Archaeology of Faynan; A celebration and Guide

Book

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Archaeology of Faynan; A celebration and Guide

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A full colour review of the archaeology in Faynan, southern Jordan. 144 pages.


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Faynan is beautiful, calm and quiet. It feels timeless and isolated from the modern world. The rocks which shape its dramatic landscape have been faulted and eroded over many millions of years. People are few in number. Some live in the village of Qurayqirah, and for the Rashaydah tribe, Faynan Village. They cultivate small fields around their villages for watermelons and tomatoes. Others live in Bedouin tents throughout the wadi, tending their goats. Some members of the community also benefit from tourism by working at Feynan Ecolodge or providing services to its guests, such as transport and guiding walks. It is easy to imagine that in Faynan horsemen don’t look like this – taming, goat feeding and welcoming visitors—and that people have had minimal impact on a landscape almost entirely shaped by nature.

Little could be further from the truth.

Value the past. Enjoy archaeology. Be inspired.

Steven Mithen, Mohammad Najjar and Bill Finlayson.

Funds from the sale of this book will be used to protect the cultural heritage of Faynan.

www.faynanheritage.org

ARCHAEOLOGY OF FAYNAN
A CELEBRATION AND GUIDE

This book is for celebrating and guiding the cultural heritage of Faynan, and at the same time it is an advisory guide to the archaeological sites in Faynan.
This book is a celebration and archaeological guide to Faynan, a site in Jordan that has been the subject of extensive archaeological research. It includes contributions from leading experts in the field, providing a detailed overview of the site's history and significance. The book is published by the University of Reading and is available from their website.

ARCHAEOLOGY OF FAYNAN
A CELEBRATION AND GUIDE

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This book is for the appreciation of Faynan and will be a reference and guide to the archaeological sites in it.

Nota anterior:
Este libro es una celebración y guía arqueológica de Faynan, un sitio en Jordania que ha sido el objeto de intensa investigación arqueológica. Incluye contribuciones de expertos líderes en el campo, proporcionando una visión detallada de la historia y significado del sitio. El libro está publicado por la Universidad de Reading y está disponible en su sitio web.
Dedicated to the people of Faynan: past, present and future
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Welcome from Steven Mithen, Mohammad Najjar and Bill Finlayson

The book is a celebration of the cultural heritage of Faynan: a remarkable record of aspiration, innovation and achievement, told through many spectacular archaeological sites. It is also a practical guide for visiting Faynan’s archaeological sites and monuments, indicating where they can be found and what they represent.

There are hundreds of archaeological sites within Faynan, ranging from scatters of ancient stone tools to Roman forts and Islamic copper works. They tell Faynan’s story from its first inhabitants, at least half a million years ago, to the present day. This book illustrates a mere 30 of these sites and monuments, selected to represent the milestones in Faynan’s history.

Steven Mithen is Professor of Archaeology at the University of Reading and Director of the AHRC ‘Discovering Faynan Heritage’ project.

Mohammad Najjar is a field archaeologist and a former Director of Archaeological Excavation and Survey at the Department of Antiquities of Jordan.

Bill Finlayson is visiting Professor at the University of Reading, and former Director of the Council for British Research in the Levant (CBRL), 1999–2018.

Cette publication célèbre le patrimoine culturel de Faynan: un extraordinaire témoignage de l’aspiration, de l’innovation et de l’accomplissement, raconté à travers de nombreux sites archéologiques spectaculaires. Il s’agit également d’un guide pratique pour visiter les sites et monuments archéologiques de Faynan, indiquant où ils se trouvent et ce qu’ils représentent.

Il existe des centaines de sites archéologiques dans le Faynan, allant de sites de dispersion de gisements anciens à des forts romains et à des ateliers de production de cuivre musulman. Ils racontent l’histoire du Faynan depuis ses premiers habitants, il y a au moins 500 000 ans, jusqu’à nos jours. Ce livre illustre une soixantaine de ces sites et monuments, sélectionnés pour représenter les mérites importants de l’histoire de Faynan.

Steven Mithen est professeur de archéologie à l’université de Reading et directeur du projet AHRC ‘Discovering Faynan Heritage’.

Mohammad Najjar est archéologue de terrain et directeur précédent de l’archéologie et de l’excavation à la direction des antiquités de la Jordanie.

Bill Finlayson est professeur invite à l’université de Reading et ancien directeur du Conseil du Conseil de Recherche British dans le Levant (CBRL), de 1999 à 2018.

Diese Publikation feiert die kulturelle Erbe von Faynan: ein bemerkenswerter Bericht über Aspiration, Innovation und Erreichung, erzählt durch viele spektakuläre archäologische Fundorte. Es ist auch ein praktisches Handbuch für die Besichtigung von Faynans archäologischen Fundorten und Monumenten, die zeigen, wo sie zu finden sind und was sie verkörpern.


Steven Mithen ist Professor für Archäologie an der Universität Reading und Leiter des AHRC-Programms ‘Discovering Faynan Heritage’.

Mohammad Najjar ist ein archäologischer Feldforscher und ehemaliger Direktor von Ausgrabungen und Oberwachung von Antiken in Jordanien.

Bill Finlayson ist Visiting Professor an der Universität Reading und ehemaliger Direktor des Council for British Research in the Levant (CBRL), 1999–2018.
The majority are easy to access by walking, while some are more difficult to find and will require a long hike. One should always use a local guide, protect oneself from the sun, carry water and wear hiking boots. As a number of the sites lie within Dana Biosphere Reserve, managed by the Royal Society for the Conservation of Nature (RSCN), access to those sites must be with a guide from Feynan Ecolodge or the RSCN. As well as always protecting nature, should you see any artefacts, such as pieces of pottery, metal or worked stone, please leave them on the ground and follow the advice: 'Take only pictures; leave only footprints.' If you want to report a find, take a picture, record the location and inform the museum.

Our knowledge about the archaeological sites and monuments featured in this book has arisen from research supported by the British Institute at Amman for Archaeology and History (BIAAH), now the CBRL. Its Wadi Faynan Project was first conceived and initiated by former BIAAH directors, William Lancaster and Alison McQuitty in the early 1990s, under the kind patronage of HRH Princess Sumaya bint El Hassan. However, the significance of the Faynan and associated areas has been known for at least a century, and the cumulative knowledge of many individuals and organisations is represented in this guide.

Further information is provided in the Faynan Museum, which has a scale model of the region and displays of the materials recovered by excavations, and at the website https://www.faynanheritage.org, where a film about the Neolithic archaeology of Faynan is available for viewing. The scale model, museum displays, Faynan Heritage website and film were also made possible by funding from the Arts & Humanities Research Council and the University of Reading, UK, and had the support of the Department of Antiquities of Jordan and the Council for British Research in the Levant.

Value the past. Enjoy archaeology. Be inspired.
Introduction

The southern Levant is the region of southwest Asia now covered by Jordan, Palestine, Israel, Lebanon and southern Syria. Faynan is in the south of Jordan centered on Wadi Faynan. To the east it includes the lower reaches of Wadi Dana and Wadi Ghwayr, both climbing to the Jordanian plateau. To the west it includes Wadi Fidan, opening out into the Wadi Araba, and in the north is Wadi el-Ghuwebe.

Faynan is beautiful, calm and quiet. It feels timeless and isolated from the modern world. The rocks which shape its dramatic landscape have been faulted and eroded over many millions of years. People are few in number. Some live in the village of Quarayqira and, for the Rashaydah tribe, Faynan Village. They cultivate small fields around their villages for watermelons and tomatoes. Others live in Bedouin tents throughout the wadi, tending their goats. Some members of the community also benefit from tourism by working at Feynan Ecolodge or providing services to its guests, such as transport and guiding walks. It is easy to imagine that life in Faynan has always been like this – farming, goat herding and welcoming visitors – and that people have had minimal impact on a landscape almost entirely shaped by nature. Little could be further from the truth.

Archaeological research has shown that people first arrived in Faynan at least 500,000 years ago. Since that time, the people living in Faynan have pursued lifestyles ranging from hunting and gathering to metallurgy on an industrial scale; their settlements have varied from small campsites, to those with thousands of inhabitants.

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Their lives were shaped by the landscape. The geology provided critical raw materials, such as flint for prehistoric stone tools and copper ore for metallurgy; the fertile soils enabled the growth of cereal crops to support large populations; the springs and streams provided water for farming, industry and domestic use. People have changed the landscape to secure these resources: quarrying for stone, excavating mineshafts, building walls and aqueducts to channel water and irrigate fields. We can still see evidence of this today.

The inhabitants of Faynan have never been isolated. Their lifestyles have always been shaped by the history and politics of not only the Levant but also of the wider world; equally, their own activities, whether the innovations of the earliest farming communities or the mass production of copper by the Romans, have influenced the events and history of the ancient world.

The remarkable history of Faynan can be seen in the archaeological remains found throughout the landscape. This book highlights just a few of the many ancient sites in Faynan that tell the story of its people.
During the early 1990s, the British Institute at Amman (BIAAH) began its own programme of fieldwork in Wadi Faynan. BIAAH began the systematic cataloguing of archaeological sites using a numbering system of ‘WF’ numbers. This was later adopted by all archaeologists working in the wadi.

During the 1990s, Graeme Barker and David Mattingly from the University of Leicester, UK, led an interdisciplinary team of archaeologists and environmental scientists, to make a systematic survey of the Wadi Faynan landscape. During five seasons of fieldwork, they discovered and documented a remarkable number of archaeological sites, which showed major developments in farming and copper working during the Early Bronze Age and then in the Roman/Byzantine periods.

In 1993, Mohammad Najjar investigated the remains of the earlier Neolithic site of Ghwayr 1, located where the Wadis Faynan and Ghwayr join, and he continued his excavations in collaboration with Alan Simmons of the University of Nevada, Las Vegas.

Writing in the 1930s, the American archaeologist Nelson Glueck was the first to realise that the mound of ruined buildings and rubble at Khirbat Faynan was the site of the ancient town of Phaino described in Biblical, Greek and Latin texts.

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Working with Yarmouk University, BIAAH excavated the Byzantine cemetery (WF3) south of the Khirbat Faynan (WF1). Khirbat Faynan itself was surveyed, and test excavations also took place at a Bronze Age site, designated as WF100.

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Modern research began in the 1980s, when Andreas Hauptmann of the Bochum Mining Museum in Germany began studying the prehistory and history of copper mining within Faynan. This project identified raw material sources, excavated numerous mines and mining sites, studied the smelting technology, and explored the patterns of ore and copper exports throughout the region.

Mohammad Najjar, Director of Archaeological Surveys and Excavations for the Jordanian Department of Antiquities, became a co-director of the copper mining project in 1988. He began his own programme of archaeological research starting with excavation at the Neolithic site of Tell Wadi Faynan, where he found traces of the earliest copper working in the area. During the early 1990s, the British Institute at Amman (BIAAH) began its own programme of fieldwork in Wadi Faynan. BIAAH began the systematic cataloguing of archaeological sites using a numbering system of ‘WF’ numbers. This was later adopted by all archaeologists working in the wadi.

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In 1996, Bill Finlayson, then Director of BIAAH (which became the Council for British Research in the Levant in 1998), initiated a survey to locate sites of early prehistoric settlement. With Steven Mithen, Bill Finlayson and Mohammad Najjar  directed a major excavation at WF16 from 2008 to 2010, revealing this to be the earliest known permanent settlement in Wadi Faynan.

During this time, research was also taking place in Wadi Fidan, located to the immediate northwest of Wadi Faynan. Russell Adams (University of Bristol, and then University of Waterloo, Canada) initiated this fieldwork in 1989 to explore the origin and development of metallurgy, and then continued this work with Tom Levy (University of California in San Diego) and Mohammad Najjar. Numerous sites of the Neolithic, Bronze and Iron Age periods were discovered and excavated by this team, notably the Bronze Age sites of Wadi Fidan 4 and Khirbat Hamra Ifdan, the Iron Age cemetery of Wadi Fidan 40, and the Iron Age site of Khirbat an-Nuhas.

The most recent archaeological discovery has been a Stone-Age site in the far southwest corner of Wadi Faynan known as the Barqa region. Containing a scatter of many thousands of stone artefacts discarded by prehistoric hunter-gatherers, it was explored by Sam Smith (Oxford Brookes University, UK) in 2013 and 2014.

There are, no doubt, many more archaeological sites yet to be discovered in the world. During the 40 years since Andreas Hauptmann began his survey of copper working sites, the surveys and excavations by archaeologists from around the world have begun to reveal the history of Faynan: a remarkable story of human endeavour and innovation in a constantly changing landscape.
The museum

The Department of Antiquities of Jordan (DoA) has built Faynan Museum on the edge of Faynan Village. This is a beautiful building that we hope will become a cultural hub for Faynan. The DoA kindly allowed the Discovering Faynan Heritage project to provide displays for the museum.

The centerpiece of this is an accurate model of the Faynan area with the key archaeological sites marked and a time-line around the wall that takes visitors from 500,000 years ago to the present day. As the museum develops, displays of finds from the archaeological sites will be introduced and research facilities developed on the second floor.

Opening of the Faynan Museum exhibition
4 March 2018

The exhibition was formally opened by her Excellency Lina Annab, Minister for Tourism and Antiquities on the 4 March 2018. This event attracted two hundred dignitaries from the region and amounted to a celebration of the cultural heritage of Faynan and its value to the local community.

The Discovering Faynan Heritage project has also provided information boards at the three Neolithic settlements in Faynan: WF16 (site 3), Ghwayr 1 (site 4) and Tell Wadi Faynan (site 5). A film about the Neolithic in Faynan can be viewed at the Feynan Ecolodge and the museum.

Her Excellency Lina Annab, Minister for Tourism and Antiquities, and Professor Steven Mithen, University of Reading, opening the Faynan Museum exhibition

The museum

وقد قام "مشروع إكتشاف إرث فينان" بإعداد ثلاثة لوائح معلوماتية تم وضعها في مواقع العصر الحجري الحديث في كل موقع: WF16 (موقع رقم 3)، Ghwayr 1 (موقع رقم 4)، و Tell Wadi Faynan (موقع رقم 5). وتستعرض هذه لوائح العصر الحجري الحديث في كل من المتحف ونزل فينان البيئي.

إفتتاح معرض متحف فينان
4 آذار 2018

قامت عدداً من كبار الشخصيات في المنطقة بالانضمام إلى حفل الافتتاح. ويعد المعرض الحديث في كل من المتحف ونزل فينان البيئي.

معالي وزيرة السياحة والأثار السيدة لينا عناب بصحبة البروفيسور ستيفن ميتين من جامعة ريدينج، افتتحا معرض متحف فينان خلال حفل افتتاح معرض متحف فينان.

The museum
The model of Faynan and wall displays within the museum tell the story of Faynan by describing 30 of its archaeological sites.

Guests at the opening of the Faynan Museum exhibition.

Dr. Monther Jamhawi, Director-General of the Department of Antiquities of Jordan (2013–2018), addressing the assembled guests.

Feynan Ecolodge has won over 20 international awards including being chosen as one of the best 25 Ecolodges in the world by National Geographic Traveler. This is due to the ethos of the lodge and the exceptional experiences that guests receive while at the lodge, which is exclusively provided by members of the local community of Feynan.

www.ecohotels.me/Feynan

Feynan Ecolodge

The museum | المتحف

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The Palaeolithic
The earliest people in Faynan
500,000–12,000 years ago

العصر الحجري القديم
أقدم المجموعات البشرية في فينان
The earliest traces of human activity within Faynan are likely to date to at least 500,000 years ago. Our human ancestors evolved in Africa, and the first people to disperse from Africa, around two million years ago, were a species known as *Homo erectus*, a type of human that looked much like us today but with a significantly smaller brain. They lived by hunting and scavenging, and gathered a wide range of plants. These people reached Asia and Europe by travelling through the Levant. They used stone tools, which are often the only trace of these people that now exist.

Following the initial human dispersal into the Levant, there was a complex flow of people and animals back and forth from Africa. New species evolved, notably *Homo heidelbergensis* and then *Homo neanderthalensis*, several of which have been found buried in caves within the Levant. These people lived during the geological period known as the Pleistocene, or Ice Age. As the climate began to warm and rain became more frequent, Faynan would have become an attractive place for hunter-gatherer communities.

The people who lived during the last few thousand years of the Pleistocene are known as Epipalaeolithic hunter-gatherers. Traces of these people are found throughout the Levant, identified by scatters of their stone tools, and sometimes by remnants of their dwellings and burials. Epipalaeolithic hunter-gatherers hunted mainly gazelle, lived in larger communities and made more permanent settlements than the people who came before them. These people lived during the geological period known as the Pleistocene, or Ice Age. As the climate began to warm and rain became more frequent, Faynan would have become an attractive place for hunter-gatherer communities.

The earliest people in Faynan were likely to have lived between 500,000 and 100,000 years ago. Our human ancestors evolved in Africa, and the first people to disperse from Africa, around two million years ago, were a species known as *Homo erectus*, a type of human that looked much like us today but with a significantly smaller brain. They lived by hunting and scavenging, and gathered a wide range of plants. These people reached Asia and Europe by travelling through the Levant. They used stone tools, which are often the only trace of these people that now exist.

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The people who lived during the last few thousand years of the Pleistocene are known as Epipalaeolithic hunter-gatherers. Traces of these people are found throughout the Levant, identified by scatters of their stone tools, and sometimes by remnants of their dwellings and burials. Epipalaeolithic hunter-gatherers hunted mainly gazelle, lived in larger communities and made more permanent settlements than the people who came before them.
The earliest evidence of a human presence in Faynan comes from stone tools found scattered across the wadi, but primarily on its north side. These come from Wadi Ratyah and include tools worked on both sides, called bifaces, in both pointed and ovate shapes, possibly made as much as 500,000 years ago. They are likely to have been general-purpose tools, used for tasks such as digging up roots, chopping through stems and butchering animal carcasses.

Flint flakes and cores made by a special method we call the Levallois technique, have also been found in the wadi, and these early stone tools are likely to have been made by Neanderthals. The Levallois technique involves striking stone flakes from a piece of stone, known as the core, that had been carefully prepared for working. The very skilful preparation of the stone core means that with a single blow a flake or blade of predetermined size and shape can be removed. Some of these are likely to have been used as spearheads. A third type of early stone tool found within Faynan are long, thin blades of flint. These were removed from skilfully prepared blade cores. They have ends showing how they were struck off the core by a sharp blow to the striking platform. This type of blade became the predominant stone tool used by modern humans, Homo sapiens, prior to the end of the Pleistocene.

Wadi Ratyah
Stone artefacts of our early ancestors in Faynan

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The Palaeolithic
Within the dune fields known as the Barqa, located to the south of Faynan, a huge scatter of stone tools and their manufacturing debris have been found. These were left by Epipalaeolithic hunter-gatherers, who repeatedly returned to this location between 20,000 and 11,500 years ago. During that period, the area around Barqa appears to have been a wetland environment. Its fresh water would have supported a diverse range of plants and animals, making the area especially attractive for hunter-gatherers.

Barqa
An Epipalaeolithic camping site

برقة
مَخيم ما بعد العصر الحجري القديم
There are literally millions of stone flakes and blades left scattered within the sand dunes, many having been chipped into the distinctive microlith forms used by the Epipalaeolithic hunter-gatherers, including slender points, trapezes and lunates.

The people at the Barqa would have made huts from bush-wood, and undertaken craft activities such as weaving baskets, drilling beads and working hide. The quantity of stone flakes suggests Barqa was a location where many small groups of hunter-gatherers congregated together each year, making use of the seasonal abundance of game and plants within the wetlands. Marriages and rites of passage would have taken place, with the exchange of goods and of information about distant places, before families and groups dispersed again across the landscapes of the southern Levant.

وقد تم العثور على ملايين النصال والشظايا الصوانية المنتشرة في موقع برقة، يقدر عمرها حوالي 15000 سنة. 

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The Neolithic
The first farming communities in Faynan
12,000–7,000 years ago
Farming transformed human lifestyles and human history, laying the foundations for the development of large permanent settlements and the first civilizations. It began independently in several regions of the world, one of which was the Levant, within which southern Jordan was an especially important area for early innovations.

Farming developed over a long period, starting with the cultivation of wild wheat, barley, chickpeas and lentils by at least 11,000 years ago. This practice began with simple activities such as weeding, removing pests and watering, and eventually led to easily harvested high-yield domesticated crop varieties. The focus of hunting changed from gazelle to wild goats, which were increasingly managed and then herded, before becoming domesticated, along with sheep, pigs and cattle. With these new resources, people were able to settle down to live in what became permanent settlements.

A host of other technological innovations were tied into this, such as the manufacture of mud bricks for houses and lime plaster for floors, a more extensive range of mortars and pestles for preparing plant foods, and new ways of making stone tools.

Social and ideological changes were an integral part of the Neolithic. This is evident by new ways of treating the dead, new types of ornamentation, and new communal buildings, some of which had ritual functions. By the end of the Neolithic, people lived in much larger communities and had to devise new ways to manage their social relationships.

And, as Norman Blake says, the Neolithic was the first time humans could be said to have entered into an intentional phase of social evolution, as they began to build new forms of collective life.

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The Neolithic
The first farming communities in Faynan
Exactly why and how farming emerged in the Levant remains unclear. Hunter-gatherers went through a long process of using their resources more intensively, gradually modifying their environment and the resources themselves. Climate change at the end of the Ice Age would have played a part, while choices made by people will have also been important, some of which will have had unforeseen consequences. Farming was able to sustain larger communities than hunting and gathering alone, and once populations had grown, it would have been hard to return to hunting and gathering. Within a few thousand years the Neolithic had put human history onto a new path, ending millions of years of hunting and gathering, and providing the foundations for our modern way of life.

The development of the Neolithic in the Levant occurred in three cultural phases referred to as:

- Pre-Pottery Neolithic A (11,500–10,500 years ago)
- Pre-Pottery Neolithic B (10,500–8,500 years ago)
- Pottery Neolithic (8,500–7,000 years ago).

Each of these phases is represented by a settlement within Faynan, providing a unique record for this critical period of the human past.
WF16 was discovered in 1996 as a scatter of flint tools and massive stone mortars on the surface of a knoll, just before the steep climb to the Jordanian plateau. This important site shows some of the earliest developments of the Neolithic, including evidence for the first steps away from hunting and gathering towards the production of food, and the development of a communal way of organising society – with shared stores and workshops, and a public space for communal activities.

Excavation showed WF16 to be a dense cluster of semi-subterranean oval structures used between 12,000 and 10,200 years ago, with a peak of activity around 11,200 years ago. The structures were lined with pisé, a mud
The Neolithic excavation at WF16 showing the remains of the semi-subterranean structures, just below the surface of the knoll.

In 2009, excavations at WF16 revealed the remains of semi-subterranean structures just below the surface of the knoll. Among the artifacts found were fragments of a stone bowl, decorated stone and bone plaques, beads, a needle and a stone vessel excavated from WF16.
and plant mixture, which was also used for walls that supported timber frames for flat roofs. The structures were of various sizes, containing objects that suggested different uses, including domestic activities, storage, and workshops for making beads. One of the structures was especially large, seeming to have been built for social gatherings and perhaps performances, as people found new ways to live together. In the final phase of occupation, buildings began to be built above ground, reflecting technical and social developments in the Neolithic.

The settlement of WF16 was also a cemetery, with many burials placed below floors and into walls of buildings.
A large amphitheater-like structure was constructed at WF16, most likely for communal activity, perhaps singing, dancing and ritual. A later circular structure with thick walls and massive stone mortars was built within its interior.
The many pestles and mortars, buildings designed for storage, grains of wild plants including barley, and the use of chaff in the pisé to stop it cracking, all suggest that wild plants were being cultivated, while trees such as figs and pistachio were exploited. The animal bones from WF16 were predominately from wild goats, with age profiles suggesting that these were being hunted in a selective manner to manage the herds. Animals such as foxes were hunted for their fur, while the bones of raptors suggest their feathers and talons were prized for ornamentation.

Many craft activities are evident, notably the working of the local malachite copper ore into green stone beads. Shells from both the Red Sea and the Mediterranean were also used for beads, these showing that visitors came to WF16 regularly for annual gatherings. Many ‘art’ objects were also made and/or discarded at the site. These were predominately small slabs of stone incised with geometric patterns.

WF16 was a cemetery as well as a settlement. Burials were made below the floors, or cut into the walls of earlier structures, into which the bodies of adults, children and infants were placed. Most of the bodies were laid on their side with a hand below their head in a sleeping position. In some cases, selected bones were removed or added to these burials. In other instances collections of bones had been painted and wrapped in bundles using plaster, suggesting complicated mortuary practices before and after burial.

To conserve and protect the structures in this important archaeological site, the excavated settlement has been carefully covered back over. A replica Neolithic dwelling, based entirely on archaeological evidence from WF16, has been constructed next to the site.

And she excavated burial plots and houses at Wadi Fannan 16, where there was both a cemetery and a settlement. She found evidence of the use of mortars and pestles, storage buildings, grains of wild plants such as barley, and the use of chaff in pisé to prevent cracking. This suggests that wild plants were being cultivated, while trees such as figs and pistachios were exploited. The animal bones from WF16 were predominantly from wild goats, with age profiles indicating selective hunting to manage the herds. Foxes were hunted for their fur, while the bones of raptors suggest that their feathers and talons were valued for ornamentation.

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Located just 500 metres from WF16, Ghwayr 1 represents the next stage in the development of the Neolithic, occupied for about 500 years around 9,000 years ago. A number of important changes took place during this time, including a new reliance on domesticated plants, the introduction of domestic animals, new ways of structuring society, and the ownership of property.

Like the earlier settlement of WF16, Ghwayr 1 is made up of a dense cluster of structures. Unlike WF16, however, all structures at Ghwayr 1 were built above ground from stone cobbles and boulders. The style developed from sub-rectangular buildings placed together in a honeycomb, into regular, rectangular structures; this reflects changes in architecture found throughout the Levant which mark the Pre-Pottery Neolithic B phase.

The scale of the settlement suggests that several hundred people had lived at Ghwayr 1. The rectangular buildings were large 10x10m spaces, which were later divided into smaller rooms, with stairs up to an additional storey. These small rooms were probably used for the storage of private property held inside the house, in contrast to earlier public storage structures, suggesting that the household had become an important economic and social unit. Blocks of houses were divided by a stepped street, indicating a considerable degree of communal planning and labour. The walls were plastered, some being decorated with geometric designs.

The people living in Ghwayr 1 had begun to keep domesticated animals. These were predominately goats, although sheep may have also been kept. Nevertheless, hunted animals remained an important part of their diet.

The Neolithic | العصر الحجري الحديث

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diet. A wide range of cereals and legumes were grown including barley, wheat, and peas, while figs, pistachios, capers and date palms were collected. Querns were a newly developed device for cereal grinding. The large number of querns that was recovered during excavation shows that the preparation of plant foods had become a huge undertaking at Ghwayr 1. Flint tools were also found in abundance, including blades used in sickles to harvest the newly domesticated cereals, and a range of arrowheads indicating that hunting continued to be important. The production of flint blades had become more standardised than at the earlier WF16 site, suggesting the emergence of craft specialisation.

Ghwayr 1 is located at the junction between the escarpment leading to the plateau to the east, and Wadi Faynan to the west. This was, and remains, a key communication route between the plateau and the Wadi Araba.

زراعة تشکیل‌واستعما من الحبوب والبقوليات كالقمح والشعير والحماص، وتم إتقان فن زراعة الطماطم والزراعة، والتمور. وقد ظهر في هذه الفترة نوع جديد من الجواريش الحجرية المقعرة مخصصة لطحن الحبوب. وظهر عدد كبير إتقانًا للجواريش المكتشفة في الغوير 1 إلى أن عملية إعداد الطعام أصبحت إحدى النشاطات الهامة في المستوطنة. وقد تم العثور في الموقع أيضًا على أعداد كبيرة من الأدوات الصوانية، حيث تضمنت هذه الأدوات الصوانية السهام التي تؤكد بأن الصيد ما زال على درجة عالية من الأهمية بالنسبة لهذه المجتمعات. ومن الملاحظ أن الأدوات الحجرية والصوانية في هذه الفترة أصبحت أكثر تناسًا مما قد يشير إلى تطور التخصصية في الحرف اليدوية.

ويحتل الغوير 1 موقعًا متميّزاً بين حربة فينان من الغرب، وسلسلة الجبال الشرقية مما جعله موقعًا هاماً على طريق الإتصال بين وادي عربة وسلسلة الجبال الشرقية الأردنية المعروفة بالشراة.

The Neolithic | جداريات بيوت الغوير 1 يؤدي جزءًا من الطريق الغربي إلى الغرب
The Neolithic | The walls of Ghwayr 1, looking west towards the Khirbat Faynan
The invention of fired clay pottery was key in the development of the Neolithic and farming lifestyles. This enabled people to prepare and cook foods in new ways – mixing ingredients, making softer digestible foods, and fermenting liquids. Clay vessels also provided a powerful new medium for social display and cultural identification.

The first use of pottery in Faynan is found at the Neolithic settlement of Tell Wadi Faynan, located in the centre of the wadi and now much destroyed by flash floods. This was occupied between 8,500 and 7,000 years ago by people who grew cereals and herded domestic goats and sheep, although direct evidence for their subsistence has not survived. Excavation has revealed rectangular boulder-walled buildings with beaten clay floors.

Some of the pottery was of a coarse fabric, the clay having been tempered with reeds and other plant matter, while some was finer having been tempered with grit and sand. Decoration was sparse, with a few thumb-impressed ledges. Flint sickles were found, but no arrowheads, suggesting a complete reliance on domesticated animals.

Tell Wadi Faynan dates to the end of the Neolithic, and the start of the Chalcolithic, or copper age. A few pieces of copper ore were recovered from Tell Wadi Faynan. It appears that people were collecting lumps of surface copper from the adjacent hills, hammering them into shapes and exploring how to transform them by heating.

The high concentrations of copper and lead found within the late Neolithic sediments suggests that people were beginning to deliberately heat metal-rich ores, presumably to extract their metal content.
The remnants of walls and floors at Tell Wadi Faynan
Engravings of people and animals can be seen on boulders in numerous locations throughout Faynan, often found at places that provide spectacular views or on key communication routes into the escarpment. Most of the motifs were made by a technique known as pecking, which involved hammering into the rock face to create images of people, ibex, camels and signs; in some cases, people are shown riding animals. On several boulders the engravings have been superimposed above one another, with the earliest appearing to be images of ibex or wild goat.

While dating rock engravings is extremely difficult, it is likely that many of these date to the Bronze Age, especially those which have images of people riding donkeys, horses and camels. These could, however, be more recent in date, while some of the less well-preserved images might be Neolithic or earlier.

There are two notable clusters of pictographs in Faynan. Site 6 is located around the upper reaches of Wadi Ushayqar, towards where it meets the edge of the escarpment. Here one finds numerous decorated boulders, some with a single motif of an ibex and others with complex depictions, with one appearing to represent an ibex hunt on horseback and using dogs. A second cluster, Site 7, is found on a small terrace within Wadi Ghwayr. These show a wide range of weathering, some being only faintly discerned suggesting they might date back to the Neolithic.

ويتواجد موقعان في فينان يتميزان بِكثرة النقوش فيها أواحها موقع 6 على إمتداد واي أشيقر من السلسلة الجبلية حيث هناك العديد من الحجارة المخرفة بعضها برسم وحيد للنوع الجبلي وأحيانا برسمات أخرى تعقد من صور عمليات صيد المأزق الجبلي من貘 ظهور الخيل ومساعدات كلاو الصيد. والموقع الثاني هو موقع 7 في أحد مصاطب واي الغوير نفسه. إن هذه النقوش قد تعودت لِمُحاولة عبرية شديدة مما جعلها باهتة وغير واضحة بما يوجي أنها قد تكون من فترة العصر الحجري الحديث.

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Pictographs of ibex, people and signs on boulders in the upper reaches of Wadi Ushayqar (Site 6)
Pictographs of ibex, people and signs on boulders in the upper reaches of Wadi Ushayqar (Site 6)
The Chalcolithic and Bronze Age
Population growth, expansion of farming and metallurgy, followed by decline 7000–3200 years ago

العصر النحاسي والبرونزي
إزدياد عدد السكان، التوسع في قطاعي الزراعة والتعدين، تلتها مرحلة تراجع
The Chalcolithic
Emergence of copper working
7000–5000 years ago

The Chalcolithic is the phase which emerges from the Neolithic, when copper begins to be worked, farming becomes more established, and new types of pottery are produced. Chalcolithic people were experimenting with copper working in Faynan. Although their mines have been largely removed by later activity, some archaeologists have argued that the marks of Chalcolithic tools can still be seen on some rock faces.

The final phase of the pottery Neolithic site of Tell Wadi Faynan (site 5) is probably Chalcolithic in date. Other Chalcolithic settlements developed into Bronze Age sites, notably the large settlement of Wadi Fidan 4 (site 13).

The Chalcolithic ( كالكوليشيک)
العصر الحجري النحاسي
ظهور صناعة النحاس

The emergence of copper working 7000–5000 years ago is a significant development in prehistory. It marks the transition from the Neolithic to the Chalcolithic, a period when copper began to be worked, farming became more established, and new types of pottery were produced. Copper working in Faynan was an important activity during this period. Although most of the mines have been removed by later activity, some archaeologists argue that the marks of Chalcolithic tools can still be seen on some rock faces.

In the final phase of the pottery Neolithic site of Tell Wadi Faynan (site 5), the Chalcolithic period is evident. Other Chalcolithic settlements evolved into Bronze Age sites, such as the large settlement of Wadi Fidan 4 (site 13).
The Bronze Age
Population growth, expansion of farming and metallurgy, followed by decline

During the Bronze Age, the Levant sat between the early state societies of Mesopotamia to the north and east, and of Ancient Egypt to the south and west. Trade and power relations between these imperial states influenced developments within the Levant, with local elites gaining their own power by facilitating the trade in metals to Egypt, passing through sites located south of Faynan on the Red Sea. Although urban communities did not develop within Faynan itself, the major expansion and exploitation of its mineral wealth, notably copper, was related to the social, economic and political transformations within the wider Levant.

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There was a substantial increase in population in Faynan during the Early Bronze Age, 5,000–4,200 years ago, evident from the hundreds of sites across the landscape where distinctive Early Bronze Age pottery is found. The largest settlement was located close to the Faynan river channel, and had a population between 1,000–2,500 people. Khirbat Faynan was also occupied from the Bronze Age onwards, although later construction masks the extent of this settlement. Such population growth would have been helped by a wetter climate, leading to higher crop yields. It would also have been achieved by a more complex farming system, involving management of the water supply using dams, walls to divert water and water-storage facilities. A settlement pattern of large communities developed, living close to the water channels cultivating arable crops, and specialist pastoral communities based on the higher slopes. Farming must have generated a surplus to support people involved in mining, smelting and the range of craft activities which expanded during this time. The large number of funerary monuments in the landscape suggest there may have been specialist priests, while coordination of this whole system might have required a political elite.

During the latter part of the Early Bronze Age, the extent of farming activity reduced, but that of mining, smelting and the export of copper increased, with its focus shifting to Wadi Fidan, where Khirbat Hamra Ifdan (site 14) become a key centre. That too declined towards the end of the Early Bronze Age, probably reflecting changing patterns of Egyptian trade and political influence in the Levant.

The reduction in farming might reflect the vulnerability of Faynan to slight shifts in climate. Reduced rainfall had a major impact on yields, whilst soil erosion arising from the clearing of trees might also have been significant. During the Middle and Late Bronze Ages (4,000 – 3,200 years ago), Faynan was principally exploited by pastoral communities, who spent much of the year on the plateau only visiting the wadi for seasonal grazing, leaving little in the way of settlement remains.
An extensive spread of Early Bronze Age pottery on the southern side of the wadi channel, a kilometre west of the juncture with Wadi Dana, marks the site of a major settlement covering 11 hectares with a complex of enclosure walls, small sub-rectangular buildings, yards, floors and pits. The site, known as WF100, has been heavily disturbed, and is partly hidden by later Roman and Byzantine field walls.

A wide range of domestic and craft activities took place at the settlement, including pottery, weaving and metal working. Copper ore was brought to the site, broken up and smelted, with the resulting metal fashioned into objects using moulds and by hammering. Pottery was made using the coil technique, producing a variety of open bowls and jars with impressions of matting on their bases, some of which included simple decorations from finger impressions and incisions cut into the clay.

The Bronze Age inhabitants of this settlement were reliant on crops and owned a range of animals including sheep, goat, cattle and pigs, as well as donkeys which may have been important for transport in the copper trade.
The dead from site 8 (WF100) appear to have been buried to the immediate south of the settlement, where several hundred Early Bronze Age graves are located in a cemetery at site 9 (WF533). Some of the graves are simple, while others are complex funerary monuments included rectangular structures. It seems likely that this diversity reflects a social differentiation where the more powerful and wealthy were given elaborate burials.

The prominent location of the cemetery and many of the funerary monuments suggest the ancestors buried here may have been used by the people of the settlement at site 8 (WF100) to legitimise control of the landscape.

An Early Bronze Age cemetery  
A landscape of the dead
Pastoral settlements away from the Wadi Faynan Channel

On the higher land to the north of the wadi channel there are several Early Bronze Age pastoral settlements, such as those found at site 10 (WF797).

These primarily consist of enclosures and pens for containing animals, with few traces of dwellings remaining. These may have been used seasonally, with Early Bronze Age herders taking their animals to the best pastures. They vary in their size and complexity, with the range of pottery present indicating that some may have been in use throughout the entire Bronze Age.

Chalcolithic mines consisted of galleries excavated horizontally into hillsides (adits), while those of the Early Bronze Age became more sophisticated with vertical shafts to target rich copper silicates and malachite ores.

Dating the mines is largely dependent on the pottery fragments found within the waste heaps. More than 15 of these have been dated to the Early Bronze Age, primarily clustered in Wadi Khalid, with some reaching more than 50m into the hillside. Site 11 (WF1389) is a horizontal shaft in Wadi Khalid where large quantities of mining waste and Early Bronze Age pottery fragments have been found.

Mining

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لقد تم التعرف أثناء الأبحاث الأثرية على العديد من الموافع التي كان يقطنها مربو المواشي وذلك في المنطقة المرتفعة إلى الشمال من وادي فينان، وذلك في موقع رقم 10 (وادي فينان 797).

وتكون هذه الموافع في الغالب من حظائر مغلقة مع القليل من المؤشرات على السكن. وعلى الأرجح أن هذه الحظائر كانت تستعمل في أوقات محددة من السنة من أجل الوصول إلى مراع أفضل. وتتنوع هذه الحظائر من حيث الحجم والبناء، مع لادات من الأحجار الصخرية تشير إلى أن هذه الحظائر كانت مستعملة غير فترات العصر البرونزي المبكر بكمياتها.

كانت مناجم النحاس من فترة العصر الحجري النحاسي عبارة عن مغائر محفرة أفقياً في سفح الجبل، في حين كانت مناجم الفترة اللاحقة في العصر البرونزي أكثر تطوراً ومرونة بآبار عمودية تؤدي إلى أنفاق أفقية تفرع في إنجذابات مختلفة من نقاط في قاعدة البئر العمودي وذلك للوصول إلى الطبقات الغنية من خام النحاس.

ويعتبر تحديد تاريخ الأنفاق بشكل رئيسي على دراسة الكسر الفخارية التي يتم العثور عليها في أكوام الركام إلى جانب المنجم، وقد نسب أكبر أكثر من 15 من أعمالها إلى أوقات في الأوائل من فترة العصر البرونزي المبكر بناء على ذلك، وكان منها ما وصل عمقه قربة 50 مترًا. وموقع رقم 11 (وادي فينان 1389) هو أحد هذه الأنفاق الألفية والذي تم العثور عليه على كميات كبيرة من الركام التي تتواجد على شكل ما قبل النحاس من العصر البرونزي المبكر.
While smelting often took place close to the mines, it also occurred on the ridges within Wadi Faynan. This is the case at Site 12 (WF524), where the strong prevailing winds would have acted like powerful fans to help the process of heating up a mix of copper ore and charcoal placed into a simple bowl furnace or crucible. Small rods of fired clay, known as ‘lady fingers’ were used to support the mix to enable the molten copper to flow freely to the base of the crucible.

When the smelting was finished, the crucibles had to be broken apart to separate the metal from the slag, leaving crucible fragments and the ‘lady fingers’ as waste.
Located at the junction between Wadi Faynan and Wadi Fidan, the buildings of this important Chalcolithic and Early Bronze Age settlement covered the entire surface of a plateau. The presence of mining picks and traces of metallurgy at Wadi Fidan 4 indicate that the community was involved in both mining and smelting copper.

The earliest copper processing did not happen near the mining sites in Faynan, but was largely undertaken far to the west, on the other side of the Wadi Araba. At these sites, copper working was undertaken in large corporate buildings, suggesting it was controlled by an elite. By the time of Wadi Fidan 4, economic and social change had occurred, because smelting now took place locally, with the ore being transported into a domestic setting for smelting at a household level. In later periods, there was a further reorganisation, with this industrial process becoming located at the mines themselves.

The walls of houses and workshops at Wadi Fidan 4 constructed from river cobbles, indicating a community involved in both mining and smelting copper.
The Chalcolithic and Bronze Age | العصر النحاسي والبرونزي

The walls of houses, courtyards and workshops at Khirbat Hamra Ifdan Image: Professor Tom Levy, University of California, San Diego, USA

Khirbat Hamra Ifdan is the largest Early Bronze Age metal working site in the Levant. It developed as a location for large scale metalurgy during the latter part of the Early Bronze Age, around 4,500 years ago. This was a settlement with numerous houses and courtyards. Its archaeological remains are unusually well-preserved because they were protected by a boundary wall, which only collapsed during a relatively recent earthquake.

The copper industry at Khirbat Hamra Ifdan was centred in one large courtyard, where fragments of crucibles for smelting, copper slag, copper ore, and furnace remains have been found, as well as hundreds of fragments of moulds which would have been used to cast copper ingots, axes, blades, chisels and pins. Other courtyards and rooms were used for finishing the objects by hammering, grinding and polishing. This industrial level production is very different from the domestic-scale

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production found at the earlier site of Wadi Fidan 4, and is further reflected in the thousands of tons of slag present at the site.

Copper had become a commodity. The workers at Khirbat Hamra Ifdan were very skilled, producing high-quality copper for export, much of which was in the form of ingots. Chemical analysis of these ingots, and comparison with other sites in the Levant, shows that the copper from Faynan was exported considerable distances.

And tells us that this site had a higher level of production than before, with a social organization that allowed for the production of high-quality copper. This is reflected in the large quantities of slag present at the site, indicating the production of copper for export in significant quantities. The chemical analysis of these copper ingots, along with comparisons with other sites in the Levant, shows that the copper from Faynan was exported to considerable distances.
Iron Age and the Nabataeans
Faynan under the control of early states
3200–1844 years ago (1190 BC – AD 105)

العصر الحديدي والأنباط
فينان تحت سيطرة الدول المركزية المبكرة
By the Iron Age, 3,000 to 2,000 years ago, or the first millennium BC, we enter the world of history with written records now increasingly supplementing our archaeological knowledge. Faynan was part of the territory known as Edom, extending from the Jordanian plateau to the Naqab desert. There are references to Edom in both the Hebrew Bible and Egyptian papyri from the Late Bronze Age. Although Edom is referred to as a kingdom, it seems likely that it was at least in part a tented kingdom, or a confederation of nomadic tribes. There is a large Early Iron Age cemetery at Wadi Fidan 40 (site 16), which appears to have been used by these nomadic people. The type of political control that was exerted over the communities living in Faynan remains unclear, but the early part of the Iron Age witnessed a major expansion of copper mining and metallurgy on an industrial scale, with more than 100 mines being exploited.

As time passes, copper mining appears to have declined. A new administrative capital for Edom developed at Busayra in the highlands, and was connected to Faynan by a road system. It is not clear why copper mining declined, but the construction of major fortified sites and Egyptian incursions suggest that conflict disrupted the industrial development of the region.

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By the 4th century BC, around 2,300 to 2,400 years ago, the Nabataean kingdom, with its capital in Petra, emerged as the local power. The Nabataean kingdom developed from people spreading into the Wadi Araba from the south, from what is Saudi Arabia today. While their wealth and power were based on acting as middle-men in the trade routes passing through their territories, the Nabataeans developed an advanced level of hydraulic engineering enabling farming in the most arid of regions, along with coinage, writing and monumental architecture. A large reservoir (site 24) was constructed in Faynan where floodwater farming was further developed.

Khirbat an-Nuhas means ‘ruins of copper’. It covers 10 hectares, making it the largest copper working site in southern Jordan, and is one of five major Iron Age metallurgical sites that developed within the vicinity of Faynan between 3,000 and 2,500 years ago (c.1000 to 500 BC). The centrepiece of Khirbat an-Nuhas was a substantial fort, the ruins of which still stand to a considerable height. The fort was surrounded by at least 100 separate buildings, some of which appear to have been metallurgical workshops.

Khirbat an-Nuhas Ruins of copper

Khirbat an-Nuhas
Ruins of copper

تحتوي هذه الحربة على 1000 دينار، مما يجعلها أكبر موقع تصنيع النحاس في منطقة فیان، وهو المواقع الرئيسية التي داخلت وتطورت في الفترة ما بين 3000 وحتى 2500 سنة من الآن (1000–500 قبل الميلاد). وموقعه الرئيسي في خربة النحاس هو في القلعة المنحوتة، وتم إنشاء خزان مياه (موقع 24) في فيان الذي أدى إلى تطوير الزراعة بري المعقلون، وهو الطريق المائي الفيقي.

مع بداية القرن الرابع قبل الميلاد أي قبل حوالي 2300 سنة من الآن، بدأت تصلنا بعض المعلومات عن السكان النبط، حيث تأثر الأنباط بوسائل الراحة، وتهتم بالبقرة السياحية المحلية المسيطرة. وعلى ما يبدو فإن الأنباط كانوا قد دخلوا منطقة المأوى بدرجات من شمال الجزيرة العربية. بينما شكل عملهم كوسطاء للمزارع الوسطي في المنطقة العربية من بلد الشام أسهمت وازدهارهم. وقد تمكّن الأنباط من استخدام أساليب ري متطورة من ناحية منسجمة بفاعلية في أكثر المناطق وعورة وجفافا، وكان لهم كتابتهم الخاصة ومصونهم النقود الذين حملوا أسماء ملوكهم وملكاتهم، هذا بالإضافة إلى إعداداتهم في فن العمارة المنحوتة. وتم إنشاء خزان مياه (موقع 24) في فيان الذي أدى إلى تطوير الزراعة بري المعقلون. هو الطريق المائي الفيقي.

يتميز هذا الموقع بضخامة ركابه حيث تصل علوها بـ 60 مترا، مما يجعله أكبر موقع تصنيع النحاس في منطقة فيان، وهو المواقع الرئيسية التي نشأت وتطورت في الفترة ما بين 3000 وحتى 2500 سنة من الآن (1000–500 قبل الميلاد). وموقعه الرئيسي في خربة النحاس هو في القلعة المنحوتة، وتم إنشاء خزان مياه (موقع 24) في فيان الذي أدى إلى تطوير الزراعة بري المعقلون. هو الطريق المائي الفيقي.

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Enormous slag heaps up to 6m deep surround the settlement and came to entirely engulf many of the buildings. The archaeological evidence at Khirbat-an-Nuhas shows how the new Iron Age technology enabled copper smelting to take place on an enormous scale.

A massive two-storey building with a well-preserved stairwell was probably the residence for the elite people who were in control of the copper production at the site. They may have been involved in the development of Edom as a political entity, prior to the movement of power to the highlands.

ولعل المبنى الضخم ذو الطابقين والمزود بالأدراج الداخلية كان مخصصاً لإقامة الأشخاص المشرفين على عملية الإنتاج من إداريين وفنيين. هذه النخبة التي قد تكون لعبت دورا هاماً في تحديد الشكل السياسي لأدوم قبل إنتقال العاصمة السياسية للدولة إلى المناطق العليا في بصيرا.
Huge deposits of slag at Khirbat an-Nuhas indicate copper production on an industrial scale.
This Early Iron Age cemetery is estimated to contain over 3,500 graves, only a fraction of which have been excavated. Each grave consisted of a pit dug to the underlying bedrock where a burial chamber known as a cist was placed. The dead body was placed into the cist, which was then sealed with a capstone and mud plaster. The pit was filled in, and the grave marked by a surrounding circle of stones. There was some variation to this basic plan, in terms of how the body was placed, and the size and complexity of the circle of stones. There were few grave goods, the most common being stone beads. Pottery was entirely absent, all vessels having been made in wood.

The absence of an associated settlement at Wadi Fidan 40, along with the lack of pottery, suggests that the people buried in this cemetery may have been mobile pastoralists, possibly a people known as the Shasu in Egyptian texts. Despite their nomadic lifestyle, evidence of toxic metals in the skeletons suggests that these people were involved in copper mining and processing.

Wadi Fidan 40
An Iron Age cemetery

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There was a major expansion of copper mining and smelting during the Early Iron Age with more than 100 mines and five major copper smelting centres in the Faynan area, notably Khirbat an-Nuhas (site 15).

As in the Bronze Age, Wadi Khalid had a major concentration of mines, with their shafts now having to go deeper to reach the copper-rich ore, in some cases up to 70m deep. The most striking is the triple shaft mine. Two of these shafts were first sunk in the Iron Age, while a third was made in the Roman period, during which ancient mines were being re-opened.
Although Roman and Byzantine activity in Faynan has destroyed much of the evidence for Iron Age and earlier activity, the remnants of Iron Age field systems indicate a substantial development of floodwater farming. One of the clearest examples can be seen at site 18 (WF443), consisting of small irregular enclosures built using a variety of construction methods and containing Iron Age pottery. This pottery was probably scattered within household debris and animal waste used to fertilise the soil. One of the largest enclosures is subdivided by a series of small terrace walls which were used to interrupt the flow of surface water during floods.
This hilltop Nabataean fort located on the south side of Wadi Faynan commands outstanding views westwards out to the Wadi Araba, and eastwards towards the Khirbat Faynan. As such, it appears to have functioned to keep the whole region under surveillance. Fortified structures built on the summit were approached via a rock-cut staircase from the northwest. Structures constructed along the ridge blocked any approaches from the east, and a tower protected the south side. Many fragments of high status fine-painted pottery have been found at Tell al-Mirad suggesting a close connection with the political rulers of the Nabataean state.

Tell al-Mirad
a Nabataean fort

يتطلب الزائر لهذه القلعة النبطية المقامة في الجهة الجنوبية من وادي فينان أن يرى خربة فينان إذا توجه بنظره إلى الشرق، ووادي عربة الواقع على مسافة لا تقل عن 10 كيلومترات إذا وجه انتظاره نحو الغرب. ولهذا فإن بناءها من المرجح قد جاء لتلبية الحاجة في وضع المنطقة بالكامل تحت المراقبة. ويمكن الوصول إلى المباني المحصنة التي أنشئت على قمة التل من خلال درج مقطوع في الصخر الطبيعي موجود في الجهة الشمالية الغربية من الجبل. والمباني المحصنة على حافة التل تحمل الوصول إلى الجهة الشرقية مستحيلاً، بينما يقف البرج في وجه كل من يحاول الإقتراب من موقعه الجنوبي. وقد تم العثور في الموقع على كسر ضخم من نوع القلاع بما قد يشير إلى أن لهذه الحامية العسكرية أو على الأقل لبعض من قادتها إرتباطات بحكام الدولة النبطية.
The Nabataean fortress at Tell al-Mirad
Roman and Byzantine Phaino
Faynan within the Roman Empire
AD 106–668

فينو (فينان) الرومانية/البيزنطية
تحت الحكم الإمبراطوري
In AD 106 the Nabataean state came under the control of the Roman Empire, becoming the province of Arabia with its capital at Bosra in the north and Petra as the major city in the south. The mines in Faynan are likely to have been immediately taken into state control because copper was a critical resource for maintaining imperial power. The scattered pattern of Iron Age copper working settlements was centralised under a single centre known as Phaino, which we now call Khirbat Faynan. After the apparent decline of mining in the Nabataean period, Roman control expanded mining and smelting activity to an even greater industrial scale than that seen in the Early Iron Age, with Faynan becoming one of the largest producers of copper in the eastern Roman empire, second only to Cyprus.

Imperial officials ran the mining operation, with soldiers either present at the mines themselves or close at hand. The work force would have been a mix of mining, quarrying and smelting specialists, free workers paid a wage, and slaves who had been condemned to the mines. We know about the latter from the writing of Eusebius in the 4th century AD. He describes slaves being blinded in one eye, castrated and having their hamstrings cut to prevent escape, although such treatment was probably exceptional and made during a period of revolt.

The scale of mining operations in Faynan required a high level of organisation, not only for the metallurgy itself, but also to supply food, secure draft animals and timber, and transport copper. The floodwater farming field system that had been gradually developing ever since the Early Bronze Age was expanded on a grand scale. The Iron Age road system was also expanded, connecting Phaino via a major road to Gaza on the Mediterranean coast, to the main north-south road along the Wadi Araba, and via the steep climb along Wadi Dana to the highland plateau.

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At least 55 separate mines were worked within Qalb Ratyah to the north of Phaino, with a further ten mines in Wadi al-Abayd and Wadi Khalid. Further mines were worked at Umm al Amad, 12km to the south of Faynan. Smelting from all the mines was centralised at the Khirbat Faynan. Roman mining was so efficient that it appears to have removed all the readily accessible copper from the region.

The end of industrial activity seems to have been rapid in the 5th century AD, with a major flood sealing its fate.

As Christianity became the official religion, Phaino became a bishop’s seat. The bishops of Phaino are recorded as participating in early church councils. Several churches were built, and the settlement must have looked like a small hill village. With the mines worked out, it is possible Phaino continued as a centre of pilgrimage to the martyrdom of early Christian slaves in the mines. The end of industrial activity seems to have been rapid in the 5th century AD, with a major flood sealing its fate.

Although the exact extent of the industrial activity between Wadi Ratyah and Wadi al-Abyad is unclear, it is clear that significant amounts of copper were mined in this area. The smelting of this copper was centralised at the Khirbat Faynan.

The Roman government was highly efficient in exploiting the copper resources of the region, and it appears that all accessible copper was removed from the area.

The industrial scale of copper production had a massive impact on the landscape. The demand for timber was considerable, far beyond what Faynan itself could provide and requiring import of timber from the plateau. Water was also in high demand for industrial purposes, farming and domestic usage, requiring an aqueduct to bring water from the springs in Wadi Ghwayr to a reservoir close to the town.

The landscape became heavily polluted from smelting activity, leading to reduced biodiversity and crop yields. This made the population susceptible to disease and reduced life expectancy, requiring a continuous replacement of people from outside, whether of waged-labour or more slaves.

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The traces of many densely-packed buildings are evident within this huge mound of rubble. The remains of two churches can be seen on the north side, while a further church and a monastic building are found to the east. There is also a substantial detached tower at the western fringe of the site.

While the majority of the surface ruins are likely to date from the Roman and Byzantine period, activity at the Khirbat Faynan ran from the Early Bronze Age to the Mamluk period, with the earlier remains hidden by later buildings, but revealed by archaeological excavation. A large building at the top of the site, once assumed to be a Roman administrative building, is now understood to be Islamic.

The long period of settlement at Khirbat Faynan is not surprising with its location being at the junction between the Wadis of Faynan, Dana and Ushayqar.

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The huge complex of buildings of the Khirbat Faynan.

Image: APAAME_20151013_IAR-0037 © Isabelle Rueben Aerial Photographic Archive for Archaeology in the Middle East.
Ever since the Early Bronze Age, field walls had been constructed close to the floor of the wadi, several of these being designed to capture floodwater to enable the growth of cereals. During the Roman period, several walls joined together to form a single bounded system of around 800 fields. This established a floodwater field system unique for the whole of the Levant. It had two areas, a northern and a southern zone. In the northern zone, boulder walls were designed to distribute seasonal run-off from the tributary wadi systems and the slopes into the fields, with the walls being interspersed with simple spillway and sluice structures.

The fields were manured with household rubbish, which can be seen by the scatters of Roman and Byzantine pottery found across the whole area, and implying the growing of cereals. In the southern zone, the fields had to be more steeply terraced, and lacked the benefit of an irrigation system. These fields were probably used for growing hardy perennial crops such as olives and vines, needing less intensive watering and manuring than the cereals.

It may have been during the Roman period that the intensive feeling of trees for fuel to power the copper smelting removed the vegetation cover from the hills. This caused rain to run off the ground surface, creating dangerous flash floods which made the streams in the wadis too unreliable and destructive to use as perennial water sources.

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Many of the Roman mines had to target low-grade copper ores, because the better-quality ore had been entirely removed during the Bronze and Iron Age periods. The Roman mines consisted of horizontal or gently sloping adits and galleries, connected by vertical shafts, with natural rock arches to support the roofs. Those in Qalb Ratyah often had low and narrow entry spaces that could be easily controlled by those supervising the workforce.

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A cemetery containing at least 1,700 burials from the 4th to the 7th century AD is located on the south side of Wadi Faynan. The majority of the graves were oriented west-east, and many of them had headstones with crosses, clearly indicating they were Christian. Most burials were simple grave cuts, with stone slabs laid over the body. Some burials were more clearly indicated at the surface by stone cobbles or rectangular structures that appear to have been plastered. Further smaller cemeteries are located close to the Khirbat Faynan.

Although they have no formal grave goods, many burials have been destroyed by looters; others have been excavated by archaeologists to avoid the loss of evidence by such looting. The analysis of the human bones from the South Cemetery has given us information about the living conditions at the time, and the effects of hard work and pollution on the mining population.

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The South Cemetery
One of the headstones within the South Cemetery with a cross, indicating a Christian burial.

Watch over the headstone that appears in the South Cemetery's southern section.
This reservoir was initially built in the Nabataean period, but continued in use through the Roman and Byzantine periods, and probably up to the Mamluk occupation. With dimensions of 31x22.4m, and 4m deep, the reservoir would have held over 3000m$^3$ of water. The water reached the reservoir via an aqueduct from the springs in Wadi Ghwayr. There is a small settling tank just as the water reaches the reservoir, designed to capture any soil or other heavy contaminants that might have got into the water.

The reservoir most likely provided water for drinking, industrial and agricultural use. The large slag heap to its immediate east (site 29) is of a later date and hence would not have polluted the water, while a number of small settlements close to the reservoir suggests the area was seen as fit for habitation.
This is a pen stock mill, where the water is dropped vertically down a shaft, before being forced through a small pipe with great force to spin a turbine that drove millstones above. It is not known when such mills were first developed. This one depends on the reservoir for its water supply, so might have been used from the Nabataean period onwards. Pen stock mills are typically used in the Islamic periods for grinding grain, although this example might have been used for crushing ore.
The aqueduct was constructed to transport water from the natural springs found several kilometres up Wadi Ghwayr from its junction with Wadi Faynan. It was cut into the side of the wadi and then ran across a 12m long arched bridge over the Wadi Ushayqar to the reservoir. The black plastic water pipes used to supply the fields growing tomatoes today follow precisely the same course.

Aqueduct bridge

كن الغرض من إنشاء هذه القنوات والقنطرة هو نقل المياه من الينابيع الموجودة على بعد كيلومترات إلى الشرق عند تقاطع وادي الغوير مع وادي فينان. ولا تزال بعض أجزاء هذه القنوات المقطعة في الصخر واضحة حتى الآن. وقد تم بناء قنطرة مائية بعرض تجاوز 12 مترًا باستخدام أقواس حجرية ما زال بعضها قائما في وادي أشيقر، عند نقطة إنشاء الوادي لهذه القنوات وإلى خزان المياه. وفي وقتنا الحالي تتبع الأنبوب البلاستيكي المستخدمة لجر المياه من وادي الغوير لسقاية حقول البندورة والبطيخ نفس مسار القنوات القديمة.
Khirbat Ratyah was most likely a Roman military fort. It was positioned to overlook the mines in Qalb Ratyah (site 22), probably serving as the control base of the mining supervisor, and accommodation for some of the mining workforce. Roman soldiers guarding the mines might have also been based here. At its centre was a 5x5m tower, with a large reservoir behind fed by a floodwater catchment wall, and a small Roman bath suite. Around the main building and on the facing slope to the east there were around 30 simple sub-rectangular buildings. It is a good example of the level of administrative organisation found within the mining industry, typical of the Roman empire.

Khirbat Ratyah
Roman fort guarding the mines

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Khirbat Ratyah, Roman fort guarding the mines

The view from Khirbat Ratyah, looking towards the mines
The Islamic and Ottoman periods
Pastoralism and a resurgence of copper production
AD 668–1918
العصور الإسلامية والفرتة العثمانية
الرعي وإعادة إحياء صناعة النحاس

125
In the first half of the 7th century, the Wadi Araba and associated area became the first Byzantine territory to fall under Muslim control, initially under the Umayyad dynasty. Phaino continued to decline, perhaps accelerated by a reduction in pilgrimage to the area, although Christianity continued as a major religion under the protection of the Umayyads. A courtyard structure at the top of the Khirbat Faynan may have served as a Khan – a meeting place providing hospitality for travelers. A Roman caravanserai at Khirbat Hamra Ifdan also appears to have continued in use. Faynan was gradually marginalised as trade routes moved to the plateau, leaving the landscape primarily to pastoralists who made use of the Roman field systems, until a new phase of copper working began in the Middle Islamic period.

The crusaders, although present in the wider region with castles at Showbak and Petra, seem to have had no interest in Faynan. As the crusader states came to an end, a boycott of trade from Europe to the Muslim Middle East provided a new impetus for copper production. The Mamluks, who ruled from Syria to Egypt between AD 1250 and 1517, pushed the last crusaders from the Levant and stopped the Mongol invasions. They rebuilt Showbak castle, established a sugar factory at Ghawr as-Safi, and their presence in Faynan is evident from concentrations of pottery found at Khirbat Faynan and the Nabataean fortress of Tell al-Mirad. With new technology, they resumed copper smelting, reprocessing the slag heaps from earlier periods and re-opened some mines. The presence of fine glazed pottery suggests that copper working was organized by the state, rather than by local pastoralists. The sugar industry may have created a new demand for local copper to make their large cauldrons for boiling and refining the sugar.

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Once the slag had been reprocessed and the last copper extracted, interest in Faynan again declined. The Ottomans, whose empire expanded across the Levant in the 16th century, never seem to have been active in Faynan, although their forts line the Hajj route from Damascus to Mecca on the plateau. When the Hajj railway was built, the Ottomans constructed branch lines into the forests around Showbak to extract the last of the timber, but Faynan was left to the pastoralists.

A large rectangular colonnaded structure on the summit of the Khirbat Faynan is visible on aerial photographs. It is associated with scatters of Early Islamic pottery, and is likely to have been an administrative building or a Khan. These were hostels for travellers and traders, sometimes constructed within a town, and sometimes on the roadside. If this interpretation is correct, it suggests that the Wadis Faynan and Ghwayr may have continued to act as an important routeway from the Wadi Araba to the plateau, or there may have been a continuation of pilgrimage to the area.
The huge complex of buildings of the Khirbat Faynan.

Image: APAAME_20151013_JAR-0037 © Isabelle Rueben Aerial Photographic Archive for Archaeology in the Middle East
During the Islamic period, some of the old Roman industrial waste was reprocessed because an increase in the value of copper following trade blockades made this economically worthwhile. The local environmental record shows a distinctive peak, containing a different set of polluting heavy metals from that produced by Roman smelting operations. This slag heap has been identified as one of the locations of Islamic copper working activity.

خلال الفترة الإسلامية الوسطى، نتيجة للحظر الذي كان مفروضاً على تصدير المعادن من أوروبا إلى المنطقة، زاد الطلب على معدن النحاس المستخدم ليس فقط في صناعة الأسلحة بل وفي صناعة النقود التجارية، وازدادت قيمة معدن النحاس. وتشير الشواهد الأثرية على عمليات إعادة تدوير واسعة للأكوام الهائلة من خبث الصهر من مخلفات الفترات السابقة، وتظهر الدراسات البيئية في المنطقة وجود مستويات عالية من التلوث بالمعادن الثقيلة تختلف في أنماطها وتركيبتها عن الأنماط السابقة. وقد تم تحديد تلال خبث الصهر المختلفة هذه كأحد مراكز صناعة النحاس في العصر الإسلامي المتوسط.
There was a brief phase of copper mining and smelting during the Middle Islamic period, evident from distinctive slag at the Khirbat Faynan (site 20) and the archaeological site of Khirbat Nuqayb al-Asaymir, located 1.5Km east of Khirbat an-Nuhas (site 15). This is the remains of a small hamlet for miners and smelters that had developed around the smelting site. It has 15 stone-built houses, a mosque, slag heaps and extensive scatters of Islamic glazed pottery, suggesting the presence of elite administrators. Coins collected from here are from the Ayyubid phase, spanning the period AD 1203 to 1235, perhaps indicating the precise date for this short-lived revival of copper production in Faynan.
A massive slag heap surrounding the houses of miners and smelters at the copperworking settlement of Khirbat Nuqayb al-Asaymir.
The present day
After four centuries of Ottoman rule, the Emirate of Transjordan was established in 1921, and the Hashemite Kingdom of Transjordan created was as an independent sovereign state in 1946 (renamed the Hashemite Kingdom of Jordan in 1949). Faynan had become a landscape of pastoralism, now principally occupied by members of four Bedouin tribes, the ‘Ammarin, Sa’idiyyin, Rashaydah and Bedouin from the ‘Azazmah tribe. They have origins in southern Palestine and were displaced permanently to Jordan by the Arab-Israeli conflict in 1948.

Traditional Bedouin life is focussed around tents, known as bayt al-sha’r or ‘house of hair’. Originally made from woven goat hair, these were principally divided into the shigg, the men’s area, and the mahram, the women’s area, providing pleasant living environments for families and space for welcoming guests. The campsites were normally located near water sources and with easy access to surrounding mountains where the best grazing was found for their goats. During the summer months, many Bedouin would re-locate to the uplands, notably around Shawbak.

This way of life continues in Faynan today, although facilitated by pick-up trucks, the availability of fodder and piped water. For others, however, there have been more dramatic changes. The Government of Jordan has long held a policy of encouraging Bedouin to adopt sedentary lifestyles in permanent houses rather than tents, including the adoption of modern farming. In the 1970s, the settlement of Quarayqira was established with the involvement of Sharif Nasser bin Jamil, uncle of the late King Hussein, and is today home mainly to the ‘Ammarin and Sa’idiyyin. The village of Faynan was established in the 2000s when the Rashaydah developed their new village supported by artesian wells and electricity – within which the Faynan Museum is now located.

Both Quarayqira and Faynan village are surrounded by cultivation. Plastic pipes bring water from Wadi Ghwayr to irrigate fields for growing tomatoes and melons especially in the area of the Roman field system. Managed by a local cooperative, such farming is continuing to expand in Faynan with extensive areas covered by plastic mulch during the cultivation seasons.

And while the traditional Bedouin lifestyle prevails, it has been adapted to the modern world. In recent years, the village of Quarayqira has seen the establishment of a museum and an educational center, which has helped to preserve the Bedouin culture and language. The village is now home to a thriving community of Bedouin, who continue to live according to their traditional ways of life, while also adopting modern technologies and practices.

The present day landscape
New employment opportunities have also arisen from the establishment of the Dana Nature Reserve, now Dana Biosphere Reserve, and the development of ecotourism. The Feynan Ecolodge was constructed in 2005 by the Royal Society for the Conservation of Nature (RSCN). It has now become a world class ecotourism destination offering guests a plethora of unique and authentic experiences, while providing support for the local communities and having a minimum impact on the landscape, environment and lifestyles of Feynan.

Many tourists come for hiking, adventure, bird watching, culture and relaxation, unaware of the archaeological remains throughout the landscape from all periods of the past. We hope this book and the exhibition in Faynan Museum will enrich their experience, encourage others to visit, and inform everyone about the remarkable history of Faynan.