

دائرة الثقافة والسياحة
DEPARTMENT OF CULTURE
AND TOURISM



Al Ain Cultural Sites

inscribed on
UNESCO's World Heritage List

Educator Resource

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Produced by Department of Culture and Tourism – Abu Dhabi, 2019

First Edition 2019

ISBN: 978-9948-39-101-2

Disclaimer: The content in this book is based on available information at the time of publication.

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Foreword

Al Ain’s cultural sites, inscribed on the UNESCO World Heritage List, are an integral part of the distinctive features of the emirate of Abu Dhabi and the United Arab Emirates. The Department of Culture and Tourism - Abu Dhabi is keen to make every effort to sustain and preserve them for present and future generations, as symbols of the cultural and national identity of the people of the UAE. “He who does not have a past, will not have a present or a future”, this statement by the late Sheikh Zayed bin Sultan Al Nahyan has been a source of inspiration to the strategic plan for the preservation of the cultural heritage of Abu Dhabi, and in line with the objectives of the emirate’s wider plan to build an educated society committed to preserving its heritage and values.

We have been honoured to bear great responsibilities that are not restricted to just preserving and sustaining this rich heritage for future generations. These also stretch to developing the UAE’s real wealth: its people. By enriching students’ knowledge of the nation’s history and cultural heritage, we instil feelings of belonging, pride and loyalty. This goes hand in hand with the promotion of national identity and the values of good citizenship, aiming to make these elements an integral part of young students’ lives. All this can be achieved through a simplified approach, one which utilises modern methods for the advancement of educational outcomes in line with the latest international practices.

It is a great honour for us at the Department of Culture and Tourism - Abu Dhabi to publish this integrated portfolio showcasing the first Emirati site inscribed on the UNESCO World Heritage List. It is a first of its kind initiative at the regional and GCC level, placing the UAE at the forefront in terms of integrating a unique cultural heritage into the curricula of public and private schools.

The history and culture of the city of Al Ain dates back thousands of years. The remains of Stone Age to Iron Age settlements in Jebel Hafit and Hili, the Bidaa Bint Saud tombs, the aflaj and the oases of Al Ain constitute a starting point and cornerstone in an ambitious, pioneering project to unveil the treasures of Abu Dhabi’s cultural heritage.

Mohamed Khalifa Al Mubarak

Chairman of the Department of Culture and Tourism - Abu Dhabi

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Introduction

The United Arab Emirates (UAE) cultural heritage reflects the nation's revered leadership. Knowledge of heritage forges national identity, elevates the UAE both regionally and internationally and shapes the diverse culture that remains grounded in the nation's collective aspirations, traditions and customs. It is a national priority to offer both heritage site-based curricula for students and schools and provide informal learning opportunities for families to enjoy local culture and heritage. The achievements of the UAE's ancestors are great. The study of local heritage sites reveals the narratives of its elders and their forebears who built the nation and enriched its civilisation. With a sound understanding of the past, it is hoped that the future can be successfully navigated. The UAE's past provides the stepping stones for the nation's collective wellbeing, prosperity and happiness.

The Department of Culture and Tourism - Abu Dhabi has created an important educational resource based on the UNESCO World Heritage Sites located in Al Ain, which is the first site in the UAE to be inscribed on this list. The Portfolio is an integral resource for educators to deliver social studies, and aims to elevate awareness of cultural history and heritage throughout the UAE.

Dear Educator,

The Department of Culture and Tourism - Abu Dhabi is delighted to provide the Al Ain World Heritage Sites Educator Resource Portfolio to you. This portfolio focuses on sites inscribed on the World Heritage List in Al Ain, presenting information on their cultural history and significance as archaeological and civilisation landmarks. The portfolio contains teaching and learning tools that will aid you in introducing your students to Al Ain's local heritage, both in the classroom and at the historical sites. We developed this educator's resource because we believe interactions with heritage offer unique experiences that build identity and civic behaviors, which will ensure the UAE's past is celebrated, understood and preserved for future generations. The Department of Culture and Tourism - Abu Dhabi aims to promote encounters with history and heritage sites that support our nation's ongoing prosperity and offer schools and lifelong learners the chance to discover the UAE's past through the nation's diverse resources.

Portfolio Overview

This portfolio contains multidisciplinary and multimedia resources designed for educators to prepare their class visit or teach about the World Heritage sites of Al Ain. It provides background information on the sites, in order to prepare educators with the tools to arrive confidently ready to begin the learning journey with their class. This resource contains lesson plans and activities that contribute to learning new terms, concepts, and skills, which reference the national curriculum. Moreover, the learning power of heritage sites and museums is through self directed and group work skills that should be nurtured in students. Students should emerge from their experience with a greater appreciation for global cultural heritage as well as the knowledge and abilities required to personally contribute to safeguarding significant landmarks for future generations.

Portfolio Objectives

- Enhance awareness of the World Heritage Sites in Al Ain and their significance to global cultural heritage.
- Develop students' skills, knowledge and attitudes associated with understanding the significance and preservation of the UAE's cultural heritage.
- Create opportunities for students to learn through the UAE's natural and cultural heritage environments.
- Support teachers in designing educational activities that focus on developing students' knowledge, understandings and skills in national and international cultural heritage.
- Foster positive attitudes in students towards the preservation and safe guarding of local and global heritage.
- Support the curricula of the Ministry of Education, and champion national identity through educational, cultural and heritage content that further ensures the preservation of the UAE's national heritage.

Who Should Use this Portfolio?

The portfolio is targeted for Social Studies, Arabic, English, Arts and Science teachers. It may serve as a model for teachers who wish to develop materials that seek to enhance and enrich school curricula through place-based learning opportunities. The portfolio is also available for teachers of other disciplines who aspire to teach and learn through the Al Ain World Heritage Sites with students in cycles one, two and three.

Portfolio Contents

This portfolio contains multiple learning resources designed to meet specific learning outcomes across the World Heritage sites. Activities provided within each lesson plan strives to develop students' thinking, research, exploration, analytical and creative skills. Each site is presented using a consistent format, allowing educators to learn first about each of the following Al Ain World Heritage sites: Jebel Hafeet's tombs, Hili, Bidaa Bint Saud and the Oases and Al Aflaj. Each site has a dedicated chapter, in which lessons have been developed with information and activities that are intentionally framed by targeted learning outcomes to guide the educator. Key terms and concepts can be found in each chapter. References and a glossary appear at the end of the resource.

The Portfolio Consists of the Following Elements:



1- Educator Resource: The resource is divided into a general introduction to the World Heritage Sites of Al Ain and specific content about a variety of sites. The introduction outlines the resource's aims, design rationale and function as a teaching and learning tool to support national curriculum objectives. Additionally, it defines a World Heritage Site to ensure that the significance of Al Ain, as an inscribed designee on the World Heritage List, is understood and appreciated by all visitors.

The rest of the resource is the essence of the portfolio, containing the relevant background information, activities and targeted learning outcomes for the lessons on the Al Ain World Heritage sites of Hafeet, Hili, Bidaa Bint Saud and the Oases and Al Aflaj. A list of references, sources and relevant online resources are also included.

2- Educators Guide: A manual for teachers, designed for use in tandem with the Resource. The Guide looks at both classroom and place-based approaches

for facilitating learning through heritage sites and in museums, giving clear and practical suggestions when planning for and working with students using the portfolio. The Guide is linked to the goals and targeted learning outcomes in the resource and looks critically at how specific strategies and methods can promote desired outcomes in student learning. The Resource serves to empower teachers and students when approaching cultural heritage, offering a range of activities, tools and materials to drive imaginative and thought-provoking discussions and dialogues, the sharing of personal views through independent and group work and active exploration by students .

3- Posters: Images of the World Heritage Sites in Al Ain are provided for your classroom. They may inspire discussion and further reflective questioning; be referenced as evidence in heritage learning work; or used as a teaching and learning resources as determined by educators and students.

4- USB: The USB contains all the information found in this portfolio, the Educators Resource, and posters. Documentary films are also provided to enhance your instruction. The USB will make both print and digital content readily accessible for use, and can be shared with colleagues and parents.

Formal and Informal Learning

Heritage sites and museums are informal learning centers, where students can gain new social, scientific and cultural knowledge through enquiry-based investigations and access to tangible and intangible culture and heritage. Through field trips, students benefit from the combined approaches of both formal and informal learning. Educational visits to heritage sites and museums are often marked by volunteerism and self-direction in student learning. Most notably, they build student self esteem. Expertly designed learning experiences enhance cognitive behaviors and skills, as well as develop positive character traits, and support teachers in locating powerful opportunities beyond the classroom for students to test their differential thinking, critical analysis and global understanding of the past and present.

Utilising the Portfolio for Field Trips

The portfolio considers your class field trip to be one of the three most important components of a complete heritage learning experience. Each step is crucial to maximise the learning potential of visiting the Al Ain World Heritage sites.

Pre-visit:

Before the visit, use this portfolio to introduce your students to the site and lead them in class discussions. Information and questions can be found in this portfolio. Pre-visit preparation ensures that your students are ready to engage with the site and each other on the field trip.

During the visit:

The Educator Guide is divided into lesson plans following the chapters in the Educator Resource, with a variety of questions to employ during the visits to museums or sites. Site exploration is made easy through the discussion-based prompts and proposed activities available in the portfolio

Post-visit:

Students should take further time for reflection and to demonstrate what they learnt when they return to school. The portfolio delivers methods, such as panel discussions and site reports, for assessing the impact of the heritage learning experience.

Learning Outcomes

After using this portfolio and visiting the Al Ain sites, students should be able to:

- > **Appreciate the role that the late Sheikh Zayed bin Sultan Al Nahyan played in preserving Al Ain for future generations.**
- > **Articulate new knowledge, skills and understanding about Al Ain, the UAE's past and preserving world heritage.**
- > **Understand the impact of geography in Al Ain's history and cultural development.**
- > **Recognise the role Al Ain has played in the cultural development of the UAE and wider region.**
- > **Become acquainted with the significance of Al Ain's historical monuments.**

- > **Understand his/her personal role and responsibility as a citizen or resident in the preservation of all archeological sites in the UAE.**
- > **Know why Al Ain World Heritage Sites qualify for inclusion on the World Heritage List.**
- > **Reflect on the significance of his/her ability to actively influence the protection of local heritage.**
- > **Comprehend key terms and concepts listed in the glossary.**

Place-Based Learning

Al Ain World Heritage Sites offer a unique opportunity for students to learn about the cultural and natural surroundings in local diverse settings. Place-based learning is an educational approach, connecting students with local history and culture through site-based facilitated learning engagements.

The approach sees the world as a classroom and creates new connections as student exploration flows through a multidisciplinary lens. Learning in heritage sites and museums gives students the opportunity to make spatial-temporal connections regarding how people and places impact each other and change over time. Students build cultural understanding, communication skills and appreciation for the broad influences that shape a location's history.

Teachers should encourage participation, dialogue, teamwork and questioning strategies, in order for students to build new understanding through active investigations and interactions during educational visits to heritage sites and museums.

Preface

Preface



UNESCO

Upon the signing of the United Nations Charter at the end of the Second World War in 1945, the signatory states recognised the urgency to secure a peaceful and prosperous future for all nations devastated by the war and forge a continuous cooperation between them. Key to this agenda was the rebuilding of educational systems, the promotion of culture and the preservation of global human heritage across the world. The United Nations Educational, Scientific and Cultural Organisation (UNESCO) was established in 1946 and its constitution lays forth the principles which drive this vision into the modern day.

UNESCO began in post-war Paris and remains headquartered there today, with a membership of 195 countries and fifty offices and training centers worldwide. It remains a specialised agency with the dedicated purpose of contributing to peace and security by promoting international collaboration through educational, scientific and cultural reform. This work is undertaken in order to establish a universal respect for justice, the rule of law and human rights alongside the fundamental freedoms proclaimed in the United Nations Charter. UNESCO implements these ideals through the World Heritage Convention.



United Nations
Educational, Scientific and
Cultural Organization

"Since wars begin in the minds of men, it is the minds of men that the defences of peace must be constructed."

Taken from the Preamble to the constitution of UNESCO

UNESCO pursues its objectives through developing programs in five focal areas: education, natural sciences, humanities and the social sciences, culture, and communication/information. The agency actively sponsors projects and initiatives, such as literacy campaigns, technical skills training, teacher training, regional history seminars, and international

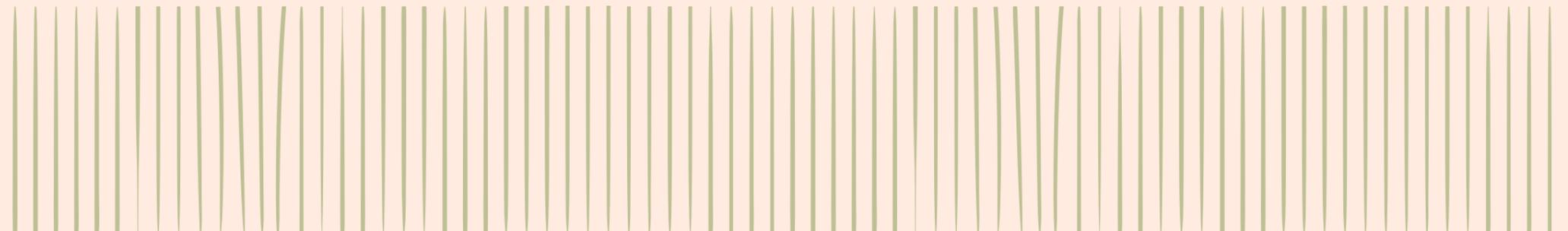
science conferences, to achieve its objectives. Furthermore, the promotion of independent media, free press and cultural diversity is central to its agenda. UNESCO's firm commitment to international cooperation agreements secures the world's cultural and natural heritage sites and is fundamental to establishing and maintaining World Heritage Sites today.

World Heritage Sites:

World Heritage signatories are sites and cities of exceptional universal value to all humankind. A signatory to the World Heritage Convention is designated a World Heritage Site through nomination and approval for inclusion on UNESCO's World Heritage List. The World Heritage Site Committee oversees this process and uses a ten point criteria to determine a signatory's compliance within the World Heritage Convention's membership framework. Acceptance into the UNESCO World Heritage Sites Programme ensures the site or city will be preserved for present and future generations, because its cultural significance is crucial to the human experience. Sites may include natural environments, such as forests or mountain ranges, or be man-made structures, such as building or artefacts. Some sites contain both elements.

Unesco Preserves Global Cultural Heritage & Identity by:

- Adopting international conventions that embrace cultural and linguistic diversity, such as conventions on "illicit antique trafficking."
- Establishing a World Heritage Committee that concerns itself with nominating properties for safeguarding and support through a World Heritage List.
- Maintaining a World Heritage Fund to financially support sites nominated to the World Heritage List.
- Advocating for relevant legislation that encourages states to preserve world heritage.
- Promoting cooperation amongst international and regional organisations to protect heritage.
- Setting standards for best practice to protect heritage, such as the Hague Protocol of 1999 that seeks to preserve heritage across armed conflict zones.



World Heritage Convention

UNESCO approved the World Heritage Convention at its General Conference in 1972. It has since been ratified by 186 countries and remains the most significant international legal instrument for identifying, preserving and presenting a World Heritage Site. The Convention lays out that each site will be protected, preserved, restored and transferred for future generations. Its premise lays in the exceptionality of each site as possessing "universal value" and the recognition that its existence is testament to the cultural heritage of human beings. Currently, the World Heritage List includes (as of 2019) 1,092 properties among 167 countries, of which 845 are cultural, 209 are natural, and 38 are mixed properties that fall within the oversight and management of key UNESCO arms, namely the World Heritage Committee and the World Heritage Fund.

How does the World Heritage Convention work?

The World Heritage Convention establishes precise standards for a registered World Heritage listed property. The World Heritage Committee is the body tasked to maintain all guidelines set forth by the World Heritage Convention and offers all necessary international assistance to listed sites. It further assures that the World Heritage Convention remains current, reflecting and embracing new scholarship and best practice across all its efforts.

Did You Know

When a property on the World Heritage List is threatened, it is classified as "At Risk" and will receive the special attention required for its protection.

When a listed property's exceptional site status is compromised, the World Heritage Committee retains the right to remove the property from the World Heritage List.

General Assembly of States Parties to the World Heritage Convention

The General Assembly of the Member States of the World Heritage Convention oversees the efforts of the Convention and is tasked to identify the World Heritage Committee. At the General Conference of UNESCO, this General Assembly determines the proportional contributory amounts paid by each Member State into the World Heritage Fund. This fund may be applied across all Member States. Appointments to the World Heritage Committee further occur at this meeting and are determined through an election process across the assembly membership.

World Heritage Committee

The World Heritage Committee consists of 21 members who serve a six-year term and are selected by the General Assembly.

Committee membership is limited to appointments drawn from the World Heritage Convention Member States. The committee meets once a year and fulfills the requirements of the Convention. A key task is to allocate financial assistance from the World Heritage Fund based on requests from Member States. The Committee further examines reports on the status of preservation of registered properties and may require a property to alter or change its practice to comply with the good management of the heritage asset. The Committee reserves the right to remove a property from the World Heritage List, having final say in deciding which property may be afforded UNESCO designation.

World Heritage Centre

The World Heritage Centre was established in 1992 and is the focal point within UNESCO for all issues related to world heritage. The Centre organises the annual sessions of the World Heritage Committee and provides guidance to Member States when preparing nominations for the proposed sites. The Centre also provides international assistance through the World Heritage Fund. In addition, the Centre arranges technical seminars and workshops; updates the World Heritage List and database; develops educational materials to raise awareness among young people about the need to preserve heritage; and provides the public with necessary information on world heritage issues.

Al Ain Cluster Site

Al Ain holds 17 sites that are inscribed as a singular designation on the UNESCO World Heritage List.

Inscribed to the list in 2011, these 17 sites include: the Jebel Hafeet area, the industrial zone containing the tombs of North Jebel Hafeet, Shaab Al Ashkar, Falaj Hazza area, Al Naqfah area, Hili Archaeological Park, Hili 2, Hili North 1, Hili North 2, Rumaila site in Al Qattara area, and Bidaa Bint Saud. Additionally, the six oases of Al Ain (Al Ain, Hilli, Al Jimi, Al Qattara, Al Mutaredh, and the Muwajji) complete the Al Ain World Heritage Site.

World Heritage Sites in Arab Countries

The Arab States Parties represent 82 sites on the World Heritage List. Since 2010, Arab representation has grown and now comprises 7.3% of the 1121 properties worldwide. The sites include: Archaeological Sites of the Island of Meroe in Sudan, the terraces of Petra in Jordan, the Fortress of Erbil in Iraqi Kurdistan, and Iraq's marshes. More recently in 2019, the following sites have been included: Babylon in Iraq, Dilmun Tombs in Bahrain, the Ancient City of Qalhat in Sultanate Oman, and Al Ahsa oasis in the Kingdom of Saudi Arabia. A number of regional sites are at risk. Listed sites include Palestine, Iraq and Yemen, which remain particularly vulnerable. All sites in Syria and Libya remain on the "Urgent Safeguarding" list due to war as determined at the 40th World Heritage Committee meeting held in Turkey in July 2017.

Map of Select World Heritage Sites in the Arab World



World Heritage Sites of Al Ain

Al Ain's World Heritage sites occupy a unique location in one of the most spectacular geographic regions of the UAE. Dating back thousands of years, archaeological remains, such as human settlements and tombs, span across Abu Dhabi emirate from its coast to inland, testify to a rich cultural history. The Al Ain sites stand as valuable monuments to the tenacity and ingenuity of human settlement, despite challenging climate conditions. The outstanding remains of the Al Ain World Heritage sites are of global value and significance and demonstrate the resilience of humans and their built environments.

Archaeological discoveries highlight the ingenious use of groundwater and its transfer to the oases through traditional irrigation systems known as aflaj. Human settlements surrounding the oases and archaeological excavations reveal the UAE's ancient mastery of survival skills in harsh conditions. The way of life which spread across the region was influenced by the neighbouring civilisations of Mesopotamia, the Indus River, and Bahrain and indicates that cultural communication and openness were concepts rooted in the UAE's rich history.

Reasons for inscribing Al Ain's sites on the World Heritage List:

1. Al Ain's archaeological sites exemplify World Heritage value due to the evidence of continuous existence of human settlements during the Bronze and Iron Ages.
2. The sites contain distinctive sites that illustrate the ability of past inhabitants to prosper in a challenging environment.

3. The sites serve to portray a traditional settlement archetype of the Bronze and Iron Ages.

4. The sites are directly related to traditions and religious beliefs that prevailed throughout the Bronze and Iron Ages.

5. The sites reveal cultural exchange of values between nations throughout the Bronze and Iron Ages.



Jens Vellew© Moesgaard Museum

The late Sheikh Zayed bin Sultan Al Nahyan during a visit to the archaeological excavation at Hilli in 1969.



Irina Bokova, former Director General of UNESCO, accompanied by H.E. Mohamed Khalifa Al Mubarak, Chairman of the Department of Culture and Tourism - Abu Dhabi while touring Al Ain Oasis and a number of historical and cultural sites in Al Ain city in 2017.

The UAE-France Initiative for the Safeguarding of Endangered Cultural Heritage

The United Arab Emirates and the Republic of France announced an initiative to establish a newfound international partnership aimed at preserving humanity's cultural heritage in periods of armed conflict in 2016. The initiative was launched by His Highness Sheikh Mohammed bin Zayed Al Nahyan, Crown Prince of Abu Dhabi and Deputy Supreme Commander of the UAE Armed Forces, at The Safeguarding of Endangered Cultural Heritage Conference, held in Abu Dhabi under UNESCO's patronage in 2016. Leaders from over 40 nations, institutions and international organisations participated in this conference to drive preservation efforts. Many specialists and experts strived to formulate practical and sustainable objectives regarding efficient safeguarding practices in order to preserve both transferable and immovable cultural resources, aiming to end the exponentially increasing threats to the world's heritage.

The systematic destruction of sites and cultural monuments, representing civilisations dating back thousands of years in countries such as Afghanistan, Iraq and Mali, prompted the UAE and the Republic of France to establish this partnership and support UNESCO's mandate to protect cultural heritage.

The joint UAE-France initiative resulted in the adoption of the Abu Dhabi Declaration, which was ratified at the Conference and included two main objectives:

1. The establishment of an international fund for the safeguarding of cultural heritage threatened through armed conflict.
2. The launching of a globally enforced safe haven for all endangered cultural property.

"On the 45th National Day, we witnessed the debut of the Heritage Safeguarding Conference. The UAE is an integral part of the humanitarian effort to preserve global cultural heritage".

HH Sheikh Hazza bin Zayed Al Nahyan, Vice President of the Executive Council of Abu Dhabi

HE Sheikh Nahyan bin Mubarak Al Nahyan, Minister of Tolerance, concluded the conference with the following words, "Protecting heritage and celebrating the cultural and societal achievements emanating from it, to around the world is a moral duty...and an important platform that can link human societies through a close bond of coexistence and understanding, and a respect for the values and the principles common to them, in the aim to achieve peace, and love in the world. "



Heads of states and international delegations attending the conference on "Safeguarding Endangered the Cultural Heritage" held in Abu Dhabi in 2016.

The Story of The Archaeological Discoveries in Abu Dhabi

The UAE has a rich and diverse historical heritage. This is seen in its archaeological sites, which include ancient tombs and settlements found across the country. These archaeological discoveries would not have been revealed had it not been for the commitment of the UAEs' leadership, notably the late Sheikh Zayed bin Sultan Al Nahyan. The last few decades have witnessed the continuation of archaeological research, resulting in a myriad of discoveries currently displayed in museums throughout the nation.

Invitation to the Danish Mission

In the 1950s, Sheikh Shakhbout bin Sultan Al Nahyan, Ruler of Abu Dhabi (1928-1966), invited the Danish archaeological expedition working in Bahrain to visit Abu Dhabi, specifically the island of Umm an-Nar. Arriving in 1958, archaeologist Peter Glob and his assistant, Geoffrey Bibby, confirmed that Umm an-Nar ruins were indeed the remains of an ancient civilisation. The Danish Mission recommended ongoing excavation and exploration of the island, citing further scientific investigation would shed light on the UAE's past.



Knus Risgaard © Moesgaard Museum

Sheikh Shakhbut bin Sultan Al Nahyan, Sheikh Zayed bin Sultan Al Nahyan, and other members of the ruling family while visiting the excavations on Umm an-Nar in 1959.

Law of Antiquities and Excavations

In 1970, the late Sheikh Zayed bin Sultan Al Nahyan enacted the Law of Antiquities and Excavations. This was the first legislation concerning

work in the field of archaeology in the UAE. Its 18 articles helped provide a secure legal framework for understanding and investigating Al Ain's archaeology.



Jens Aarup Jensen © Moesgaard Museum

Sheikh Shakbut Al Nahyan with his brother Sheikh Hazza Al Nahyan visit the camp south of Al Ain in January 1963. In front of them are finds from the excavation of Jebel Hafeet tombs.

With his insightful vision, Sheikh Zayed bin Sultan called upon the Danish Mission to visit the oasis of Al Ain in 1959. Their survey of the area led to the discovery of various tombs and settlements. Dozens of Bronze Age tombs excavated here by the Danish Mission, the local team and the French Mission reached twelve.

Abu Dhabi's Cultural Heritage Law

HH Sheikh Khalifa bin Zayed Al Nahyan, President of the UAE, issued Law No (4) in 2016, concerning the Cultural Heritage of the Emirate of Abu Dhabi.

The law aims to protect, disclose, preserve, manage and promote Abu Dhabi's cultural heritage. The law regulates the functions of the Department of Culture and Tourism - Abu Dhabi and the scope of its supervision over the emirate's cultural heritage. It stipulates that the cultural heritage of the emirate shall be effective and that tangible cultural heritage shall become the emirate's public property, unless the holder of such tangible heritage proves his/her ownership. In all cases, the law dictates that all heritage found underwater is considered the general property of the emirate. The law also regulates the competence and scope of the Department of Culture and Tourism on cultural heritage in the emirate.



Jens Vellelev © Moesgaard Museum

The late Sheikh Zayed bin Sultan Al Nahyan during his visit to the archaeological excavation in Hili in 1969.

Abu Dhabi Emirate Historical Sites Timeline

Stone flint
Jebel Baraka, Al Dhafrah region
(around 200,000 - 20,000 years ago)



Stone Age
200,000 - 20,000 BCE

Ceramic vessel
Hili tombs
2700-2000 BCE



Bronze Age
2500 - 2000 BCE

Soft stone vessel
Rumeilah settlement



Iron Age
1300 - 300 BCE

Mosque and Falaj
Al Ain City

Early Islamic Period
7th-8th century CE



Flint arrowhead
Hili 8, New Stone Age
5500 - 3200 BCE

Related sites

Jebel Hafeet,
Umm Al-Zamoul, Ghadeer Al-Homanih



Ceramic vessel
Jebel Hafeet Tombs, Early Bronze Age
3200 - 2700 BCE

Related sites

Jebel Hafeet tombs, Umm an-Nar, Hili,
Jern Bidaa bint Saud



Ceramic incense burner
Qarn Bidaa bint Saud
1000-600 BCE

Related sites

Bidaa bint Saud, Hili 2, Hili 17,
Rumeila Settlement



Gypsum plaster cross motif
Sir Bani Yas church site
600 - 800 CE

Jebel Hafeet Tombs

This chapter deals with the excavations of the tombs at Jebel Hafeet and is divided into three main lessons, each of which is linked to targeted learning outcomes.

- The first lesson focuses on Jebel Hafeet's significance, location and geological characteristics.
- The second lesson looks at Jebel Hafeet's history, cultural development and its tombs.
- The third lesson examines the archaeological discoveries within the tombs.

Lesson 1

Jebel Hafeet

Learning Outcomes

- Understand Jebel Hafeet's geological importance.
- Locate and describe Jebel Hafeet and its various geological features.
- Understand the late Sheikh Zayed's role in preserving Abu Dhabi's history.

Concepts & Terminology

- > **Jebel Hafeet**
- > **Calcareous stone**
- > **Sedimentary Rocks**
- > **Erosion**
- > **Planktonic Fossils**
- > **Tertiary Geological Age**
- > **Cretaceous Period**



Site

Jebel Hafeet is a breathtaking mountain that rises 1,249 meters (4,098 ft.) over Al Ain. It is located south of the city and lies next to the Al Hajar mountains' western edge. This mountain, the emirate of Abu Dhabi's highest, encompasses a 15 kilometre range towards Oman's border from Al Sadfah roundabout in Al Ain's industrial zone, and continues to stretch for another eight kilometres into Oman.

Significance

Jebel Hafeet, has a unique landscape and ecosystem and is one of Al Ain's most celebrated landmarks. Due to its ever-growing prominence, Abu Dhabi's Environmental Agency has established the site as a national park. A comprehensive survey regarding Jebel Hafeet's flora and

fauna, organised by the Emirates Natural History Group (ENHG), was conducted between 1997 and 1998.

Under the late Sheikh Zayed bin Sultan Al Nahyan's leadership, Jebel Hafeet has prospered as Al Ain's primary tourist attraction.



Niels Axel Boas © Moesgaard Museum

General view of Jebel Hafeet.



Geological Features

Jebel Hafeet is comprised of calcareous and sedimentary rocks that have eroded over millions of years, dating back to the Tertiary geological era. The mountain's altitude ranges between 300 metres in the north by the city's Industrial Zone to 1160 metres east in the Mezyad Village. It is a unique mountain cut by many wadis on its eastern and western sides. Geologists find Jebel Hafeet particularly notable due to how erosion has allowed its composing layers to attain a remarkable surface visibility. Jebel Hafeet features two major formations: the Hafeet formation and the Seniya formation. A third less studied formation is called the Al Jaww formation. Both Hafeet and Seniya are rich in deep-sea planktonic fossils aptly named foraminifera. At the foot of the mountain, fossils of branching corals, oysters, gastropods and extinct organisms can be found, with some dating back to the Cretaceous period. These fossils have helped provide a significant geological model to study the mountain, contributing to the unearthing of Al Ain's rich history while highlighting its unique geological features.

Emirates Natural History Group

ENHG, the UAE's principal environmental NGO (nongovernmental organisation), was established in Abu Dhabi in 1976. Its primary aim was to encourage studies pertaining to natural history and archaeology. The agency conducts research in hopes of raising environmental awareness across the nation.



General view of a valley at Jebel Hafeet

Lesson 2

Jebel Hafeet's Archaeology

Learning Outcomes

- Learn about the archaeological sites of Jebel Hafeet and its cultural significance.
- Identify and explain the various features and characteristics present in Jebel Hafeet tombs.
- Recognise the historical importance of Jebel Hafeet tombs to Al Ain.
- Provide solutions for safeguarding the tombs.
- The student will learn about archaeology and its importance in the field of understanding culture.

Concepts & Terminology

- > Early Bronze Age
- > Umm an-Nar Period
- > Belief in the After Life
- > Funeral Rites
- > Mezyad

Hafeet's Historical Evolution

The Jebel Hafeet tombs, dating back to the Bronze Age (c.3100 BCE), were uncovered in the excavations conducted by the Danish archaeological mission in Al Ain, in the early 1960s. Pottery and other objects discovered in these tombs indicate the beginnings of a craft industry and long distance trade at the onset of the Bronze Age.

Subsequent surveys have led to the discovery of hundreds of stone tombs spread around the mountain's foothills, dating back to the same period. A significant majority of tombs in the northern region, known today as the Industrial Zone, have disappeared due to development. The Department of Culture and Tourism - Abu Dhabi has preserved hundreds of the remaining tombs in the eastern Mezyad region, and is responsible for the maintenance and restoration of the tombs and surrounding area.



View of one of Jebel Hafeet tombs from inside.



General view of Jebel Hafeet.

Jebel Hafeet's Tombs

The discoveries made at Jebel Hafeet were so significant that when similar objects are found elsewhere in the region they are labeled as belonging to the 'Hafeet Culture.'

Typically, each tomb consists of a round or oval burial chamber, built from rough, locally sourced stones. They are different from the succeeding Umm an-Nar tombs, which were architecturally more complex, being built from smoother carved stones and containing the remains of numerous people.

Jebel Hafeet tombs consisted of three to four metre high stone-built domes with a narrow entrance leading to their inner chamber.



An illustrated view of one of the tombs indicating the construction of the tomb.

Hafeet Period (3100 -2700 BCE)

Archaeologists excavating the UAE region are able to differentiate between the periods of the Bronze Age by assessing the architectural methods used to construct the region's tombs and the objects found in each tomb. The discoveries at Jebel Hafeet are distinctive of the period from 3100 to 2700 BCE. Remains of this period are now labeled as belonging to the 'Hafeet Culture.'





Niels Axel Boas © Moesgaard Museum

A picture from one of the tombs at Jebel Hafeet showing the position the dead were buried in.



A view of the reconstructed tombs at Jebel Hafeet.



Niels Axel Boas © Moesgaard Museum

A view of one of the tombs after excavation and prior to restoration.



General view of the rear façade of Jebel Hafeet tombs.

Lesson 3

Archaeological Discoveries and Inter-Civilisational Relations

Learning Outcomes

- Connect the Jebel Hafeet tombs with Al Ain's history.
- Name the cultural similarities between the region's neighbouring cultures.
- Identify and describe archaeological discoveries made at Jebel Hafeet tombs.
- Recognise Mesopotamia's cultural influence on the Hafeet region.

Concepts & Terminology

- > Neolithic Age
- > Bronze Age
- > Mesopotamia
- > Jemdet Nasr
- > Dilmun Civilisation

Archaeological Discoveries at Jebel Hafeet Tombs

Ancient tomb robbers had destroyed many of the Jebel Hafeet tombs in the past. Nevertheless, some complete ceramic pots were found alongside bronze pins and needles. Some of the pots were imported from Mesopotamia, thus helping archaeologists work out the age of the tombs. Several pottery vessels were decorated with distinctive geometric designs called Jemdet Nasr. This name is derived from an archaeological site in Mesopotamia. They indicate the importance of long-distance maritime trade at this time.



Jackknife clam
Hafeet tombs
Bronze Age, 3200-2700 BCE
Height: 10.3 cm, Width: 2 cm
Al Ain Museum

Other Famous UAE Tombs

The type of tombs first found at Jebel Hafeet are common throughout the region. In the Wa'am and Danha villages near Dibba in Fujairah, an exceptional number of tombs dating back to 3000 BCE have been discovered. In Ras Al Khaimah, similar tombs were found at the foothills of mountain ranges near the Khatt region in Wadi Al Qawr. In Sharjah, were also found at Jebel Meliha.

Trade and Exchange

Archaeological evidence suggests close cultural ties between the Hafeet culture and its neighbouring civilisations, such as Mesopotamia from c. 3000 BCE onwards. At that time, large cities were developing in southern Mesopotamia and these cities needed raw materials. Merchants from these cities may have approached areas like the region of the UAE to trade and obtain resources like copper.

Around 2500 BCE, this trade expanded. Archaeological discoveries in Hili and Umm an-Nar indicate extensive trade with Mesopotamia and elsewhere. Mesopotamian texts show that goods came from Dilmun (ancient Bahrain) and Magan (ancient UAE and Oman). These goods included copper, diorite, and dates, many of which have been excavated within Hili's archaeological sites. Textiles may have been traded in the opposite direction from Mesopotamia to the UAE. Such trade was only possible because of

maritime technology. This technology had already developed during the much earlier Neolithic period. It was to remain a distinctive characteristic of the UAE and surrounding regions until the present day.



Niels Axel Boas © Moesgaard Museum

Two ceramic vessels in situ in one of Jebel Hafeet tombs.



Ceramic vessel with polychrome painting in black and red

Hafeet tombs
Bronze age, 3000 BCE
Al Ain Museum



An illustration of the polychrome painting pattern (of the vessel above) found in one of Jebel Hafeet tombs of Jemdet Nasr type.



Niels Axel Boas © Moesgaard Museum

Ceramic vessel in situ in one of Jebel Hafeet's tombs.



A map showing the routes between ancient Al Ain and the centers of neighboring civilizations.



Hili

This chapter focuses on Hili, and is divided into four main lessons, each of which is linked with targeted learning outcomes.

- The first lesson focuses on Hili tombs, specifically the Grand Hili tomb, tombs E and N. The lesson delves into the excavation and restoration of the tombs, as well as the symbolic carvings on the Grand Hili tomb.
- The second lesson looks at Hili's Bronze and Iron age settlements and the cultural connections between Hili and neighbouring sites, or sites found in the UAE.
- The third lesson examines the social and economic system at Hili through the architectural, agricultural, and craft discoveries.
- The fourth lesson takes a look at the copper industry in Al Ain during the Bronze Age.

Lesson 1

Hili Tombs

Learning Outcomes

- Acknowledge the historical importance of the Grand Hili Tomb.
- Recognise the general characteristics of the Grand Hili Tomb.
- Understand the cultural significance of Hili monuments and how they were restored.
- Develop ideas regarding the safeguarding of national and international heritage.

Concepts and Terminology:

- > Bronze Age
- > Archaeological Site
- > Archaeological Excavation
- > Umm an-Nar Civilisation
- > Engravings

The largest archaeological complex of Bronze Age settlements in the UAE is located in Al Ain's Hili district. It provides evidence of the area's continuous occupation from 2500 to 2000 BCE. Several sites located in Hili Archaeological Park are accessible to the public.

Hili Grand Tomb

During the Umm an-Nar period (2500-2000 BCE), mass graves were round, stone-built and above ground. They were divided into four to twelve spaces by internal walls.

The Hili Grand Tomb dates back to 2500 BCE. It has been regarded as one of the most significant tombs of the Umm an-Nar civilisation due to its architecture, quality and sheer size. The tomb has become an important historical landmark, representing ancient civilisation in the Arabian Gulf and a symbol of Abu Dhabi's heritage.

The Hili Grand Tomb is the largest mass grave in Hili Archaeological Park, measuring twelve metres wide, by four metres high. Evidence found at other mass graves in the region indicates that hundreds of people were interred here over a considerable period of time. The tomb's chambers were originally blocked with movable carved stones which allowed easy access to the tomb. This was done in order to bury the deceased and associated grave goods.



Soapstone vessel

Found in Grand Hili tomb
Bronze Age 2500-2000 BCE
Height: 5.6 cm, Diameter: 7.8 cm
Al Ain Museum



Grand Hili tomb

Bronze Age, 2500-2000 BCE
Hili Archaeological park, Al Ain

The Hili Grand Tomb's Phases of discovery

Before the Excavation

Before excavation, the Hili Grand Tomb site comprised a low mound (75 centimetres high, by 20 metres wide) in which the stones of the tomb were visible. The locals aptly named them “sitting stones.”



Jørgen Lund© Moesgaard Museum.

The ruins of Grand Hili tomb before excavation.

During the Excavation

The excavation revealed the foundations of a circular structure. Hundreds of pottery sherds, similar to those from tombs already excavated on the island of Umm an-Nar. These indicated that the site dated to between 2500 and 2000 BCE.



KF© Moesgaard Museum

Relief carvings on one of stone blocks of Grand Hili tomb.

Hili Grand Tomb's Restoration

Due to the historical and architectural importance of this tomb, a plan was conceived to restore the site, which began in 1973 by what was then called the Al Ain Department of Antiquities and Tourism. They appointed a team of experts from around the world to restore the landmark in 1975.

It is worth noting that the tomb had experienced significant damage before its restoration.

Many of its stones were not in situ, while others had disappeared, leading the team to acquire new limestone from Jebel Haqla, about two kilometres to the east of Hili. The stones were polished, measured and shaped by hard stone hammers, metal axes and chisels.



Grand Hili tomb
Bronze Age, 2500-2000 BCE
Hili Archaeological park, Al Ain



Moesgaard Museum © Moesgaard Museum

Photographs of Grand Hili tomb Northern entrance stones during the restoration.

Tombs E and N

The archaeological excavations at Hili led to the discovery of two other tombs, which are round in shape, and were named E and N. This was the most common type of tomb construction in the Umm an-Nar period (2500-2000 BCE).

Tomb E

Tomb E originally comprised a height of 3-4 metres and possessed masterfully crafted walls, constructed of polished stones and of which few remain. The tomb was divided into two parts, each consisting of three chambers with a small entrance.



The internal divisions of Hili Tomb E
Hili Archaeological park



General view of Hili Tomb E
Hili Archaeological park

Tomb N

Tomb N is a 2.5-metre-deep pit-grave that is deemed exceptional due to the fact that it contains various objects, including works of pottery, stone vessels and ornaments, all dating to end of the Umm an-Nar period. During the excavation, remains of over 600 skeletons were found. Buried over a period of 100-200 years, people of all ages were found. They were provided with stone and pottery vessels and a variety of beads and ornaments, some of which were imported from distant lands.

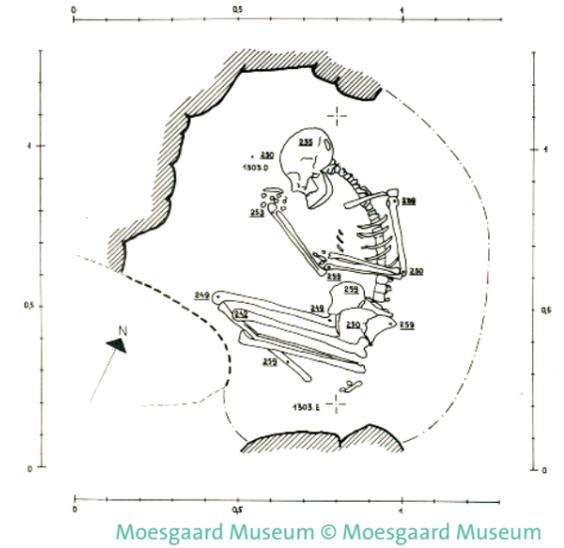


Illustration of the position of a skeleton found in Hili Tomb E.



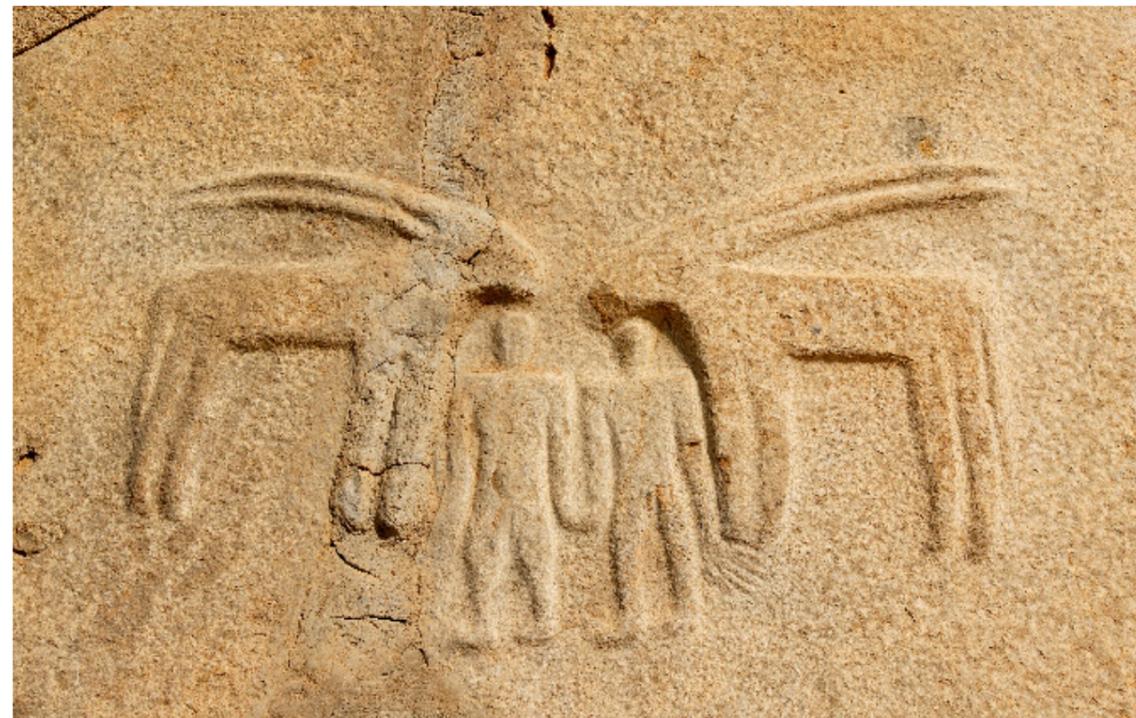
Ceramic vessel
Tomb N, Hili Archaeological Park
Bronze Age, 2300-2000 BCE
Height: 11 cm, Diameter: 4 cm
Al Ain Museum

Carved Reliefs on the Hili Grand Tomb

The reliefs on the Grand Tomb are some of the earliest and most unique artwork found in the UAE. The reliefs are located on both sides of the tomb. The relief above the southern entrance consists of a pair of oryx facing each other with two



figures standing between them. The relief indicates the importance of the oryx to the inhabitants of Hili during the Bronze Age.



A relief carving above the southern entrance of a pair of oryx facing each other, with two figures standing between them.

Grand Hili Tomb
Hili Archaeological Park



The northern entrance leads into the center of a chamber. There are a series of reliefs carved above this entrance. To the right, a carving of two intertwined figures is visible. Below this scene are two predatory animals, presumably Arabian leopards, which appear to be devouring a young gazelle.



Abu Dhabi's Arabian Oryx Conservation Programme

The Arabian oryx, one of the largest desert mammals in the region, has a significant presence in Arabian wildlife throughout history. Colloquially referred to as wild cows, Arabian oryx are large antelopes that weigh anywhere between 80 to 100 kilograms.

The late Sheikh Zayed bin Sultan Al Nahyan was known for his personal interest in the Arabian oryx. He was one of the first conservationists to take note of the alarming population rate of this beloved mammal. In 1968, he launched a successful conservation programme and ordered the capture of the sole remaining four animals in the wild of the UAE to start a captive breeding program in Al Ain Zoo. After the development of Sir Bani Yas Island, another captive breeding programme with a staggeringly low population of five oryx. His effort has clearly made a significant difference as the island now contains a thriving community of over 500 of the respected animal.





Northern entrance carvings of presumably two Arabian leopards devouring an oryx.
Grand Hili Tomb
Hili Archaeological Park



Jan Koch © Moesgaard Museum

A relief carving of two figures, one riding a donkey, and the other carrying a stick in his right hand and perhaps a shield in the other hand.

Northern entrance- Hili Grand tomb



Niels Axel Boas © Moesgaard Museum

Two carvings above the Northern entrance of Hili Grand tomb.

Lesson 2

Ancient Settlements and Trade Relations

Learning Outcomes

- Understand the Hili settlement sites and their importance.
- Identify and describe characteristics of the Bronze and Iron Ages.
- Recognise discoveries made at the sites and understand Hili's interaction with other civilisations.

Concepts and Terminology:

- > **Bronze Age**
- > **Archaeological Site**
- > **Archaeological Excavation**
- > **Umm an-Nar Civilisation**

Prior to the Bronze Age, there appears to have been no permanent residential settlements in the southeastern part of the Arabian Peninsula. Instead there existed small seasonal gatherings based on nomadic pastoralism, hunting, and fishing. Evidence of these gatherings can be found throughout the deserts and coastlines of the UAE in the form of shells and stone tools.

During the Bronze Age (3000-1300 BCE), numerous settlements were established around Al Ain. The inhabitants of these settlements dug wells, planted palm trees, implemented farming techniques and raised livestock.

The Bronze Age Settlements of Hili

The most ancient known settlement is referred to as Hili 8 and was excavated by a French archaeological mission several decades ago. One of the oldest in the UAE, this settlement dates back over 5000 years and was occupied for about 1000 years. It consists of several buildings. The most significant and ancient is a square tower with a well at its centre. Sherds of pottery and miscellaneous artefacts were found throughout the excavation.

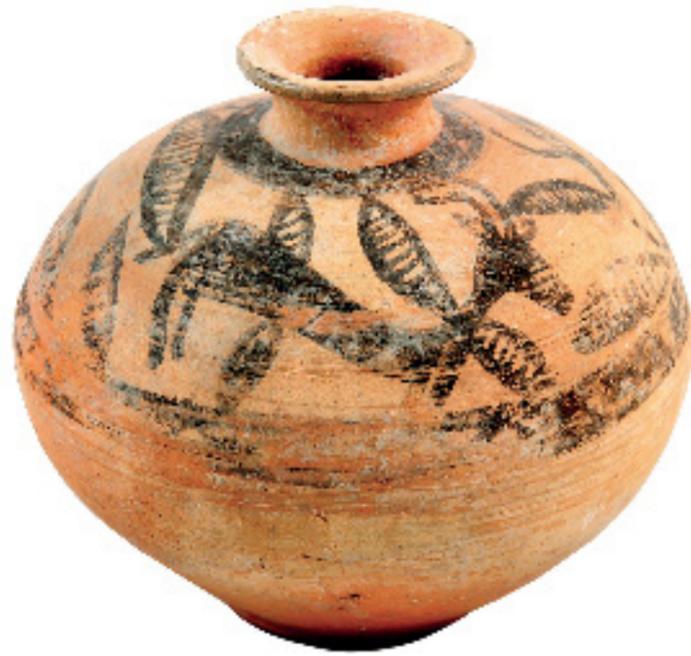


Stone vessel
Hili Tomb A
Bronze Age, 2300-2000 BCE
Height: 11 cm, Opening diameter: 8.8 cm,
Base diameter: 10 cm
Al Ain Museum



Birds-eye view of Hili 8 settlement.

Jens Vellew© Moesgaard Museum



Ceramic vessel

Hili tomb A
 Bronze Age, 2300-2000 BCE
 Height: 11.6 cm, Opening diameter: 4.4
 cm, Base diameter: 5.5 cm
 Al Ain Museum



Bronze arrowheads

Hili 2
 Late Bronze Age- Iron Age
 Height: 3.6 to 5.2 cm
 Al Ain Museum

The evidence obtained at the Hili site is significant as it demonstrates a regional cultural transition from the nomadic pastoralism of the Neolithic period to the establishment of a permanent settlement that relied on the cultivation of cereal crops and dates. A similar economy was also present at other Umm an-Nar period settlements throughout the country.



Jens Vellev© Moesgaard Museum

Hili 1

Bronze Age building remains at Hili 1. 2500-2000 BCE

The Iron Age Settlements of Hili

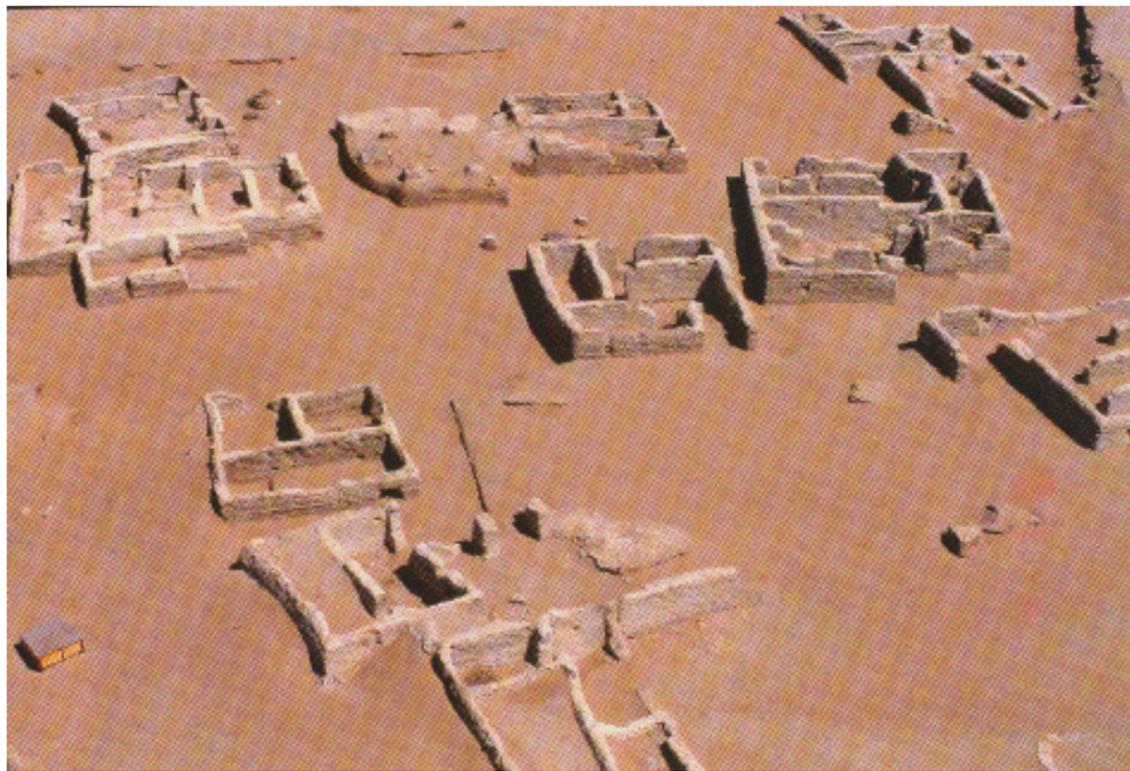
The number of settlements in Hili expanded during the Iron Age (1300-300 BCE). These settlements were characterised by agricultural development based upon the falaj system, which channeled water from underground to agricultural lands through a series of tunnels. This innovation led to the expansion of arable land in the region.

There are many Iron Age settlements in the UAE. One of the most significant is Hili 2, located 1.5 kilometres northwest of the center of Al Ain. In this settlement, eleven adjacent houses were discovered. Each house consisted of a number of rooms, separated by narrow corridors. A certain number of these houses' walls still retain their original height. The most important archaeological discoveries in this settlement were large storage jars and bronze arrowheads. These were distinctive to the first millennium BCE.



Perforated Ceramic vessel

Hili 2 settlement
Iron Age, 1000 - 600 BCE
Al Ain Museum



General view of Hili 2 settlement, the buildings thick walls and foundations are made of mud.

Iron Age, 1000 - 600 BCE.



Striated Ceramic vessel

Hili Tomb A
Bronze Age, 3200-2000 BCE
Height: 14.5 cm, Diameter: 9.5 cm
Al Ain Museum

Trade and Communication During the Bronze and Iron Ages

Excavations have indicated that ancient settlements in Hili maintained close relations with other sites in the UAE, such as at Tell Abraq, Asmah, Al Munaie, and Al Mowaihat in Ajman and Shimal in Ras Al Khaimah. Round tombs that are similar to the ones found in Hili have been discovered at these locations. Artefacts from all of these sites exhibit similar styles of decoration and manufacturing technique.

Through ports, such as those found on Umm an-Nar island, the inhabitants of Hili traded and exchanged with other societies across the Arabian Gulf and Indian Ocean. Copper from the nearby mountains in Al Ain was an especially valuable resource. It was exported to Mesopotamia (ancient Iraq) where it was an important commodity to the development of cities. The people in these cities referred to the UAE and adjoining areas as 'Magan.'



Søren Gottfred Pedersen © Moesgaard Museum

General view of Umm an-Nar tomb

Bronze Age, 2500-2000 BCE
Umm an-Nar island, Abu Dhabi



Ceramic vessel painted in grey

Hili Tomb B
Bronze Age, 2500-2000 BCE
Height: 20.5 cm, Opening diameter: 9.8 cm, Base diameter: 12.3 cm
Al Ain Museum



Etched stone vessel

Rumeila settlement
Iron Age, 1000-500 BCE
Height: 7 cm, Top diameter: 15.7 cm, Base diameter: 9.3 cm
Al Ain Museum

Lesson 3

Life in Ancient Hili

Learning Outcomes

- Understand life in ancient Hili.
- Understand the role agriculture played in the settlements of Hili.
- Recognise the role of belief in Hili through its tombs and associated artefacts.

Concepts and Terminology

- > Economic system
- > Social system
- > Industry
- > Architecture

Evidence found by archaeologists during excavations in Hili indicates that the inhabitants of the area, who lived during the second half of the third millennium BCE, depended on agriculture, herding and hunting for their livelihood. They used copper and stone tools and showed signs of developed social and economic systems. The inhabitants of Hili believed in the afterlife and conducted rituals related to burial and tomb construction.

Agriculture Organisation

Agriculture was the basis of life in Hili. Inhabitants planted wheat and barley under the shade of their palm trees. They dug wells in order to irrigate crops, using basic techniques and tools. From the second half of the third millennium BCE, this development of agricultural techniques in Hili encouraged the establishment of larger human settlements, which led to trading relations with other nearby communities.

The archaeozoological remains found from this time indicate the existence of herd animals such as cattle, goat and sheep. These animals played a major economic role in society by providing meat and milk.

Craft and Industry

Industry developed during the first phase of the Hili settlement. The community produced handicrafts and engaged in copper mining. They made ceramic pots from locally available clay as well as weapons and other objects from copper. The copper came from the nearby mountains of Al Ain and was also exported across the region. The people living in Al Ain also built structures using mudbricks. These buildings became a distinctive feature of the oases and similar construction techniques were still in use until the recent past.



Fragment of ceramic vessel, decorated with spirals resembling snakes
Rumeila settlement
Iron Age, 1000 BCE
Al Ain Museum



Decorated ceramic vessel

Hili 2 settlement
Iron Age, 1000-500 BCE
Height: 5.5 cm, Opening diameter: 9.8 cm, Base diameter: 4.5 cm
Al Ain Museum



Stone vessel

Hili Tomb A
Bronze Age, 2300-2000 BCE
Height: 4.7 cm, Diameter: 11.2 cm
Al Ain Museum

Lesson Four

Copper Mining During the Bronze Age

Concepts and Terminology

- > Copper
- > Smelting Process
- > Copper Mining
- > Al Hajar Mountains
- > Copper Pots

Copper Mining in Al Ain

Archaeologists have found evidence of the early extraction and mining of copper from around 3000 BCE. They have discovered mines and veins of copper ore through excavations in ancient tombs at the foothills of Jebel Hafeet and the Hili region in Al Ain. By examining the pottery, weapons and bronze objects discovered in these tombs, archaeologists have estimated the tombs date to 5000 years ago. Metal analyses performed on several artefacts have shown that they consist of copper and arsenic. This indicates that sufficient quantities of copper were available in several sites in the area, making it easier to extract, melt and shape.

Learning Outcomes

- Understand the importance of copper mining in the socioeconomic life of early settlements in Al Ain.
- Locate areas where copper mining has been discovered in the UAE.
- Identify and classify archaeological artefacts made of copper.
- Understand the role copper played in the advancement of trade with other local and nearby civilisations.

Copper Extraction and Trade Links

The presence of copper-rich ores in the nearby mountains ensured a supply of this precious metal to the people living at Hili. Enriched seams of copper ore near the surface were found in the mountains extending from Al Ain to Oman. Workers would dig trenches to extract the ore. The ore was then broken into small pieces and heated. This process is known as smelting. The molten metal was then poured into moulds to make weapons and

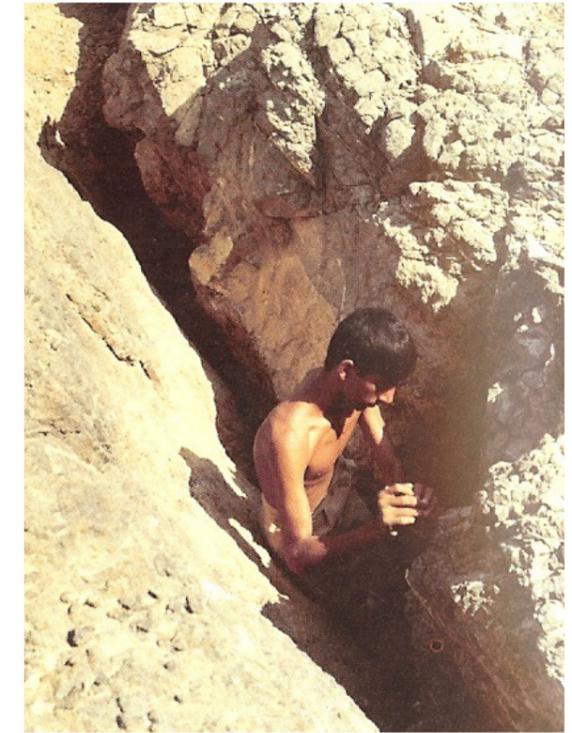
agricultural tools. Copper continued to be an important part of Hili's economy for thousands of years. Copper was exported to other countries by sea via Umm an-Nar Island, where archaeologists discovered a large and prosperous port. It is believed the merchants and their intermediaries arrived from Mesopotamia (ancient Iraq) to purchase copper and barter their pottery and jewellery. The result of this trade may be the Mesopotamian pottery and jewellery found in the tombs at the foothills of Jebel Hafeet.



Copper ore sample extracted from the Hajar Mountains that lies in the UAE and Oman.
Al Ain Museum

Al Ain Copper during the Early Islamic Age

In the mountain foothills of a region in Oman near Al Ain, archaeologists have discovered several copper smelters that date from the Islamic Golden Age (8th to 10th century CE). They discovered 70 ovens at a single site, in addition to large amounts of slag, a waste product of the smelting process. This discovery indicates that large-scale copper production was present at the time and has led archaeologists to believe that the development of this industry was fundamental to the site's local economy.



ADNOC ©

A re-enactment of a copper mine.



ADNOC ©

A re-enactment of a copper smelting model in the Islamic era.

Bidaa Bint Saud

This following chapter focuses on Bidaa Bint Saud and is divided into two lessons, each of which is linked to targeted learning outcomes.

- The first lesson focuses on the site's cultural development through the associated landmarks, such as the tombs situated on the site's rocky outcrop, the adjoining falaj.
- The second lesson deals with the site's historic petroglyphs and paintings.

Lesson 1

Cultural Development at Bidaa Bint Saud

Learning Outcomes

- Indicate reasons why Bidaa Bint Saud flourished throughout the Iron Age.
- Learn about the archaeological discoveries made at the site.
- Differentiate between Bidaa Bint Saud and other archaeological sites in the UAE.
- Explain the significance of the Bidaa Bint Saud falaj.

Concepts & Terminology

- > Bidaa
- > Falaj
- > Cultural Development
- > Trade and exchange

Site

About 12 kilometres north of Al Ain city lies a 700-metre-long and 50-metre high rock outcrop called Qarn Bint Saud. The mountain itself is considered one of the most distinctive cultural sites in Al Ain, as it offers an bird's eye view of the surrounding landscape. The ancient sites' location is the first post heading north from Al Ain to other areas in the region. The location played a key role in the prosperity of Bidaa Bint Saud, which may account for the development of the site, and the discovery of foreign objects within it.

Significance

Bidaa Bint Saud is one of Al Ain's most significant sites. Located 14 kilometres away from the ancient site of Hili, the site contains remains that date from the Bronze Age and the Iron Age. The number and variety of these remains indicate how important the area was for the ancient inhabitants of Al Ain. Among the discoveries are Hafeet period tombs that

were in use from the Early Bronze Age to the Iron Age. In addition, the discovery of two ancient water canal systems known as aflaj (falaj for singular) which date back to 3000 years ago adds to the importance of the site. The falaj was used to carry water from nearby mountains from a subterranean level to above ground. A Danish expedition initiated the first archaeological excavations at Bidaa Bint Saud in 1970. This was followed by local archaeology teams from Abu Dhabi government. The excavations uncovered several tombs atop the rocky outcrop and its neighbouring areas. The excavations by the local archaeologists unveiled a large mud-brick building, accompanied by a falaj which dates to the Iron Age (1000 BCE). Archaeologists suggest that the building's function was connected with the maintenance and possible control of the falaj.

A Bidaa Folk Tale

In Abu Dhabi, the site is commonly referred to as Jarn, replacing the sound of Q with J as is common in the local dialect. The area is also known by the name Bidaa.

Bint Saud's lore is attributed to the area's namesake, Maryam bint Saud, who reportedly dug a well and had settled there in the mid-20th century. The well was then colloquially referred to as Bidaa Bint Saud, using "Bidaa" to allude to newly ploughed fields.



General view of Bidaa Bint Saud outcrop north of the region of Al Ain.



General view of Bidaa Bint Saud outcrop north of the region of Al Ain.



Poul Otto Nielsen © Moesgaard Museum.

Bidaa Bint Saud tombs prior to restoration.

Historical Features of the Site

I: The Tombs and Artefacts

Over 40 tombs were found and 18 were excavated at the Bidaa Bint Saud site. The tombs are an important example of the period in which they were built and used. The tombs, believed to be dome-shaped, were found on the southern foothills of the site, and were constructed during the Bronze Age, dating to almost 5000 years ago (3000 BCE). In their construction technique, they are similar to the tombs found at Jebel Hafeet. In many of the tombs, a rich variety of objects were discovered that attest to the development of local industry and trade and exchange.

Archaeological discoveries at the site unveiled several decorated stone and ceramic vessels. A number of copper weapons, such as swords, an axe, daggers and arrowheads, as well as various adornment objects, including agate beads, which date back to the Iron Age were unearthed. These discoveries indicate that the people inhabiting this region during the Iron Age (1300-300 BC) had a sophisticated economic and social existence.



Bidaa Bint Saud tomb after restoration.

II: The Iron Age Building

Archaeologists discovered what is thought to be a large administrative building towards the western side of the mountain. Twelve pillars, the bases of which remain to this day, supported the central room of the building. Buried under sand, the largest part of the building is comprised of a well-maintained hall and several adjoining rooms. Described as a public building, it may have served to manage water from the nearby falaj.

Among the discoveries were several large storage jars, which probably stored water. The size of the jars, the building and connection of a falaj draw a picture of a prosperous community which thrived on farming. As it was constructed from delicate materials, the building has been fully reburied in sand to help preserve it.



A public "administrative" building which was buried in sand to protect it from the elements.

III: The Iron Age Aflaj

The aflaj, discovered west of the Bidaa Bint Saud area, contained many wells and underground channels which date to about 1000 BCE. An access hole, leading to stone steps as well as a large pool designated for water storage, was found near the area where one of the falaj comes to the surface. Other ancient aflaj (plural for falaj) were discovered in this region, indicating the widespread use of this technology. The discovery of the aflaj further supports the theory that the settlement thrived on an agricultural economy.



Ceramic vessel used for incense.

The circular vessel is open from the bottom, the upper part is perforated with holes which are thought to allow incense smoke out. The lower part of the vessel has wide vertical openings probably with the purpose of allowing air in.

Iron Age, 1000-600 BCE
Height: 33 cm, Widest diameter: 34 cm,
Base diameter: 30 cm
Al Ain Museum



A group of ceramic vessels used for storage, found in situ inside one of the rooms in the public building in Bidaa bint Saud.

Trade and Exchange

Many of the Bidaa Bint Saud artefacts are similar to those found elsewhere in the country. The most prominent sign of an apparent relation between the former and Bidaa Bint Saud exists due to the allocation of similar stone pots embellished by detailed decorative engravings. Throughout their Omani archaeological excavations, the Danish expedition unveiled several tombs that bore a striking resemblance to those found

at Bidaa Bint Saud, proving direct contact between the neighbouring settlements. A series of archaeological sites belonging to the same period (Iron Age) have been discovered along an ancient caravan route heading north from Hili. Bidaa bint Saud is probably the second in this chain and would have facilitated travel supported by other agricultural towns along the route. It has been purported that a cross-cultural system extended throughout the region at this time.



A pair of hollow gold earrings
Bidaa bint Saud tomb
Iron Age, 1300-300 BCE
Height: 2 cm
Al Ain Museum



A group of agate beads
Bidaa bint Saud tomb
Iron Age, 1000-500 BCE
Al Ain Museum

Lesson 2

Bidaa Bint Saud's Rock Carvings & Paintings

Concepts & Terminology

- > Petroglyph
- > Stone painting
- > Historical source



Rock Engravings and Paintings

The Danish expedition located numerous engravings and paintings on the walls of the caves, notably on the east of the outcrop of Bidaa Bint Saud. Their main shared characteristic is the red/dark grey pigment used. Their date is impossible to determine. Petroglyphs or engravings, on the other hand, were divided into three groups. One traditionally depicted snakes (commonly represented throughout the Iron Age) while the others depicted various animals, and weapons.



Learning Outcomes

- Learn about the significant carvings and paintings found in these caves.
- Identify symbols and characteristics of the carvings and paintings.



A general view of the caves and shelters of Bidaa Bint Saud, whose walls contain engravings.

Significance

The petroglyphs and paintings found at Bidaa Bint Saud provided important historical information, even if their exact meaning is unclear.

The findings can be divided as follows:

I. Paintings: using red or dark grey pigment on the stone surface.

- Abstract motifs: the un-dateable paintings may be interpreted as wusm or tribal markers (singular: wasm).

- Structure/shelter: a painting of what seems like a shelter was painted in red-ochre, the proportions of the painting seems similar to a mosque rather than the adjacent beehive tombs. Exact indication of what the painting represents remains unclear.

II. Petroglyphs: engraved images on the rock surface by picking or carving out the stone.

- Animals: depictions of ox, oryx, sheep, and cattle. These carvings inform us of the available and possibly prized faunae in the local environment of Bidaa Bint Saud.



An engraving representing a snake on the facade of rocks at Bidaa bint Saud.



Engraving on the facade of rocks at Bidaa bint Saud.



An engraving representing a bull on the interior walls of a cave at Bidaa bint Saud.

- Snakes: a recurring motif that is found across several sites in the UAE, such as the Qusais site in Dubai, and Rumeilah in Al Ain. It is believed that the motif pertains to customs and beliefs during the Iron Age.
- Weapons: carvings of daggers or possibly axes. The analysis of the similarities between the carvings at the sites can potentially date the carvings to the Iron Age.

Knowing the Past

Scientists consider ancient petroglyphs a vital source of historical and cultural knowledge. The value of these engravings is derived from the fact that they reflect how ancient people saw the world around them. Sometimes, however, the exact meaning is lost through time and thus we must use other evidence to fully comprehend what is depicted.



Engraving on the facade of rocks at Bidaa bint Saud.



Oases & Al Aflaj

The following chapter focuses on the oases and aflaj of Al Ain and is divided into four main lessons, each of which is linked to targeted learning outcomes.

- The first lesson in this section outlines the history of the oases of Al Ain and the elements within, such as Al Aflaj system.
- The second lesson delves into the historical and cultural aspects of oases life in Al Ain.
- The third lesson looks into the six oases of Al Ain, and examines the Al Ain oasis in depth.
- The fourth lesson concludes with a look into the economical and social system of a traditional oasis.



Lesson 1

The History and Components of Al Ain Oases

Learning Outcomes

- Know the historical significance of the oases.
- Identify the different components and elements of the oases.
- Understand the falaj construction process.
- Recognise how palm trees are vital to the oases' agricultural system.
- Be aware of the measures used to safeguard the oases.

Concepts & Terminology

- > Oasis and oases
- > Al Shar'ia
- > Mother of Falaj (Umm Al Falaj)
- > Agricultural system
- > Traditional crafts and handicrafts

The land that makes up today's UAE has a rich history of continuous occupation spanning 10,000 years. Prior to the invention of the falaj around 3000 years ago (1000 BCE), people accessed groundwater with simple wells, as evidenced in Hili around 5000 years ago (3000 BCE). These population centres traded widely with neighbouring civilisations from the Arabian Gulf to Mesopotamia and the Indus Valley and exported copper through coastal settlements like Umm an-Nar.

History

The etymology of the English word "oases" is originated from ancient Greek, however, the Arabic word for oases (alwaha) has strong etymological links to Coptic Egyptian.

Around 3000 BCE, a myriad of factors contributed to the beginning of oasis life in Al Ain. The area developed into a type of "pit stop" along commercial trade routes, providing travellers with general relief, shelter and a chance to buy supplies. The emergence of trade routes that linked the inland areas to the coast were particularly important. This trade was fuelled by the discovery and processing of precious resources like copper from the nearby mountains. Around this time agriculture also developed, as seen at the archaeological site of Hili 8.

Ancient Dates

Archaeological evidence from Hili 8 (3000 BCE) points to the harvesting and use of dates in the region.



Ronald Codrai © Department of Culture and Tourism - Abu Dhabi

A farm in old Al Ain.



Characteristics and Components of Oases

An oasis can be understood through examining its characteristics and components, namely Al falaj and its palm trees and agriculture.

Al Falaj

The word "falaj" (aflaj in plural form) means "a small stream or spring" in Arabic, and refers to an ancient irrigation system. This system involved transporting water from under ground (subterranean) to ground surface via long horizontal tunnels.

The Falaj throughout History

Beginning in the first millennium CE, the falaj system was widespread across numerous regions in the world including North Africa, Spain, Iran, Afghanistan, and China. Recent archaeological research indicates that the earliest known examples are located in the UAE.

Examples of falaj discoveries include:

- Hili, and Bidaa Bint Saud in Al Ain,
- Al Thuqibah in Sharjah



Ronald Codrai © Department of Culture and Tourism - Abu Dhabi

A farm surrounded by walls.



Henning Nielsen © Moesgaard Museum

Al Shari'a or open pool where water is collected from Falaj Hili in 1968.





The covered channel of an ancient falaj system that was discovered in the site of Hili 15.

The aflaj, a complex irrigation system implemented in Al Ain around the first millennium BCE, consists of underground channels that transport water across several kilometres from mountain foothills to the oases. The system used gravity to move groundwater across these distances. As the water moved through a shallow channel, it irrigated the palm groves and fields. The falaj revolutionised life across the region, by overcoming difficult desert conditions and exponentially expanding the region's water supply, in turn allowing unprecedented development in Al Ain. The falaj excavated at Hili 15, is notable for being the oldest known falaj. It has stood the test of time and fragments of it remain to this day.

Types of Aflaj

The Aflaj of Al Ain can be classified into three main types relative to its water source, which are:

- 1- Al Aflaj Al Ghay'leyah: This is a seasonal falaj, affected by rainfall.
2. Aflaj Al Ain'nyah: Finding source water from natural springs.
- 3 - Al Aflaj Al-Dawoudeyah: This falaj finds its source in ground water wells, and its supply is relatively continuous throughout the year.



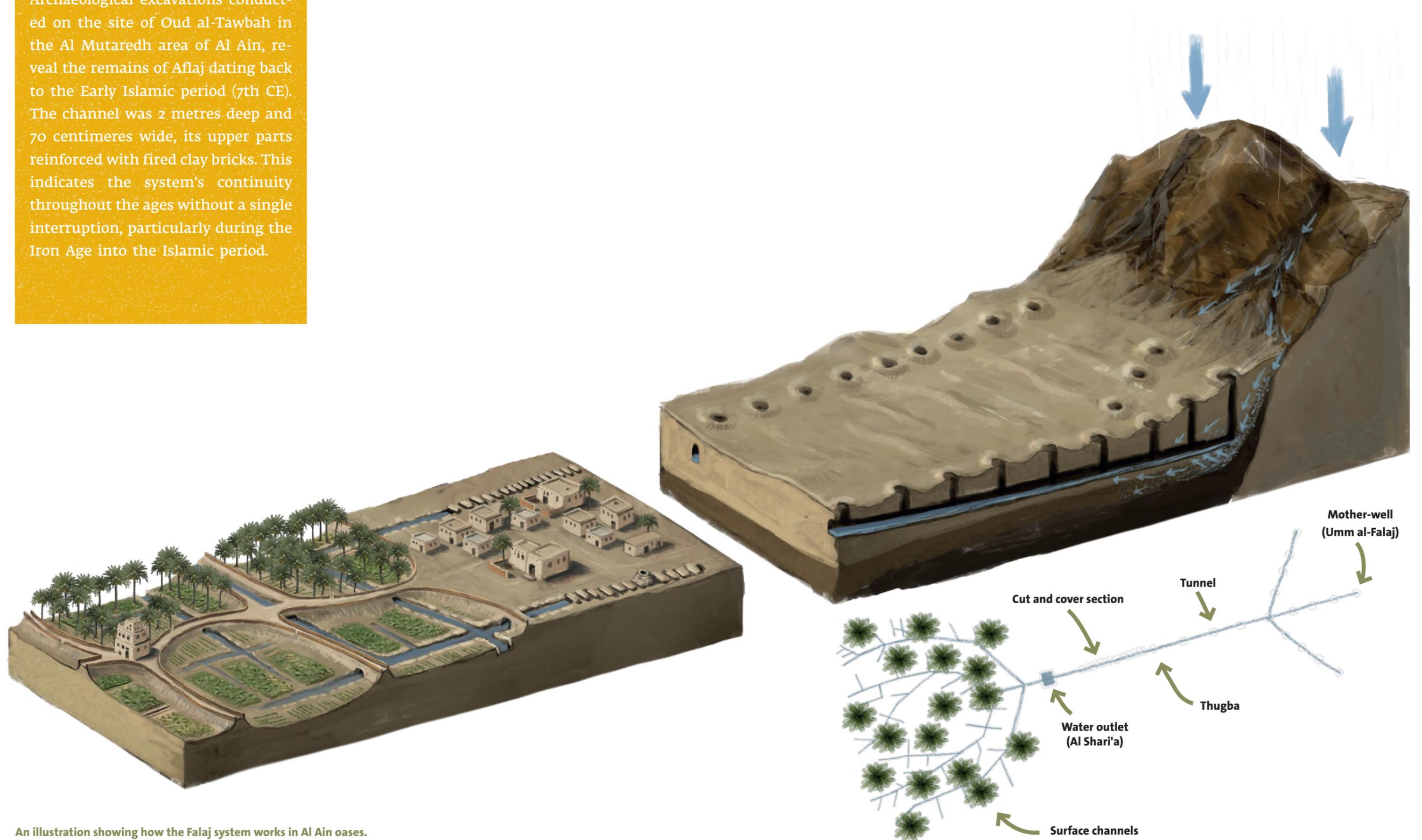
A watering trough for camels from a falaj in Al Ain in 1963.

Jens Aarup Jensen © Moesgaard Museum



Early Islamic Irrigation Systems

Archaeological excavations conducted on the site of Oud al-Tawbah in the Al Mutaredh area of Al Ain, reveal the remains of Aflaj dating back to the Early Islamic period (7th CE). The channel was 2 metres deep and 70 centimetres wide, its upper parts reinforced with fired clay bricks. This indicates the system's continuity throughout the ages without a single interruption, particularly during the Iron Age into the Islamic period.



An illustration showing how the Falaj system works in Al Ain oases.



Falaj Construction in Al Ain

Extending from Al Ain for several kilometres, a falaj is usually two metres tall with a width ranging between 50-120 centimetres. It gradually decreases in height as it travels from the water source to a storage basin. Typically built underground, a covering for the falaj was critical in order to avoid water loss through evaporation.

There are several theories regarding the construction of a falaj, however it is agreed that the process that involves a series of stages, beginning with the main falaj (Umm Al Falaj), where an underground pool for transporting water is located. Next, several wells are drilled in varying depths according to the direction of water flow and availability. The wells also known

as Thuqbah were used as access holes to the falaj for maintenance purposes. Finally, underground channels are built horizontally with the aim of connecting these wells to form an extensive canal. This canal can stretch up to several kilometres underground until it reaches an open basin at the surface (Al Shari'a), distributing the water to a network of channels that typically run through palm groves. Falaj water flow can vary from one to the other. For instance, the aflaj located in Al Mutaredh, Al Muwaiji, Al Jimi and Al Qattara transport water from the east to the southwest, while water from the Hili's Falaj flows from northeast to southwest, and Al Daoudi's from the southeast to the northwest.



An illustration of a model of the oases.

The open water basin Al Shari'a usually fills up during the evening. The water flow is controlled by a series of canals with a dam, typically built using various kinds of mineral, stone and rubble. The dam would operate according to the water supply needs of each farm.

Many tools were used to construct the aflaj. The work was very dangerous. While digging the tunnels the workers faced a number of environmental hazards including scorpions, snakes, and even collapse of the tunnel itself.



Distribution of water from the Falaj through surface canals using dams.



Palm Trees and Agriculture

The oasis is an integrated ecosystem incorporating a number of natural features. Palm trees are one of the most essential elements in its development. Their role includes, but is not limited to, the provision of shade, protection of the soil, reduction of water evaporation, and production of nutritional goods, such as dates and raw materials used to build shelters and household items.

The shade provided by palm trees and the running water of the aflaj create a microclimate within the agricultural system. The farms or palm groves typically follow a three-layered farming system, with the palm trees at the highest level

covering the agricultural fields, fruit trees at the second layer, and grains and other small crops at the lowest level. Through widespread successful cultivation of the palm tree, the regional population was able to adapt its by-products to serve the local community. The fronds, for example, were used for weaving into mats and baskets.

The following list describes other products that resulted from palm tree cultivation.

Al Mahaffa: A handheld fan made of palm fronds, square in shape and built to enable manual ventilation.

Al Mabkhara: A four-legged conical base on which clothes were hung in order to perfume them with incense.

Al Mukabba: A pyramid-shaped structure used to cover food, still used in many Emirati homes.

Al Saroud: A circular mat on which dishes were placed, usually used in sets to accommodate the number of people dining.

Al Juffeir: A woven basket with a circular base used to hold various fruits and vegetables.

Al Arish: A simple shelter made of palm trunks and fronds.

Al Mezfan: A mat made from the spines of palm leaves on which dates were placed to dry, also used in constructing Arish structures.

Al Habool: A belt made of palm fibre used to climb palm trees.

Al Makhsha: A traditional broom made from palm leaves.

Types of Palm Trees

Palm dates harvested around the oases vary greatly in size, colour and taste. The most common types include Al Naghal, Al Kholas, Al Jabri, Bu-Ma'an, Khneizi, Firdh and Lulu.



A farm in one of the oases of Al Ain showing multiple agricultural layers.



Weaving palm frond leaves.



Lesson 2

Al Ain, the City of Oases

Learning Outcomes

- Know the historical value of Al Ain's oases.
- Understand the economic impact of the oases.
- Connect the oases to the community building and human interaction in Al Ain.
- Appreciate and recognise the actions taken to safeguard the oases and aflaj, and particularly by the late Sheikh Zayed bin Sultan.

Concepts and Terminology

- > City of Oases
- > Palm Oases
- > Irrigation System
- > Food and Agriculture organisation
- > Historical Buildings

Al Ain's oases are considered one of the distinctive natural features of the UAE, setting them apart from the rest of the country. Historical evidence shows humanity's interaction with nature over centuries and its impact on social relations and economic and cultural activities.

Historical Value

Al Ain, commonly referred to regionally as "the City of Oases," encompasses six different oases, with each occupying their own boundaries and showcasing distinct historic buildings.

Despite the availability of hard evidence, scholars roughly estimate that the oases formed alongside the aflaj irrigation system over 3,000 years ago, due to the fertile soil and groundwater. Trade opportunities in the region, as well as activities such as agriculture, grazing and fishing, resulted from the possibilities afforded to residents by the oases.

Since ancient times, the oases were important for use in farms and aflaj were integral to the social life of Al Ain residents. Then, societal interaction played a fundamental role in constructing civilisation, which consequently contributed to enriching Al Ain's history and the world's heritage. Today there are 68 historical buildings (including Al Jahili Fort): 23 heritage homes, 17 mosques, 16 forts, seven fortresses, two aflaj, a palace (Qasr Al Muwaiji), a marketplace (Souq Al Qattara) and the Muraba'a site (Muraba'at Al Muraijib).



Al Jahili Fort's gate.



A camel caravan during its rest near Al Ain.

Jens Aarup Jensen © Moesgaard Museum



The Impact of Leadership

In 1946, the late Sheikh Zayed bin Sultan Al Nahyan, as an appointed Representative of Al Ain, began to look for solutions to urgent issues affecting citizens. The lack of clean water, essential to development, health and stability was a critical issue. He took an immediate interest in restoring the falaj system, as he believed it would lead to agricultural progress. He restored the channels through which the falaj's water flowed to Al Ain's oases, providing them with sufficient irrigation to sustain growth.

The late Sheikh Zayed went beyond the customary limitations of leaders in his day. According to Sultan bin Ahmed Al Kuwaiti,

an expert on the aflaj in Al Ain, Sheikh Zayed took part in cleaning and maintaining the falaj with his own bare hands. In addition to restoration and preservation, he began construction on what was then the most comprehensive irrigation project in the city of Al Ain, one that lasted nearly two decades. In addition, he established four new underground falaj channels near Falaj Al Ain and its source, paying particular attention to the city's fresh water reservoir, which included Jebel Hafeet's springs.

One of the challenges Sheikh Zayed encountered was the distribution of falaj water, known as the saqqaya (watering) system. In the region, a minority owned the aflaj and controlled its distribution, while the majority suffered from a lack of water to irrigate their farms.

To correct this social injustice, Sheikh Zayed liberated the aflaj, making them available to all residents. In a famous speech, he stated that: "the falaj water emanating from the ground is a right to all." He added: "I want all residents to irrigate their farms with the aflaj, whether poor or rich, and shall begin this initiative with the Nahyan family, by waiving our inherited falaj rights."

Positive results began not long after this humanitarian gesture. Previously, most farmers had been forced to wait about six weeks to irrigate their lands. Now, they could be irrigated every ten days, free of charge.

The biggest impact on society was equal access to water for all the region's residents. This change was noted by the Iraq Oil Company's envoy who stated in a special report that: "this generous attitude, attributed to Sheikh Zayed's policy to improve his people's standard of living at no cost, is remarkable, especially in a country where the cost of water is astoundingly high."

Additional Information

The late Sheikh Zayed bin Sultan Al Nahyan personally rented mules to transport water for the irrigation of trees along the way to Al Ain's Mutaredh suburb.



Ronald Codrai © National Archives

Sheikh Zayed with Julian Walker (Former British political agent in Dubai) eye one of the Aflaj in the city of Al Ain in 1954.



View of a palm grove in one of the oases of Al Ain.



The oases have become one of Al Ain's key tourist attractions because of their considerable historical and cultural importance, offering the visitor a view of the past and present. The late Sheikh Zayed bin Sultan Al Nahyan decreed that this heritage was to be preserved and developed for generations to come. In 1993, the municipality of Al Ain embarked on a project that would further develop the oases, by improving their entrances, rebuilding their walls and establishing transportation routes between farms. This made the oases more accessible for tourists to enjoy.

Recognising Agriculture

To preserve the oases, the Food and Agriculture Organization (FAO) recognized the date-palm system in Al Ain and Liwa as "a highly important agricultural system with heritage status for present and future generations." This system contributes to food security, biodiversity, cultural diversity and sustainable development and knowledge.

Following the directives of His Highness Sheikh Khalifa bin Zayed Al Nahyan, President of the UAE, and His Highness Sheikh Mohammed bin Zayed Al Nahyan, Crown Prince of Abu Dhabi, Deputy Supreme Commander of the Armed Forces and Chairman of the Executive Council of the Emirate of Abu Dhabi, issued Decree No. 38 in 2005 to safeguard Al Ain's significant landmarks. The decision stipulated that the use of palm groves in the oases or within their boundaries should not be altered, unless decided otherwise by the sovereign and under specific conditions. The decision warned against damaging heritage landmarks or established buildings/facilities within the boundaries of the oases, obliging palm tree owners to maintain their palm groves. The decision obliged the Al Ain municipality to regulate, monitor, manage and water the palms in the oases in accordance with the principles of falaj water division and distribution.



One of the walls or lanes between palm groves.



Lesson 3

Al Ain's Six Oases

Learning Outcomes

- Appreciate the impact of opening Al Ain oasis to the public as the UAE's first UNESCO World Heritage Site.
- Learn about the Eco Centre's objectives.
- Understand the significant heritage buildings associated with the oases.
- Realise the learning opportunities for students.
- Recognise the importance of safeguarding cultural monuments.

Concepts and Terminology

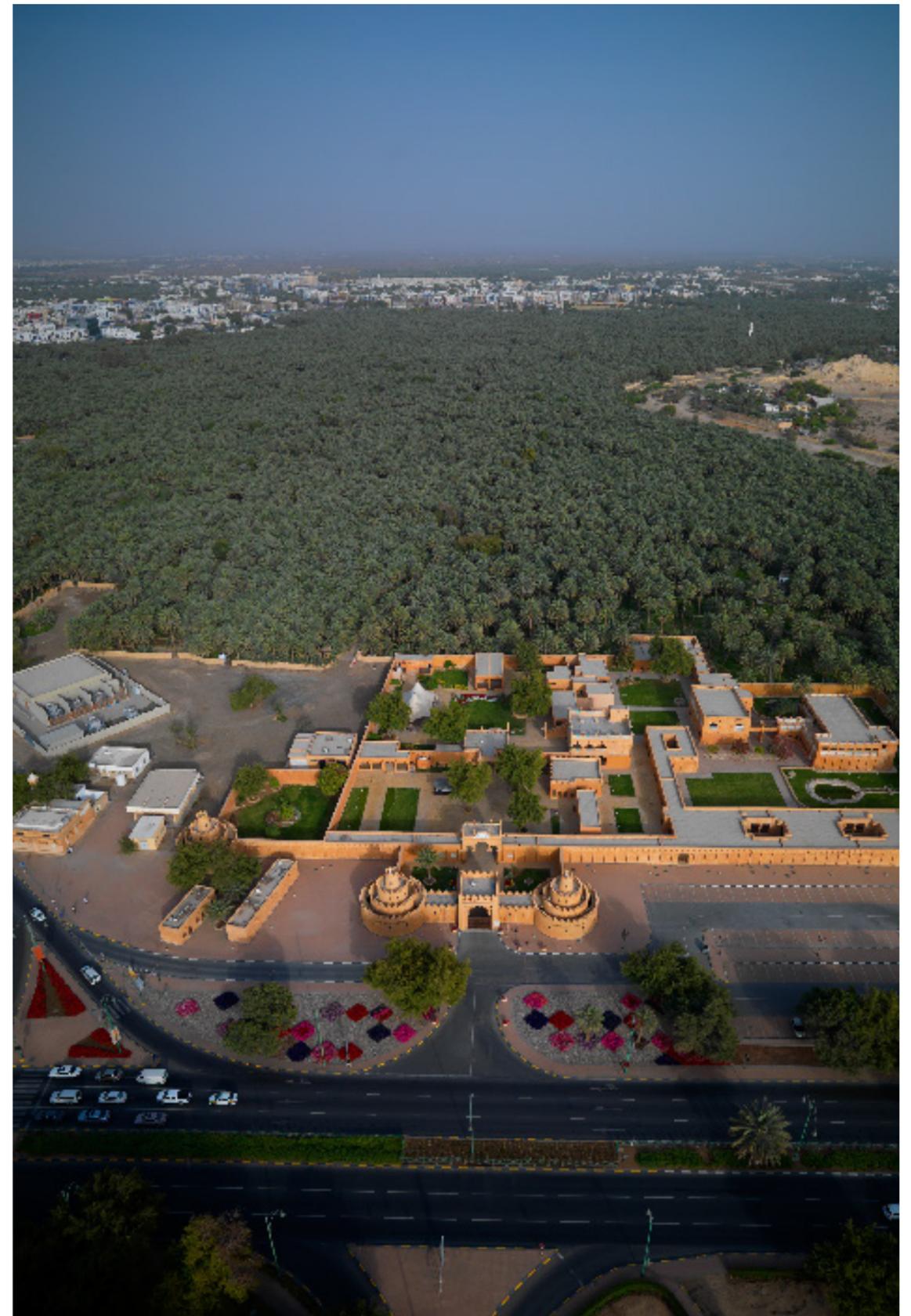
- > Eco Centre
- > Traditional Irrigation Systems
- > Al Shari'a
- > Forts
- > Towers

Al Ain contains six oases: Al Ain, Hili, Al Qattara, Al Jimi, Al Mutaredh and Al Muwaiji, varying in size, palm tree allocation, historic buildings and landmarks.

Al Ain Oasis

Al Ain Oasis is located within the heart of the city and is one of the largest. The most famous of the oases, it is located near the Al Ain Museum to the east and the Al Ain Palace to the west. It spans over 120 hectares and contains more than 147,000 palm trees, encompassing over a hundred different classifications. This oasis includes a myriad of farms, the majority of which are still operational to this day.

The Department of Culture and Tourism - Abu Dhabi inaugurated the UAE's first UNESCO World Heritage Site in November 2016 to provide citizens, residents and visitors a unique experience of Al Ain's cultural history and heritage. The Al Ain Oasis is composed of various experiences, each offering a variety of interactive and informative programmes aimed at exploring the significant natural features of the oasis and its building's distinctive style.



Aerial view of Al Ain oasis and Al Ain Palace museum.



The Eco Centre

The Eco Centre is a small education centre with an interactive experience that provides an ideal learning opportunity for those interested in Al Ain oasis. It is an educational and cultural destination, where displays and multimedia exhibits reveal the story of the oasis through the ages.

The Miniature Oasis

The Miniature Oasis is a small panoramic representation of the oasis where the visitor can learn more about the falaj network that delivers water to palm farms. Through modelling the oasis's hydrological components and spatial geometry, this miniature recreation demonstrates how gravity is used for irrigation purposes.

The Oasis Garden

The Oasis Garden represents the three agricultural layers of oasis formation. These include land crops, orchards and palm plantations. This system was vital to achieving a self-sufficient society and nurturing a climate-friendly environment.

Layer One: Small Plants and Trees

This layer represents the oasis during its establishment. Through the planting of crops and small trees, this first layer provides shade and reduces water evaporation. Therapeutic trees or crops were planted here, such as henna, aloe vera, and nutritional grains. Additionally, a species of thyme grass is used to curb desertification. These plants do not require an abundant water supply, which simplifies the first agricultural phase.

Layer Two: The Orchard

The second agricultural layer in the oasis consists of fruit trees such as figs, pomegranates, lemons, bananas and olives. These trees aided the development of civilisations, from the Mediterranean to Africa and China. These orchards have all been planted around Al Ain's oases. This layer also includes sugarcane plants that were integral and evidenced historically in regional agriculture.

Layer Three: the Symbolic Garden

The third layer is characterised by larger trees. The wide canopy repels heat and facilitates the growth of the plants underneath its cover. Palm trees play this role in the oasis, but it has been replaced by

a number of other plants in the "Symbolic Garden", in order to represent the rare trees found in the oasis that people may not have the opportunity to view. Medicinal plants and trees, such as the Indian Neem (*Azadirachta indica*) or the African Moringa Paregrina, can be viewed in the garden, as well as the Frankincense tree.



General view of Al Ain oasis Eco centre.



Palm tree bearing dates.



The Oasis Gate

The buildings in the courtyard form an entrance to the oasis, accessible through the recently constructed western gate, which is reminiscent of the old oasis gates that have become part of Al Ain's historical and cultural identity. Two rooms flank the entrance on each side, with one acting as the ticket office and the other containing an interactive falaj exhibition. They maintain a similar architectural style to the courtyard's pavilions.

West Gate Exhibition

This exhibition offers a unique sensory experience focusing on the falaj irrigation system. Visitors view an interactive film of the falaj travelling from its water source in the mountains springs to the palm groves.



Al Ain oasis gate.



Falaj Al Ainy shari'a



Historical buildings

Al Ain's Oasis contains a number of buildings considered historically significant as models of traditional architecture models and as tangible evidence of the evolution of local heritage through different historical eras. The most prominent of these buildings are:

1 - Sheikh Sultan bin Zayed Fort (Eastern Fort)

This fort was built 100 years ago by Sheikh Sultan bin Zayed Al Nahyan, who used it as a family home until he became the ruler in 1922. It included his government headquarters, where he

hosted official guests and members of the public. The Sheikh Sultan bin Zayed Fort, also known as the Eastern Fort or Sultan Fort, vividly displays Al Ain's traditional lifestyle during the beginning of the 20th century. It shares architectural features with many of the city's 18th century forts, especially in its design, which includes three conical-shaped towers. The fort was used to defend the oasis and its water sources. It has crenellations in the outer walls for defence and cannons positioned in front of the gate. In 1969, the fort was converted into a museum. Two years later, its artefacts were transferred to what is now known as the Al Ain Museum, which is situated next to the fort.

2 - Al Ain Palace

The palace was constructed in 1937 and served as the residence of the late Sheikh Zayed bin Sultan Al Nahyan until he moved to Abu Dhabi in 1966. It offers insight into the ruling family's lifestyle and the local community culture prior to the discovery of oil. The palace consists of a courtyard and several "majalis" (plural of majlis), or seating areas, where the late Sheikh Zayed used to host guests including citizens, sheikhs and foreign dignitaries. The palace also contains a number of private rooms on the ground floor where Her Highness Sheikha Fatima Bint Mubarak received her female guests. The first floor contains the bedrooms of the late Sheikh Zayed's sons.

Terminology

Al Qal'ah or Hosn (castle or fort): A large building featuring high and sturdy walls, as well as towers with crenellations for watchmen. These buildings maintained security against external aggression and acted as the governor's official seat.

Al Burj (tower): A circular building with crenellations made for watchmen, to observe and defend their surroundings.



Sheikh Sultan bin Zayed fort, also known as The Eastern fort.



Al Ain Palace museum.



Hili Oasis

Hili Oasis is situated about a kilometre southwest of the Hili Archaeological Park and twelve kilometres north of Al Ain's city centre. It acts as the city's second largest oasis, encompassing 62 hectares, and is one of the oldest in the region. Archaeological evidence indicates that the Hili area has been inhabited since the Iron Age, roughly 3000 years ago (1200 BCE).

The oasis contains a number of historic buildings, including forts, towers, mosques and traditional houses. The restoration of the buildings was done following traditional building techniques using mud-bricks, to preserve the traditional character of the buildings. The historic buildings in Hili oasis are divided into:

The Towers

Romeila Tower

This large round tower stands at the entrance to the Hili Oasis. Despite its surrounding walls, the tower is observable from a considerable distance within the oasis. In the past, its location was crucial as a point of defence.

Sheikh Zayed bin Sultan

Al Nahyan Tower

Northeast of the city of Al Ain, Sheikh Zayed Tower stands atop an artificial mound and displays the distinctive features of a defensive Murab'a tower. The ground floor contains a wooden staircase leading up to the parapets used by watchmen to protect the area.



Ejvind Lorenzen © Moesgaard Museum

General view of part of Hili oasis and its traditional buildings in 1968.

The Forts

Hamad bin Hadi Al Darmaki Fort

This fort is an example of the fortified structures that contributed to the defence of the oasis in the past. Surrounding the Fort is a long, rectangular exterior wall connected to a large square tower in one of its corners. Oral histories indicate that the fort was built in the beginning of the 19th century.

Hamid bin Hudaiba Al Darmaki Fort

This fort dating back to the 19th century is accessible through the Bin Hudaiba Al Darmaki Farm, with a complex house located in its northern side.

Juma bin Rahma

Al Darmaki Fort and Mosque

This fort was placed in a strategic location for defence of the oasis and its surrounding population. It has played a prominent military, economic and social role in the region.



Hamid bin Hudaiba Al Darmaki fort during the process of restoration.



Al Qattara Oasis

Al Qattara Oasis is located seven kilometres away from the city centre in the Al Qattara district. It contains mud brick buildings dating back to the last century. It features around many buildings, including nine mosques, six houses, three forts, a souq (market) and a tomb. The Qattara Tomb dates back to the second millennium BCE and contained numerous bronze weapons, currently on display at Al Ain Museum. An archaeological site was also discovered in the oasis. The site revealed objects that date from the Iron Age to the late Islamic era, such as pieces of pottery and household utensils made of stones.



One of Al Qattara oasis's lanes.



General view of Al Qattara oasis.

Al Qattara Souq

Al Qattara Souq was built under the direction of Sheikh Shakhbut bin Sultan Al Nahyan around 70 years ago. It consisted of 16 shops given to merchants free of charge. An additional four shops were added to its eastern side. The souq was built from mud bricks, palm frond panels and various types of wood. Next to the souq lies Al Baraha, a land used to hold mules and other animals. It is worth noting that the souq initially operated between noon and sunset prayers. The souq now opens from morning to dusk. Department of Culture and Tourism - Abu Dhabi recently restored the souq, reopening it during the 41st National Day celebrations on the 2nd December, 2012 as one of Al Ain's historical landmarks.



Al Qattara oasis historical souk.

Terminology

Al Murabaa (square tower): A large three-story rectangle tower in the corner of the castle courtyard, where residents typically gathered for weddings and religious and other social events. They also served as a centre for the government and police forces.

Al Saybah (tower): A circular or square-shaped building, located at the edges of the oases and its entrances, typically used as guard points.



Al Jimi Oasis

Located on the northern side of the Al Jimi district, this oasis contains a varied range of historical buildings. Irrigated by the aflaj, it accommodates a myriad of plants and trees, including palm groves, mesquite (*Prosopis*), buckthorn (*Rhamnus* and *Frangula*), black Mangrove (*Avicennia*), fig trees, banana plants and fodder crops. In addition, medicinal plants, such as aloe, were cultivated around the oasis. Its historical buildings include seven restored houses, three mosques, two towers and a fort.

Sheikh Ahmed bin Hilal Al Dhaheri Watchtower

This 14-metre watchtower was strategically located along the south side

of the oasis to protect its surrounding villages and precious water supply.

Sheikh Ahmed bin Hilal Al Dhaheri House

Dating back to the mid-19th century, this fortified construction consists of a rectangular building that contained archery facades, with a tower on the north side and another in the oasis's southeast area. On the northern and eastern sides, are two palm grove farms. Sheikh Ahmed Bin Hilal was the Ruler's Representative in Al Ain during Sheikh Zayed bin Khalifa's reign, playing a mediative role between Abu Dhabi's Ruler and the people of Al Ain and Northern Oman. He conducted meetings in a private space adjacent to the house's entrance.



Sheikh Ahmed bin Hilal Al Dhaheri house.



Sheikh Ahmed bin Hilal Al Dhaheri tower.



One of the groves of Al Jimi oasis in 1969.

Jan Koch© Moesgaard Museum



Al Mutaredh Oasis

Al Mutaredh Oasis lies four kilometres away from Al Ain's city centre. It derives its name from the six kilometre long Al Mutaredh falaj, which supplies most of the district's farms. Water from this falaj emanates from the Al Muwaiji village's western plains, adjacent to the Al Mutaredh village. This falaj was distinctive in the region because its water flowed from east to west before veering south.

Al Mutaredh oasis is considered significant in terms of date production and is ranked fifth among Al Ain's oases in size and palm tree allocation.

The oasis contains several historical buildings currently undergoing restoration work, with some of these buildings dating back several hundred years.

One of the most significant buildings is the Ahmed bin Sorour Al Dhaheri house, where a historical dates molasses extractor was discovered.



A modern farm in Al Ain.

Al Muwaiji Oasis

Al Muwaiji Oasis, the smallest in Al Ain, is located in the western part of the city about two kilometres west of the Al Ain Oasis. Originally irrigated by the six kilometre long Al Muwaiji Falaj which sourced its water from the Kuwaitat district, the falaj was thoroughly enlarged by Sheikh Zayed bin Khalifa. The falaj's basin was located in the northern part of the Muwaiji Palace.

In 1948, the English explorer Wilfred Thesiger described Al Muwaiji Oasis by saying: "Al Muwaiji is one of the eight small villages in Al Buraimi oasis where Zayed lived and is an agricultural village owned by Al Nahyan, containing a low population density settlement..."



Sir Wilfred Thesiger © Pitt Rivers Museum

Qasr Al-Muwaiji photographed by Thesiger in 1949, showing the mosque and the Northeast tower.



Qasr Al Muwaiji

Al Muwaiji Oasis derives its historical significance from its palace, which acted as a primary government centre for the late Sheikh Zayed bin Sultan Al Nahyan, the Ruler's Representative prior to becoming the Ruler of Abu Dhabi.

Qasr Al Muwaiji is a palace that was built by the late Sheikh Zayed bin Khalifa Al Nahyan. After his death, the palace title was passed on to Sheikh Mohammed bin Khalifa, the father of Sheikh Tahnoun bin Mohammed Al Nahyan, the Ruler's Representative in the eastern region. In turn, he bestowed it upon the late Sheikh Zayed bin Sultan Al Nahyan when he became the Ruler's Representative of the Eastern Region in 1946.

From that time onwards, the palace played a crucial role in Sheikh Zayed's rule over Al Ain. It served as the ruling family's residence and was the birthplace of Sheikh Khalifa bin Zayed Al Nahyan, the president of the UAE.



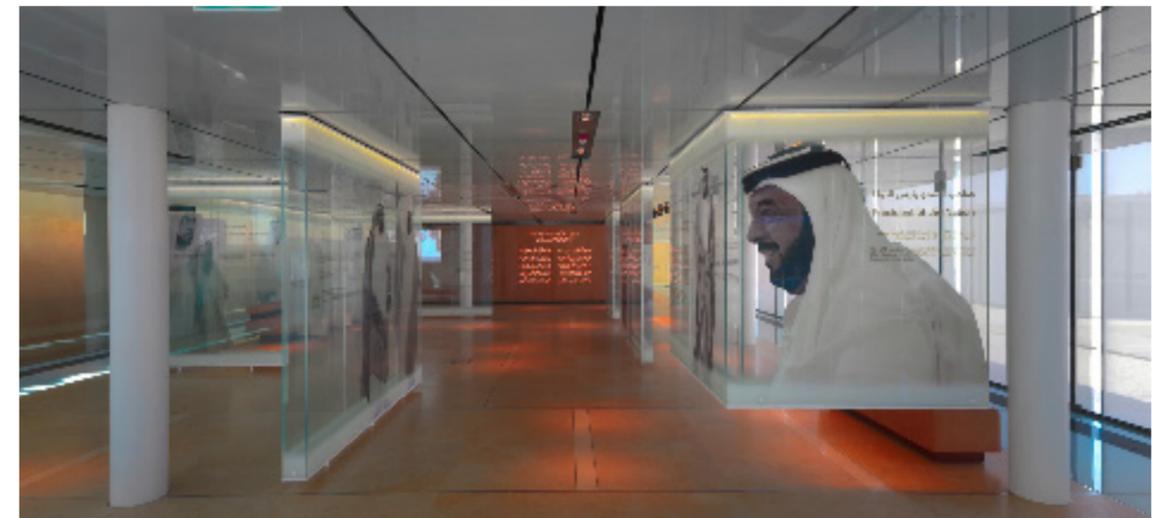
Qasr Al Muwaiji

The Architecture of Qasr Al Muwaiji

The palace was constructed as a square-shaped fort, 60 metres wide and seven metres high. The fort contains three towers, two of which are rectangular and one of which is square-shaped. Inside the palace enclosure lie two large buildings. The first is considered the principal building. It has three floors and is located in the northwestern corner. The second building is situated in the southwestern corner. Both buildings were designed for residential and administrative purposes.

Qasr Al Muwaiji

Qasr Al Muwaiji was inaugurated in 2015 to celebrate Sheikh Khalifa bin Zayed Al Nahyan's major achievements in various development sectors. The exhibition displays the Al Nahyan family's chronological timeline and each member's role in leading the union and the nation's development. The exhibition also presents an ideal learning opportunity for those interested in the palace's history and its cultural heritage as the nation's antecedent seat of governance. The palace was known for the open majlis of the late Sheikh Zayed bin Sultan. This is where he received all his visitors, according to historical records left by travellers through the region.



Qasr Al Muwaiji exhibition.



Lesson 4

The Socioeconomics of the Al Ain Oases

Lesson Outcomes

- Recognise how the environment impacted life in the Al Ain oases.
- Identify and discuss the cultural role the oases played within its geographical setting.
- Understand how agricultural systems operated on the oases.
- Describe social aspects of life in the Al Ain oases.

Concepts and Terminology

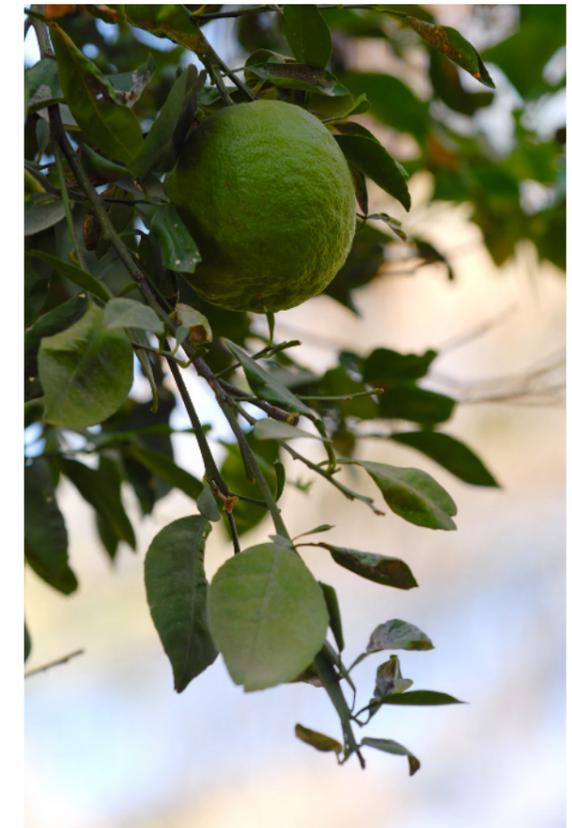
- > Ecological Environment
- > Pollination
- > Agricultural Environment
- > Social Solidarity
- > Al Maqidh (summer journey)

1: Economic Life

Palm trees have been an essential economic factor in Al Ain for centuries. Al Ain residents benefit from them for nutrition, building materials and even shade. Every winter, farmers used to plant small crops around palm plantations in abundant quantities, guaranteeing their self-sufficiency. Each farm typically accommodated between 50 -150 fruitful palm trees. Farm boundaries were clear to all residents, as the owners had inherited their lands through many generations. When border disputes arose, cases were referred to the Judge of Customs, who solved the case in cooperation with the neighborhoods' panel of elderly and experienced citizens.

Agricultural System

The agricultural system of the oases relied on the interdependence of plants, which created an ecological environment involving three levels. At the top level, palm trees provided shade for other plants, protecting them from sandy winds, attracting moisture, and providing organic matter to serve as fertiliser. Next, fruit trees were planted, bearing citrus, mango, fig, banana, grape and pomegranate. Finally, small plants and vegetables, such as pumpkin, carrots, tomatoes, cucumbers and corn, were planted. Wheat and other small crops were usually planted on the outskirts of the oasis fields, as they generally required more sunlight.



Citrus fruits in Al Ain oases



The three layered agricultural system in the oases.



Cross-pollination

Palm trees have either male or female flowers. Date production is enabled on female palm trees, which form the bulk of the trees in the oasis. Farmers are required to fertilise the palm trees artificially, as spontaneous pollination rarely occurs in a desert climate. Farmers climb each tree to complete the task. This practice typically occurs between the end of spring and the beginning of summer. This period is regarded as a festive season, when traditional agricultural practices are employed with an increased sense of commitment.



Trade

Al Ain oases have always been notable for their agricultural production and commercial exchange. The region's residents would sell dates to the bedouins, as well as to the coastal populations of Abu Dhabi and Dubai. Dates were a staple food, especially during treacherous desert journeys and pearl diving season. The bartering of products was not, however, limited to dates. Goods such as milk, meat, charcoal, ghee, lemon, spice, rice, coffee, flour, clothes and wool (which was used to fabricate tents) were also exchanged.



Jens Aarup Jensen © Moesgaard Museum

Camel commercial convoy destined for Al Ain souk in 1963.



Irrigation System

The palm farm irrigation system is considered one of the most significant agricultural features of the Al Ain oases. Due to gravitational force, water flows to the surface from underground channels and reaches the palm groves, where dams divert the waterway into all corners of the farm. Agricultural engineering is employed with precision, as each crop is irrigated along the main channels that intersperse into smaller channels. Farmers, known as Al Baydar, built these channels and maintained the system daily to ensure prosperity.

Master of the Falaj

The community of Al Ain's oases inherited detailed historical records concerned with the management, control, and distribution of aflaj water. The community saw the systematic management of water as essential, as the falaj ensured the successful flow of water to all palm groves. This need led to the development of a designated role within the oasis responsible for the maintenance and operation of the aflaj. The Areef Al Falaj or Master of the Falaj was appointed, based on experience and seniority, by a council of citizens.



Søren Gottfred Pedersen © Moesgaard Museum

A farmer distributes water through the use of dams.



An illustration of water distribution to irrigate palm trees.



A modern falaj.



2: Social Life

The social life in Al Ain's oases was characterised by simplicity. This was because the prevailing agricultural economy revolved around the palm tree, its dates and associated crafts. The palm garden provided a focus for the community. The activities associated with it provided an opportunity for people to work together. Cohesion and community bonds were thus strengthened. Historically, there were ten distinct neighbourhoods in Al Ain: Al Hosn (formerly called Al Sharq), Al Nayadat, Al Mutawah (formerly called Al Janoubeyah), Al Rabeenah, Al Khazainah, Al Nawasir, Al Kuwaitat, Al Shamaliah, Mishinja and Al Watat.



Ronald Codrai © Department of Culture and Tourism - Abu Dhabi

Woman carrying a vessel on her head filled with water.



Jens Aarup Jensen © Moesgaard Museum

Two boys riding donkeys in one of the oases in Al Ain in 1963.



Søren Gottfred Pedersen © Moesgaard Museum



Social Solidarity

Fazaa, which is the act of rushing to help those in need, was a notable form of social solidarity that prevailed in Al Ain's oasis communities. Each community member would contribute towards helping the group as a whole in all aspects of social life, including building houses, harvesting the dates or cleaning the aflaj. Help was also provided to individuals in joyous or sad circumstances, such as weddings or illnesses.

Traditional Building System

Residences were located in a separate area from palm farms. The houses were fortresses, courtyard houses, or areesh (temporary houses made from palm fronds and branches). The villages were usually built near palm groves and surrounded by protective walls. The materials used for construction were mud bricks, clay mortar and palm trees. Palm tree trunks and branches were used to build ceilings while palm fronds were used for the floor and to make woven mats, which covered the floor.



Illustration of the building method of traditional houses.



An old gate in the oases of Al Ain in 1969.

Jan Koch© Moesgaard Museum



Work Routine

Men, who worked in palm farming, would gather at the shari'a after morning prayers and tend the palm farms until mid day. They would then join together near the mosque and the shari'a to make tools from the palm trees essential for daily life. In the afternoon, farmers would undertake various jobs, such as building houses for village residents. To show gratitude, residents would invite them into their homes for dinner.

During the winter, farmers grew wheat and vegetables in addition to caring for palm trees. Wheat was harvested in the spring. Date palms were pollinated in the spring and harvested during the summer. The harvest of fresh dates and fruits would be stored by autumn, when the earth was also ploughed to prepare it for the planting season. Farm owners often hired other farmers to look after their farms in exchange for the largest raceme (athk)

from the palm tree. This allowed a farm owner and his sons more time to focus on other aspects of farm maintenance.



Climbing palm trees to harvest fresh dates.



Water distribution and cleaning of palm trees.

Giving Alms

Palm farm owners paid zakat or alms for their crops with dates and other nutritional products, such as harvested grains, fruits and vegetables. For example, one qalah (a typical vessel made of woven palm leaves) portion of dates was given for every hundred qalah produced, and one saa (a standard portion) for every ten "saa" of wheat produced. Zakat was collected by the governor's office, which was in charge of beneficiary distribution.

Climate

A temperate and balanced climate is a major characteristic of the oases, despite the surrounding desert typically reaching temperatures near 50°C. Humidity levels tend to fluctuate in the oases due to water

evaporation and the existence of the aflaj, which balances the oases' climate. The plants in the oases absorb moisture through their leaves, also affecting the overall climate of the region.



Illustration depicting the climate surrounding the oases.





Surface channel in Al Ain oasis.

Summer Journeys to Al Ain Oases (Al Maqith)

Al Maqith, considered one of the most significant of the UAE's social activities, was a seasonal journey made by residents who traveled from the coastal areas to inland areas in Al Ain and Liwa. This was done to escape the summer's scorching heat. At the onset of the pearl diving season, camel convoys, loaded with the families of the men working at sea, would cross the desert to settle at the oases for the summer season. Staying for months at a time, they would be joined by farm owners who also sought refuge from the sun in the shade of palm trees.



A caravan of the seasonal migration of people from the coast to the oases of Al Ain during the summer.



Religious Occasions- Ramadan and Eid Al Fitr

Religious occasions, such as the holy month of Ramadan and Eid Al Fitr, have always had their own special celebration in the oases of Al Ain. Ramadan always was and remains a special month of worship, prayer, reading Quran, and taraweeh (night time prayers and rituals) for Muslims. Ramadan brings intimate gatherings that unite families, friends and neighbours around the Iftar table where the daily fast is broken together and favourite Ramadan dishes are shared in joyous celebration and affinity. The Eid of Ramadan (Eid Al Fitr) is also an occasion for devotion and prayer, when people visit relatives and neighbours in the freej (neighbourhood), and further afield. It is an occasion for hosting loved ones and opening homes to friends and neighbours

to share joy and celebrate together. Eid Al Fitr is also a time for differences and disputes to be set aside and forgotten, a time when hearts embrace, gifts are exchanged, and relationships renewed a fresh.

Wedding Ceremonies

Following wedding customs was of utmost importance in the oases. Some of these customs included the bride being covered by natural herbal cosmetics daily for the week before the wedding or for the bride's family to receive cooked meals from their neighbours. On the day of the wedding, the bride was adorned with henna and would bathe at the shari'a. The bride's dowry was displayed on the morning of the wedding and celebrations began around lunchtime.



Niels Axel Boas © Moesgaard Museum

Preparation of food for a wedding in Al Ain in 1971.



Niels Axel Boas © Moesgaard Museum

The performance art of Al Ayala during a wedding in Al Ain in 1971.



Al Dan performance was practiced on occasions such as weddings in the oases.



Education

Religious education was standard in the oases and was taught by the Mutaw'wa or, religious scholars who were well versed in Quranic studies. One of the sections of Al Qattara Market was used as an educational centre, where children were taught to read and write. This remained the standard until semi-formal education emerged in the region in the 1950s.

Al Nahyania School

Al Nahyania was the first formal school, established in Al Ain in 1959. By 1960, it opened to welcome students. In the first year, 49 students were enrolled, including His Highness Sheikh Khalifa bin Zayed Al Nahyan, the current President of the UAE. The school's establishment led to a new era for education in Al Ain. Al Nahyania was named after the Nahyan royal family.

Birds of the Oases

The temperate habitat of the oases and the abundance of water and plants attract a variety of wildlife, especially birds, whose distant chirping resonates throughout the area. Some of the many varieties of birds include: wild pigeons (al ra'ee), sparrows (safsouf), the partridge (sofrod), bulbul, green parrots (abou toq), hoopoes, and owls. Migratory birds can also be found, such as Indian starlings (khadris), hummingbirds and a relatively new migratory bird identified as al meena, or the Indian crow.

Oases Today

The oases have developed into one of the nation's most significant tourist attractions, as they poignantly combine the culture of the past and present. The late Sheikh Zayed bin Sultan Al Nahyan has ordered the oases to be safeguarded for the use and enjoyment for future generations.



Ronald Codrai © Department of Culture and Tourism - Abu Dhabi

Al Katateeb - A traditional education system.



Hoopoe

Owl

Desert Dove "Al Ra'ee"



Glossary

Glossary of Concepts and Terminology

Word / Definition

Abbasid Period: beginning in the 8th century with the ascension of the Abbasid Caliphate and the transfer of the Islamic capital from Damascus to Baghdad, an era often referred to as the Islamic Golden Age.

Al Hajar mountains: a chain of mountains covering a great part of northern Oman and parts of the northern region of the United Arab Emirates. The Al Hajar Mountains extend from the Ras Al Jabal area in Ras Musandam near the Strait of Hormuz to Ras Al Hadd in the eastern region of Oman, reaching a maximum height of 3,000 metres in the Green Mountain region of Oman.

Archaeological excavation: the planned and scientific recovery of artefacts through excavation.

Archaeologist: a specialist who excavates and interprets material remains to understand past human behaviour.

Archaeology: the study of material remains resulting from past human activity.

Artefact: objects made or shaped by humans in the past, such as a tool or a work of art.

Anthropology: the study of humans and their society from the past and present.

Bronze Age: the period between the Stone Age and the Iron Age in the Arabian Peninsula, from around 3,000 BCE until 1,200 BCE. It was characterised by the use of bronze in the manufacture of tools and weapons.

Calcareous rocks (or “limestone”): a type of sedimentary rock, often originating from calcified aquifers, and containing skeletal fragments, such as snails.

Carnelian (Red Agate): a mineral composed of transparent red silicon (naturally found in sand and quartz). It was used in the Stone Age to make jewellery and later in the manufacture of small, engraved seals for securing important documents.

Copper: a chemical element used in the composition of many alloys. For example, small quantities of copper alloys are added to gold to increase its hardness for use in manufacturing jewellery and coins.

Copper mining: the process of manufacturing copper after smelting, and the production of various materials, tools and weapons.

Copper pots: Copper was one of the oldest materials used for cooking in ancient civilisations, as it was a very good conductor of heat. Ancient peoples manufactured copper pots manually by hammering and sculpting.

Cretaceous Period: an age following the Jurassic Period, roughly 65 million to 135 million years ago.

Dilmun Civilisation: a civilisation that emerged on the island of Bahrain and the east of the Arabian Peninsula around 2,000 BCE.

Ecological environment: the word “ecology” is derived from a Latin word for the branch of natural sciences which studies the interaction between all living organisms, and between organisms and their environment.

Falaj: underground tunnels that brought water from underground to the surface for agricultural use. The earliest known examples are to be found in the United Arab Emirates.

Hafeet Period: a period between 3,100-2,500 BCE in what is currently the United Arab Emirates. Named after Jebel Hafeet, where stone cairn tombs from this time were first discovered.

Historical Building: any architectural tombstone or monument established by humans and distinguished by its historical, aesthetic or artistic value.

Indus Valley Civilisation: an ancient civilisation that flourished in the areas of the Indus Valley and adjoining regions from 3,000 to 1,500 BCE.

Intangible cultural heritage: a group of practices, knowledge, skills, materials and associated cultural spaces that are recognised by communities and groups. Cultural heritage is transmitted over generations and reflects cultural identity and human creativity.

Intaglio (bas-relief): the raised image or inscription on the surface of a seal, which when pressed into wax leaves a visible mark.

Iron Age: the period of human civilisation that followed the Bronze Age on the Arabian Peninsula, between 1,500 and 1,000 BCE in the Middle East, India and Greece. It was characterised by the use of iron in the manufacture of tools and weapons.

Magan: an ancient region mentioned in Mesopotamian texts that likely corresponds to the United Arab Emirates and Sultanate of Oman.

Madbasa (a date press): a place specially designed to extract the juice of dried dates, prevalent in the oasis communities

of ancient times. It consists of channels created parallel to the earth leading to a vertical channel. The molasses or date extracts flows down the channels for collection in a pot.

Mesopotamia: the fertile area “between the rivers” Tigris and Euphrates in what is today Iraq.

Neolithic or New Stone Age: a recent period of the Stone Age in the Arabian Peninsula, which likely lasted from 6,500 BCE to 3,000 BCE.

Palaeolithic Age: the Old Stone Age, which lasted from about 2.5 million years ago to nearly 10,000 years ago.

Plankton: a group of microorganisms that live on water surfaces such as oceans and seas. They are found in freshwater and saline areas.

Qalah: a round wicker bowl in which dates are kept for storage and use.

Soapstone: a talc-schist, which is a type of metamorphic rock known as “the soft stone”. A shifting rock consisting mainly of metallic talc and therefore rich in magnesium.

Steatite a type of soft stone (soapstone) found in the south-eastern mountains of the Arabian Peninsula and elsewhere and made up mainly of talcum. Because of its softness and malleability, Estetate was used in sculpting objects and tools. It is sometimes called “chlorite”, and both words carry the same meaning.

Stone Age: the period in which humans principally used stone to make tools and weapons, before metals were commonly available.

Stratified rock: a type of rock composed of layers which includes clay rocks, sandstone, limestone, and other minerals.

Sumer: the ancient civilisation which existed in southern Mesopotamia from 3,000 BCE.

Tangible cultural heritage: material objects and structures such as buildings, historical places, antiquities, monuments and artefacts which deserve protection and preservation.

Ubaid Period: a prehistoric era in Mesopotamia from 6,000 to 3,800 BCE, named after the Ubaid site where remains from this time were first found.

Umm An Nar Period: a period between 2,500 and 2,000 BCE. Named after the island of Umm an Nar in Abu Dhabi, where buildings and tombs from this time were first found.

Wadi Suq Period: a period between 2,000 and 1,500 BCE in what is today the United Arab Emirates and Sultanate of Oman.

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