs and the spiritual crisis within the monastic communities as well as how the tradition of hermitic retreatment continued into the Islamic Era.

Keywords: Ascetic Tradition, Hermitage, Monasticism, Landscape Archaeology, Islamic Transition

FLOW OF ARTIFACTS...CHALKSTONE VESSELS FROM TELL ABU SARBUT

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Soft chalkstone vessels first appear in the archaeological record of the Levant during the second half of the first century BC and continued widespread popularity until the mid-first century CE. They were not used any more after the mid-second century.

Chalkstone vessels have been found at over 250 sites throughout Israel and Jordan.

The vessels were hand-cut or lathe-turned, both of which technics allowed for mass production. Workshops have been found in the vicinity of Jerusalem, in Galilee and also in the Golan.

In Jordan such vessels are known from Machaerus, Tell Abu Sarbut and Tell Zera'a.

Tell Abu Sarbut was a small settlement situated in the Jordan Valley. It was inhabited in the Early Roman, the Abbasid and the Mamluk periods.

Here 152 fragments of chalkstone vessels have been excavated from different stratigraphical contexts. Early Roman chalkstone vessel fragments were found in the make-up of Abbasid floor layers, and complete and near complete vessels were excavated from the Early Roman layers.

In this paper I will discuss the stratigraphical contexts in which these vessels have been found, and the implications of the Abu Sarbut repertoire for the study of chalkstone vessels in the Southern Levant.

Keywords: 1. Chalkstone vessels, 2. Early Roman stone vessels, 3. Stratigraphy, 4. Abbasid floor structures, 5. Perea

WATER STORAGE IN THE CONTEXT OF GERASA'S WATER MANAGEMENT SYSTEM IN THE CLASSICAL PERIOD

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The Jarash Water Project is an interdisciplinary study investigating the various components of the water management system to the Decapolis city of Gerasa and its hinterland in the Classical period. The paper describes the main water storage installations inside and outside the city in the context of the known water supply network and the present state of archaeological knowledge, and presents a rationale to explain their distribution and function.

The study distinguishes between installations that stored rainfall runoff (cisterns) from those that stored water sourced from springs (basins and reservoirs). The concentration of major springs in the Jarash valley means that spring-fed and associated offtake storages are essentially confined to this valley. Reservoirs are uncommon, with the largest (Birketein) located outside the city. Around 5,000 m³ of reservoir and basin water storage capacity has been identified within the city, although it is likely that additional installations lie hidden in unexcavated areas.

The terrain and geology favours bedrock rainwater harvesting, which would have been replaced by roof-top runoff as the area became urbanised. Runoff from public buildings and spaces was also a substantial potential resource within the city, but there is little evidence that it was fully utilised. The largest cisterns identified in the study stored bedrock runoff from the summit of a hill at Bab Amman 1 km south of the city.

The notable lack of provision for long-term storage is interpreted to mean that this provision was unnecessary owing to the adequacy and reliability of the available spring-fed supplies.

Keywords: Gerasa, water system management, cistern, reservoir, basin

ANCIENT GADARA AND ITS HINTERLAND

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The German Archaeological Institute is conducting archaeological research and a survey around the ancient city of Gadara, Umm Qays. Research in recent years at Gadara were characterised by clarifying the development of the Hellenistic-Roman city. By observing the cityscape, the attention was directed towards the settlement history and to find new insights into the transformation process of the ancient city Gadara and especially its surroundings hinterland. The paper is dealing with the history of settlement and usage of Gadara - starting with the Hellenistic fortress - and its surroundings in the classical period. The initial aim is to investigate the surrounding landscape of the ancient city of Gadara, and to identify settlement structures or technical and agricultural installations in the surrounding. The new research in the hinterland of Gadara and inside the Hellenistic fortress addresses and emphasizes essential questions that pertain to the generation and utilization of urban space and its natural and historical-political conditions.

Keywords: Gadara, Urbanization, Settlement Dynamics, Interrelations, transformation process

SUSTAINABLE DEVELOPMENT FOR HERITAGE AND NATURE PROTECTION. TRANSFER AND COMMUNICATION OF CULTURAL AND NATURAL HERITAGE FOR CHILDREN AND YOUNG ADULTS IN GADARA/UMM QAYS

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Building researchers and experimental archaeologists have started activities in the area of cultural mediation for the local community as well as for the promotion of sustainable cultural and natural tourism. They developed an unprecedented imparting program which connects nature-conservation and monument-protection in Gadara/Umm Qays. The major local target audience of the project are children/young adults. By learning about their region's history, they become sensitised to their own cultural and natural heritage. The projects were realised in very close cooperation with local partners from Umm Qays. Due to the exceedingly positive experiences, in the years ahead an education programme to impart knowledge about the rich cultural heritage of the entire region will be developed from this in very close collaborations. At the same time, it is also planned to look after the preservation of the considerable monument substance of Gadara. For this purpose, a training programme for local craftsmen is being established, in which techniques in traditional stonemasonry are trained with German experts. The aim is to cautiously build up a pool of knowledge and practical experience. This paper summarises activities in the field of communication and preservation of the rich cultural and natural heritage of the region. The idea is: Strengthening the local intangible cultural heritage, for example stonemasonry, will finally prove beneficial to the tangible cultural heritage as well.

Keywords: capacity building 1, education programme 2, Awareness for children 3, cultural and natural heritage 4, tangible and intangible heritage 5

TECHNICAL KNOW-HOW IN CRISIS? TECHNIQUE OF EXECUTION OF WALL PAINTINGS IN BYZANTINE PERIOD (AD 324-640)

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Fragments of painted plaster are a relatively common finding in Byzantine structures, especially in churches, yet they rarely spark interest among scholars, as they usually survive in poor condition and are considered inferior in quality to their Roman-period predecessors. While their simpler technique of execution is indeed apparent, it is rarely subject to technical investigations. As a result, our understanding of the changes which occurred in the craft of wall painting between the Roman and the Byzantine period is limited. This paper presents a part of a research project on characteristics of the technique of execution of Byzantine wall paintings, understood as both the substrate layers (mortars and plasters), and the paint layers (pigments and media), coming from a number of sites in Arabia, Palaestina, and Phoenicia. In Jordan, the investigated sites include Abila, Deir 'Ain Abata, Gadara, Gerasa, and Umm er-Rasas. The analyses of samples of mortars, plasters, and pigments from sites covered by the project allow to propose a general characterization of Byzantine wall paintings, to pinpoint local variations in means and materials, and to compare their technique of execution with murals from the heyday of Roman art. To illustrate the latter point, a comparison is made between the execution of wall paintings pertaining to different periods yet coming from the same site, namely from the Sanctuary of Zeus and from the

Propylaea church in Gerasa. The technical study relied on macroscopic observation of fragments of the paintings, as well as on analytical methods such as optical microscopy, petrographic thin sections, SEM-EDS, and LC-MS.

Keywords: wall painting, technical studies, plaster, mortar, pigments

EBEL AL-MUTAWWAQ. CERAMIC AND LITHIC ANALYSIS FROM THE SPANISH-ITALIAN EXPEDITION

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The paper will present the preliminary results concerning the study of pottery and lithic tools discovered by the Spanish-Italian expedition at the Early Bronze Age I settlement of Jebel al- Mutawwaq. The distribution of the different types of objects and vessels in the several quarters of the settlement - both in private and public areas - will be used to reconstruct the functional attribution of the artifacts and their meanings for the life of the Jebel al- Mutawwaq village. Concerning the flint tools, objects coming from the settlement are mainly made of small scrapers and blades. Large tabular scrapers characterized by an extremely careful manufacture are not frequent in the site and probably embodied a ceremonial function. The EB I ceramic repertoire comprehend mostly handmade, plain ware, with a limited range of applied and painted decoration. The relative distribution of table, storage and cooking ware in the different quarters of the site helps in identifying a first attempt of an intra-site functional specialization. Thus, the analysis of the findings in relation with their location, and in particular in selected public areas such as the Temple of the Serpents, will be useful for the interpretation of the economic activities performed by the Early Bronze Age I community.

Keywords: Jebel al-Mutawwaq, Lithic, Pottery, Functions, Economy

AN ISLAMIC GLASS DISK WEIGHT FRAGMENT FROM SHAWBAK CASTLE

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Islamic glass disk weights are common through museums' and private collections, although they are usually linked to Egypt due to their provenience or because they bear the finance directors names knownd to be active in Egypt. Egyptian glass weights have been largely studied, and offered a starting point for studies on the Syrian ones, while jordanian territory is yet to be investigated. Their use is broad and their interpretation not always certain, having usually lost their originally context: coin weights or monetary substitutes for copper and low-value currency, and later re-used tokens. Aim of this study is to analyse the origin, possible use, historical context and economic significance in exchange politics of a glass disk weight fragment from the excavation of the CF 35 in Shawbak1 castle, a great vaulted structure, built by crusaders and reused by ayyubids, located in the "monumental" area of the castle. It comes from the most recent layer, a thick level of sand and clay, covering the whole excavation area and dating to the abandon period. The item bears part of an inscription and a central design, it is therefore possible to establish a link to official coinage and patronage, and to deepen the knowledge of political and economic interaction of such a crucial area.

Keywords: Islamic Glass; Medieval Archaeology; Cultural Heritage

SLOPE CONSOLIDATION WORKS IN THE 'SIQ' OF PETRA: A PIONEERING APPROACH

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Petra is one of the world's richest and largest archaeological sites set in a dominating red sandstone landscape, inscribed in the World Heritage List in 1985. The 'Siq' is a 1.2km, naturally formed gorge that snakes through the sandstone cliffs, serving as the main entrance to the site. Due to its unique geological and cultural landscape, the 'Siq' is one of Petra's most endangered areas, in which natural risks pose a major threat to the cultural heritage and the visitors. Preserving Petra's Outstanding Universal Value for which the site has been inscribed in the World Heritage List, is one of the corporate UNESCO priorities for culture actions in Jordan. The UNESCO Office in Amman in partnership with the Petra Development and Tourism Region Authority and the Department of Antiquities of Jordan has therefore engaged in the multi-year "Siq Stability" project aimed at assessing, managing and mitigating natural hazards through the implementation of risk mitigation interventions in the 'Siq'. The project, currently in its third phase of implementation, aims to apply mitigation measures in priority areas identified as most hazardous – based on feasibility study 2017 - by targeting specifically blocks of medium- large dimensions. This paper aims at describing the activities carried out and the results achieved during the implementation of the pioneering slope consolidation works undertaken in 2018. Emphasis will be placed on the collective efforts for the implementation of the activity, the low visual impact approach adopted and the sustainability of the intervention through the engagement of the local community.

Keywords: Petra, World Heritage Site, slope instability, consolidation works

INVESTIGATING THE PREHISTORIC LANDSCAPE OF THE "BLACK DESERT": RESULTS OF THE "WESTERN HARRA SURVEY"

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The Harra, or "Black Desert", of north-eastern Jordan, is characterised by low levels of precipitation and access difficulties due to the dense scatter of basalt rocks over its entire surface. However, archaeological investigations over the last few decades, and in particular the last few years, have identified a prehistoric site preservation of an almost unparalleled density in the Middle East. Started in 2015, the "Western Harra Survey", located north-east of the Azraq basin, is one such project. Its intent is to address the overall patterns of settlement and nomadism in the region through the study of the prehistoric occupation and landscape of the western edges and interior of the Harra. The results of the first few seasons provided a wealth of data that allow some preliminary interpretations to be made from the investigation of prehistoric structures, their material remains, "off-site" features, and geographical observations. These include the analysis of numerous sites and subsets of their lithic material, potential links to raw chert material sources, and a typological seriation of the morphology of sites known as "wheels", which are linked to different site uses and/or different

periods of occupation. This paper will disseminate these results within the framework of the associated remote sensing investigation and mapping of the area under study.

Keywords: Black Desert, Late Prehistory, Survey, Landscape archaeology, Mobility

THERE'S NO PLACE LIKE HOME: AN ARCHAEOLOGY OF HOMEMAKING IN EBA III NUMAYRA, JORDAN

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Numayra's excellent preservation offers a unique opportunity to explore how people crafted homes from their houses in some of the region's earliest fortified towns. Houses provide more than shelter from the elements; they are socially conditioned places that transcend space, time, and status: they are Homes. Homes are a dynamic type of material culture that people create for themselves in a series of decisions involving the availability and desirability of construction and decorative materials (Glassie 1975, 2001). Throughout time and across space, people have decided how, where, and what to use to build and equip their homes, and these intricate decisions were (and continue to be) influenced by economic, political, religious and social networks, beliefs, worldviews, and differential access to local and non-local resources. Approaching EB III Numayra (c. 2850-2550 BC cal) through the lens of homemaking integrates the more comfortable archaeological analyses of built environment, craft production, consumption, storage, activity areas, and landscapes, with an appreciation for the materiality of daily life in early fortified communities of the third millennium BCE.

Keywords: Early Bronze Age; Household Archaeology; Fortified Town; Materiality

THE MADABA REGIONAL ARCHAEOLOGICAL MUSEUM PROJECT (MRAMP): THREE YEARS OF COMMUNITY ARCHAEOLOGY

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The Madaba Regional Archaeological Museum Project (MRAMP) represents an international American-Italian-Jordanian initiative dedicated to establishing a new regional archaeological museum in Madaba, Jordan, supported in part by ASOR and USAID/SCHEP/ACOR. In order to protect, preserve, and present Jordan's cultural heritage, the museum will showcase artifacts from over a dozen archaeological projects in the region which represent pre-historical through modern sites and remains. Since 2015, MRAMP has launched three field seasons (May 2016, 2017, and 2018) and maintained an active year-round working presence on site during 2017 and part of 2018, all in the quest to clean and prepare a portion of the Madaba Archaeological Park West currently occupied by a late Ottoman-period settlement, which will become the ground floor of the new museum. Working with Italian architects of Studio Strati in Rome, as well as architecture students from three Jordanian universities, and others, the MRAMP team facilitated the development of architectural plans. In the process, MRAMP has engaged wide segments of local, regional, national, and international stakeholder communities who have contributed to MRAMP's quest to provide a complete and comprehensive narrative of the Madaba region's illustrious past, while creating numerous positive impacts on the community and its economy. The project has been educating and training the local community in a wide range of employable areas/disciplines, such as consolidation, preservation, construction, architectural skills, curation, and a plethora of archaeological, museum, and

management skills, all in order to ensure the development, continued growth, and sustainability of this new museum endeavor.

Keywords: Madaba, museum, community archaeology, architecture, conservation

PLEISTOCENE FORAGER MOBILITY IN THE WEST JORDANIAN HIGHLANDS – A LANDSCAPE APPROACH

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Deploying a novel methodology based on Bayesian statistics, this paper uses the incidence of retouched stone artifacts to assess the relative degree of mobility and duration of site occupation characteristic of Stone Age hunter-gatherers in west-central Jordan based on one hundred and fifteen 250 x 250 m² random sample units from the Shammakh-to-Ayl Archaeological Survey (MacDonald et al., 2016). The incidence of retouch offers a measure of residential stability, or lack thereof, and the incidence of retouch scaled to artifact density will give some indication of the relative importance of curated and expedient assemblages. A higher incidence of retouch indicates greater residential mobility, smaller groups, shorter duration of site occupation, low lithic densities, and many retouched pieces relative to the amount of débitage. This configuration is expected to occur during dry periods when resources were 'patchy', irregularly distributed in the landscape, and less predictable in terms of location. These assemblages are usually referred to as 'curated.' Conversely, a high incidence of cores and débitage coupled with a low incidence of retouched pieces indicates a reduced need for conserving behaviors, greater residential stability, a longer duration of site occupation, and larger groups during wet periods when resource distributions are more predictable and when the locations of raw material sources are known and can be stockpiled in anticipation of future needs. Assemblages with these characteristics are usually referred to as 'expedient.' Data from five subdivisions of the Paleolithic are cross-classified against three environmental zones with particular phytogeographic (hence, resource) characteristics. Results indicate a complex pattern of mobility shifts over the past 1.5 million years in which alterations between mesic and xeric climatic regimes appear to be the most important factor driving changes in site types and distributions.

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HUMAN-ANIMAL INTERACTION IN MIDDLE ISLAMIC JORDAN (AYYUBID AND MAMLUK PERIODS)

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In the last decade, a number of zooarchaeological assemblages dated to the Ayyubid and Mamluk periods have been analyzed in central and southern Jordan. There is now a considerable corpus of data on everyday life in the Middle Islamic period. This research is based on the study of animal remains from Al-Wu'ayra, Shobak, Karak, and Tall Hisban, which have been directly analyzed by the authors, as well as on published results from Wadi Farasa, Dhiban, and Aqaba. The faunal assemblages are fairly diversified and show peculiarities related to the natural environment surrounding the sites. Overall, the results show that the inhabitants of the sites relied mainly on sheep/goats, followed by chicken. Pack animals, such as camels and donkeys, were rarely used as a source of food. The occurrence of wild animals, mainly gazelle, is related to the social status of the inhabitants; these taxa contributed only occasionally to the everyday meals. Age profiles and pathologies of sheep/goats indicate that separate flocks of animals were probably reared for the upper class. They were likely raised and butchered outside the settlements. This study aims to investigate human-animal interactions during the Ayyubid and Mamluk periods. The results obtained not only provide a picture of the local daily life, but also an insight into the management of animals and landscape in Middle Islamic Jordan.

Keywords: Zooarchaeology, animal husbandry, hunting, Ayyubid, Mamluk

NEW INSIGHTS ABOUT THE EARLY BRONZE AGE SEQUENCE AT KHIRBAT ISKANDAR: THE 2016 EXCAVATIONS

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Khirbat Iskandar, in central Jordan, is known particularly for the EB IV period (ca. 2500-1950 BC), represented by multiple-phase stratigraphic sequences excavated in Area B (Phases B-A) and Area C (Phases 1-3). They show continuous sedentary occupation, social complexity, cultic activities, and crafts at the site, challenging pastoral nomadic theories concerning the end of the Early Bronze Age in the southern Levant, emphasizing instead continuity with antecedent urbanizing (EB II-III) traditions. In 2016, the team excavated a larger exposure of the Early Bronze II-III layers in Area B and re-excavated the three-phase Early Bronze IV sequence in Area C. For example, in Area B the phase preceding the destroyed final EB III settlement revealed an area of activities (hearths and tabun) quite distinct from the overlying occupational pattern. Re-excavation and further horizontal exposure of a three-phase Early Bronze IV sequence in Area C (the gateway) was likewise illuminating. Although further radiometric analysis is needed, particularly to determine more precise dates for the EB IV levels, some preliminary results, in combination with ceramics from multiple EBA phases in Area B, allow us to clarify and reconstruct the history of settlement at Khirbat Iskandar, as excavated so far. When did the crisis of the Early Bronze II-III urban settlement at Khirbat Iskandar occur and what was the site's response? How did climate changes affect patterns of human occupation at the site? The paper seeks to answer these compelling questions by using fresh data from the last excavation campaigns at Khirbat Iskandar.

Keywords: Khirbat Iskandar, Early Bronze Age, urbanism, collapse, regeneration

THE ROCK-INSCRIPTION OF KING NABONIDUS IN SELA: A PRELIMINARY STUDY

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In the 6th century BCE, Neo-Babylonian imperial expansion towards the West reached southern Jordan. King Nabonidus' military campaigns to Arabia and his long stay at the oasis of Tayma in the Hijaz are closely linked to his warlike activities in the area of historical Edom. Witness to these activities is the impressive cuneiform relief at Sela (Tafila) where the monarch is represented with the symbols of the three main astral deities of Babylonia near a carved cuneiform inscription. Located at 120 m above the level of the wadi, the difficulty in reaching the monument bears witness to the technical challenges met by the ancient artisans and scribes. In this paper we would like to present the results of our investigation on the monument in which we used a combination of climbing techniques and archaeological photography in order to address problems posed by cuneiform epigraphic studies.

Keywords: Iron Age, Edom, Rock-inscription, Babylonia, Empires

RECONSTRUCTING A LATE ANTIQUE, ANTHROPIZED, RURAL LANDSCAPE: THE DYNAMICS OF BYZANTINE WADI AGRICULTURE AND VITICULTURE AT UMM AR-RASAS (MEFAA)

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Umm ar-Rasas, a Unesco World Heritage site in the semi-arid steppe of Jordan, developed from the Late Roman cavalry military camp of Kastron Mefaa, into the civilian, double, walled town of Byzantine Mefaa with 16 churches and a stylite's tower. What was its economic basis? By comparing and combining data from old British RAF aerial photographs, with satellite imagery, and field-checks, the agricultural landscape of the lands of Mefaa at its heyday in the 5th and 6th

centuries was recaptured. The complex system of four major wadis and their tributaries, walled-in lengthwise and bridged by a succession of dams, totalled 658 plots of varying sizes and shapes inside the wadis, and another 68 plots edging some segments of wadis. The data from the fields of the agricultural wadis were put through a set of GIS statistical and spatial analyses in order to discover the significant variables in the original creation and subsequent organic development of the system. The depiction of Mother Earth Gê, ploughs, fruit trees, and vines on the mosaic pavements of the churches of Mefaa, and the discovery of wine and olive presses, provide the reasons for the spider-web system of paths leading to the fields of wheat and barley, and to the orchards, olive groves and vineyards of a most bountiful agricultural territory. The lands of Umm ar-Rasas were declared in March 2018 "A Protected Ancient Landscape" by the Department of Antiquities of Jordan - a First for the archaeology of the Middle East.

Keywords: Landscape, GIS, Byzantine, agricultural wadis

FIGURINES AND STATUES FROM KHIRBAT AL-MUDAYNA THAMAD

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In the past, our knowledge of Moabite culture was confined to information contained in Hebrew texts and the Mesha Inscription (Dearman, ed. 1989), along with the initial results from regional surveys and a small number of excavations at Iron Age sites. These sources yielded a rather homogenous view of Moabite culture. However, the discovery, excavation and publication of a wayside shrine in Northern Moab revealed a complex assemblage of pottery and artifacts reflective of diverse cultures, many of which cannot now be related to known textual information. More recently, excavation at the town site of Khirbat al-Mudayna on the Wadi ath-Thamad has yielded dozens of unique Iron Age figurines and statues whose cultural affinities have yet to be fully explained. This paper is an investigation of these objects in an attempt to understand the cultural influences at play in the town of Mudayna and their implication for the history of the site and the interactions of peoples in the region.

THE RESTORATION WORKS IN QUSAYR 'AMRA: AN OPPORTUNITY FOR A IN-DEPTH KNOWLEDGE ON THE Umayyad MURAL PAINTINGS

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Qusayr 'Amra main building consists in a magnificent bathhouse built between 723 and 743 for the Umayyad élite as part of a broader settlement complex. The uniqueness of this site, where the largest cycle of early Islamic mural paintings is preserved, has been confirmed by its inscription in 1985 within the four World Heritage List sites in Jordan. The cycle is the result of commingling different iconographic traditions: from the Hellenistic-Roman to the Jewish, to the proper Islamic one which was then emerging.

Since 2010, an Italian team from the Higher Institute for the Conservation and Restoration (ISCR) is carrying on a large scale intervention on the Building's structures and decorations. Besides being a moment of methodological reflection on the international standards in conservation for such artifacts, the restoration works has allowed a deepening of knowledge. The subject of this paper will be the results of the last campaigns in terms of knowledge on early Islamic mural paintings' materials and techniques, as well as of update on the interpretation of the cycle's iconography and on the bathhouse function within the Umayyad palatial settlements.

A LANDSCAPE OF PEACE AT UMM EL-JIMAL: USING SPACES OF THE MIND AND SPACES ON THE GROUND TO LINK THE ISLAMIC HERITAGE OF THE MODERN COMMUNITY AND THE 'PRE-ISLAMIC' HERITAGE OF ARCHAEOLOGICAL SITE

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Jordan is a young country in the modern sense, but with a deep past in the archaeological sense. In communities the daily routines of family, mosque and employment, overshadowed by an influx of global ideas and habits from popular social media. Ironically, the deep archaeological past plays a minuscule role in popular self-awareness, even in places like Umm el-Jimal, where spectacular ruins dominate public spaces. It is the goal of this paper to analyze this gap and suggest integrative solutions, with focus on Umm el-Jimal. We treat this question at two levels, first at the level of intellectual and historical understanding and second at the level the built environment. Spaces of the mind. A result of archaeological research is new understanding that places like Umm el-Jimal are not merely Nabataean-Roman-Byzantine sites, but instead also continuously occupied from the Umayyad to the late/Ottoman periods; i.e., Umm el-Jimal is also a site of Islamic history. This means that the built environment of Islamic heritage known from great historic cities like Damascus, also includes many archaeological sites across Jordan. Spaces on the Ground. Working with municipality and community we have consciously created a bridging architectural environment: Spaces on the site are planned for community as well as tourist use; e.g., the Interpretive and Hospitality Center. Boundary spaces have received an integrative treatment; e. g. the southern community entry traffic circle monuments and the West Entry Park. Conclusion: Harmonizing community and antiquity enhances the peaceable nature of Jordan's civil society.

Keywords: 1. Peace, 2. Spaces of the Mind, 3. Spaces on the Ground, 4. Islamic History, 5. Islamic Archaeology

BUILDING A CAPITAL - NEW EVIDENCE FOR CONSTRUCTION TECHNIQUES IN PETRA

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In course of the ongoing North-Eastern Petra Project (NEPP), conducted by the Humboldt University Berlin, a large architectural, palatial-type complex is being investigated and a large number of architectural artifacts were documented. In recent years, this material was an integral part of newly conducted research analyzing the architecture and architectural decoration of freestanding buildings in Petra. In this paper I would like to discuss the question of construction methods and techniques that were used by the Nabataeans. Often discussed on the basis of the well-known rock-cut façades, this topic shall be reviewed this time by analyzing new evidence from the NEPP. In general, the Nabataeans used the naturally occurring sandstone as building material. It has specific characteristics, which have a significant impact on the construction methods and techniques used in Petra. Clearly visible geometric patterns on the surface of several architectural components indicate a systematic approach for preparing architectural elements before they were incorporated into the building. Particularly, such evidence can be found on the upper and lower surfaces of Nabataean capitals. These construction lines allow to discern different steps in the process of manufacturing the architectural components, from the quarry to the stonemason and its final use. Based on the evidence it is also possible to re-evaluate general questions regarding the construction techniques, e.g. the influence of the building material on the construction techniques, the use of different sandstone for various architectural components and, therefore, the dependency of the composition of architectural decoration on the material and manufacturing processes.

Keywords: Petra, architecture, freestanding buildings, construction techniques, Nabataean capital.

KARAK CASTLE INSTABILITY: FROM DAMAGE ANALYSIS TO CONSOLIDATION WORKS

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The Castle of Karak, built in the Crusaders period between 1136 and 1142, is located in the west border of the old city, upon a narrow ridge, oriented N-S at ca. 1,035 m a.s.l.

According to historical and recent sources, the castle was affected by structural damage caused by the large earthquake of 1927. After slope consolidation works executed in the east slope in the mid '90s, the western side was affected in 2013 by extensive and large cracks interesting the outer walls, the lower court and the museum area due to slope instability involving the upper sector of the slope. Due to structural damage, urgent measures were adopted such as the closure of the lower court and museum to the public and a monitoring system was installed to measure the cracks deformation. In 2015, the Department of Antiquities of Jordan promoted a geophysical and geotechnical investigation to reconstruct the causes of the slope deformation and structural damage. An action plan was presented with a set of urgent measures to be implemented to mitigate the effects of slope instability, mainly caused by uncontrolled surface water and poor geotechnical conditions of the terrains in the west slope area. Slope consolidation works of the west slope and rehabilitation of the ancient superficial drainage system were implemented in 2017 as preventative measure to undertake further structural consolidation of the damaged portions of the castle. The main results of the study, rehabilitation and consolidation works are presented in the present paper.

Keywords: Karak Castle, structural damage, slope instability, consolidation works

FROM ONTOLOGY TO VIRTUAL REALITY: PHOTOGRAMMETRY SURVEY FOR MEDIEVAL ARCHAEOLOGY

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This paper presents certain reflections concerning an interdisciplinary project between medieval archaeologists from the University of Florence (Italy) and computer science researchers from CNRS, National Center for Scientific Research, (France), aiming towards a connection between 3D spatial representation and archaeological knowledge. The main "object" of our research is the castle of Shawbak, where we try to develop an integrated system for archaeological 3D survey and all other types of archaeological data and knowledge by incorporating observable (material) and non-graphic (interpretive) data. 3D survey is crucial, allowing archaeologists to connect actual spatial assets to the stratigraphic formation processes (i.e., to the archaeological time) and to translate spatial observations into historical interpretation of the site. We propose a common formalism for describing photogrammetric survey and archaeological knowledge stemming from ontologies: indeed, ontologies are fully used to model and store 3D data and archaeological knowledge. We equip this formalism with a qualitative representation of time, starting from archaeological stratigraphy. Stratigraphic analyses (both of excavated deposits and of upstanding structures) are closely related to Edward Cecil Harris's theory of the "Unit of Stratigraphication". However, the limitations of the Harris matrix approach led us to use another formalism for representing stratigraphic relationships, namely Qualitative Constraints Networks (QCN), which was successfully used in the domain of knowledge representation and reasoning in artificial intelligence for representing temporal relations. The second main aspect of this project presented in this paper is the link with 3D visualization. As the full process of developing on a 3D approach based on photogrammetry since more than 10 years all the results are available in a 3D interface using full VR tools. The 3D models coming from photogrammetry but also the measured archaeological concepts as Stratigraphic Unit, ashlar blocs and semantic links between them are visible and queryable through a VR tool implemented in JAVA using JMonkey game Engine and HTC VIVE Virtual Reality System.

WHEN NABATAEANS SETTLED IN THE HEJAZ: NEW INSIGHTS FROM THE NABATAEAN FINE WARE FOUND IN HEGRA/MADĀ'IN SĀLIH (NORTH WEST ARABIA)

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Since 2008, the French-Saudi Archaeological Project of Hegra/Madā'in Sālih (NW Arabia) investigates this major Nabataean site, known to have been one of the most important cities of the kingdom after Petra. Excavations revealed that human occupation in Hegra began several centuries before the Nabataean settlement. This paper aims to examine the settling process through pottery finds, in particular through Petra imports and local "Nabataean" productions. "Nabataean" pottery is found in the monumental tombs, in the residential area, and in the Jabal Ithlib area which seems to have been occupied exclusively during the Nabataean phase and devoted to ritual meetings. During the whole Nabataean period, from the early 1st c. BCE to the late 1st c./early 2nd c. CE, Petra imports are present in all assemblages, but always in rather small amount. These Petra imports seem to end with the Roman annexation of the kingdom in 106 CE. However, at the end of the 1st c. BCE, the apparition of a specific painted fine ware production, yet unknown in Petra, can be observed. It is characterized by a simple decorative pattern, so-called "2 red lines" type (Durand, Gerber 2014). This new type may be interpreted as a reflection of the settling by a Nabataean population group in Hegra, probably coming from Petra. Contrary to the evolution of painted Nabataean pottery in the capital, the "2 red lines" decorative pattern remains the same during the whole Nabataean occupation of Hegra. Archaeometric results on Petra and Hegra fine ware will complete this presentation.

Keywords: Nabataean kingdom, Petra, Hegra, pottery, colonization

THE ORIGINS OF A NATUFIAN 'BASE-CAMP': NEW EVIDENCE FROM WADI HAMMEH 27

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This paper outlines the results of the 'Ice Age Villagers of the Levant: sedentism and social connections in the Natufian period' project, based at La Trobe University. The project was designed to investigate residential persistence at the Early Natufian site of Wadi Hammeh 27, the flow of raw materials into the settlement, and the archaeological parameters of the site's earliest phases. To this end, excavations were undertaken at Wadi Hammeh 27 between 2014 and 2016,

revealing new aspects of the successive occupations (Phases 1 - 4). In Phase 3, a house structure was discovered underlying the later Structure 1. Its most notable feature is a row of shaped, upright wall slabs; precursors to the larger decorated examples of Phase 1. The Phase 3 house was founded over a series of burials, dug into bedrock (Phase 4). Stone features positioned outside the house were instituted to commemorate the burials, and these were augmented and continued throughout the lifetime of the settlement. Wide-ranging surveys and analysis programs were made in the east Jordan Valley, extending from the southern end of the Dead Sea to the Syrian border region, to investigate the sources of chert and basaltic rock utilised at Wadi Hammeh 27, and to create a map of bioavailable strontium to underpin stable-isotope analyses of human mobility. Palaeogenetic analyses are also continuing to discover the affiliations of the Wadi Hammeh 27 human population.

Keywords: Natufian, Jordan Valley, sedentism, raw materials, populations

‘AYN QUSAYBA: EXCAVATIONS AT A MIDDLE BRONZE SITE IN NORTHERN JORDAN

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‘Ain Qusayba is located on the northern flank of the Wadi Qusayba in northern Jordan. The site was first explored in 2012 when a small test pit was excavated next to several stone wall lines visible at the surface, and adjacent to the modern footpath leading eastward from the Jordan Valley to the plateau above. Ceramics collected during this operation dated to the Middle Bronze Age through Roman periods. The Wadi Qusayba Project returned to ‘Ayn Qusayba in 2014 and 2018 in order to further delineate the plan of several structures first identified in 2012, and also to refine its dating. Preliminary results indicate that the northern of the two buildings comprises at least two rooms and a stone glacis or retaining platform. The eastern room contains a doorway and threshold on the south, providing access to a street or corridor. Immediately south of the modern footpath, and downslope from the main building, excavations revealed a small storage unit containing several MB II cooking pots. Pottery collected from the floors within the main building corroborate a MB II date for the structure. The structures at ‘Ayn Qusayba remain only partially exposed, but it appears that they form part of a small, isolated MB II farmstead or villa. A nearby spring provided perennial access to water. Given its location and small size, ‘Ayn Qusayba presents a unique example of a non-urban site dating to the Middle Bronze Age.

Keywords: Middle Bronze Age, Cooking Pots, Rural Archaeology, Jordan Valley, Domestic Architecture

THE MISSED OPPORTUNITY: NEOLITHIC PAST AND CULTURAL HERITAGE IN SOUTH JORDAN

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In light of recent studies and archaeological excavations conducted in the last few years, which have created an archeological trail in the south of Jordan, this on-going project firstly examines the ways locals appreciate intangible heritage as part of their archaeological and development planning. Secondly, it aims, through education, to strengthen the spatial and cultural heritage of the local community. The importance of the Neolithic archaeological path is that it demonstrates the agricultural settlement where the first man settled and practiced agriculture and domestication of animals. Life style of people has changed but their rural practices around agriculture and animal husbandry and their products of baked bread made out of barely and wheat, dairy industry, popular medicine, and agricultural development reflects the continuum through nature. This paper discusses findings of the field research, which will conduct surveys to study the community's understanding of the spatial value and its acceptance of the development of tourism, its aspirations and its cultural and material objectives using quantitative and quantitative research methods. The research team will train

the youth (16-24 years) on leadership ideas through extracurricular activities in collaboration with schools and universities. This aims to strengthen the sense of ownership and shape up national identity. The research team will lead community leaders to create brand-specific production for each village that will link them to the Deep Past. Through education, the project hopes to create basic foundations for sustainable development that will guide the people of the south to invest their human potential in a cultural heritage they own.

Keywords: Neolithic, cultural heritage, education, sense of ownership, sustainable development

THE AMMAN NYMPHAEUM ARCHAEOLOGICAL PARK: CONSERVATION AND REHABILITATION PROJECT

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This paper is part of the project entitled: "Restoration and Rehabilitation of the Roman Nymphaeum in Amman: Nymphaeum Archaeological Park 2014-2017" funded by the US Ambassador Fund for Cultural Heritage Preservation, implemented by the Hamdi Mango Center for Scientific Research at the University of Jordan and in cooperation with the Department of Antiquities of Jordan. The purpose of this paper is to present the final results of the project in terms of conservation, rehabilitation, site management and interpretation, capacity building, in addition to tourism development for this important monument opened for the first time to the public as a new tourism attraction at the downtown of Amman. It demonstrates a case study for a best cultural heritage restoration and management practices with applied methods to the revival of urban heritage as an approach for sustainable heritage preservation for the Roman Nymphaeum in Amman, which is considered as the biggest monument of its kind in the region. The Nymphaeum was suffering from different deterioration factors and forms that affected its state of conservation and was considered a mass of visual pollution. The project is focusing on creating a new model in the downtown of Amman for the revival of urban heritage into a cultural forum open public space "Nymphaeum Archaeological Park" that will foster socio-economic benefits to the community. The site is now connected with the tourism map of Amman and clustered with the key Roman attractions in including the Citadel and the theaters.

Keywords: Conservation, Site Management, Archaeological Park, Public Archaeology, Cultural Heritage

MADABA INSTITUTE FOR MOSAIC ART & RESTORATION AND ITS ROLE IN PIONEERING AND RESTORATION OF MOSAIC FLOORS AND TRAINING AND TEACHING

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The purpose of this paper is to introduce Madaba Institute for Mosaic art and Restoration (MIMAR) which established in 2007 as a result of joint collaboration between Jordanian Department of Antiquities and the Italian government and the USAID. MIMAR is considered the only institute in the region that offers a diploma program specialized in scientific methods of production and restoration of mosaic art. This paper will introduce the pioneering role for (MIMAR) in training and teaching students to qualify them to work in this field, and this paper will introduce the main projects implemented by the Institute, especially those related to restoration of mosaic floors. The paper will also highlight the role of the Institute in designating madaba city in the UNESCO networks of creative cities in mosaic handicrafts.

Keywords: Mosaic, conservation, restoration

THE CITADEL OF RABBAT-AMMON IN THE EARLY IRON AGE: A CENTER OF INFLUENCE

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The Citadel of Rabbat-Ammon is among the most imposing archaeological sites in Palestine and Transjordan. The known settlement traces date from the 3rd - 1st millennium BCE and beyond to the Umayyad (Harding 1951) and Mamluk periods (Bennett 1978). The L-shaped upper and lower terraces cover in total more than 15 hectares (by comparison, Aleppo Citadel covers 4.5 hectares). During the Bronze and Iron Ages, the water supply was ensured by a vast, over-15-metre-deep cistern situated north of the acropolis (Humbert/Zayadine 1989). Despite its significance as one of the largest early cities east of the Jordan with strong fortifications, monumental palatial and temple structures and a superb inventory of imported and locally produced artifacts which map a network of international exchange and influence, a convincing stratigraphy of the site prior to the second half of the 1st millennium BCE has never been established. In their paper, the authors will present the results of new large-area excavations which were undertaken by the Department of Antiquities of Jordan on the Citadel of Rabbat-Ammon inside the temenos of the Roman temple. Among the amazing finds of these campaigns is a unique assemblage of female terracotta figures that provides the key to the interpretation of these much-discussed artifacts. The figurines projected as RTI files will be typologically and contextually classified.

THE KHIRBAT 'ATARUZ CULT STAND

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Located in Jabal Hamidah, Khirbat 'Ataruz has become a site of great importance with the discovery of an early Iron Age II temple complex. This site has produced an array of cultic artifacts that has provided a clearer understanding of the religious practices of ancient Iron Age Transjordan and the people who worshipped at this particular temple. During the 2001-04 excavations, pieces of several architectural models were found on and around several offering platforms in the Main Sanctuary Room in Field A. Dating to the 9th century B.C.E., these architectural models include what is currently being considered one of the largest, most complete, and most complex examples of an Iron Age cult stand. This paper will examine the artistic style and motifs found on the large cult stand with focus given on the iconography and its proposed meaning. Comparison of other cultural artistic motifs that may have influenced the design via nearby trade routes will also be presented. This artistic analysis may help provide deeper insight into the ancient concept of aesthetics symbolism, how it related to religious practice, and how those concepts manifested themselves in the use of this cult stand in the early Iron Age II 'Ataruz temple complex.

Keywords: Khirbet 'Ataruz, Cult Stand, Iron Age Cult, Iron Age Iconography, Iron Age Temples

CONSERVATION OF BYZANTINE ICONS FROM GEORGIOS CHURCH IN AJLOUN AND MAGTAS MUSEUM- JORDAN

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Icons vary in materials and methods of preparation, especially the wooden or linen supports and the devious ground layers, the various painting techniques. Deterioration factors of icons the physical deterioration factors that affect the wooden support, the gesso layer and the color layer are the change of relative humidity around the icon. Investigation and Analysis of an icon is importance with using modern scientific methods, for investigating and analyzing the ground layer

or color layer, is considered. Before conservation and restoration operations, physical conditions of the icon were evaluated. The use of X-Ray Fluorescence (XRF) was used to identify the colored materials, gilding layer and preparation layer. Fourier Transformation Infrared (FTIR) spectroscopy was used to identify the bonding materials for colored materials. Scanning electron microscopes (SEM) was used to identify the linen that supports the ground layer. The study included an analytical investigation of the microbes in the icon where many bacteria and fungi which is considered as one of the main causes of microbiological degradation to the icon. Conservation and restoration work started with sterilization, cleaning and then filling in missing parts and gaps and coloring following well recognized international scientific methods. There are various methods and materials that can be used for cleaning wax, soot or fly secretions from or icon's surface. After that the wood may be completely treated and consolidated. Another point of treating icons is the retouching or repainting of colors and the use of new varnishes after cleaning an icon, in order to retain its old glamour. The last step of treating an icon in a museum or church is to exhibit it under suitable conditions.

Keywords: Icons, painting, deterioration, investigating, Conservation

VILLAGE LIFE AT TELL ABU EN-NI'AJ DURING THE EARLY BRONZE AGE URBAN CRISIS

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The archaeology of Jordan features one of the most dramatic episodes of urban collapse in the ancient world: the pervasive and long-term abandonment of towns during Early Bronze IV (also known as the Intermediate Bronze Age). This period traditionally has been correlated with the political decentralization of the Egyptian First Intermediate Period, and the interpretation of Early Bronze IV society has emphasized a shift to non-sedentary pastoralism. Excavated evidence from Tell Abu en-Ni'aj in the Jordan Valley contributes to revised assessment of Early Bronze IV society in Jordan from a variety of perspectives. Tell Abu en-Ni'aj documents sedentary village life through seven stratified archaeological phases spanning most of Early Bronze IV. A community of dedicated farmers and herders lived in agglutinated mudbrick structures along sherd-paved streets, with village edge industrial areas. A series of lamb burials provides a rare glimpse of Early Bronze IV ritual behavior. Bayesian modeling of calibrated radiocarbon ages pushes the beginning of this period two to three centuries earlier, to the mid-third millennium BC. This major revision disconnects the explanation of Early Bronze IV collapse from Egyptian dynastic history and opens possible connections with regional environmental crises in the third millennium BC. The evidence Tell Abu en-Ni'aj provides a dramatic portrait of village life during the most dramatic social crisis in the prehistory of Jordan.

Keywords: AMS Chronology, Bronze Age, Early Bronze IV Collapse, Sedentary Village, Urban Crisis

GIS MAPPING OF LONG-TERM HUMAN INTERACTION AND WATER ACCESS IN WADĪ RAMM

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The paper presents the exploratory methods of the joint project, Jordanian and French program in Wadi Ramm. To understand the large scale human occupation in the desert, it was indispensable to develop an innovative approach to obtain societal interrelationship between human groups and territorial management. As a complex program, with epigraphical, archaeological, geographical, social aspects, the GIS provides the wider lecture of dynamic territory and subsistence strategies through time. The preliminary results show agreement and alliances between social groups to water access. The Ad tribe in Wadi Ramm seems to have concluded an agreement with Mazan tribe and the inscriptions delimits this territory. This type of agreement is very known the Ancient Arabia and any infraction of this agreement can provoke conflicts. Arabs Historiographer relates rich stories about such events, as al-Basūs, conflict for 40 years between two cousin tribes in Arabia of Late Antiquity.

Keywords: wadi Ramm, territorial management, water access, methodology

THE PROVINCE OF ARABIA IN THE FOURTH CENTURY AD. THE VOICE OF THE RHETOR LIBANIUS

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The literary output of the rhetor Libanius (ca 314–393 AD) includes a vast collection of letters: 1,544 in total. Among these we find about twenty-five letters addressed to several governors (praesides) of the province of Arabia (which in today's terms was largely coterminous with the Kingdom of Jordan). These letters allow us to study multiple aspects of prosopography with regard to Arab elites, students and rhetors who lived in Arabia and in Antioch, the native city of Libanius. They also make it possible to study the elites of the state, in particular the governors of the province, their origin, education and careers. The letters to the governors of Arabia also allow us to conduct historical research on the internal situation of the province, particularly illustrating the fluctuations of the inhabitants of Arabia and their migrations to neighbouring regions as well as the attitude of the Greek Antiochene elites towards the newcomers from Arabia. Last but not least, they help us answer the fundamental question of the ways in which the Romans ruled Arabia in the mid-fourth century AD. The correspondence of Libanius, which lies at the core of my presentation, has been only rarely used in research on the history of the province: applying to it the methods of classical philological and historical text analysis yields interesting new results.

Keywords: Arabia, Late Antiquity, Jordan, administration, elites, Libanius

A WADI GROWS UP

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The Wadi Faynan is a remarkable heritage asset. Lying adjacent to the Dana Biosphere Reserve, the Faynan contains a comprehensive record of humanity from the Palaeolithic to the modern day. The patterns we can see in the past, from the settling down, domestication of resources and farming of the Neolithic, to the mineral extraction, industrialisation and ancient pollution of the wadi, and the efforts to mitigate and adapt to long-term processes of desertification and environmental degradation, are all echoed today in the lives of the Bedouin, tourism, water management, and mineral extraction interests. These ancient and modern concerns contain many contradictions and conflicts of interest. However, at the same time the wadi, past and present, encapsulates all that is important in cultural heritage and how the modern world is built on the past. Knowing about and appreciating the past allows it to be brought into the present, not as an alien and remote world, the special place of small interest groups, but as a common inheritance capable of enriching lives and economic opportunities. This paper will illustrate how the past can be seen to resonate with the present in a first step in helping to bring cultural heritage into planning for the future, enabling both conservation and development to occur in harmony. We should not simply fossilize the world around us as a dusty museum but bring it alive through showing its place in the present, in living heritage, in the physical traces in the landscape, and its economic potentials.

Keywords: Cultural Heritage, economic opportunity, conservation, development

RETHINKING MONUMENT 468 (THE BERG-BERG MONUMENT) ON THE AD-DEIR PLATEAU. PETRA, JORDAN

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In June of 2018, the Ad-Deir Monument and Plateau Project (AMPP) completed the first comprehensive GPS pedestrian survey of the Ad-Deir Plateau linked with UAV-drone imagery. Special attention was given to Monument 468 (the Berg-Berg Monument) due to its proximity to the Ad-Deir 'Monastery' Complex as well as this massive building's prominent position above the Great Circle Pool now being restored by AMPP. While Monument 468 has previously been briefly discussed in earlier German scholarship, with portions of it drawn by the famous artist David Roberts, there has never been a modern comprehensive study of the site despite its monumental size and precarious positioning on one of the highest peaks to the west of the Ad-Deir façade. Significantly, Monument 468 may have been one of the Nabataean's

greatest engineering feats, given its challenging position high on a rocky saddle that gave it birds-eye views of both the Ad-Deir Monument to the East as well as the Wadi Arabah escarpments to the West. Additionally, this massive multi-tiered building was supported by unique Nabataean sub-structural engineering and kept supplied with water via a large underground cistern complex. This paper discusses the findings of the GPS mapping of Monument 468 and provides never before available on-site information concerning the functions, design, and potential purposes of one of the most important building structures in ancient Petra. This discussion will attempt to answer the question: was such a challenging engineering product the result of a 'culture in crisis,' or a civilization with other agendas?

Keywords: Monument 468 at Petra, Berg-Berg Monument, Ad-Deir Plateau, GPS/UAV Survey

PROTECTING PREHISTORY: FINDING LATE NEOLITHIC SITES IN JORDAN

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The Late (or Pottery) Neolithic is a key period in the archaeology of Jordan, as it is during this time that we find the first farming communities as we imagine them, with the distinction between 'desert and sown' and the use of dairy products. However, the period remains understudied and is underrepresented in both ground and remote sensing surveys, and consequently in heritage databases. As has been shown in previous research (e.g. E. Banning) this probably does not reflect an actual absence of sites but rather their poor visibility and research biases. This poses a problem for protecting sites of this important period: to protect sites, we first need to know where they are. Using publications and existing datasets, information on Late Neolithic sites in Jordan was collected and recorded in the freely available EAMENA database (www.eamenadatabase.arch.ox.ac.uk). Over a hundred sites with reliable evidence for Late Neolithic occupation have already been entered (April 2018). The dataset confirms that there is no lack of Late Neolithic sites, but they are often poorly visible with little evidence visible on the surface, and a research bias is clearly present. Remote sensing (satellite images and aerial photographs) is used to assess the condition of each site, including existing damage and potential threats. Finally, an analysis is made of site locations – while sites are hard to see on imagery or even the surface, we might be able to establish a pattern to their locations creating a predictive model potentially of value for other prehistoric periods.

Keywords: Late Neolithic, heritage database, remote sensing, site distribution, predictive modelling

THE RITUAL LANDSCAPE OF THE ANCIENT TOWN OF NEBO

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The ancient town of Nebo, known today as the site of Khirbat al-Mukhayyat, is located approximately 6 km northwest of the city of Madaba. The Khirbat al-Mukhayyat Archaeological Project (KMAP) was established in 2012 to investigate the sacred aspect of the landscape around the site and explore the economic and ritual importance of Mukhayyat across multiple cultural and historical periods. This paper will present the results of KMAP's second and third seasons of excavation, which focused on the site's Iron Age and Hellenistic remains. Three fields of excavation were opened during KMAP's inaugural season of excavation in 2014. Two of these fields formed the focus of efforts during the 2016 and 2017 seasons. In Field C West, the discovery of a miqveh prompted further work, uncovering a number of plaster and bedrock installations, which may support the hypothesis that, during the Hellenistic period, the site was used primarily for agricultural and ritual purposes. In Field B, excavations allowed us to determine an Iron Age foundation date for the defensive architecture in this area. This fortification system was reused briefly in the Hellenistic period; however, during this period, Field B was used primarily for ritual activities that involved the placing and subsequent burying of a number of cooking vessels. The presence of the miqveh coupled with the contemporary cooking pot deposits indicates that, during the Hellenistic period, the ancient town of Nebo was the focus of a distinct set of ritual activities that appear to be unique to this site.

ON THE STEPS OF THE QASR AL-BINT: NEW ARCHITECTURAL STUDY ON THE TEMPLE AREA (PETRA)

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The works carried out since 1999 by the French archaeological mission in Petra on the temenos of the Qasr al-Bint were complemented by a renewed architectural analysis, allowed by the excavation of a peristyle building, located east of the temple (1999-2014), and the exposure of the monumental staircase of the temple itself (2015-2018). The paper integrates both the archaeological evidence and the architectural analysis of the excavated structures, presenting a revised reconstruction of the area during the Nabataean and Roman periods. We will first discuss the spectacular refurbishing of the monumental stairs with white marble in the second c. AD, displaying a rather original design; we will then develop hypothesis and reconstruction drawing concerning the second construction, a luxury Nabataean two stories building. It was centred on a courtyard surrounded by a Doric portico, supporting a Corinthian gallery at the upper level, with screen walls adorned with colonette. Beside this sophisticated courtyard, the monumental gate of the building, with imbricated Nabataean and Corinthian orders, was studied, revealing two main successive construction stages. New perspectives are light out with those discoveries and enrich the debate about its function within the Qasr al-Bint complex.

Keywords: Petra, Architecture, Temple, Nabataean, Roman

THE AYYUBID QĀ'AT AL-NĀSIRI IN KERAK CASTLE: ARCHAEOLOGICAL ANALYSIS AND HISTORICAL CONTEXTUALIZATION OF A MIDDLE ISLAMIC PALACE (13TH CENTURY)

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Starting from the late 12th century, the palace "theme" was replicated throughout Bilād al-Shām and also in Transjordan where appeared after 1188 in the major fortified centers of the region: Kerak, Shawbak, 'Ajlūn and Hesban. Exactly in Kerak castle there is one of the most well preserved reception hall of Ayyubid period, the Qā'at al-Nāširi, erected during prince al-Nāšir Dawūd's regency of the city (1229-1249). The aim of this paper is to show the results of the archaeological and architectural investigations carried on this building from 2012; the methodological basis of this contribution relies primarily on stratigraphic archaeology of buildings (Brogiolo and Cagnana 2012, Nucciotti 2010) through the methods of Light Archeology, used by the Medieval Petra Italian Archaeological Mission (University of Florence) directed by Professor Guido Vannini and on Oystein La Bianca's studies of Great and Little Traditions of medieval Jordan (La Bianca 2007, 2011); secondly, we will investigate the reasons that led al-Nāšir Dawūd to build this complex and where he found the models that inspired the general architectural composition of his qā'a.

Key words: Middle Ages; Upstanding building stratigraphy; light archaeology

MULTIDISCIPLINARY APPROACH TO THE HISTORICAL AND ARTISTIC HERITAGE IN THE AREA OF PETRA

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For some years a group of researchers to University of Urbino and CNR of Rome has carried out basic and applied studies in the Petra area to petrographic, mineralogical, geochemical, archaeometrical and inherent to the various problems of degradation and conservation of monumental heritage. Petrographic and physical characteristics of the outcropping geological formations in the Petra valley have been defined. The small springs present in valley's surroundings have been

studied with geochemical techniques. The study also involved the whole valley of the Jordan with particular regard to the thermos-mineral springs. In collaboration with archaeologist of the university of Florence the characteristics of the materials of the Al Wu'eyra and Shawbak sites have been studied. As for this last site, after geo-tectonic overview of details, through petrographic comparisons between the litotype used in the construction of the castle and the outcropping formations were found the quarries of origin of the materials of the masonry structures. In an area of the castle called "productive area" characterized by multiple cocciopesto tanks, the investigations have clarified their function. The problems of alteration of the wall structures have been defined. As for problems of deterioration of the architectural heritage present in Petra valley and the main causes and the mechanisms connected to it have been identified from mineralogical, petrographic and physical investigations conducted with methodologies in DX, SEM, mass spectrometry. In particular the Palace Tomb was studied with different survey techniques based on range-data and image-based systems.

Keywords: Petrography, Jordan Valley, Petra, Archaeometry, Survey Techniques

HARRAT JUHAYRA 2: A CHALCOLITHIC SETTLEMENT AND CEMETERY IN THE JAFR BASIN, SOUTHERN JORDAN

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Harrat Juhayra 2 is a composite site that extends over a volcanic hill of the same name occupying the northwestern corner of the al-Jafr basin, southern Jordan. Our recent excavations have attested to an elongated Chalcolithic settlement and a large cemetery attached to it. The settlement contained a dozen rectangular, single-room houses, where tabular scrapers, drills, potteries, stone vessels, grinding implements were found in situ. Meanwhile, the cemetery consisted of several rectangular, pier-house-like ossuaries equipped with a long, tail-like feature and several dozen miscellaneous burial features. Although the latter were scarce in small finds, the former yielded a certain amount of human skeletal remains and burial gifts including tabular scrapers, grinding implements, maceheads, shell/snail adornments, a fringed palette, and a cylindrical figurine. A series of C-14 data converge on the final few centuries of the 7th millennium calBP, suggesting that the composite site dates back to the middle Chalcolithic. The occurrence of the diagnostic potteries and basalt bowls (both similar to the Ghassulian products) and the limestone figurine reminiscent of the baton-like artifact from Qulban Beni Murra, to say nothing of the tabular scrapers and the robust drills, also supports the dating. In this sense, the site supplies the information deficiency in the Jafr chronology that the author presented to trace the process of pastoral nomadization in the dry periphery. This paper discusses the Chalcolithic settlement first found in the Jafr basin together with its unique burial practice.

Keywords: Harrat Juhayra, Jafr basin, Chalcolithic, settlement, ossuary

DEVELOPMENT OF A MANAGEMENT SYSTEM FOR THE ANALYSIS AND DISSEMINATION OF SANTO STEFANO CHURCH'S MOSAICS IN UMM AR RASAS (JORDAN)

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Umm ar-Rasas is a Jordan archaeological site, located 30Km southeast of the city of Madaba, in the northern part of Wadi Mugib. It preserves findings dating back the period from the end of III century d.C. to the IX d.C. and, from 2004, it belongs to the world heritage list of UNESCO. In 2015 a multidisciplinary work was undertaken over the site, mainly

focusing on Santo Stefano Church, with the main purpose of enhancing the knowledge and documenting the conservation state of the polychrome mosaic carpet, which covers the entire surface of the hall and presbytery. A huge amount of data has been collected, coming from archaeological and historical investigations, geophysics and geodetic inspections, Geomatics surveys. Data has been organized in a geo-database, enabling a more efficient management and facilitating the exchange of information. The logical structure of the database allows one interconnect tables attributes and vector layers. It is even designed to infer qualitative (i.e. conservation state, presence of pre-existent structures, modules identification) and quantitative information (i.e. supposed number of textiles composing the original surface). Moreover, by combining laser scanner and close range photogrammetry, true orthophotos have been produced to be managed within a dedicated GIS, allowing in-depth analysis for understanding the evolution of the iconographic repertoire that, among the centuries, has undergone several disfigurements due to the iconoclastic age. On the other, it can be used for multimedia applications (i.e. AR application or High resolution WEB visualization) for dissemination purposes, to spread with the mankind this priceless heritage.

Keywords: GIS, Mosaic, Dissemination, Archaeology, Management

THE PALACE TOMB. A METHODOLOGICAL APPROACH FOR THE SURVEY OF ONE OF THE MOST IMPORTANT MONUMENT OF PETRA ARCHAEOLOGICAL PARK

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The paper presents the results of the international project "The ancient hydrologic system of Petra. Study and restoration aimed at the conservation of architectural heritage". The monumental area of Petra is characterized by several nabatean tombs, carved and modeled in the rock in imitation of the architecture of the Hellenistic Period. Composed mainly of quartz-arenites with inhomogeneous characteristics and considering the advanced state of deterioration of the structures, the project aimed at defining the surface degradation of the Palace Tomb as a case study. Studies on the area underlined how the water flowing down on the monuments represents one of main reason of the high degradation, beyond the chemical phenomena, the wind erosion and the expansion-contraction phenomena caused by strong temperature differences that disarticulate the sandstones. Some of these phenomena were supposed by the nabatean builders that realized an appropriate drainage system, able to assure a water reserve for the city and preserve the architectural façades. Since 2005 the research group (ITABC) performed several measurements in order to update the graphic documentation of the Palace Tomb. Aim of the survey was the experimentation of different methodological approaches based on range-data and image-based systems for acquiring 3D information at very high resolution. From the numerical model of the tomb, plans, sections and different maps for analyzing the archaeological features and the pathologies of the surfaces placed at very high altitudes were carried out. The results have been imported in a specific GIS for the safeguard of the monument.

Keywords: Palace Tomb, Aerial Photomodeling, Laser Scanner, Degradation Phenomena, Petra

SEISMIC VULNERABILITY INVESTIGATIONS ON THE STYLITE TOWER AT UMM AR-RASAS

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Umm ar-Rasas is the third Jordan site inscribed in the UNESCO World Heritage list, thanks to the richness of the inscriptions, quality of the mosaics and presence of the Stylite Tower. The latter, a unique survived example of stylite towers in the Middle East, presents evidence of structural damage due to frequent earthquakes occurred in that area. In order to prevent the tower from further damage and improve the level of safety, a multidisciplinary study of seismic vulnerability was undertaken. On the basis of geophysical surveys performed in situ, two structural models were implemented for the tower. In the first one, the tower was considered as a rigid structure supported by means of an elasto-perfect plastic soil; in the second one, a more complex finite element model was setup. In both cases, a parametric study was carried out to evaluate the influence of the inner core of the tower and analyze different hypotheses on the interconnection between the core and the external walls. Push over analyses were performed that resulted in a very low resistance of the tower to seismic action. The proposed analyses suggest the necessity to implement further in situ measurement campaigns for a better identification of the tower structural characteristics. This will allow to tune the structural models, with the goal of designing an effective retrofitting intervention to preserve this unique monument. This work is part of a research program co-founded by the Italian Ministry of Foreign Affairs and International Cooperation.

Keywords: Stylite Tower, Umm ar-Rasas, laser scanner acquisition, seismic vulnerability, structural analysis

RESEARCH AND DEVELOPMENT OF A METHODOLOGY FOR A THREE DIMENSIONAL REPRESENTATION OF JORDAN CULTURAL HERITAGE FOR BLIND AND VISUALLY IMPAIRED PEOPLE, THROUGH DIGITAL MANUFACTURING TECHNIQUES

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This experimental work is the result of collaboration between CNR ITABC (CNR ISPC, starting from June 2018) - represented by Roberto Gabrielli - that has a great knowledge of the Petra Archaeological Site and 3D data acquisition process, FACTO ENGINEERING - represented by Filippo Sessa and Andrea di Savino - experienced in 3d data reconstruction and digital manufacturing for Cultural Heritage sector and UNIONE ITALIANA DEI CIECHI E DEGLI IPOVEDENTI – ONLUS (Sez. Benevento) - represented by the president Rafaela Masotta – the main blind and visually impaired Italian association.

The purpose of the work is to improve, thanks to the help of the digital process, the accessibility and the understanding of Jordan Cultural Heritage for blind and visually impaired people: a point cloud produced by a 3D laser scanner is processed through algorithms to generate a closed mesh, which represents the monument in a precise scale; then will be manufactured with 3d digital technologies. The main aspects on which the research has focused concern the choice of materials, perception of the scale factor and educational contents.

The technical results of the research will take a place in a physical prototype, made with digital manufacturing tools and techniques, that could be exposed during the conference or in a museum space.

The general results of the work concern the improvement of the accessibility, awareness and dissemination of the cultural heritage.

Keywords: 3DScanning, Digital, Manufacturing, Blind, Cultural Heritage

JALUL ON THE CROSSROADS OF THE GREAT EMPIRES

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This paper will situate Tall Jalul as a thriving settlement during the complex sociopolitical climate of Levantine secondary states under Assyrian, Babylonian and finally Persian domination. The location of the site in the crossroads region of the Madaba Plains placed it along a trade route between Damascus in the north and Egypt and Arabia in the south. This paper will highlight material remains such as fragments of incense altars, anthropomorphic and zoomorphic figurines, seals, and ostraca that suggest that this community had international interactions with the dominating powers of the north. This paper will also examine the architectural evidence for sophisticated residential and administrative complexes as well as the largest open-air water reservoir from this period. The significant and abundant finds from the Late Iron II C/Persian period (539–332 BC) remains found in both Fields C and D at Jalul help to clarify the emerging picture of the cultural resilience of local traditions and the adaptation of provincial governance amid occupation during the Persian period in Transjordan.

Keywords: Tall Jalul, Madaba Plains, Jordan, Ammonite, trade

THE LPPNB MEGA-SITE PHENOMENON: PROMOTERS OF RISE AND COLLAPSE REVISITED

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Since the eighties when the understanding of the mega-site phenomenon was developed by the excavations in 'Ain Ghazal and Basta, more data and meta-theoretical investment helped to illustrate the complexity and diversity of this unique phenomenon limited to the LPPNB of the Transjordanian Highlands (7500-7000 BCE). However, mega-sites are not an extraordinary phenomenon in the Near Eastern Early Neolithic (cf. Abu Hureyra/ Mureybet or Jericho) once natural conditions and socioeconomic/ cognitive adaptations fostered or triggered progressive dynamics. „Flows of people, artefacts and ideas“ can guide „cultures into crises“, and in the case of the mega-site phenomenon we may deal with additional factors forming the cooperating reasons for stability and finally instability, collapse and transformation. Recent insights showed that at different times different combinations of different promoters gained momentum over a finally unsuccessful trajectory moving towards higher-level social stratification and complex settlement systems. Apart from the known promoters of the Transjordanian mega-site phenomenon, two freshly identified promoters for its collapse appear to have been crucial: Terrestrial factors seem to have caused the collapse together with rising social inequality. While we have direct evidence for the first factors (rubble layers and earthquake damage in the villages), only indirect evidence exists for the formation of societal pockets not equally sharing space, power and access to resources and productivity. For these negative promoters the LPPNB communities may not have found adaptations in time.

Keywords: Mega-Site Phenomenon, LPPNB, terrestrial impacts, social collapse

NORTHERN BORDERS OF AMMONITE KINGDOM (ZARQA) THROUGH EXCAVATIONS

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Ammonite Kingdom which adopts Rabbat Ammon as its Capital which was extends between Zarqa River to the north and Wadi Al-Mujeb to the south. The Ammonite built many Towers and fortresses to control the border guarding the natural crossings leading to the kingdom of Ammon. Governorate of Zarqa –Sub- District of Bi'erin which was a part of

Ammonite Kingdom, Zarqa has deeply impacted on archaeological sites represented the Iron Ages such as Rujm Jamaan – Khirbet Al-Kamsheh – Khirbet Al- Jamous – Tall Ajeel / Al-Qun'ah whereas the Excavations conducted by the Author shed light at all ammonite towers in these sites, and its function protected the northern borders of Ammonite kingdom. Excavations recover many archaeological remains dating the Iron II the most distinctive remains in Rujm Jamaan the head of a male statue, the iconography of the personage is that of a high official or military chief. The excavations recover the ammonite towers in Khirbet Al-Kamsheh – Khirbet Al- Jamous – Tall Ajeel / Al-Qun'ah, but unfortunately almost completely neglected by archaeologists, was documented and it's historical – archaeological role in the Iron Age acknowledged. It became clear that Jamaan was a stronghold on a main track connecting the Zarqa River to the Jordan Valley during the time at Ammonite Kingdom of the 9th – 6th century B.C., Researches are still ongoing.

Keywords: Ammon – Iron II -- Bi'rein – Jamaan

LATE NEOLITHIC CERAMIC AND OBSIDIAN NETWORKS IN THE LEVANT

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The purpose of this project is to investigate the relationship between local and long-distance interaction networks during the Late Neolithic Wadi Rabah period (5746 – 5118 cal. BC) in the southern Levant. Previous scholarship has characterized the Wadi Rabah period as a time of socio-cultural 'devolution' or 'collapse'. However, there is still evidence for the widespread adherence to particular technological traditions and long-distance trade of raw materials across the Levant. To investigate these complex patterns of interaction social network analysis techniques (e.g. clustering, centrality, density) are employed to explore the integration and connectedness of Wadi Rabah settlements across the Levant. Similarities of proportions of ceramic wares and obsidian sources are used as evidence of more direct and/or intensive interactions between settlements. Analysis of the Wadi Rabah network suggests that the structure of ancient social interaction simultaneously allowed for the development of locally situated identities within a more expansive and dispersed global network. The increasingly localized interaction sphere of the Wadi Rabah period does not necessarily have to reflect some sort of socio-cultural "collapse," but should instead be explored in the context of complex and flexible social relationships.

Keywords: Late Neolithic, Social Network Analysis, Ceramic Analysis, Obsidian Sourcing, Interregional Interaction

EXCAVATIONS AT A YARMOUKIAN SITE IN WADI QUSEIBA, NORTHERN JORDAN

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The Late Neolithic remains one of the more poorly understood periods in the archaeology of Jordan. Fortunately, several recent archaeological projects have contributed to an improved understanding of the Late Neolithic. This paper discusses the results of fieldwork at the site of WQ117, which is located on the north side of Wadi Quseiba in at-Taybeh district, northern Jordan. The site was discovered during archaeological survey in 2012 and excavations in 2014 and 2018 produced artifacts and features that are attributed to the Late Neolithic Yarmoukian culture. This evidence includes pit features, pottery, stone tools, a figurine fragment and faunal remains. The paper summarizes the results of the fieldwork and discusses the material culture, economy and chronology of the site in the broader context of the Late Neolithic of northern Jordan and the surrounding area. Special attention is paid to the site's ceramics. A petrographic examination of this material shows connections with areas beyond the immediate vicinity of the site.

Keywords: Late Neolithic, Yarmoukian, Wadi Quseiba, excavation, ceramics

UMM AS-SURAB: ARCHAEOLOGY AND ARCHITECTURE IN A NORTHERN JORDANIAN VILLAGE. DATA FROM THE 2017 AND 2018 FIELDWORK SEASONS

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This paper aims to illustrate the results of the archaeological research carried out in the village of Umm as-Surab, Mafrāq governorate, during the 2017 and 2018 fieldwork seasons. The study of Umm as-Surab is part of the wider Jordan Hawrān Archaeological Survey (JHAS) project, which aims to outline the historical evolution dynamics of rural settlements in northern Jordan between the late Roman and early Islamic periods. The methodology employed applies the principles of archaeological stratigraphy to the study of architecture, i.e. Building Archeology, in conjunction with the analysis of construction techniques and related technological processes. This research methodology for ancient architecture has generated new data that have been expanded and enriched with other information from surface survey, archaeological soundings and mortar analysis. On the one hand, the study of building techniques, combined with archaeometric analysis of the mortar samples taken according to stratigraphic sequences, has allowed us to develop a more precise chronology of some architectural complexes, providing sufficient data for new reflections on the transition period between Late Antiquity and the Islamic era. On the other hand, the surface survey, carried out in the village and its surroundings, has increased the data on the occupational phases which are currently less visible in the extant architectural remains. The synthesis and interpretation of all this information creates a complex picture of the evolution of a village in the basaltic area, significantly improving our knowledge of the history of Hawrān. Finally, an updated chrono-typology of the construction techniques is presented.

Keywords: Building techniques, chrono-typology, archaeometry, technology, Hawrān

THE NABATAEAN CROCODILE BETYL

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In addition to the 628 monumental rock-cut tombs and 730 non-monumental tombs at Petra, there are over a thousand rock-cut betyls or cultic niches. The 'Petra Niche Project' launched by Robert Wenning and the late H. Merklein in 1997 has already recorded 840 votive niches in the eastern half of Petra alone, two-thirds of which were previously unrecorded, with an estimated total of over 1200 in the Petra region. The predominant type is anti-conic (a square unmarked stone in some instances), but there are a few that have figurative theophoric representations (identified as one of the Nabataean deities Dushara, Allat/al-Uzza, or the Egyptian Isis). During the 2017 survey of the Ba'aja region just 10 km north of Petra, a unique iconographic betyl was discovered at Raqqabet Abu Thabet. This betyl has a vertical crocodile strung across its face. As is well known, the crocodile is a familiar symbol of the Nile, where it was worshipped as a god—the crocodile god Sobek. Arsinoe in the Fayyum was also called Crocodileopolis. The connections with Egypt are attractive, perhaps in connection with the Isis cult that penetrated Petra in the late Hellenistic era. There are depictions of Isis seated with a crocodile at her feet in her cultic center at Philae in Upper Egypt and in the Temple of Isis at Pompeii in Italy, which offer support for the hypothesis.

Keywords: Betyl 1, Nabataeans 2, Crocodile 3, Isis, Petra 5

KHIRBET SAFRA: A MILITARY INSTALLATION OR REGULAR SETTLEMENT

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Khirbet Safra is located 17 km south from Madaba. It has commanding view of the entire region, situated on a road connecting Madaba with Hot Springs at Zerqa Main. Preliminary readings of pottery collected from the surface indicate that the site was occupied during Iron Age 2A and 2B. The city covered an area of more than one hectare and it is encompassed by a casemate wall system. Since it is located at a strategically important location, it is possible that it served as a military outpost. Due to its size, however, it may be that it was only an ordinary village-type settlement. The first season of excavation will begin in the summer of 2018, and hopefully, will produce material culture which will resolve this dilemma.

Keywords: Safra; Settlement; Pottery; Casemate wall

MEGA IN ACTION: ASSESSING ITS CONTRIBUTION TO THE VISIBILITY OF THE JORDANIAN ARCHAEOLOGICAL AND HISTORICAL HERITAGE AND PROPOSAL TO REMEDY ITS SHORTCOMINGS

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Between its launch in 2011 and January 2018, 3598 archaeological sites totalling 6031 site elements were added to the Middle Eastern Geodatabase for Antiquities (MEGA) by the Staff of the Documentation and Management of Cultural Heritage of the Department of Antiquities of Jordan. GIS-mapping the distribution of these "new sites" has enabled the refinement of the understanding of the geographical distribution of sites and has clarified the focus of enquiry by Jordanian and foreign institutions in the last decade. A showcase for the Jordanian Archaeological and Historical Heritage, MEGA however presents some serious shortcomings, such as the difficulty (often repeated by users) in accessing sites in the Database. Suggestions are put forward to improve MEGA, more particularly within the context of the creation of archaeological parks in Jordan (Jarash, Madaba, Petra) and of the first "protected ancient landscape", that delimited by natural features (relief and wadis) around Umm ar-Rasas.

Keywords: Cultural Heritage, MEGA Jordan, Archeological parks, landscape

RURAL PROPERTIES IN BYZANTINE AND ISLAMIC ARABIA AND PALAESTINA TERTIA: CHURCH, STATE AND LANDOWNING ÉLITE

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The paper intends to examine the processes of formation and transformation of rural properties in the Provinces of Arabia and Palaestina within the chronological framework of the 5th and the 8th/9th centuries. Specifically, it will consider various aspects as the spatial impact of the Church on rural landscape, especially in the 6th century, through the archaeological record, and how the ecclesiastical institution played a central role in country life shaping it through rational organisation, for example when acting as landlord of agricultural land, vineyards, orchards and pastures, besides redirecting part of the income to evergetic activity. Analogously monastic institutions located near villages, had also a determinant role, they collected rent, labour and services from the peasants and took care of charitable institutions. Monasteries also interacted with local landowners, and in few cases were engaged in trade displaying over time a fairly well-structured society with mutual interests and concerns, as can be evinced from data provided by epigraphy, hagiography and the papyri of Petra and Nessana. Assessing the changes that occurred in the 7th century, and especially under the Umayyad rule, allows us to evaluate not only the notion of κρίσις "Krisis" (intended here as a positive concept), but the manner in which the Church re(acted) as a substitute for the State in reorganizing the institutional and economic assets of the provinces, as well as the interactions with the new Muslim élite. This led gradually to the rise of a new category of land ownership in the countryside, creating a new, although chronologically limited, equilibrium.

Keywords: Rural Proprieties, Church, State, Byzantium, Islam

HARNESSING THE LANDSCAPE- GEOMORPHOLOGICAL MODIFICATIONS THROUGH TIME. WADI HREMEYEH – PETRA AS A CASE STUDY

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Human survival is generally governed by their ability to harness the natural elements and to manage resources for maximum benefits. Water was the main element which could lead to prosperity or to destruction. Ancient human relationships with water oscillated between fear and need. Fear created shrines, while need motivated people to recreate the surrounding and to engineer structures to harness the elements. Wadi al- Hremeyeh is located approximately 1.65 Km South East from the famous monument of Petra Al- Khazneh, within Al- Madras catchment. The catchment has an elevation differential of 500m. It is dominated by limestone outcrops at Ayn al-Braq upstream and is dominated in the downstream segment of Wadi Al-Quntara and Hremeyeh by the Disi and Umm Ishreen Sandstone outcrops. This geology might imply a barren surface of fallen rocks and surfaces. Although several travelers visited the site (for example:

Brünnow and Domaszewski 1904, Savignac 1906, and Dalman 1908) their interests were limited to inscriptions, shrines and decorated facades along the Wadi. The reason for these to exist, however, were large scale efforts to harnessing runoff water and surface modification associated with that. These included terraces, check dams, settling tanks, storage dams and canals that transformed the local landscape. These installations attest to the human ability to manage water crises (both related to shortage and excess) and creating an oasis fitting for the Gods. In 2017, a project funded by U.S. Ambassadors fund for Cultural Preservation was initiated, focusing on documenting and preserving the archaeological features related to hydrology. A survey documented the hydrological features that began from the Nabataean period, as evident from surface sherds, and continued sporadically up to the Mamluk period. This study aims to report these features, explain their function and role in modifying the area and making it accessible and livable.

Keywords: Petra, terraces, dams, Nabataean, geomorphology, water management

THE CYLINDRICAL HEATING PIPES OF THE ROMAN BATH AT 'AYN GHARANDAL

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The Roman military bath at 'Ayn Gharandal ranks as one of the best-preserved baths thus far found in Jordan and therefore represents a rare opportunity to study elements of construction that typically do not survive, such as wall-heating systems. Indeed, the wall-heating system of this Tetrarchic period bath is remarkable, both for its state of preservation and for its unique construction. Excavation within the bath revealed cylindrical pipes (of the type typically used for water) installed against walls to convey hot air from the hypocaust, rather than the typical rectangular pipes found in nearly all other contemporaneous baths in the region. Elements of this heating system have been previously presented; however, the cylindrical heating pipes have only recently been studied in full and will be presented here for the first time. This paper will discuss this unique use of cylindrical pipes and consider why these pipes were chosen over rectangular ones. Although this choice may have been the result of a hasty renovation of the bath's heating system, this paper will argue that these pipes were deliberately chosen to regulate the heating of the bath. A preliminary typology of the pipes, based on form and fabric, will also be presented, which should help to fill a long-standing gap in the publication of ceramic building materials in the region. Through this close examination of the bath's heating pipes, this paper will demonstrate how ancient Jordan was a place of technical innovation despite being on the edge of the Roman Empire.

Keywords: 'Ayn Gharandal, Roman baths, heating systems, ceramic building material

DOJAM – A NEW DATABASE FOR JORDANIAN MUSEUMS

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Due to the fact of regional crisis and growing illicit trafficking, the need of a large-scale inventory of archaeological material in Jordanian museums became strikingly aware. Therefore, a new collaborative project between the German Protestant Institute of Archaeology in the Holy Land (GPIA) and the Department of Antiquities of Jordan (DoA) was established in January 2017. It is financed by the German Gerda Henkel Foundation, whose main objective is to support the historical humanities, archaeology, the history of art and other disciplines with a historical component. The project is entitled "DOJAM – Documentation of Objects in the Jordanian Archaeological Museums". The aim of this four-year project is the protection and management of archaeological objects stored or displayed in DoA museums, which is compatible with the 2014–2018 DoA strategy, with a particular focus on the Jordan Archaeological Museum (JAM), located at the Amman citadel. The main task is the setup of a database for the registration of the archaeological finds in JAM which should be later implemented in other archaeological museums in Jordan. Additionally, the project includes the conservation of special archaeological objects and the training of the museum staff for the management of

archaeological finds stored in Jordanian museums. Furthermore, a risk management plan for the JAM will be prepared. This lecture provides an overview of the aims and implementation of the DOJAM project.

Keywords: archiving, heritage sustainability, Jordan Archaeological Museum, risk management, training of museum staff

ARCHAEOLOGY MEETS ASTRONOMY: IN SEARCH OF OUR ORIGINS

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Astronomy and archaeology are two seemingly disparate disciplines that share, however, a common goal: tracing our origins. Other than the many shared philosophical implications, this common quest also leads to a plethora of conceptual and methodological commonalities. Data acquisition is almost exclusively based on observations supported by models, while experiments are largely beyond the bounds of possibility. But while time is, undoubtedly, of greatest importance for both disciplines, the uncertainties on the measurements are unthinkably large or small, when seen from the other discipline's point of view. At the same time, the arch enemies of the two fields are also in common: weather, affecting observations on one side and causing damages on the other, and human intervention, in the form of light and atmospheric pollution on one hand and destruction on the other. With the advent of technology both fields of study start benefiting strongly by the contribution of their respective amateur communities and the general public, in the form of citizen science. Meanwhile, the virtual observatory, an effort within the astronomical community (but quickly spreading among other disciplines) to bring together and curate data sets and other resources from all the astronomical facilities across the globe, to preserve their provenance, to render metadata searchable, and to make all those resources accessible as a whole, is taking up, allowing for unprecedented discoveries.

Keywords: archaeology, methodology, interdisciplinary, citizen science

NOMADIC MOBILITY DURING THE LATE 2ND MILLENNIUM BC AND EARLY 1ST MILLENNIUM AD AMONG ARABIAN SAFAITIC TRIBES IN THE JORDANIAN BADIYA AND BEYOND: AN EPIGRAPHICAL AND PHILOLOGICAL APPROACH

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Nomadic mobility is an adaptation to different configurations of variables, which helps to ensure the livelihood of people and flocks. On the basis of hitherto unpublished Ancient North Arabian (ANA) inscriptions discovered by the author in different regions of Jordan (Harra, Mādaba Ḥisma, Bāyir) and other available epigraphical sources that roughly cover a time span of 1000 years of history, this contribution reflects upon different aspects of human nomadic mobility in Northern Arabia in general and Jordan in particular. An attempt will be made to present a synthesis concerning the environment and general circumstances of the nomadic mobility, e.g. directions, destinations, and the question of search for land that can support herds of animals and supply various wild products. We will tackle the main lexical items that imply the connotation of moving from place to another. The cultural historical background of the target and source places or regions indicated by the prepositions mn "from" or l/l "to" (i.e. verb + mn / l/l + the name of the region / place) will be delineated to glean the reasons of mobility. Some tribal names are concentrated in inscriptions of a defined provenance. The contribution will try to trace such names that sporadically occur in other regions of the Badiya or beyond to understand the distance of mobility. On the basis of the script type, we have noticed that Safaitic or Hismaic inscriptions are attested in remote areas where other ANA or Semitic script genres are dominant; e.g. the presence of Safaitic and Hismaic inscriptions in Tayma region. These cases are helpful to understand the distance and spatial range of mobility. The study will be concluded by a discussion whether the nomadic movements in North Arabian Badiya are regarded as migrations, with intention to settle in a new place, or generally seasonal cyclic movements.

Keywords: Ancient North Arabia, Ancient North Arabian Epigraphy, Nomadic mobility and migrations, Safaitic inscriptions

LOCAL COMMUNITY DEVELOPMENT IN HERITAGE AT AMMAN CITADEL (JABAL AL-QAL'A)

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Development and Conservation in archaeological sites begin by engagement the local community in Management Plan process in these sites. The International Charters and Conventions related to the cultural heritage has recommended encouraging and participation them in the development sustainability process to reinforce the preservation of the Cultural Heritage in all forms tangible and intangible. Amman Citadel known as Jabal al-Qal'a located at a high elevation in Amman Capital and it's the largest and one of the city most important heritage attractions. The development and improvement project in Amman Citadel started in 2007 led by Ministry of Tourism and Antiquities, Department of Antiquities, the Greater Amman Municipality and USAID (Siyaha Project) have been necessary to improve the Citadel as unique and has outstanding values of cultural heritage and the visitors experiences. Ministry of Tourism and Department of Antiquities have initiated to integrate and share the local community in implementation of the Management plan which started of awareness campaigns for students and local associations to get their suggestions and integrated in the implementation process which focus on creating jobs and activities related to the site especially participation in the seasonal festival and events which have been organized by Ministry of Tourism, Department of Antiquities and Private Sector, which are contribute to increase of the preservation of the archaeological sites and sustainability to the next generations.

Keywords: Local community, Engagement, Integrated, Preservation, Heritage

CERAMIC EVIDENCE FOR MOVEMENT AND ECONOMIES IN SOUTHERN JORDAN AND THE NEGEV DURING THE EARLY ISLAMIC PERIOD

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This paper discusses results of comparative geochemical analysis (ED-XRF, SEM-EDS) of domestic and utilitarian pottery and ceramic lamps from transitional-early Islamic (c. 7th– 10th centuries CE) contexts from six archaeological sites in southern Jordan and the Negev, previously Palaestina III. Ceramic industries and distribution patterns of ceramic artefacts can be seen as markers of viable local economies, transportation networks and movement of people during these centuries when written sources and archaeological evidence are scarce. The sites in focus are Jabal Harun near Petra, Humayma, Khirbet edh-Dharih, Ayla, Elusa, and Abu Matar in Beersheva. Ceramic compositional data patterns indicate shared production centres, regional pottery economies and long-distance over-land ceramic transportation. Ceramic exchange mainly links with other economic activities between the studied communities. However, centralised manufacture of specialised ceramic products also existed, apparently dictated by the quality of raw material resources available to the different communities and their craftsmanship. Mass-export of containers informs us about active trade routes and commercial relations between the southern sites during the formative centuries of the Islamic era, whereas micro-level movements can be mapped by individual artefacts, e.g. ceramic lamps carried by travelers and pilgrims. The southern ceramic products show remarkable resemblance to ceramic style preferences diffusing from the Islamic centres, furthermore demonstrating that the southern rural economies had active contact networks in the early Islamic times.

Keywords: Ceramic compositional analysis, Early Islamic, southern Jordan, the Negev, ED-XRF, SEM-EDS

KHARAYSIN (ZARQA): A PPNA AND PPNB MEGASITE BY THE ZARQA RIVER

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Kharaysin is a Pre-Pottery Neolithic A and B site located in the village of Quneya, by the Zarqa River (Jordan), with 25 ha of extension, dating from the end of the 10th to the beginning of the 8th millennium cal BC. Four occupation levels have been documented, two of them dating from the PPNA and two from the PPNB. In the Middle PPNB levels (beginning of the 8th millennium cal BC) terracing walls and rectangular semi-sunken dwellings arranged in parallel to one another are documented. One of these dwellings showed a lime plaster painted floor. In the Early PPNB levels (second half of the 9th millennium cal BC) semi-sunken agglomerated and sub-rectangular houses are observed, showing plastered floors. In the Late PPNA levels (beginning of the 9th millennium cal BC), sunken dwellings with outlines in transition from oval to rectangular morphologies are observed. One dwelling is divided in two by a thin mud wall and the floor is covered by red painted lime plaster. Finally, the remains of some oval sunken dwellings with mud floors dated from the end of the 10th millennium BC are also documented. Preliminary information on the agricultural and animal resources, funerary customs, lithic tools and symbolic objects indicates that Kharaysin is a major site for the understanding of the origins of the Neolithic in the Northern Jordan Plateau.

Keywords: Neolithic, Megasite, Kharaysin, Jordan

CHALCOLITHIC SAHAB BETWEEN HIGHLAND AND DESERT

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Sahab is located ca. 12 km southeast of Amman on the main route to the desert castles. The area of Sahab is considered a transitional zone between desert and highland of Jordan. According to the excavations (1972-1980) led by the author, the site has a long occupational history extending from the Chalcolithic period (5th/4th millennium BC) until the Iron Age (6th century BC). Sahab found its largest extent during the Chalcolithic period. The first settlers of Sahab constructed houses around central courtyards with storage facilities. These settlers coexisted with caves dwellers which were reused in later periods for burial purposes.

The Chalcolithic settlement at Sahab is so far the largest village farming community to be found in this transitional zone. It could have served as a center for a number of smaller settlements in the region as a survey around Sahab has shown. This important archaeological site is covered with modern houses and remaining settlement of all periods needs to be rescued, especially in the middle of the present town which allows further excavations.

THE FIRST HUMAN SETTLEMENTS ON THE LEFT BANK OF THE JORDAN

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The Jordan Valley occupies a pivotal position within the Levantine landscapes; however its early history remains sketchy so far. During the Upper Pleistocene (i.e. the past 780'000 years) it acted either as a passageway for the transit from the coastal area to the Jordanian plateau or it was a barrier when an extensive waterbody formed during cooler climatic periods. For about half of the Upper Pleistocene such a barrier existed between the Sea of Galilee and the Dead Sea. During the Palaeolithic, the period of hunters and gatherers until 12'000 years ago, this ever changing landscape had a deep impact on the movements of humans and animals. What used to be a crossroad became a dead end within short periods. Surveys along the valley floor conducted by the Universities of Basel, Jordan and Yarmuk revealed a rich and continuous legacy of Palaeolithic sites. Taphonomic processes permitted the preservation of some of oldest Levantine archaeological sites only in the Northern third of the Jordan valley. For younger periods preservation is better and allows to reconstruct land-use patterns and to recognise human movements on a larger scale. Crucial in this respect are the discoveries of the Yabrudian and Hummalian periods evincing human movements and land-use hitherto ignored. During both periods, the Jordan valley acted as a transit to settlement located far in the arid interior of the Levant, regularly occupied by humans in these periods.

Keywords: Paleolithic, early settlement, Pleistocene, human dispersal, lithic technology

ARCHAEOLOGICAL PROJECTS IN JORDAN IN PERSPECTIVE

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Since 1923, the year of establishment of the Department of Antiquities, the protection, preservation and interpretation of the archaeological sites in Jordan was one of its main man-date. This was reflected in the so many projects over last decades through surveys, excavations, restorations and documentation projects over all Jordan. Therefore, there was a need for the establishment of a directorate in the department for the control and arrangement of these works and dealing directly with the missions that are and were working in Jordan. This directorate for Excavations and Surveys is concerned mainly with drawing up policies related to archaeological excavations and surveys projects, including to developing the internal plans & proposals concerning the DoA projects, and making evaluation for the international proposals submitted to DoA in seeking for approvals & permits to work in Jordan. In this paper a study and analysis of the projects in Jordan conducted over the last 20 years will be statistically analyzed, using GIS based maps showing different categories; location, governorate, main sites, related periods, missions and nationalities. This study will be a starting base as a feedback for building up the new strategy of the DoA.

MODERN TECHNOLOGY FOR DOCUMENTATION AND SAFE-GUARDING OF MOVABLE AND IMMOVABLE ANTIQUITIES IN THE DEPARTMENT OF ANTIQUITIES

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The use of modern technologies for the documentation and safe-guarding of movable and immovable antiquities is a necessary step for the conservation and availability of objects for researchers and the public all over the world. It is even more essential in regions like the Middle East which are under constant threat during the last decades. Illicit trafficking, looting and vandalism attacks the cultural heritage and the shared human identity. Therefore, the use of modern technology can have a deterrent effect by creating a database for recording any single artifact and proving the right of ownership in this way. This prevents the sale of archaeological objects and the facilitation of funding to terrorist organizations. Such project would also advance any plans that would eventually allow for the proper maintenance and protection of antiquities. In this paper, some essential modern technologies will be reviewed, especially with regard to the publication, recording, and restoration of antiquities at the Jordanian Department of Antiquities and the Jordan Archaeological Museum on the Citadel of Amman. This includes the use of new technology in reading aerial photographs to protect archaeological sites, 3D scanning systems and the preliminary use of QR Code Systems, which helps the mentioned museum to achieve its goals, especially with regard to education as well as safeguarding the great cultural heritage for the enjoyment and education of coming generations.

Keywords: museums, documentation and modern technology

THE HELLENISTIC FORTIFICATION OF SELEUKEIA GADARA (UMM QAYS)

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The fortification on the hilltop of the decapolis-town Gadara can be dated by stratigraphy to the first half of the 2nd cent. B. C. Although just the southern flank is preserved whereas most of the other parts were covered by the constructions of the Roman town, many of the most important features of its architecture are still to be seen. The construction shows typical characteristics of a Hellenistic fortification: regular header-stretcher-masonry, elements of an active strategy, indented trace with pentagonal towers. Although the masonry is an impressive example of regular Greek masonry, the building is first and foremost a military installation, built to protect the new captured Seleucid territories. Form and constructional details of the building elements, e. g. the pentagonal towers, compartment walls and segmental arches, show the 'global seleucid' character with similarities to fortifications in western Asia Minor as well as in central Syria, in Palestine or in Ptolemaic Egypt. In this regard the building is suited to follow the ways of distribution of building techniques and military concepts throughout the huge Seleucid empire. The transfer of technology and ideas can only be understood against the background of the military conflicts between the Ptolemies and the Seleucids which accelerated the development and distribution of economic building techniques and effective defensive architecture.

Keywords: Gadara, fortification, Seleucid, Umm Qays, Hellenistic

THE TECHNIQUES OF MUD BRICKS MANUFACTURING & ITS CONSTRUCTION: DEIR ALLA / JORDAN VALLEY

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This study aimed to know of mud brick making and building techniques in Jordan valley. This material were used since the Neolithic period (8500 B.C) and continued until the present. Also, this study will answer on many questions in the archaeological field. Sun dried mud brick easy to make and low cost since all material that used available in the surrounded area which consist mainly of soil and plant remains.

Keywords: sundried mud-brick, archaeology, material, building and techniques, Jordan valley.

UNDERSTANDING CONSTRUCTION AND ACTIVITY AREAS AT NEOLITHIC SITES THROUGH COMBINED ETHNOGRAPHIC, PHYTOLITH AND GEOCHEMICAL INVESTIGATION

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This paper summarizes results of scientific ethnoarchaeological investigations into abandoned mud and stone constructed village houses and Bedouin tents and the implications of the results for the interpretation of Neolithic archaeological sites. The INEA project (Identifying activity areas in Neolithic sites through Ethnographic Analysis of phytoliths and geochemical residues), develops and applies a method that combines the analysis of microscopic plant remains (silica phytoliths) and geochemical residues to inform on construction methods and the use of space in recently abandoned historical villages and Neolithic settlements. Ethnographic sediment samples from defined activity areas and building materials from the 19th-20th century village of Al Ma'tan in the At Tafila governorate and from Bedouin campsites in Wadi Faynan were analysed to determine if certain anthropogenic actions have particular phytolith and elemental signatures. Archaeological sediment samples from Wadi Faynan 16, 'Ain Ghazal, and Neolithic sites from Wadi Jilat formed the comparative case studies. For the recent village comparative samples, phytolith and elemental signatures were strongest for categories linked to construction practices, particularly for floors and structural features; with geology, age and natural vegetation a key source of variability. For the Bedouin tents, hearths were found to be the most durable and visible contexts. When compared with the Neolithic samples, the phytolith and elemental remains were good at recording patterning that could be indicative of certain activity types, but there was also evidence of mixing and multipurpose use that required cautious interpretation.

Keywords: ethnoarchaeology, archaeological sediments, soil geochemistry, phytolith analysis, archaeological activity areas

ISLAMIC FAYNAN: THE SETTLEMENT HISTORY OF A MINING REGION IN SOUTHERN JORDAN BETWEEN THE 7TH AND 19TH CENTURIES AD

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This paper is a summary of research conducted by the UC San Diego Edom Lowlands Regional Archaeology Project (ELRAP) on Islamic period sites in Faynan, a copper mining region in central Wadi 'Araba, southern Jordan. Drawing on evidence from surveys and excavations conducted over the last two decades, this paper traces shifts in the settlement history of the region between the 7th and 19th centuries AD. Although known primarily as a mining region, copper production in Faynan during the Islamic period occurred only during the 13th century AD. Earlier and later Islamic period settlement in the region had other economic bases, primarily agricultural and pastoral. After describing these shifts in settlement, their relevance for the broader settlement history of Wadi 'Araba during the Islamic period is explored.

Keywords: Faynan, Wadi 'Araba, Islamic period, settlement, long-term

LATE NEOLITHIC SETTLEMENT PATTERNS IN WADI AZ-ZARQA (SIXTH AND FIFTH MILLENNIA BC)

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The az-Zarqa River (Wadi az-Zarqa) is the second largest tributary of the Jordan River, after the Yarmouk River. It rises in Ras Al 'Ain springs/ Amman and flows through a deep and a deep and broad wadi, measuring 70 km in length and ranging between 7 to 10 km in width, into the Jordan River. The Wadi represents a passage-way that connects the Jordan Valley in the west with the Badiya regions in the east. Archaeological sites were established on the banks of the Wadi as early as the Palaeolithic (1mya) to modern times. The archaeological surveys and excavations indicated that the Wadi was heavily occupied during the Neolithic period (ca. 10.500 - 6.500 BP), and it indicates that the area was very rich in flora and fauna during that period. To mention, the Neolithic site Khraisan which was established around 10.500 years ago represents the earliest farming community to be established in the Wadi. The Pre-Pottery Neolithic A settlements in the Wadi were followed by large settlements such as Ain Ghazal and Abu es-Suwwan. It seems that before 8000 years climatic changes happened in the region which led to the abandonment of many Early Neolithic Village, except few of them such as the site of 'Ain Ghazal which became less in area rather than the previous periods. Actually, i seems that some of the farming communities changed their life of styles to pastoralism, such as at the site of eh-Sayyeh, in the meantime new small settlements were established very close to permanent water resources such as the site of Abu Thawwwab, in which people practiced farming, pastoralism and hunting. This paper aims at presenting information about the Late Neolithic settlement patterns (ca. 5500 - 4500 BC), by studying the following subjects:

1. Discussing the diversity of the type of settlements (village, camp and station).
2. Types of architecture.
3. Pottery utensils and flint industry.
4. Art.
5. Economy.
6. The relationship between Late Neolithic settlements in Wadi az-Zarqa with those located in the other Jordanian geographical zones.

CHARACTERIZING TERRA PETRAEA – THE PETRA HINTERLAND IN NABATAEAN-ROMAN TIMES

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The Nabataean capital of Petra has been extensively researched archaeologically and numerous excavations have revealed important insights into Petra's cityscape. In contrast, although various survey expeditions have been carried out in Petra's surroundings documenting an impressive number of rural archaeological sites that date from the Iron Age to the Byzantine and Early Islamic Periods, Petra's hinterland remains comparatively under-researched. Although aspects of rural settlement and land use in the Petra region from the Nabataean-Roman to the Early Islamic Periods have recently been discussed, an overall, in-depth archaeological and historical contextualization of the various archaeological sites in the Petra area is yet missing. Therefore, this paper synthesizes the author's doctoral research results which aimed at reassessing overall, military and non-military, strategies of spatial organization in the Petraean hinterland in Nabataean-Roman times. By adopting a landscape archaeological approach, it is attempted to investigate political, administrative, socio-economic as well as military aspects of Petra's surroundings. Specifically, this paper focusses on discussing the available archaeological evidence for rural settlements, subsistence strategies, the communication infrastructure as well as the military disposition and possible religious structures – thus providing a cultural landscape characterization of the Petraean hinterland in Nabataean-Roman times.

Keywords: Petra hinterland, landscape archaeology, spatial organization, cultural landscape characterization

THE RITUAL LANDSCAPE OF MURAYGHAT, 5 YEARS OF EXCAVATION AND SURVEY

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The landscape of Murayghat, consisting of the central knoll and its surrounding dolmen fields has been studied since 2014. Around 100 dolmen (standing and collapsed) have been documented on the hills; additionally several classical period caves (presumably also burial sites) and several standing stones, stone circles and stone lines have been found. The dolmen are nearly all visible from the center of the site and gather on natural terraces on the hills. The central knoll has yielded several stone constructions from the Bronze Age, rock art and cup marks, the latter particularly along the wadi edge. The excavation at the northern end of the site brought extensive MBA occupation, which consisted of several structures, which have all domestic character, demonstrated by the amount of cooking-pots, grinding tools etc. The underlying EBA structures consist of standing stone walls, which are very similar to those on the surface of the central knoll. Earlier periods are evidenced by the intensive survey on the site. The site is one of a number of EBA dolmen sites, which are in this part of Jordan (another one is closer to Mount Nebo), often connected to an EBA settlement and resettled in the MBA, thus showing the palimpsest character of the site, which has not only been effected by humans, but had effects on them as well.

Keywords: Early Bronze Age, Dolmen, Landscape, Burial, Ritual

FROM THE MOUND TO THE MANTELPIECE – THE MOVEMENT OF EARLY BRONZE AGE POTS FROM THE DEAD SEA PLAIN IN JORDAN

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Early Bronze Age (3600-2000 BCE) pots buried with ancient ancestors along the Dead Sea Plain in Jordan have long held a fascination for locals, pilgrims, and tourists. Demand for these archaeological objects has resulted in decades of illegal excavation, the destruction of the archaeological landscape, and subsequent movement. As artifacts travel from the mound to the mantelpiece, recent research has shown they pass through many hands, crossing borders, traveling in hand luggage, shipping containers, diplomatic cars, and sometimes disguised as fruit baskets. Tracking the movement of these EBA pots is an important aspect of understanding the legal and illegal trade in antiquities in the region. Law plays an important role in the movement of artifacts. In the Holy Land (Israel, Jordan, and Palestine) legislative bodies, legislation, and policy facilitate and discourage the movement of objects. Situated in the debates over artifact agency, the social lives of things, and object itineraries, this paper is an examination of the diachronic relationship between law, movement, and pots. Archaeological evidence, archival documents, interviews, and aerial surveys using unmanned aerial vehicles all provide valuable insights into how these pots go from the burial mound to the mantelpiece or museum vitrine.

Keywords: Artifacts, law, cultural heritage, Early Bronze Age, Jordan

EVIDENCE OF ADMINISTRATION LINKED TO THE PERSIAN DOMINATION IN THE LEVANT IN THE LIGHT OF THE ARCHITECTURAL DISCOVERIES

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Previous attempts at recognizing tangible evidence for the Achaemenid administration in the Syria-Palestine territory have sometimes been rather haphazard and there was no a research method involving an up-close, in-depth, and detailed examination of the history of the Levant as an integrated cultural entity at this time. It became clear that a larger perspective should be adopted. The excavations and surveys conducted throughout the Levant have shown to a satisfactory level the nature of the economic, political, social and intellectual aspects in the Levant under the Persian regime. By "Evidence of Administration" I mean the evidence extracted from the architecture remains and material culture of various kinds that have been found in their original architectural contexts and allude directly or indirectly to an administrative function. I will do so from an archaeological perspective and chronological sequence, insisting on the functional interpretation of the main buildings that are only of administrative nature, which are primarily the residencies, palaces, fortifications and certainly the regional administrative centers. Due to limitation of space, I shall not investigate the literary and epigraphic sources as their available quantity is quite considerable, but only point out by some examples. Indeed, extracting administration information from all these sources requires a comprehensive and long-term work, which cannot be handled by a single archaeologist in a single article. This article is a short extraction from my PhD thesis

entitled: "The Architecture of the Persian Period in the Levant", which was published in May 2017 in Germany by the Scholars' Press publishing house.

Keywords Levant, Achaemenid domination, architecture, fifth satrapy

SOUTHERN JORDAN IN THE NEOLITHIC AND EARLY BRONZE AGE. NEW DATA FROM POLISH ARCHAEOLOGICAL PROJECT CONDUCTED IN YEARS 2014-2018

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The state of research on the issue of the Neolithic and Early Bronze Age in the lands of the Levant is not uniform. It seems that the territory of present-day southern Jordan (understood as the historic land of Edom, geographical area between Wadi Al-Hasa and the Gulf of Aqaba) ought to be more seriously considered within general studies. The role of this territory is underestimated which is a result of both, the state of research and very limited related publications, especially concerning the environmental issues. Within the presentation we will try to describe the main research problems and gaps in our knowledge, as well as direct the discussion to the questions of: i) the settlement continuity (including the explanation of hypothetical hiatuses) and its structure in the region, ii) connections with neighboring territories, and iii) directions and mechanisms of exchange of goods. All these issues definitely have to be presented in relation to the then environmental situation in the area (taking into account the level of its description), which will allow for creating a more complete image of communities functioning here during the Neolithic-Early Bronze Age period. The problems of linking the archaeological image of this region with the environmental and climatic data, seems to be actually one of the most significant. An important reference point for these remarks will be related with the new research project initiated by the authors in the south of Jordan in 2014, as part of which excavations on several sites located in this region have been started in 2017. During the survey works in the mountain area of At-Tafileh directorate several problems related to older documentation and new data appeared. In particular, the difficult and even inaccessible terrain raises questions about the methodology of data obtaining, and makes the verification of older studies highly difficult or in some cases even impossible. Another controversial problem is the issue of description and classification of areas on which surface material has been identified. It seems that they fairly often did not leave standard traces of more or less stable settlements (thus, traces of human activity have not been observed and gathered properly so far). It is probable that many such areas should be treated rather as zones of some economic pursuits (first and foremost pastoral ones). Overall, it is likely that the territory under consideration was not unused in some periods (e.g. in the Early Bronze Age) as previously thought, but it could be simply an arena for the activities of semi-nomadic groups. This can lead us to a new look at older methodologies, studies as well as on the results of new projects. As a result, a new image of southern Jordan in the Neolithic and Early Bronze Age may occur.

Keywords: Neolithic, Early Bronze Age, settlement, southern Jordan, trade routes

ARTU:DTU – LASER SCANNING AND CLOSE RANGE PHOTOGRAMMETRY IN DAJANYIA AND TUWANEH, SOUTH JORDAN

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Since many archaeological sites are at risk of erosion and robbery establishing efficient methods of documentation is one of the most pressing challenges of modern archaeology and cultural heritage protection. South Jordan abounds in sites dated – among others – to broadly understood antiquity. Their documentation is a huge logistic and methodical challenge. In our paper we would like to present our experiences with documenting two South Jordan sites: Roman fort in Dajaniya and the remains of the city of Tuwaneh. After the approval from the Jordanian Department of Antiquities the works will be conducted in the beginning of November 2018. These two sites are characterized by a relatively good state of preservation of monumental architecture. Documentation is prepared by an archaeological expedition from the Department of Classical Archaeology of the Jagiellonian University in a co-operation with surveyors from the Faculty of Mining Surveying and Environmental Engineering of AGH University of Science and Technology in Krakow, Poland. In our efforts to document the sites we use two methods: 3d laser scanning and close range photogrammetry. The choice of these methods was motivated by the complexity of the sites. Both of them consist of a mix of monumental architectural remains and their destructs which makes a documentation process arduous. Moreover, the choice was motivated by an inability to use UAVs. Final result of our work will be – beside the full documentation of visible remains – establishing a methodology of documentation based on two used methods and indicating their possibilities and limitations.

Keywords: Dajaniya, Tuwaneh, close range photogrammetry, 3d laser scanning, site documentation

GEOARCHAEOLOGICAL EVIDENCE OF CULTIVATION AND ENVIRONMENT IN THE PETRA REGION

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Soils and sediments are data archives about environmental change. Combined with archaeological evidence, they can be used to reconstruct past land-use practices. This understanding of the past can be potentially used for water conservation and the sustainable development of arid areas for food production, questions, which are ever more critical in the face of present global warming. The Petra Geoarchaeological Survey, which is part of the "Holocene landscape change in the southern Levant in the context of dust deposition and land use" project, directed by Dr. Bernhard Lucke, FAU Erlangen-Nürnberg, carried out archaeological field survey and geoarchaeological research in the surroundings of Petra in September 2016 in co-operation with the German Jordanian University in Amman. While the geoarchaeological studies covered a range of sites from Pre-pottery Neolithic to Early Islamic, the field survey concentrated in the surroundings of the city of Nabataean to Byzantine Petra, which was also reflected in the surface archaeology and archaeologically datable structures recognized in the survey. The aim of the combined field survey and geoarchaeological studies was to find evidence of long-term environmental change and cultivation practices through comparing surface pottery distributions with sub-surface geoarchaeological information. Here we will present the preliminary conclusions from the analysis of soil samples from the agricultural terraces and surface pottery scatters.

Keywords: Geoarchaeology, Petra, agriculture, environment, survey

AMOENITAS IN CHANGE. DECAPOLIS URBAN AMBIENCES, 2ND TO 6TH CENTURIES

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Amoenitas, the pleasantness of urban life, was a major quality of Roman urbanity. Yet amoenitas, expectations towards it or categories of it were subject to changes over time. The paper seeks to approach this aspect of regional Roman urbanity. The Jordanian Decapolis cities offer a multitude of insights into daily urban life beyond their monumental cityscapes. Yet research has focussed nearly exclusively on their monumental cityscapes as defining elements of urbanity. Only recently have approaches addressing e.g. the sensory perception, even sensescapes of urban environments opened new archaeological perspectives on the manifold and diverse local urban experiences. Introducing some facets of this kind of locally specific experiences and urban situations as their locales will contribute to a more complex understanding of regional Roman urbanity and the changes of urban life (styles).

Keywords: Amoenitas, Decapolis, Roman urbanism, Gerasa, Gadara

JORDAN IN GLOBAL HISTORY: THE VIEW FROM TALL HISBAN

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On a planet where more and more people are on the move and where economic nationalism and xenophobic sentiments are on the rise, often with dire consequences, a new kind of history writing is urgently needed—one that emphasizes our common journey as humans and our deep-time connections to each other and to the rest of Creation. Global history has this as its central concern, and a big part of the story of connectivity in antiquity is that of the people and places in the Southern Levant. In this paper the perspective and narrative of global history will be deployed as a heuristic to synthesize five decades of archaeological survey and excavations by the Madaba Plains Project (MPP) at Tall Hisban and vicinity. The presentation will illustrate ways in which a global history framework opens new windows of understanding when it comes to investigation of the drivers of long-term cultural production and change in Jordan. The following global history processes will be highlighted: the macroecology of local food systems, including cycles of intensification and abatement; the levelling effect of endemic polycentrism; the rise and influence of text-based religions; the hard and soft cultural influences and legacies of dynastic and imperial powers; local-level resistance and resilience strategies; accumulative world system economic expansions and pulsations; incidents of extreme events such as earthquakes, famines and epidemics; cycles of environmental regeneration and degradation; cultural transformations occasioned by the great acceleration and the Anthropocene; and accumulative patterns of entrapment and entanglement in our present age.

Keywords: Global history, Anthropological archaeology, Connectivity, Madaba Plains Project, Hisban

ANCIENT FARMSTEADS IN THE HINTERLAND OF PETRA

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The Jabal ash-Sharah mountains, characterized by a relatively high average annual rainfall (aprox. 350 mm) and arable soils, had apparently been the most important part of the agricultural Hinterland of the Nabataean capital Petra. A pronounced increase in settlement activity in this area in the second half of the 1st century AD – a time during when Petra was a thriving political, economic and religious center with an increasing demand for agricultural products – had already been noted by previous studies. This project focuses on this pioneer phase of Nabataean landuse by analysing the distribution, topographic setting and layout of these new sites. An additional focus of the project is constituted by the documentation of the surrounding agricultural hinterland of each site, characterized – in all cases – by agricultural terraces and barrages of various types. By using SFM-technology on the basis of low level aerial photography we were able to document large areas surrounding each site, in order to get a better understanding of the terracing systems, water harvesting techniques, field sizes and the organization and infrastructure of the agricultural hinterland in general.

Keywords: Landscape Archaeology, Petra Hinterland, Farmsteads, Structure from Motion, Terraced Landscapes

ANCIENT NEAR EASTERN EMPIRES: EXPLORING THE LONG-TERM REGIONAL IMPACT OF EMPIRES UPON FRINGE ZONE COMMUNITIES IN THE FIRST MILLENNIUM BCE

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Despite the extensive research conducted on Jordanian historical sites as the world-renown Petra and other World Heritage Sites such as Um es-Rasas and Qasr Amra, the Iron Age settlement evolution has remained somewhat overlooked due to the transient development of pastoral communities in Jordan. This project tries to address this gap by using satellite imagery and GIS analysis to record and interpret archaeological sites and landscapes, focusing on the interaction between the built and natural environment to understand the transformation during the Iron Age. GIS and aerial images are valuable tools to investigate human interactions within the natural environment, as well as more recent land-use transformation that have impacted on archaeological sites.

This paper explores the relationship between the Jordanian landscapes and the urban transformation through the Iron Age. The main focus is to determine patterns of urban development over time and the interactions between central government and peripheral regions. In order to investigate these specific topics, research questions address settlement types, distributions, and possible land use. Using new and published data from modern and historic satellite imagery, a series of occupational patterns have been discovered and mapped. These data also form the starting point of the ANEE's survey along the King's Highway to investigate the changing relationship between rural and urban environment, landscape uses

in pastoral communities and the impact of varying imperial powers during the first millennium BCE on their fringe regions.

Keywords: Jordan survey, GIS, satellite data, Iron Age archaeology

RESTORATION OF AL-QASTAL MOSQUE

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Al-Qastal is an important Umayyad complex located 35 km south Amman. The most significant part in this site is the mosque and its unique minaret, which is considered to be the oldest minaret in the Islamic world and it is still standing. The mosque was in a poor state. Here I shall discuss the restoration, rehabilitation, and protection activities that I supervised from September 2016 to June 2017. A major focus will be the reconstruction of the western wall, the protection of the courtyard and the restoration and rehabilitation of the internal part of the mosque. Thousands of the structure's building stones—sadly bulldozed 18 years ago—were sorted in order to be reused in the forthcoming restoration projects. I shall consider the Iraqi influences which appeared in the Umayyad monuments in Transjordan in the eight century AD.

THE 2011-2018 WORK OF THE DANISH-GERMAN JERASH NORTHWEST QUARTER PROJECT: RESULTS AND PERSPECTIVES

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Since 2011 a joint Danish-German project is undertaking fieldwork in the Northwest Quarter of Jerash. This quarter is the highest area within the walled city of Gerasa/Jerash and it was hitherto hardly investigated. Six campaigns of fieldwork between 2011 and 2016 were undertaken and the results yielded important new information on the settlement history of the Northwest Quarter which has considerable impact on the overall history of Jerash. Particularly the periods between the Late Roman and Early Islamic times and results on the Middle Islamic settlement provide new information on the settlement history of this important site in Jordan. The Danish-German project is characterized by the integration of a variety of archaeometrical methods and it can serve as a test case for the integration of such methodology in an archaeological project in Jerash. The talk will focus on results of the project but it will also outline perspectives of the Danish-German Jerash Northwest Quarter Project for the years to come. (250 words).

Keywords: Gerasa/Jerash, Northwest Quarter, Settlement Archaeology, Roman to Middle Islamic Archaeology

SEDIMENTS IN ANCIENT RUINS IN JORDAN AS ARCHIVES OF DUST DEPOSITION AND LAND USE

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Archaeological structures are usually subject to sedimentation after their abandonment. These sediments ("debris") come partly from collapse and are often removed as quickly as possible in order to study the intact remains of the structure. However, in the semi-arid and arid climates of the southern Levant, the sediments of the debris can also contain aeolian dust. Thus they represent a potential environmental archive comparable to the famous loess sequences of the Negev. The latter, however, mostly lack Holocene layers, meaning that the debris preserved in archaeological sites might be suited to continue the dust record through the Holocene. A systematic comparison of sediments preserved in different

archaeological structures (hilltop ruins, cisterns, and terraces), actual dust storms, and natural sediments around Petra in southern Jordan is presented in this contribution. Preliminary results suggest that long-range deposition of silty, calcareous sediment continues until today; and that the terrace sediments and the material culture associated with them allow for reconstructions of ancient land use patterns.

Keywords: sediment, debris, land use, dust, climate

ARTISTIC TRADITIONS IN THE EARLY AND MIDDLE EPIPALAEOLITHIC: KHARANEH IV IN PERSPECTIVE

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Artistic objects are thought to be one of the hallmarks of the Natufian period, marking a florescence of artistic behavior appearing prior to the origins of agriculture. However, with continuing research into Early and Middle Epipalaeolithic sites in the Levant, new discoveries of 'symbolic' artifacts are increasing our understanding of even earlier artistic and symbolic pursuits. In this paper we present an engraved plaquette from the Middle Epipalaeolithic context of Kharaneh IV, eastern Jordan. Using white-light confocal microscopy, we analyze manufacturing traces to identify the gestures and tools used to create the plaquette. This artifact, although the only engraved piece recovered from Kharaneh IV thus far, links into wider networks of Epipalaeolithic interaction and cultural exchange. Placing the Kharaneh IV engraved object into regional context with other Early/Middle Epipalaeolithic artistic artifacts, we explore wider networks of interaction prior to the Natufian.

Keywords: Epipalaeolithic, art, confocal microscopy, surface metrology, regional interaction

PLACE-MAKING IN THE WETLAND: MICROSTRATIGRAPHIC TRACES OF HUNTER-GATHERER LIFEWAYS AT KHARANEH IV & BEYOND

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The end of the Pleistocene in Southwest Asia is widely known for the emergence of socially-complex hunter-gatherers that herald the beginnings of village life and are accompanied by a rich material culture record, including elaborate burials and cemeteries. Here we explore the lifeways of these hunter-gatherer groups, tracing aspects of material culture, human action, and complex human-landscape dynamics from a *longue durée* perspective. Using examples from the Epipalaeolithic site of Kharaneh IV, eastern Jordan, we address the implications of perspectives that focus on 'being' a hunter-gatherer in relation to 'becoming' Neolithic, particularly how past people engaged with their surroundings and how they created connections to places in the landscape. This paper explores approaches for reconstructing the Epipalaeolithic social landscape of Southwest Asia, using macro- and microscale geoarchaeological approaches to examine how everyday practices leave traces of human-landscape interactions that relate to place-making. We employ micromorphological, phytolith and micro- and macro-artifact analysis from two hut structures that provide insights into construction, use, maintenance, and intentional destruction of these places. A human burial on the floor of one of these structures suggests the structure served as a grave; it was subsequently burned down, partially charring the remains and signifying the end of the life of the structure and the individual buried inside. This type of mortuary practice is unknown from other contemporary sites in the region, as well as from later Natufian and Neolithic sites. Micro-scale analysis of the burial and structures at Kharaneh IV highlights that the notion of 'Neolithization' is somewhat misleading as many of the features we use to define this transition were already well-established patterns of behavior. Instead, these features and practices were enacted within a hunter-gatherer world and worldview.

Keywords: human-landscape dynamics; microstratigraphy; technology; social networks; hunter-gatherers; Epipalaeolithic

A STEP BACK INTO THE PAST. THE RISE OF THE ISLAMIC PLAIN HANDMADE WARE IN SOUTHERN JORDAN: THE CASE STUDY OF KHIRBAT EDH-DHARIH

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The following paper attempts to present preliminary results of the examination of the ceramic assemblage from the last phases of occupation at Khirbat edh-Dharih. It seems important to highlight that archaeological remains from the Middle and Late Islamic periods uncovered within the ruins of the Nabataean temple have not previously attracted much attention, nor have been studied in comprehensive manner. From the point of view of the ceramic records, it is clear that the communities reoccupying the site were relatively isolated and probably economically self-sufficient. A petrographic analysis has proved that inhabitants of poorly executed households established above the remains of the sacral complex consumed mainly locally-produced plain handmade pottery. Generally speaking, the ceramic assemblage sits firmly in the tradition of southern Jordanian pottery of the Middle and Late Islamic periods. In the following presentation, the results of the Khirbat edh-Dharih study will serve as a backdrop for a discussion on the appearance and spread of the handmade plain ware on the territory of the Islamic Bilād al-Shām. While most of the studies explicitly examine handmade pottery assemblages in the local or rarer regional context, only a few papers deal with the broader perspective, but unfortunately leave it only cursory underlined. If we go further beyond the contractual borders of the southern Jordan and look at overall picture of handmade plain wares production on the territory of the Levant, it is worth noticing that this wide area shares significant similarities in the pottery styles, manufacture practices and even distribution patterns.

Keywords: Khirbat edh-Dharih, handmade pottery, ruins, Wādī al-Hasā, settlement patterns

RECYCLING GLASS IN BYZANTINE PERIOD IN THE LEVANT

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There are evidences for recycling glass since Roman Period in the Levant. Sometimes these evidences were just registered in the record of the finds, but were not analyzed for their technological significance. Almost eight kilograms of glass cakes, which are considered as unfinished products of a glass re-melting process were excavated from Petra Church site. These glass cake fragments were studied for their archaeological and chemical composition. They showed varieties in their colours and textures. Optical microscopy (OM) and scanning electron microscopy (SEM) examinations were applied to these glass fragments, as well as chemical analysis using electron probe micro analysis (EPMA). The examinations and analyses revealed that there were different glass compositional groups identified reflected different sources used for their production in different periods and places. These glass cakes are interpreted to be evidence for recycled glass, and possibly experimentation with new raw materials. This research continued to follow the glass recycling till the modern times and the reasons behind applying it in the past times and not very much in common use at the modern times.

Keywords: Glass Cakes, Recycling Glass, Petra Church, Scanning Electron Microscopy, Electron Microprobe Analysis

RAINWATER STORAGE SYSTEMS AT THE SITE OF SELA: ANCIENT WATER TECHNOLOGY IN SOUTHERN TRANSJORDAN

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The first results of the new research project promoted by the University of Barcelona at the site of Sela near Tafila in present-day Jordan have yielded important data on water supply systems based mainly on rainwater harvesting from the Iron Age to the Medieval and Ottoman Periods. The most prominent means of water storage that survive today in Sela are rock-cut cisterns, cut into the bedrock close to natural catchments with feeder channels to collect runoff water. These structures together with other water structures designed for the collection, transport and distribution of rainwater form a complex well-developed system of rainwater management in the upper part of the settlement. This presentation will provide a brief description of the rainwater storage system used in Sela and the preliminary results of the study of the complex hydrological network, which forms the core of my doctoral thesis. The structures for storage rainwater have

been identified, described, catalogued and contextualized in the course of two archaeological seasons (2015-2016) at the site of Sela. These water structures are mainly cisterns, which present a great variety of dimensions and building techniques. Several categories have been established according to their relationship with the terrain as well as the shape of their mouths and storage chambers. These findings highlight the importance of Sela and the scientific value of studies on water culture from a perspective of *longue durée* and make Sela a unique site for the study of the economic and social development of southern Transjordan.

THE UNIQUE FUNERARY OBJECTS IN THE BURIAL OF SAHAM AL-KFARAT. FROM THE LATE BRONZE AGE AND ITS TECHNICAL, SOCIAL AND ECONOMIC CONNOTATIONS

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The town of Saham al-Kfarat is located 22 km north of the city of Irbid, north-west of Jordan at an altitude of 403 meters above sea level and adjacent to the Yarmouk River. Archaeological excavations carried out in 1992 by the Jordanian Department of Antiquities under the supervision of the researcher revealed a collective family burial that dates back to the late Bronze Age on the coordinates of 32,69369 (north) and 35,77822 (east), and includes a large group of the funerary objects are more than 300 objects, such as pottery vessels, small statues, seals, jewels and weapons, and pieces made of flint, in addition to the remains of human bones. Although most of its archaeological remains are preserved. This burial is pointing to the burial traditions of the local population and their ability to manufacture, trade with their surrounding neighbors. The diversity in the forms of pottery vessels and their decoration reveals the ability of craftsmanship in manufacturing and designing of these objects which considered part of the funerary offering. The small figurines also refer to religious aspects associated with fertility and the status of women as a symbol of this fertility. The seals also indicate that the inhabitants affected by Egyptian culture through the use of the Egyptian hieroglyphics and the Egyptian slogans on the seals. The bronze weaponry also highlighted the social and political role played by men who were buried in this burial, and the social status of their wives that buried with their gold, silver jewelry. In conclusion, the evidence indicates that this burial was using for long years may reach to a century by very rich and powerful family.

ON THE NORTH-EASTERN BORDER OF ANCIENT CAPITOLIAS. ARCHAEOLOGICAL RESEARCH BY THE UNIVERSITY OF WARSAW IN BEIT RAS 2014-2016

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Archaeological research conducted by the Polish Centre of Mediterranean Archaeology, University of Warsaw, at Beit Ras in 2014-2016 focused on the north-eastern part of ancient Capitolias, right to the west of the Roman-period theatre. The main aim of the research was to determine the functional character of this portion of the town. A survey season of 2014, using the electric resistivity method in order to detect ancient structures concealed under the ground, was followed by two seasons of excavations (2015-2016). They led to the discovery of the remains of a Byzantine winery and of a section of the city wall dated to the Roman and Byzantine periods, as well as of a sequence of stratified floors. These established the chronology of usage of this area as from the Roman to the early medieval period and proved that this part of the town was mostly domestic in character, at least during the Byzantine and early Islamic periods. Evidence of destruction of a nearby church was also found, tentatively attributed to a Sassanian raid in AD 614 or soon after.

Keywords: Archaeological research, Beit Ras, ancient Capitolias, Byzantine winery, Roman city wall

THE LITHIC FINDS OF THE GADARA/UMM QAYS HINTERLAND SURVEY

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The German Archaeological Institute, Damascus Branch, is conducting a survey around the ancient city of Gadara, Umm Qays, directed by Claudia Bührig. The survey of the Umm Qays hinterland, lying in the extreme northwest of Jordan, started in 2010 and focuses on the settlement dynamics and climatic changes in the region since the Palaeolithic. A long settlement history with several hundred open-air and cave sites has been documented, spanning the Palaeolithic to the Hellenistic/Roman and early Islamic times. This paper will discuss important Lower to Upper Palaeolithic and Neolithic sites, their spatial distribution, environmental conditions and raw material availability. Chronological markers for the different periods will be presented and future prospects discussed.

Keywords: Gadara, Umm Qays, Survey, Settlement Dynamics, Chipped Lithics

REHABILITATION OF IRAQ AL AMIR ARCHAEOLOGICAL SITE (QASR AL-ABD) AND ITS SURROUNDING FOR SUSTAINABLE CULTURAL TOURISM PURPOSES

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Jordan is blessed with valuable archaeological sites that need delicate treatment and conservation plans for their protection and transfer for future generations. This research is intended to introduce an action plan for the rehabilitation of Iraq Al Amir archaeological site (Qasr Al-Abd) that dates back to the Hellenistic period as a tourist destination. Qasr Al-Abd is the only standing hellenistic monument in Jordan, built by Hyrcanus; the Tobiad and the governor of ancient Ammon. The site can be linked to several nearby archaeological and natural tourist attractions to demonstrate the comprehensive narrative. The research data was gathered from the authors' visits and field research, as well as publications, laws and regulations, local authorities' strategies undertaken to reduce the barriers of accessibility of tourists to cultural heritage sites. The proposed action plan is built upon identifying cultural tourism potentials in the site and its surrounding to promote sustainable cultural-tourist trail with minimal interventions to preserve and present the site components. The action plan configures the mutual relationship between the tourist, the site and the local community.

Keywords: Cultural tourism, cultural-tourist trail, Iraq Al Amir, Hellenistic

ROMAN MAUSOLEUMS OF KHREBIT ES SOUQ – NORTHERN MAUSOLEUM(QASIR EL REDINI) AND EASTERN MAUSOLEUM

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The Roman Tombs are located on the suburbs of Amman city, known as the mausoleum, they built outside the city according to the Roman law, which prevents construction inside the Roman city. Khrebit es Souq is located about 8 km south of Amman. It Contains two Roman Mausoleum (Eastern and Northern). The purpose of this research is to focus on the Roman Mausoleum features historical, architectural and preserve those sites of the threats, hazards and damage caused by natural and human factors. The methodology in this research depends on using new technical systems in identify dangers and threats that affect the archaeological site by using GIS Mapping, interpretation and monitoring of aerial images and satellites imagery, and collecting data from sources and archaeological references, and analyze data from excavations reports that Since 1990, in addition to continuous field visits to assess site conditions. This research will present collected data by following identify of level of the risks and threats (natural and human impact) according to the scientific strategy and classification methods to determine the mitigation measures. Finally, I recommended to mitigation measures as engagement the local community to preserve, monitoring programs, conservation project and reinforcement the relevant authorities existence to contribute the preservation of sites.

Keywords: Khrebit es Souq, Roman Mausoleums, Awareness, Threats, Interpretation

THE OIL LAMPS FROM TELL ABU SARBUT JORDAN

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Excavations at Tell Abu Sarbut in the Eastern Jordan Valley were conducted from 2012-2015. A building with several rooms around a courtyard was excavated as well as part of a larger courtyard which probably belonged to another building. Both buildings dated to the Early Roman period. Occupation from the Abbasid and Mamluk periods was also found. Almost fifty fragments of pottery oil lamps were retrieved, mainly dating to the Early Roman period. Most oil lamps were of the Herodian type, characterized by an 'everted' nozzle and 'volutes' on both side of the nozzle. These lamps were wheel-made. Other Early Roman lamp types were made in a mould and displayed a decoration of lines and geometric representations. This paper will focus on some questions raised by the find of different types of oil lamps in these buildings. Were they made for daily use or for special occasions? Can they tell us something about the people who inhabited Abu Sarbut in the early Roman Period and about the connection with the area west of the river Jordan?

NO SPLENDID ISOLATION! CHARACTERISTICS AND LOCALISATION OF EXTERNAL CONTACTS OF THE LC/EBA CULTURE IN THE NORTHERN BADIA

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Eight years of research in the basalt desert (al-harra) and the easterly adjacent limestone desert (al-hamad) of the northern Badia, which has hitherto been regarded as empty and uninhabitable, have revealed unexpected evidence for intense Late Chalcolithic / Early Bronze Age (LC/EBA) socio-economic activities, such as industrial flint mining and tool production, intensive nomadic pastoralism, settling in hillforts, and practicing terrace gardening by using artificial rainwater harvesting irrigation. Even though a possible chronological differentiation of these diverse activities and the respective sites have not yet been fully clarified, and the question of whether this was an autochthonous development cannot yet be clearly determined, it is obvious that this culture did not remain in isolation. Several hints in architectural structures and material culture have been identified at the investigated sites, which indicate contacts with other regions and cultures in SW Asia and adjacent areas. The degree of distinctiveness of these hints range from "background noise" to the "smoking gun". This paper will present the material evidence for these long-distance contacts and the regions with which the inhabitants of the northern Badia interacted.

Keywords: Late Chalcolithic / Early Bronze Age, Northern Badia, External Relations, Material Culture

DE-MARGINALIZING THE MARGINS: THE ESSENCE AND FUNCTIONS OF THE Umayyad QUSŪR RECONSIDERED

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The essence and function(s) of the Umayyad qusūr (early 8th century palatial establishments) remain a moot point among researchers. Traditional interpretations of these imperial buildings as isolated elite hideaways for hedonistic pleasure and/or centers of socio-political interaction seem unconvincing. In addition, they do not account for the relative frequency of these palaces and their wide geographic distribution. The sheer numbers of these grand edifices, their extensive range, varying contexts and relatively complicated architecture and associated infrastructure beg a more "practical" functional interpretation of their purpose. This paper reviews the relevant archaeological and archival evidence related to known "rural" qusūr (and their environs) and suggests these aristocratic buildings were in fact meant to be viable "cores" for larger settlements, and the proliferation of these edifices was due to an economic strategy that reflected a comprehensive intentional imperial policy of settlement and colonization. Infrastructures associated with the palaces indicate economic factors, particularly in the agricultural sector and associated services, were crucial elements in the continued development of these settlement centers. These factors and the resulting demographic changes could signify both the use of qusūr as a settlement and economic strategy and explain their aggregation in the peripheral zones. In short, the qusūr may have been a means to integrate marginal areas with the central socio-economic system of the Umayyad state.

Keywords: Umayyad archaeology, qusur, archaeology of the margins, archaeology of economy, Umayyad architecture

ADAPTIVE REUSE OF UNCOMFORTABLE HERITAGE – HOW TO BENEFIT FROM THE EUROPEAN EXPERIENCE IN JORDAN.

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This paper addresses an understudied and essential type of heritage, that is uncomfortable heritage; its importance; how can it be conserved? how can we adaptively reuse uncomfortable structures to contribute to the cultural, social and economic development? and last but not least, lessons learned from the European experience on how can we conserve such heritage in Jordan. The research undertakes a qualitative approach to conduct a comparative analysis of three flak towers and bunkers that were constructed during the Third Reich era in Germany and Austria as examples of uncomfortable Nazi heritage.

The cases are:

1. Tower in Vienna: now an aquarium and a zoo.
2. Bunker in Hamburg: now an energy planet.
3. Bunker in Berlin: now a private art gallery.

After analyzing the process each case undergone to develop it into a functioning project that benefits the society, with regards to the specific cultural significance associated with each case, the research concluded the criteria for a 'Successful Adaptive Reuse Project of Uncomfortable Heritage'. Afterwards, the research tries to reflect those criteria on two sites related to uncomfortable past in Jordan; Ajloun Prison and Tafilah Prison. Both prisons were used in the 1920s then closed and remained abandoned for a while. Currently, there are plans to adaptively reuse both prisons into cultural centres and museums. Lessons learned from the European experience can be applied during planning and implementing the adaptive reuse project in order to achieve the maximum cultural, social and economic benefits while of course retaining the cultural significance associated with the prisons.

Keywords: culture, crisis, uncomfortable heritage, adaptive reuse, sustainable development, Jordan, prison

UNUSUAL BURIALS FROM KHIRBET ES-SAMRA SITE

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Among the hundreds of excavated tombs and burials in Khirbet es-Samra, north Jordan, some odd or unusual cases were observed, which presented extreme deviation from the standard forms and types usually found. These presented difficulties in the interpretation, particularly in their relevance to burial customs, as well as in their dating. A few such excavated cases are shortly described aiming to stress the points that burials are private and sometimes whimsical matters and that these must not necessarily be interpreted in terms of population changes. It also suggests that methods of excavation might affect the archaeological interpretation.

Keywords: Byzantine cemetery /Burial customs/ C14 dating/ popular cultures

PAINTING WITH GOLD IN NABATAEAN PETRA: MICROANALYSIS, MICROMORPHOLOGY AND SOME CONSERVATION ASPECTS

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This research identifies gilding materials and technology of Nabataean gilded wall paintings. Micro-spectroscopic analytical investigations were performed on wall painting fragments (1st century C.E.) from various painted facades in Petra. A stratigraphic approach of the analysis was followed defining number, composition and thickness of the strata. Analytical techniques used are Optical Light Microscopy (OM), 2D and 3D Micro X-Ray Fluorescence (μ XRF), Scanning

Electron Microscopy with Energy Dispersive Spectroscopy (SEM-EDX), Fourier Transform Infrared Spectroscopy (FTIR) and Raman Spectroscopy. Results allowed defining the gilding technology in the studied samples and categorising the paintings accordingly. Two groups with two types each were categorised and defined. The four categories of all studied fragments were made with 'Water Gilding' technique. Two gilding applications were found: powder (shell gold) and leaf (one and multiple). We report an unprecedented detection of original multiple gold leaf application in the Nabataean wall paintings. The dependence of deterioration phenomena on gilding application technique is discussed, and a micrographic glossary of the gold layer was developed and correlated with various deterioration mechanisms.

Keywords: Nabataean, Wall Paintings, Gold, Analysis

THE EVALUATION OF RISKS AND CRISES IN THE JORDANIAN MUSEUMS.

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Abstract: The study aims to exam and evaluate the risks that is possible to occur in the Jordanian museums, by identifying the readiness of museums to deal with natural, technical and human risks. In addition to evaluate Emergency cases, The study was applied in 16 museums that where spread in the Kingdom's governorates, through the questionnaire that is consisted Of 80 paragraphs include a Criteria developed by the International Council of Museums. The results showed that only 2 from 16 museums had received training on emergency case. This assessment approach for risks, to preventive, in order to effectively allocate resources for risk management and crisis in the Jordanian museums.

Keywords: Culture Heritage, Museums, Risk Management

RETHINKING THE MIDDLE BRONZE AGE OF SOUTHERN JORDAN VALLEY IN THE LIGHT OF THE NEW DISCOVERIES AT THE SITE OF TALL AL-HAMMAM, JORDAN VALLEY

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Tall al-Hammam (TaH), in the S Jordan Valley, is distinctive in many ways. Its size reaches app. 100 hectares (26 hectares within its fortifications). Moreover, the site has one of the longest settlement histories in Jordan, from at least the late 5th millennium BCE until the Roman Period, with ephemeral occupation between the 17th and the 10th century BCE. Additionally, TaH is well-placed among a number of important satellite sites with identical occupational histories. In this paper, it will be argued that our perception of Jordan during the Bronze Age should be revisited in the light of the new data-sets obtained during the last 13 seasons of work at at TaH. It will be further argued that N. Glueck's paradigm regarding a gap in the occupational history of sites to the south of the Wadi Zarqa (Jabbok) during the Middle and Late Bronze Age is no longer valid. Equally, it will be argued that actual "city-states" existed in Jordan during the Bronze Age. However, it is important to stress that this review comprises a framework that should be revised and developed in conjunction with data-sets from other sites in the same geographic region. Further, archaeological investigations at sites such as Tall al-Rama, Tall Bleibel, and Tall al-Kafrayn are crucial to our understanding of the history of the Jordan Valley.

Keywords: Early and Middle Bronze Age, city-states, occupational history, networking and exchange, crossroads

THE ARCHAEOLOGY CLUBS IN SCHOOLS IN JORDAN

Nofa Nasser

Jordan Friends of Archaeology and Heritage Society

The Jordan Friends of Archaeology and Heritage Society (FoAH) is a voluntary non-governmental, non-profit organization that promotes greater understanding of archaeology and the importance of preservation and conservation of our national heritage by introducing members and guests to various issues related to archaeology and heritage. This is achieved by conducting several activities such as organizing field trips to archaeological and cultural sites inside and outside Jordan, in addition to hosting lectures related to this sector in both Arabic and English, presented by professors and experts in these fields. Another main activity that FoAH does is specific workshops conducted by experts in the field for archaeologists. In 2017, an agreement was signed with the Sustainable Cultural Heritage Through Engagement of Local Communities Project "(USAID-SCHEP) to establish "Archaeology Clubs" at Schools. The role of these clubs is to create an environment for student to discover their past. Hence up bring a generation proud of their national identity and even interested in perusing a career in cultural heritage and cultural tourism.

Keywords: Archaeology Clubs

KHIRBET AL-BATRAWY 2015-2017: THE EB II-III FOUR-LINED FORTIFICATIONS AND THE DISCOVERY OF THE EB III CITY-GATE

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Archaeological investigations and restorations at the site of Khirbet al-Batrawy, in the Upper Valley of Wadi az-Zarqa, carried out by Rome "La Sapienza" Expedition to Palestine & Jordan in 2015-2018 seasons, were focused on the excavations of the northern fortifications, displaced on four roughly parallel lines on the slope of the khirbat. A special focus was directed on the investigation of the Main Inner City-Wall (MIW) in its north-western stretch, where a huge bastion flanked it for more than 20 meters. Right inside the bastion in the 2016 season a blocked gate (L.860), 3 m wide, was identified, probably opened through the MIW at the beginning of EB III period following the tremendous earthquake which led to the closing of the previous EB II City-Gate (L.160). Batrawy multiple city-walls represent a unique summary of the city history, from its foundation at the eve of the 3rd millennium BC (beginning of EB II), the complete reconstruction around 2500 BC (beginning of EB IIIA), until the final fire which destroyed the city around 2300 BC (end of EB IIIB). Fourteen seasons (2005-2018) of excavations along this impressive defensive system revealed a cycle of destructions and reconstructions, crisis and recovery, which illustrate the main historical-archaeological periods of this ancient city of Jordan, well-framed into the history of the early urbanization of Southern Levant.

Keywords: Khirbet al-Batrawy; Early Bronze Age; urbanization; fortifications; city-gate

THE IRON AGE IIB-C AMMONITE STRONGHOLDS OF JAMAAN AND RUJM AL-JAMUS, NORTH-CENTRAL JORDAN

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In years 2015-2017 the Zarqa Directorate of the Department of Antiquities of the Hashemite Kingdom of Jordan carried out a preliminary survey at the sites of Jamaan and Rujm al-Jamus, two Iron Age IIB-C Ammonite fortresses respectively located 16 Km north and 19 Km north-east of Amman. Both sites were surveyed and limited soundings were excavated, allowing to plot plans of the structures and to collect rich ceramic assemblages. The strongholds consisted of a rectangular enclosure with a casemate wall, including a square podium tower and water reservoirs. Architecture and material culture dated from Iron Age IIB-C (c. 840-580 BC), a chronological horizon also confirmed by the extraordinary discovery of the head of an Ammonite statue from the fort of Jamaan. The identification of the strongholds of Jamaan and Rujm al-Jamus provided fresh information on a central period of the history of ancient Jordan, as during the Iron Age II the Upper and Middle Wadi Zarqa, and its tributaries, were the core of Bît-Ammani, the Kingdom of Ammon during Neo-Assyrian period. The chronology and strategic location of these sites support the hypothesis that Jamaan and Rujm al-Jamus were

part of the line of forts and strongholds erected to protect the territory ruled by the Kingdom of Ammon, ensuring the defense of the northern and western boundaries of the "House of Ammon".

Keywords: strongholds; Iron Age IIB-C; Bît-Ammani; north-central Jordan; rescue excavations

FIRST RESULTS OF THE NEW ARCHAEOLOGICAL PROJECT AT QASR ED-DEIR (TAFILA)

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Qasr ed-Deir is situated in southern Jordan, around 5 km south-east from the city of Tafila. It was recognized as a historical/archaeological site not later than in 1934 by Nelson Glueck, who himself suggested that the site had been described earlier by Alois Musil. It was also included in the surveys, that were run in Tafila-Busayra area in 1980s and 1990s. In 2002 first basic excavation works were undertaken at the site.

In 2016 Qasr ed-Deir was chosen for more detailed research by the Institute of Archaeology of the Jagiellonian University in Krakow. Comprehensive studies of masonry as well as excavations started a year later. During the research all visible masonry structures were recognized and recorded as well as the archaeological trenches were open (to document the stratigraphy of the site and to correlate the collected archaeological material with architectural structures).

Qasr ed-Deir should be seen as a compact but multiphase building complex and its origins should be most probably dated to the Byzantine Period. The complex have been developed and reconstructed more than once and the last great alterations took place during the Mamluk times (that is suggested by both the masonry techniques and the collected pottery).

History of the complex, together with analysis of the stratigraphy of masonry structures combined with the interpretation of the archaeological material (mainly pottery), will be presented in the paper. Elements of landscape archaeology will be included.

Keywords: Byzantine, Mamluk, landscape, fort, monastery

IMPROVEMENTS THE INFORMATION TECHNOLOGY IN DOA & ICHAJ

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Technology is the backbone of the various sciences. So It is necessary to talk about keeping track with this development in the Department of Antiquities in Jordan, How using the latest technologies and programs, for supervision and documentation, and as well as the future perspectives to employ modern technology as Artificial Intelligence and Big Data and Data Mining. Which make a big change when combined with the archeology science. And also we discuss the remarkable development in use the technology in the International Conference on the History and Archaeology of Jordan, which facilitated the processes of accession and increased the rate of participation and interaction with the Conference.

Keywords: ICHAJ, Information Technology

THE 12TH CENTURY CASTLE OF AL-HABIS IN PETRA: A LIGHT ARCHAEOLOGY OF LONGUE DURÉE

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The paper presents the results of Light Archaeological readings carried-out by the Florence University "Medieval Petra" mission, at the site of Al-Habis (Petra) during seasons 1998-2000 and 2015-2017. Fieldwork findings will be contextualized in the most recent studies dealing with 12th century sites in Jordan, with a specific emphasis on southern Jordan and the dynamics of Latin Crusader settlement in the area of Petra. Fieldwork at Al-Habis consisted of: archaeo-topographic mapping and stratigraphy, typological characterization of masonries, stratigraphic units recording and analysis, photogrammetric and laser scanner surveys. Main results include the elaboration of a long-durée chronology for the use of the site, between Nabatean-Roman and Medieval periods. Originally a sort of acropolis with traces of monumental architectures, the site was used as a quarry for stone building materials in Late Roman and Early Byzantine period, when a first fortification is built on its summit. In 12th century, the Crusader castle deeply re-elaborated the ancient stronghold in order to build a large, fortified and structured settlement for the control of the SW access of the Petra valley (from wadi Sabra). Archaeological research at Al-Habis evidenced the presence of 12th century civil residential architectures, a feature which is lost in the other major Crusader sites of the region (Al-Wu'aira and Shawbak) and whose study is therefore of extreme interest.

Keywords: Medieval Petra, Light Archaeology, Medieval architectures, Archaeological survey

A MILITARY BREWERY IN THE TRAJANIC FORT AT HAUARRA/HUMAYMA, JORDAN

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The Trajanic fort at Hauarra is exceptional for the clarity of its modular planning, based on the Roman *pes monetalis*, and for the earliest documented use in a Roman fort of a fortification wall with projecting towers. Given the isolated location in a hyper-arid environment, provisioning the unit must have been a challenge. Water was obtained by diverting part of the outflow of the pre-existing Nabataean aqueduct into a reservoir inside the fort. At least some of the wheat and barley required for the military diet could be obtained from local fields irrigated with run-off water, and poultry and pigs appear to have been supplied locally as well. But wine remained a problem. Sherds of wine amphoras are infrequent at the site, and only one small winepress has been identified in the region. A structure inside the fort, however, suggests that beer was being brewed on site for the soldiers, providing a nutritious beverage based on local grain and enhancing the scanty water supply. The building holds five basins of graduated sizes that could have produced 3,000 litres per week of a soupy lambic type beer, using malted barley or wheat and air-born yeasts. This type of beer was an important beverage throughout the Near East from the Early Bronze Age onward, and it is still produced today in rural Egypt. This appears to be the first brewery identified inside a Roman fort.

Keywords: Roman brewery, Roman diet, frontier fort, beer

"THE REMAINS OF NOTHING"? PRE-CRUSADER MATERIALS FROM THE EXCAVATION OF THE "MEDIEVAL PETRA – SHAWBAK CASTLE PROJECT" OF THE UNIVERSITY OF FLORENCE: RESIDUALITY AND OTHER ISSUE

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The paper presents the results of the analysis carried out, within the framework of the "Medieval Petra – Shawbak Castle Project", on the pottery assemblages found during the excavations carried out by the team of the University of Florence in Shawbak – in particular in the areas 35000 and 39000 – and dating to the pre-Crusader period. Although the recorded pottery samples – mainly cooking wares, storage and transport vessels and tableware – are quite fragmentary and not referable to any level of use, there is a clear uniformity regarding typologies and fabrics, which allowed us to identify some constant features on the bases of which to distinguish the different ceramic groups by typology and chronology. This study reliably points to well defined chronological contexts: Early Islamic; Roman / Byzantine; Late Hellenistic. Percentage and consistency of the pre-Crusader findings make us question whether they are residual

material and lead us, rather, to think that they represent the first evidence of one or more phases of life during a period not testified up to now from any structure in the area later occupied by the Crusader castle.

A more in-depth analysis of these materials will represent the base for any future study aimed to a more certain identification of the pre-crusader phases in the area of Shawbak.

Keywords: Shawbak, Medieval Archaeology, Material Culture, Ceramics

LIFE AFTER THE EARTHQUAKE: AN EARLY ABBASID DOMESTIC ASSEMBLAGE FROM JERASH.

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This paper will discuss new archaeological data from a residential quarter in Jerash's southwest district produced by the "Late Antique Jerash Project" since 2015. The research is focused on a hilltop, which is located southwest of the Umayyad congregational mosque near the Church of SS Peter and Paul and the Mortuary Church. Between 2015 and 2017, nine trenches were excavated in this area in order to investigate the extent, internal organisation and chronology of the residential area. Five of these squares exposed remains of structures that, on the basis of the ceramic analysis, were in use in the Abbasid period. This paper aims to reconstruct the diagnostic vessels in the domestic assemblage of the 9th cent. in order to clarify the chronological sequence and to examine the ceramic markers of the transition from the Umayyad to the Abbasid period. To do that, the technical and typological features of each type of vessels will be analyzed. The evidence of the early Abbasid ceramic repertoire is still poorly recorded from other excavation areas in Jerash, especially compared to the preceding Byzantine and Umayyad phases. Nevertheless, through a comparative analysis I will clarify the distribution of the Abbasid types in order to identify the extent of the settlement in Jarash after the earthquake of 749. A comparison with ceramic assemblages found at other sites in the Levant will assist in highlighting continuity and changes in the pottery production on a larger scale in the transitional phase from the Umayyad to the Abbasid period.

Keywords: Jerash, Abbasid, Umayyad, Pottery, Domestic Assemblage

SEARCHING FOR PETRA'S NON-ELITE POPULATION ON THE NORTH RIDGE

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The vast majority of fieldwork in Petra has focused on its extraordinary monumental structures. The Petra North Ridge Project conducted field work between 2012 and 2016 with the explicit goal of learning about Petra's non-elite population through two avenues of research: excavation of simple rock-cut shaft tombs and non-elite domestic structures. Both avenues have yielded significant results about this largely neglected portion of Petra's urban population from the 1st century B.C. to 4th century A.D. Among key results is evidence that the Nabataeans lived in houses among the tombs of their family members in the 1st centuries B.C./A.D. The cemetery apparently went out of use ca. A.D. 106, i.e., the Roman annexation), presumably because imposition of Roman law forbade future burials within the city's pomerium (sacred boundary). Domestic occupation continued until the 363 earthquake, which catastrophically destroyed these houses. The excavations have also yielded a plethora of evidence about daily life of the non-elite population, including diet and trade. For example, there is a surprising paucity of imported fine ware pottery and imported amphorae (transport jars) throughout this period, even when Petra is known to have been a major center of international trade. What might explain these phenomena? Finally, despite the erection of three churches on the North Ridge in the Byzantine period, the area excavated by the current project immediately to the east suggests no occupation after 363, i.e., that the sector east of the churches simply lay in ruins by the Byzantine era.

Keywords: Petra, Nabataeans, household archaeology, trade, diet

PETRA IN CRISIS? DISEASE AND MORTALITY OF CITY RESIDENTS ON THE EVE OF THE ROMAN ANNEXATION

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Petra in the 1st century AD represents a vibrant, dynamic urban center through its monumental constructions, complex material culture, and architectural elaboration. This florescence exists within the context of possible political and economic decline due to a redirection of trade routes and the elevated political importance of Bostra to the north (see Fiema 2003). This paper revisits this old debate through the assessment of Petra's inhabitants' quality of life prior to Roman annexation. Morbidity and mortality patterns, particularly of non-elites, can be sensitive reflections of a community's access to resources and their success in adapting to their unique environment. Shifts in subsistence and economic activities, such as reduced income from trade, could result in higher levels of disease and death at earlier ages than expected. A sample of individuals buried on Petra's North Ridge (MNI=121) in "non-elite" shaft chamber tombs during the 1st centuries BC and AD indicates that this segment of the urban population did not suffer from dietary deficiencies, infectious diseases, physiological stress, or other conditions potentially causing morbidity and mortality. In addition, adults surviving to age 20 had a high chance of living long past 60 years of age. These results support the archaeological and textual evidence outlined by Fiema that Petra did not experience a decline in the 1st century AD.

"THE TIMES THEY ARE A-CHANGIN'". BUILT ENVIRONMENT AS RESILIENCE MARKER OF SOCIAL IDENTITIES

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Patterns of change and continuity in the spatial organization of settlements had been studied mostly in the urban context, neglecting the rural one. Starting from a diachronic comparative analysis of sites, and based on anthropological theories, the paper addresses the built environment as marker for socio-economic identities, working in turn as guiding principle for settlements' organization. It will be argued that despite "crises" of different nature (environmental, political, economic, etc...), the social structures of the local rural communities might have helped to endure and pass the difficulties. In particular, the flexibility of the "segmentary structures" and of the "pastoral" groups are two key-elements not only to understand the recurring reoccupation of sites, eventually after short-term breaks in their occupation, but also the maintenance of their organizational and spatial principles. The idea of continuity across periods of "crises", as the Byzantine-Early Islamic Transition or the Mamluk arrival, had been often considered, is not a complete "absence of change": change is an inevitable feature of any settlement, ultimately allowing its survival. What was maintained, and possibly understood in the light of socio-economic identities, is the principle behind those changes. The case study of Tall Hisban, near Madaba, represents here a privileged example, thanks to the interdisciplinary studies that had been and are still conducted in the Mamluk village. Nonetheless, further comparisons with better preserved sites – such as Umm er-Rasas and Umm el-Jimal – are needed, to better show the different spatial patterns that are otherwise, in Hisban, less understandable at the present state.

Keywords: Built environment, Segmentary Structures, Pastoralism, Identities, Hisban

HOUSES OF NABATAEAN AND ROMAN ERAS AT DHARIH AND ELSEWHERE

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IFPO and Mission archéologique franco-jordanienne de Dharih)

The excavations conducted on the archaeological site of Dharih (Jordan) between 1984 and 2007, under the direction of F. Villeneuve and Z. al-Muheisen, revealed a large sanctuary built on the Nabataean and Roman times, a village and various facilities probably related to the maintenance of the sanctuary, a necropolis. Two houses were discovered, V1 at the north end of the village and V12 at the south end. New excavations carried out over the past few years on the large house V1 highlighted new facilities such as walls with stone niches for a hypothetical stable and a bathroom; they will be presented during this communication. These researches on the two houses V1 and V12 allow us to put forward two syntheses: one regarding the dwelling at Dharih and one more ambitious regarding the domestic architecture from the Nabataean and Roman eras between Negev and Southern Syria.

JEBEL AL-MUTAWWAQ. PRELIMINARY REPORT OF THE 2016-2018 EXCAVATION SEASONS OF THE SPANISH-ITALIAN EXPEDITION

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The paper will present the preliminary results of the 2016-2018 campaigns performed by the Spanish-Italian Expedition to the EB I settlement of Jebel al-Mutawwaq. The excavations have been centered on the Area C and the Area D located in the central and in the eastern sectors of the village. Area C has started to be investigated in 2014 and it is characterized by large structures with clearly public function, in particular the Great Enclosure and the nearby Building 131. Moreover, other courtyards and structures have been identified in the following excavation campaigns in this area, identifying the function of this place as a production and storage area, very important for the public life of the IV Millennium BCE settlement. Moreover, two late dolmens (nos. 534, 535) built inside or close to the village and its settlement wall and dated to the EB IB or the EB II have been also investigated, testifying a second late phase of use of the site that was previously unknown. Finally, the excavation in Area D, where in 2015-2016 seasons geophysical investigations were performed, will be presented, giving more informations about the organization of the norther part of the EB I settlement and more general about the pre-urban landscape of Jebel al-Mutawwaq.

Keywords: Jebel al-Mutawwaq, Early Bronze Age I, Upper Wadi az-Zarqa Valley, Dolmens, Urbanization

THE MADABA REGIONAL ARCHAEOLOGICAL MUSEUM PROJECT: A MULTIDISCIPLINARY APPROACH TO PRESERVING THE ARCHAEOLOGICAL PARK WHILE ENVISIONING A NEW MUSEUM

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The Madaba Regional Archaeological Museum Project (MRAMP) is an international cooperation between Italian (Perugia and Sapienza Universities), American (La Sierra and Gannon Universities) and Jordanian (Madaba DoA) institutions to set up a new regional museum in the city of Madaba, to showcase the collection of several thousands

artifacts coming from more than a dozen archaeological sites from the Madaba district, and to valorize the rich cultural heritage of the area. This paper will present the result of the archaeological documentation of the Archaeological Park West using geomatic techniques as well as of the geo-electrical survey of this area. These activities have been possible through the cooperation between several Italian public and private institutions, such as the CNR-ITABC institute, Perugia University, Sapienza University of Rome, the Studio Strati of Rome and the cultural associations C.E.S.A.R and CAMNES. These preliminary research activities on the site, which were integrated with the archaeological operations, include a complete 3D laser scanning of the Park, and a geo-electrical survey of the underground cisterns and water system, using an experimental prototype of georesistivimeter developed by CNR-ITABC. The complete documentation of the above- and underground structures in the Archaeological Park West allowed the architectural team of MRAMP to develop a preliminary model for an open museum, not only able to attract more foreign and local tourists to the area, but also to transform an endangered archaeological park in a new lively cultural center for the city of Madaba.

Keywords: Madaba Regional Museum, Madaba Archaeological Park West, MRAMP, Laserscanner, Geophysics

THE MOVEMENT OF PEOPLES, THEIR MATERIAL CULTURE AND IDEAS IN THE GHAWR AL-SAFI DURING THE HELLENISTIC, ROMAN, BYZANTINE AND TO THE ISLAMIC PERIODS.

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The movement of peoples for economic and socio-political reasons has been the inevitable process in the development of human kind and a goal for a better life and well-being. Jordan, on the cusp of the 'Fertile Crescent', has been in the central stage for change for ages. Dynamic Hellenistic culture pervaded the Near East for over a millennium and laid the foundation for the Islamic polity. 'Crisis', an ancient Greek word, is not a negative one, but rather, the decisive factor in human activity. Therefore culture in crisis can be seen as cultural transformation. So it was from the 1st century B.C. to the 8th century A.D. in Jordan. Recent archaeological finds dating from this period in the Ghawr al-Safi have highlighted this issue and demonstrated the progress and accomplishments of ancient societies there. This is manifest in writings, architecture, arts and crafts, science, industry and even recreation.

Keywords: Ghawr al-Safi, movement, peoples, Hellenistic, Islamic

SOIL MICROMORPHOLOGICAL INVESTIGATION OF EARLY NATUFIAN SITE WADI HAMMEH 27, JORDAN

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The Natufian period witnessed intensified settlement persistence compared to previous periods but scholars debate whether settlement involved seasonal occupations rather than year-round sedentism at the large base-camp sites. The 'Ice-Age villagers of the Levant; sedentism and social connections in the Natufian period' project, based at La Trobe University, is investigating this at Wadi Hammeh 27, an Early Natufian base-camp site in northwest Jordan. Four distinct occupation phases were identified here - each phase constructed upon the exact location of the previous (Edwards 2013). The aim of this research is to apply high-resolution analysis of microstratigraphic sequences to evaluate cyclical occupation at Wadi Hammeh 27. Soil micromorphology - the microscopic study of deposits in resin-impregnated thin-sections - provides in situ data on primary deposition, relationships of micro-artefacts to sediment structures as well as secondary mixing of deposits. This investigation identified micro-signatures of the Phase 2 and 3 trampled floors identified by Edwards (2013). However, these surfaces have undergone significant secondary mixing by occupation, reoccupation, floralturbation and faunalturbation. In conclusion, seasonal occupations were not positively identified and few discontinuous lenses of horizontal flint artefacts were identified and possibly indicate deposition on past surfaces. Archaeological deposits at Wadi Hammeh 27 therefore represent rapid accumulation palimpsests. Similar sediment structures were identified within Natufian layers at Hayonim (Cave and Terrace). Deposits at Wadi Hammeh 27 fit into a wider pattern of Early Natufian occupation strategies where cleaning occupation surfaces both within structures and externally was not, or only rarely, practiced (Hardy-Smith and Edwards 2004).

Keywords: Micromorphology, Wadi Hammeh 27, Early Natufian, Microstratigraphy, Sedentism

SHERDS OF LUXURY: IMPORTED POTTERY IN SOUTHERN TRANSJORDAN

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The most detailed pottery researches carried out the Shawbak site (in southern Jordan, conducted by the Medieval Archeology Chair Medieval of the University of Florence) were aimed at the acquisition of chrono-typological and technological data concerning the pottery between the 12th and 15th centuries, ie in the phases dominated by the Crusaders, the Ayyubids and Mamlukes rules. The main object of this article is instead to focus the imported pottery, the so-called fritware (also known as stonepaste ware), mainly coming from Syria and Egypt. The goal is to aim at these productions, to highlight their main provenience area, their chronology and, above all, try to understand what kind of informations we can reach with their presence, even very small in all the main periods considered. In particular, some fragments, probably of Iranian origin, will be discussed, playing until now a singular role in the general scene of Southern Trans-Jordan. It is precisely this fact that offers the opportunity to rethink the motivations for the presence of so-called imported ceramics: they are object of commercial transactions, exclusive valuable objects that denote the rank of their owners or others?

Keywords: Artifacts, Pottery, Luxury goods, Medieval Period

MATERIAL CULTURE AND RESIDUALITY: METHODOLOGICAL PERSPECTIVES. THE MEDIEVAL CONTEXTS OF SHAWBAK

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The main aim of this paper is to deal with the 'problem' of residuality in archaeology, with a particular focus on pottery assemblages, starting from the medieval contexts of Shawbak. Shawbak represents an extraordinary case-study because it is a site with an important, and relatively continuous, political role throughout its duration, especially for the crusader, ayyubid and mamluk periods. Furthermore, in Shawbak, at least in relation to the phases above mentioned, the percentage of residual materials seems to almost never fall below 20% (with "peaks" at 40-45%). Residuals are, first of all, sherds found in a stratigraphic unit that originated in an earlier one. Starting from this idea of "sherds residuality", in strict connection with the general archaeological context, we will also be able to better define the lifespan of particular wares that continue to be used long after their first appearance. A systematic analysis of the residual assemblages will be essential to reconstruct the extent of phases that often contain very little evidence in the primary deposition (e.g. pre-medieval phases, like Nabatean, Roman and Late Antique phases). Complete study of the stratigraphic contexts is therefore necessary in order to use residual materials as historical sources. To summarize in this presentation we will emphasize the importance of (re)considering the study of residuality in archaeology as a necessary part of the historical/archaeological research method.

Keywords: Medieval archaeology, stratigraphy, residuality, quantification, pottery

HERITAGE TOURISM AND PUBLIC ARCHAEOLOGY REFLECTED BY SOCIOLOGICAL STUDY AND ANALYSIS CONDUCTED IN SOUTHERN JORDAN. CASE OF HLC PROJECT

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As part of the archaeological HLC Project, preliminary sociological studies were also carried out. The main goal of this activity was to examine the interest of local community in archaeological work, as well as the impact of archaeological presence on the emerging tourism and infrastructure in the region of At-Tafileh directorate. During the 2017 and 2018 season the inhabitants of 4 local towns located in southern Jordan - not far from the place of excavation carried out by the expedition - were subjected to research. Both, towns where previously excavations were conducted (including archaeological sites), as well as the touristic area of Dana and the largest city in the area (At-Tafila) were taken into account. The research tool used during the sociological test (according to the sociology methodological patterns) was a

survey consisting of three parts, devoted respectively to archeology, tourism and demography. In the first part of the archaeological survey, the respondents were asked about their interest and benefits for the local community from the conducted archaeological work, present in the At-Tafila region. The second part devoted to tourism, focuses on the benefits of using archeology in tourism and its impact on improving living conditions and infrastructure development. In the third - social part, the main goal was focused on demographic issues, obtaining information on gender, age, education and property status of subjected residents. The obtained results, which are still being under analysis, indicate that a significant part of the respondents is positively oriented towards archaeological excavations conducted in the At-Tafila region, and believes that the role of excavations is indispensable in the process of cultural tourism formation, which may contribute to the economic development of the region and its inhabitants. However, there is a group of residents who express their dissatisfaction and fears connected with archaeological research. The above mentioned sample research is, of course, only an example of a pilot study, which will be continued in subsequent years, with the systematic introduction of educational and promotional activities in the field of protection and promotion of the local archaeological heritage and the use of these sources to shape new values in the field of public archaeology and cultural tourism. The paper will present the details of the research as well as its practical impact on the activities conducted by Polish archaeologists and plans for the following years.

Keywords: Public Archaeology, local community, public engagement, southern Jordan, sociological survey

RUINS AND PEOPLE. ECONOMIC CRISIS, GLOBAL TOURISM AND ENHANCEMENT OF HERITAGE IN PETRA (JORDAN)

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The speech presents the research carried out, from 1998 to 2011 in Petra and Beida (Jordan), by the rapporteur, anthropologist at the Sapienza University of Rome. The aim of the research was to study the relationship between the enhancement of the archaeological site of Petra (Jordan), from the excavation seasons to the appointment in the World Heritage List, the resettlement of the site area and the urban and economic-social relocation of the bedouin people (Bdoul tribe) who resided there. As in other cases of rock contexts of the Mediterranean area, sometimes wealthy in ancient architectural preexistences, the nomination of Petra in WHL coincided with deep transformations of the socio-cultural and economic habitat. The archaeological work of excavation, restoration and conservation has had a decisive impact on the people living there. These events produced positive effects, on the one hand, with the involvement of the bedouins in the archaeological support operations and subsequently in tourist activities, through a conversion of the traditional economic practices of such a semi-nomadic population. Outcomes problematic, on the other hand, due to the forced urbanization process in the nearby built ad hoc village of Umm-Sahyun.

The research has confirmed that, as claimed by M. Augè, any cognitive, anthropological or technical intervention or other, is a social practice that must be read as a process of cultural contamination that involves the archaeologist, the urban planner, the expert of restoration, the anthropologist, the informant alike. In the most recent, radical revision of the concept of history we are re-establishing the same conception of the Ancient and therefore of restoration and conservation, re-elaborating the very concepts on the basis of which we have formulated our western notion of Heritage. The idea that springs from the research is that the Ancient is not at all an "innocent place", but a "place of experience", an area of a transcultural memory and, above all today, a complex terrain of interaction between local and global.

ARCHAEOBOTANICAL EVIDENCE OF MORTUARY BEHAVIOR FROM THE SHAFT TOMBS AT PETRA

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There is substantial evidence from ancient literary sources and archaeological remains for the practice of funerary dining and offerings to the dead, such as ceramics and faunal remains. However, mortuary behaviors rarely are explored using evidence from plants. This paper wishes to address this lack of information through the analysis of samples recovered

from tomb contexts in Petra to gain a better understanding of the role plants played in this type of ritual context. Excavation of several rock-cut shaft tombs on the North Ridge in Petra dating to the Nabataean period (1st centuries B.C.E. and C.E.) aimed to learn more about the lives of ordinary people in the city through the recovery of bioarchaeological evidence and artifacts. Several tombs were excavated over three seasons (2012, 2014 & 2016) and recovered human remains as well as burial goods including jewelry, oil lamps and perfume bottles aid in a better understanding of the civic population and their cultural funerary practices. Analysis of the charred remains recovered from sediment samples taken from the tombs indicates the presence of a variety foodstuff such as *Triticum* sp. (wheats), *Hordeum vulgare* (barley), *Lens culinaris* (lentil), *Vitis vinifera* (grape), *Ficus carica* (fig) and *Phoenix dactylifera* (date). These finds provide intriguing evidence of materials consumed during ritual feasting during the Nabataean period in Petra. This study, in association with the analysis of bioarchaeological remains and ceramics expands our knowledge of funerary dining and contributes to a broader understanding of local diet and ritual in the ancient world.

Keywords: Archaeobotany, Petra, Tombs, Funerary offerings, Nabataean

A LATE-IRON AGE II/PERSIAN-PERIOD COURTYARD BUILDING IN FIELDS C AND D AT TALL JALUL

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Excavations in Field C were begun in 1994, focusing on the remains of a pillared house, parts of which were spread over its original four squares (C1-4). In an attempt to delineate the southern end of this house, in 1996, Square C5 was opened, with the north wall of another building, to the south, unearthed. In 1999, work also continued here, and parts of the west wall of this building were discovered. With the pillared house almost completed in 1999, the intriguing nature of the new building necessitated that operations in Field C move laterally, to the south, so in 2005 three new squares (6-8) were opened for excavation. In the process of uncovering the eastern extension of its northern wall, the remnants of two superimposed stone-paved streets were found between this building and the south wall of another, still unexcavated structure, to the northeast. Work continued on this building from 2007-2011, unearthing parts of its southern and eastern walls as well as revealing part of a paved courtyard. The removal of massive amounts of earth and rubble earthquake debris was necessary in order to reach the earliest floor levels. The results of these excavations are the discovery of four phases of a two-room structure, which when connected with a larger complex of rooms surrounding a courtyard, further south, in Field D, excavated from 1996-2009, represent a large late-Iron Age II/Persian-period courtyard building.

Keywords: Tall Jalul, Late-Iron Age II/Persian period, Courtyard Building, Earthquake, superimposed streets

PICTORIAL GRAFFITI ASSOCIATED WITH THE SOLDIERS AND CIVILIANS OF NABATAEAN AND ROMAN HUMAYMA

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In 2012 and 2014 the Humayma Excavation Project documented over 150 graffiti (images and texts) carved or abraded on the sandstone ridges and hills west of the ancient settlement at Humayma (Nabataean Hawara, Roman Hauarra) in southern Jordan. Most of these graffiti have subsequently been assigned to chronological periods in the site's history based on associated texts, relative darkness of patina, spatial overlap, and content. The goal of this paper is to analyze images that can be associated with the Nabataean town and Roman garrisoned community in order to examine what they reveal about the values and beliefs of those ancient inhabitants. Particular focus will be placed on an image of a Roman officer conducting a religious ceremony, numerous footprint carvings, images of human figures displaying weapons, and images of humans riding camels and horses. The location and frequency of these images will also be addressed in order to show how different places in the natural landscape seem to have been conceptualized in distinct ways by Humayma's Nabataean and Roman inhabitants.

Keywords: Petroglyphs, Rock Carvings, Nabataean, Roman Arabia, Roman army

IMPORTED POTTERY IN THE QASR AL-BINT AREA: AN IMAGE OF THE INTERNATIONAL TRADE IN PETRA (3RD C. BC – 6TH C. AD)

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INRAP/ CNRS

Various imports (amphora and ceramic table ware) were discovered in the Qasr al-Bint excavations (1999-2017), dated from the third century BC until the fifth and sixth centuries AD. Although they are not many compared to the rest of the ceramic corpus, these imports evidence the trade flows and their evolution over a long period. During the Hellenistic and Nabataean periods, they are mainly represented by Rhodian and Cos amphorae as well as black glazed and later on by Eastern Terra Sigillata (ETS). Their number raised significantly during the Roman and Byzantine periods: African Red Slip (ARS) represent the most important corpus associated with amphorae of various origins (Italy, Spain...). Late Roman and Byzantine contexts evidence imports from the Aegean Sea and Southern Levant. This preliminary study provides a first glimpse on a general image of the imported ceramic and products.

ARCHAEOLOGICAL INVESTIGATIONS IN PETRA'S AGRICULTURAL HINTERLANDS

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In 2018, the Brown University Petra Terraces Archaeological Project (BUPTAP) explored the ancient agricultural terracing systems in the Wadi Baqa', north of Petra. Building on previous survey work carried out by Brown University in the northern hinterlands of the city, an interdisciplinary group comprised of archaeologists, architects, and a geo-archaeologist, carried out investigations that combined meticulous architectural investigation of the retaining structures with geomorphological and archaeobotanical analyses of the retained soils. Specifically, we were interested in vexing questions regarding the dating, construction, functioning, maintenance, and obsolescence of Petra's agricultural terrace systems. In this paper, we present the preliminary results of our high-resolution mapping, photogrammetry, detailed architectural documentation, targeted test-pitting, and micromorphological and archaeobotanical analyses of selected terraces in the Wadi Baqa'. The results should be of interest not only to specialists working on the history and archaeology of the city itself, but also, more generally, to archaeologists and architects interested in the study and documentation of ancient agricultural landscapes.

Keywords: Petra, agricultural terraces, archaeological illustration

ENVIRONMENTAL CRISIS AND SOCIETAL COLLAPSE: WAS THE YOUNGER DRYAS A SIGNIFICANT FACTOR IN TRIGGERING THE TRANSITION FROM THE PALAEO-LITHIC TO THE NEOLITHIC IN THE LEVANT?

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The impact of climatic change on the environment in southwest Asia has been regularly put forward as a key factor that triggered fundamental changes in culture and society. The beginnings of food production in the Levant is one of the classic examples: the onset of cooler and dryer conditions during the Younger Dryas (c. 12,900 – 11,500 cal BP) are said to have caused the necessity for sedentary late Epipalaeolithic gatherer-hunters to develop means to cultivate plants, which marked the onset of the agricultural revolution.

Using evidence from our archaeological fieldwork at a series of Late Epipalaeolithic and Early Neolithic sites in the Qa' Shubayqa area of northeast Jordan, which we've accumulated over the past six years of archaeological fieldwork in the area, we will evaluate the impact of the Younger Dryas on the economy, environment and societies in the Qa' Shubayqa during the Late Epipalaeolithic Natufian and the Pre-Pottery Neolithic A. Drawing on data from geomorphological analysis, archaeological excavations, archaeobotanical and zooarchaeological analysis, we show that while there were subtle impacts of the Younger Dryas on the local landscape, that late Pleistocene and early Holocene groups coped with these changes without detectable levels of stress.

OMNEM MOVERE LAPIDEM ("TO MOVE EVERY STONE", LATIN PROVERB)

Gary Rollefson
Whitman College

Detailed analysis of a growing number of 7th-6th millennium BC Late Neolithic sites in the badia of eastern Jordan have raised questions concerning the cultural character of potentially different social identities of groups engaged in a generalized hunter-herder subsistence economy and possible connections with antecedent populations in other parts of Jordan during the late 8th millennium. Intensive examination of typological and technological attributes of chipped stone tool production from two sites in the Black Desert – Mesa 7 in the Wadi al-Qattafi and structures W66 and W80 at Wisad Pools – offer insights into contemporaneous diversity in areas separated by only 50 km. Comparisons with other Neolithic research in the Black Desert provide additional interpretations of the range of variability and commonality over these two millennia.

Keywords: Late Neolithic, lithic technotology, eastern Jordanian badia, social diversity, hunter-herder

IS COMMUNITY ENGAGEMENT IN ARCHAEOLOGY BUILDING THE SOCIAL CAPITAL IN JORDAN? REASONING ON A DECADE OF COMMUNITY ORIENTED PROJECTS IN JORDAN

Maria Elena Ronza
Sela

Rural and semi-rural communities in Jordan can be defined as "dense social networks" and as such constitute an enabling environment for increasing social capital in the short term. This paper aims at reasoning on the broader impact of community archaeology in Jordan and how and if community archaeology influences the social capital and increases civic participation. Several study cases from the author's experience with different communities in Jordan over the past decade will be analyzed and presented.

Keywords: Social capital theory, Civic participation, Community engagement, Post-colonialism, Sustainable preservation

DISTRIBUTION OF PETROGLYPHS AT WISAD POOLS, BLACK DESERT, JORDAN

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Dispersed across the arid zones of the Negev, eastern and southern Jordan, and Arabian Peninsula, petroglyphs are notoriously difficult to record and study. This is particularly true when found in large numbers; pecked rock art may be highly weathered, difficult to understand, hard to date, and thus frustrating to record accurately. Recording of hundreds of petroglyphs at Wisad Pools, in the eastern Black Desert of Jordan, used UAVs, GPS, handheld photography and individual record collection. Mapping this data allowed the close examination of not only typological distribution, but also the association of types with each other, proximity to landscape features, and relationships between the topography of individual basalt boulders and the pecked petroglyphs they contain. Here we examine the Wisad Pools petroglyphs,

comparing them to those in other regions, and study them in the context of local landscape features, species depicted, and possible chronology.

Keywords: Late Neolithic, petroglyphs, badia, Black Desert, hunting

THE MIDDLE GHOUR (DAIR ALLA AND AL SHONAH ALJANOBIH) BETWEEN DOCUMENTING AND PROTECTION USING AVAILABLE SATELLITE IMAGERY AND ARIAL PHOTOGRAPHS

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The area of the Middle Ghour of Jordan is considered to be inhabited area starting with Neolithic ages to Present. Due to many living attractive reasons, this area is a region where many Archeological remains have been found in such as: Settlements, archaeological tells, Dolmens fields and many archaeological features like Canals and ancients roads. Unfortunately, many disturbances and threats affected and are still affecting these sites and features starting from: the agricultural and constructions extent, the development and industrial projects, looting and modern cemeteries extent, because of the difficulties to obtain reliable quantitative information "on the ground" about either the extent and intensity of these disturbances and threats, in this paper will shows and investigate the damage, disturbances and threats that affect these sites using the available satellite imagery and Aerial photographs . because these imageries such as that are provided by Kennedy and Bewely or the google-earth are easy to use, and affordability make the identification, quantification, monitoring and making analysis for these archeological sites possible and easy. So that the results should help the decision makers to choose the best plans to document, protect and quick intervention for these sites and to highlight broader application of this method.

Keywords: Middle Ghour, Tells, Aerial photographs, Satellite imagery, GIS, disturbances

LATE PLEISTOCENE LANDSCAPES AND HUMAN MOBILITY EAST OF THE JORDAN RIFT VALLEY: RESULTS OF GEOARCHAEOLOGICAL RESEARCH IN WADI SABRA

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Landscapes east of the Jordan rift valley are characterized by semi-arid biomes that make human occurrences seem comparatively remote. Since 2008 we have conducted geo-archaeological research in the Wadi Sabra, Greater Petra Region, investigating terrestrial stratigraphies and archaeological sites related to the presence of Homo sapiens during the Late Pleistocene. The main sedimentation phase in the Wadi Sabra stretches from mid OIS 3 to the younger Dryas (45-15 ka calBP) and is associated with archaeological sites. A chronological framework has been established by combined C14, TL and OSL-dating. The first half of the sedimentary record is characterized by fluvio-aeolian sedimentation during OIS 3. While the OIS 2 record indicates comparable sediment origins, they are intercalated with stable surfaces related to phases of increased precipitation and possibly initial soil formation. Since the early Holocene, continuous erosion and possibly flash-floods lead to the modern appearance of the deeply incised Wadi Sabra as we know it today. Human presence is confirmed during the Middle Palaeolithic, Initial Upper Palaeolithic, Early Ahmarian, Aurignacian, Masraqan, Kebaran and Natufian by archaeological investigations, while most evidence relates to Upper Palaeolithic contexts. In respect to human mobility patterns in the Upper Palaeolithic, we recognized increasing mobility during OIS 2 indicated by diversified raw material sources and microlithisation (Dufour bladelets) contrasting with OIS 3 behavioural patterns. Changing mobility patterns and technologies coincide with fluctuating climate conditions during OIS 2, which can be

understood as an adaptive strategy by modern humans to cope with an increasingly unpredictable environment at that time.

Keywords: Pleistocene Upper Palaeolithic, geo-archaeology, CRC 806, Wadi Sabra, Homo sapiens, mobility

KHIRBAT ATARUZ IN THE LATE IRON IIB AND IRON IIC PERIODS: SYNTHESIZING 15-YEARS OF ARCHAEOLOGICAL EXCAVATION FINDINGS

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Chango-Ho Ji
La Sierra University

This article deals with the Iron II architectural and material findings from Khirbat Ataruz and synthesizes archaeological data related to the second half of the Iron Age settlement history at the site (ca. late 9th to 7th centuries BCE). To this end, the present study centers on the results of the 15-year excavations in Fields A, B, E, F, and G, even though it also refers to literary sources and ongoing regional surveys. The results indicate that, in this period, Ataruz was a thriving town or urban center with multiple residential buildings and a well-developed water channel system that collected rainwater from the surface for drinking and other purposes. The ceramic evidence shows much similarity in typology and decoration to that from other Iron II sites in the Dhiban Plateau and the Madaba Plains. During this period, Ataruz was well connected with other Iron II settlements in the region through a complicated road system. The Iron IIB-IIC settlement of Ataruz appears to have come to an end in the early or mid-Iron IIC period, but the cause is as yet unclear despite some signs of violent destruction in Fields E and G. The historical implications of these archaeological findings will be discussed within the context of both the Hebrew Bible and the Mesha Inscription.

Keywords: Ataruz, Iron Age, Archaeology, Moabite, Mesha Inscription

JORDAN AT THE TURN OF THE 18TH-19TH CENTURIES

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This presentation will investigate the impact that two episodes at the turn of the 18th-19th centuries had on the area of modern-day Jordan: the French invasion of coastal Palestine under Napoleon in 1798 and the Saudi / Wahhabi takeover of parts of Jordan between 1803 and 1812. The French under Napoleon invaded Egypt in 1798 and in early 1799 they invaded Palestine, advancing along the coast as far as Acre, where their failed siege led to their withdrawal back to Egypt. The French army did not reach Jordan and the fourth months of their presence in Palestine was not long enough to require the population of Jordan to take sides. Of greater impact on Jordan was the expanding authority of the third Saudi / Wahhabi leader, Sa'ud ibn 'Abd al-'Aziz ibn Muhammad ibn Sa'ud into Jordan and southern Syria between 1803 and 1812. For a few years, the Ottoman Hajj pilgrimage caravan from Damascus to Mecca was disrupted, and much of the tribal population of Jordan pledged allegiance, at least nominally, to the Saudis, but the Saudi attempts to establish effective control and collect taxes, such as in Karak, were repulsed. The Saudi presence, however, may have led some of the small Christian population in southern Jordan to move to Karak, where they would have felt more secure.

Keywords: Jordan, Ottomans, Napoleon, Wahhabis, first Saudi state

PAUL SCHRÖDER'S VISIT TO PETRA AND TRANSJORDAN IN 1905

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University of Helsinki

Paul Schröder (1844-1915) was a German orientalist working for many decades first as a dragoman at the German consulate and embassy in Constantinople, later on as German consul and consul general for Syria based in Beirut. His doctoral thesis on the Phoenician language is still nowadays a work of reference. During his sojourn in Beirut he undertook many study trips, leading him in May 1905 to the Hauran and to Transjordan. In his archives, preserved at the University of Jena (Germany), there is an important amount of notices and maps he collected in order to prepare this trip. More importantly, there is an album with 70 photographs he had collected before starting his own trip. These photographs cover many sites in Transjordan and reach as far as Medain Salih in Saudi Arabia. The bulk of the album consists of 18 photographs from Petra, taken by various photographers from Cairo and Haifa and dating back to the late years of the 19th century. From his own trip, a journal with detailed notes, descriptions and drawings does survive, offering a vivid picture of the site of Petra in the early years of the 20th century. Schröder had devoted special attention to the Nebi Haroun that he described in detail including drawings.

In our paper we aim at presenting a first insight into this unpublished material, compare with other early travellers' accounts and stress the historical importance of descriptions, drawings and photographs of places that changed considerably since.

Keywords: Petra (site), history of research, early photography, travel accounts, late Ottoman period

WAS THERE GLASS PRODUCTION OR GLASS MANUFACTURING AT TALL ZIRĀ'Ā? AN EVALUATION OF THE ARCHAEOLOGICAL AND ARCHAOMETRICAL MATERIAL

Katharina Schmidt

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In the years 2003 to 2011, remains of workshops were excavated at Tall Zirā'ā, situated in the Wadi el-'Arab in the north of Jordan. Remains of kilns, slags, raw glass, crucibles and other equipment, such as mortars, suggest a differentiated and vivid production activity that can be traced continuously from the late Bronze Age to the Iron Age IIC period. Finds of raw glass granulate, and raw glass "chunks" confirm that glass was processed at the site. A number of glass finds found at Tall Zirā'ā could confirm this, such as for example, a glass pendant showing the "naked goddess" and a number of "spacer beads", typical for the Late Bronze Age period. In addition to glass finds, there a number of faience and metal finds, which also indicate that these materials were processed at the site. These workshop remains offer the possibility to explore the different workshop branches and their relationship to each other over a period from the late Bronze Age to the end of the Iron Age period. A new research project, carried out by the German Protestant Institute of Archaeology in Amman, investigates these workshops at Tall Zirā'ā. The aim of the project is to study the manufacturing processes of glass, faience and metal finds throughout all periods, and to place these technologies within a larger technological framework. Therefore, both, chemical analyses as well as new excavation results will be incorporated. The lecture will present the first results of the project.

Keywords: Tall Zirā'ā, workshop, glass, archaeometry, technology

10 YEARS OF RESEARCH INTO THE PALAEO-LITHIC ARCHAEOLOGY OF THE WADI SABRA / SOUTHERN JORDAN

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Since 2009, a German-Jordanian interdisciplinary research team carried out geo-archaeological and archaeological survey and excavation in the Wadi Sabra south of the Nabatean capital of Petra. Human occupation began at the time of the Acheulean, around 1 Mio. years ago. Middle Paleolithic remains have only sporadically been found, whereas the Upper

Paleolithic and Epipaleolithic periods saw intensive and repeated human presence in the region. Consequently, the time range between 45,000 years ago and 15,000 years ago is excellently documented in the Wadi Sabra. Huge remnants of Quaternary sediments were deposited at the same time and made the good preservation of prehistoric sites possible. The paper will present an overview about the results achieved by the research group comprising Archaeologists from University of Cologne and University of Jordan and Geologists from the RWTH University of Aachen.

Keywords: Quaternary, Early Homo, Palaeolithic, Landscape Archaeology, Geoarchaeology

FATHER MICHELE PICCIRILLO: AN ARCHAEOLOGIST DEDICATED TO RESTORATION

Franco Sciorilli

Restoration Team, Studium Biblicum Franciscanum

The professional figure of Father Michele Piccirillo is known for his intense research in the field of archeology, but the first task assigned to him by the SBF (Studium Biblicum Franciscanum in Jerusalem), together with Father Alberto Prodomo, in 1973, is a work restoration to be performed on the mosaics of the church of the SS. Lot and Procopius in Khirbat al-Mukhayyat. On the occasion of this conference we want to describe the great work done by Father Piccirillo in the field of restoration and conservation, with the interventions made in Madaba (to the Archaeological Park and the Apostles Church), Palestine Jericho (Hisham Palace), Syria Taybat al-Imam (Church of the Martyrs), Alexandria of Egypt (Greek-Roman Museum) and Jerusalem (Basilica of the Holy Sepulcher) and the last one he started the restoration of the Memorial of Moses of Mount Nebo. In his thirty-five years of activity he has opened two schools for the training of local workers for the conservation of mosaics, the Mosaic School of Madaba and the Mosaic School of Jericho, with the project of a third school in Hama, Syria, not implemented. This activity dedicated to conservation was also possible thanks to the help received from friends and professionals in the sector.

Keywords: Mosaic Conservation, Heritage Training, Public Education, SBF, Memorial of Moses of Mount Nebo

THE OBSESSION OF SEARCHING FOR TREASURES: ITS NEGATIVE IMPACT ON ARCHAEOLOGICAL SITES AND THE ROLE OF AWARENESS IN PRESERVING THEM

Ahmad Shami

Heritage and archaeological sites in Jordan suffer from the obsession of searching for treasures and chests of gold, in people's attempts to get rich quick. This phenomenon led to the destruction of many archeological sites. It is also exhausting the resources of the Department of Antiquities while trying to reduce it. The phenomenon is due to a number of factors including ignorance, poverty and greed, as well as the lack of recognition of the value of this cultural heritage that represents our identity and history. In this paper I will highlight the problem and how it is handled, and the role of the Department of Antiquities in reducing it by maximizing the role of the local communities and involving them in the tourism process, thus they get material benefit from the sites. Also, through spreading awareness that they are friends of the sites and their protectors, not their enemies.

A NEW PROSPECTIVE OF JUFFAIN DOLMEN FIELD, JORDAN

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The work presented here is about documentation, analysis and sharing new discoveries of Juffain megalithic field. A series of systematic surveys have been conducted in the archaeological field, with the main goal in documenting all structures and their surroundings. In addition, pottery typology can provide a unique and precious information for the understanding of past landscapes and the relationship between archaeological sites. As based on ethnographic and archaeological research conducted, the Study area was settled through Chalcolithic, Bronze, Roman and Byzantine Period. Using Geographic information system (GIS), total station and GPS devices a comprehensive topographical map of the site and 3D mapping of groups and their structures have been produced. Understanding dolmen types and the megalithic structures related to them was attained using a holistic approach. The produced topographical maps are the basis for the conservation and the development of a Dolmen Heritage Park. While collecting data for a topographical

map, of the structural types there are two different categories, single and centers. Single structures are those that stand alone they are, Dolmens; Tumulus; Tomb; Patio, Wall, Cave, Cistern, Silo, Press and Quarry Stone. Five major new discoveries were found, borders and boundaries, show that each of the dolmen groups stand alone. domestic meeting places point to a sedentary society, quarries and cup hole centers demonstrate a high scale of distribution of central places, and ritualistic centers indicates a higher level of human relationship. Furthermore, ceramic typology identified 7 major pottery types with an additional 3 minor types.

Keywords: Dolmens, Megalithic, Juffain, Heritage park, Documentation

THE STORY OF THE MUSEUM AT THE LOWEST PLACE ON EARTH/ GHOR AS-SAFI

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The importance of the Museum is derived from the fact that it serves as a hub where the visitors can be introduced to a whole series of archaeological and heritage sites that span more than 10,000 years of Jordanian history. Moreover the educational programs designed for the school kids and local community at large can greatly help in the preservation and the protection of the cultural heritage sites through creating heritage job opportunity and enhancing the sense of ownership of his heritage by the local community. Ghor Safi is being considered as one of the important heritage districts because in has historical sites and religious stories related to prophet Lut. Our museum was established in 2004 to make the history of the region accessible to the public and to be a research center, so that it has been built next to Lut's cave and the discovery spots. In this paper I will try to demonstrate the rule of the museum in linking all the historical sites in the region and giving the public chance to know the story of the museum.

Keywords: preservation, educational programs

AN ETHNOARCHAEOLOGICAL STUDY OF ZIZIA POTTERY FACTORY IN JIZZA, JORDAN

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Independent Scholar

For nearly four decades scholars have been welcome at Zizia Pottery Factory in Jizza, central Jordan. Based on several visits over the past five years this study closely examines interconnected components within a modern industrialized context: artisans, scale and technology of production, spatial and social organization, and distribution of pottery. Many pottery manufacturing sequences at Zizia are not far removed from those partially known from antiquity, therefore modern quantitative data and on-site observations contribute to interpretation of archaeological evidence.

Keywords: Modern pottery factory, Jizza, ceramic technology

SETTLEMENT IN CRUSADER TRANSJORDAN (1100–1189): A HISTORICAL AND ARCHAEOLOGICAL STUDY

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This paper summarizes and presents the main results of a PhD thesis defended at Cardiff University. The Lordship of Transjordan, part of the Latin kingdom of Jerusalem during the 12th century, is usually assumed to have had more or less the sole function of serving as the southeastern frontier of the kingdom, and that it was rather isolated from the rest of the kingdom. Through the detailed analysis and combination of all available sources, including documentary evidence and recent results from archaeological projects, this study shows that this image of a series of castles in a largely deserted area originates primarily from a scarcity of research, and that it does not reflect the evidence offered by the sources, which indicate that the region had a much more complex identity. The conclusions from this research have provided very rich information on the dynamics, variety and timing of settlement in the region, on the importance of the various kinds of settlements, on socio-economic aspects, and on the overall significance and importance of Transjordan for the Latin

kingdom of Jerusalem. Results have highlighted, among other aspects, the close connection of this region with the rest of the Latin Kingdom, including the relationship between settlement patterns of Transjordan and the broader policy of the Latin Kingdom, the diverse and rich economic resources of the Lordship, and the important aspect of the relationship of the Franks with the population of Transjordan.

Keywords: Crusader-period history and archaeology; Transjordan; Settlement Patterns; Latin Kingdom of Jerusalem; 12th century A.D.

CULTURAL HERITAGE AND ECONOMIC DEVELOPMENT IN WADI ARABA: TRIALS, TRIBULATIONS, AND OPPORTUNITIES

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After more than ten years of promoting and facilitating economic development at Bir Madhkur, Wadi Araba, an assessment is warranted of the current state of affairs of the Bir Madhkur Project. Therefore, this paper will examine the background to the Bir Madhkur Project initiated in Wadi Araba in 2007, summarize the challenges presented then and now, and assess current conditions in the context of looking at next steps forward. The focus will be on identifying the many initiatives funded over the years, and assess them in terms of their challenges and more or less successful outcomes. This paper will also provide a realistic assessment of the challenges presented when engaging with local communities in impoverished areas and suggest alternative outlooks and practices.

THE DEVELOPMENT OF THE ABILA/QUWAYLIBAH PILGRIMAGE SITE IN BYZANTINE PALAESTINA SECUNDA AND Umayyad JUND AL-URDUNN

Robert W. Smith
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Crises during Late Antiquity stimulated the development and sustained support of a pilgrimage complex at Abila/Quwaylibah. Preserved ancient texts make no mention of pilgrimages to the site, but the continuing work of the Abila/Quwaylibah Expedition directed by Dr. David Vila under the permission of the Department of Antiquities of Jordan has exposed much of the complex. Excavation has revealed a central five-aisled transept church surrounded by auxiliary structures built upon a previous three-aisled church and an even earlier second century bathhouse at the terminus of the city water system. Architectural elements such as tessellated floors and special hydrological features together with artifacts such as eulogia, inscriptions and a relief icon fragment provide indications of the focus of the complex and its rituals. The pilgrimage site emerged in the context of a plague, an expanding pilgrimage impulse and a doctrinal crisis during which Bishop Alexander of Abila was exiled as a heretic in c.553 CE. The successor Bishop in response repaired the aqueduct system and promoted the stature and finances of the city through the creation of *loca sancta*. Pilgrimage to Abila continued after the Battle of the Yarmuk and the ascendance of the Umayyad Caliphate. When confronted by early eighth century earthquake damage and iconoclastic sentiments the aesthetic and spiritual experiences of pilgrims promoted the refurbishment of the complex and the public display of the icon fragment. Pilgrims including those who inscribed Kufic prayers visited the site until it was devastated in the great earthquake of 749 CE.
(248 words).

Keywords: Abila 1, Pilgrimage 2, Byzantine 3, Umayyad 4, Icon 5

WHAT DOES IT ALL MEAN? TAPHONOMY, SPACE AND CHIPPED STONE AT PPNA WF16, SOUTHERN JORDAN.

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WF16 is a relatively small (c 0.5 ha) PPNA settlement, located in the Wadi Faynan, southern Jordan. There is no evidence for either later (PPNB) or earlier (Late Natufian) occupation of the site. A suite of >50 radiocarbon dates suggest that the site was occupied throughout the PPNA (c.11, 600- 10,200 cal BP). Open area excavation has revealed more than 20 buildings tightly packed within the 600m² excavation trench. These buildings provide evidence for a variety of construction methods, take a wide range of forms and sizes and demonstrate a diverse range of life histories. Excavation of the site has also yielded a diverse array of material culture, including a large assemblage of chipped stone, aspects of which show both spatial and chronological patterning. In this paper we document and analyze the inter-site distribution of the assemblage, using a suite of statistical techniques drawn from ecology. We use these data to investigate the formation processes responsible for these patterns, and evaluate the extent to which these shed light on the spatial structure of Early Neolithic life.

Keywords: PPNA, Southern Jordan, spatial analysis, chipped stone, taphonomy

WHO BUILT THE DOME OF THE ROCK: A RE-EVALUATION?

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This paper proposes that Mu'awiya planned and built the Dome of the Rock and its supporting platform. The Dome situated at the highest point of the sacred precinct of the Haram al-Sharif was his crowning achievement and part of his greater urban vision in establishing Jerusalem as one of multiple seasonal imperial capitals in seventh century Greater Syria or Bilad al-Sham. The paper also addresses the origins of the building's form as well as its purpose. While the date of completion 691/692 CE is clear in the Kufic inscription located in the interior arcade, the date of the initiation of construction is unknown. The Kufic inscription was modified to include the name of the Abbasid Caliph al-Imam al-Ma'mun (813-833) suggesting that it replaced the name of the caliph 'Abd al-Malik (685-705). Many scholars attribute the Dome to the period of 'Abd al-Malik but both Goitein in 1980, Grabar in 1988 proposed that Mu'awiya planned and initiated construction of this early Islamic commemorative monument. While scholars pointed to Solomonic, Davidic and Christian associations, Khoury connected the form and meaning of the Dome with the palaces (or mihrabs) of Sabeo-Himyaritic pre-Islamic Yemen. This paper provides additional historical evidence that the Dome was built by Mu'awiya with links to Syria and Arabia. Mu'awiya's goal was to create a monument unifying the three religions of the Book thus (the Peoples of the Book—ahl al-kitab) with the legacy of the pre-Islamic Arabs—the Sabaeans of Yemen—in a singular monument glorifying and testifying to that unity under the sovereignty of Islam.

Keywords: Dome of the Rock 1, Mu'awiya 2, Jerusalem 3, al-Haram al Sharif 4, mihrab 5

TOWARD AN UNDERSTANDING OF THE NABATAEAN-JUDAEAN BORDER

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Using the results of recently published and on-going field work, this paper re-examines arguments about the border zone between the Nabataean and Judaeen kingdoms from the second and first centuries BCE. This era saw the emergence of new autonomous or semi-autonomous states out of the deteriorating Hellenistic empires of the Seleucids and Ptolemies and the establishment of new borders. The location of the border between Nabataea and Judaea, while known, remains poorly understood, particularly regarding the timing of changes in the frontier and the method of marking and policing of the boundary. On-going survey and excavations at Dhiban have failed to reveal extensive settlement to accompany the creation of the large temple there, yet the site stands in the border zone between Nabataean territory to the south and east and Judaeen territory to the west. Based on parallels from the Aegean world, this paper argues that one function of Nabataean temples, such as those at Dhiban and Khirbet et-Tannur, is to mark the border between the lands of Yahweh and the lands of Dushara.

Keywords: Dhiban, temples, border zone

THE LATE BRONZE AGE TEMPLE AT DEIR ALLA - A REASSESSMENT

Margreet L. Steiner
Independent researcher

In 1964 Henk Franken excavated a large Late Bronze Age temple at Deir Alla, located in the eastern Jordan Valley; the finds were published in 1992. All in all some 16 rooms were exposed, including a cella, a treasury, a chapel and several storage spaces. The number of excavated objects was staggering and included hundreds of ceremonial and household vessels, dozens of objects of faience, gold, bronze, alabaster and bone, several Mycenaean juglets, Mitanni seals, Egyptian scarabs, bronze scale armour fragments, hundreds of beads, five so-called shrine pots as well as ten clay tablets, some inscribed with a yet not deciphered script. According to the excavator the temple was a trade sanctuary, not attached to any settlement, and used by local tribal traders and Egyptian middlemen. However, since 1964 much more information has become available on Late Bronze Age temples in the Jordan Valley and beyond, and on the contemporary settlement excavated at the site. It is time for a re-assessment of the temple.

Keywords: Deir Alla, temple, Late Bronze Age

EXPERIENCE EXCHANGE IN THE ARCHIVE AND DOCUMENTATION METHODS

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No doubt that the documentation process in the field (drawing, photographing, taking notes...) considered as the most important step in the archaeological work. State like Jordan founded in 1921 and has tens of thousands of archaeological sites, one of it priority was to establish department of antiquities in 1923, since thou thousands of archaeological projects were implemented which left tens of thousands of documents, photos and slides. In 1971 the DOA established special sector for this huge archive, which aim to protect, sort, and digitize it. Since that time the Department of Antiquities of Jordan succeed in building a very good experience in this topic and share it with other partners and institutes. In this paper I will speak about our experience in exchange and sharing our knowledge with other partners particularly the Middle East Photograph Preservation Initiative (MEPPI).

Keywords: Archive, Documentation, Digitizing

PRELIMINARY RESULOF TELL AL-HUSN EXCAVATIONS – NORTH JORDAN

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The aim of this paper is to shed a light on the results of recent excavations by the department of archaeology-Yarmouk University, at Tall al- Husn archaeological site, located about 8km to the south of Irbid. This paper is presenting a detailed report about the excavated areas during three seasons of excavations. Various parts of the site were excavated in order to determine the successive periods of settlement at tall al Husn, and analyzed it to decide their functions and uses. As well as document the findings. That could enrich our understanding about social and economic systems among past communities, Likewise interaction between human and surrounding nature. This paper also presenting a descriptive study for excavated architectural remains at the top of the tell. As well as document the findings, such as the Umayyad fortress and the small mosque. The Islamic period in Jordan greatly neglected in archaeological studies. These expected results will help us to understanding the early Islamic culture and history of Tell al-Husn archaeological site; therefore, to get a better understanding of Jordanian history between antiquity and the Islamic period.

Keywords: Tell al-Husn, excavations, results, Islamic periods, and fortress

COLLABORATING AT HOME AND ABROAD: USING MUSEUM EXHIBITIONS TO ENGAGE WITH LOCAL AND REFUGEE COMMUNITIES

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Public and community heritage and archaeology, and heritage and memory institutions such as museums and curated heritage sites, have long tried to engage different publics in cultural heritage. The connection of heritage to identity and also to well-being has been noted as an important element for working with displaced persons, as well as local people who may feel disconnect or disenfranchisement from cultural heritage for whatever reason. The University of Helsinki's Centre of Excellence in Ancient Near Eastern Empires aims to conduct an intensive field survey program along the King's Highway in central Jordan. From the outset, local community engagement forms an intrinsic part in developing the fieldwork—from the planning stage, to the research, to the dissemination of our results. In this presentation, we reflect on the history of public and community heritage initiatives in Jordan, and discuss our own plans to make sure that community engagement forms a central element in our research. This includes engaged ethnographic research with local partners and communities in Jordan, collaborating on building mobile digital heritage applications for local communities that support multivocality and co-creation, and implementing a 'born-open data' policy by which our archaeological data becomes immediately available for unencumbered use by anyone. We will also be working with several leading museums and Near Eastern refugee communities across Finland to find ways of developing participatory projects centring on the archaeological and cultural heritage of the Ancient Near East.

Keywords: Participatory exhibitions, community heritage, open science, displaced communities, heritage values

SHKĀRAT MSAIED AS CULTURAL HERITAGE

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For almost 20 years a team from University of Copenhagen has excavated the remains of a well-preserved PPNB village, Shkārat Msaied, located about 13 kilometers north of Petra. The final seasons have focused on building unit F located in the centre of the excavation area where unique and well-preserved remains of burials were found, allowing us to study in detail not only mortuary rites of the PPNB population but also their health and nutrition history. The chronological frame for the mortuary practices are understood based on detailed analyses of the sequence of building events taking place within the structure. The field work is expected to be terminated in 2020 and a strategy for preservation and presentation of the site and the results of the archaeological research for a broader audience, national and international, is being developed in collaboration with the department of antiquities. This paper presents the cultural heritage management strategies developed for the site as the end product of the project.

Keywords: Shkarat Msaied, PPNB, cultural heritage, mortuary praxis, site presentation

THE NEW RAQMU-PETRA MUSEUM, A STEP AHEAD FOR A MODERN COLLECTION MANAGEMENT AT PETRA

Qais Tweissi

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Modern archaeological work in Petra started in 1928. Since then, many objects from excavations were stored in a cave inside the ancient site. With time, this storage grew, and problems arose. The first museum in Petra was established by the Department of Antiquities in 1963, in another cave inside the ancient site. This partly solved the storage problem and presented some of Petra's history and cultural heritage to the public. With time, more collections arrived for storage. The need for a more suitable place became urgent. The Department of Antiquities therefore established the Petra Archaeological Museum in 1994, with storage facilities for museum-grade artefacts, within an existing building located inside the site.

In 2010, an agreement was signed between the Petra Development and Tourism Region Authority and the Japanese Government to establish a new museum for Petra, which is located near the entrance to Petra and not inside the site. This makes the stories of life in the Petra region through the ages, exhibited in the museum, more accessible to local communities and enhances local cultural awareness and pride. This new museum will also have storage facilities and a small laboratory for the museum collections. In addition to an overview of collection managements at Petra and the role of the new museum, this paper will present exhibition and conservation methods proposed for the museum collections, as well as their documentation (including 3-D scanning).

TECHNOLOGICAL DEVELOPMENTS AND CONTINUITY IN THE LATE EPIPALAEOLITHIC JORDAN VALLEY: THE LITHIC ASSEMBLAGES FROM THE LOWER DEPOSITS OF WADI HAMMEH 27

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A rich flaked-stone artefact assemblage was excavated during the three seasons of renewed excavations by La Trobe University at the Early Natufian site of Wadi Hammeh 27 (ca. 12,500 – 12,000 cal BC). Just under half a million artefacts were uncovered from approximately seven cubic metres of sediment, including a diverse range of six thousand retouched pieces. These artefacts were associated with four clearly stratified occupational phases, providing a good opportunity to investigate the existence of techno-typological developments within the course of the Early Natufian. Ten months were spent performing detailed typological and attribute analyses of the artefacts. Ultimately, while the overall composition of each assemblage was similar, several key unidirectional trends were identified. These included a shift from burins struck from truncated ends towards dihedral burins, as well as an increase of sickle components and geometric lunates featuring the characteristic Early Natufian 'Helwan' retouch. The excavation of both interior and exterior deposits associated with a newly-discovered oval house furthermore provided an ideal opportunity to investigate differences in refuse patterning between different domestic settings. Clear spatial differentiation in the types of artefacts deposited in between these two contexts was observed, with large, heavy artefacts tending to be ultimately deposited outdoors, whereas the interior deposits were typified by a higher rate of broken microlith fragments and minute angular fragments associated with primary knapping refuse. This indicates that some rudimentary refuse disposal was employed in Jordan during the Early Natufian period, long before the Neolithisation process had truly taken hold.

Keywords: Natufian, flaked-stone technology, site abandonment, refuse disposal, diachronic trends

THE RUPESTRIAN CHAPEL OF AL-WU'AYRA AND THE HERMITIC LANDSCAPE OF CHRISTIAN PETRA

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Università di Firenze

Silvia Leporatti

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After the identification of a rupestrian chapel at al-Wu'ayra, opening a new perspective on the history of the site, the authors discuss the possible character of this new pre-Crusader facies of al-Wu'ayra and present a preliminary overview on the topographical and typological aspects of the hermitic settlement of Christian Petra. The latter has been for many centuries an important part of the religious geography of the town, whose vitality, at least as devotional reference point, is demonstrated by its survival after the abandonment of the town and its churches. Beside the more impressive religious buildings, mainly located in the middle of the town or in specific spots in the surrounding area, an extraordinary, extended and diffused net of hermitic installations, up until now less known by historians and neglected by archaeologists, starts to be brought to light. Being simple reoccupations of Nabataean cultic or funerary complexes, through more or less substantial modification, or new foundations purposely accommodating natural cavities, some of the most interesting aspects of the phenomenon are the reasons guiding the choice of the spot, the building techniques and the organization. The paper is intended to offer both a contextualisation of the rupestrian chapel of al-Wu'ayra and the preliminary results of the still progressing survey of hermitic installations, enriching the available data for Southern Jordan.

Keywords: Petra, Hermitages, Christian Rupestrian Settlement, Topography, Light Archaeology

THE MHJ PROJECT IN JORDAN: A MULTI-PERIOD RECORDING SYSTEM FOR LOCAL HERITAGE

Apolline Vernet
UMR7041-APOHR & UMR8167-Orient Méditerranée

Pierre-Marie Blanc

Gourguen Davtian

On behalf of the Jordanian DoA, the international archaeological mission MHJ (Mission de Haute Jordanie) directed by P.-M. Blanc, is surveying since 2014 the area between the cities of Ajlun and Irbid. Considering the theme chosen for ICHAJ14, that presentation will focus especially on the GIS recording system set by the mission in order to draw a history of settlement. The mission aims to record every archaeological sites and the related informations: type of settlement, occupation phases, actual state of preservation, modern threats. The three survey campaigns gather several specialists to face the numerous issues of the project by means of archaeological observation on the ground combined to the small finds and ceramic collection. The systematic record of architectural entities by G. Davtian ensures the accuracy of previous data recorded in MegaJordan system. The archaeologists that took part in the project address numerous issues like the tools of economic development in the Jordanian hinterland by A. Zerbini; the pre-historical evidence of settlement by C. Nicolle; the territory transformation from early Islamic to Ottoman period (A. Vernet). Additionally, the ceramic study done by P.-M. Blanc informs about some unknown local productions and sustains the long distance trade with importations from the Mediterranean world over the centuries. Moreover, the mission documents the human transformation of the landscape over the "*longue durée*" but also the modern threats undermining the territory like looting or quarries activity. The paper will present the methodology and the results of the previous campaigns, and discuss the further work of the mission.

THE AYYUBID COMPLEX OF KHIRBAT AL-DUSAQ: NATURE AND RAISON D'ÊTRE

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IFPO, French Mission of Khirbat al-Dusaq

Frédéric Imbert
IFPO

René Elter
Université de Lorraine

The site of Khirbat al-Dusaq is located 5 km east of Shawbak Castle. This complex consists in 3 visible buildings which vaulting has collapsed, among them are a reception iwan and a rich hammam. Since 2014, the archaeological study of the site is conducted by a team from the French Institute for the Near East (Ifpo). The excavation project includes the use of photogrammetry and 3D reconstruction. In 2015, the analysis of the architectural typology of the bathhouse as well as the study of the pottery material led us to date the buildings from the 13th century. Then, during the 2016 excavation campaign, the inscribed lintel of the hammam entrance has been found, bearing the name of the founder and the year of construction. Since this crucial discovery, a new light has been shed on this site. Thanks to data from the Medieval narrative sources, it appears that Khirbat al-Dusaq is linked with the patronage of an Ayyubid prince of Damascus. This paper aims at presenting the results of the 2016 and 2017 excavation campaigns and at enlightening the nature and the raison d'être of such a complex in that region.

NOTES ON A POSSIBLE EARLY MIHRAB IN THE AREA E CHURCH AT ABILA

David H. Vila
John Brown University

Over the past decade a number of significant volumes have appeared on the transition between the Byzantine and Early Islamic periods in the greater Levant (Avni 2014, Guidetti 2016, et. al.). Evidence from many excavations in the region is confirming that the transition was slow and non-disruptive in many respects. Long suspected from literary sources on the period, archaeological evidence now exists that in some locales Christians and Muslims occupied sacred spaces

simultaneously, such as the examples of Muslim prayer spaces found at the Kathisma church (Avner 2010) and the Shivta church (Guidetti 2016) where mihrabs were created inside of functioning Christian buildings. Recent excavations at Abila have uncovered what we believe to be a mihrab in the south wall of the diaconicon of the Area E church. Carbon dating of an olive pit found embedded in the plaster associated with the mihrab would seem to indicate that it dates from a very early period after the arrival of Islam in the region. This paper will demonstrate that we do indeed have a mihrab in the Area E church at Abila, and that the prayer space was used by both Christians and Muslims for nearly a century until the destruction of the church in the earthquake of 749 CE.

Keywords: Christianity, Islam, church, mihrab, prayer

THE ARCHAEOLOGICAL SITE MANAGEMENT, PRESERVATION AND CONSERVATION OF MACHAERUS/MUKAWIR, OVERLOOKING THE DEAD SEA IN JORDAN

Győző Vörös

Hungarian Academy of Arts

In 2015, after his personal visit with his wife to our restoration project on the historical site, HRH Prince El-Hassan bin Talal summarized its importance with the following honorable words: "The evocative Citadel of Mukawir, or Machaerus to the ancient world, is a site that is redolent with the narrative and wonder of history and faith. It is one of those very special places that seem to exist beyond time and in its own space. It sits in a deeply imbued landscape that brings to life the resting chronicle of belief, devotion and struggle. This abandoned hilltop site with its faded but once-magnificent fortified royal palace, occupies a strategic point overlooking the Dead Sea in the modern Hashemite Kingdom of Jordan. This is the place where, according to the Roman historian Flavius Josephus (*Antiquitates Judaicae* XVIII 5, 2), one of the holiest men of the biblical era, the Prophet Yahya ibn Zakariyya, was imprisoned and executed by the Jewish Tetrarch Herod Antipas almost 2,000 years ago. This story of death for faith and for love of an ideal makes Mukawir so much more than a fascinating archaeological site. It sits in the landscape of religious memory as a testament and place of pilgrimage, not only for Muslims, but for Christians too." The archaeological excavations of this historical Citadel started in 1968, and after 50 years of scientific research, the evaluation and description of the site has been completed by three monumental archaeological-final-report academic-monographs of the author. The current paper will summarize the next phase of the conservation, consolidation and preservation of the monument complex, together with a sustainable site management program, engaged with the local community, for the next generations.

Keywords: Machaerus, historical, conservation, consolidation, preservation

TRADE IN THE DEKAPOLIS- REGION

Nora Voss

University of Vienna

During three survey campaigns in northern Jordan nearly 50.000 ceramic sherds and small finds were gathered at the vicinity of the ancient cities of Gadara, Abila and Umm el-Jimal (northern Jordan). This pottery assemblage collected there represents a cross section through the vessel repertoire used by the populations of the cities and their immediate hinterlands. The sherds originate from different aspects of life from simple storing jugs to expensive fine ware deposited as offerings in the necropolis, produced during 1000 years from Hellenism to the reign of the Umayyad. Due to the characteristics that only finds from a survey can offer – variety of form and chronological diversity – the ceramic material discussed in this paper offers a broad base for a more detailed understanding of trade routes and commercial exchange both amongst the cities situated within the ancient Dekapolis region, and between those cities and neighbouring regions. Considering the poor state of conservation of the finds as well as their provenance from a modern surface, the investigation's first goal is to analyse the materials used in their production in order to locate their places of origin. This information, in combination with the investigation's focus on three cities belonging to a region that is well-defined geographically, promises a detailed view of the trade routes and economic behaviour of the region's inhabitants. Also, it offers a valuable tool for identifying the broader dynamics of regional and interregional contact and exchange in the ancient Levant region.

Keywords: Jordan, Survey, Pottery, Regional Trade, Fabric

RESILIENCE IN THE FACE OF REGIONAL CRISES: IDENTIFYING LOCAL KNOW-HOW AND DECISION-MAKING AT MAMLUK-ERA ḤISBĀN

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University of Bonn

The financial and political collapse of the Mamluk Sultanate in the 15th century CE created conditions of instability throughout Bilād al-Shām, and particularly in parts of Transjordan, where the agricultural economy was most dependent on state sponsorship. This imperial “crisis” was exacerbated by periods of environmental insecurity marked by years of drought and extreme climatic events. It is the reaction of local communities to these circumstances that is the topic of this paper. Recent seasons of excavations at Tall Ḥisbān, under the direction of this author, have revealed ways in which local knowledge and decision-making allowed the local community to survive these periods of want and stress and to remain in the village. This paper will focus on three patterns of communal resilience in this regard: 1. diversification of cropping and selective irrigation of cereals, 2. creative solutions to rapid “urbanization” (the result of imperial interventions in settlement) using local building techniques, and 3. the phased abandonment of the site, after repeated attempts at village renewal and restructuring, and subsequent dispersal of the community into smaller settlements. The study is a multi-disciplinary one, and relies on a combination of stratigraphic excavation (and small finds and materials analysis), a robust program of environmental and botanical analysis, and intensive critical and archive-based textual analysis. Comparisons will be made, as well, with other regions of Jordan, as well as further afield in Greater Syria.

Keywords: resilience, local knowledge, phased abandonment, Mamluk

URBANISM IN THE LATE ANTIQUE DECAPOLIS: JERASH AND SCYTHOPOLIS COMPARED

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In this paper, I compare the late antique (4th-8th century CE) remains of the Jordanian city of Jerash with the remains of the Decapolis city of Scythopolis. These two cities are the most extensively studied cities of the Decapolis, which was a group of cities that possessed a vibrant Greek cultural life that made them unique in the southern Levant region. The differences between these cities in late antiquity are stark. For example, at least twenty churches have been discovered in Jerash, whereas only one has been discovered in the city center of Scythopolis. Another major difference is that Scythopolis was the capital of a Roman province, which meant that the imperial authorities spent lavishly on its urban plan and constructions in the city. At Jerash, the only major building projects of this period were religious in nature – the aforementioned Christian churches and, under Muslim rule, a mosque in the center of town. However, similarities are also visible in the archaeological record – for example, the street plans remained largely unchanged in these two cities, and, the streets became narrower as shopkeepers and residents occupied the sides of the roads for their own benefit. This project is significant as it helps to place the archaeological remains of Jordan into the wider Mediterranean context by helping to explain the gradual and uneven process of how cities founded under a Greco-Roman regime were transformed as a result of the process of Christian conversion and later Islamic rule

MOBILITY WITHIN THE LIMITS OF THE ROMAN EMPIRE: ARABS IN ROMAN GERMANY AND GERMANS IN ROMAN ARABIA

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This paper contributes to the actual dispute on mass migration from the Near East to Europe reflecting mobility in antiquity. Especially military administration, logistics and tradefostered an exchange of ethnic groups from one limit of the Roman Empire to the other. Archaeological and written sources will be presented in order to describe this phenomenon of mobility. These documents attest shifts of individuals from the Roman East to the West, and vice versa. A number of Arabs can be traced by epigraphy serving in high-ranked positions of the Roman Legions in the Roman Rhine provinces. Also women from the Roman East, married to officers, can be ruled out among the inscriptions: Gravestones of a Roman body Imperial body guard from Philadelphia / Amman as well as an epitaph of a lady from AeliaCapitolina (Jerusalem), for instance, have been found in the city of Mainz, the capital of Roman Germania Superior. Incised Aramean graffiti on local Gaulish Terra Sigillata further prove the presence of Syrian merchants in the lower Rhine valley. In reverse, soldiers

serving in the legio XXII primigenia fidelis, the garrison permanently stationed at Mainz, migrated to Bostra, the capital of the Roman provincia Arabia. Names of Germanic or Celtic origin variously occur in the western transitional zone of the Iraqi desert. They point to the presence of gentile groups from Germany in the Orient prior to the Christian pilgrim tourism following the tolerance edict of Constantine I. An outstanding archaeological find are remains of a long sword of central European type in one of the tombs of the Khisfin cemetery on the occupied Djolan.

Keywords: Roman Army, Arabs, German, Celts, Epigraphy

THE MARBLE STATUARY DEPOSIT IN THE EASTERN BATHS OF JERASH

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The eastern baths at Jerash, ancient Gerasa of the Decapolis, escaped long time from the attention of archaeologist. First discoveries during salvage excavations by the Department of Antiquities resulted in the partial expose of a pillared hall along the northern flank of the bath and of a number of inscribed statuary bases in situ. Several marble statue fragments found near-by, studied by E. A. Friedland and the author, created hope to reconstruct the statuary decoration of the hall by further archaeological exploration. In three seasons of joint excavation of the Department of Antiquities, The Mission Française Archéologique de Jerash, and The German Jordanian University (2016-2018), the areas adjoining to this hall were systematically excavated. In a pool between the hall and the frigidarium of the baths, fragments of marble sculpture in different dimensions came to light. All of them were in incomplete condition and scattered upon the pavement of the pool in positions which cannot be explained as tumble by earthquake. Their scattered disposition implies instead the conclusion that their find position was caused by human destructive activity. Several marble fragments display decay release caused by an exposure to high temperatures. The paper gives an overview on the statuary finds of the three seasons. It compares similar find complexes of marbles in contexts to lime kilns such as in Ostia, Sardis, Enns (Austria), and others. Burning marbles to lime was an Imperial-wide phenomenon starting from the early Christian periods continuously thru the Medieval Ages until modern times.

Keywords: Roman, Baths, Marble, Sculpture, Lime-burning

PETRAEAN SCULPTURES IN CONTEXT – PROBLEMS AND INSIGHTS

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I work on a documentation of all figural sculptures from Petra made in stone, metal, stucco and bone. Figural means anthropomorphic and theriomorphic. Floral and abstract designs, objects made in clay and glass, coins/seals, paintings, and objects from the Byzantine period and later are not included. This huge project could not be done without the great support of the Department of Antiquities, the cooperation of many colleagues and the enormous involvement of Mohammad al-Marahleh at the Petra Museum. The monuments are presented according to find-spots, respectively to the results of the various expeditions. In this paper I give an overview of the situation on both sides of the Wādī Mūsā, the great boulevard of Petra. The context with still standing or assumed buildings is one aspect, but there are as well free standing sculptures. Especially the earlier excavations at the site create several problems to relocate sculptures to their original contexts. Other problems with the sculptures are given by a difficult storage and an insufficient registration. There is hope that the situation will be improved with the new museum. The new documentation of the sculptures is another step forwards. But the World Heritage site needs still more support in the handling of the finds. We would create problems to call all the sculptures from Petra as "Nabataean". I try to avoid such an ethnically approach and prefer the term "Petraean". Today we have a couple of firm dated sculptures which helps greatly to develop into the dating the other sculptures.

Keywords: Petra, Sculptures, Architectures, Museums, Documentation

THE LATE OTTOMAN PERIOD DEFENDED LANDSCAPES OF SOUTHERN JORDAN

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On July 6th, 1917, the legendary Howeitat leader, Auda Abu Tayi, leading an Arab force captured the Red Sea port of Aqaba from the occupying Ottoman forces. Aqaba was considered impregnable by British and Ottoman forces and the loss of Aqaba was an opportunity for Emir Feisal's Northern Arab and the British to establish a base from which to launch actions against Ma'an and eventually Damascus. This prompted a crisis for the Ottoman army commanders who, with the help of German advisors rapidly began to fortify and defend the landscape along the Hejaz Railway between Ma'an and Mudawwara. This paper explores the archaeology of the Ottoman defences along the Hejaz Railway to the south of Ma'an. Using historic aerial reconnaissance and modern aerial photography, archive material combined with satellite imagery and field work the paper identifies distinct categories of features and proposes a chronology for their construction. These features are central to the Arab and British actions to disrupt the Hejaz Railway and the attempted capture of the Ottoman garrison at Ma'an. They are an example of an immediate response to a crisis of increased threat against the Ottoman garrison at Ma'an. They represent the last Ottoman defensive systems to be built before the fall of the empire and played a role in the formation of what was to become the modern state of Jordan. They are some of the best-preserved landscapes of the Arab Revolt and First World War period.

Keywords: Ma'an, Hejaz Railway, Landscapes, Arab Revolt, Late Ottoman

EARLY MIDDLE PALAEOLITHIC SITES FROM JORDAN AND THEIR CONTRIBUTION IN UNDERSTANDING OF A LAMINAR PHENOMENON IN THE LEVANT

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In Jordan, a blade industry relating to the Early Middle Palaeolithic (EMP) has been documented in the Azraq, Tell Khanasiri regions and at the Ain Difla site. The collected evidence seems to confirm results from other areas of the Near East that the EMP of the region comprises variable technological traditions, which coincide within the same geographical and chronological ranges. Blades are the most distinctive product of these. The recent discovery by a joint Jordanian-Swiss research team of the University of Basel, Jordan University and Yarmouk University of EMP occupations in the Jordan Valley during surveys carried out in the upper reaches between the Yarmouk River and Deir Alla, shed new light on settlement dynamics in this region, which was a possible route to the arid interior of the Levant. The newly discovered spots can be qualified as factory sites, where blanks were mass produced. The typical tools and retouched blades are infrequent. But the particular débitage system seems to be similar to the Hummalian production strategy recognized at the Hummal site in Syria. The main workshop areas are in the direct vicinity of the raw material outcrops. The previously discovered EMP sites together with new discoveries in the Jordan Valley with such rich EMP assemblages allow us to further the discussion on the origin of the variability between the lithic assemblages from this period. Furthermore, the settlement dynamics and subsistence strategies of EMP humans can be also discussed.

Keywords: Early Middle Paleolithic blade industry; Hummalian; settlement dynamic; Jordan Valley.

THE FLOW OF PEOPLES, ARTIFACTS AND IDEAS THROUGH JALUL

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This paper will explore the theme of the conference—the flow of peoples, artifacts and ideas in the context of cultural crises—from the vantage point of one site—Jalul. Excavations at Tall Jalul during the last 25 years, a major site located at a key crossroad site in the center of the Madaba Plains Region, have revealed evidence for major cultural transformations throughout its history from the end of the Late Bronze Age down to the Persian period (and beyond). Particularly interesting is the evidence—material and epigraphic—of the appearance of different cultural entities that seem to have dominated Jalul at different times in its history. This evidence points to Israelite, Moabite and Ammonite during the Iron Ages. Evidence for other people groups and cultures appear in the later periods (Greek, Roman, Muslim). Not surprisingly, the evidence for material cultural changes at Jalul often coincide with evidence of manmade destruction—yet at times, other changes appear to be more gradual and/or natural—perhaps by disease or earthquake. The appearance at Jalul of these various cultural elements through time raises interesting questions—do the material culture manifestations that are seen reflect actual new people groups at Jalul or do they simply reflect the dominance of an external influence on the local population (imperial or dominant local polity). Or are both phenomena represented at different times? And how do the local manifestations of changing cultural influence tie in with larger, regional crises and change through time? This paper will address these questions.

THE ROLE OF THE DIRECTORATE OF INTERNAL MONITORING IN PRESERVING THE CULTURAL HERITAGE

Ahmad Yousef
Department of Antiquities of Jordan

Internal Monitoring Directorate at the Department of Antiquities is the administrative and technical arm of the Department that helps in achieving its objectives and applying its general vision and strategy in protection the cultural heritage of Jordan.

Its Duties can be summarized as follows:

- Ensuring that the tasks and duties are carried out in accordance with laws, regulations and instructions.
- Essentially ensuring the validity and fairness of all procedures that the department are following and implementing all within the laws and regulations.
- Periodic review of the plans and compare with the Department strategy and ensure the integrity of the results and give feedback to the Department.
- Ensuring the adequate experience of the employees and staff.

Keywords: Internal Monitoring Directorate, DoA strategy

PALEOLITHIC OF SOUTHERN JORDAN AS REFLECTED BY INVENTORIES FROM THE SITE OF FAYSALIYYA (SHAWBAK DIRECTORATE)

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Jagiellonian University in Krakow

Marek Nowak
Jagiellonian University in Krakow

Michał Wasilewski
Jagiellonian University in Krakow

Barbara Witkowska
Jagiellonian University in Krakow

The aim of the presentation is to set forth new data on Paleolithic period, obtained during investigations at the site of Faysaliyya, conducted within the Polish Archaeological Project (HLC Project), in the years 2017-2018. These data will be analyzed against the extensive background of Paleolithic findings from the southern Levant. During investigations, a total of over 7,000 stone artefacts were recorded. Approx. 60% of them come from excavation units, while the remaining ones were selectively collected on surface. Artefacts were made of local raw materials – mostly of chert of a brown-beige colour. Analysis of this inventory showed that it contains many pieces that are not distinctive chronologically and culturally. On the other hand, there are also some diagnostic forms that can be attributed to several different chronological horizons. The earliest finds are Acheulian handaxes, collected on surface. Morphological features indicate that they can be referred either to the Middle and Late Acheulean or to the Late Acheulean exclusively. They demonstrate a significant similarity to other collections from south-western Jordan, such as Fjaje and Wadi Qalkha. The next chronological horizon is connected with the Middle Paleolithic. A distinctive group consists of specimens associated with the use of the Levallois technique, some discoidal cores and some flake, single-platform cores, not to mention a large number of scrapers and notched / denticulated tools. This group reveals features which suggest that remains of the Middle Paleolithic in Faysaliyya are associated with the Levantine Mousterian. There are also lithics which can be dated to the Epipaleolithic. Among them, single-platform, conical and pyramidal, bladelet cores were registered as well as very regular bladelets. Fragments of microliths (backed bladelets or rectangles) should also be mentioned. In the presentation we will also discuss the problem of research on multicultural, open sites, containing numerous chipped artefacts that do not occur in stratigraphic arrangements ("palimpsest" sites), what is exemplified by the site of Faysaliyya.

Keywords: Paleolithic, chert, flint tools, lithics, southern Jordan

NORTHERN JORDAN FROM THE AIR: LANDSCAPE CHANGE IN THE MOHAFAZHAT OF IRBID, AJLUN AND JARASH OVER THE LAST 100 YEARS

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Michael Fradley
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This paper draws upon a large number of collections of aerial photographs, including a hitherto unpublished early set from 1930-1, and satellite imagery to reconstruct major aspects of the archaeological landscapes of north-western Jordan. This includes traces of the road network linking the Decapolis cities, water management infrastructure and field patterns, making up an archaeological landscape which, even in Antiquity, was among the most densely populated parts of the country. This paper will then assess the major, long-term disturbances which have affected the rich cultural heritage landscapes of north-western Jordan. The major sources used to reconstruct the changing landscape of northern Jordan are a range historical aerial photographs dating to the First World War; a newly-identified photographic mapping survey conducted in 1930-1 in the eastern Jordan Valley which have left a near-complete aerial coverage of the area from the wadi Zarqa to the Yarmouk; the Hunting Aerial Survey imagery conducted in 1953-4; KH-4 Corona satellite imagery (1967-1972); Landsat 5-7 imagery (1980s-2000s); and recent, high-resolution satellite imagery covering the last 15 years. Using these sources, the paper will provide a detailed model of assessing the archaeological impact of long-term landscape change in Jordan, and contextualise issues in this area within the surrounding Levantine and desert regions.

Keywords: Landscape; Satellite Imagery; Google Earth Engine; Aerial Photography; Heritage Management

ORIENTALISM IN THE ARCHAEOLOGY OF BILĀD ASH-SHĀM AND THE PROBLEMATIC OF LOCAL INHERITANCE IN URBAN SPACES PLANNING

Afaf Zeyadeh
The Department of Antiquities of Jordan

The paper aims at revealing the impact of orientalist suppositions in the archaeology of Bilād ash-Shām. Planning of urban spaces will be the problematic domain of study to show how those suppositions played a vital role in the exclusion of local identities. The archaeological literature, with orientalist inspiration, used to affiliate the orthogonal style of city planning to a Greek origin labeled as Hippodamian (referred to the architect Hippodamus), which is used without drawing attention to the historical precedence of the orderly orthogonal plan in many cities of the ancient Near East including

Bilād ash-Shām. In this context, the paper concerns detecting the historical presence of the orthogonal plan in Bilād ash-Shām before the classical periods. The question arises here is whether we can follow the local continuity in practices/inheritances in urban planning prior to the impact of the classical city's model supposed by scholars. To answer, the research will dismantle the orientalist model by conducting a preliminary approximation to positioning the local planning practices in their geographical and synchronizing contexts. The study reveals that the era of the emergence of cities in Bilād ash-Shām had witnessed examples of orthogonal plan preceding the classical Hippodamian style for at least two millennia, and that a wide geographical region, including Bilād ash-Shām, Mesopotamia, and ancient Egypt, shows many examples of orthogonal plan date to the Bronze and Iron Ages as well as to the Persian period.

Keywords: Orientalism, Hippodamian, orthogonal plan

Workshop abstracts

1. SCHEP

SUSTAINABLE CULTURAL HERITAGE THROUGH ENGAGEMENT OF LOCAL COMMUNITIES PROJECT

Nizar Al Adarbeh, Jihad Haron, and Jack Green

This panel-based session provides an overview of the USAID Sustainable Cultural Heritage Through Engagement of Local Communities Project (SCHEP), implemented by the American Center of Oriental Research (ACOR). USAID SCHEP has developed a number of innovative approaches to cultural heritage through the engagement of local communities over the past four years. A special focus will be made on community engagement and site stewardship models, which have been integral to SCHEP and its activities at sites in Jordan. Through a focus on four case studies SCHEP sites, including Umm el-Jimal, Wadi Ramm, Madaba Regional Archaeological Museum Project, and the Temple of the Winged Lions CRM Initiative, this session will present an overview of the key aspects of SCHEP and its key achievements, including its role in training and capacity building, job creation, community and stakeholder engagement, site conservation and interpretation, educational awareness, and the development of sustainable tourism and economic opportunities within local communities. A series of panelists and co-panelists will present on each case study, with questions and discussion following. A key aim of the session will be to raise awareness of the project and to review its successes and challenges for the benefit of future projects. This session will also be used as an opportunity to share information about the continued work of SCHEP in Jordan.

THE SCHEP COMMUNITY ENGAGEMENT MODEL

Nizar Al Adarbeh

American Center of Oriental Research / SCHEP

Jordan hosts a vast number of archaeological sites that are important cultural heritage resources (CHRs) for the country. These CHRs could have substantial tourism appeal if properly developed using a sustainable preservation model that ensures their viability as long-term resources for Jordan. Implemented by the ACOR, the USAID Sustainable Cultural Heritage Through Engagement of Local Communities Project (SCHEP) aims to enable local communities to preserve and promote cultural heritage resources through site development projects that engage and employ local communities in sustainable site preservation, management, and promotion. Based on its funded field projects across Jordan SCHEP was successful with its partners to demonstrate the substantial benefit of community engagement in nine pilot project CHR sites including Ghawr as-Safi (Karak), Busayra (Tafila), Umm al-Jimal (Mafraq), Bir Madhkur (Wadi Araba), the Temple of the Winged Lions (Petra), Bayt Ra's (Irbid), Wadi Ramm, Ayla (Aqaba), and Madaba. SCHEP developed its community engagement model based on grassroots empowerment of local communities from different age groups in participating in different site preservation interventions, tourism development and awareness activities. SCHEP offered many job opportunities and hands-on capacity building programs for local communities, supported establishing CHR community-based enterprises, and worked with the Department of Antiquities, Petra Development and Tourism Region Authority, and the Aqaba Special Economic Zone Authority to mainstream and strengthen the important role of communities in preserving cultural heritage and in fostering their creative and intellectual engagement with Jordan's past. This paper will present the overall SCHEP community engagement model and the different levels and approaches of engagement in cultural heritage preservation and development. This model is intended to be discussed during this session and to benefit from the feedback and discussion drawing on the case studies presented.

COMMUNITY ENGAGEMENT IN DOWNTOWN MADABA. THE MADABA REGIONAL ARCHAEOLOGICAL MUSEUM PROJECT (MRAMP)

Douglas R. Clark

La Sierra University

Marta D'Andrea

La Sapienza, Università di Roma

As a constituent part of the USAID SCHEP initiative in Jordan implemented by ACOR, the Madaba Regional Archaeological Museum Project (MRAMP), an international American (La Sierra and Gannon Universities)-Italian (Perugia and Sapienza Universities)-Jordanian (Madaba DoA) endeavor, has focused on the public nature of the project and the range of stakeholders involved. Given the value to cultural heritage preservation of involving multiple publics, especially local entities and populations, MRAMP has attempted to be as comprehensive and complete as possible in engaging a maximum number of such communities. Among the stakeholder groups are policy makers (local, regional, national, and global governmental entities); business support organizations in tourism and business; local businesses; academic research institutions (local, national, and international) and regional archaeological projects; private and public organizations; educational entities (elementary, secondary, and tertiary); religious organizations; media outlets; local citizens of Madaba, including descendants of the original nineteen families immigrating from Karak to Madaba in the 1880s. Of these stakeholders, this presentation will focus primarily on the contributions of architecture students from three Jordanian universities (University of Jordan; Hashemite University, and American University of Madaba [AUM]), with special emphasis on a collaborative internship program for AUM students involving the students, our Site Steward, the university administration and architecture faculty, Studio Strati (our architectural establishment in Rome), MRAMP, and SCHEP. In this way, we hope to explore a number of community dynamics crucial to the success of MRAMP and its fundamental commitment to protect and preserve Jordan's considerable cultural legacy.

Keywords: Community archaeology, stakeholders, public archaeology

SIGNAGE MANUFACTURE AT UMM EL-JIMAL: A COMMUNITY-BASED MICROBUSINESS FOR VANDALISM-RESISTANT INSTALLATIONS

Bert de Vries
Calvin College

The Umm el-Jimal SCHEP project has focused on community participation in site presentation and management. To achieve a long-term cost-effective operation the Hand-by-Hand Heritage Corporation was established to manage several locally owned and operated micro-businesses, each focusing on a discreet archaeological activity or service. One of these is signage development, which has the goal of implementing signage design and production entirely with local Umm el-Jimal staff and resources. Its first assignment was the creation of signs for 33 points of interest along an interpretive trail linking the West Entry to the Interpretive and Hospitality Center. However, after their installation in the summer of 2016, the first twenty signs were rendered useless by spring of 2018 from systematic vandalism unchecked by the site's security guards. As a result, in the 2018 phase of SCHEP funding, before developing the additional 13 signs to complete the set of 33, we began with a complete redesign and rebuilding of the first twenty signs, with improved frame design and more durable display components. This experience enabled the development of a vandal-resistant sign, for which the entire process, from graphic design to frame production, assembly and installation is concentrated within the community of Umm el-Jimal, Marketing of this product to other sites has begun. No sign can be completely vandal-proof, but site security can be improved. To deal with this related issue we have proposed that responsibility for guarding the site become a privatized community-based service operated by Hand-by-Hand Heritage Corporation as another of its micro-businesses.

Keywords: Signage Design and Production, Community Archaeology, Shared Heritage, Vandalism, Micro-business

EMERGENCY CONSERVATION AND COMMUNITY TRAINING AT THE TEMPLE OF THE WINGED LIONS, PETRA

Jack Green
ACOR

Franco Sciorilli
Restoration Team, Studium Biblicum Franciscanum

The Temple of the Winged Lions Cultural Resource Management (TWLCRM) Initiative, implemented by ACOR, has carried out extensive efforts in excavation and documentation, site conservation, site safety and interpretation, and educational awareness from the time of its beginnings in 2009. The most recent phase of activities at the site

supported by USAID SCHEP in 2017 and 2018 has enabled the Initiative to complete vital emergency conservation of the Temple Cella and the Southwest Quadrant, as well as backfill key areas to help preserve the site for years to come. The conservation work in the Cella included the provision of a mortar capping for the podium of the temple, backfilling the cella to enable improved drainage, and the bracing of leaning columns. Backfilling and mortaring in the SW Quadrant has helped to buttress and stabilize the rubble slope and temple podium, and provide improved drainage that will improve water run-off from the site. An important element of the conservation effort has been the hands-on training of local TWLCRM team members and staff of the PDTRA within the Petra Archaeological Park, among others, during the project, enabling the transfer of knowledge, skills, and best practices. This in turn provides potential for new or enhanced employment opportunities for those who have received such training. In addition, through SCHEP's educational awareness program, TWLCRM team members have played a vital role in sharing the message of site conservation and preservation through hands on activities with almost 300 Jordanian school children as well as multiple tourist groups. Another important aspect of the project has been the preparation of site pathways and signage that makes the site safe and more accessible to visitors, as well as sharing the message of preservation. In this presentation, in addition to sharing the achievements and outcomes of the project, we intend to share our experience (and lessons learned) of training and education as a key element of any site conservation and management project, for local partners, local community members, and visitors.

Keywords: Cultural Heritage, Community archaeology, Site Conservation, Heritage Training, Public Education

THE ROCK-ART RANGERS PROGRAM: ENHANCING TOURISM AND IMPROVING EMPLOYMENT OUTCOMES IN WADI RUM

Kaelin Groom
Arizona State University

Casey Allen
University of the West Indies

George Bevan
Queen's University

In 2017, the Community-Based Rock-Art and Epigraphic Recording (CB-RAER) Project, funded through the USAID-SCHEP program, completed several interrelated goals in the Wadi Rum Protected Area (WRPA). Besides providing an effective monitoring program for this World Heritage site via smartphone-based GIS data-collection using the Rock-Art Stability Index (RASI), the project combined Jordanian and foreign CB-RAER team leaders' expertise with data gathered during field surveys to create the Rock-Art Rangers (RAR) program, expanding local guides' knowledge and skillsets. To this end, 25 tour guides drawn from Rum Village itself and neighbouring villages participated in a workshop run by the CB-RAER core team in December 2017. Of these 25, fifteen of the most committed were selected to participate in the official three-month Rock Art Rangers program, during which time they learned about the geology, geography, rock-art, and epigraphy of Wadi Rum, and subsequently use this knowledge to create new rock-art tours in and around the WRPA. Upon successful completion of this program, tour guides were accredited as Rock-Art Rangers and as guides qualified to offer enhanced tours that focus on the region's rock-art heritage. As more tourists seek out new experiences in Wadi Rum that go beyond its spectacular natural heritage, we believe that this RAR accreditation will become ever more important for local guides.

Keywords: Wadi Rum, Rock-Art, Epigraphy, Thamudic, Rock-Art Stability Index, Tourism

THE SITE STEWARDSHIP MODEL

Jehad Haron
American Center of Oriental Research / SCHEP

In this paper I will present our experience as part of the USAID Sustainable Cultural Heritage Through Engagement of Local Communities Project (SCHEP) in developing the site stewards model. This model has been applied in some countries of the world in different engagement levels. The site stewards play a critical role as part of SCHEP because of their continuous presence and engagement at the local community level. While site stewards fulfill roles and

duties that are specific to their respective sites, all stewards work towards the overall goals of protecting, preserving, and promoting SCHEP sites in their host communities. Under the employment of SCHEP, the sub-grantee's project directors and in coordination with the SCHEP team, Site Stewards fulfill the aims of both local sub-grantee projects and broader SCHEP objectives. With support from their project directors and the SCHEP team, site stewards are entrusted with protecting CHRs for future generations. So far SCHEP was successful in recruiting 15 site stewards among the nine project sites. Various capacity building courses has been customized to fulfill the needs of the site stewards to build up their capabilities and ensure knowledge transfer. Our experience has shown that there were many challenges related to the nature of communities, laws and regulations in terms of the governmental adaptation of this model. In conclusion, we believe that this model will have a positive impact on the protection of archaeological sites. My presentation will open up discussion about both the challenges and value of the site steward model in Jordan

Keywords: site steward, host community, SCHEP

2. EAMENA

ENDANGERED ARCHAEOLOGY IN THE MIDDLE EAST AND NORTH AFRICA (EAMENA): CULTURE IN CRISIS - THE ROLE OF DIGITAL DOCUMENTATION IN HERITAGE PROTECTION AND MANAGEMENT

The EAMENA project uses remote sensing to identify, document and monitor the state of archaeological sites and records this information in a freely available database. The aim of this panel is to exchange knowledge, information and expertise on the role of heritage documentation and the use of modern technologies for better protection and preservation of cultural heritage.

The panel will explore:

- How effective existing digital documentation projects are in the protection of heritage in Jordan?
- What are the challenges and obstacles for better protection?
- Is the legal framework adequate?
- What are the next steps?

Workshop programme:

Introductory Speeches:

Dr. Robert Bewley

"Culture in Crisis and EAMENA – current state of archaeology in Jordan with a brief introduction to the workshop and EAMENA project"

Dr. Bijan Rouhani

"Capacity building in digital documentation to strengthen heritage protection – The role of EAMENA"

Dr. Morag Kersel

"Looting and illicit trade in antiquities"

Panel Discussion – Moderator: Dr. Robert Bewley:

List of Participants:

- Dr. Ziad Alsaad – Yarmouk University
- Mr. Yazid Elayan – DoA (Mr. Yazid has appointed Ahmad Laash, head of external cooperation to attend the Panel)
- Ms. Samar Habahbeh – DoA
- Mr. Jihad Haron – SCHEP
- Dr. Jutta Häser – GPIA / DOGAM
- Dr. Monther Jamhawi
- Dr. Morag Kersel – DePaul University
- Dr. Carol Palmer – CBRL

Note: Ms. Dana Salamin will facilitate the translation if needed.

3. BAYT RAS

THE NEW DISCOVERY OF THE BAYT RAS TOMB

Jehad Haron

Bayt Ras Tomb Project in Irbid is one of nine projects supported by USAID SCHEP throughout Jordan. USAID SCHEP has been working at the site since April 2017 under the leadership of the Department of Antiquities supported by international consortium members consists of distinguish scholars from France and Italy. The project trained many staff members from the Department of Antiquities, graduate students, and local community members in conserving and documenting mural painting. The workshop aims to present the initial results from this outstanding discovery through brief presentations from the consortium members showing all the scientific stages and achievements.

CONSORTIUM BUILDING AS A MODEL OF COOPERATION

Nizar Al Adarbeh
American Center of Oriental Research / SCHEP

Since the coincident exceptional discovery of the Bayt Ras Tomb during late November 2016, ACOR worked under SCHEP to formulate an international consortium to help the DOA in managing the needed complex interventions in the tomb at all levels. SCHEP was successful in bringing together a group of professional international and national institutes renowned on their remarkable work in heritage preservation in Jordan and the region. The consortium members were subsequently expanded to include new institutes to cover the different components of the project. Such a project needs a new approach combining a myriad of expertise in a dynamic collaborative management structure. The consortium approach revealed the full potential of using a holistic approach to addressing the compelling needs in heritage preservation and management in a project context in addition to implementing an adaptive management framework to respond to evolving situations. This paper will highlight this new approach and lessons learned in the process of Bayt Ras project consortium building. SCHEP believes that this pioneered model would present a new solution to the capacity constraints and more effectively carry out cultural heritage-related projects in Jordan.

THE "FOUNDER'S TOMB": THE NEW PAINTED HYPOGAEUM OF BAYT RAS AND THE CIVIC FOUNDATION OF CAPITOLIAS

Julien Aliquot
CNRS

Pierre-Louis Gatier
CNRS – Université Lyon 2

Jean-Baptiste Yon
CNR

This paper will focus on the nearly sixty Greek and Aramaic painted inscriptions examined in 2017–2018 in the newly found Roman tomb at Bayt Ras, as part of the work of the consortium led by SCHEP, to understand their relationship to the numerous images visible inside the burial chamber. The paintings covering the walls of the hypogaeum indeed compose an unprecedented narrative. On either side of the central scene where a priest offers a sacrifice to the deities of the city of Capitolias (Jupiter Capitolinus and the Fortune of Capitolias) and the capital of Provincia Judaea (the Fortune of Caesarea Maritima), five large panels consecutively show (from left to right from the entrance) the consultation of the gods at the banquet, a country landscape, the clearing of the site with the help of the gods, the building of a rampart, and a final sacrifice in honor of the city's guardian deities. By comparing the Greek and Aramaic epigraphic material to the historical analysis of this highly sophisticated program, we will demonstrate that the hypogaeum of Bayt Ras illustrates the foundation myth of the city of Capitolias at the end of the first century AD.

Keywords: Capitolias, Provincia Judaea, civic foundation, Greek epigraphy, Aramaic language

BAYT RAS TOMB

Amjad Bataineh

Department of Antiquities of Jordan

Bayt Ras Tomb has been discovered by IRBID DOA office at the end of 2016, through construction activities for sewage system in the village. Due to the rarity of the discovery we decided to close the cave in order to protect the mural paintings from weather conditions, in addition to the of lack of experts in mural paintings conservation in Jordan.

In 2017 consortium was formed under the supervision of USAID SCHEP, the tomb was re-opened in April, 2018. The main protection stages which were considered in our work plan are:

1. Reinforcement works through installing steel scaffolding inside the tomb.
2. Fencing the important areas and providing the site by two caravans for technical and administrative issues.
3. We designed preventive shelter which is located on the main entrance of the tomb to control the environmental changes inside the tomb.

BAYT RAS TOMB 2016: FIRST CHRONOLOGICAL ASSESSMENT OF THE VARIOUS USES OF THE BAYT RAS TOMB

Soizik Bechetoille

IFPO - French Institut of Near East

This paper tackles the first phase of a project, started in 2017, that aims at documenting the recently found Roman tombs at Bayt Ras. The project is part of the program led by consortium led by SCHEP. In addition to highlighting the challenges posed the interpretation of the tombs' hypogeous and frescos, this paper will focus on the excavation carried by an international team of archeologists and anthropologists in september 2018.

The team was composed by 7 researchers:

Dr. Jean-Sylvain Caillou, archaeologist (Ifpo associate researcher) Head of the operation Soizik Bechetoille-Kaczorowski, Architect (Ifpo researcher)

Dr. Chiara Fornace, Archaeologist (University of Roma)

Dr. Joyce Nassar, anthropologist, (Ifpo associate researcher)

Dr. Lucie Bidouze, anthropologist (University of Aix-Marseille)

Aven Al-Qatameen, anthropologist (Yarmouk University)

Lucie Duvignac, archaeologist (University of Poitiers/Ifpo fellow scholarship)

The first phase of excavation provided clues to understand visible successive phases of usage of the burial chamber. The excavation work done in the 2 arcosolia chambers and inside the sarcophagus helped us understand the use and re-use of the space over time. The basalt sarcophagus in the tomb was also studied in detail.

While the early results lead to new questions, four phases of the tombs' were clearly identified. This paper will try to demonstrate that during the first phase (the frescos), the hypogeum was probably not a grave but rather a funeral banquet hall / hestiatorion.

Keywords: Capitolias, burial chamber, occupation phases, hestiatorion

GEOPHYSICAL AND GEOTECHNICAL INVESTIGATION FOR SUSTAINABLE CONSERVATION OF THE ROMAN PAINTED TOMB IN BAYT RAS

Giuseppe Delmonaco

ISPRA - Geological Survey of Italy

Luca Maria Puzzilli

ISPRA - Geological Survey of Italy

Francesco Traversa

ISPRA - Geological Survey of Italy

A coupled geophysical investigation with a Ground-Penetrating Radar (GPR) and geotechnical non-destructive techniques Geophysical were conducted in two distinct campaigns in April and July 2017 after the discovering of the Roman painted tomb in Bayt Ras (Jordan). The investigation was mainly focused inside and around the tomb and in surrounding sites (elementary school and Roman theatre) were investigated in order to: (a) detect potential

underground structures around the recently discovered cavity and in the neighboring areas; (b) reconstruct the geological and geotechnical characteristics of the site, (c) set up a stability modeling of the tomb structure and; (d) provide recommendations and advices to local authorities for the safe conservation of the tomb also in the perspective of a future tourist scopes. A total area of 3,000 m² was investigated with 87 GPR survey lines for a total length of ca. 2,900 m. In the area of the tomb, no other evidence of underground structures was found. GPR survey executed in the schoolyard area provided evidence of potential underground structures to be further investigated. 2D profiles and 3D analysis have been implemented with indication of major anomalies found. A geological section of the tomb area was reconstructed through coupled GPR survey and direct geological investigation. A SW-NE profile with lithological sequence and hypothesis of ancient morphology and location of the dromos was presented. A geostructural and geotechnical investigation conducted in the tomb has evidenced presence of different joints systems in the E sector near the original entrance. Active and progressive straining process is evident. Geotechnical parameters of the limestone materials have been assessed through site investigation. Application of distinct Rock Mass Classification (RMC) systems provide a geotechnical condition of the limestone materials as poor especially in the E sector of the tomb. The W side present a more stable and better geotechnical conditions of the limestone rock. RMCs suggest implementation of reinforcement to improve stability conditions. A geotechnical analysis of a set of potential trenches was carried out and a set of design plans were proposed in support of archaeologists for further excavation of the entrance area of the tomb. A geostructural model was implemented. According to the shape of the cavity, the results of the structural analysis has provided stress-strain conditions that can lead to instability in case of sudden unload of material and/or straining in time due to progressive displacement of sub-vertical main joints. The presence of water in the upper soil material provide a decrease of stability. The limestone forming the ceiling is actually working as a beam-like support with a typical flexural behavior, very sensitive to load/unload up and around the structure. The main recommendations provided deals with urgent and long-term actions such as: (i) provide a temporary support to the ceiling in the E sector with reinforcement of the door lintel; (ii) install a monitoring system to assess displacement of largest cracks; (iii) execute backfilling and impermeabilization of the tomb area; (iv) divert superficial waters flowing from the N side of the road; (v) design and implement structural reinforcement of the top soils and limestone ceiling and E side of the tomb; (vi) carry out further indirect and direct investigation of the underground structures found in the surrounding areas.

BAYT RAS IN ARABIC RESOURCES

Jehad Haron

American Center of Oriental Research / SCHEP

Ahmad Lash

Department of Antiquities of Jordan

The recent city of Bayt Ras built on the old Capotelyas one of the Roman Decapolis cities. The Arabic historian and geographers mentioned Bayt Ras in their records as a rural city in the southern part of the Levant (Belad esSham) famous for agricultural crops such; grapes and olives, in addition to wine production as mentioned in many Arabic poems. In my presentation we will mention the most important sources and references that mentioned the city starting from the Umayyad period. The importance of our study is to identify the role of the city after the Roman period through analyzing the different Arabic resources and find out linkage or continued traditions related to architecture or life style between Roman, Byzantine and the early Islamic period.

Key words: Levant, Umayyad

CONSERVATION ACTIVITY IN BEIT RAS

Marie José Mano

ISCR – Istituto Superiore Conservazione e Restauro

Giorgio Sobrà

ISCR – Istituto Superiore Conservazione e Restauro

Since the very first weeks after the exceptional discovery in Beit Ras, the Higher Institute for Conservation and Restoration - ISCR - has been charged of the delicate operations for the conservation of the hypogeal structure. What

worried the most the members of the consortium was to preserve the outstanding mural-paintings decorating the walls and the ceiling of the tomb. After the first survey held by ISCR team in May 2018, aimed at compiling a detailed condition assessment, the actual worksite started in July. The worksite was aimed both at putting in safe the mural-paintings before any other action could take place, and at verifying and assuring the stability of the inner microclimate conditions. From the beginning the works were also the occasion to train professionals, selected from DOA and ACOR, in the conservation techniques for the mural-paintings. This capacity building activity found its apex in the workshop held on site in September, which has involved several Jordanian archaeologist and conservators, and was focused on increasing the awareness on the issues connected in the preservation of hypogeal archaeological structures.

THE BAYT RAS PAINTED TOMB (2016) THROUGH THE ONGOING ARCHAEOLOGICAL DOCUMENTATION

Claude Vibert-Guigue
National Center for Scientific Research - CNRS

The paper focuses on the graphic and photographic archaeological documentation work carried out by the CNRS since 2016 on the amazing iconography found in the new Bayt Ras tomb, thanks to the DOA and the international consortium. The challenge consists to observe and record what is clearly comprehensible or half-visible in the paintings, including fragments carefully collected. Line hand drawings explore each part of an 18 meters long narrative frieze, four panels and the Nereids seascape around a circular zodiacal composition on the ceiling. They show either the painting remains or the alterations, or both thanks to transparent sheets. Prints are colored with pencil and brought back into the tomb for more observations. Centimeters by centimeters, we go deeply into the details of the paintings and inscriptions. Almost 266 figures have been inventoried, but considering the missing parts, more than 300 have been depicted at different scales. The inscriptions are drawn on computer to get an accurate result. Except a white dado, colored shades in the background separate around one hundred scenes. A catalog (numbering surfaces, scenes and figures) will help the phases of analysis and interpretation. The goal is to provide to the scientific community and public readers a complete contextual, iconographical and epigraphical survey of this rock cut tomb, different by many aspects from the regional typology.

Key words: Bayt Ras, painted tomb, drawings, photographs, catalogue, iconography, epigraphy

Poster Abstracts

NEW MATHEMATICAL AND ARTISTIC APPROACH TO THE UNDERSTANDING OF THE FACADE OF AL- MUSHATTA PALACE

Sereen Al Shoubaki
Independent Researcher

This poster intends to clarify the early Islamic motifs and decoration designs in al-Mushatta palace, it will partly certain artistic elements in it, by showing a new geometric analysis of the façade decoration, designed by the presenter of the poster herself. Islamic art can be categorized into the following motifs: geometry, Calligraphy, plants and animals. These motifs were used by many ancient civilizations and they were applied in pottery, wall paintings, stones ... etc.

Application of geometric analysis:

Geometry is concerned with the division of spaces into systematic areas. Triangles were mainly used to divide the wall with circle rosette, the circle controlled all these shapes. It is even divided into hexagon or octagon as the photos analyzing the façade decoration show. The design relies mainly on the repeating of circles, spirals, and vesica, this shows ingenuity in controlling different shapes in the same space. Modulation of the geometric. How artist changed lines into curves. Geometric ratios and inspiration from nature. Golden ratio is the connection between mathematics and art. In Mathematics it equals 1.618, but in geometry it is formed by using the principle of intersection between two circles producing many ratios: $\sqrt{2}$, $\sqrt{3}$, $\sqrt{4}$, ϕ . And that helped me to establish artistic school in Jordan

Keywords: Al-Mushatta Palace, façade, Geometry

THE RITUAL LANDSCAPE OF MURAYGHAT: THE EBA AND MBA CERAMIC ASSEMBLAGES FROM THE 2014-2018 EXCAVATIONS

Ann Andersson
University of Copenhagen

This poster presents the results of the ceramic analyses of the 2014-2018 excavation seasons of the project The Ritual Landscape of Murayghat (directed by Dr. Susanne Kerner, University of Copenhagen). Murayghat is known for its extensive Early Bronze Age (3600-2000 B.C.) dolmen field and its large standing stone called the Hajr al- Mansub, but the recent excavations by University of Copenhagen have also uncovered Early Bronze Age and Middle Bronze Age (2000-1500 B.C.) architecture at the site. Since dolmens are extremely visible in the landscape and are commonly associated with mortuary practices, the site has long been recognized as a cultic center of the EBA. The discovery of MBA material culture demonstrates a longer history of settlement than previously identified. The material culture excavated suggests that Murayghat was still an important center of the Madaba region during the MBA, although the nature of this settlement is yet to be fully understood. The resettlement of the site in the MBA period may point to a reuse of the EBA ritual landscape. The analysis of the ceramic material examines the EBA and the MBA material in order to investigate the changing ceramic traditions at the site and the chronological implications, through fabrics, forms and decoration techniques. The analysis presented will also consider the socio-religious status of the site in the EBA and will seek to investigate the function of the Murayghat settlement in the MBA period. Furthermore, the ceramic analysis aims to situate the Murayghat EBA and MBA assemblage in a regional perspective.

Keywords: Murayghat, Ritual Landscape, Ceramics, Early Bronze Age, Middle Bronze Age

ROCK DWELLINGS IN THE SHOWBAK CASTLE AREA

Ezio Burri
CNR, Istituto di Metodologie Chimiche

Andrea Del Bon
Qanat Project, Roma

Pasquale Di Paolo

Terredimezzo srl - Campobasso

Angelo Ferrari
CNR, Istituto di Metodologie Chimiche

Massimo Mancini
Università del Molise, Campobasso

Marco Meneghini
Società Speleologica Nazionale, Trento

Pietro Ragni
CNR, Istituto di Metodologie Chimiche

Showbak Castle Hill and the surrounding area favored the development of various natural caves. Many of these caves have been expanded and renovated by human activities, and their use lasted for a long time.

Near these structures there is the presence of extensive terracing systems, of various shapes and sizes, still used.

In the considered area, five different settlements have been identified:

- a) hill of the castle characterized by three hypogeal structures adapted for burial and, in a specific case, a place of worship with the presence of arcosolium;
- b) hill in front of the castle, called Towr Aba-Ras, with a lot of hypogea for housing, for shelter of flocks and for burials. Outside some buildings for water canals and a burial plant carved into the rock;
- c) settlement called Habis 1 with reconstructed cavities on several levels with burials, engravings and depictions of crosses of Christian origins;
- d) area called Al Jaya, with many epigee structures and cavity adaptations, still used today;
- e) area called Habis 2 near Al Mukairya village. This is the largest settlement and in its interior there are still structures that have been used for a long time.

Keywords: Showbak, Rock dwellings, Jordan

ANCIENT WATER SUPPLY SYSTEMS IN THE MA'AN AREA (SOUTH JORDAN)

Ezio Burri
CNR, Istituto di Metodologie Chimiche

Angelo Ferrari
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During the November 2017 surveys the qanats of southern Jordan have been identified in part, because the area was devastated by the construction of roads, embankments, dams. An interesting qanat is about 4 kilometers south of Udhruh (Tall Abar'ah), near the road to Ma'An. This qanat has three ramifications which flow into one channel, it is probably about five kilometers long. It is not possible to identify the final structure of the channel and not even know its use. The accessory constructions to the qanat have all been destroyed, now you can only see the remains of an ancient mill near the qanat, but it is not certain that in the past it was fed by the waters of qanat. The traces of another qanat can be found on the outskirts of the city of Ma'An, near the soccer field, along a wadi, but even this qanat is only partially visible, due to roadworks and the construction of the wadi banks. For what refers to the collection of rainwater, in the area between Udhruh and Ma'An there is a rectangular tank for collecting rainwater. It measures 25 meters by 12 meters and is protected by a small 50 cm high dam and it has a waterproofed base. The tank has two channels for water distribution, in the past used for agricultural activities. Another tank is located on the eastern outskirts of Ma'An, it measures 60 meters by 60 meters and is 4 meters deep. In the past the water from the cistern flowed towards the city of Ma'An through an artificial little canal. In the past the water from the cistern flowed towards the city of Ma'An through an artificial canal.

Keywords: Qanat, Water, Jordan

BONE TOOLS FROM THE EB IIIB "PALACE OF THE COPPER AXES" AT KHIRBET AL-BATRAWY, JORDAN

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The 2009-2012 seasons of excavations and restorations carried out by Rome "La Sapienza" Expedition to Palestine & Jordan at the site of Khirbet al-Batrawy, in north-central Jordan, were focused on the investigation of the huge palatial building uncovered on the northern flank of the Acropolis. The excavation of the city palace, dated to the Early Bronze IIB and abruptly set on fire around 2300 BC, provided an impressive quantity of items in an extraordinary state of preservation. Along with the special finds retrieved in the halls and storerooms of the palace, first of all the five copper axes which gave the name to this huge building, excavations provided a large and varied assemblage of worked bones and bone tools which testify to a rich bone industry. This study will present a morphological and typological analysis conducted on the assemblage of bone tools from the "Palace of the copper axes", in order to better understand the role of bone industry in the craftsmen activities which took place in the palace. The study of these items also contributed to a deeper and more detailed knowledge of the Early Bronze III city of Khirbet al-Batrawy, shedding light on its economy and craft activities in the most prosperous period of the early urban experience.

Keywords: Khirbet al-Batrawy; Early Bronze Age; bone industry; palace; craftsmanship

EXCAVATING EXTRAORDINARY ARCHIVES: TRANSFORMING ARCHAEOLOGICAL PRACTICE IN JORDAN THROUGH THE LENS OF R. THOMAS SCHAUB'S CORRESPONDENCE FOR THE EXPEDITION TO THE DEAD SEA PLAINS

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In 1973, Tom Schaub, together with his colleague Walt Rast, designed and initiated the interdisciplinary research program of the Expedition to the Dead Sea Plain (EDSP). This project anticipated by two or three decades what has become the standard for archaeological practice by incorporating faunal and human skeletal specialists, a palynologist, paleoethnobotanist, and a geologist. Their ecologically informed, problem-oriented research program echoed and coincided with the heyday of the New Archaeology, and they traced the rise and fall of Early Bronze Age (EBA) walled towns on the southeastern Dead Sea Plain of Jordan by weaving together the archaeological and environmental evidence. In many ways they demonstrated the potential of incorporating new scientific methods into archaeological research projects, and transformed standards and goals of archaeological research in the region by setting an example for scientific excellence. With funding from the Wenner-Gren Anthropological Foundation and the Universities of DePaul and Notre Dame, we are excavating Tom's letters, notes, and files to gain further insights into the historical, social, economic, and political contexts under which he and Walt fundamentally changed the archaeological landscape of EBA studies in Jordan.

Keywords: R. Thomas Schaub; Early Bronze Age Archaeology; Archival Research; Expedition to the Dead Sea Plain; Bab adh-Dhra'; Fufa; Numayra

FROM JADIS TO MEGA-JORDAN

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The Middle East Geodatabase for Jordan Antiquities- MEGA- is a national system for the digital documentation and management of cultural heritage of Jordan. It was built using the Global Signing System (GPS), and the Geographical Information System (GIS). MEGA is a joint collaboration project between the Department of Antiquities of Jordan, the Getty Conservation Institute and the World Monuments Fund. It was launched in 2011. The project aims to build a geographic database of archaeological sites in Jordan, based on an old database known as JADIS, to create an updated registration system of the Jordanian archaeological sites including their boundaries, elements and legal boundaries. MEGA provides the policy makers with the assistance in the developing tourism plans. The aim of this poster is to show

the differences between JADIS and MEGA through showing variance documentation examples of archaeological sites in Jordan. Suggestions to improve the system are presented, including the addition of a new layer to improve the data concerning the mega archaeological parks such as Petra.

Keywords: Jadis, Mega, cultural Heritage of Jordan, Archaeological park

THE CRESWELL ONLINE NETWORK: DOCUMENTING ISLAMIC ARCHITECTURE THROUGH EARLY PHOTOGRAPHY

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The poster will present the Creswell online network, a project organized by five institutions. Keppel Archibald Creswell (1879-1974) was a pioneer in Islamic architectural history who considered photography an essential part of his fieldwork. His publications remain essential in the history of Islamic architecture. During his life he travelled extensively in the Middle East to measure and photograph monuments. He created a unique photo archive documenting monuments and archaeological sites that are now in ruins or have disappeared because of wars or natural disasters. Other monuments have been significantly altered through restoration or adaptation, or have been subject to thefts. These materials are today an invaluable source of knowledge to trace thefts and alterations. The photo archive (40,000 photos) is now divided in five repositories; librarians, IT specialists, and architecture historians from the American University in Cairo, the Ashmolean Museum, the Victoria & Albert Museum, and two Harvard University institutions the Fine Arts Library and Villa I Tatti will collaborate in order to reunite in a single online platform all documentation. The aim is to highlight the importance of early photographic documentation in Jordan, provide online access to these materials, and make them easily discoverable to scholars and conservators by creating linked metadata of exceptional value.

Keywords: Photography, Architecture, Islamic, Creswell, Photo archives

THE REHABILITATION PROJECT OF MADABA CATHEDRAL

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The cathedral is located on the southern slope of Tell Madaba, dated to the sixth century AD. It is one of the largest churches complex in Madaba across the tourism trail of the city. The project aims to rehabilitate and present the site to visitors, starting with evaluation of the site in terms of state of conservation of cathedral structure and mosaic floors, the required intervention works, the previous excavations and dumping of some areas. The rehabilitation plan includes: elaborating of an inventory for all stones and architectural elements scattered on the site to be displayed in front courtyard of the site as gallery, consolidation and light restoration works for walls and mosaic floors, and rebuilding of one column of the cathedral. Finally preparation of an interpretation plan which consists of paths, accesses and interpretative panels and signboards for the cathedral.

In this poster we will present the work stages and the site before and after rehabilitation work.

Keywords: rehabilitation, interpretation plan, dumping, state of conservation

AFFECT OF MAN ON THE ENVIRONMENT: A CASE OF STUDY IN THE AL-KORAH DISTRICT, JORDAN, FROM THE BEGINNING OF THE EARLY BRONZE AGE TO THE BYZANTINE PERIOD

Marzia Marcantonini
Independent Researcher

The poster presents the preliminary results of a study about the use of the methodologies of Landscape Archeology in the Al-Korah District, in Northern Jordan. This particular part of the region is rich thanks to the presence of natural and water resources, which they allowed, since its formation, the exploitation of the land. This has promoted the continuous human

occupation of this interesting grazing area. In the case of study, have been analyzed the distribution of the settlements, the necropolis, the architectural features of the sites and the organization of the urban spaces, from the Early Bronze Age I to the Roman and Byzantine periods. The research considered data coming from past and recent surveys in the District of Al-Korah. The use of the Landscape Archeology have been used to inquire the many aspects of the territory, its morphology, and in particular the fundamental use of satellite images has allowed to delimit the sites in various areas, each with its own features. The analysis of the findings and the aim of the poster is the evolution of the agricultural and pastoral communities in the region. In particular how the cultural heritage of a people is taken into account for its conservation, and the impact of the settlements on the territory, from the IV millennium BC to the VII century AD, through the knowledge of the needs of ancient cities and the development of the land exploitation techniques.

Keywords: Al-Korah District, Landscape Archeology, Evolution, Settlements, Features

AI-BALU' BETWEEN SITE AND PEOPLE

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BALU' (el-Bālūc), is a site located south of Wadi el-Mujib (Biblical Arnon) about 5 km east of Jebel Shihan, in the district of Kerak, in central Jordan, ancient Moab. El-Balu' is the largest Iron Age ruin in the area, where all periods of occupation are represented until Mamluke periods. In this paper I will talk about the local community of Al-Azazmeh tribe and Smakiey people who live close to the site of Balu' during the excavation conducted by the German missions, many stories could be tell about these communities even Aazmeh or Smakiey people, about their traditions, their life style, and the main role they play during the mission and the way they react to work, help, guard, even protect the site. Many interesting stories about these communities and how they insist to a part of the whole work, I will speak about their history, their original region, and how they began to be part of the archaeological community and began to understand the importance of education and Archaeology.

EMPLOYMENT THROUGH HERITAGE PROJECT - EHP

Maria Elena Ronza

Sela

Eman Abdassalam

Sela

With the support of the Drosos Foudation from Switzerland and in collaboration with the Department of Antiquities of Jordan, Sela for Vocational Training and Protection of Cultural Heritage, a Jordanian non for profit company, will launch in the summer of 2018 a new training program (Employment through Heritage Project – EHP) in CRM targeting both university students and youth in the communities living in the surroundings of archaeological and heritage sites in Jordan. Currently host communities' involvement in CRM in Jordan is limited to minimum wage, seasonal jobs which improve or build local capacities only at the most menial level. This project aims at creating an enabling environment for host communities to become active partners in the sustainable preservation of the heritage in their backyards. The proposed poster will showcase the project strategy and the first accomplishments of EHP.

Keywords: Community engagement, Vocational training, Post-colonialism, Sustainable preservation, Formal employment

CHRISTIAN COMMUNITIES IN JORDAN DURING THE FIRST ARAB DOMINATION THROUGH EPIGRAPHIC SOURCES

Valentina Virgili

Pontificio Istituto di Archeologia Cristiana

The speech I would like to present is connected to my PhD thesis, that aims to analyze Christian communities in Israel, Palestine and Jordan from epigraphic data between the 7th century and their final fall. Jordan is a special case, with many

sources about the life of Christian people at the time of the first Arab communities: actually, Christian religion did not suddenly disappear due to Arab invasions -how many ancient texts say- and the inscriptions are the most important proofs about the dioceses organization and the tolerance that Omayyade empire had for Christians. This peaceful coexistence brought to no "total crisis" for Christianity. These data have always been examined in a very partial way: in my speech, I would like to analyse the most important inscriptions that help understanding local Christian communities and their continuity of life. All the information date between 636 to 785 BC and come from dedicatory or votive inscriptions, found in churches and connected to architectural restoration like new mosaics. Some of the epigraphs (Al-Quweismeh; Umm er-Rasas; Ma'in; Ain al-Kanisah) show how Christians communities survive despite the so called "crisis of the 7th-8th century" and after Arab invasion. At the same time, the impact of Omayyade constructions in Jordan just after the conquest is actually pretty poor. This interesting coexistence can be traced until 9th-10th century, when the Abbassid Caliphate completely stopped the policy of religious tolerance and totally change the historical processes in Jordan and the relation between different social groups.

Keywords: Christian communities, Ommayade, epigraphy, mosaics, surviving.

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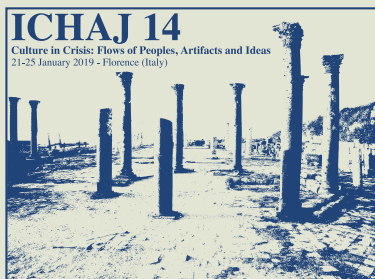
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- 1 **Palazzo Vecchio**
- 2 **San Gallo / Fenzi**
via San Gallo 10
- 3 **Capponi - via Capponi 9**
- 4 **University of Florence**
Rectorate building
piazza San Marco 4
- 5 **Istituto degli Innocenti**
piazza SS. Annunziata 12
- 6 **Teatro della Compagnia**
via Cavour 50/r
- 7 **Train & Tram Station**
Taxi station



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