

1. Geography Along The Silk Roads

Unit A

THE MULTIPLE ENVIRONMENTS OF EURASIA AND INNER ASIA

Unit B

TRADITIONAL VS. MODERN USES OF NATURAL RESOURCES:
THE CASE OF THE ARAL SEA

Unit C

OASES, TOWNS, AND CARAVANS



Unit A

THE MULTIPLE ENVIRONMENTS OF INNER AND CENTRAL ASIA

Essential Question: How has the geography and environment of Inner Asia shaped the way the peoples of this region have influenced history?

Learning Experience: Students will be asked to analyze geographic information on Inner and Central Asia. Activities will encourage students to compare and contrast various geographic features of Central Asia and their impact on its inhabitants.

Anticipatory Set: Have you ever moved? Imagine a lifestyle where you and your family (and everything you own) move from place to place with the change of seasons. Or else imagine living in an oasis town that gets so hot in summer that you and your family spend most of your time living in the cellar.

Context: What is Inner Asia?

INNER ASIA

Inner Asia includes the following regions and countries:

1. CENTRAL ASIA: Xinjiang (China's largest province)

Uzbekistan

Kazakhstan

Kyrgyzstan

Tajikistan

Turkmenistan

Northern Afghanistan

2. SOUTHERN SIBERIA

3. INNER MONGOLIA

4. MONGOLIA

5. TIBET

Inner Asia is the setting for the Silk Roads. Its two most significant geographic features are

- Its remoteness from the sea (hence the word “Inner”) and thus, very dry, moisture-bearing winds from the ocean lose their wetness by the time they reach Inner Asia. Average rainfalls cannot support farming.
- It is continental (a “continent” is a continuous body of land). “In coastal regions, seas moderate temperature changes, because the sea cools more slowly than the land. Large land masses allow more extreme fluctuations of temperature and more severe climates” (Christian 1998: 7).





These geographical factors mean that Inner Asia doesn't produce much food and can't support high population densities (Christian 1998: 8, 9). The poverty of the environment is in sharp contrast to the importance of the region as a conduit for trade and as the homeland of great nomadic empires.

Inner Asia has four major ecological zones: forests, steppe (grasslands), deserts, and mountains (see **Map A**). A useful web site for introducing Earth's varied environments is http://www.blueplanetbiomes.org/world_biomes.htm.

1. Forests (the taiga) are a rich source of fur, timber, and other products. In the past, the hunters, trappers, and fishermen who lived in these more northerly places didn't, however, figure importantly in the region's history.
2. The Inner Asian steppe or grasslands stretches across Kazakhstan, northern Xinjiang province in China, and Mongolia. This is the “eastern half of the great Eurasian steppes, those rolling plains of grass and scrubland punctuated by high mountain ranges, extending from the borders of Manchuria westward to the Black Sea and the plains of Hungary” (Barfield 1989: 16). The peoples who founded the great nomadic empires—Xiongnu,¹ Turks, and Mongols—all depended on their herds (horses, sheep, camels) for survival. The steppe provided them with essential pasture for their animals.
3. Early travelers thought that Inner Asian deserts such as the Gobi and Taklamakan were filled with demons. Although desert environments differ (the Gobi, for example, is not a sandy desert, but is a desert comprised of many rocks), all are barriers to trade and travel.
4. Although the great mountain ranges were barriers to trade and travel, in many parts of Inner Asia they were the major source of water. The agricultural oasis towns circling the Tarim basin, for instance, couldn't survive without the snowmelt from nearby mountains.

The steppes, deserts, and oases of the southern part of Inner Asia (Mongolia; Xinjiang, the largest and farthest west of China's provinces; southern Kazakhstan) was a frontier separating the nomad world from the agrarian civilizations of China and Persia. From ancient times to roughly the eighteenth century CE, the movement of peoples in this region was a central element in Eurasian (and world) history. With the expansion of the Russian empire and China's Qing dynasty (1644-1911), Inner Asia's pastoral nomads lost the power to effect major historical change.

Rationale: Unique topography and climate make Inner Asia a case study in how humans adapt to varied geographical contexts. The study of its geography and environment opens a door to better understanding of the central role this region played in world history.

Time: One to two forty-minute sessions.

Instructional Resources: Eleven documents with accompanying questions; “Matching Exercise: Important Terms”; Map questions: “What is Eurasia? What is Inner Asia? What is Central Asia?” “The Ecological Zones of Inner Asia.”

Some documents may be primary sources, and some may be secondary materials selected from various books and articles. Primary sources are marked with an asterisk. *

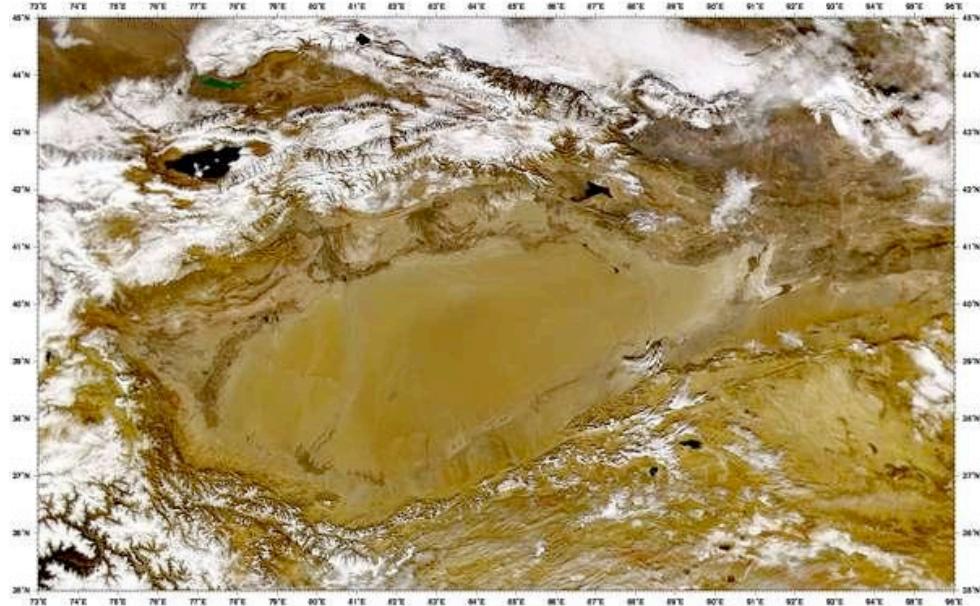
¹ The Xiongnu empire was the major foreign policy threat to the Chinese state for much of the Han dynasty (202 BCE-220 CE). See Unit D: *The Han, the Xiongnu, and China's Traditional Foreign Relations*.





Using NASA's "Visible Earth" web site (<http://visibleearth.nasa.gov/>), students can also access some spectacular color satellite photos of the Tarim Basin, eastern end of the Silk Road in China's Xinjiang province. (Just enter "Xinjiang" in the site's search function.)

Tarim Basin



(Source: Photo: NASA <http://visibleearth.nasa.gov/images/4811/Taklimakan.A2002306.0740.1km.jpg>)

Procedure: Students will complete the document-based short answer questions; the matching exercise, and the map questions.

Whole Group Reflection: In class discussion, students will emphasize how geographic features have a significant impact on people's lives in both past and present. They should be able to identify places where they would choose to settle and justify their choices based on knowledge of Inner Asia's geography.

Instructional Modification: As homework, students can do the following creative writing assignment to help internalize knowledge about Inner Asia's geography and environment.

- **Geography in the News:** Students will create the weather section of a newspaper or news broadcast on the various geographic regions of Inner Asia or Xinjiang province. Articles will focus on the weather, seasonal changes, and geographic features. The news should include human-interest stories regarding the impact of the environment on the lives of the residents.

Application: How does geography affect students' lives today? How does it affect the choices they make for the future? How are their concerns similar to, and different from, the people of Inner Asia? What are the similarities and differences in the way geography influences industrial as opposed to non-industrial societies?





A. DOCUMENT-BASED SHORT ANSWER QUESTIONS

DOCUMENT 1: THE CLIMATE OF CENTRAL ASIA

Inner Asia and Central Asia are far away from oceans and are therefore very dry. This is because winds from the ocean lose their moisture by the time they reach the region. Holding little humidity, winds in this region produce only limited condensation even as they are cooled. Average annual rainfall throughout the region cannot support farming.

Central Asia has some of the greatest climatic extremes in the world. Owing to its vast size and the distance of the interior from the moderating influences of the ocean, there is a tremendous difference in temperatures between summer and winter.

The dryness of the air over the desert permits a large proportion of the sun's heat to penetrate to the surface, so that during the brief summer the bare earth becomes very hot. Rock surfaces exposed to the sun may have a temperature of 150° F or above during the middle of the day while the air itself may be 100° F. During the winter the transparent nature of the atmosphere permits radiation to cool the earth excessively so that the weather becomes bitterly cold, with temperatures down to -40° F. Descending air currents also bring cold air from the upper atmosphere.

This region has two seasons rather than four. Winter may be said to last for eight months and is abruptly followed by a short, hot summer. Frosts occur early in September and the few streams are frozen by October (Adapted from Cressey 1934: 252).

1. Why does Central Asia have such great climatic extremes?

2. What is the longest season in Central Asia?

3. Imagine how this type of climate might affect the inhabitants in the following categories:

Livelihood _____

Clothing _____

Housing _____

Activities _____





DOCUMENT 2: THE DESERT OASIS

Oases are desert areas that have water supplies able to support vegetation. The water comes from melted snowfall in higher mountain ranges that feed underground springs, which can travel for hundreds of miles to water the oases.

Irrigation Allows Oasis Towns To Become Islands Of Green In The Central Asian Desert



(Source: Photograph courtesy of Marleen Kassel, 2001, Xinjiang)

The key to understanding the desert is water. Without it the landscape is empty and without life; with water, the desert becomes a beautiful land of grass and flowers Fixed settlement is restricted to those areas where the rainfall is sufficient for a little vegetation, or where water may be obtained from wells, springs, or mountain streams. Where this is possible, small communities may arise. Such communities, however, are as isolated from the outside world as islands in the ocean. These oases form the stopping points along the caravan trails which cross the desert. Often the wells are too small or the water too poor to permit settlement (Adapted from Cressey 1934: 255).

1. Where can people settle in a desert environment?

2. Name two sources of water in an oasis.



DOCUMENT 3: THE KAREZ SYSTEM AND FARMING THE OASES

Part Of A Karez.
The Bucket Suspended Over The Water Comes From Above Ground.



(Source: Photograph courtesy of Marleen Kassel, 2001, Xinjiang)

The oasis towns that flourish in the arid region along the Silk Road depend on an ancient system of water distribution known as the *karez*. The word *karez* is from the Uyghur² language: *Kar* means “well” and *ez* means “underground.” Depending on gravity, the *karez* consist of underground channels that bring water down from the melting snow in distant mountain ranges. Since the water flows underground, it doesn’t evaporate in the fierce heat of this desert region.

The chief tools for digging the *karez* are simple: the hammer and the pickaxe. The main parts of the *karez* are (1) the subsurface tunnels that collect and transport water; (2) the openings at ground level that allow workers to maintain the channels—the most important job being to make sure the water flow isn’t interrupted by the accumulation of fine particles of earth, called silt, suspended in the water; (3) the ponds that collect the water just before it is channeled into the fields.

Since more than ninety percent of the land in Central Asia requires irrigation, agriculture would be impossible without the *karez*. *Karez* are used to water wheat, corn, sorghum (a grain resistant to drought and heat), rice, melons, grapes, and sugar beets. Long-staple cotton, which thrives in an arid climate, is also grown in the Tarim Basin.

1. Where does the water for the karez come from?

2. What is the most important job in maintaining the karez?

² China's more than 8 million Uyghurs are a Turkic Muslim people. See Unit G: *China's Uyghurs—A Disaffected Muslim Minority*.





DOCUMENT 4: POPULATION DENSITY IN XINJIANG

Region	Persons/sq. mi.
Xinjiang Province	9
Oases in Xinjiang	407
Turpan Basin	900

(Hsieh 1995: 150)

1. Compare the population density of Xinjiang's oases to the province as a whole.

2. Using the information in Documents 2, 3, and the chart above, write a brief paragraph (three or four sentences) explaining why oases can support human settlement.

DOCUMENT 5: THE EURASIAN FOREST (TAIGA)

A vast belt of forestland borders the northern part of Eurasia, from Siberia to Finland, an area that is extremely cold in winter. This Eurasian forest is often called by its Russian name, “taiga” (forest). Trees in this environment are evergreens, such as fir, spruce, and pine. Combined with the forest that stretches across Canada, the taiga forest is the most extensive of all the world’s environmental regions.

The taiga is home to fur-bearing animals such as mink, sable, and ermine. The human population is very small, with most of the people of the taiga living by hunting, fishing, or trapping.

In modern times, the main threat to this environment “is the wasteful and ever growing consumption of wood products—above all paper—in the industrialized world” (http://www.taigarescue.org/index.php?view_article=70).

1. Name two natural resources provided by the taiga.

2. Considering the type of trees and animals mentioned above, what common characteristics allow them to survive in this ecological zone?



DOCUMENT 6: THE STEPPE

Life in the steppe is completely dependent upon grass, and grass is completely dependent upon the rainfall. Agriculture is almost out of the question, and for most of the region the only possible occupation is in the keeping of animals. Sheep, horses, camels, and cattle live on the short steppe grass and permit nomads to make a living. From them, they obtain milk, butter, and cheese, which make up a large part of their diet. Clothing and shelter are both made from the wool of the sheep, while the other animals provide the only modes of transportation. In the absence of wood, even the dried dung of the animals, known in Mongolian as *argol*, is used as fuel; great piles of dung can be seen about every encampment. All life centers in the quest for grass. When it fails, life fails; when it is abundant, prosperity rules. Since the grass is usually too short to be cut, there is no possibility of storing it. The people of the grasslands are thus nomads, constantly on the move in search of pastures (Adapted from Cressey 1934: 255).

Mongolian Steppe

(Source: Photograph courtesy of Augustinus Wibowo Weng Hongming, 2002, Mongolia)
<http://www.worldisround.com/articles/12332/photo7.html>

1. Give two examples of how animals support the nomads.

2. Why do nomads have to move from place to place?

3. Find examples to support the following statement: Local geography determines what the nomads eat, sleep, and wear.





DOCUMENT 7: THE YURT

UNIT
1 – A



(Source: Cressey 1934: 258)

The nomadic life of the herdsmen calls for a dwelling that can be made of local products, is easily transported, and affords sufficient protection from the bitter climate of winter. The result is the felt-covered tent, or yurt, twelve to fifteen feet in diameter and seldom much higher than a man's head. The yurt consists of a collapsible framework of willow sticks ... over which are placed layers of thick felt made of sheep's wool. A low wooden door affords access on one side; one of the felts on the top may be thrown back to let out the smoke of the *argol* fire. There are no windows, and in many yurts there is no room to stand (Cressey 1934: 258-259).

1. How does the yurt allow nomads ease of movement from place to place?

2. Why does the yurt fit the nomadic lifestyle? (Use information from Documents 4 and 5.)





DOCUMENT 8: WHAT IS PASTORAL NOMADISM?

The word “pastoral” means having to do with shepherds or the country.

Pastoral nomadism is the commonly used term for a form of mobile stock-raising in which families migrate with their animals from one seasonal pasture to another through a yearly cycle. The most distinctive cultural feature of this economic adaptation is that nomadic pastoral societies are adapted to the demands of mobility and the needs of their livestock . . .

Inner Asian pastoralism traditionally depended on exploiting the extensive but seasonal grassland of the steppes and mountains . . . The herds consisted of a mix of grazing animals including sheep, goats, cattle, horses, camels, and sometimes yaks . . .

Sheep are by far the most important subsistence animal raised and the mainstay of Inner Asian pastoralism. They provide milk and meat for food, wool and hides for clothing or housing, and dung which could be dried and used as fuel (Barfield 1989: 20, 21).

1. Why do pastoral nomads need to migrate?

2. What is the most important animal raised by Inner Asian nomads?

DOCUMENT 9: THE GOBI DESERT

The population of the Gobi is far less than in the steppe country which precedes it. Indeed, none but the Mongol and his constant companion the camel could inhabit these regions because there is so little water and timber, it is scorched by an almost tropical heat in summer, and chilled in winter to an icy cold (Adapted from Przheval'skii 1876: 20-21).

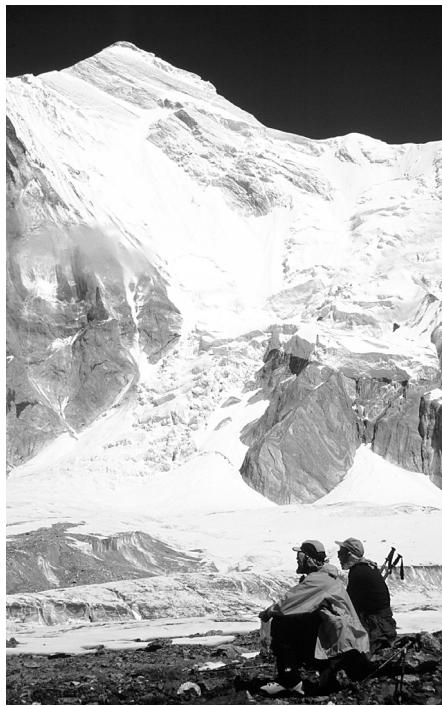
1. Describe two harsh conditions of the Gobi desert.





DOCUMENT 10: THE TIANSHAN AND PAMIR MOUNTAIN RANGES*

Khan Tengri ("Lord of the Sky") in the Tianshan Range (23, 620 ft.).



(Source: Photograph courtesy of Daniel C. Waugh, 1999)

The Tianshan and Pamir mountain ranges are the most important in Central Asia (**Map A**). They provide much of the region's renewable water supply because (1) they are the sources of major rivers, and (2) the runoff from melting mountain snow provides water to feed underground springs. These springs enable farmers in desert oases (see Document 2) to grow grain, fruits, and vegetables. Also, water stored up in glaciers and frozen mountain soil provides a reserve supply in years of drought.

Nomadic herdsmen also relied on the mountains. Some tribes would move to higher altitudes when summer heat dried up pools of water and destroyed the grasses that fed their herds.

Mountains are also barriers to travel. In the early seventh century, a Chinese Buddhist monk named Xuanzang crossed the Tianshan on his way to India. He had the following to say about Khan Tengri (photo above):

This mountain is steep and dangerous, and reaches up to the clouds. From the beginning of time the perpetual snow has collected here in piles, and has been changed into glaciers which melt neither in winter nor summer . . . looking at them the eye is blinded with glare, so that it cannot long gaze at them (Wriggins 1996: 29-30).

1. Why are mountain ranges important to farming?





A. MATCHING EXERCISE

IMPORTANT TERMS

Match up the following terms with the definitions given below.

- Arid
- Desert
- Felt
- Nomadic
- Oases
- Pastoral
- Steppe
- Taiga
- Yurt

DEFINITIONS:

1. _____ Fabric made by bonding wool fibers together using heat and pressure.
2. _____ Moving from place to place in search of grazing land for animals.
3. _____ Felt-covered tent used by steppe nomads.
4. _____ Dry, without moisture.
5. _____ Russian name for the vast forest belt that stretches across Eurasia from Siberia to Finland.
6. _____ Grazing ground for nomad herds, made up of low trees and bushes.
7. _____ Desert regions possessing water supplies capable of supporting vegetation.
8. _____ Lifestyle based on livestock raising.
9. _____ Barren land receiving less than ten inches precipitation annually.





B. MAP EXERCISES

1. WHAT IS EURASIA? WHAT IS INNER ASIA? WHAT IS CENTRAL ASIA?

Materials:

- Blank map (**Map C**)
- **Map A** and **Map B** (and an atlas from the school library, if necessary) as references.

Using colored pencils or ballpoint pen, indicate the following regions on the blank map:

1. EURASIA “Eurasia” means the combined continents of Europe and Asia.		
2. INNER ASIA Inner Asia includes the following regions and countries: <table><tr><td>1. CENTRAL ASIA: Xinjiang (China's largest province) Uzbekistan Kazakhstan Kyrgyzstan Tajikistan Turkmenistan Northern Afghanistan</td><td>2. SOUTHERN SIBERIA 3. INNER MONGOLIA 4. MONGOLIA 5. TIBET</td></tr></table>	1. CENTRAL ASIA: Xinjiang (China's largest province) Uzbekistan Kazakhstan Kyrgyzstan Tajikistan Turkmenistan Northern Afghanistan	2. SOUTHERN SIBERIA 3. INNER MONGOLIA 4. MONGOLIA 5. TIBET
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2. THE ECOLOGICAL ZONES OF INNER ASIA

A. Using the outline map (**Map C**) and **Map A** and **Map B** as a reference, shade in the major ecological zones of Inner Asia:

1. TAIGA FOREST (Document 4)
2. STEPPE (Documents 5, 6, 7, 8)
3. DESERT (Documents 2, 9)
4. MOUNTAINS (Document 10)

B. Locate and identify (as desert, mountain, etc.) the following features on the map:

Amu Darya Aral Sea Gobi Kizil Kum	Pamirs Syr Darya Taklamakan Tarim Basin Tianshan
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Unit B

TRADITIONAL VS. MODERN USE OF NATURAL RESOURCES: THE CASE OF THE ARAL SEA

Essential Question: What impact has cotton cultivation had on modern Central Asia's environment?

Learning Experience: The dwindling of fresh water resources in many parts of the world will be an ever-increasing concern in the twenty-first century. Even now, problems of water supply in the western and southwestern United States, the Middle East, China, and Central Asia¹ trouble politicians and planners worldwide.

In this unit, students will learn how water resources along the Silk Road have been utilized in traditional and modern times. They will (1) study how pre-modern Central Asians supplied their oases with water using the *karez* system; (2) learn about the environmental and health problems caused by the Soviet Union's establishment of cotton as the main crop in the Aral Sea region; and (3) investigate the relation of cotton growing to the destruction of the Aral Sea.

Anticipatory Set: Where does the water you use to drink, cook, and wash with come from? How does the use of water in the U.S. differ from water use in developing societies? How does it differ from pre-modern societies?

Context: Silk Road trade was supported by a network of cities and oasis towns (**Color Map** plus **Map D** and **Map E**). Since the region lacks the rainfall necessary to sustain agriculture, farmers in the past as well as today depend on irrigation. The traditional *karez* irrigation system (*kar* means "well" and *ez* means "underground" in the Uyghur language) was a major irrigation technique in this part of the world. By comparing the traditional *karez* system with modern, plantation-style irrigation around the Aral Sea, students will learn about the problems of water resource development in Central Asia.

What is an oasis?

Oases are desert areas that possess water supplies able to support vegetation. The water normally comes from melted snow or rainfall in the nearby mountain ranges. The snowmelt and rain feeds underground springs that can sometimes be hundreds of miles away from the original source of water. Oasis towns and cities provided stopping places for Silk Road merchants and travelers to rest and conduct business.

The most readily available (and renewable) water resource along the Silk Roads is the run-off from melting snow in the mountains. The traditional *karez* system uses the force of gravity and underground channels to deliver this water to thirsty farmland (see Document 1, and Student Handout: The Karez Irrigation System, p. 81). This is a system of water control that is environmentally friendly and well-suited to grape farming in oases such as Turfan in Xinjiang province, China's part of the Silk

¹ Central Asia comprises the Chinese autonomous region of Xinjiang and the currently independent countries of Uzbekistan, Kazakhstan, Kyrgyzstan, Tajikistan, and Turkmenistan, as well as northern Afghanistan. See Map F.





Roads (Map D and Color Map). Turfan's grapes and raisins have been famous for centuries. Although situated in a hostile desert and scrub environment, places like Turfan continue to thrive using the *karez*.

The Aral Sea region, however, is one of the world's great environmental disasters, a decline that was caused by modern industrial cotton cultivation, which used enormous amounts of water, not to mention tremendous quantities of pesticides. Under the Soviets, the area around the Aral Sea became a major cotton-growing region. By the 1960s, the diversion of river water for massive irrigated cotton plantations led to a drastic shrinking of the Aral Sea. For centuries, the sea and the two great rivers that fed into it, the Amu Darya and the Syr Darya,² supported great cities such as Samarkand and Bukhara (in modern Uzbekistan), centers of Islamic learning.³ In modern times, the depletion of these bodies of water caused many areas to turn into desert.

***Ground-Level Openings To The Vertical Shafts
Used To Ventilate And Clean A Karez.
Kirkuk, Iraq***



(Source: Cressey 1957: 124)
<http://geography.ucdavis.edu/njallan/class/geo10/slides/pages/Geo10-108.jpg.htm>

Another negative environmental consequence was that soil productivity was sharply reduced due to salinization. Salinization is the increase of the salt content in soil. Water used in irrigation picks up salt from the soil that it passes through and then the salt is deposited in the soil around irrigated crops. High levels of salt prevent plants from absorbing water, so they are unable to nourish themselves.

Changing this bleak situation will take a long time and require a lot of money.

. . . the underlying causes of ecological decline in the area date back to inappropriate irrigation and land use during the Soviet Era. These are now being addressed by large-scale international, national and regional efforts, such as the Aral Sea Basin Programme, a joint project of the World Bank, United Nations Development Project (UNDP), United Nations Environment Project (UNEP), and Global Environment Facility (GEF). The collapse of the Soviet Union and the emergence of an independent Uzbekistan, however, have spawned a number of additional threats which must be countered if the global biodiversity value of the area is to be conserved.

² "Darya" is Persian for river.

³ See: <http://depts.washington.edu/uwch/silkroad/cities/cities.html>.



These new threats are principally related to the economic decline brought about by the difficult transition to a free market economy. Rural populations often overuse the remaining natural and semi-natural areas for grazing, fuel wood, hunting, and other purposes. Restricted government budgets have loosened state controls over resource use as well as undercut government ability to carry out conservation activities . . . Nonetheless, though the area sustained a high level of ecological damage in the past, including the degradation of the Aral Sea ecosystem and damage to the surrounding delta and deserts, the situation has begun to stabilize and major national, regional, and international efforts to redress the key causal factors have begun (http://www.wwf.ru/about/where_we_work/asia/tugai/eng).

***A Rusting Fishing Boat Lies Abandoned
On What Used To Be The Shore Of The Aral Sea***



(Source: OSCE photo archive)

Rationale: Comparison of traditional and modern methods of land use in Central Asia will aid students in understanding a worldwide problem, the clash between sustainable, environmentally friendly development, and development based on maximizing profit. Students will make policy recommendations to the governments of the region. They will base their suggestions using documents about Central Asia, the Aral Sea, and the *karez* system.

Working in teams, students will apply their knowledge to find solutions to complex environmental and economic problems. The teams will develop arguments, assess strategic options from a variety of points of view, and debate solutions in a debriefing session. A review of the positions advocated by each team will reveal the priorities of the class with respect to environmental policy. Each team will appoint a spokesperson to present the recommendation to a “Central Asian Minister.” Using social studies skills as they relate to geography, students will assess why this is a region that demands international concern.

Time: Two to three forty-minute periods.

Instructional Resources:

- **Map D and Map E;** Handout on the *karez* system (p. 81); two page printout: “Disappearance of the Aral Sea” from <http://www.grida.no/aral/maps/aral.htm>); Mission Statement (p. 75).
- Documents 1-7: Resource materials for training as a policy advisor.

Some documents may be primary sources, and some may be secondary materials selected from various books and articles. Primary sources are marked with an asterisk. *





Procedure: The unit is based on a jigsaw format. Divide the class into groups. Since each group will “train” to fill one of the roles detailed in the documents (*karez* keeper, agronomist, hydrologist, health worker, environmentalist, economist), every group member gets the same document to study. Students read their documents together and work through the content collectively. Every member of the group becomes an “expert” in one field.

New groups are then formed, each consisting of experts in the various fields. After hearing each member’s point of view and taking various aspects of the issue into account, these teams frame a policy initiative. A spokesperson for each team makes one recommendation to a hypothetical “Central Asian Minister.” On briefing day, give the teams ten minutes each to present their analysis and recommendation.

Whole Group Reflection: After reviewing all the recommendations, ask students to reflect on the effectiveness of each team. Were recommendations consistent with the priorities of each adviser? What values did each recommendation emphasize? What priorities would they like the minister’s government to adopt?

The class will then discuss and debate all the proposals. In preparation for a final proposal, they will make changes where necessary. Board notes will be made during this debriefing session.

Instructional Modification: Sources may be adapted or replaced to meet student reading levels, or to conform to the makeup of the cooperative discussion groups.

Application: Students will reflect on the presentations. They will write an editorial to the “Uzbekistan Gazette,” detailing solutions to the region’s environmental problems.

Student Handout:

Mission Statement: Making a Water Use Policy for Central Asia

International Crisis: In many parts of Central Asia, there is a water use crisis. Your job is to assess the situation and make a recommendation for appropriate action. You will present your recommendation both orally and in writing. Keep in mind the many dimensions of the issue and incorporate them into your group proposal.

Group Roles:

- Karez keeper
- Agronomist
- Hydrologist
- Health worker
- Environmentalist
- Economist

Since your second group is composed of experts in different fields, each member is concerned with a different aspect of the problem. You must take into account all perspectives. At the end, however, you must present only one recommendation.

Oral Presentation: You will have ten minutes to present your recommendation to the Minister. You must make your argument in an organized and persuasive fashion. All members of the team should participate in the presentation.



RESOURCES FOR STUDENT POLICY ADVISERS

DOCUMENT 1: KAREZ KEEPER—THE KAREZ SYSTEM AND XINJIANG’S OASIS TOWNS

The oasis towns that flourish in the arid region along the Silk Roads depend on an ancient system of water distribution known as the *karez*. The word *karez* is from the Uyghur⁴ language: *Kar* means “well” and *ez* means “underground.” Depending on gravity, the *karez* consist of underground channels that bring water down from the melting snow in distant mountain ranges. Since the water flows underground, it doesn’t evaporate in the fierce heat of this desert region.

Karez played an important role in the development of the Turpan Basin, particularly near the oasis towns of Hami and Turpan. The chief tools for digging the *karez* are simple: the hammer and the pickaxe. The main parts of the *karez* are (1) the subsurface tunnels that collect and transport water; (2) the openings at ground level that allow workers to maintain the channels—the most important job being to make sure the water flow isn’t interrupted by the accumulation of fine particles of earth, called silt, suspended in the water; (3) the ponds that collect the water just before it is channeled into the fields.

Since more than ninety percent of the land in the western regions requires irrigation, without the *karez*, agriculture would be impossible. *Karez* are used to water wheat, corn, sorghum (a grain resistant to drought and heat), rice, melons, grapes, and sugar beets. Long-staple cotton, which thrives in an arid climate, is also grown in the Tarim Basin.

This traditional system has existed in harmony with the environment for centuries. The earliest Chinese account of the *karez* dates to about 100 BCE.

⁴ China’s more than 8 million Uyghurs are a Turkic Muslim people. See Unit G: *China’s Uyghurs—A Disaffected Muslim Minority*.



DOCUMENT 2: AGRONOMIST—THE ARAL SEA REGION

In order to make the Aral Sea region a large-scale independent cotton producer, the Soviet Union promoted land reclamation to increase agricultural productivity. At the end of the 1960s, the U.S.S.R. also ordered the Central Asian Republics to increase water available for irrigation by taking it from the rivers, streams, and other sources that normally feed into the Aral Sea. New drainage and irrigation systems, dams, and water reservoirs were constructed throughout the Central Asian Republics. Land used to raise livestock and to grow traditional crops such as apricots, subtropical fruits, and wheat, was planted with cotton. In addition, thousands of tons of chemical fertilizers and pesticides were put into the cotton fields to promote high yields.

Since the breakup of the Soviet Union, much of this elaborate water delivery system has fallen into disrepair. Some aging irrigation and drainage canals waste more water than they deliver. In Soviet times, at least sixty dollars a year per acre was spent to maintain water systems. Uzbekistan currently spends less than twenty-five dollars an acre; Tajikistan spends four dollars.

This arid region grew used to abundant water. Rice, a crop that requires large amounts of water, is grown in both Kazakhstan and Uzbekistan—poor management of a scarce resource.

Cotton is also a hungry crop, demanding tremendous amounts of fertilizer. Soils must be rich in nitrogen, potassium, and phosphorous as well as other nutrients. Cotton also requires large amounts of pesticide.

In addition, hundreds of acres of once-productive farmland are now covered with a thin crust of salt: salt in the irrigation water leaches into the fields through unlined canals. Frequent dust storms blow salt off the now dry Aral Sea bed and deposit it in the fields. Between 1968 and 1985, sixty percent of the cropland in the Amu Darya delta was affected by salinity. Salt lessens the ability of plants to absorb moisture, and fertility is thus sharply decreased.



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DOCUMENT 3: HYDROLOGIST—THE ARAL SEA REGION

Hydrology is a science concerned with the distribution of water. Hydrologists study how water flows, enters, and goes out of rivers, lakes, and dams.

In the 1960s, an extensive network of canals was built by the Soviets to irrigate millions of acres of cotton fields in the desert regions of Uzbekistan, Kyrgyzstan, Turkmenistan, Tajikistan, and Kazakhstan. Water was taken from the two rivers that flowed into the Aral Sea, the Syr Darya and the Amu Darya.

Although this massive irrigation network increased the amount of land available for agriculture, the environmental effects on the Aral Sea region have been disastrous. The five nations involved have drunk dry the natural flow of two great rivers. Because collective farm workers frequently neglected to turn off the irrigation systems, some areas used up twice as much water as necessary to irrigate fields.

The Aral Sea is a saline lake in the center of a large flat desert basin. The Aral is a closed system in which water flows into it mainly from the Syr Darya and Amu Darya, but no water flows out.

In 1960, it was the world's fourth largest lake, as big as Southern California (26,250 square miles). Over the years, the huge amounts of water taken from the Aral Sea have caused it to shrink. In the past few decades, its volume has decreased by seventy-five percent, the equivalent of draining Lakes Erie and Ontario. Furthermore, its surface area has decreased by fifty percent, the shoreline has receded up to seventy-five miles, and sea level has fallen by more than fifty feet. Because of these changes, the waters of the Amu Darya no longer enter the Aral Sea but disappear in its former delta region. The Syr Darya dies off more than seventy-five miles from where it used to enter the sea.

By 1988, the misuse of water resources caused almost nine million acres of agricultural land to be taken out of production. There is almost no flow from the two rivers, and the soil in the region has become polluted with salt, pesticides, nitrates, and other chemical elements. The salinity of the water has increased. Indigenous fish species are threatened with extinction. Groundwater is polluted with fertilizer and pesticide run-off.

DOCUMENT 4: HEALTH WORKER—THE ARAL SEA REGION

The shrinking of the Aral Sea has had an impact on human health. Billions of tons of poisonous salts cover millions of square acres of the Aral Sea bottom. Tens of millions of tons of salt and chemicals, including toxic pesticides, evaporate into the air from the Aral Sea and are spread over long distances by the wind. The soil of the region is also highly saline, the result of being irrigated with water that collects large amounts of salt on its journey down from the mountains. The Amu Darya and the Syr Darya are also polluted.

Human exposure to toxic chemicals is inevitable, since chemicals sprayed on crops end up in the water and in locally grown produce and meat. In one region, the meat contains eight times the maximum permissible level of pesticides, and the fruits and vegetables contain sixteen times the permissible level. Many farm workers get cancer, anemia, dystrophy, allergies, and jaundice. Residents of some areas contract hepatitis and typhoid at significantly higher rates than people in other regions. The mortality rate for children less than a year old is ninety-eight to one hundred per thousand. Also, many babies refuse to nurse because their mother's milk is three to four times saltier than normal due to the high salt content of the water. As a result, malnutrition among infants is common. Anemia is also common in pregnant women.

Lung and stomach diseases are also prevalent. In one region of Uzbekistan near the Aral Sea, seventy percent of its population of over a million are ill or have some chronic condition. There are towns where seventy percent of the people have pre-cancerous conditions. Many believe that these ailments are related to the region's environmental problems.



DOCUMENT 5: ENVIRONMENTALIST: THE ARAL SEA REGION



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The craving for water has turned the Aral Sea into a shrunken brine lake. The destruction of this ecosystem began in the 1920s when Soviet planners, seeking products for export, emphasized the production of cotton. The pace accelerated in the 1950s, as irrigated agriculture was expanded and mechanized in Central Asia.

From the mountainous Chinese border to the Caspian Sea, the Soviet Union built twenty thousand miles of canals, forty-five dams, and more than eighty reservoirs. The Karakum Canal, for instance, is an 837-mile man-made river diverting water into the Turkmenistan Desert. It feeds a vast irrigation network providing water for millions of acres of cotton. Desert dust and sand have been turned into one of the world's great cotton-growing regions.

Beginning in the 1960s, the level of the Aral Sea began to drop. Depletion of the flow of the two historic rivers—the Syr Darya and Amu Darya—brought rapid change in the Aral Sea and greatly altered the delta of the Amu Darya. By the early 1980s, the flow of river water into the Aral had stopped completely. As the Aral shrank, its salinity level increased. By 1977, the commercial harvest of fish had declined by over seventy-five percent. Some species of fish unique to the Aral Sea are now extinct. Much agricultural land in the region has become too saline for most crops. Native vegetation is being crowded out by salt-tolerant species with little value as forage and fodder for domestic animals.

The former seabed is now an environmental hazard. Thousands of tons of salt left behind as the water retreated are scoured off and blown hundreds of miles by fierce winter winds. Winds also pick up millions of tons of sediment laced with the residues from pesticides and fertilizers. All of this is transported into rivers, lakes, and streams, as well as the Aral Sea, by runoff and faulty irrigation and drainage systems.

Water pollution also limits the availability of drinking water. Eighty percent of the people of the Central Asian republics lack access to clean water.

The degradation of the land has accelerated the natural process of desertification. As the Aral Sea's shoreline receded, wetlands have disappeared, and falling water tables have destroyed oases. The Amu Darya delta, a center of civilization in the age of the Silk Roads, is one of the endangered oasis environments.

The Aral Sea is one of the greatest environmental catastrophes in human history. People have made use of its resources for thousands of years. They have also used the region's land and soil for thousands of years. Has massive overuse (and misuse) in recent years brought this to an end?



DOCUMENT 6: ECONOMIST—THE ARAL SEA REGION

The development of an agricultural economy based almost solely on cotton has had wide-ranging negative effects. Cotton dominates society. Children and the elderly work in the fields. Traditional farming is abandoned.

The environmental costs of abandoning traditional farming for an economy based solely on cotton have not been offset by monetary benefits. Earnings from cotton exports are used to buy wheat, dairy products, meat, and fruits. At one time, all of these were abundantly available. While the production of cotton continues to increase, the standard of living for the typical farm family does not. In rural areas, people's diets contain only one eighth the amount of meat compared to national averages across the region.

The once active Aral Sea fishing industry has vanished. Fishing towns and ports that once dotted the coast are now many miles from water. The part of the sea that has evaporated covers more than ten thousand square miles, two-thirds of which is salty sand and dirt.

The town of Muynak in Uzbekistan, once a bustling village surrounded by lush green vegetation, has been devastated. Located at the southern edge of the Aral Sea, Muynak once produced millions of pounds of fish. Now it is more than thirty miles from the coast, surrounded by salt flats and arid land. The few remaining residents survive by raising chickens, pigs, and goats, and by tending household gardens. The thriving muskrat industry that once harvested half a million pelts a year has been gone for two decades. This followed the loss of the animals' natural habitat to desertification.

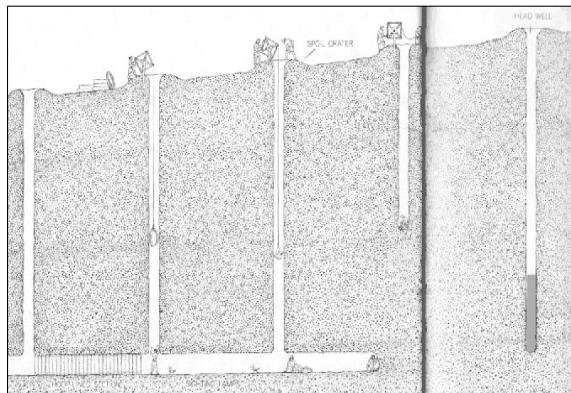
The parts of the former seabed that are now dry land are strewn with the remains of fishing trawlers and cargo vessels. In 1959, fishing fleets hauled close to 50,000 metric tons of fish, mostly carp, bream, pike, perch, roach, barbell and sturgeon. In 1994, a mere 5,000 metric tons of carp were taken from polluted lakes in the ruined deltas of the Amu and Syr Darya Rivers. The destruction of the fishing industry resulted in sixty thousand people losing their livelihoods.



Student Handout: The Karez Irrigation System

Karez are underground channels that bring water from highlands to lower levels solely through gravity. Karez require no pumps or other mechanical means to operate. They depend entirely upon the supply of groundwater.

Building a Karez



(Source: Courtesy of the Eric Mose Estate)
<http://www.waterhistory.org/histories/qanats>

The shaft at the far right is labeled “head well.” The horizontal tunnel at the bottom of the drawing is being dug toward it. The vertical shafts are sunk every sixty to ninety feet.



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A Karez Seen from Ground Level



(Source: © FAO United Nations Food & Agriculture Organization)
<http://users.bart.nl/~leenders/txt/qanats.html>

“From the air, the tunnel portion of a *karez* system looks like a line of anthills leading from the foothills across the desert to the greenery of an irrigated settlement”

(<http://www.waterhistory.org/histories/qanats/>).

A Karez Seen from the Underground Channel



(Source: Photograph by Marleen Kassel, 2001, Xinjiang)

The ground level opening is at the top of the photo. The bucket is used to clean out the channel. This is the most important job in keeping the *karez* in working order.



Unit C

OASES, TOWNS AND CARAVANS

Essential Question: What were the risks and rewards of caravan travel and oasis life?

Learning Experience: Students will assume the role of a Silk Roads merchant by playing a board game. They will experience caravan life by journeying from Chang'an (now Xi'an) to Kashgar (see **Map D**) during the Tang dynasty (618–907). By journey's end, travelers will have been given an in-depth look at the Silk Roads in northwestern China and its climate, terrain, oases, towns, and peoples. They will also have become familiar with some of the trade goods that moved back and forth over the Silk Roads.

Anticipatory Set: Traveling along the Silk Roads, caravans played a dangerous game of chance with terrain, weather, wild animals, and bandits. How much risk is acceptable in order to make a profit?

Context: A typical caravan included merchants and/or their agents, guides, camel drivers, armed guards, baggage handlers, camp workers and, of course, camels and merchandise.

Goods traded along the Silk Roads were mostly luxury items that were lightweight and easily transported. From China, merchants and/or their agents brought silk, porcelain, tea, and rhubarb westward. From the west, they transported things such as horses, spices, jade, and metalwork to China. Caravan travel was important because it also involved another type of “trade”—the exchange of skills and ideas. Papermaking, for instance, originated in China but gradually spread westward during the late first millennium CE. Both Buddhism and Islam also entered China via the Silk Roads.

Even by the standards of modern air travel, the distances covered by merchants and other travelers were great. The stretch of the road within China’s modern borders—from Chang'an, capital of the Tang dynasty and eastern end of the Silk Roads, to the oasis town of Kashgar on the western edge of Xinjiang province—is roughly two thousand miles (**Map D**). This is about one and a half times the distance from New York to Miami. Imagine traveling this distance on camel walking two-and-a-half miles an hour! An average journey could take months to complete.

In addition to long distances, the terrain and climate also presented challenges: deserts, high mountain passes, fierce heat, and bitter cold. Caravans were also in constant danger from bandits, packs of wolves, poisonous lizards and snakes, as well as accidents and illnesses.

How did humans and animals cope with such conditions? Part of the answer is that much trade involved shorter distances. Merchants or their agents would trade their goods to intermediaries who would take them farther west (or east). In fact, commodities often passed through the hands of a number of merchants before reaching their final destination. Individual merchants rarely traveled the whole length of any of the Silk Roads.

Along the way, oasis towns and way stations called “caravanserais” provided food, water and shelter for people and animals. The word “caravanserai” is Persian: *karwan* means “traveling group” and *serai* means “large inn.” Caravanserais were either state-owned and operated, or owned by private individuals. They were built twenty to twenty-five miles apart, a distance that could be covered on foot in eight to ten hours (Dar 2000: 173).





Caravanserais accommodated merchants regardless of religion, language, or race. Anyone who was ill received medical care. Services were available to all for a small fee. Caravanserais didn't sell large quantities of food, fuel, or fodder. These were readily available from provisioners at the nearest town.

Caravans could likewise rely on Buddhist monasteries to provide shelter and supplies. In areas under Chinese control, garrisons and watchtowers were built to protect caravans. Chinese officials also provided them with escorts to ward off bandits.

Rationale: This lesson teaches about caravan life on the Silk Roads in an entertaining and creative way. Students will appreciate the hardships endured by travelers and will begin to understand how the Silk Roads served as a conduit for cultural exchange.

Time: Two class sessions. (Time can be adjusted to meet the needs of the class.)

Instructional Resources:

- (1) **Map D** (Look also at the **Color Map**) regarding the Silk Roads.
- (2) Six handouts on various game-related topics
- (3) Handout containing rules of the game.
- (4) Game board—the board should be enlarged using a photocopy machine.
- (5) Sheets divided into blue and numbered cards.
- (6) Suggested questions.

Some documents are primary sources and some are secondary materials selected from various books and articles. Primary sources are marked with an asterisk. *

Procedures: The teacher should devote five to seven minutes of the first class to asking students about their travel experiences. For instance, what type of information and provisions (clothing, passports, plane ticket, etc.) do you need before an extended trip? Students should also be asked to list things that make a trip successful or unsuccessful.

- Distribute the handouts. Go over the Silk Roads map. Mention that although the Silk Roads began in Chang'an and eventually reached the Mediterranean, but in this unit merchants will travel only from Chang'an to Kashgar, the Chinese part of the route.

Point out mountains, deserts, rivers, major oases, and towns. Mention that travelers pass through three Chinese provinces: Shaanxi, Gansu, and Xinjiang.

Divide the class into groups of three to five and ask students to read the documents and compose fifteen to twenty questions per group based on them.

- In the second class, divide students into groups different from those on the first day. Each will receive a game board and sheets of blue and numbered game cards. Have students create game pieces for themselves—pieces from another game board can be used—and cut the sheets apart to make individual cards.
- Tell students they are Silk Roads merchants and are about to travel from the Tang capital of Chang'an to Kashgar, a distance of about 2000 miles. Their mission is to earn enough miles to beat the other teams to Kashgar. They must depend on both their knowledge of the Silk Routes and sheer luck to complete the trip. Each caravan is loaded and ready to start!



Whole Group Reflection:

- The teacher leads a discussion that sums up the issues involved in the game, focusing on how goods as well as ideas were exchanged in Silk Road trade?
- Ask students to describe some of the hardships involved in traveling the ancient Silk Routes.

Instructional Modifications: The teacher can replace the game questions included here (p. 98) with student-created questions based on reading of the documents. In this way, the difficulty of the questions will match the level of the class. Teachers are advised to vet the questions for accuracy and suitability before making them into cards.

If the size of the game board, after enlargement, is still considered inadequate, students can work in groups to create their own full-size version using cardboard, crayons, paint, construction paper, and whatever else is available to them.

More advanced students can make their own game board as a class project—they can even extend the game further west to cover the entire Silk Roads from Chang'an to the Byzantine Empire (about 7,000 miles).

Application:

- Each student will write a journal entry about his or her trip, providing a list of things that one should and should not do when traveling and trading on the Silk Roads.
- Students will write a brief essay on how the exchange of products and ideas affected people at both ends of the Silk Roads.



Rules of the Game

The objective of the game is to be the first merchant to get from Chang'an to Kashgar.

Materials

- Game pieces
- Game board
- Question and answer sheets
- Blue cards and red numbered cards

Game Play

- Each student in the group is represented by a game piece.
- All players start at Chang'an. Players will not move further east than Chang'an.
- One student in each group is in charge of the questions.
- Each square on the board is equivalent to fifty miles.
- One student starts by asking the first player a question (see p. 98, below).
- A correct answer advances the player to the next square. An incorrect answer will end the player's turn.
- The next player begins his/her turn.
- Some squares are marked blue and some are numbered.
- If you land on a blank space, your turn is over.
- If you land on a blue square, you must draw a card from the blue deck. Read the card and move your caravan accordingly.
- If you land on a numbered square, you must draw a card with the corresponding number from the numbered deck. Read the card, answer a question (see p. 98, below) and move your caravan accordingly. If more than one student lands on the same numbered square, the same corresponding card should be used.
- After the first student completes his/her turn, the next student begins. This is repeated until each student reaches Kashgar. The first to complete the journey is the winner.

Notes on Play

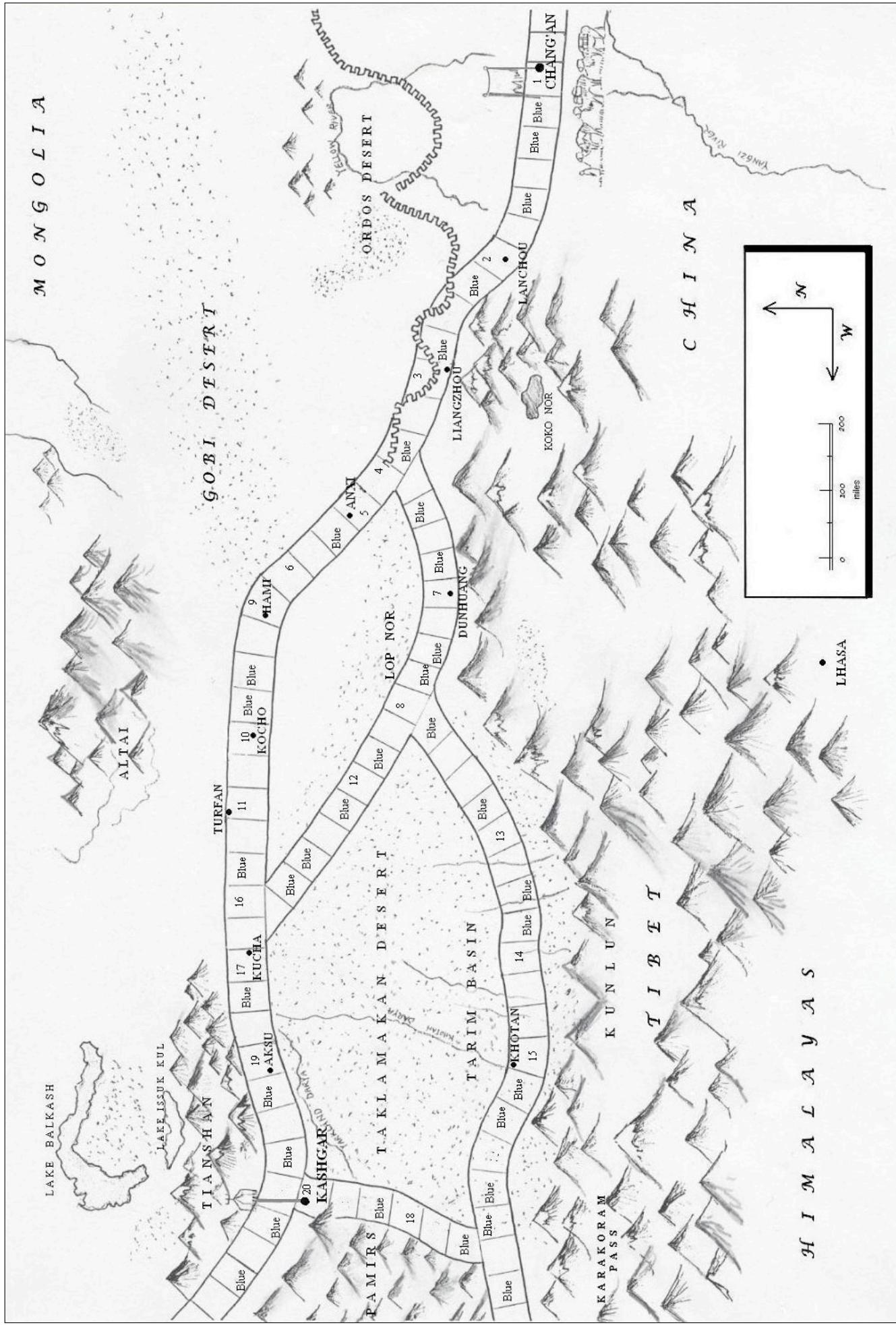
- Players, in consultation with the teacher, will decide (1) how much time a person has in which to answer a question, and (2) how specific the answer must be.
- Students can work in teams.



UNIT
1 – C



MONGOLIA



BLUE CARD	BLUE CARD	BLUE CARD	BLUE CARD
One of your camels wandered off during the night. You lost 50 miles. Move back one space.	Sandstorms result in the loss of a heavily loaded camel. You lose 100 miles. Move back two spaces.	Hungry wolves attack your caravan. You lose 100 miles. Move back two spaces.	Most of the wells in this part of the Silk Road are dried up. Draw Again
BLUE CARD	BLUE CARD	BLUE CARD	BLUE CARD
Severe heat causes two of your men to suffer heatstroke. You lose 50 miles. Move back one space.	Dangerous terrain ahead; your caravan must travel at a slower pace. You lose a turn.	Several members of your company become sick after drinking unsanitary water. You lose a turn.	Your caravan is lost after taking a shortcut. Draw again.
BLUE CARD	BLUE CARD	BLUE CARD	BLUE CARD
Your guards fell asleep during the night. Bandits escape with twenty percent of your goods. You lose 100 miles. Move back two spaces.	Shortage of fodder; you have to get to an oasis soon to replenish supplies. You lose 50 miles. Move back one space.	An eastbound caravan warns you of bandits ahead. You take a different route. Draw again.	After a night of partying, you miss your intended departure time. You lose 50 miles. Move back one space.
BLUE CARD	BLUE CARD	BLUE CARD	BLUE CARD
You purchase fresh camels at a bargain price. You earn 100 miles. Move forward two spaces.	You decide to spend the night at an inn. The innkeepers are subsidized by the Chinese government. You earn 50 miles. Move forward one space.	The desert heat is unbearable; you decide to travel at night. You earn 50 miles. Move forward one space.	You secretly leave camp before dawn and receive the best price for your goods at the next town. You earn 200 miles. Move forward four spaces.

BLUE CARD	BLUE CARD	BLUE CARD	BLUE CARD
Shortage of water but your Bactrian camels easily located some. You earn 50 miles. Move forward one space.	You increase your supply of silk with a profitable private trade. You earn 150 miles. Move forward three spaces.	You stay at a Chinese garrison for the night. The friendly soldiers warn you of dangerous animals in the desert. You earn 150 miles. Move forward three spaces.	After wandering onto a lesser-known path, you turn back after seeing ground covered with the bones of travelers and their camels. Draw again.
BLUE CARD	BLUE CARD	BLUE CARD	BLUE CARD
You purchase a Buddhist scroll from a trader for a friend, a Dunhuang monk. You earn 100 miles. Move forward two spaces.	Another caravan is traveling in the same direction as you. You decide to join them for safety reasons. You earn 50 miles. Move forward one space.	You help a Buddhist monk returning from India retrieve a lost scroll. You receive his blessings. You earn 200 miles. Move forward four spaces.	You avoid a path said to be the home of desert sirens that lure travelers to their deaths. You earn 100 miles. Move forward two spaces.
BLUE CARD	BLUE CARD	BLUE CARD	BLUE CARD
An eastbound caravan carrying luxury goods advises you to avoid a dangerous stretch of land. Draw again.	You have found lodging for the night and warehouse space for your goods. You earn 50 miles. Move forward one space.	Your camels guide the caravan through a difficult sandstorm. You earn 50 miles. Move forward one space.	A customs officer, your friend, allows you to pass without paying duties on your goods. You earn 100 miles. Move forward two spaces.
BLUE CARD	BLUE CARD	BLUE CARD	BLUE CARD
You purchase a supply of flour and fodder at a bargain price. You earn 50 miles. Move forward one space.	Fighting between Chinese and Tibetan forces straight ahead. You must find another route. Draw again.	Instead of the standard fee of 12 bolts of silk for a Bactrian camel, you pay 10 bolts. You earn 150 miles. Move forward three spaces.	Fighting between nomad raiders and Chinese troops up ahead. You must find another route. Draw again.

<p>1</p> <p>Before leaving the Tang capital of Chang'an, you run some errands. You collect two of your camel drivers at a teahouse and then go to a moneylender. The city is bustling with life—merchants showing their wares to their agents, agents selling goods to shopkeepers, local people examining goods for sale. As you and the caravan exit the city through the Western Gate, you can still hear customers and shopkeepers haggling in various languages. Draw a blue card if you answer the question correctly.</p>	<p>2</p> <p>Your caravan reaches the city of Lanzhou, a major mail station. You show your paperwork to the customs officers and pay the required duties. You pay a small bribe to speed up the paperwork, allowing you to get to the next city quickly. Before leaving, you make sure your cargo includes enough silk. Move forward three spaces if you answer the question correctly.</p>	<p>3</p> <p>South of the Ordos Desert and the steppes, north of the Koko-Nor and the Tibetan Plateau, lie the green pastures of Liangzhou (modern-day Wuwei). The city has become an important commercial and political center in recent years. You notice foreign caravans and dignitaries, as well as a diverse population of Chinese, Central Asians, Indians, and Tibetans. Move forward three spaces if you answer the question correctly.</p>
<p>4</p> <p>You've arrived at a caravanserai at the end of the Great Wall. The wall was built to protect China's northern frontier from nomadic tribes. Construction began in the seventh century BCE and was continued under the Qin dynasty, unifiers of China in 221. The Han dynasty (206 BCE-220 CE) extended it to the Gobi Desert. Move forward three spaces if you answer the question correctly.</p>	<p>5</p> <p>You have reached the town of Anxi, located south of the Gobi Desert. You have been warned about the next stretch of road, called the "Black Gobi" because black pebbles cover the ground. Here the wind blows all the time. You will have to cross a thick salt crust covering sections of this region. Its soft, spongy surface irritates the camels, forcing them to stop frequently to spit. Move forward three spaces if you answer the question correctly.</p>	<p>6</p> <p>Crossing a stretch of the Gobi Desert, most of the wells have dried up or are contaminated. There are few locals to help you. Fortunately, you brought extra gourds of water as well as a sack of dough-strings. Since well water is often too salty to drink, the dough-strings, when boiled in the water, absorb much of the salt and make it drinkable. Move forward three spaces if you answer the question correctly.</p>
<p>7</p> <p>You have reached Dunhuang, a town known for its rich Buddhist art and culture. You visit some of the cave temples outside the town. With offerings of silk, fruits and other goods, you pray for a safe journey. Chinese officials on your caravan have decided to return to Chang'an after securing a herd of horses for the emperor from Sogdian merchants. Draw a blue card if you answer the question correctly.</p>	<p>8</p> <p>You are crossing the Lop Nor, located in the Tarim River Basin. The once great lake is gradually drying up. A thick salt crust surrounds the edges of the lake. The soft, spongy surface of nearby marshes irritates your camels, making this stretch of the trip much harder than anticipated. You travel well into the night before finally arriving at a caravanserai. Move forward three spaces if you answer the question correctly.</p>	<p>9</p> <p>You narrowly avoid bandits before arriving in Hami, the first major town in Xinjiang. The town, situated at the western end of the Gobi Desert, was part of the Turkic Empire and was recently taken over by the Chinese. Nevertheless, it is raided from time to time by neighboring nomads and oasis empires. You replenish food and water before leaving for the next stop on the Silk Road. Move forward three spaces if you answer the question correctly.</p>
<p>10</p> <p>At the outskirts of Kocho, you stay at a caravanserai where you hope to replenish your supplies. The manager suggests you go into town to buy the food and fodder you want. He gives you the name of an honest provisioner at Kocho. The next day, you travel into town and get the supplies you need. You also buy some locally grown mare's teat grapes and the delicious wine made from them. Draw a blue card if you answer the question correctly.</p>	<p>11</p> <p>You arrive at the oasis city of Turfan, located in a depression of the Tarim Basin. The weather is less humid than usual, but still uncomfortable. You quickly trade some of your silk and gemstones, and sample some local foods (melons, grapes, raisins, and wine) before leaving town. The Turfan customs officers give you a hard time until you pay a bribe. Move forward three spaces if you answer the question correctly.</p>	<p>12</p> <p>You are traveling on the northern edge of the Taklamakan, one of the world's driest deserts. The name Taklamakan means "if you go in, you won't come out." Rough terrain and uncomfortable temperatures slow down even your sturdiest Bactrian (two-humped) camels. Luckily, you brought along extra camels to carry water and supplies. Move forward three spaces if you answer the question correctly.</p>

<p>13</p> <p>You are traveling along the southern edge of the Tarim Basin, a pear-shaped depression that extends from Lop Nor in the east to Kashgar in the west. The depression surrounds the entire Taklamakan desert. Here you can see where the streams flow from the high gorges of the Kunlun into the depression. Move forward three spaces if you answer the question correctly.</p>	<p>14</p> <p>You have reached a caravanserai near the northern base of the Kunlun mountains. The last couple of days have been difficult due to the barren road and the lack of human habitation. The Kunlun acts as a natural divide between north and south. On the other side of the Kunlun live the Tibetans, whose frequent clashes with the Chinese you hope to avoid on this trip. Move forward three spaces if you answer the question correctly.</p>	<p>15</p> <p>Khotan is the largest oasis town along the southern route of the Silk Road. You are glad to be passing through, as it is famous for its jade, a semi-precious stone coveted by the Chinese. Raw jade is brought down from the mountains by the two rivers that surround the oasis. The markets are full of foreign merchants hoping to make a profit from raw jade and jade jewelry. Move forward three spaces if you answer the question correctly.</p>
<p>16</p> <p>Your caravans are traveling towards the southern edge of the Tianshan. The road between the Tianshan and Altai ranges is surrounded by great pastures with numerous camels, horses, sheep, and cattle. There have been reports of a sea monster in the depths of Issuk-kul, to the northwest. Thankfully, you will not have to pass through that area on your way to Kashgar. Move forward three spaces if you answer the question correctly.</p>	<p>17</p> <p>You are passing through the triple walled city of Kucha. Although Kucha is an independent city state, it's currently under the protection of the Chinese. The land is green and fertile, the inhabitants friendly, and the food plentiful. You notice several monks and nuns wandering around the town market. You visit a Buddhist temple with offerings of fruits and precious gems before leaving. Move forward three spaces if you answer the question correctly.</p>	<p>18</p> <p>High in the Pamir Mountains, a few of your men experience altitude sickness. Recently recruited from the oasis towns, they aren't used to the mountains. Symptoms include headaches, vomiting, and shortness of breath. Combined with the high wind and sudden storms, this is one of the most difficult stretches of your journey. Move forward three spaces if you answer the question correctly.</p>
<p>19</p> <p>Aksu is a small but important town along the Silk Road. Here you replenish your supply of food, fodder, and water in preparation for the last leg of the journey. You trade some of your silk, rhubarb, and ceramics for gold, ivory, and beautiful Central Asian textiles. Move forward three spaces if you answer the question correctly.</p>	<p>20</p> <p>Congratulations! Your journey is complete. You have arrived at the outskirts of Kashgar. There is plenty of pasture for your camels and space to pitch tents. You trade the silk you brought from Chang'an for jade, dried dates, Iranian metalwork, and other goods to take back to the east. You meet other traders from all over Asia and trade information about people and places. Move forward three spaces if you answer the question correctly.</p>	

HANDOUT 1: SOME GEOGRAPHICAL FEATURES OF THE SILK ROADS

For an interactive web-map for locating important Central Asian mountain ranges, visit
http://www.peakware.com/encyclopedia/ranges/maps/asia_c.htm

The Gansu (Hexi) Corridor



(Source: Photograph courtesy of Daniel C. Waugh, 1998, Hexi Corridor)

The Silk Roads stretch across the modern day Chinese provinces of Gansu and Xinjiang for almost 2,200 miles. The Gansu corridor is a 1,200 mile stretch of terrain that borders the oases, deserts, and mountains along the Silk Roads. This is where the Gobi Desert ends and the Taklamakan Desert begins.



UNIT
1 – C

Jiayuguan and the Great Wall



(Source: Photograph courtesy of Daniel C. Waugh, 1998, Jiayuguan)

This fort at Jiayuguan marks the western end of the Great Wall. It was built to protect China's northern/western frontier from nomadic tribes. Construction of some parts began as early as the seventh century BCE and was continued under the Qin dynasty, which unified China in 221 BCE. It was during the Han Dynasty (206 BCE - 220 CE), however, that the wall was extended out into the Gobi Desert to provide communication between garrisons as well as protection from the nomads. This picture shows the main geographical features of the Silk Roads: mountains, deserts, and oases.

Pamir Mountains



(Source: Photograph courtesy of Phil Endecott, 1992, The Pamirs)
http://pbe.cssoft.net/gallery/1992_Pamirs/index.html

Looking west from Kashgar, you can see the peaks of the Pamir Mountains. The Pamirs, located west of China and south of the Hindu Kush and Afghanistan, present considerable danger to the traveler:

Here the route winds though narrow high-walled valleys beside rushing rivers. The camel drivers call this section of the Silk Routes the "Trail of Bones" because of the many men and animals that have died along the way from falls and from sudden storms in the high, cold passes (Major 1995: 18).

Travelers frequently experience high altitude sickness, the symptoms of which are headaches and shortness of breath.



Daily Life on a Caravan

The scholar Owen Lattimore describes his experiences with a trading caravan on a trip from Beijing to India in 1926-27.

“We traveled mostly at night. Had we traveled by day and turned the camels loose at night to graze, there would have been a danger of their straying and getting lost; whereas by grazing them during the day we were able to keep an eye on them.

We began by day at dawn, by making tea . . . About noon we had the one real feed of the day. This would be made of half-cooked dough . . . The reason we drank so much tea was because of the bad water. Water alone, unboiled, is never drunk. There is a superstition that it causes blisters on the feet. Our water everywhere was from wells, all of them more or less heavily tainted with salt, soda and I suppose a number of mineral salts. At times it was almost too salty to drink, at other times very bitter . . .

Sometimes we had water every day; usually we came to a well every two or three days, carrying a supply with us in flat-sided, wooden containers, which could be loaded two on a camel. Our longest distance between wells was in the crossing of the Black Gobi, where we had one stretch of nearly 100 miles between wells. Our average march was 15 or 16 miles, but in forced desert crossings we could push the distance up to 30 miles.

. . . Fire and water assume a different importance. Each time that the tent has been set up in a new place, a little of the first water boiled and the first food cooked must be thrown on the fire, and a little out at the door. The offering to the fire is evidently to honor it for its services, and the offering thrown out at the door is to honor the local god, lest it be dismayed or angered at the intrusion of men . . .

The men who take caravans out and back through Mongolia are migrants. They are a mixed race without true nationality, one might say, forming a link between the nomadic and the settled races. They are not business men, able to calculate in advance their yearly turnover, maintenance charges, and percentages of profit. Like the nomads, their wealth is tied up largely in living animals, whose capital value is subject to great variation. They take up a cargo on the edge of China, migrate with it for hundreds of miles into Mongolia, or across Mongolia to Chinese Turkestan. There they pick up the most advantageous freight they find and make a return migration toward China.

There may be a fortune in the business. There may be only privation and suffering. There may even be robbery or captivity, or death by storm or violence. The men travel between known destinations, it is true, but they must be prepared on the way to open new passes across mountains, or undertake new detours through deserts. They represent an adaptation of nomadic society to the uses of civilized trade” (Lattimore 1962: 41-45).



Merchant Life

Camel Caravan in the Early 1900s



(Source: Photograph by Harold Loucks)

Caravans transported goods from one end of the Silk Road to the other. A typical caravan included merchants and/or their agents, armed guards, professional camel drivers, baggage handlers, camp tenders, guides, other workers and, of course, camels and merchandise.

Bandits, wild animals, sandstorms, extreme temperature, and difficult topography regularly confronted Silk Road travelers and caravans. Individual merchants could often be bankrupted if a single caravan was lost. In order to avoid bankruptcy, merchants would form an *ortogh*, a Mongol invention. An *ortogh* was a group of merchants who would invest in a single caravan and share in both the profits and the losses. Thus, if one caravan was lost, then the losses would be absorbed by the group rather than by an individual. Since their investments were diversified—groups would invest in several different trips, one caravan per trip—the chance of gaining a profit was much higher. The Arabs had a similar arrangement known as a *commenda* (Adapted from <http://afe.easia.columbia.edu/mongols>).

Travel was frequently done in short stages: one merchant would trade his goods to another who would take them further west (or east). Commodities often passed through the hands of a number of merchants before reaching their final destination. Established merchants would sometimes send their agents on caravan journeys and/or install them in major cities to trade for them. Very rarely were there merchants who would willingly travel the entire length of the Silk Roads.



UNIT
1 – C

"Ships of the Desert"



(Source: Photograph by Marleen Kassell, 2001, Xinjiang)

The Bactrian camel was widely used in Central Asia and Western China because it was well-adapted to the rocky terrain and cold temperatures of the region. Although the dromedary (one-humped camel), native to North Africa and the Middle East, also carried goods along the Silk Roads, it was only used in its hot and dry western deserts.

Camels were central to the development of overland trade across Asia. Merchants and other travelers relied on the camels' ability to carry heavy loads (averaging as much as 1,100 lbs.), detect sandstorms, find drinkable water, and survive on the scrub and thorn bushes found along desert roads.

Although camels move at a very slow pace (an average of two and a half miles an hour when loaded), they are versatile creatures. They have a remarkable ability to process and conserve water, being able to go up to fifteen days without water. They can also store fat in their humps (<http://depts.washington.edu/uwch/silkroad/exhibit/trade/horcamae.html>).



HANDOUT 3: NOMADIC AND SEDENTARY SOCIETIES

The Nomads and Their Yurt



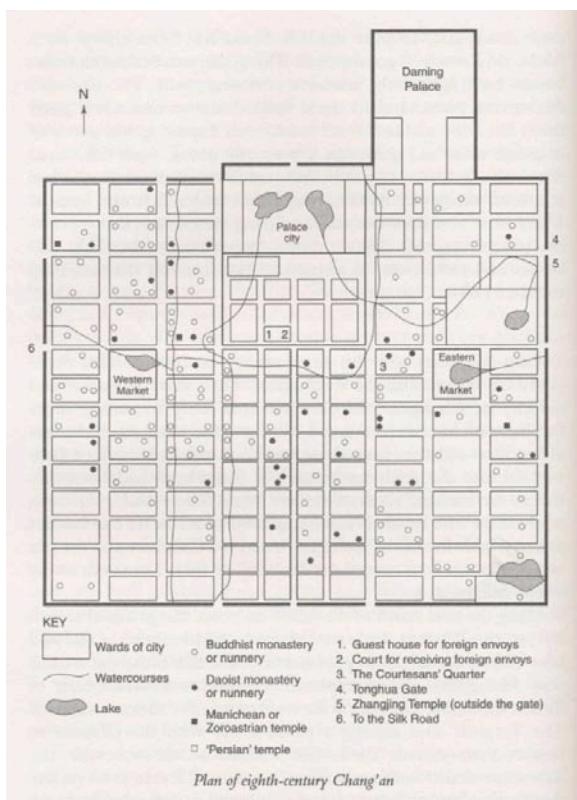
(Source: Photograph courtesy of Daniel C. Waugh, 1995, Kyrgyzstan)
<http://depts.washington.edu/uwch/silkroad/culture/dwellings/dwellings.html>

Caravans traveling along the Silk Roads might have encountered the ancestors of this Kyrgyz family, pictured here next to their yurt (in Mongolian, *ger*). Since nomads regularly moved in order to ensure pasture for their animals, their houses needed to be portable. The yurt shown here, for instance, consists of a wooden frame covered with white felt made of sheep's wool. It can be easily taken down, transported, and re-assembled elsewhere.

The center of nomadic society was the herd. Domesticated animals such as horses, sheep, camels, donkeys, and oxen, were essential to the survival of the nomads. They not only served as sources of food, shelter, and clothing, but as a commodity of exchange and a form of currency.

In the past, nomads used to supplement their income by raiding. They would attack caravans, harass border towns, and invade the farmlands of sedentary neighbors. Nomad men were trained to hunt on horseback from infancy. This also made them skillful fighters (Adapted from <http://depts.washington.edu/uwch/silkroad/culture/culture.html>).

HANDOUT 4: CLOSE-UP OF CHANG'AN, TANG CAPITAL CITY



(Source: Whitfield 1999: 52)

Chang'an (present-day Xi'an in Shaanxi Province, China) is located in the Wei River Valley. It was the wealthy capital of China during the Sui and Tang dynasties (589-907). Located at the eastern end of the Silk Road, Chang'an was a planned city with over a million inhabitants, at that time the most populous city in the world.

The city's population was ethnically diverse, consisting of Han Chinese, Turkic peoples from northwest China such as the Uyghurs, Arabs and Iranians from West Asia, Koreans, Japanese, Indians, and so forth.

The foreign presence in Chang'an could be seen in religious practice and the arts. Central Asian religions such as Zoroastrianism, Manichaeism, and Nestorian Christianity were all established there during the Tang. Tang clothing, music, the decorative arts, and even women's makeup were influenced by the non-Chinese world. In modern day Xi'an, you can still see traces of this period in the mosques and foreign names of various streets.

With its huge Western and Eastern markets, Chang'an was an important city along the Silk Road.



HANDOUT 5: THE OASIS TOWN OF KASHGAR

Kashgar was a major oasis stop for exhausted travelers going both east and west. If you were going west around the northern or southern edges of the Taklamakan Desert, Kashgar was at the location where these two routes merged. It was also the closest oasis after descending from the Pamir Mountains to its west or the Tianshan range to its north.

Chinese merchants would arrive in Kashgar and trade their goods before returning home. A few would make the journey west over the Pamirs or Tianshan, going farther into Central Asia. Eastbound travelers would descend from the mountains and exchange their yaks for camels to journey across the Taklamakan Desert.

Kashgar was strategically and economically important and many battles were fought to control it. Called Shu-le by the Chinese, Kashgar was garrisoned by them during the Han dynasty (206 BCE - 220 CE). Over the centuries many peoples, including Turks and Tibetans, left their mark on Kashgar. During the seventh century, Kashgar was, for a time, a protectorate of the Tang Empire (618-907).

At the eastern edge of town, the Sunday market was the center of Kashgar's commercial life. Colorful goods from all over Asia—gemstones, silk, and locally produced woolen carpets; various types of fruit; and livestock ranging from horses to camels, sheep, and oxen were all traded there.

The city was also the passageway through which a number of religions spread. Although the city's inhabitants were mostly Buddhists, there were also communities of Manichaeans and Nestorian Christians (Foltz 1999: 104).

During the eighth century, Islam reached Central Asia and Kashgar eventually became Muslim. When Marco Polo visited in the thirteenth century, he had the following to say:

The inhabitants live by trade and industry. They have very fine orchards and vineyards and flourishing estates. Cotton grows here in plenty, besides flax and hemp. The soil is fruitful and productive of all the means of life. This country is the starting-point from which many merchants set out to market their wares all over the world. The folks here are very close-fisted and live very poorly, neither eating well nor drinking well (Latham 1958: 80-81).



UNIT
1 – C



HANDOUT 6: PRODUCTS

The silk trade that gives the Silk Roads its name began as early as the second century BCE when caravans carried Chinese silk across Central Asia. Some silk eventually reached the Mediterranean, where wealthy people in ancient Rome wore it. Silk was also often used as money.



(Source: Photograph courtesy of Denis Titchenell)

Silk comes from the cocoons of silkworms (photo, left). Silk production depends on knowing how to raise silkworms on a diet of mulberry leaves, as well as how to reel the thread from the cocoons, dye the raw material, and eventually turn it into clothing.



(Source: Photograph courtesy of Sharon Shambourger, 2001, Xinjiang)

Turfan, one of the key oases along the northern route of the ancient Silk Road, is situated south of the Tianshan Mountains in the eastern part of today's Xinjiang Province. Turfan is the lowest point in China and has the country's highest temperature.

Turfan is famous for its grapes, raisins, and wine. The cultivation of grapes is made possible by the *karez* system, underground channels that bring water down from the melting snow in distant mountain ranges. The *karez* are vital to the economic development of the region.



(Source: Photograph courtesy of Marleen Kassel, 2001, Xinjiang)

In addition to grapes, melons are a famous product of the Silk Roads oases. They respond favorably to the climate and soil of the region.





(Source: The Metropolitan Museum of Art,
Gift of Heber R. Bishop, 1902 [02.18.689] Photograph,
all rights reserved, The Metropolitan Museum of Art)
http://www.metmuseum.org/toah/ho/09/eac/ho_02.18.689.htm

Jade Basin
China, Qing Dynasty (1644–1911), Dated 1774
Nephrite (Jade) 20 in. length
Metropolitan Museum of Art

Khotan, an oasis south of the Taklamakan Desert, has been known for centuries as a source of jade.

Much of the jade went to China where it was carved by highly skilled artisans into trinkets for the imperial family and the aristocracy. Jade is an extremely hard material, and to shape it takes hours of grinding with fine sand, water and drills made with diamond points. Intricately carved pieces, such as hair ornaments and belt buckles, were therefore particularly prized (Whitfield 1999: 127).

The following table lists some important products.

Products	Origin	Destination	Uses
Amber	Iran; Baltic Sea	China	Ornaments; jewelry; medicine
Glass	Ancient Rome, later West Asia	China, Central Asia	Containers; decorative objects
Grapes	Europe; Central Asia	China	Food and drink (raisins, wine)
Horse	Western Asia; Central Asia	China	Warfare; communication; transportation; sport; entertainment
Ivory	India; Southeast Asia	China	Decorative
Jade	Central Asia (Khotan)	China	Religious ritual objects; decorative objects
Porcelain	China	Europe; Central Asia	Containers; decorative objects
Dried rhubarb	China	Europe; Western Asia	Medicine
Silk	China	Europe; Western Asia; Central Asia	Currency; clothing
Silver	Europe (Ancient Rome)	China; Central Asia	Currency; containers; jewelry



Suggested Questions for Players

1. Approximately how long is the distance from Chang'an to Kashgar?
2. Which three provinces in China did the Silk Roads pass through?
3. Besides Buddhism and Islam, name one other religion practiced along the Silk Roads.
4. What structure was built to protect China's northern frontier from nomadic tribes?
5. What did the Chinese government often use as currency?
6. What do nomad peoples sometimes use as currency?
7. Which oasis town is located in a depression?
8. What two characteristics describe most Silk Roads products?
9. Where are the Pamirs located?
10. What do the members of a caravan typically eat and drink?
11. About how many miles can a typical caravan cover in a day?
12. Name two products that originate in Central Asia.
13. Which city, located in the Wei River valley, was the capital of China during the Tang dynasty?
14. Name two oases located in the Chinese province of Xinjiang?
15. Which oasis town is a famous source of jade?
16. How many humps does a dromedary have?
17. Which oasis city is the lowest point in China and one of its hottest places?
18. Name three important items needed most by caravan travelers.
19. Why is the camel called the "the ship of the desert?"
20. What type of camel has two humps?
21. When would caravans mostly likely graze their camels?
22. What is a "caravanserai"?
23. What are the three main geographical features of the Silk Roads?
24. What animal did the Chinese import for use in warfare?
25. Name the underground system that brings water down to the oases in Xinjiang from the nearby mountains.
26. What do silkworms eat?
27. List three occupations that can be found in a caravan.
28. What type of dwellings do Central Asian nomads live in?
29. Name one way that nomads earn their living.
30. List two local products of Xinjiang.
31. What part of the silkworm is silk thread made from?
32. What two religions entered China via the Silk Roads?
33. What stretch of the Silk Roads is known as the "Trail of Bones"?
34. What is the arrangement whereby a group of merchants invest in a caravan to share both profits and losses?
35. What was rhubarb, a plant widely traded along the Silk Roads, used for?



Answers to Questions

<ol style="list-style-type: none">1. Two thousand miles2. Shaanxi, Gansu, and Xinjiang3. Zoroastrianism, Nestorian Christianity or Manichaeism.4. The Great Wall5. Silk6. Livestock7. Turfan8. Luxurious and portable9. West of Kashgar10. Half-cooked dough and hot tea11. Fifteen to sixteen miles per day12. Jade, grapes, or melon13. Chang'an14. Kashgar, Khotan, Turfan15. Khotan16. One hump17. Turfan18. Food, fodder, and water19. Like a ship, it transports people across a hostile environment.	<ol style="list-style-type: none">20. Bactrian camel21. By day—to keep closer watch of them.22. A way station or shelter built to provide for travelers along the Silk Roads23. Mountains, deserts, and oases24. Horses25. Karez26. Mulberry leaves27. Merchants and/or their agents, armed guards, professional camel drivers, baggage handlers, camp tenders, guides are all occupations found on a caravan.28. Portable tent-like structures called yurts29. Raising livestock or raiding their neighbors30. Melons, grapes, jade31. Cocoons32. Buddhism and Islam33. The Pamirs34. Ortogh (Mongol) or commenda (Arab)35. Medicine
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UNIT
1 – C

