Under the auspices of

The German Protestant Institute of Archaeology in the Holy Land (DEIAHL) Research Unit of the German Archaeological Institute, Auguste Victoria Compound, Jerusalem

And

The Institute of Archaeology, The Hebrew University of Jerusalem

Mount Scopus Campus
Information about the conference

We are pleased to welcome you to a two-day conference dedicated to the Archaeology of Landscape, to be held under the joint sponsorship of the German Protestant Institute of Archaeology in the Holy Land and the Institute of Archeology of the Hebrew University of Jerusalem at the Mount Scopus campus of HUJI, 1-2 March 2016. Archaeological research in the countries of the eastern Mediterranean basin now encompasses the most advanced methods of acquiring and processing archaeological data, enabling us to study many aspects of ancient Near Eastern cultures, social processes and environmental change that were previously out of the reach of scholars. Among these, a new field of archaeology dedicated to the study of the landscape and armed with a theoretical background and technological means has developed rapidly during the last few decades.

Settlements and monuments do not exist in a void. Settlements exist due to their water sources, road networks, natural resources and agricultural surroundings. Monuments gain their importance from their special location, orientation, conspicuous visibility and accessibility. These features can be recognized and studied in the field and laboratory, and analyzed by statistical tools, computer models and GIS systems, helping us to understand their function and meaning as an integral part of the surrounding landscape. Moreover, there is a full range of social and environmental paradigms that can be better understood through study of settlements/monuments in the context of their landscapes: military campaigns, agricultural ecosystems, trade networks and even ritual ideology.

The main goal of this conference is to strengthen landscape archaeology in the region by giving an opportunity for scholars who study this discipline to present the results of their projects, share their theories and discuss their implementation in the field.

Six sessions will be presented at the conference:

1. Cultic landscapes
2. Ecological landscapes
3. GIS and Image Analysis
4. Agroeconomic landscapes
5. Theory
6. Dating and OSL

On the afternoon of the first day we will have a hands-on computer exercise on using Worldmap Cartography for landscape archaeology. This will be followed by a conference banquet in Sheikh Jarrah. At the end of the conference we will have a “Meet the Speakers” informal gathering with drinks and snacks before departure.

We hope to create an ongoing discourse among the participants. As part of this, we propose to form a Society for Landscape Archaeology. Participants are invited to register for this during the conference, in order to be updated on developments. For those who would like to publish their presentations, there will be a special issue of the Journal of Landscape Ecology devoted to peer-reviewed papers from this conference. See page 9 (Publication) for details.
Registration

Registration will begin at 8 am in the Atrium of the Rabin Auditorium (see map, page 8). The cost of registration for the conference for the participants (covering coffee breaks and buffet lunch) is **150 shekels** (**100 shekels for students**).

Conference kits are prepared for those who have registered. We will provide printouts of the agenda for the public, and provide a pdf copy of the conference booklet online or for scandisk.

If you wish to join the conference buffet at Pasha’s on 1 March, the cost is **100 shekels**. Conference speakers do not have to pay, but companions and all other participants should pay.

## Agenda

<table>
<thead>
<tr>
<th>Day</th>
<th>time</th>
<th>agenda</th>
</tr>
</thead>
<tbody>
<tr>
<td>Wednesday 1 March</td>
<td>8:00-8:30</td>
<td>Coffee and registration</td>
</tr>
<tr>
<td></td>
<td>8:30-9:00</td>
<td>Opening: remarks by Prof. Dieter Vieweger, Mike Freikman</td>
</tr>
<tr>
<td></td>
<td>9:00-11:00</td>
<td>session 1: Cultic landscapes</td>
</tr>
<tr>
<td>Mike Freikman, chair</td>
<td></td>
<td>Introduction</td>
</tr>
<tr>
<td>Müller, Michael</td>
<td></td>
<td>Hoards as boundary markers inside Neolithic landscapes</td>
</tr>
<tr>
<td>Weissbein, Itamar</td>
<td></td>
<td>Tel Mevorakh, an Isolated Canaanite Temple in the Northern Sharon Plain</td>
</tr>
<tr>
<td>Mike Freikman</td>
<td></td>
<td>Into the Darkness: Cultic depositions in prehistoric caves</td>
</tr>
<tr>
<td>Paz, Yitzhak</td>
<td></td>
<td>The Megalithic Millennium: The Jordan valley Urbanized megalithic landscape during the late 4th- mid 3rd Millennium BC and its Equivalents in the Levant and in Europe</td>
</tr>
<tr>
<td>Time</td>
<td>Session Title</td>
<td>Presenter(s)</td>
</tr>
<tr>
<td>--------------</td>
<td>--------------------------------------</td>
<td>--------------------------------------------------</td>
</tr>
<tr>
<td>11:00-11:15</td>
<td>coffee break</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Soennecken, Katja, Preliminary analysis of the Wādī al-‘Arab Survey (Jordan)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Wieler Nimrod, The significance of the geological section on desert runoff agriculture in southern Israel: indications for stable desert environment over the last 1600 years</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Taxel, Itamar, Living Archaeology: Trees-People Interrelationships in the Landscape – Historical Trees in the Yavneh Region (Israel) as a Case Study</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Perlman, Edna Barromi, Is this land mine? What should it look like? Landscape photography in Palestine and Israel</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Eitam, David, Landscape and Groats Mills</td>
</tr>
<tr>
<td>13:15-14:15</td>
<td>buffet lunch in atrium</td>
<td></td>
</tr>
<tr>
<td>14:15-16:15</td>
<td>Session 3: GIS and Image analysis</td>
<td>David Gurevich, chair, introduction</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Haiman, Moti, Mapping Ancient Agricultural Systems Project 2004-2014</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Howry, Jeff, WorldMap – a GIS platform for Scholarly Collaboration and Teaching</td>
</tr>
<tr>
<td>Time</td>
<td>Session</td>
<td></td>
</tr>
<tr>
<td>--------------</td>
<td>-------------------------------------------------------------------------</td>
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</tr>
<tr>
<td>16:15-16:30</td>
<td>coffee break</td>
<td></td>
</tr>
<tr>
<td>16:30-18:00</td>
<td>Workshop: Using Worldmap Cartography</td>
<td></td>
</tr>
<tr>
<td>18:30</td>
<td>transportation to Sheikh Jarrah for dinner at Pasha</td>
<td></td>
</tr>
<tr>
<td>Thursday 2</td>
<td></td>
<td></td>
</tr>
<tr>
<td>March</td>
<td></td>
<td></td>
</tr>
<tr>
<td>8:30-9:00</td>
<td>coffee and registration</td>
<td></td>
</tr>
<tr>
<td>9:00-11:00</td>
<td>session 4: Agroeconomic landscapes</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Shimon Gibson Introduction</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Zwickel, Wolfgang Economic conditions in the area around the Sea of Galilee</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Chocron, M. Effect of the physical environment on Byzantine viticulture in Semi-Arid region</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Franklin, Norma Defining Greater Jezreel</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Frumin,Suembikya I. Plant Imprints on Pottery Reveal Fig Tree in Hellenistic Jerusalem</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Orendi, Andrea The agricultural landscape of Tel Burna</td>
<td></td>
</tr>
<tr>
<td>11:00-11:15</td>
<td>coffee break</td>
<td></td>
</tr>
<tr>
<td>11:15-13:15</td>
<td>session 5: Theory</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Mike Freikman, Chair Introduction</td>
<td></td>
</tr>
<tr>
<td>Name</td>
<td>Title</td>
<td></td>
</tr>
<tr>
<td>-----------------</td>
<td>----------------------------------------------------------------------</td>
<td></td>
</tr>
<tr>
<td>Uhl, Regina</td>
<td>Choosing the right mound...Shifting settlements in the north-western pontic region in the 4th millennium BC.</td>
<td></td>
</tr>
<tr>
<td>Arikan, Bulent</td>
<td>Arslantepe in Its Environmental Context: Agent-based Modeling of the Early Bronze Age-I Socio-ecosystems</td>
<td></td>
</tr>
<tr>
<td>Gassner, Evie</td>
<td>&quot;Beyond the Walls&quot;- Locating the 'Common Denominator' in Herod's Landscape Palaces</td>
<td></td>
</tr>
<tr>
<td>Pažout, Adam</td>
<td>Roman road system in southern Golan – highways, paths and tracks in quotidian life</td>
<td></td>
</tr>
<tr>
<td>Lewis, Rafaeil</td>
<td>Endangered landscapes : The Antiquities Law and the Future of Archeological Landscapes in Israel</td>
<td></td>
</tr>
<tr>
<td>Elgart-Sharon, Yelena</td>
<td>A palimpsests Landscape unravels: OSL dating of Land Transformation Along the Upper Soreq Catchment and the Introduction of Terracing</td>
<td></td>
</tr>
<tr>
<td>Elinson, Rotem</td>
<td>Lidar based analysis of soil erosion rate in abandoned terrace walls at Nahal Shemul</td>
<td></td>
</tr>
<tr>
<td>Ben Melech, Nitsan</td>
<td>Contextualizing Lime Kilns - New Insights Following OSL Dating</td>
<td></td>
</tr>
<tr>
<td>Gadot, Yuval</td>
<td>Highland agriculture without terraces: reviewing Bronze and Iron Ages agricultural landscapes in the Jerusalem hinterland</td>
<td></td>
</tr>
<tr>
<td>Time</td>
<td>Event</td>
<td></td>
</tr>
<tr>
<td>------------</td>
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<td></td>
</tr>
<tr>
<td>16:00-16:30</td>
<td>Conclusions</td>
<td></td>
</tr>
<tr>
<td>16:30-18:00</td>
<td>Meet the speakers over drinks and snacks; registration for new Landscape Archeological Society</td>
<td></td>
</tr>
</tbody>
</table>
Map of venue

Venue (Rabin Auditorium)
Publishing reports from this conference.

The Journal of Landscape Ecology has agreed to publish a special issue as proceedings for this conference. If you wish to publish your paper in this issue, please provide a DRAFT version at the conference. (This mainly signifies intent to publish.) A manuscript for review should be submitted one month later.


Executive Committee
of the Conference "Landscape Archaeology Today",
1-2 March 2017, Hebrew University of Jerusalem

This is the confirmation letter: we declare our preparedness to publish a special issue of the Journal of Landscape Ecology composed of papers derived from the conference contributions with the help of agreed guest editor(s).

Sincerely,

Prof. dr. Pavel Kovar, Prague, October 25, 2016
Journal of Landscape Ecology, Editor-in-chief

A new Society for Landscape Archaeology

We hope the participants in this conference will form a nucleus for a Society for Landscape Archaeology, based in Israel but including the entire Near East. We would therefore welcome international members as well as Israelis. Our focus will be on developments in this new and rapidly evolving field. We would like to have yearly meetings. If you are interested please register at the desk labeled “Society for Landscape Archaeology” and leave your contact information with us. We will get back to you after the conference ends.
Abstracts

Adams, Mathew J and Homsher, Robert S. Albright Institute of Archaeological Research mja198@gmail.com, Adam Prins, Ryan Gardner-Cook, and Michael Ashley

NEW DIRECTIONS WITH DIGITAL ARCHAEOLOGY AND SPATIAL ANALYSIS IN THE JEZREEL VALLEY

The Jezreel Valley Regional Project (JVRP) is a long-term multidisciplinary project investigating human activity in the Jezreel Valley through all periods through the modern era. This research incorporates extensive and intensive archaeological survey and excavation at several spatial scales, and utilizes a number of methodological approaches to documentation and spatial analysis. One of the major challenges of this project has been coping with a high volume of data, and integrating cutting-edge technology into our workflow to solve the problems that many archaeologists face. This paper will present an overview of our field-based methods of data acquisition, particularly by means of 3D photogrammetry, remote sensing, and high-precision ground control. When integrated through our data management system and used in GIS applications, these data not only produce plans and imagery far more precise than conventional approaches, but the methods used are incredibly time-efficient, cost-effective, and produce archival, digitally-preservable products. Furthermore, we will report on results of spatial analysis of archaeological activity in the Jezreel Valley in conjunction with digital terrain and hydrological modelling of the landscape. These digital techniques allow us to study human and environmental changes in the landscape like never before.

Arikan, Bulent. Department of Ecology and Evolution, Eurasia Institute of Earth Sciences Istanbul Technical University, Maslak-Sariyer, Istanbul-TURKEY 34469 bulent.arikan@gmail.com

Arslantepe in Its Environmental Context: Agent-based Modeling of the Early Bronze Age-I Socio-ecosystems

Arslantepe is one of the multi-period settlements in the eastern highlands of Anatolia. In the Late Chalcolithic (3350-3000 BC) and Middle-Late Bronze Age (2000-1200 BC) periods, Arslantepe was the political and economic center of its region. However, this regional center went through a significant transformation during the Early Bronze Age-I (ca. 3000-2750 BC). This transformation was in the form of significant depopulation, de-intensification of agricultural production. The archaeological evidence suggests that Early Bronze Age-I society mainly practiced site-tethered pastoralism. This presents a major contrast with the social organization of the previous era. Consequently, transformation in the social organization from hierarchic to heterarchic structure can be put forward. Following the dual-processual theory and the concept of heterarchy, it is possible to suggest that in this marginal landscape, human societies might have moved along the opposite ends of a continuum, due to a wide variety of factors. At the one end of the continuum, there is network mode of organization, which is exclusionary. At the other end of the continuum, there is corporate mode of organization, which aims to integrate wider groups through consensus building. This research attempts to identify: (1) the environmental background of these socio-economic and political transformations, (2) the range of human activities, (3) the anthropogenic impacts on the environment through the methods of paleoclimate modeling and agent-based socio-ecological modeling. The results of various scenarios (climate types–population densities) will be assessed and the results of these scenarios will be interpreted from the perspective of network/corporate modes of social organization.
From photographs of archaeological sites in Palestine to photographs of Jewish pioneering in Palestine: Analysis of dimensions of people as part of a material culture.

The land in Israel, in Palestine, the Holy Land has been used and abused by photographers, from the invention of photography. Photographers have created images of the land that served agendas of power struggles, representing a claim of stronghold over the land. Christian missionaries, Western tourist photographers and local Palestinian photographers, created images of the landscape and of its inhabitants. Jewish Zionist pioneers came to Palestine at the beginning of the 20th century aspired to build a homeland for the Jews. Their photographs of the landscape were influenced by styles of documentation that were promoted in pre-state Israel, by the Zionist institutions, as a form of propaganda, for the purpose of fundraising and to promote the Zionist cause. New visions of the land and landscape were created, reflecting visions of modernity and technology, brought about by the pioneers.

The study will explore photographs created in Palestine from the 19th century, and the PEF collection of photographs, in order to discover to what extent the photographs served as a means for moral appropriation and entitlement over the land over the course of time by different institutions and populations. Current Israeli art exists in a state of response to these forms of propaganda, either by creating work that endorses, denies or escapes past legacies. Israeli artists such as Simha Shirman, Yosaif Cohain, Efrat Natan, whose work is characterized by a critical discourse regarding Israeli legacy in relation to styles of is discussed as well as the forms of discourse they generate.

Sample photographs and art work to be presented in paper:

Land Survey at Kibbutz Ein Hashofet, photograph by Malavsky, 1950. Courtesy of the JNF KKL archives

Photograph by Simha Shirman Courtesy of Simha Shirman.
Ben Melech, Nitsan  Tel Aviv University  halo.nitsan@gmail.com  and Ben-Yosef, Erez

Contextualizing Ancient Limekilns in the Judean Mountains and Shephela - New Insights Following OSL Dating

Used in various ancient industries and for household need, lime was an important material in antiquity. These days, ancient limekilns are scattered throughout the landscape, bearing evidence of the vast scale of this industry and serving as a reminder of its central role in past everyday life.

However, despite its dominant place within ancient daily life, lime production technologies and associated archaeological remains have received little attention in archaeological research in Israel. Limekilns were usually located at the outskirts of settlements and while the archaeological research has focused on the sites themselves, these installations as well as other features at the sites’ vicinity have been overlooked by the researchers.

In addition, the kilns’ typical detachment from the archaeologically-rich settlement presents interpretative challenges, in particular regarding their dating. Accurate dating is crucial for understanding their role within the broader archaeological and historical contexts, and for reconstructing trends in technological choices and developments through time.

The integration of various analytic methods into archaeological research in recent years could provide a solution for the dating challenge of different industrial installations, including limekilns. The current study focuses on using the optically stimulated luminescence method (OSL) to address this challenge, and on developing a methodological approach to incorporate such results in the broader archaeological interpretation of ancient limekilns.

Bernstein, Rachel  Ben Gurion University  rachel.d.bernstein@gmail.com

Byzantine Monasticism in the Negev: Physical, Architectonic, and Socio-Economic Context

The goal of this research is to better understand the socio-economic context of monasteries and the lives of monks in the Byzantine Negev, with emphasis on the significance of their built living space. The research aims to identify how the living space of monks was formed, how large it is, for what purpose it could have been used, what lay in proximity to the living space, and where it lies within the topography of the area around it.

It also seeks to investigate and describe what relationships this space has had to other functions of a monastery: church duties, communal activities, such as eating and praying, agricultural work, and public service. The research is also particularly interested in the relationship between monasteries and their surroundings of built space, environment, climate, and topography.

This proposal details how the research uses a variety of techniques, including GIS, written sources, as well as critical review of the construction techniques of monastic structures, both through surveys and physical structures, and emphasizes the important role of socio-economics in the construction and planning in these structures. The research intends to provide an extensive and detailed corpus of the architectural elements of monasteries in the Negev.

It is hypothesized that such an examination will illustrate that a uniqueness of the socio-economic context of Christianity and particularly monasticism within the Negev region existed. A complete analysis of the characteristics of Negev monasticism will aid in enriching the picture of early
monasticism in Palestine, and particularly in contrast to the well-known monasticism of the Judean desert.

Preliminary findings include a catalogue of the intended sites to study, a collection of blueprints obtained of sites thus far, and an illustration of beginning GIS work on the site of Oboda.

Birkenfeld, Michal Israel Antiquities Authority mikibarkiki@gmail.com and Paz, I.

**New Vistas on Human-Landscape Relations at Ramat Bet Shemesh as Reflected from GIS Analyzes**

The main focal point of the on-going archaeological research project at Ramat Bet Shemesh is the bilateral relations between human communities and their surrounding landscape. As various periods are reflected in the archaeological record of the region, and keeping in mind that the landscape should be regarded as a central player in the scene, an accurate, spatially-oriented tool is needed. Thus, thorough GIS-based research is an integral part of the project, employing several strategies, such as viewshed analysis, path and cost-distance analysis as well as predictive site location modelling.

In the current paper we will present new vistas of human-landscape relations as reflected in settlement patterns, spatial distribution of settlements, installations and agricultural plots, and their socio-economic, political and symbolic implications.

The paper will discuss several case studies according to the periods that are most extensively presented in the archaeological record:

The Intermediate Bronze period – the surprising visibility patterns between the settlements of this period and the ghostly EBA mega-city of Yarmouth

The Late Bronze Age – the interplay between two city-states and their related subordinate settlements

The Late Hellenistic period – the Hasmonean identity as reflected in villages, agricultural installation, purifying paraphernalia and agricultural plots.

The employment of GIS as a central research tool at Ramat Bet Shemesh thus enables us to study a wide range of human-landscape behaviors and attitudes that were employed during the long history of this region.

Chocron, M., Department of Land of Israel Studies and Archaeology, Bar-Ilan University chocronm@gmail.com, Zissu, B., Ackermann, O., and Stavi, I. The Martin (Szusz)

**Effect of the physical environment on Byzantine viticulture in Semi-Arid region**

In ancient times, wine was produced mostly in simple wine presses. This presses were small and carved in rock outcrops. Each press consisted of treading floor and collecting vat. During the byzantine period complicated-industrial wine press was prevalent. Research on oil and wine presses in the Upper Galilee revealed that the presses locations were influenced by geology (Aviam, 1987). Our research aim is to investigate the effect of the physical environment on the location of wine presses in the semi-arid Northern Negev and southern edge of Hebron Mountain (200-300 mm annual average rain). Data base of byzantine wine presses was established by collecting findings from salvage excavations, Archeological Survey of Israel, and other surveys. This data base was analyzed by GIS tools with different data layers, including: lithology, topography, soil, geology, precipitation and topography. From the preliminary results it seems that wine presses in the hard limestone of Hebron Mountain are usually simple, small and were curved in the rock outcrops. On the other hand, wine presses in the Beer-Sheba and Besor valleys are
complicated in type, they are bigger and constructed. It seems that the reason why most of the byzantine wine presses in the mountains area (Yattir) are simple is not only due to the geology structure but due to the cultural tradition in this area.

References:

Eitam, David. Independent researcher david.eitam@mail.huji.ac.il

Olive Oil or Cereal Groats – Definition of Agricultural Device According to Ecological State

These edge-runner mills were defined years ago as open-air olive presses. Thirty such mills were found by us in the semi-arid eastern Samaria Hills. In most cases, only the wheel-shape lower part and a barrel-shape basin were found, both cut-in rock exposures, while the upper and lower parts were rarely found together, sometime located in courtyard of an agriculture tower.

The landscape is characterized by rocky slopes and patches of dark-brown soil between them. The slopes are covered with bushes of thorny Lycium and few scattered outsized Pistacia atlantica trees, while barley and weeds are growing in the soil patches and small valleys.

In the presentation, I will describe how the landscape guided us to discover the use of the mills as groats making devices and not olive oil presses. Dating the mills is difficult as not much pottery were found around the mills, except for few "Roman-Byzantine" shreds. More accurate date and the historical significant of the groats mills will be suggested, taking into consideration the ecological surrounding of the Mills found in various regions in Israel.

Elgart-Sharon, Yelena Dept. of Archaeology and Near Eastern Studies, Tel Aviv University yelenael@mail.tau.ac.il

A palimpsests Landscape unravels: OSL dating of Land Transformation Along the Upper Soreq Catchment and the Introduction of Terracing

This paper will present the results of a landscape study conducted along Nahal Shemuel and Nahal Hallilim, two major tributaries of the Upper Soreq River which borders Jerusalem from the North West. The aim of the study is to understand the interrelation between Jerusalem and its agricultural hinterland. The city's immediate environment suffers from poor soil coverage and limited water sources. This has turned regions like the Upper Soreq catchment, into crucial for the sustainability of the city.

Two areas of excavation were chosen in order to reconstruct past settlement and land use patterns. It seems that both Nahal Shemuel and Nahahl Hallilim were exploited for agricultural purposes, though in different methods. The excavations included sampling and dating of terraces and other man made features using optically stimulated luminescence (OSL). The combination of OSL and field work and stratigraphy enabled us to get a better understanding of the palimpsest nature of the landscape in that area. This data was then combined with the knowledge from different surveys and excavations in the area and helped to shed light on the connections between the settlements and the agricultural installations that surround them.

Elinson, Rotem Department of Geography and Human Environment, Tel Aviv University. rotkes7@gmail.com and N. Porat
Lidar based analysis of soil erosion rate in abandoned terrace walls at Nahal Shemul

Soil erosion is considered by many scholars to play a major role in the shaping the Jerusalem highland landscape. According to this paradigm, terrace walls were constructed to support and conserve the soil placed behind them. When terrace walls collapsed due to poor maintenance or abandonment, the soil stored behind the wall was rapidly eroded down-slope into the valleys, leaving behind bare bedrock.

The current study aims to put to test this paradigm by calculating the rate of soil erosion in abandoned and collapsed terraces built along Nahal Shemuel. Here the terraces no longer form the typical step topography but a relatively monotonous slope. A LIDAR scan of 0.05 Acrs was converted into high resolution DEM layer that was used to calculate the terraced area and the slopes angle of the abandoned terraces. Field surveys established the average soil depth in the original terraces and OSL dating of the soils provided an estimate of the time of terrace construction and abandonment. All combined, we were able to reconstruct current and past soil volumes and estimate the amount of soil that was washed since the terrace walls collapsed. By combining OSL dating and LIDAR scanning we created a general model that can be applied in other areas.

Erskine, Neil University of Glasgow

The religiosity of landscape: connecting data and theory

Theoretical archaeological methodologies designed to analyse religious activities, and their transmission through time, are thoroughly underdeveloped. The historical pre-eminence of textual evidence has left scholarship of Ancient Near Eastern religions distinctly elite-focussed and in particular need of a theoretical revolution. However, the field has traditionally treated theory-laden approaches with some suspicion. Similar scepticism has been shown towards theoretical approaches to landscape, where investigations are dominated by positivist investigations of communications, power, and trade networks. Much of this suspicion may be justifiably rooted in the lack of methodological clarity presented by archaeologists when moving between excavated data and theoretical frameworks: a problem largely the result of borrowing theories directly from anthropologists without reformulation with specifically archaeological research in mind.

Investigating the religiosity of landscapes through the routine movement of those who interacted with them presents a possible solution to these issues. This paper seeks to develop the ways in which archaeologists might investigate the ancient individual’s experience of both religiosity and landscape by presenting a methodology designed to explicitly bridge the data-theory divide. By drawing on the work of Deleuze and Guattari, a theoretical framework can be constructed that allows the interpreter to move clearly between environmental, architectural, and artefactual data and the social meaning embedded in them.

Using the Iron Age Negev as a case study, this paper uses a Deleuzo-Guattarian approach to illustrate the reflexive processes through which religious meaning was created and sustained in a landscape and demonstrates a new methodology that can move between data and theory with ease and clarity.

Franklin, Norma The Zinman Institute of Archaeology, University of Haifa norma_f@netvision.net.il

Defining Greater Jezreel
Airborne LiDAR was used for the first time in Israel in February 2012 over a ca 7 sq. km area, an area that we have defined as Greater Jezreel. This comprises the upper site known as Tel Jezreel, the lower site known as Ein Jezreel, and includes the ancient paths which connect both sites with a perennial spring, numerous agricultural installations, rock-cut tombs and bell-shaped cavities.

The first part of this presentation will illustrate how combining LiDAR, aerial photography, and traditional surveying has helped us understand the site of greater Jezreel in the long durée. The second part will focus on the ca 100 bell-shaped cavities which have been documented on the upper site. These have invariably been misidentified as Ottoman period cisterns, not just at Jezreel, but at many other rocky-hilltop sites in the Levant. I suggest that they are potentially an important clue to understanding local agricultural abundance in the Iron Age at Jezreel and elsewhere.

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The cave of Zarda located in the Western Samaria was discovered by the local speleologists and later surveyed by our expedition. It is a highly branched cave more than 40 m deep found on a steep slope of a cliff overlooking Nahal Shiloh. Several Pottery Neolithic jars were found in the spaces located in the depth of the cave. They were carefully placed on their side and hidden in the darkest side spaces. No evidence for Neolithic domestic activities was found in the cave, but objects which could be explained as evidence for ritual activities were discovered inside the cave. We propose that these vessels were actually ritual depositions interred by the people who visited this cave during the Neolithic period. It appears that the finds from Zarda were not at all unique. Depositions of objects dated to the Protohistoric periods buried in deep caves were also reported from the renowned cave in Nahal Qanah and other sites in the vicinity of the Zarda cave, and usage of the caves for the ritual purposes was also attested in other parts of the Neolithic Near East, such as the vicinity of Çatalhöyük. In this paper I will present the relevant data collected from different Protohistorical sites and try to present the place of a dark cave in the landscape of the prehistoric Ancient Near East. Furthermore, I will propose an explanation for this phenomenon as part of the shamanistic cult which prevailed in this region during this period.

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Plant Imprints on Pottery Reveal Fig Tree in Hellenistic Jerusalem

This research proposes and tests a novel interdisciplinary method for reconstructing the ancient common people’s lives and environment by using plant imprints on pottery. Sherds with plant imprints may represent a link to the potter’s immediate environment, pottery production methods, and the local cultural relationships with plants. We present here study of sherds with plant imprints retrieved from Hellenistic strata from Givati Parking Lot, Jerusalem. Plant imprints were analyzed for their position on the vessel and which plant organ was presented, and the imprints were then scanned and measured for plant species determination. Results show clear evidence for the intentional use of green leaves for vessel rim repair. Archaeobotanical analysis of these sherds has also revealed the earliest evidence for the presence of fig tree, Ficus carica, in Jerusalem and the surrounding region. These results show that
analysis of plant leaf imprints on pottery can further improve the reconstruction of ancient settlement life and its environmental conditions.

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Highland agriculture without terraces: reviewing Bronze and Iron Ages agricultural landscapes in the Jerusalem hinterland

The development of the modern city of Jerusalem, located in the central highlands of southern Levant, during recent decades has led to an unprecedented volume of archaeological research into the city's rural hinterland, including the discovery and excavation of multiple agricultural settlements dated, among other periods, to the second and first millennia BCE (mainly Middle Bronze Age and Late Iron Age). Many of these sites are located on rocky slopes typical of the city's surroundings, and associated with agricultural installations such as stone piles, fences, and winepresses. Based on current evidence, agricultural practices in these areas did not include large-scale terracing, but was based on the exploitation of moderate topographic niches as well as soil pockets between lapies. This type of practice is also implied in several biblical sources, including the famous “song of the vineyard” (Is. 5: 1-6). This lecture will discuss OSL dating of stone piles and other features to demonstrate a pre terracing phase of agricultural activities.

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"Water, Water, Everywhere"- Water as a Landscape Element in Herod's Building Projects

Water, by virtue of its vitality to existence, has naturally been a key feature of humanity’s daily life since its very dawn. However, as with many other natural elements, water can also be used in other functions – to serve an agenda, for example. King Herod, who ruled Judaea between 37 BCE and 4 BCE, erected many spectacular buildings and monuments, seeking both to elevate his own name and to serve the people. Herod – a foreign king in a strange land and a vassal ruler to the greatest Empire in the world - was forever seeking to prove his worth. In this paper, I will present the way in which Herod recruited water as a landscape element - in the form of pools, nymphaea and fountains - to build up his political standing via physically exhibiting his power and wealth. The innovative use of landscape archaeology as a tool to help us better understand Herod, his projects, and the motivation behind his building system, is essential and can further the research of Herodian archaeology. The study of the surroundings in which the buildings stood and their relations can teach us a lot about the buildings themselves.

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On the Dating of Agricultural Terraces in the Southern Levant; Landscape Archaeology versus Selective Scientific Testing

Recently, the method of OSL (optically stimulated luminescence) has been advocated as a primary tool for dating agricultural terraces in the highland zones of the southern Levant, and a claim has been made that it is a much more efficient and reliable archaeological dating method than any other used hitherto. The purpose of this paper is to show that while OSL is an excellent dating procedure, it can only be used successfully for dating terracing when employed in conjunction with other dating methods and under the umbrella of a structured project utilizing the basic principles of landscape archaeology; otherwise the outcome can be seriously flawed. The problems that occur when relying solely on OSL for dating purposes will be demonstrated through the examination of the results of two research projects conducted in recent years on terraced hills within the environs of Jerusalem.
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Mapping Ancient Agricultural Systems Project 2004-2014

Throughout the 1990s, due to large-scale intensification of surveys and excavations in the Beer-Sheva Valley, it was found that a tremendous number of agricultural runoff systems and farmhouses from the 6-8th Centuries CE, of the type that prevails in the desert to the south, were dispersed throughout the area. Since 2004 the current speaker has been involved in a remote sensing archaeological landscape project, focused on the remains of that agriculture, after finding that it distributes also in the entire sedentary land to the north, as well.

The goal of the project was to create a GIS layer for further interdisciplinary landscape studies. The Methodology to achieve that goal practices three tools:

1. Archaeological Method of moving from the conventional display of sites as points, to a display that encompasses all of the visible features with a GPS, which is mapping rather than surveying, of every feature, without any selection, such as the network of terraced wadis and hill slopes as well as farmhouses and installations that comprise the agricultural system.

2. Synchronization rather than dating: Constant excavations in the agricultural farmhouses and the features save the necessity to pursue dating issues based on surface pottery collections. The real challenge is to synchronize between the certain elements that according to the surveyor’s concept comprise a certain period’s spatial picture. Hitherto it is possible to identify at least five different strategies of environmental exploitation in terms of agriculture practice, representing different settlement systems.

3. Interdisciplinary landscape study. As mentioned, the goal of mapping with GPS is to create GIS layer for interdisciplinary studies. Till now, about seven such studies have been conducted, involving Geology, Geomorphology and Hydrology, showing the high potential of such a GIS layer:

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WorldMap – a GIS platform for Scholarly Collaboration and Teaching

WorldMap is a web-based GIS platform developed by the Center for Geographic Analysis at Harvard University designed for research collaboration and teaching. Users of WorldMap can create their own maps or build them with multiple layers added by collaborating colleagues. WorldMap provides access georeferenced maps, location points, lines and polygons which can reference online images, videos and web services. Users can import maps and data created with desktop applications or use tools built-in to WorldMap. WorldMap contains reference layers to political, environmental and ethnographic data previously scattered in many sources. WorldMap also offers the capability of linking to data in a digital archive which the user can manage for images and data sets in an assortment of database file formats.

WorldMap was developed using open source software and operates on Amazon’s cloud to assure worldwide access. There is no cost associated with using WorldMap for scholarly research and publication. WorldMap is supported by the Center for Geographic Analysis, within the Institute for Quantitative Social Science, Harvard University.

WorldMap has the following objectives and capabilities:
Enable georeferencing of maps, images and text; permit other researchers to annotate map layers and features.

Provide a repository for maps and data that would be typically difficult to access after a project is completed.

Embed live maps in other web pages and blogs; provide permanent links for use in publications.

Search external map repositories such as the Harvard Geospatial Library, YouTube and Picasa, and bring their content into WorldMap; search several gazetteers for 1 million place names.

The presentation of WorldMap will include both illustrations of the platform’s features and examples of its application to the field of landscape archaeology.

Jeff Howry, Ph.D., Semitic Museum, Faculty of Arts & Sciences, Harvard University  
March 31, 2016

The following images are provided for visualizing WorldMap and its capabilities.

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Endangered landscapes: The Antiquities Law and the Future of Archeological Landscapes in Israel

The original mission statement of the Palestine Exploration Fund was: "to promote research into the archaeology and history, manners and customs and culture, topography, geology and natural sciences of biblical Palestine and the Levant".

The PEF’s comprehensive approach stands in contrast to the archaeological approach in mandatory and modern day Israel, which can be generalized as "tell/ site-orientated". We can attribute the shift in methodological approach to the two important archaeological innovations made by the famed English archaeologist Flinders Petrie, regarding the successive, superimposed and urban nature of tells and the
possibility to date these archaeological sites by studying their associated pottery assemblage and cross-dating it with assemblages from other sites.

Petrie's innovations are the base of modern archaeology and should not be underestimated. But a few had noticed that Petrie's work had such a strong influence on the following generations of archaeologists, that the archaeological discipline which was developing alongside the "site-orientated" discipline was abandoned and vanished. Though landscape archaeology is a common practice in Europe, in Israel this discipline is hardly practiced or studied and even regional surveys still tend to focus on the detection of sites and their dating.

The "site-orientated" approach has also a direct implication on our ability to protect these landscapes from the negative effects of modern development. This is because the Israeli antiquities law (based on the mandatory law from 1920) is also "site-orientated". This situation leads to an absurdity, where on the one hand we have the highest concentration of declared and protected archaeological sites, but on the other hand the traditional/archaeological landscapes have no archaeological legislative rights and therefore are subjected to intensive modern development. The lecture will deal with the evolution of the antiquities law and its implication on the preservation and study of landscapes in modern Israel.

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Hoards as boundary markers inside Neolithic landscapes

The Funnelbeaker culture (4100–2800 cal BC; following TRB1 Culture) is the first Neolithic culture in Northern Europe. In its main distribution in the area of the what is now Northern Netherlands, Northern Germany, Northern Poland, Denmark and Southern Sweden three groups were divided, the so called Western, Eastern and Northern Group. The last one is deemed to be the most important due to being the one from which most of the cultural and technical impulses for the other parts of these culture were coming from. The TRB was forming their environment with the construction of several thousand megalithic tombs made of monoliths weighing tons; the first measurable deforesting in their distribution area for building settlements and practice agriculture; with the construction of causewayed enclosures, where obviously ceremonies have taken place and at least with depositing flint objects, mostly huge flint axe heads in wetland areas. With all of these mentioned features the TRB culture seemed to have divided their space into different areas, namely places for life, places for death, places for ceremonies and places for offerings. Even more the chosen areas for the different features had a special meaning in themselves. It can be shown that the deposition places for hoards of flint axe heads mark areas between culture and nature, visible and invisible, dry and wet and stagnation and motion. The object numbers of these depositions vary between one and several dozen and for each a lot of time for mining the flint as well as for knapping and grinding it was investigated. And even if we must expect that these precious and fully functional axe heads were still visible at their place of deposition and were not taken away. We could suppose that this might have destroyed the function and maybe also the meaning of the territory whose entrances they were marking.

1 Short form of the German term for the culture ‘Trichterbecherkultur’

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The agricultural landscape of Tel Burna
The archaeology of agriculture in the Southern Levant was the topic of many research studies. However, focus was set on the archaeological finds and contexts combined with written sources. The actual object of research – the agricultural products – and its associated research field namely Archaeobotany rarely were integrated in general studies of ancient agriculture.

Tel Burna offers a great opportunity combining the archaeological remains with the archaeobotanical data. The site is located on the border of the Philistine Coastal Plain and the Judean Hill Country and it was suggested to identify it with biblical Libnah. Archaeological remains point to an occupation from the Early Bronze Age to the Iron Age IIC. During the seven campaigns of excavation several agricultural installations like silos and wine or olive presses were exposed dating to the Iron Age periods. In this paper we will present the agricultural features alongside the systematical archaeobotanical sampling that enables to reconstruct which crop plants were cultivated at Tel Burna. The variety of cultivated plants for the Iron Age is high. In addition to olive and grape which might have been processed outside the settlement, also various legumes, cereals, and flax were found. The site is situated in an area with modern annual precipitation between 400 and 500 mm which is enough water supply for rain-fed agriculture. Also new isotope data from barley grains dating to the Iron Age show that they were grown under sufficient water availability.

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The Megalithic Millennium: The Jordan valley Urbanized megalithic landscape during the late 4th- mid 3rd Millennium BC and its Equivalents in the Levant and in Europe

The Jordan valley rift was the scene of major socio-political changes during the Early Bronze Age. The area that lies between the northern Golan to the dead sea plain may be considered as the 'cradle of southern Levantine urbanization'. Along the valley rift, major urban sites like Jericho, Bad edh-Draa, Tell Abu el-Kharaz, Beth Yerah and Golan 'enclosures' flourished during the EBA and formed a backbone of urban landscape that remained steady until the very last days of the period.

Another manifestation of the Jordan valley during the EBA is its megalithic nature. It can be no coincidence that most megalithic phenomena, such as the Jordanian menhirs and burial structures, the Golan dolmens and the unique Rogem Hiri are all found along the Jordan valley rift.

In this theme I will use a post-processual approach in order to try and understand the meaning of the Jordan valley as a 'megalithic landscape', in which 'cosmological engineering' formed new ideological frameworks within which urban societies experienced their role in the universe.

The Jordan Valley megaliths will be compared to contemporaneous phenomena that curiously reached their zenith in the course of the 3rd millennium BC, amongst are Tel Banat in northern Syria, The Maltese ‘temples’ the passage graves of southern Spain, and the various monuments of the British Isles. While no direct connections seem to have existed between these remote regions, the same ideological and cognitive principles were employed in order to create monumental landscapes.
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Roman road system in southern Golan – highways, paths and tracks in quotidian life

Roman roads in the strict sense of paved highways built, maintained and organized by Roman army and provincial authorities were studied in the Golan since Schumacher’s times. However, most of these were obliterated by building and agricultural activity since the beginning of 20th century. Local ancient road system, linking individual communities and their agricultural land was never studied, since it barely leaves a trace in archaeological record. This contribution presents reconstruction of inter-provincial highways passing through Golan, and local road system in GIS using least-cost path analysis. The landscape is further analysed in terms of “focal mobility networks” which explores possible natural movement corridors in the region. From focal mobility networks it is possible to extract path with higher mobility potential which will be tested against present evidence for Roman paved highways, since it is assumed that corridors with high mobility potential would be suitable place for construction of (inter-)provincial road. Path with lower mobility potential might indicate local road system, so it would be possible to connect agricultural communities with the land they exploited; which in turn may have implications for site prediction and site-catchment analysis exploring quotidian movement of people and goods in the landscape.

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Preliminary analysis of the Wādī al-‘Arab Survey (Jordan)

As an integral part of the Gadara-Region-Project, a survey of the Wādī al-‘Arab region was conducted during the years 2009-2012, by Biblical-Archaeological Institute Wuppertal and German Protestant Institute for Archaeology. The aim was to achieve a better understanding of the hinterland of Tall Zirā’a and to provide answers concerning settlement pattern, trade relationships and the importance of sites throughout time. The main focus was laid on the Tall Zirā’a hinterland, but all important sites of the Wādī al-‘Arab region were re-visited, GPS points taken, pottery collected and the situation today documented. Even though many sites – which were documented by the pioneers Schumacher and Glueck in the early 20th century – were nowadays built over, destroyed or integrated in modern settlements, we could map more than 200 sites.

This paper will give an overview of the conduct of the survey (aims, region and methodology). Exemplary sites will be presented – long known sites and their appearance today as well as new sites found during the Wādī al-‘Arab survey.

On the basis of this survey we used ecological approaches to see what correlation might exist between archaeological sites and habitat. Since more than half the sites in this survey had Roman occupation, we asked what difference, if any, was there in the distribution of Roman sites compared to previous occupations. A comparison was made of “new” Roman sites (those not previously occupied in the Hellenistic period) with those that had both Roman and Hellenistic occupation. Clearly there could have been other definitions such as “never previously occupied”. Hence this analysis is preliminary.
The analytical approach was ordination (multivariate analysis, correspondence analysis). The ordinations, despite the lack of statistical significance of correlations, suggested interesting relationships. Open water, riverine habitats, and large archaeological sites all seemed connected. In addition, analysis indicated a correlation of older (more successful or established?) sites with open water. Analysis also suggested that new Roman sites were less related to water. We knew that Roman engineering both of cistern systems and aqueducts opened new areas (such as plateaus) for settlement and exploitation. Hence the weaker correlation of new Roman sites with water also made sense.

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Living Archaeology: Trees-People Interrelationships in the Landscape – Historical Trees in the Yavneh Region (Israel) as a Case Study

Inspiring by Tim Ingold’s “taskscape” concept in his study on The Temporality of the Landscape, which sees trees in activity-saturated landscapes as components in a network of interrelated rhythms, this lecture suggests a different way of looking at man-planted trees and interpreting them in the “taskscape” of historical Palestine. Following Ingold and others, I claim that certain trees, especially in off-settlement landscapes, constituted by their presence particular places, which came into being with the trees. People planted the trees, but they or their descendants return to the trees and used them for various purposes while acting in the open, outside their permanent dwelling: the lives of people and trees were bound together. Such a perception, which creates indeed a kind of a chicken or the egg paradox, allows for a better understanding of ancient landscapes, or “taskscapes”. Since trees have not survive from antiquity to the present, in my research I concentrate mainly on historical trees planted during the 19th century (if not before then) and the first half of the 20th century in the region around ancient Yavneh, in Israel’s coastal plain. Forming part of a larger regional survey project (Archaeological Survey of Israel, Map 75), this documentation of historical trees and the physical remnants of human activity around them – if exist or identified – contributes much first and foremost to our knowledge about the history of this particular region in late Ottoman and British Mandate times. However, while treating historical trees as a kind of living archaeology, we also gain a better understanding of the role of trees and of trees-people interrelationships in antique landscapes in general.

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Choosing the right mound...Shifting settlements in the north-western pontic region in the 4th millennium BC.

The so called Cucuteni-Trypillia-Complex is rising in the middle of the 5th millenium and spreads eastward from the Eastern Carpathian Mountains to the Dnepr. Most of the sites are concentrated in the hilly landscape of the forested steppe zone of the north-western pontic region, where almost 75% of the settlements are built on hill tops. In some cases these well structured settlements are sitting almost perfectly centred on the highest point of the hilly ridges. In contrast to the preceding cultural groups, e. g. Gumelnita , the communities of the CTC didn’t live on and around tell sites, but developed a horizontal settlement stratigraphy on natural elevations. Especially in the first half of the 4th mil BC, these sites can occupy very large spaces. In some regions they form agglomerations of up to 3000 houses, which were built and deliberately burnt in a rather short period of less than 200 years. At the current state of research this would mean that at some sites, several thousands of people would have lived together for a rather short time. But how could, for instance, 20 000 people be nourished and
survive at such densely populated places? Was this shifting of the settlements from one spot to another necessary in order to supply their basic needs or should these sites rather be regarded as a social phenomenon, e.g. feasting places, where people met occasionally? Possible answers shall be explored by a case study at the settlement Petreni, a large site in the northern part of the Republic of Moldova, and its hinterland.

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**Predicting modeling for archeological sites location: comparing logistic regression and Maxent in north Israel and North-East China**

In this study we analyze the distribution of archaeological sites, using a new method of maximal entropy (Maxent). Given the environmental parameters, the model predicts the probability of sites existence. Such models are important tool for preservation of archaeological sites as they can help planners avoid areas where site are likely to exist. The models are also used for research purposes, as an analytic tool to better explain settlement patterns and past human behavior.

The model produces probabilistic values, which can be introduced graphically as a colored maps or a binary map. We found that the results of the Maxent are much better than the common prediction model based on logistic regression.

In the present work, we examine the Maxent models with respect to data collected from two independent areas: The Upper Galilee, Israel and the Fuxin area in northeast China. The model based on a high-resolution systematical survey of those regions together with high quality satellite images.

We also compared Maxent models with Logistic regression models for both study areas (Fuxin in China and Upper Galilee in Israel). The models apply to the same data sets, and it seems that the Maxent maps give better results, according to several characteristics which are used in the literature.

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**The significance of the geological section on desert runoff agriculture in southern Israel: indications for stable desert environment over the last 1600 years**

Large distribution of historical agricultural installations in the desert zone of the southern Levant, mainly from the Byzantine – Early Muslim periods (1600-1000 y BP) indicates that the region was highly productive in the past. That could have been achieved either because of a more humid climate, or by sophisticated runoff harvesting techniques utilized by the ancient farmers under a desert climate. Among all, the most important factor enabling the existence of the desert agriculture was generating runoff. Our study assess a multi-disciplinary approach testing the relationship between diverse geological units, their ability to cause runoff and the possible preferences made by the ancient farmers to utilize these rock properties. Utilizing GIS methods we generated high-resolution maps, highlighting the present runoff potential both on a single lithology slope level and on the drainage basin scale. By applying this methodology we show that high correlation (80%) exists when testing the spatial emplacement of runoff-farming installations constructed during the Byzantine – Early Muslim periods on
the present best runoff yielding drainage basins under the present climatic conditions. This hints at the long stability of the environmental and probably climatic conditions in the southern Levant regions during the late Holocene.

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In a landscape archaeology project all the fertile fields around the Sea of Galilee (an area of 50 x 30 km) were mapped. The whole territory was subdivided in 5 regions: Jordan valley, Lower Galilee, Upper Galilee, Golan and Transjordanian Hill Country. Additionally all ancient sites from the Neolithic to the Persian period, which are mentioned in archaeological literature, were collected – all together more than 300 sites. These data allow a reconstruction of the economic conditions in antiquity in the area around the Sea of Galilee. Landscape archaeology clearly demonstrates that the economic basis may have been completely diverse in the five sub-regions, and also during different times. Agriculture played a major role in the economy of ancient people. During some periods and in some regions people lived in the midst of the fields, while in other periods they settled at the edges in order not to waste valuable farmland. On the other hand the position of some sites in some periods clearly demonstrates that trade played a major role for the income of the settlers, or basalt mining and working. Streets can be reconstructed, and our methodological approach allows new insights in the economy of this area.