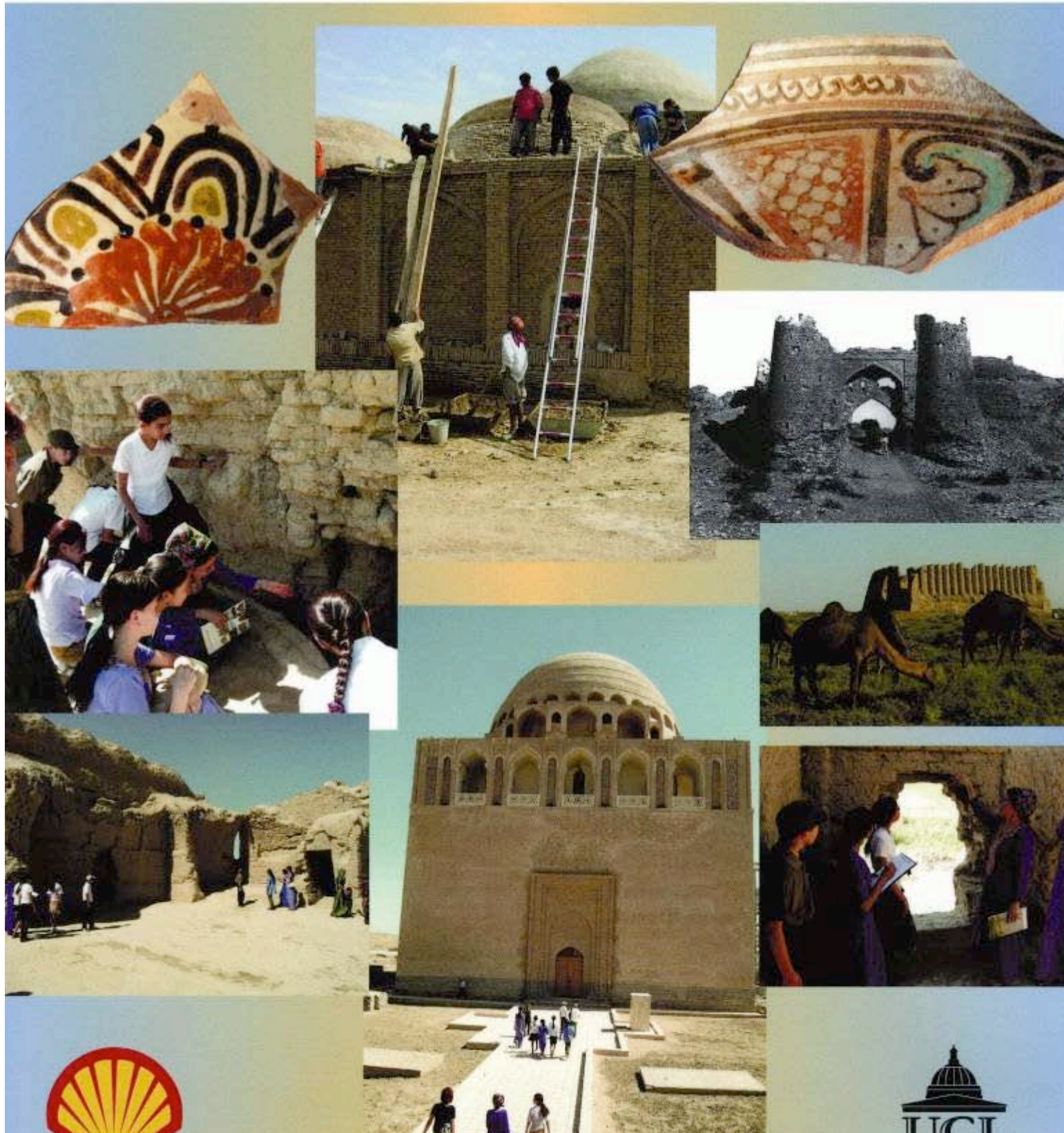


ANCIENT CITIES OF MERV

HANDBOOK FOR TEACHERS



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Useful information



*A school group visiting one of the site
museum rooms at Ancient Merv.*

Ancient Merv Archaeological Park, Bairam Ali

Archaeological Park: Opening hours:
any time (24 hours, 7 days)
Interpretation centre at Park entrance,
with displays on Gonur and the cities
of Merv: Opening hours: 8:⁰⁰ – 19:⁰⁰
Telephone: (00564) 26217

Mary Regional Museum,

Komsomolskaya str. 1, Mary.
Important collections on Merv Oasis,
including Gonur, all the cities of Merv
and ethnography.
Opening hours: 10⁰⁰ – 17⁰⁰ lunch break
13⁰⁰ - 14⁰⁰.
Telephone: (00522) 34083

National Museum of Turkmenistan, Berzengi, Ashgabat

Fine collection of material from Merv,
including the Merv vase.
Opening hours: 10⁰⁰ – 17⁰⁰
Telephone: (0012) 489020

ANCIENT CITIES OF MERV

HANDBOOK FOR TEACHERS

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Inside back cover: Plan of the ancient cities of
Merv.



Pupils investigate the staircase of the Little Kyz Kala.

ABOUT THIS BOOK

This book has been written especially for teachers in Turkmenistan schools to provide information and illustrations about one of the country's most important sites, Ancient Merv, to supplement existing school textbooks.

Why is Merv so important?

The oasis at Merv was one of the earliest places to be inhabited in Turkmenistan. In fact, the Bronze Age settlements there are among the earliest evidence of civilisation in Central Asia.

Later, Merv shows evidence of sophisticated cities spanning nearly 2,500 years, including the Seljuk period when Merv was the capital of a vast empire and one of the largest cities in the world.

Merv is also important because the oasis lies on one of the main arms of the ancient Silk Routes which crossed half the world, from the Far East to Europe and Africa.



A school group from Bairam Ali visiting the Great Kyz Kala in Merv.

Why is it important to study Merv?

The Turkmen people are rightly proud of their heritage. Pupils at school are taught about the history of their country and the founders of the ancient cities of Merv played a crucial part in Turkmenistan's long and distinguished history.

The ancient cities of Merv also provide us with the evidence for the way of life of the people who lived there in the past. But that evidence is in danger of being destroyed, mostly by the harsh conditions which the weather imposes on the monuments and their

landscape. It is important for pupils, the adult citizens of tomorrow's Turkmenistan, to understand what that evidence is and to help preserve it for their children to enjoy and learn from.

Using this book

We hope that this book will give teachers, especially young teachers, ideas for including Ancient Merv in their pupils' learning and, if possible, to visit the site itself as part of curriculum work. The book includes:

- Information about **World Heritage Sites**, especially as Ancient Merv has been included on this world list since 1999.
- A **Timeline** which lists important dates for Merv, Central Asia and the World.
- An outline of **The Silk Routes** with a map of the most important routes to use as a classroom resource.
- The main part of the book deals with **The History of Merv and its Monuments** with sections on all the historical periods from the Achaemenian Empire to the establishment of the modern city of Mary.
- Ancient Merv has been studied by archaeologists since the 19th century and the section, **Archaeological Techniques**, explains some of the ways archaeologists discover and record the evidence for the past.
- **Conservation at Merv** explains how mudbrick buildings and structures (such as city walls) can be damaged by climatic conditions and how they can be conserved for the future.

- The final section, called **Teaching Strategies**, lists some ideas for including a visit to Merv in the teaching of a number of curriculum subjects.

WORLD HERITAGE SITES

In 1972 the United Nations Educational, Scientific and Cultural Organisation (UNESCO) adopted the Convention concerning the Protection of the World Cultural and Natural Heritage.

In 1990 the Turkmenistan Ministry of Culture made the far-sighted decision to establish the State Historical and Cultural Park of Ancient Merv to protect the walled cities and the main outlying monuments in the oasis. Ancient Merv was declared a World Heritage Site, under this UNESCO Convention, in 1999.

The World Heritage List

The countries which are party to the Convention can nominate sites for inclusion in the list and commit themselves to safeguarding those sites. Cultural sites are defined by the Convention as:

- '*monuments*: architectural works, works of monumental sculpture and painting, elements or structures of an archaeological nature, inscriptions, cave dwellings and combinations of features **or groups of separate or connected buildings** which, because of their architecture, their homogeneity or their place in the landscape, are of outstanding universal value from the point of view of history, art or science;

- *sites*: works of man or the combined works of nature and man, and areas including archaeological sites which are of outstanding universal value from the historical, aesthetic, ethnological or anthropological or anthropological points of view’.

For a site, such as Ancient Merv, to be added to the list, it has to be of outstanding international importance.

The criteria for a cultural monument to be selected are that it should satisfy one or more of the following:

- ‘Constitute a masterpiece of human creative genius
- Have exercised considerable influence at a certain period or within a cultural area of the world
- Provide exceptional evidence of a culture which is living or has disappeared
- Illustrate a significant historical period
- Be associated with ideas or beliefs of a universal significance’.



The Great Wall of China was a fortification built across northern China against attacks from the nomadic tribes of Mongolia and Manchuria. The wall was originally a series of earth ramparts constructed by the 3rd century BC. The first Qin emperor, Shi Huandi, ordered that these walls be joined together and extended from 221 BC. The stone wall which encased the earth ramparts was not built until the 16th century AD and stretches 2,250 kms.



Djenné, Mali in West Africa was declared a World Heritage Site in 1988. The Great Mosque is the largest mud brick building in the world and was built in the 13th century AD and restored in the 19th century.

The Aswan High Dam

In 1970 the Egyptian government completed the construction of the Aswan High Dam which was to create hydroelectric power from the annual flooding of the River Nile. Archaeologists were aware that a number of important archaeological sites would be flooded and that neither Egypt nor Nubia could finance a rescue programme. UNESCO launched an international appeal and \$80 million was raised. Five groups of temples were dismantled, restored and re-erected on new sites.



The temples of Ramesses II being reconstructed at their new location away from the flooded area. Four years after this rescue work, in 1972, the World Heritage Convention was adopted by UNESCO.

TIMELINE

CENTRAL ASIA

BC
6th century Achaemenid Empire founded by Cyrus the Great

530
522-486 Cyrus dies
Reign of Darius the Great



Alexander the Great.

c 336 Alexander the Great begins campaigns in Central Asia

323 Death of Alexander at Babylon

322 Seleucus I takes control of Alexander's Asian empire

247 Parthian rebellion against the Seleucids



Parthian warrior guarding the walls of Ancient Merv.

232 Nisa becomes capital of Parthians

91

AD
224

by 652

661-750

750

821

10th century

1040-1256
1256-1383

MERV AND KHURASAN

BC
End of the 3rd and early 2nd millennium.

First Chinese embassy, from Emperor Wu-ti, to Parthia

Sasanians seize power from the Parthians

Persia overrun by Muslim armies

Umayyads control the Arab Empire from Damascus

Abbasid dynasty rules from Baghdad (destroyed by the Mongols in 1258)

Tamirid dynasty declares independence from Abbasids

Seljuks become a powerful new force

Seljuk Empire
Mongols control Central Asia.
Timurid dynasty rules from Samarkand

First settlers in of the oasis.
Gonur-depe

1st millennium

c 6th century

after 291

53

AD
220

241-272
651

c 652

c 740s

748

755

821

Many settlements along the ancient river in the Murghab valley

Erk Kala, the first city of Merv

Antiochus builds a new city Antiochia Magiana (later Gyaur Kala)

The Parthians defeat the Romans in battle near Karrah (in Mesopotamia). 10,000 Roman soldiers became prisoners of war and were settled in Merv

Sasanian Ardashir overcomes Artabanus V in single combat at Hormizdgan to become King of Kings.

Reign of Shapur I Last Sasanian king, Yazdirigid III, murdered near Merv

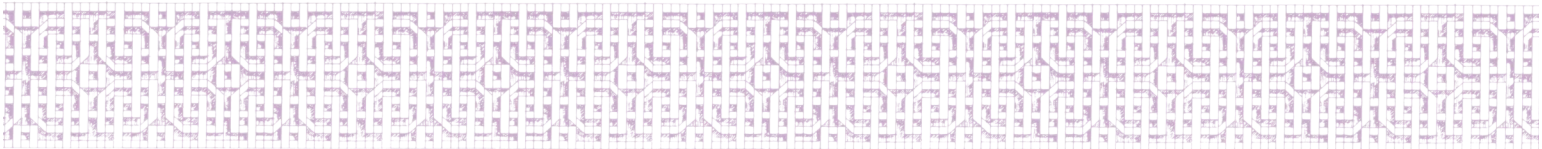
Merv under Umayyad rule. Abbasid revolt against the Umayyads

New city of Sultan Kala established; Gyaur Kala becomes industrial quarter

Abu Muslim leads Abbasid revolt against the Umayyads

Abu Muslim assassinated in Iraq

Tahir ibn Hossein governor. Declares independence and founds the Tahirid dynasty.



867 Start of the Saffarid dynasty
 892 Samanids seize power
 977 Ghaznavids become the new power
 1037 Seljuks take control of Merv
 1040 Merv the Seljuk capital
 c 1080 Walls around Shariyar Ark and then Sultan Kala constructed
 1153 Sultan Sanjar taken prisoner by the Ghuzz



An aerial view of Abdullah Khan Kala looking west with the modern town of Bairam Ali in the background.



The west gate of Abdullah Khan Kala photographed in 1890, but now in ruins (see the section on Conservation page 30).



This photograph taken in the autumn of 2004 shows the most recent restoration of Sultan Sanjar's Mausoleum.

1157 Sultan Sanjar dies at Merv at the age of 71
 1221 Mongol army sack city and murder the inhabitants

c 1409 New city of Abdullah Khan Kala founded
 1454 Last great Timurid ruler, Husayn-i Bayqara, marries in Merv
 1498 Rebellion against Husayn. Merv besieged
 1506 Death of Husayn. Timurids cease to be a powerful force. Safavids and Uzbeks fight for control
 1510 Uzbek army defeated in battle with the Safavids
 1727 Sultan Band dam destroyed. Inhabitants of Merv forced to leave
 1737 Inhabitants return to Merv
 c late 18th century Bairam Ali Khan Kala built
 1850-1890 Merv a city independent from its Qajar rulers of Iran
 1884 Russians annexe Merv. New peoples arrive

1991 Central Asian Republics gain independence

The beginnings of farming	
BC	
9000	First wild sheep flocks are managed in the Zagros Mountains of Iraq
9000-8000	First cultivation of wild cereals in Mesopotamia
8000-7000	Wheat and barley domesticated in Mesopotamia
6500	Rice cultivation in China
6000	Wheat, barley and sheep farming begins in Egypt
6000	Earliest evidence for farming in Indian subcontinent

THE SILK ROUTES

In the past there was a huge gulf between the peoples of the western and eastern worlds – a gulf created not only by the intervening expanses of mountains and deserts but also by a lack of information about each other. Traders brought some information about the different countries they travelled through. The ancient Greeks may have known about the Chinese – they had a legend about a race of people they called the Hyperboreans, the ‘Dwellers beyond the North Wind’. The Romans knew of a people they called the Seres. Perhaps the word was derived from the Chinese word *ssu*, meaning ‘silk’. But for a long time nothing was known about these mysterious people of the far east except that they produced silk. The Roman poet Virgil, in the 1st century BC, talks about ‘*the delicate wool that the Seres comb from the leaves of their trees*’.

A trading caravan of merchants and camels from a Spanish 14th-century map - the Catalan Atlas.



This is the elaborately decorated entrance to a caravanserai at Shahdad in Iran. Beyond the gateway you can see the courtyard and the surrounding rooms and stores.

Caravanserai

A caravanserai was a fortified enclosure to provide secure accommodation for travelling merchants, their camels, packhorses, carts and their goods. In some areas along the Silk Routes armed patrols protected the travellers against attack from bandits. Caravanserais were built at intervals of about 30 to 40 km. Food, water and a place to sleep were provided (usually up to 3 days) free of charge. The remains of one caravanserai has been found in Merv,

between the Great Kyz Kala and the city walls of Sultan Kala.

FROM EAST TO WEST

Although you will often see the term Silk Road used, the map on pages 8-9 shows a number of routes taken by merchants, on land and sea, to import goods from the east to the Mediterranean and Europe.

Few people travelled the whole route from east to west. Traders usually carried their goods a few hundred kilometres, made deals at markets and caravanserais and travelled back home with new loads.

From Changan to Kashgar

On land these great trading routes started in the ancient capital of China, Changan (now the modern Chinese city of Xi’an). The road took the traders with their caravans of camels through the Gansu Corridor to the end of the Great Wall to Anxi near Dunhuang. The road now split. Travellers had to pass north or south around the Tarim Basin, which is over 1500 km long and surrounded on three sides by mountain ranges. These routes



avoided the arid wasteland of the Taklamakan Desert and joined together again at Kashgar. The southern route could take travellers over the Karakoram Mountains into India. An even more northern route went via Tashkent.



Travel along parts of the Silk Routes were very difficult for traders. This is the main pass between Uzbekistan and Turkmenistan into the Ferghana Valley.

From Kashgar to Bactra

After the great market town of Kashgar, the traders had to cross the high passes of the inhospitable Pamir Mountains. Once through this obstacle the traders could once again choose a northern or a southern route. The northern route took them through fertile countryside across two rivers, the Jaxartes, now the Syr Darya and the Oxus, now the Amu Darya and on to Bukhara. This route passed through Samarkand. The southern route passed through Bactra (later called Balkh) where for centuries a main trading route went south to India.

From Merv to the Mediterranean Sea

These routes now came together at Merv and on to Rayy, which is just outside Tehran in Iran. It was here that this east-west trading route split again. The northern route went to Trebizond on the Black Sea and on to Constantinople (now Istanbul in Turkey). The southern route went to Ctesiphon and either north to Constantinople or west to the Mediterranean ports of Tyre and Antioch. From here the goods could

now be transported by boat to Rome, or in later periods to the cities of Europe.

TRADE WITH ROME

'So many merchants ships arrive in Rome with cargoes from everywhere, at all times of the year... that the city seems like the world's warehouse. The arrival and departure of ships never stops – it's amazing that the sea, not to mention the harbour, is big enough for these merchant ships.'

The Roman writer Aelius Aristides in the 2nd century AD.

The Romans bought luxury goods from across their own empire and beyond in large quantities – perfumes, spices, cotton and Chinese silk for example. One Roman writer, called Pliny the Elder, said in the 1st century AD:

'India, China and the Arabian states drain our Empire of a huge amount of money every year – this is what our luxuries and our women are costing us.'

In return for luxury items from the east, The Romans sent gold and silver coins, glass vessels, fine pottery and precious stones. But the most expensive of the imported goods was Chinese silk. In Rome in the 3rd century AD it was literally worth its weight in gold – you would have to exchange 327 grams of gold for one Roman *libra* or pound (327 grams) of

silk.

ROUTES FOR RELIGIONS

The Silk Routes did not just carry goods from one part of the world to another. Merchants and travellers the world over have spread information and ideas as well. Three main religions were spread by Silk Routes trade and travel: Buddhism, Islam and Christianity were dominant during the height of the Silk Routes trading in the 8th century AD. But other religions spread as well: Zoroastrianism, Confucianism, Daoism, Hinduism, Shinto and Judaism. And along with these religious ideas came their culture, literature and their arts.

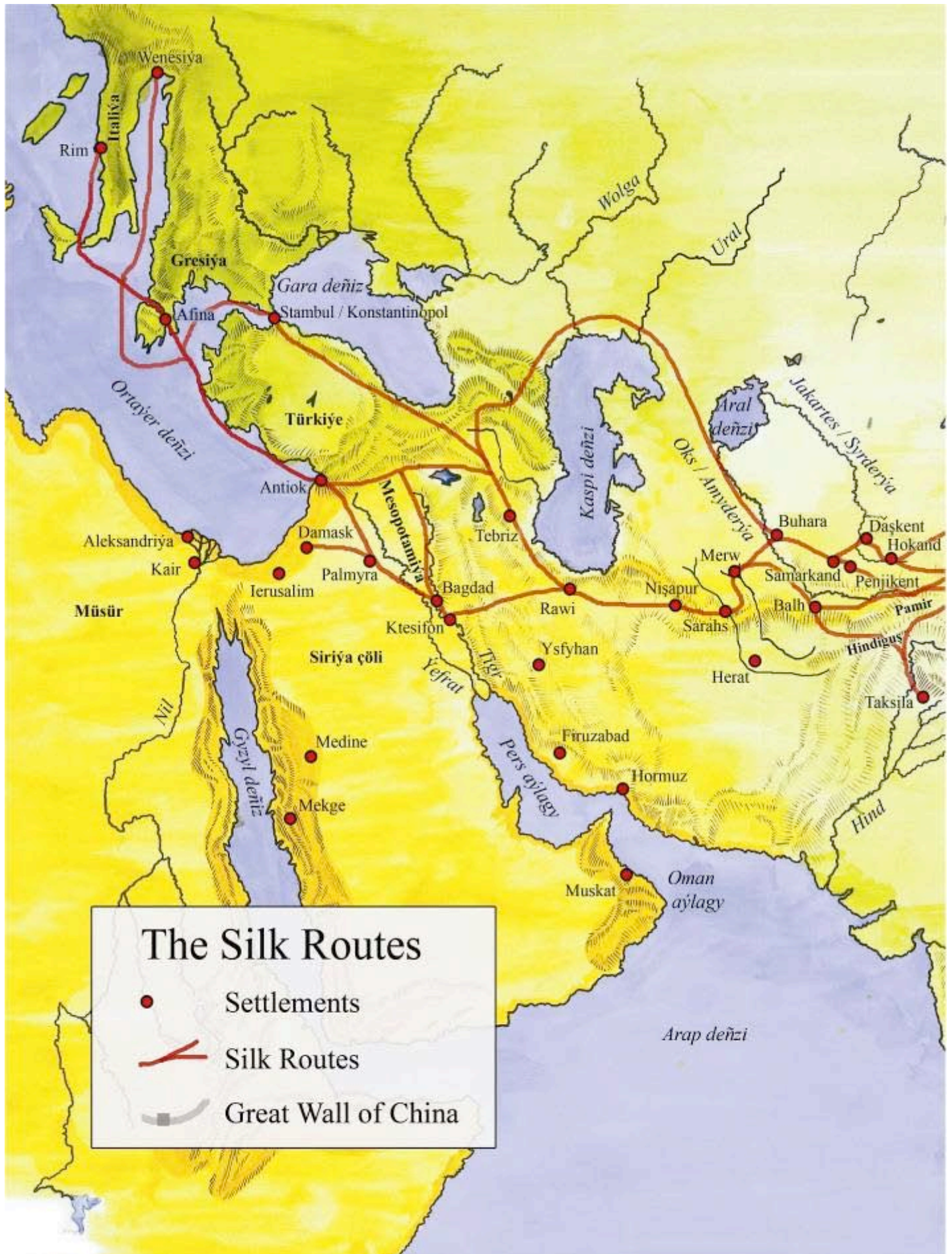
THE END OF THE SILK ROUTES?

In the 13th and 14th centuries AD European traders continued to buy goods transported along the Silk Routes. In 1368 the Mongols were driven out of China and their empire began to decline. It was briefly revived under their leader Tamerland from his capital, Samarkand. But after his death in 1404 the Silk Routes trade passed into the hands of local merchants. Silk Routes trade was now mainly carried out by well-established sea routes (see following pages).



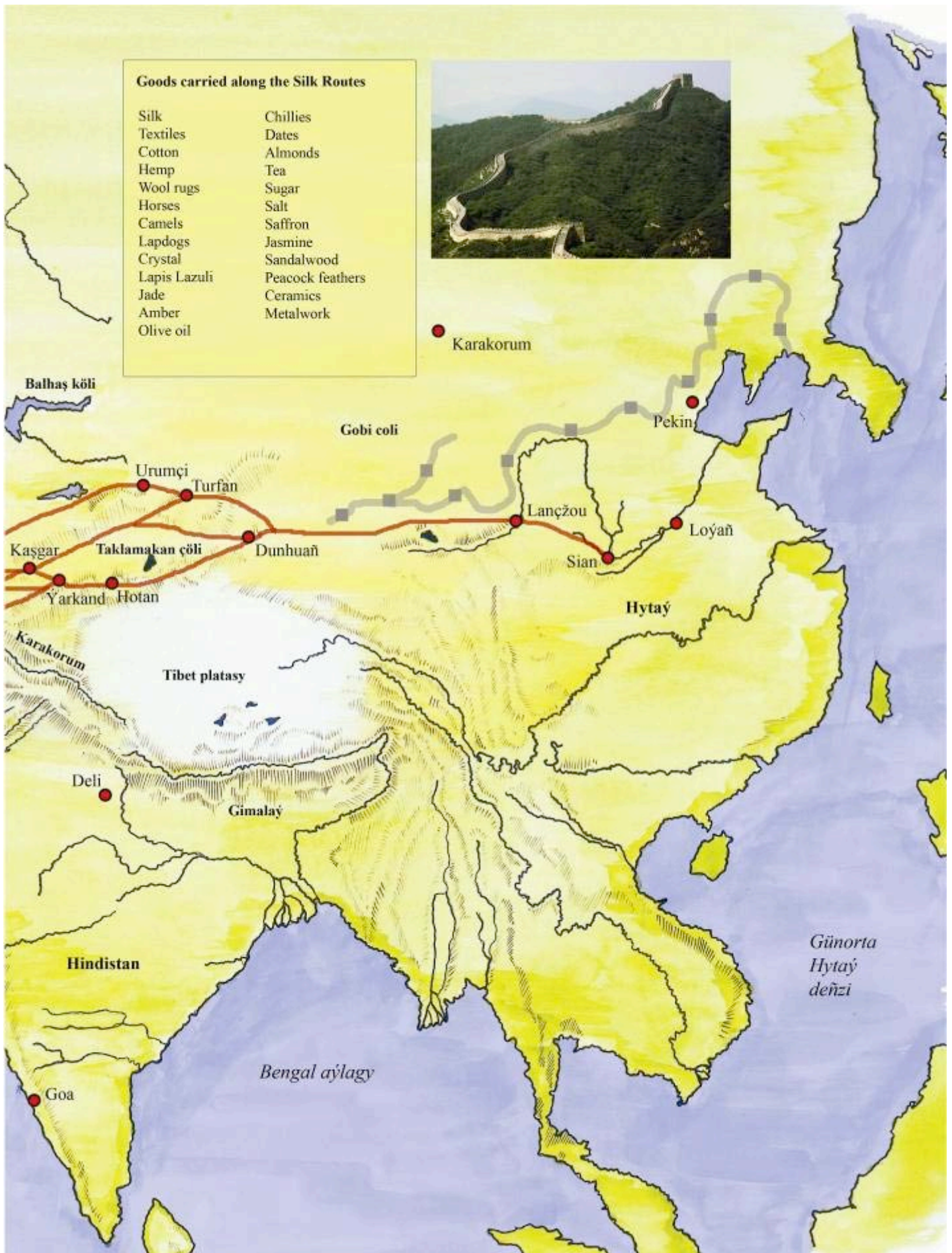
A Zoroastrian fire altar on a coin of Ardashir I (see page 13).

MAP OF THE SILK ROUTES



Goods carried along the Silk Routes

- | | |
|--------------|------------------|
| Silk | Chillies |
| Textiles | Dates |
| Cotton | Almonds |
| Hemp | Tea |
| Wool rugs | Sugar |
| Horses | Salt |
| Camels | Saffron |
| Lapdogs | Jasmine |
| Crystal | Sandalwood |
| Lapis Lazuli | Peacock feathers |
| Jade | Ceramics |
| Amber | Metalwork |
| Olive oil | |



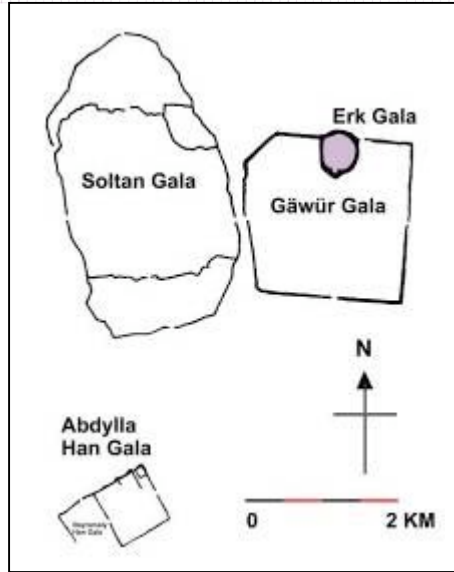
THE HISTORY OF MERV AND ITS MONUMENTS

BEFORE MERV

The oasis of Merv was part of the land of Margush or Margiana. In the Bronze Age, in the early second millennium BC (see Timeline page 4), the River Murghab provided water and rich silts to make the land fertile for cultivation. People probably settled all over the oasis and irrigated their fields from the river. We only find evidence of their occupation in the north, probably because they abandoned their settlements elsewhere because of the onset of the desert. The settlements they built show evidence of a civilisation which is amongst the earliest in Central Asia. The largest settlement discovered so far is at Gonur-depe.

In the 17th to the 15th centuries BC their settlement sites are abandoned, probably because the climate changed and became there was less rainfall and less water in river delta resulting in these areas becoming desert. People now moved to the heart of the oasis.

In the Iron Age, in the first millennium BC, settlements were established in the south and the east of the oasis along the river Murghab, which must have been dammed by this time.



River Oxus) and the Merv oasis was chosen to build the new city of Erk Kala, which covered about 12 ha. It became a flourishing centre for trade and administration. Extensive walls, built for defence, were constructed of mud brick to enclose an oval. Inside were palaces, temples, houses and army barracks.

During the time of King Darius the Great there were a number of uprisings in the empire. An inscription at Bisitun, near Kermansha in western Iran refers to the crushing of a revolt in the province of Margiana:

‘While I (Darius) was in Babylon, there are provinces which rebelled against me – Persia, Elam, Medea, Assyria, Egypt, Parthia, Margiana, Sattagydia, Scythia....one man, Frada, a Margian – him they made chief...He said ‘I am king in Margiana.’ So I sent against him a Persian, by name Dadarshi, my subject, satrap (governor) in Bactria. Thus I said to him: ‘Go forth, attack and destroy that army which does not call itself mine!’.

THE ACHAEMENIAN EMPIRE

In the 6th century BC, Cyrus the Great, King of Persia, founded the Achaemenian Empire, from his kingdom in Persia (now modern Iran). This empire was named after an ancestor of Cyrus the Great, called Achaemenes. At Cyrus’ death in 530 BC, his vast empire stretched from Central Asia to Egypt and from western Turkey to northern India. One of Cyrus’ successors was Darius I (called the Great) who reigned from 521 BC until his death in 486 BC.



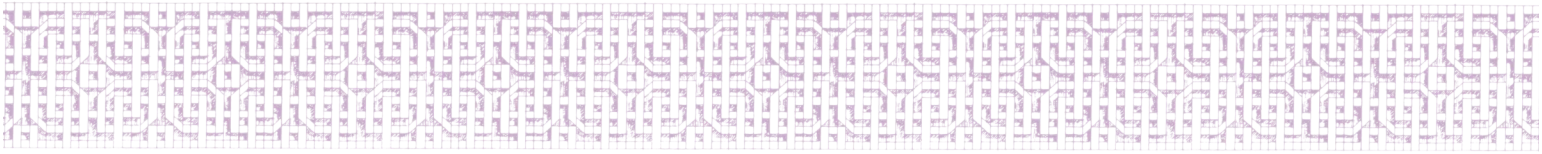
An aerial photograph of Gonur.

ERK GALA

The first settlement at Merv was during the period of the Achaemenian Empire. King Cyrus established a huge empire, united the Medes with the Persians and took over various peoples including the Babylonians and the Phoenicians. He invaded the area known as Transoxiana (around the



An aerial view of Erk Kala with the city of Gyaur Kala (see page 14) in the background. The city is protected by high walls and it has a high point, the citadel, inside it. Excavations showed that the earliest settlement at Erk Kala lies 17 m below the present-day surface – a continuous sequence of mud brick buildings spanning nearly 2,000 years.



A cut through the defensive wall at Erk Kala shows its construction of carefully-laid mud bricks.



Part of a mosaic from the Roman city of Pompeii in Italy. It pictures Alexander the Great at the Battle of Issus where he defeated the Persian army.

ALEXANDER THE GREAT

In the late 4th century BC Merv, and the region around it, became part of the Hellenistic (Greek) world. Around 336 BC the Macedonian king, Alexander the Great, began his campaign against the Achaemenid Empire as he led his army of Macedonians and Greeks across Central Asia towards India. Erk Kala was soon conquered by Alexander himself, or one of his generals. After Alexander's death in 323 BC his empire was divided into kingdoms and governed by his generals who bitterly fought with each other. The whole of his empire was taken over by others.

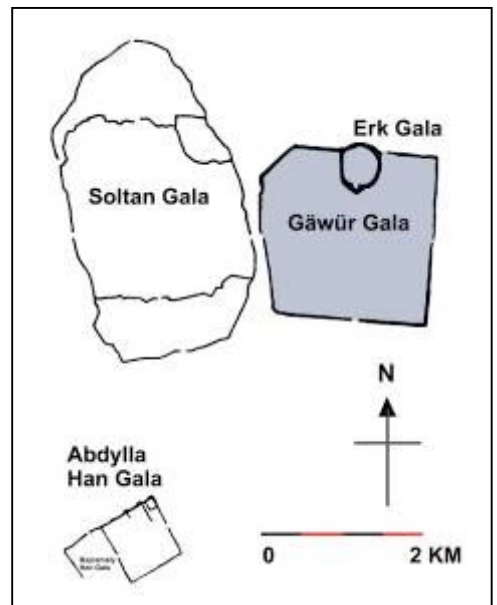
After Alexander, the city of Erk Kala saw a period of unrest until Seleucus I, from Macedonia, gained control of the Asian part of Alexander's empire in about 322 BC. According to Roman sources, the city was destroyed (see next section).

THE MONUMENTS

Erk Kala is best approached through Gyaur Kala (see map on inside back cover). It is a steep climb over the defences on the south side. At the highest point you will see the remains of a Seljuk watch tower and from here there is a good view of the original city of Erk Kala.



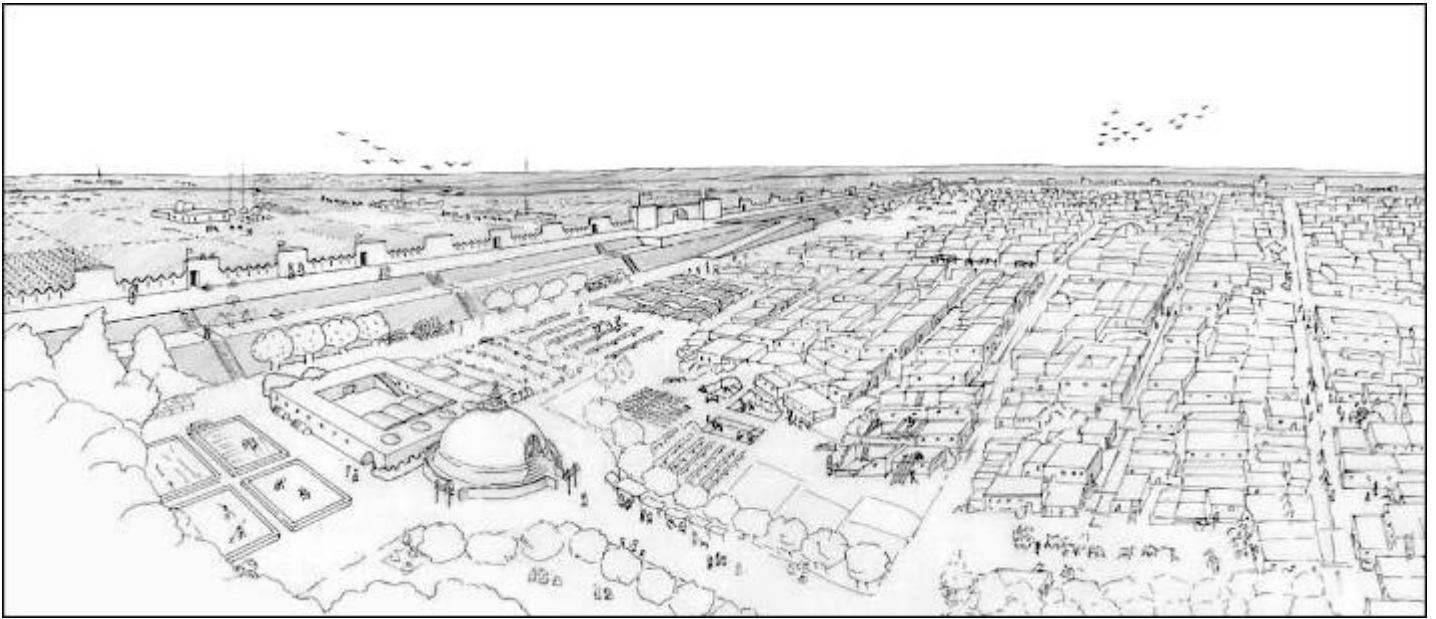
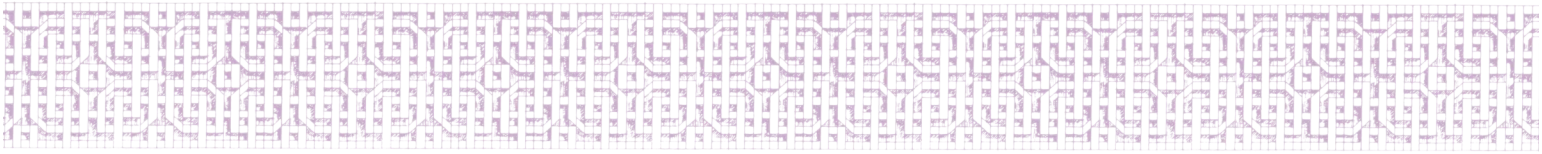
View of Erk Kala from the road through Gyaur Kala.



GYAUR KALA

SELEUCIDS

Early in the history of the Seleucid Empire, Antiochus I, the son of its founder Seleucus I, built a new city at Merv which incorporated the first city of Erk Kala. The new city was much bigger. A rough square, 2 km across covering about 340 ha, was enclosed in defensive walls. This Greek city, with Greek features such as a rectangular grid system of streets, theatres and markets, was named Antiochia



Margiana. Erk Kala, with its strong defences, became the new city's citadel.

An artist's impression of how part of Gyaur Kala might have looked. The Buddhist stupa and monastery is shown bottom left.

Alexander founded Alexandria in Margiana, which was later destroyed by the barbarians, but Antiochus, son of Seleucus, restored the Syrian city in the very same place, through which passes the River Marg, which flows into the Lake of Zotkha. Antiochus preferred the city to bear his own name.

Pliny the Elder, Roman writer on natural history, history and science. AD 23-79.

Margiana is surrounded by deserts. Admiring its fertility, Antiochus enclosed a circuit of 1,500 stadia with a wall and founded a city – Antiochia. The soil of the country is well suited for growing vines.*

Strabo, Roman geographer. Lived about 64 BC – AD 21.

*a stadium was a Greek measure of length equal to 184 metres.



A satellite photograph of Gyaur Kala.

PARTHIANS

Parthia was originally a province of the Achaemenid Empire which came under Seleucid control. In 247 BC, under their leader Arsaces I, the Parthians rebelled and by the 2nd century BC ruled an empire which stretched from the River Euphrates to Afghanistan and north as far as the River Oxus. Antiochia Margiana became the Parthian's eastern outpost for their empire, with their capital at Nisa, around 250 BC. The city developed as a major administrative, military and trading centre.

The city's defences were strengthened against rival empires and peoples who were attracted by its ideal location along the Silk Roads (see page 4).

Parthia and Rome

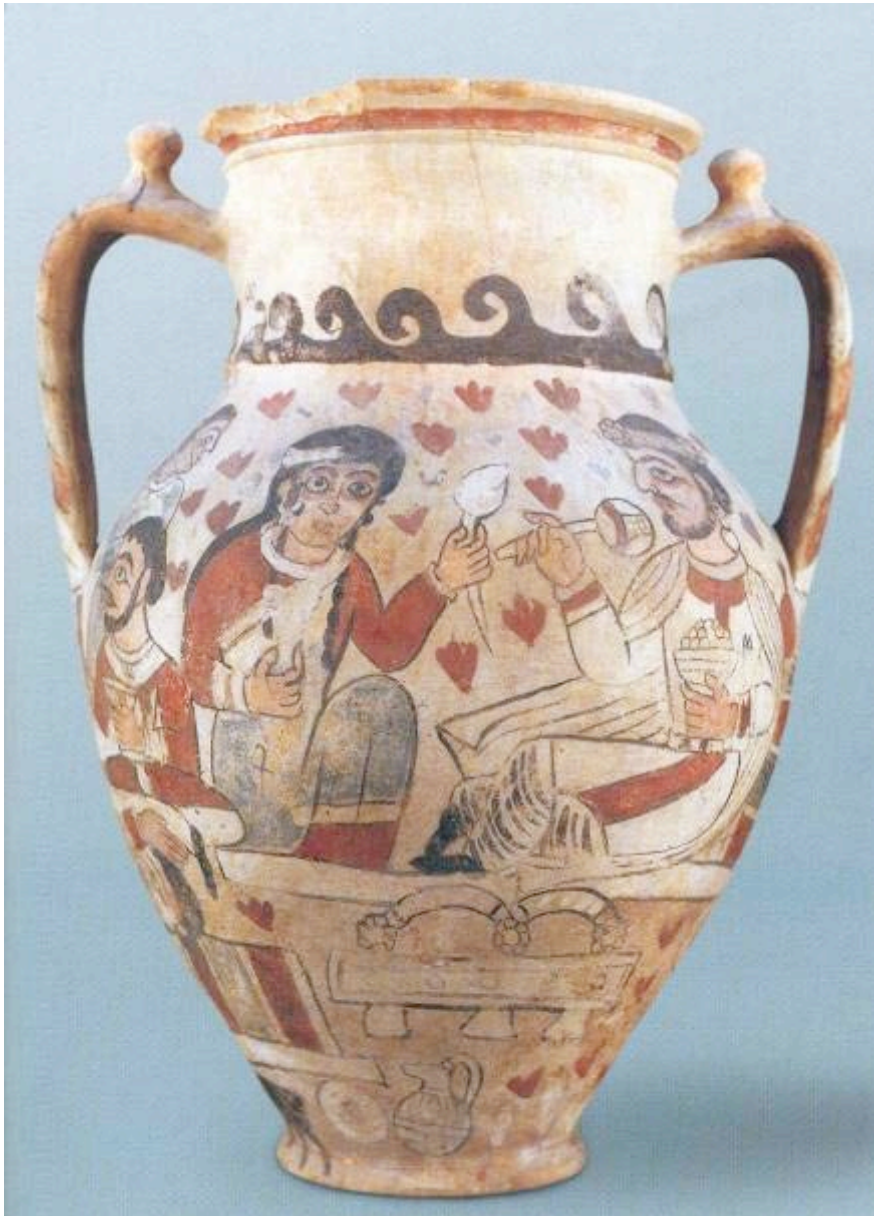
The Romans suffered one of their few military defeats against the Parthians. The Romans invaded their territory in northern Mesopotamia in 54 BC. Marcus Licinius Crassus led an army of seven legions (about 44,000 troops in all) against the enemy but were defeated at the battle of Carrhae. Only 10,000 men escaped to reach Syria while another 10,000 were settled as prisoners at Merv. A Chinese historian in the 1st century AD describes some paintings which show troops attacking a city in Turkmenistan while the defenders are using the military siege tactic of the *testudo* – soldiers interlocking their curved rectangular shields over their heads to protect themselves against missiles.

SASANIANS

Despite the defences against their enemies the people of Antiochia Margiana were overcome by the armies of the Sasanian ruler, Ardashir, in 220 BC. He ruled a small kingdom in the province of Fars in south-

western Iran, who had overthrown the last Parthian king around 224 BC.

Ardashir's son and successor, Shapur I, appointed a *marzban* (or 'guard of the frontier') to govern the city of Merv.



Painted vase from the Buddhist monastery in Antiochia Margiana. This vase is also thought to show Zoroastrian religious rites.

RELIGIONS

We have evidence that during the Sasanian period the religions of Christianity, Zoroastrianism and Buddhism were practised in the city.

Zoroastrianism: a Persian religious reformer, Zarathustra (or Zoroaster) founded this religion. He is said to have received a vision from *Ahura Mazda* (the Wise Lord), one of the many gods worshipped at the time who urged him to believe in one god. After the Persian king's conversion Zoroastrianism spread from the 6th century BC. The followers worshipped only *Ahura Mazda* as the creator and their practices included the preservation of the sacred fire in fire temples and the disposal of their dead by exposure on 'towers of silence'.

Buddhism: Siddhartha Gautama Buddha was born around 566 BC in one of the small states which came part of the Mauryan Empire in India. He founded the religion called Buddhism. He believed that each person should do good works, be disciplined in their life and meditate. After his death a group of followers established an order of monks and began to spread this religious belief. Monasteries had a special building, called a *stupa*, for rituals and to hold relics associated with the Buddha. In Turkmenistan *stupas* have domed roofs. The westernmost Buddhist stupa can be found in the south-east corner of the city (see photo below – on the next page).

THE MONUMENTS

Apart from visiting Erk Kala via Gyaur Kala and investigating the walls (see below) you can see the remains of the Friday Mosque or Beni Makhan Mosque which was built in the second half of the 7th century AD. The mosque was restored in the Seljuk period. You can also visit the Buddhist monastery and *stupa* which is in the south east corner of Gyaur Kala.



A view of the Buddhist monastery and stupa from the walls of Gyaur Kala. These mounds represent the eroded mud brick walls of the building.



A cut through the walls of Gyaur Kala are shown here. Archaeologists have cleaned the surface revealing all the different phases of construction.

DEFENDING GYAUR KALA

The city walls are square and run for 15li (about 8000 metres). The inhabitants made the city gates with iron..

This is part of a description of Antiochia Margiana by a Chinese prisoner, called Du Huan, held in Merv in AD 765 under the Abbasids (see next section). Each section of the square walls are about 2 km long and there were originally four gates, one on each wall.

The ancient city of Gyaur Kala was surrounded by an 8 kms defensive wall. The fortifications are now corroded but survive up to a height of 20m. They consisted of a city wall strengthened with towers at regular intervals and four gates which led in and out of the city

A cut bulldozed through the walls of Gyaur Kala by the Russians in the early 20th century (to pipe water into the inside for irrigation – a scheme which was abandoned) allowed an archaeological investigation of a complex sequence of defensive walls.



View along the top of Gyaur Kala's walls. As the ground dries out it reveals the layers of mud bricks used to construct the defensive walls.

The first wall was built around 280 BC and consisted of an earthen wall, about 6m high, with a gallery walkway. After that, the wall was repeatedly strengthened and enlarged to withstand the military demands of the time.

Distinctive features which can still be recognized today include in-filled gallery walkways, arrow-slits, and a huge corner-bastion.



This photograph, taken from inside the walls, clearly shows the gallery walkways which allowed soldiers to patrol and defend Gyaur Kala at different periods.

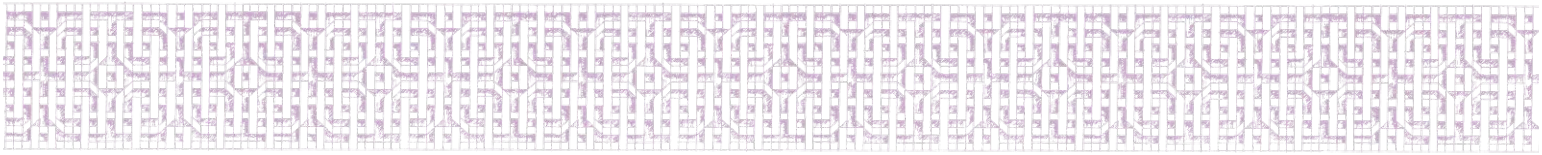
Interpreting the defences

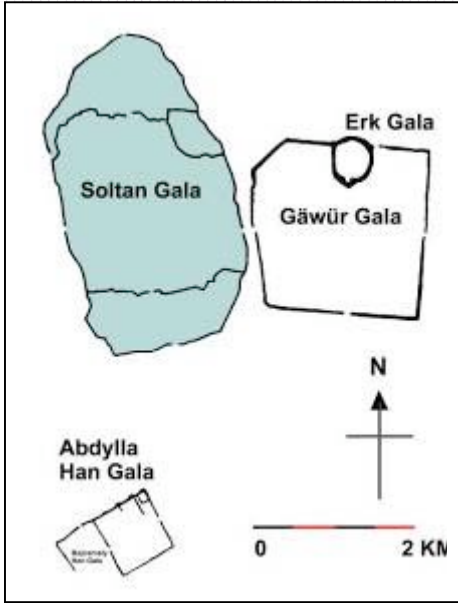
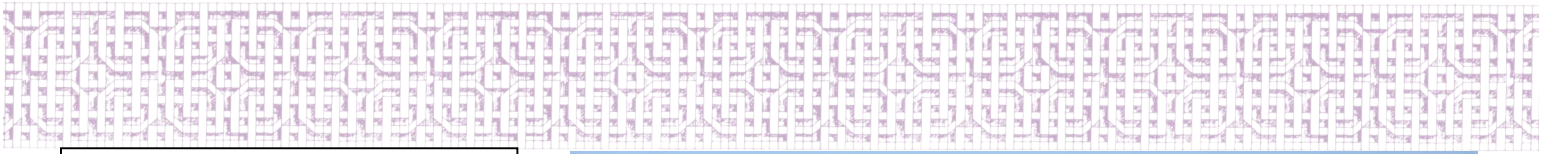
The photographs on the right have been annotated to show each phase of the defensive walls of Gyaur Kala.

On the right you can see the three main phases of the wall around Gyaur Kala:

1. Seleucid wall, around 280 BC.
2. Parthian wall, around second century BC.
3. Late Parthian wall, around first century AD.
4. All phases.

- A. Filled-in access gallery.
- B. Arrow slit.
- C. Outer defences.
- D. Erosion debris.





SULTAN KALA

A NEW ERA

In the 7th century AD, Merv went through a period of decline. By AD 653 Persia had been overrun by Muslim armies. In AD 651 the last Sasanian king, Yazdigird III, tried to take refuge at Merv and use it as a base to resist the Arab forces, but the city closed its gates to him. He was murdered near Merv. The arrival of Muslim Arab armies marked the beginning of a new era in which Islam became not only the main religion but also a dominant cultural force.

Merv now came under Muslim rule within the Umayyad Empire. The city became the capital of Khurasan ('Eastern Land'). The new Arab ruler renamed the city Gyaur Kala, meaning 'City of Pagans', because of the number of religions they found there. Arab troops were stationed there and some of the inhabitants of Basra and Kufa in southern Iraq moved there and constructed a new city alongside the original towns of Erk Kala and Gyaur Kala. Shaim Kala was a self-contained walled town outside the eastern gates of Gyaur Kala. As the capital of the province, Merv now attracted merchants and skilled craftspeople. There is archaeological evidence for cotton growing, textiles and steel making, for example.

The original expansion of Merv under Arab rule, at Shaim Kala outside the eastern gates of Gyaur Kala, was largely destroyed under a Soviet planned village.



Photograph taken in the 1950s of the remains of a house at Shaim Kala.

UMAYYAD AND ABBASID DYNASTIES

The **Umayyad** dynasty was founded by Mu'awiya with its capital in Damascus. The Umayyads took control of the Arab empire from Ali, the son-in-law of the Prophet Muhammad in AD 661. Umayyad forces moved into North Africa, Spain, Transoxiana and north east India. In AD 748, the city commander at Merv, Abū Muslim, famously raised the black **Abbasid** banners proclaiming the start of the revolution against the Umayyads. Abū Muslim led armies in the campaigns in Iran and Iraq. But in AD 755 he was lured to Iraq and assassinated. The Abbasids moved their capital from Damascus to the new round city of Baghdad, breaking the Syrian domination of the Umayyad Caliphate.

ABBASID MERV

The capital of the Abbasid empire was at Baghdad but Merv remained the capital of the Khurasan province. Under Abū Muslim's rule, a new city, Marv al-Shahijan (meaning 'Merv the Great' or perhaps 'belonging to or the soul of the king'), was built to the west of Gyaur Kala. This area is now known as Sultan Kala.

Abū Muslim commissioned a mosque to be built alongside the Majan Canal, which flowed about a kilometre to the west of Gyaur Kala. It was an area in which there had been earlier settlement – defended houses (*kōshks*) were built by the 7th century. Abū Muslim's mosque lay in the centre of a new thriving city. The city was planned, with an organised street system and a carefully managed water supply with numerous canals and reservoirs for each district – fresh water needed for houses and for the practice of Islam.

As Marv al-Shahijan grew in importance, so Gyaur Kala slowly

began to change and decline. By the 9th century its defences had fallen out of use. The former city became the industrial quarter for the new city.

For its cleanliness, its good streets, the divisions of its buildings and quarters among the rivers and gardens and the separation of the people of each suq from another, their city (Merv) is superior to the rest of the cities of Khurasan.

Al-Istakhri, an Islamic geographer writing sometime before AD 951.

Marv, a large town. In the days of old the residence of the mir (governor) of Khurasan was there but now he lives in Bukhara. It is a pleasant and flourishing place with a citadel....in it there are numerous kōshks. It used to be the abode of the Sasanian kings. In all Khurasan there is no town better situated. Its market is good.

An unknown geographer writing in AD 982.

FROM THE TAHIRIDS TO THE SELJUKS

In AD 821 Tahir ibn Hossein was appointed governor of Merv but soon after that declared independence from the Abbasid Empire and starts the **Tahirid** dynasty. Merv becomes the Tahirid capital. The province of Khurasan continued to be prosperous and peaceful until the Tahirids were challenged by the leader of the **Saffarids** in AD 873. However this was a period of disturbances in the province with attempts to establish Merv as an independent power. The confused state of affairs ended in AD 900 when the **Samanids** took power. They were originally from Iran. However, by AD 977, Khurasan was in the hands of a new dynasty, the

Ghaznevids from Afghanistan. In 1039 Merv was the base for the final attempt by the Ghaznevids to destroy the advancing Seljuks.

SELJUK MERV

THE SELJUKS

In the 10th century AD a Turkish nomadic tribe, the Seljuks became an important power in the Islamic world. By 1055, led by Tughrul Beg, they entered Baghdad and took control of the eastern territories of the Muslim empire. The Seljuks and their successors were called sultans, not caliphs as previously, and maintained an Islamic social order by a common religion and law, the Arabic language and trade. The Seljuk period was from 1038-1194, although an offshoot, The Seljuk Sultanate of Rum ruled in Anatolia until 1307.

SULTAN KALA

By the time the Seljuks came to power in the 10th century, the city of Merv had become one of the largest cities in the world and the capital of an empire that stretched from the Amu Darya (the River Oxus) to the Mediterranean. Successive rulers had developed the extensive water system started by Abū Muslim and built many important structures.

The Seljuk rulers took over Merv in 1037 and by 1040 it was the capital of the Seljuk empire. The Seljuks continued to add to the city, and in about 1080 Sultan Malik Shah constructed the massive walls surrounding Sultan Kala. The defensive walls of Merv, over 9 km in length, enclosed an area of 550 ha, including separate walled suburbs to the north and south. Aerial photography (see page 26) shows that Sultan Kala was densely occupied on

either side of the Majan Canal, with a large number of houses set out on a grid system of streets.

Sultan Kala was famous for its beautiful gardens and as a centre for trade where people from far and wide would come to exchange their goods. Besides the houses and the markets, there were baths (*hamans*), mosques and *madaris* (Islamic theological schools). Inside the city, and along the roads leading out, were *caravanserais*. These were large buildings which acted as shelters for traders with their camels or mules, often in their hundreds. They were places to rest as well as provided security, storage, food and repair of equipment. There was a large industrial quarter in the western suburbs, mainly producing pottery, including highly decorated wares which were in great demand along the trade routes.

Shahriyar Ark, or ‘the Royal Citadel’, was constructed in the 11th century. The walled circuit enclosed an area of nearly 20 ha, containing a palace complex, administrative buildings and fine houses and gardens for the most important residents.

A CULTURAL CENTRE

In the Seljuk period Merv became one of the most important cultural centres in the eastern Muslim world. There were several libraries here and a number of outstanding scholars visited or lived here. The famous poet, mathematician and astronomer Omar Khayyam (died about 1130) worked on his astronomical tables at the now long lost observatory in Merv. He had been asked by the Seljuk Sultan, Malik Shah, to revise the calendar. The geographer Yaqut al-Khamavi lived in Merv in the early 13th century for three years and was reputed to have first had the idea of compiling a detailed geographical dictionary of countries.

SULTAN SANJAR

During the reign of the Seljuk sultan, Sanjar, Merv reached the high point in its history. Sultan Sanjar ruled the Seljuk Empire from Merv for sixty

years. Sultan Sanjar engaged in several military campaigns during his reign. In one of them, against the Ghuzz Turkmen tribes, he was defeated and taken prisoner in 1153. It was a disastrous period for Merv. The Ghuzz plundered and killed after the Seljuk army had abandoned the city. Sanjar remained in captivity for three years but escaped and re-established himself at Merv, dying in 1157 at the age of 71.

SULTAN SANJAR'S MAUSOLEUM

When Sultan Sanjar died he was buried in the magnificent mausoleum in the centre of Sultan Kala, which still dominates Merv and its surrounding landscape. Now in isolation, the building was once part of a major complex of religious buildings, all now below the ground or in low ruins on the surface. The mausoleum itself is square and capped by a dome and the geographer Yaqut describes it: *Despite the vast extent of his kingdom, Sultan Sanjar, son of Malik-Shah the Seljuk, chose it (Merv) above the rest of his cities and continued to live there until his death. His tomb is there in a vast dome and a window towards the great mosque. Its dome is blue and can be seen from a day's journey away.*

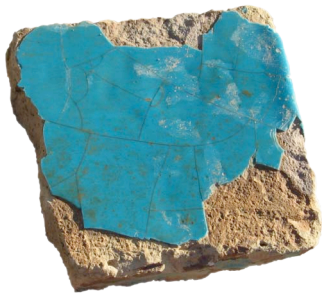
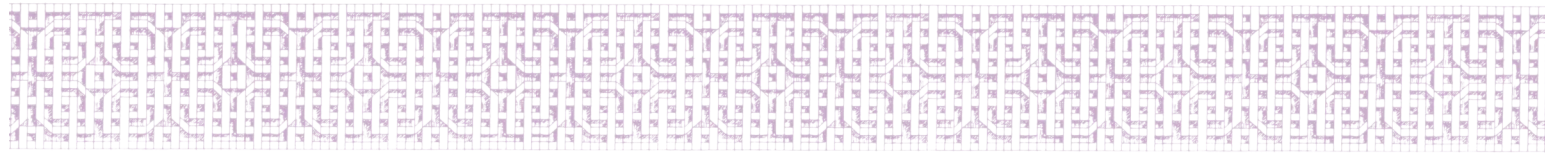
The exterior of the dome has a complex arrangement of galleries and, below that arches with intricate designs.

Restoration

Although the writer Isfizari, in the 11th century, declared that Sultan Sanjar's mausoleum was ‘*..one of the greatest constructions of the world's kingdoms, so strong that it would be impossible to destroy it*’, this great building has suffered over the years. The photograph here shows its state when it was photographed by the Russian Imperial Archaeological Commission in 1890. Since then there have been four restorations – in 1937, in the 1980s, in 1996 and finally one completed in 2004.

This aerial photo shows the remains of the complex of religious buildings which survive around the mausoleum.

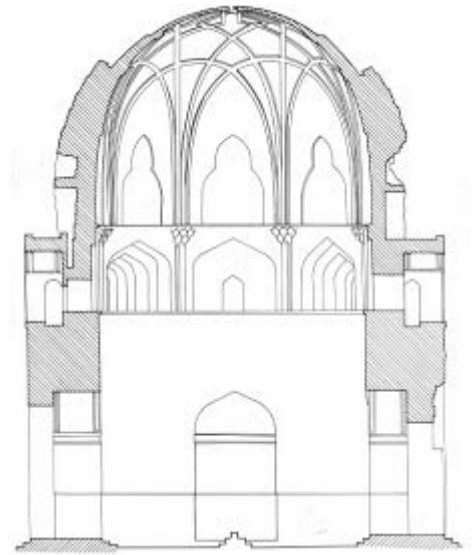




A damaged turquoise tile from the dome of Sultan Sanjar's mausoleum.



This photograph of the mausoleum taken in 1890 shows how much of the original construction survived until then.



Drawing showing the construction of the interior of the mausoleum.



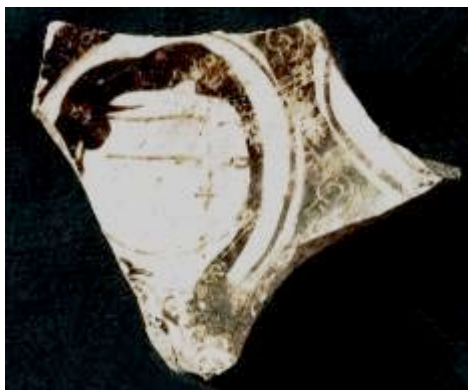
The inside of the mausoleum has also been restored. This shows the dome with its painted decoration.



This photograph taken in the autumn of 2004 shows the most recent restoration of Sultan Sanjar's mausoleum.

AFTER SANJAR

With the death of Sanjar in 1157, the power of the Seljuk's began to wane and the empire was under constant threat from the warmongering Mongols. In 1221 a Mongol force arrived at the gates of Merv. They spent six days riding around the defences looking for the weak points before the city negotiated a surrender. However, the Mongols sacked the city and historical sources claim that they killed over 1.4 million people throughout the Merv Oasis. But this figure is likely to be much too high – even the figure given in Ibn al-Athir's account (below) is probably too many. Although the city had been badly damaged, there is evidence of industry and reused housing in Sultan Kala, showing occupation after the Mongol invasion. Some people suggest that the skilled craftspeople may have been the only ones spared in the massacre.



This sherd of pottery found in Sultan Kala clearly shows the face of a Mongol.

Genghis Khan sat on a golden throne and ordered the troops who had been seized should be brought before him. When they were in front of him, they were executed and the people looked on and wept. When it came to the common people, they separated men, women, children and possessions. It was a memorable day for shrieking and weeping and wailing. They took the wealthy people and beat them and tortured them with all sorts of cruelties in the search for wealth. Some of them died when there was no money left to pay their ransom. Then they set fire to the city and burned the tomb of Sultan Sanjar and dug up his grave looking for money. They said, 'These people have resisted us' so they killed them all. Then Genghis Khan ordered that the dead should be counted and there were around 700,000 corpses.

Ibn al-Athir's account after talking to refugees in Mosul in 1221.

THE MONUMENTS

There are a great many monuments to visit in Sultan Kala apart from Sultan Sanjar's mausoleum (see map on inside back cover).

Shahriyar Ark

The most important building to visit here is the Kepter Khana, probably a small *kōshk* which served as a library or an administrative building. Nearby are the remains of a building which was perhaps the palace of Sultan Sanjar.

View across Shahriyar Ark. The modern building in the background is the rebuilt and enlarged Mosque of Yusuf Hamadani. The complex was originally built around the grave of the dervish Abu Yaqub ibn Ayub, who came from the city of Hamadan in west Iran in the first half of the 12th century.





Shahriyar Ark with the Kepter Khana in the foreground and beyond it the defensive walls.



This section of the wall surrounding Shahriyar Ark clearly shows the internal walkway for guards to patrol the wall.

Defensive walls

Good stretches of the walls of Sultan Kala can be seen on the road that runs between Sultan Kala and Gyaur Kala and the road from the Park entrance towards Shahriyar Ark and beyond.



A great tower of Sultan Kala defending the wall which survives in some places to about 8 metres.

Kyz Bibi

On the road leading to the Great and Little Kyz Kalas is a Seljuk mausoleum and mosque. This was possibly the mausoleum of wife of Sultan Sanjar, Turkan-khatun.



The religious complex of Kyz Bibi.



Great and Little Kyz Kalas

The Great Kyz Kala is the largest *köshk* in the Merv oasis. Its south and east sides are relatively well preserved and there is evidence of rooms and an upper floor to be seen inside. The Little Kyz Kala is close by and less well preserved. It was nearly square and had two storeys. One room inside is relatively well preserved, as is the staircase entrance. Buildings like these may have been semi-fortified palaces or villas, which were built by the wealthy outside the city to act as retreats – buildings which were cool in summer and warm in winter and surrounded by gardens and orchards.



Part of the interior of the Great Kyz Kala showing evidence of vaulting inside rooms.



The staircase entrance to the Little Kyz Kala.



Great Kyz Kala from Little Kyz Kala with Kyz Kibi on the right.

Mausoleum of Muhammad ibn Zayd

Beyond the entrance to the Park is the religious complex of Muhammad ibn Zayd. An inscription dates the building of the mausoleum to 1112. The mausoleum also includes a later mosque or prayer hall and a secondary mausoleum or anteroom. There is also a ruined kitchen complex, a *sardoba* or cistern for water and the mound of a ruined *köshk*.



Mausoleum of Muhammad ibn Zayd.

ABDULLAH KHAN KALA

By the 15th century AD the old city at Sultan Kala was largely abandoned and a new provincial centre was planned, later called Abdullah Khan Kala. The new town, founded by Shah Rukh in c 1409, was rectangular in shape, built about 2 km to the south and covered about 46 ha, all enclosed in a defensive wall with a citadel and four gates. It also had a moat and massive mudbrick walls. The citadel contained the ruler's palace and caravanserai. Unlike other cities, this Timurid city never flourished, although it was still fairly important, strategically, for the next century at least. This was partly due to an increase in maritime trade between Europe and China. Merchants preferred to use the sea rather than the laborious overland route (see pages 8-9) on which Merv's prosperity depended.



Part of the defensive circuit of Abdullah Khan Kala showing the wall, a guard tower (one of 48), moat and eroded defensive wall.

The last great Timurid ruler, Husayn-i Bayqara, came to Merv shortly after 1454 where he married the daughter of the local prince, Mirza Sultan Sanjar. Despite this family connection Mirza staged a coup against Husayn-i Bayqara, but failed.



The west gate of Abdullah Khan Kala photographed in 1890, but now in ruins (see section on Conservation page 30).

By 1470 Husayn had established himself as ruler in Herat and one of his sons ruled in Merv. But the son, Abu'l-Muhsin, and his uncle rebelled against Husayn in 1498 and was besieged in Abdullah Khan Kala:

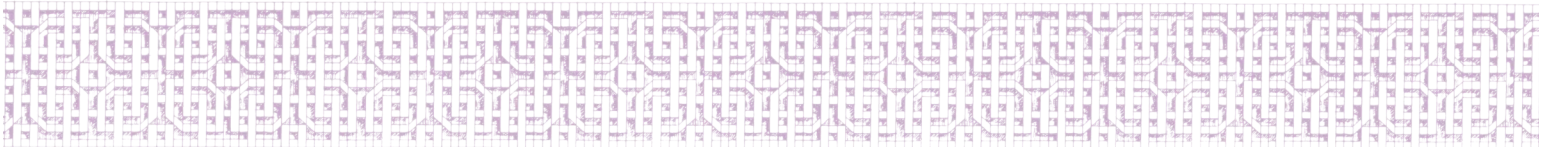
He raised the defences of Merv and got ready for siege. When the imperial forces arrived outside Merv, they laid siege and began battle, resisted valiantly by Abu'l-Muhsin's soldiers. The whistle of arrows began to draw blood from both sides and sometimes the stones hurled reduced a fortress tower to rubble, and sometimes the vessels of fire thrown into the middle of the imperial forces took many lives. For three or four months the siege continued but in the end both father and son, weary of battle, arranged a ceasefire.

Timurid historian Ghiyath ad-Din Khwandamir (1475 - c 1535)

Abu'l-Muhsin was allowed by his father to go on ruling Merv.



An aerial view of Abdullah Khan Kala looking west with the modern town of Bairam Ali in the background. The citadel is situated in the bottom right-hand corner of the town.



THE TIMURIDS

Timur, known also as Tamerlane, was a Mongol leader, a descendant of Genghis Khan who waged brutal campaigns against Persia, India, Egypt, Syria and the Ottomans. He died marching against China in 1405. His descendants, the Timurids, ruled only in the heartland of Central Asia from his capital was at Samarkand.



Icehouse north east of Abdullah Khan Kala.

THE MONUMENTS

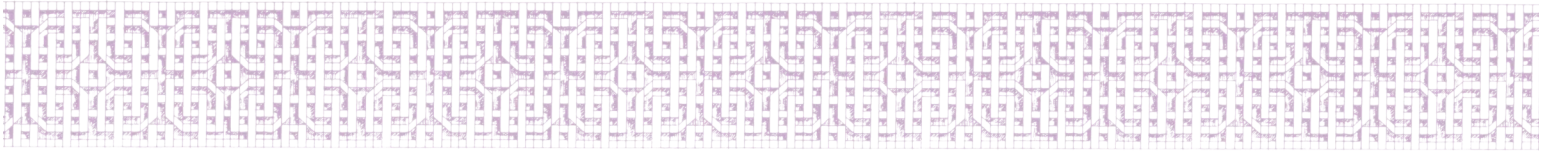
Apart from the defensive walls of Abdullah Khan Kala, the other monuments from the Timurid period in Merv are:

Icehouses

These conical buildings are thought to be icehouses or snow stores (see map on inside back cover) built in the Seljuk and Timurid periods.



Timurid pavilion and icehouse north east of Abdulla Khan Kala.



Timurid pavilion at Merv.



Pavilion

These were decorative buildings set in a garden with pools and fountains as a place to retreat to in the scorching summer months.

Iwans

In the southern suburb of Sultan Kala are the Timurid iwans and sardoba or water cistern. This is a religious complex built in the 15th century AD around the tombs of the ‘standard bearers of the Prophet’ – al-Hakim ibn Amr al-Ja’fari and Buraida ibn al-Huseib al-Islami.



Timurid iwans in the southern suburb of Sultan Kala.

MERV AFTER THE TIMURIDS

After the death of Husayn-i Bayqara in 1506 the Timurids ceased to be a powerful force in Khurasan. There were new contenders for the area – the Safavids in Iran and the Uzbeks. In these new conflicts Merv’s importance under the Timurids came to an end. 1510 saw a major battle between the Safavids and the Uzbeks. The Uzbeks lost and Merv came under Safavid control but exposed to continual Uzbek raids. The city was destroyed in 1785 and the vital Sultan Band dam destroyed. This caused the main River Murghab channel to move 25 km to the west – the reason why the modern city of Mary is located further west of the historic cities of Merv.

ARCHAEOLOGICAL TECHNIQUES

There are a number of ways of finding out about the past - evidence from documents, asking local people about the monuments in their area, aerial photographs, surveys and archaeological excavations, for example.

DOCUMENTARY EVIDENCE

Documents from the past can help us find out more about Ancient Merv. Some documents tell us about the buildings that were once there, others how the people lived. Some examples are given here but there are others throughout this book.

The Persian text of the 10th century, the *Hudud al-Alam* (The Regions of the World), described Merv as a

“...pleasant and flourishing place...with numerous castles...in all Khorasan there is no town better situated.”

The geographer Yaqut al-Khamavi, who lived in Merv in the early 13th century wrote,

“...Truly but for the Mongols, I would have stayed and lived and died there. Hardly could I tear myself away.”

More modern documents and writings from travellers or archaeologists may give us clues to monuments which have since become ruined or destroyed completely. The traveller Edmund O'Donovan visited Merv in the late 19th century and wrote in 1882,

“I caught my first glimpse of the old cities of the plain – the ancient capitals of Margina. A long line of walls and turrets, dominated by some towering domes, broke the line of the horizon...I could scarcely express my anxiety to proceed there and then to this mysterious spot concerning which so much has been written and so little known.”

Photographs

Old photographs from the 19th and early 20th centuries can be a valuable source of evidence, especially if the monuments are now destroyed. The Russian Imperial Archaeological Commission sent V A Zhukovsky to survey and record Ancient Merv in 1890. He took photographs and collected and translated a number of Arabic and Persian writings about Merv.



The west and north sides of Sultan Sanjar's mausoleum in 1954.

A satellite photo of all the ancient cities of Merv. The quality of the photograph is good enough to provide details of archaeological features which cannot easily be seen on the ground.



THE WORK OF ARCHAEOLOGISTS

Archaeologists carefully hunt for evidence, recording what they find and presenting stories of what they think happened in the past. Archaeologists now have a range of scientific techniques and instruments to help them, such as DNA and computers.

Discovery

Archaeological sites can be discovered through *aerial photography*. Much of the evidence for the ancient cities of Merv lies below the ground. Aerial photographs can show up the streets and walls which cannot be seen on the ground. The evidence from these photos are then plotted on plans.

Survey and recording

Some of the evidence for life at Merv lies on the surface. Archaeologists *survey* sites and upstanding buildings in detail with special tools and instruments used by architects and builders – tape measures and theodolites, for example. But they also use sophisticated measuring and location instruments, using satellites and computers.



Excavation and finds

Careful archaeological excavation can provide details of the buildings which the people at Merv lived in, how they organised their towns, and of the everyday things people made and used. Excavation needs to be carried out very carefully and at each stage records are made by taking notes and photographs, making drawings and storing data on computers.



Pottery sherds on the surface of Sultan Kala.



Some finds, such as pottery and tile, can be washed before being marked with their record number.

Archaeologists excavate and record an area in Sultan Kala.

The *finds*, which may be anything from broken pottery to a piece of sculptured stone or ancient seeds trapped in a mud brick wall, are all carefully collected, recorded and analysed. Each find is recorded on site (from the excavation or from collection from the surface) in numbered plastic bags, then brought back to the park office for cleaning, detailed recording and analysis.

Surveying part of Merv (left)

CONSERVATION AT MERV

For over two thousand years the main building material in Central Asia has been earth. Sometimes it is made into mud bricks and bonded with mud mortar, sometimes rammed or placed into position, and nearly always covered with mud plaster (a mix of mud and straw).

WHY DO EARTH BUILDINGS POSE BIG PROBLEMS?

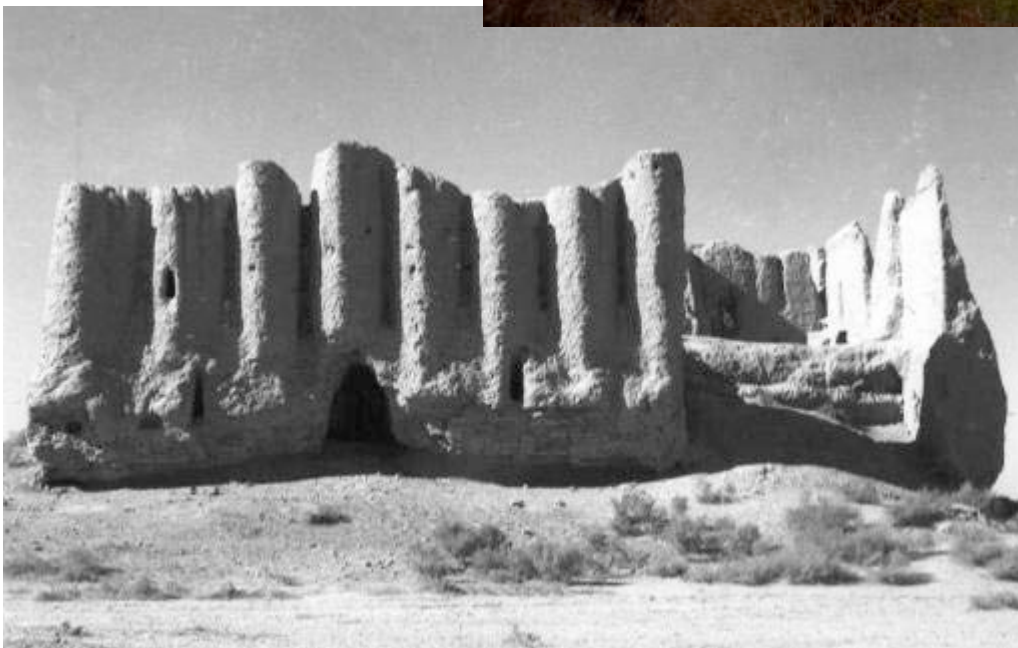
Earth is a cheap and available material, and it is very strong material when used in construction. Earth can be used in lots of different ways to make lots of different structures and buildings. The thermal characteristics of earth mean that earth buildings feel cool in the summer, but warm in the winter, and this is really important for a desert environment, such as Merv.

PROBLEMS

The buildings that remain today at Ancient Merv are preserved as ruins. They are without the roofs that once protected them from rain and snow, and are damaged by their exposure to sun, rain, wind and snow, the reptiles, birds and animals that nest and burrow within them, and sometimes, by the people who come to visit them. For most of the time the buildings were abandoned at Merv, the process of erosion was gradual, so buildings like the Great Kyz Kala have only lost about 1.5m in height over a thousand years.

Today the damage to the buildings at Merv is accelerating. There are a number of main problems that cause damage to the remaining buildings at Ancient Merv.

The same face of the Little Kyz Kala in 2003 shows how much erosion has taken place. The erosion is mainly caused by the wind.



The east face of the Little Kyz Kala in 1954.

Water

Water causes the most damage to earth buildings, from rising water, and from falling water.

- **Rising water** damages the bases of earth buildings. Water seeps into the bottom of the walls, and as this dries the salts in the water crystallise on the wall surface.



Damage at the base of the south wall of the Great Kyz Kala, with repairs at each end to stop the walls collapsing.



Rainwater runs down the face of part of a wall in Gyaur Kala creating gullies and damaging the structure.



A camel rubs itself against a wall in Shariyar Ark.

- **Falling water** in the form of rain or snow damages earth buildings and makes the surface much more fragile. Heavy rains can wash the surface and gradually erode structures. Excess moisture causes the clay component of the earth materials to swell up. This can break down the bonds between the materials. This sort of damage is especially dangerous in freezing conditions because the moisture absorbed by the structure will expand when it is frozen, and damages even further the bonds between the materials.

Wind

Wind removes the faces of walls. Wind can carry desert sand; this sand blasts the faces of walls and abrades them.

Vegetation

Plants can damage the monuments at Ancient Merv because they have long and extensive roots. The roots can grow through and damage the earth walls and buried archaeology. Plants can also trap moisture, and lower the relative temperature, this can speed up damage to the fragile earth structures.

Animals

Humans move out and animals, birds, insects, and reptiles move in to earth buildings. Animals can excavate burrows in earthen material, and by bringing food, and depositing their waste they can accelerate the rates of erosion.

People

Sometimes the people who come to visit the monuments in the park cause damage to them. This is because taking the same path through a monument can cause it to erode. In addition the monuments are sometimes damaged by illegal activities such as robbing.



Visitors using the same steep path up into Erk Kala has eroded the surface.



Repairing the base of one of the towers at Abdullah Khan Kala.

SOLUTIONS

The solutions to the conservation problems at Merv are not easy. To find the best solutions there is a continual process of monitoring, both to understand the processes of destruction and to find out how well our attempts to address them are working.

For over 100 years archaeologists and conservators have been interested in finding methods to conserve earth buildings. Some of the first work was carried out in the USA at the Great House at Casa Grande Ruins, in Colorado. Some of the methods used then are still used on sites all over the world, including Ancient Merv.

To find the best solutions for Merv we are undertaking experiments with traditional materials, such as mud plasters, mud mortars and mudbricks, as well as new materials, such as using a geotextile to separate the new conservation work from the archaeology. We are also using techniques that have been developed on other sites around the world, such as backfilling, alongside techniques more local to Merv, such as including wheat straw in mud plasters. We hope that by combining new and traditional techniques, with information from around the world, and from Merv that we will find the ideal solutions for conserving the fragile earth structures.

During 2001-2 all the standing historic structures and open and eroding archaeological trenches within the Archaeological Park at Ancient Merv have been evaluated to assess their current condition, research and educational potential, and conservation priorities. This has been instrumental in shaping an emergency conservation programme for the park, which is now underway.

Work has taken place on the standing buildings, to improve drainage and repair the most urgent structural problems. Some of the work we have undertaken so far on the standing buildings includes:

Repairing eroded wall bases

The heavily eroded and undercut wall bases have been filled and packed with new mudbricks. These repairs provide support for the structure and limit the effects of damage from rising water, as the erosion occurs in the new material rather than the old material. In some places underground drains have been installed, and in other the original fired brick damp-proof course has been reinstated.

An eroded wall base at the Great Kyz Kala repaired with new mudbricks and replastered.



Drainage works

Conservation work has been carried out to give the monuments better drainage. Simple measures like building low slopes are effective in redirecting water run-off from particularly fragile areas in monuments.



New wall built at the top of the defensive wall at Gyaur Kala redirects rainwater to stop erosion.

Capping

Work at the top of walls is carried out to help water flow away from the structure. This is through placing new mudbricks or new plaster of the tops of walls. This 'cap' makes rain or snow fall away from the wall or structure and means the erosion occurs in the new material rather than the old material.

Repairing damaged surfaces

Mud plaster surfaces that are damaged and cracked have been replastered using mud plaster and chopped wheat straw. These surfaces are regularly maintained to cover cracks and ensure they last longer.

Replacing earlier conservation work

Some earlier conservation replaced the mud plaster finishes and surfaces on the monuments with heavier materials, such as concrete or cement. These harder materials were thought to last longer than the traditional finishes and surfaces. However they actually caused more problems, because they were heavier than the original materials and because these materials stopped the earth structure from being able to 'breathe'. As the buildings could no longer breathe moisture could become trapped underneath the cement finish or surface.

Where it has been possible, such as on the roof of Ibn Zayd, these harder materials have been removed, and they have been replaced with traditional mud plaster. These enable the building to 'breathe' again, and with the regular maintenance of these surfaces the building can last much longer.



Replacing earlier conservation work on the roof of Ibn Zayd.

ARCHAEOLOGICAL TRENCHES

Archaeological excavations over the last 100 years have created a lot of open and eroding trenches in the archaeological park. These open and eroding trenches cause problems because they are big and deep, water runs off in to them. As they are cooler and attract water, vegetation, animals and birds live in the trenches, causing damage through burrowing and by depositing their waste. Because some of these trenches have been left open and eroding for such a long-time water, wind, plants and animals have caused the sides of the trenches to slump and have covered what remained of the exposed archaeology. To try to limit some of the damage that occurs to the trenches some of them have been backfilled.



Preparing the material for backfilling.



Tamping down backfill material in Shariyar Ark to conserve the archaeological remains. In the background is 'geo-textile' which covers the walls and allows them to 'breathe' through the backfill.

TEACHING STRATEGIES

Using a visit to Ancient Merv can help fulfil a number of aspects of teaching pupils and cover a number of subjects in the school curriculum.



A school group visiting the restored mausoleum of Sultan Sanjar.

MAKING A VISIT

You will need to decide whether your visit will be an introduction, the central part of the work or take place after you have covered the history of the site in the classroom. Make a plan beforehand and decide how your visit to Ancient Merv will fit into your teaching. Decide what you are going to do:

- in class before you make the visit
- what your class is going to do at Merv
- what you want your class to do when you get back to school.

Pre-visit preparation: decide on the aims of the visit and visit the parts of Ancient Merv you want to take your pupils to. You might prepare your pupils

- by talking to them about their expectations

- by explaining any terms (such as erosion, archaeology and koshk) that pupils might be unfamiliar with and look at the timeline (see pages 4-5)
- by giving them some ideas about daily life in, say Sultan Kala during the reign of Sultan Sanjar, but leaving the pupils to discover the buildings themselves on the visit.

On site: do not try to do things at Ancient Merv which might be better done at school, for example by giving them a talk about a particular period of Merv's history. At the major monuments you might want to

- ask the pupils to spend a few moments using all their senses to experience the atmosphere. What might they have seen if they had come to, say Sultan Sanjar's mausoleum when it was first built?
- use the activity sheets to carry out specific tasks, for example investigating the evidence for doors, windows and internal rooms at the Great Kyz Kala.
- think about breaking your class into small groups, of say 5 or 6, and ask each group to do a particular task which you can talk about back at school.

Follow-up: decide what work your class is going to do back at school. You might want them to

- make a class book with their thoughts, drawings and, perhaps, photographs
- describe, in their groups, what they have discovered or how their activity went
- make a timeline in the classroom using their own words and drawings
- make a list of places they visited at Merv under the headings of

MY FAVOURITE PLACE

THE MOST EXCITING MONUMENT

THE BEST PLACE FOR A PICNIC

THE PLACE I WANT TO VISIT AGAIN WITH MY PARENTS

An educational visit to the Great Kyz Kala.



ASKING QUESTIONS AND MAKING DISCOVERIES

The activity sheets that go with this book will give you some specific tasks for your pupils to do. But here are some ideas for getting your pupils to think about the remains and the evidence for the past.

Questions

There are five types of questions which can be used as a starting point in examining evidence. You should not expect your pupils to answer them before you visit Merv. You can build up the answers before the visit, on site and when you get back to school. The five types of questions are:

WHAT questions: What was this place for?

HOW questions: How was it built?

WHY questions: Why was it built? Why was it built here?

WHEN questions: When was it built? When was it changed?

WHO questions: Who built it? Who lived here?

Making observations

People, not just pupils, rarely think about what they are looking at. Your pupils will see unfamiliar buildings and objects when they go to an ancient site, like Merv, or to a museum. You need to find ways of making them think. On site you could ask your pupils to fill in empty boxes for the questions below.

Looking at the evidence

It is important to look for evidence in the surviving buildings at Merv and ask 'What can this evidence tell us?'

- Is there any evidence of decoration on buildings? Example: on the walls of the Timurid icehouses and pavilion.
- Is there evidence of roof structure and upper storeys? Example: in the Great Kyz Kala
- Where might doors and windows have been? Example: in the Little Kyz Kala.
- Is there evidence of below-ground rooms? Example: Near the stair into the outside wall of the Little Kyz Kala.
- Can your pupils identify the evidence in the city walls to show they were used for defence? Example: Height of the walls of Gyaur Kala and wall bastions of Sultan Kala and Abdulla Khan Kala.
- Were there religious buildings in Merv? Example: Buddhist stupa and monastery and Friday Mosque in Gyaur Kala and the mausolea of Sultan Sanjar, Turkan-khatun and Muhammad ibn Zayd and the Timurid iwans.



Teacher and pupils investigate the evidence for an underground storage area at the Little Kyz Kala.



Vaulting in the walls of the Great Kyz Kala is evidence for domed roofs. Decorative brickwork can be seen on the left of the photograph.



The evidence for a window in the Little Kyz Kala is easy to see.

OBSERVING	DISCOVERING	HYPOTHESISING
<i>Observational activities</i> are good for encouraging pupils to understand ancient buildings. Ask pupils to:	<i>Discovering activities</i> build on observation and develop the simple question of “What can I see?” into “What does it tell me?”. Ask pupils to:	<i>Hypothesising activities</i> will lead pupils to use the evidence they have seen on site to make historical deductions. Ask pupils to:
Use the heading “I see”, “I hear” and “I feel” to record words at particular locations at Ancient Merv. Use the lists back in the classroom to discuss the history of the site.	Record the different materials used at a particular location. What is natural? What has been made?	Look at the clues that tell them something about the owners or occupiers of the site. What do we definitely know about them? What can we reasonably guess?
Look for clues at each location you visit to explain what went on there. Write three descriptive words (adjectives), three ‘doing’ words (verbs) to indicate what people would have done there.	Identify ways that the site has changed over time. What has been added and why has it been added? What is now missing and why?	Work out which was the noisiest or quietest room or monument. This will help pupils link physical conditions to living conditions.
Find evidence for repairs and alterations to buildings. What has changed and why?	Measure and record the different dimensions of doors and windows. Use this data to make comparisons with modern buildings (for example the school).	Draw an incomplete feature, such as a wall or part of a building. Back at school, get small groups to try to draw in the missing sections.
Sketch or photograph a part of Ancient Merv or a part of one particular building or structure which reflects the atmosphere of the place.	Use the evidence your pupils can see to say what is the biggest, smallest, darkest, lightest, for example.	Look at the artist’s impression (from this book). Identify how much of the impression is based on the evidence they have seen on site.

ACROSS THE CURRICULUM

A visit to Ancient Merv can cover subjects other than history. You could plan your visit, and follow-up back at school, to increase your pupils' knowledge and skills in a number of subjects, for example:

Turkmen

You could use the visit as an opportunity for younger pupils to listen carefully to tasks (such as the activities) and discuss with others, perhaps in small groups. A well-planned visit will help your pupils with their writing skills, for example, imaginative, descriptive and creative writing. On site they can **plan**, noting and developing ideas. There may be time on site (or if not later back at school) to **draft** these ideas into a more structured text. Back at school, you might want them to **present** a neat, correct and final copy.

You might want to use this writing, or their notes from the site visit, to carry out some role play back in the classroom. For example, they might imagine that they are a particular character from the past and describe what they might have seen, perhaps taking the role of:

- the geographer Yaqut who lived in Merv in the 13th century under the Seljuks and wrote,
“If it were not for the Mongols I would have stayed and died there. Hardly could I tear myself away.”
- or a traveller in the same century who sees the turquoise tiled dome of Sultan Sanjar's Mausoleum glinting in the sun a day's camel ride away.

Mathematics

Use the opportunity of a site visit to practise measuring and calculation (for example the height of a wall or the area inside a *koshk*). Look for shapes (for example in tiles) and patterns (for example in brickwork).

Science

Looking at the problems of conservation of the mud-brick buildings at Ancient Merv is to make science enquiries. Look at the way buildings are constructed and how they stand up.



Decorative patterns inside the mudbrick dome of an icehouse in Merv. The two entrances you can see are where ice and snow was taken in for storage.



Restoration work at the Kepter Khana in Merv.

Design and technology

The surviving buildings and structures at Ancient Merv will provide you with plenty of opportunities to investigate design and technology, for example:

- How would you design a roof for the internal rooms of the Great Kyz Kala?
- Are the walls of Gyaur Kala or Sultan Sanjar well-designed to protect their inhabitants?



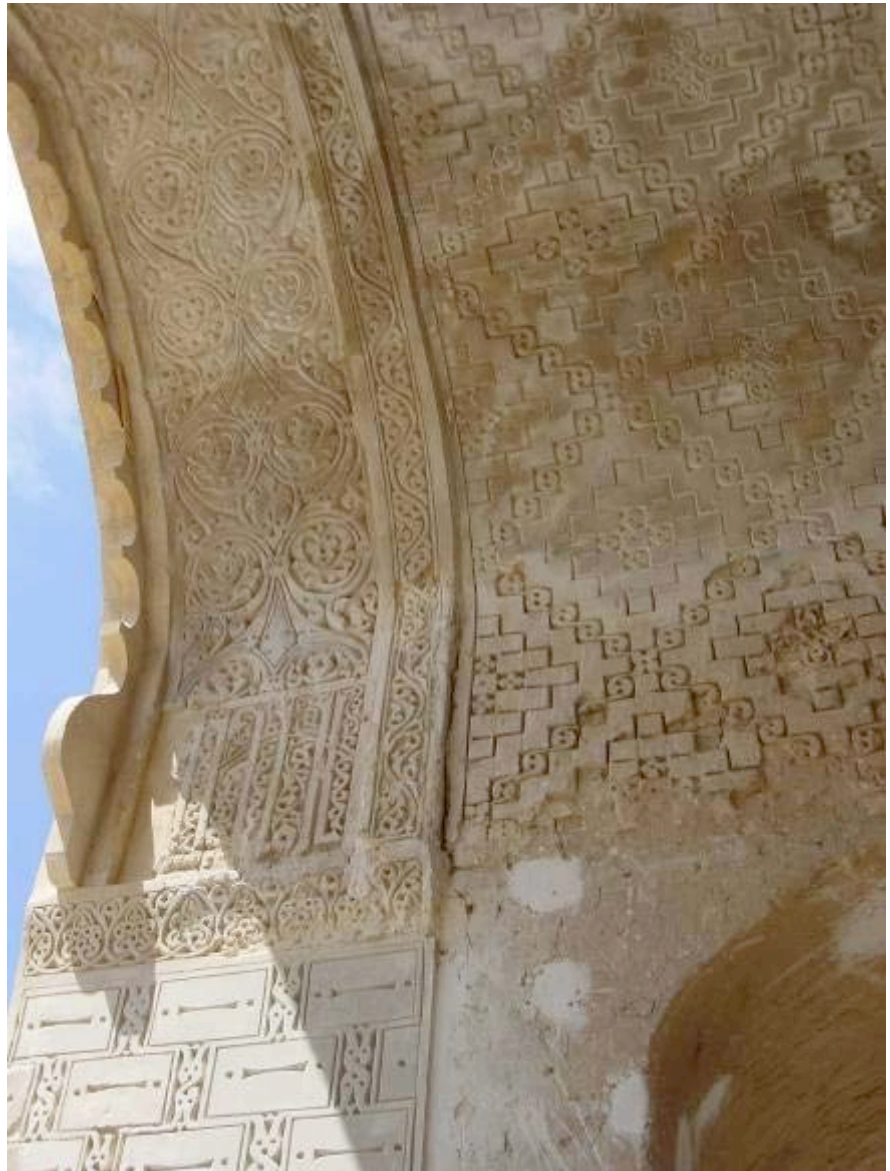
Great Kyz Kala. The 'corrugated' walls of the köshks make the walls more difficult to attack, allow rainwater to run off them without damaging the walls and help protect the inside from heat in the summer and cold in the winter.



Little Kyz Kala. This cone-shaped feature was specially designed to connect the upright walls of this room to a domed roof. Each section of the rod measures 20cm.

Art

Sketches and drawings made by your pupils on site can be worked up into finished pieces of artwork back in the classroom. Drawings, paintings, models, collage, friezes and a display of photographs taken on site can all be displayed as a record of the visit.



Decorative plasterwork inside Sultan Sanjar's mausoleum. This photograph was taken before the recent restoration.

ANCIENT CITIES OF MERV

