



SECRETS OF THE SILK ROAD

EDUCATORS' GUIDE



Penn Museum

UNIVERSITY OF PENNSYLVANIA MUSEUM
of ARCHAEOLOGY and ANTHROPOLOGY

3260 South Street / Philadelphia, PA
www.penn.museum



LETTER FROM THE MUSEUM

Dear Educators,

I am delighted to introduce you to our newest major exhibition, *Secrets of the Silk Road*, through this guide for your use in the classroom. *Secrets of the Silk Road* contains over 100 objects, including two extraordinary mummies, from the Xinjiang Uyghur Autonomous Region Museum in China. The exhibition focuses on the cultural influences of trade and exchange in Central Asia, before and during the height of the Silk Road, and is illustrated by an impressive collection of incredibly well-preserved archaeological objects.

Secrets of the Silk Road takes familiar concepts of trade, migration, technology, and mummification—discussed in the Penn Museum’s other galleries and in classrooms all over the world—and looks at them in the context of the Tarim Basin, a remote place in Central Asia many of us have never heard of before. This area is particularly interesting to archaeologists and anthropologists because it lies right at the heart of the Silk Road, and thus became a melting pot for the cultural influences of the people traveling through it from China in the east, and from Europe and the Middle East in the west.

An interest in China and its cultural heritage has been engrained in the fabric of the Penn Museum since its completion of the Chinese Rotunda in 1915. This impressive domed space has become synonymous with the architecture of the Museum, and is home to an extraordinary collection of Chinese sculpture. In 1996 the Penn Museum was the natural place on Penn’s campus to host “The Mystery Mummies of the Tarim Basin, Central Asia” conference, organized by Penn Professor Victor Mair, which increased our interest in the mummies now in the collection of the Xinjiang Museum. It is a great privilege for the Penn Museum to host *Secrets of the Silk Road*, with objects never-before-seen in the United States. We are pleased to present the mummies, along with many other fascinating objects from Central Asia, in order to tell the story of the mysterious inhabitants of the Tarim Basin, and to illustrate the part they played in the history of the Silk Road.

It just remains for us to welcome you, the visitors, and more importantly, the educators, to join us in discovering this exciting narrative. The exhibition opens on February 5, 2011 and will remain at the Penn Museum—the only East Coast venue—until June 5, 2011. We look forward to seeing you.

Sincerely yours,



Richard Hodges
The Williams Director
Penn Museum



Photo credits for front cover:

Male Mummy, *Yingpan Man*, 25-420 A.D.
Excavated at Yingpan
Xinjiang Uyghur Autonomous Region, China
©Urumqi, Xinjiang Institute of Archaeology

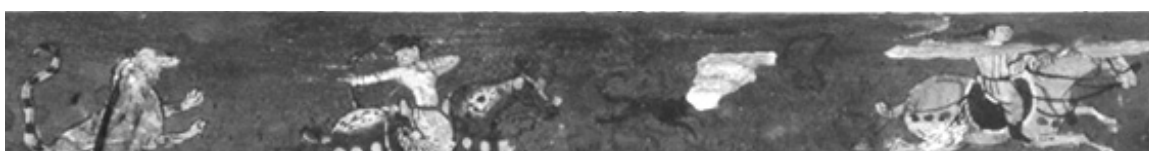
Gold Plaque in the Shape of a Lion, 475-221 B.C.
Excavated from Tomb No. 30 at Alagou
Nanshan, Urumqi, Xinjiang Uyghur Autonomous Region, China
©Xinjiang Uyghur Autonomous Region Museum

Yellow Brocade with Designs of Pearls and Flowers
7th-9th Century
Excavated from Tomb No. 211, Astana, Turfan
©Xinjiang Uyghur Autonomous Region Museum Collection

Photo credit for page 3:

Painted Quiver
7th-9th Century
Excavated from Tomb No. 188, Astana, Turfan
©Xinjiang Uyghur Autonomous Region Museum Collection

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ACKNOWLEDGEMENTS

Organized by the Bowers Museum, Santa Ana, California in association with the Archaeological Institute of Xinjiang and the Ürümqi Museum.

The presentation of *Secrets of the Silk Road* at the Penn Museum is made possible in part with support from Lois and Robert M. Baylis, the Commonwealth of Pennsylvania, Alexandra Schoenberg and Eric J. Schoenberg, Ph.D., Host Hotels and Resorts, Annette Merle-Smith, and Subaru of America, Inc.

Special thanks to Charlotte Byrd, Jean Byrne, Prema Deshmukh, Amy Ellsworth, Allison Francies, Lia Gaetano, Jane Hickman, Erin Erb Jensen, Anne Marie Kane, Julie Lee, Victor Mair, Dian Margolis, Polly Mitchell, Suzanne Naughton, Jane Nelson, Kate Quinn, Jennifer Reifsteck, Kevin Schott, Bernadette Smith, The Philadelphia Inquirer and News in Education, and Emily Toner for their assistance in producing, editing, designing, and publishing this Guide.

INTRODUCTION

The *Tarim Basin*, a vast and inhospitable desert region in Central Asia, is China's gateway to the west. Bordered by two routes of the Silk Road, the region became a melting pot of a variety of people, languages, and cultural traditions from across Europe and Asia. Although surrounded by mountains, subject to extreme temperatures, and with only scattered oases offering the possibility of habitation, the Tarim Basin is home to thousands of perfectly preserved objects, telling the story of the people who traveled, traded, and settled along the Silk Road. The harsh and arid weather conditions provide an ideal environment for the natural preservation of burials, textiles, and fragile artifacts from archaeological sites across the region. From the unfamiliar expanse of the Tarim Basin, the *Secrets of the Silk Road* are finally revealing themselves.

More than 100 artifacts from the Ürümchi Museum and the Institute of Archaeology of Xinjiang (shin-jiang) are included in this exhibition, all of which recount the meeting of many different ethnic groups from east and west, and the precious goods, vibrant customs, and new technologies which each brought with them. These artifacts include two remarkable Caucasian mummies found in the Tarim Basin, which are central to understanding the multicultural diversity present along the Silk Road. Their presence seems to indicate the arrival of nomadic groups from Europe and Western Asia; they may well have been the first humans to populate the Tarim Basin in Western China, long before the Silk Road became a frequently used trade route. The preservation of textiles, documents, and even food allows us to gain a detailed and enlightened understanding of the daily life, language, burial rituals, and livelihood of these peoples, and to better understand their place in the heart of Asia.

This Educators' Guide is inspired by middle school curriculum, but is adaptable to many grade levels. Pre-visit and post-visit activities, tailored specifically for high school students, are located online at <http://www.penn.museum/silkroad>. This Educators' Guide will support and enrich your classroom's visit to the *Secrets of the Silk Road* exhibition at the Penn Museum. The booklet's five units, each with pre-visit and post-visit activities, correspond to the layout of the exhibition, creating a comprehensive educational package. Each activity connects to National Academic Standards, covering a range of subjects across the curriculum. Additional resources, including a selection of images from the exhibition catalog, are available online at <http://www.penn.museum/silkroad>.

The Silk Road was not a single road, but a system of trade routes across Asia, extending from the Mediterranean in the west to China in the east, and reaching into India in the south. Altogether the Silk Road covered more than 4,600 miles, and was in use from the 2nd century *BCE* right into the 8th century *CE*. Although the Silk Road is named after the silk which was exported from China, many other luxury goods, such as precious stones and metals, ivory, glass, perfume, spices, and paper were also commonly transported along various routes. Travelers were not only merchants and traders, but also pilgrims, soldiers, and guides, who would have traveled by foot or by camel.

At the *Taklamakan (tak-la-ma-Kahn) desert*, the Silk Road divided into a northern route and a southern route. The desert climate would have been too inhospitable to travel straight across, so the routes passed through oasis towns situated around the edge of the desert. These provided stopping places with food and water, as well as places to buy and sell goods. Rather than travel the entire length of the Silk Road, individual merchants would transport their goods along a section of the route and exchange them at certain major stopping points, such as oasis towns. Different merchants would then continue to transport the goods along the next section of the route. This constant influx of travelers meant that the oasis settlements benefited not only economically, but also culturally.

From the west, technologies such as felting, weaving, farming techniques, and *animal husbandry* were imported into China, along with spices from the Middle East. From the east came the art of papermaking, printing, and *sericulture*, as well as tea, fine ceramics, and gunpowder. Archaeological excavations at sites along the Silk Road have unearthed hundreds of objects and burials, which demonstrate not only the extent of trade along the Silk Road, but also the spread of language and cultural practices across Asia.

VOCABULARY

animal husbandry	the agricultural practice of breeding and raising domestic livestock (i.e. sheep, camels, and horses)
BCE	Before Common Era. Time before the year 0. Also known as <i>BC</i> (“Before Christ”), <i>BCE</i> is the preferred denotation of time by archaeologists.
CE	Common Era. The year 0 to present day. Also known as <i>AD</i> (Latin for <i>Anno Domini</i> or “Year of Our Lord”), <i>CE</i> is the preferred denotation of time by archaeologists.
sericulture	the rearing and farming of silk worms for the production of silk
Taklamakan desert	a large desert, comprising the majority of the Tarim Basin
Tarim Basin	an area situated within Xinjiang, located between the Tian Shan Mountains to the north, and the Kunlun Mountains to the south

UNIT ONE

THE SILK ROAD – CLASSROOM ACTIVITY

PRE-VISIT ACTIVITY

Mapping the Silk Road

STANDARDS

Geography: The World in Spatial Terms; Places and Regions; Human Systems; The Uses of Geography

World History: Era 3: Classical Traditions, Major Religions, and Giant Empires, 1000 BCE–300 CE; Era 4: Expanding Zones of Exchange and Encounter, 300–1000 CE

OBJECTIVE

Students will chart the migration of Silk Road trade products through research and map making.

SUGGESTED TIME

50 minutes: 20 minutes discussion time and 30 minutes computer lab time. If a computer lab is not available, 20 minutes discussion time plus evening homework

PROJECT NEEDS

- ✘ In-class computer lab time
- ✘ Textbook
- ✘ Pre-understanding of the Silk Road
- ✘ Overhead projector (or class Smart Board)
- ✘ Overhead transparency (or projected image of map onto Smart Board) made from the Eurasia physical map by the Houghton Mifflin Harcourt Publishing Company, found online at http://www.classzone.com/cz/books/wh_survey05/get_chapter_group.htm?cin=1&rg=map_center&at=outline_maps&var=outline_maps

DIRECTIONS

1. Students will discuss what they know about the Silk Road. Sample discussion prompts include:
 - a. What was the purpose of the Silk Road?
 - b. Where did the Silk Road go?
 - c. What items were traded along the Silk Road?
2. As a class, students will generate a list of products that were traded along the Silk Road: silk, paper, porcelain, spices, tapestries and carpets, perfume, tea, gold and silver, ivory, paper, horses, furs, jade, etc.
3. Students will break into small groups. Each group will be assigned a product or products to research.
4. Each group will be responsible for researching the following information in their textbooks and online about their product(s):
 - a. Region of origin of their product(s)
 - b. Where the product(s) would have traveled along the Silk Road
5. Students will present their findings to the class.
6. As a class, students will mark the origins of each product as “point A” and the destinations as “point B” of each product on the overhead transparency/Smart Board. Students will then draw an arrow(s) connecting their points.

POST-VISIT ACTIVITY

Trade Role-playing Game

STANDARDS

Visual Arts: Understanding and Applying Media, Techniques, and Processes; Choosing and Evaluating a Range of Subject Matter, Symbols, and Ideas; Understanding the Visual Arts in Relation to History and Cultures

World History: Era 3: Classical Traditions, Major Religions, and Giant Empires, 1000 BCE–300 CE; Era 4: Expanding Zones of Exchange and Encounter, 300–1000 CE

OBJECTIVE

Students will role-play as Silk Road traders, physically trading mock-Silk Road-related items with their classmates who “reside” in another region of the Silk Road.

SUGGESTED TIME

2 class periods of 50 minutes each

PROJECT NEEDS

- ✂ Trade game activity sheets (pages 27-31), located in the *Secrets of the Silk Road* Educators’ Guide
- ✂ Craft items to create Silk Road trade goods
- ✂ Reference images for Trade Game, found online at <http://penn.museum/silkroad>

Day One:

1. Students will divide into groups of four. Each group will represent one of the following areas:
 - ✿ Far East
 - ✿ Central Asia/Tarim Basin
 - ✿ Middle East
 - ✿ Mediterranean (Greece and Rome)
2. Students will review their region’s goods of trade indicated on the activity sheets.
3. Students will re-create their goods of trade.

Day Two:

1. Students will study the goods conversion chart and the items needed.
2. Students will decide who needs to stay at “home base” and barter, and who needs to act as merchants and travel to obtain the goods needed.
3. Students will be given a set period of time for the trade game (approximately 30 minutes).
4. When the 30 minutes are up, students will discuss the following questions as a class:
 - a. What types of things were traded? How can we categorize these goods?
 - b. How easy/difficult was it to obtain the goods that each region needed?
 - c. How successful was each region in obtaining all the goods on their list?

UNIT TWO

TARIM BASIN

A significant portion of the Silk Road was located at the center of the Asian continent, in what is now China's *Xinjiang (shin-jiang) Uyghur (WEE-gur) Autonomous Region*. Xinjiang, which literally means "New Territories," has only been a province of China since 1884; before this, the area was known as the Western Regions. This province covers almost 650,000 square miles, an area over one-sixth the total area of China. Today, the capital of the region is Ürümqi.

Approximately twenty million years ago, when the earth's continents were not positioned as they are today, the Indian subcontinent drifted as an enormous island in the Indian Ocean. Moving north at a rate of 15 centimeters per year, the Indian subcontinent began to collide with Asia and, from this collision, the Himalayan, Tian Shan, and Kunlun mountain ranges were formed. One area lying within these mountain regions was made of a harder bedrock than the surrounding areas and was not folded into mountains, but formed a basin—a geological depression formed by *tectonic* activity. This region is known as the Tarim Basin and makes up a large part of the Western Regions.

The Tarim Basin is dominated by the Taklamakan desert, an arid expanse with little rainfall, soaring summer temperatures, and subzero winters. The Tarim Basin and Taklamakan desert have an arid climate because they lie in what is known as a *rain shadow*. As tropical storms leave the sea and encounter elevated land, such as the Himalayan mountain range, the warmer, wetter tropical air is forced upwards. When this warmer air meets the cold air high above the mountains, the water vapor in the warm air is forced to condense, resulting in the release of moisture, or rain. In order for heavy tropical storm clouds to pass over mountains as high as the Himalayas, the clouds must abandon virtually all of their moisture, creating a monsoon season on one side of the mountain range (in India) and a dry region, or rain shadow, on the back side of the mountain range (in the Tarim Basin).

Despite the inhospitable climate of the desert, a series of *oases* exist, supported by natural underground water reserves and by rivers carrying runoff from nearby glaciers and snowmelt. The geography and climate of the Tarim Basin were essential for dictating the direction of the Silk Road and created ideal conditions for the preservation of the mummies and objects discovered there.

VOCABULARY

oasis	a fertile spot in the desert, created by the presence of water. Oases is the plural of oasis.
rain shadow	a dry area on the backside of a mountain, produced when a mountain or mountain range blocks the path of a weather system which produces rain
tectonic	relating to the structure and movement of the earth's crust

PRE-VISIT ACTIVITY

Silk Road Routes: Getting from Point A to Point B

STANDARDS

Geography: World in Spatial Terms; Places and Regions; Physical Systems; Human Systems; The Uses of Geography; Environment and Society

Objective: After discovering Silk Road trade goods, students will explore the geographical limitations of the trade routes along the Silk Road. They will discover the Tarim Basin as the crossroads of the Route.

SUGGESTED TIME

50 minutes

PROJECT NEEDS

- ✘ Completed overhead transparency of Eurasia physical map from the *Mapping the Silk Road* activity
- ✘ Tarim Basin geography map (page 32), located in the *Secrets of the Silk Road* Educators' Guide
- ✘ Overhead transparency made of the Silk Road routes map (page 40), located in the *Secrets of the Silk Road* Educators' Guide. An interactive map is also found online at <http://www.penn.museum/silkroad>
- ✘ Eurasia physical map, one per student, printed online from the Houghton Mifflin Harcourt Publishing Company: http://www.classzone.com/cz/books/wh_survey05/get_chapter_group.htm?cin=1&rg=map_center&at=outline_maps&var=outline_maps

DIRECTIONS

1. Students will examine the overhead transparency from the *Introducing and Mapping the Silk Road* activity.
2. Students will examine the geographical map of the Tarim Basin (page 32).
3. Students will decide as a class whether or not the trade routes they created on the transparency would be feasible for travelers. The class will discuss the following factors which would affect Silk Road traders:
 - a. Climate
 - b. Access to food and water
 - c. Places for travelers to rest
 - d. Mountains, rivers, deserts, and other geographical features which might be difficult to traverse
 - e. Directness of route vs. getting around obstacles
 - f. Places for traders to buy and sell their wares
4. As a class, students will discuss the geographical features in the Tarim Basin, such as the mountains to the north and the south, the Taklamakan desert, the rivers and the oases, as well as the location of towns and settlements.
5. Based on the discussion, each student will remap the routes on the Euroasia physical map.
6. Students will examine the transparency or online map, which shows the actual routes of the Silk Road.
7. Students will discuss how their guesses differ and are the same as the actual routes, and talk about why the route takes the shape it does.
8. Students will create a legend for their maps, assigning a color to each geographical feature. Features to consider include:
 - a. Desert
 - b. Oases
 - c. Rivers
 - d. Mountain ranges
9. Students will color the geographical features on their map.
10. Students will discuss why the Tarim Basin might be a particularly interesting area of the Silk Road for archaeologists to study. They might think about:
 - a. The fact that it is right in the middle of the Silk Road
 - b. The people, objects, and influences entering the area from east and west

UNIT TWO

TARIM BASIN – CLASSROOM ACTIVITIES/POST-VISIT ACTIVITY

POST-VISIT ACTIVITY

Making a Pointed Cap

STANDARDS

Visual Arts: Understanding and Applying Media, Techniques, and Processes; Understanding the Visual Arts in Relation to History and Cultures

Objective: Students will create a pointed cap, a popular fashion in the Western Regions during the Tang Dynasty (see *Secrets of the Silk Road* catalog image #11: *Head of a Figurine Wearing a Pointed Cap*.) Project can be made out of paper or felt and stapled, or the felt can be sewn for a more authentic look.

SUGGESTED TIME

up to 50 minutes

PROJECT NEEDS

- ✘ Two pieces of felt or paper. Each piece should be 14" X 16"
- ✘ Pen and scissors
- ✘ Either a needle and thread or a stapler
- ✘ Pointed hat template (page 33), located in the *Secrets of the Silk Road Educators' Guide*

DIRECTIONS

1. Students will fold each piece of felt/paper in half the long way.
2. Students will place the hat template onto the felt/paper so the straight edge of the template lines up with the folded edge of the felt/paper.
3. Students will trace the pattern and cut out.
4. Repeat steps 1-3 to produce a second cut piece of felt/paper.
5. Students will place the two pieces of felt/paper on top of each other. Students will leave a 1/4" seam allowance and sew or staple the slanted edges together along both sides.
6. Students will fold up the bottom 2 inches of the hat. Students will sew or staple the seam on the outside of the hat.

A. LIVING IN THE TARIM BASIN

The earliest inhabitants of the Tarim Basin arrived around 2000 BCE from the west. They relied on fishing and hunting for *subsistence*. Later, as inhabitants began to settle in oasis towns, they depended primarily on small-scale agriculture and *stock-keeping* as an alternative to hunting. The oasis towns of the Tarim Basin were provision centers for those traveling across the desert and along the Silk Road, offering lodging, food, and a place to exchange goods. In fact, the oasis towns were so important for traversing the desert that their locations dictated the routes of the Silk Road.

Beyond oasis towns and to the north of the Tarim Basin, *pastoral nomads* (some of whom were known to the Chinese as the *Xiongnu* [*she-oong-noo*]), herded sheep and cattle in expansive grasslands. It was not until after 1000 BCE that pastoral nomadism reached its peak in the northern part of Xinjiang province, when domesticated horses were used to manage large flocks of sheep and cattle. These nomads followed their flocks across great distances to fresh expanses of pastureland.

Nomadic life was largely dependent on weather; during years of drought, when the grassy expanses of pastureland dried up, an entire flock could be lost. When this happened, nomadic people would often raid local agricultural communities for food and supplies. Due to their itinerant lifestyle, nomads grew few crops and often relied upon the agricultural goods grown in oasis towns in times of need. In exchange for goods, local nomadic groups would offer protection against other raiders.

Some nomadic people from the north of the Tarim Basin gave up their precarious, weather-dependent lifestyle for the settled, agricultural lifestyle of oasis towns. Originally, small-scale agriculture in the Tarim Basin relied only on the water provided in oases—farmers planted crops near water sources. As oasis populations grew, however, a complex system of irrigation was necessary to provide for an increase in crops. Oasis towns consequently became increasingly dependent on their new system of irrigation infrastructure for subsistence. This extended system of dams, irrigation canals, and levees left oasis farmers vulnerable to attack from the poorer, more mobile nomadic pastoralists. When oasis populations grew too large and oases began to be exhausted of resources, people who had previously been agriculturalists would leave the oasis to take up nomadic pastoralism.

VOCABULARY

nomad	a person with no fixed home, who moves according to the seasons and other environmental factors
pastoral	relating to a rural, stock-keeping lifestyle
stock-keeping	tending to livestock, such as cattle, sheep, goats, or camels
subsistence	supporting oneself at a minimum level; continued existence
Xiongnu	the Chinese pronunciation of the name “Hun,” nomadic horsemen who lived on the grasslands to the north of the Tarim Basin

B. FOOD

Diet in the Tarim Basin depended largely on an inhabitant’s particular lifestyle. For early inhabitants, hunting deer, wild sheep, and birds, fishing, and gathering fruit were adequate means of subsistence. As people began to settle in oases, they ate mostly what they could grow, which included wheat, barley, *millet*, *legumes*, grapes and pomegranates. Nomads ate what they could herd, primarily sheep, goats and cattle, and the products which these animals produced, such as milk and its derivatives, yogurt, and cheese. However, some farmers may have participated in limited stock-keeping and some nomads may have participated in a small amount of itinerant agriculture. Despite the relative isolation and the harsh conditions of Xinjiang, inhabitants of the Tarim Basin developed a relatively varied diet, much more so than the traditional Chinese diet of millet and pork.

UNIT THREE

DAILY LIFE

Agriculture and stock-keeping were the primary methods of obtaining food. The knowledge required for the *domestication* of plants and animals developed in the *Fertile Crescent* around 8000 BCE and entered Xinjiang sometime around 4,000 years later. Wheat was domesticated by selectively growing and harvesting the wheat stalks with the largest ears and the largest seeds because those stalks were easiest to harvest and would produce the most food. Wild sheep, which did not originally have wool but hair more like a deer's, could only be used for meat, leather, and milk. As herders began to domesticate sheep they realized that sheep could also provide wool, so the animals were selectively bred to encourage woolly coats. Wool was valuable because it could be packed into felt or spun into thread for weaving, in order to create textiles to use as clothing and shelter. As a result, a sheep could provide a lifetime of milk for products such as cheese and yogurt, wool for clothing and when aged, it could be killed for meat and leather.

VOCABULARY

domestication the training of animals to live with, or be of use to, humans

Fertile Crescent a region in western Asia, so named because of its rich soil and curving shape

legume a type of vegetable used for food, such as peas or beans

millet the small grain of a cereal grass, used for food in Europe and Asia

C. TEXTILES

The textiles excavated from the Tarim Basin are extraordinarily well-preserved, due to the climate in this region. Usually organic fibers such as wool, cotton, and silk decompose, which makes it difficult to trace the history of textiles. In the Taklamakan desert, however, the dry air, salty soil, and cold winters helped to preserve textiles, allowing us to see clearly the development and spread of weaving techniques, and the extent and nature of the textile trade.

Nomads of the Xinjiang province often used *felt*, a lightweight and relatively waterproof fabric. Felt was used for both clothing and for nomad homes, called *yurts*. Felt-making requires no weaving and could be made easily while moving from place to place. To make felt, nomadic horsemen would tie up bundles of woolen fibers and place them under their horses' saddles. The weight and movement of the rider during a day's riding would compress the fibers into a rudimentary fabric. This process would be repeated several times until the felt was dense enough to be used for making clothing or shelter.

Weaving was a more time-consuming activity than felting, but woven fabrics were much stronger and more durable than felt. Nomadic people did not have the space or lifestyle to accommodate fixed or large *looms*, so they used simpler techniques, using trees or body-parts to support the warp threads. The strips of fabric created by this method would be very narrow; many strips to be sewn together to create larger, more useful pieces of cloth. People who lived in more permanent settlements could use larger looms, which would allow them to produce large pieces of cloth more efficiently. Simple weaves can unravel relatively easily, whereas more complex, diagonal weaves made on a proper loom will create a more durable, densely woven fabric, which is both warmer and longer lasting. In order to provide insulation from the cold, woven fabrics were lined with felt.

Silk came to the Tarim Basin ready-made from China. The Chinese went to great lengths to protect their monopoly on silk production. Legend has it that the secrets of sericulture eventually found their way west when an exiled Chinese princess smuggled silkworm eggs and mulberry seeds out of China in her headdress.

VOCABULARY

felt	an unwoven fabric of matted or compressed fibers, such as wool
loom	an device upon which to weave cloth
weaving	a method of creating fabric by interlacing a set of vertical and horizontal threads
yurt	a portable, circular skin- or felt-covered dwelling with a collapsible wooden frame

D. LANGUAGE

Just as precious goods were exchanged along the Silk Road, so too were languages, producing a bewildering amount of *linguistic* diversity in the Tarim Basin and surrounding areas. Evidence exists that 28 written languages were used in this region including: official records; imperial edicts; personal and commercial correspondence; religious scripture and literature; medical, social, and economic literature; calendars, tablets, and coins. Most of these documents were written in ink on wooden tablets, leather, silk, and paper. Some of the languages, most notably *Tocharian* (*tock-AIR-ee-an*), are unique to the region, indicating that they may have been present in the Tarim Basin from an early time, while many others are later imports to the region, from both east and west. Many of the languages which were spoken and used in the Tarim Basin belonged to a family of languages that *linguists* call *Indo-European*.

It would have been common for several languages to be spoken in the same region during the same period, and most inhabitants of the region were probably bi- or multi-lingual. That is, inhabitants were fluent in more than one language and spoke each language in a different context. For example, you would speak your native language at home, perhaps Tocharian, but when speaking to a *caravan* leader, you would probably speak *Sogdian* (*sog-dee-in*). Sogdian was the language used most often when traveling the Silk Road because Sogdians were the commercial middlemen who led caravans between China and Byzantium. If you wanted to become a monk or read religious texts, you would have to learn to read traditional Buddhist scriptures in *Sanskrit*. Administrative documents were more likely to have been written in Chinese, the language of the imperial authorities during the heyday of the Silk Road. These are only a few of the languages that we know were spoken in the Western Regions.

VOCABULARY

caravan	a company of travelers journeying together, often across a desert or hostile territory, sometimes accompanied by camels or horses
Indo-European	a group of several hundred languages from Europe to Central Asia, which linguists have determined are related to one another
linguist	someone who studies languages
linguistics	the scientific study of language and how it works
Sanskrit	an ancient Indo-European language used in Indian literature, philosophy, and scripture
Sogdian	the ancient Indo-European language of the Sogdians, an ethnic group in the Tarim Basin famous for navigating caravans of goods along the Silk Road
Tocharian	language spoken by early inhabitants of the Tarim Basin, thought to be native to the area, and not known to be spoken elsewhere

UNIT THREE

DAILY LIFE – CLASSROOM ACTIVITY

E. TECHNOLOGY

Goods were not the only things exchanged along the Silk Road. In fact, the Silk Road's most historically influential commodities were ideas: languages, technologies, and religions in particular. From the west, in addition to agriculture, inhabitants of the Tarim Basin spread the discovery of the wheeled vehicle, as well as the arts of felting and weaving to the east. Ideas and technology that came from the east included papermaking, sericulture, and gunpowder, just to name a few. Although there are countless examples of technological and intellectual innovation developing in and traveling through the Tarim Basin, the two most notable displays of technological advancement in the *Secrets of the Silk Road* exhibition are metalworking and the evolution of textile design.

The mountains surrounding the Tarim Basin were rich in mineral deposits, yielding copper, iron, lead, gold, tin, and coal. With readily available access, the inhabitants of the Tarim Basin became highly skilled at *metallurgy*, producing mostly small items, such as weaponry, jewelry, ornaments, and household utensils. Metallic objects found in the Tarim Basin were generally made in two ways: by hammering shapes out of sheets of metal or by casting—pouring molten metal into molds. Nomads in particular favored bronze for cooking implements because of its durability, transportability, and ability to quickly absorb heat for cooking. Gold metalworking, which was generally used decoratively as a symbol of wealth, was much favored by the nomads who lived on the grasslands to the north of the Tarim Basin.

Just as textile production evolved from packed felt to intricately woven and brocaded fabrics, garment construction and decoration underwent a similar evolution. Early garments were typically simple wraps produced in natural colors, but production quickly evolved to suit the needs of the wearer. For example, nomads began to wear closely fitted clothing with sleeves and pant legs in order to provide insulation from the cold and allow for greater movement while riding horses. Additionally, as dyeing and weaving technology developed, clothing became a medium for decorative expression.

VOCABULARY

metallurgy the science of extracting metals from their ores, and of refining and alloying metals. For example, bronze is an alloy of copper and tin.

PRE-VISIT ACTIVITY

Nomads vs. Oasis Dwellers: Textiles and Weaving Exercise

STANDARDS:

Geography: Human Systems; Environment and Society;

World History: Era 2: Early Civilizations and the Emergence of Pastoral Peoples, 4000–1000 BCE

Visual Arts: Understanding and Applying Media; Understanding the Visual Arts in Relation to History and Cultures

OBJECTIVE

Students will contrast the textiles worn by a pastoral nomad and an oasis dweller of the Tarim Basin. Students will then participate in a weaving exercise.

SUGGESTED TIME

50 minute discussion time plus 50 minute activity time

PROJECT NEEDS

- ✂ Small piece of felt
- ✂ Small piece of woven fabric
- ✂ Images of textiles (a variety of felt and woven objects) from the *Secrets of the Silk Road* exhibition, found online at <http://penn.museum/silkroad>

DIRECTIONS

1. Students will re-examine the geography of the Tarim Basin (page 32).
2. Students will discuss the following:
 - a. What is an oasis?
 - b. What is an oasis dweller?
 - c. What is a pastoral nomad?
 - d. What type of lifestyle does a pastoral nomad of Xinjiang live in? An oasis dweller?
3. Students will discuss how the lives of nomads and oasis dweller groups might have differed. The following aspects will be considered:
 - a. Clothing
 - b. Dwellings
 - c. Personal possessions
4. As a class, students will write a list of the pros and cons of being an oasis dweller or a nomad. Students can consider the following factors:
 - a. Physical security
 - b. Food and water: access and variety of diet
 - c. Freedom and self-sufficiency
5. Students will reflect on the climate of the Tarim Basin. Discussion questions can include:
 - a. What type of climate would a pastoral nomad endure? An oasis dweller?
 - b. How would the climate impact what a nomad would wear? What an oasis dweller would wear?
6. Students will examine their own clothes and share any observations they might have.
Discussion questions can include:
 - a. What type of clothes do we wear (be sure to consider different seasons)? How would you describe the texture and weight of each piece of clothing?
 - b. What does the texture and weight of these clothes say about the climate we live in?
 - c. What are the properties of fabrics that make them suitable for different uses? Why might certain fabrics be used to serve a certain purpose? (i.e. snow jackets, swimsuits, towels, etc.)
7. Students will pass around the piece of felt and piece of woven fabric to touch. Students will discuss the differences between the two types of fabrics. Aspects to think about may include:
 - a. Which fabric feels more lightweight? More insulating?
 - b. Which type of fabric would have been worn by a pastoral nomad? An oasis dweller?
 - c. Which fabric would require a loom?
8. Students will examine images of textiles from the *Secrets of the Silk Road* exhibition.
9. Students will be introduced to the uses and creation of felt and woven fabric in the Tarim Basin. How do their hypotheses compare?
10. Students will participate in a weaving exercise. See directions on the next page:

UNIT THREE

DAILY LIFE – PRE-VISIT ACTIVITY

WEAVING EXERCISE

- ✘ 5" x 8" index cards (1 per student)
- ✘ 4 yards of wool yarn, 2 colors per student
- ✘ 4 yards of kite string
- ✘ Masking tape
- ✘ Rulers
- ✘ Scissors
- ✘ Pencils or popsicle sticks, one per student

DIRECTIONS

1. Students will create a loom from an index card by measuring and marking ten points $\frac{1}{2}$ " apart on both of the short sides of the index card (directly opposite of each other) and then making a small cut at each mark (Figure 1).
2. Students will create the warp of the loom by (Figure 2):
 - a. Taping one end of the string to the bottom left hand corner of the index card and positioning the string so it sits in the leftmost cut of the bottom edge.
 - b. Winding the string around the card lengthwise so as each time it passes over the edge of the card, it is snugly wrapped into one of the cuts.
 - c. Taping the string to the index card (making sure it's on the same side as the other bit of tape) and cutting off the excess.
3. Students will create the shuttle by selecting a color of yarn and tying one end securely to a pencil or popsicle stick.
4. Students will begin weaving by (Figures 3 & 4):
 - a. Turning the index card so the taped side is to the back.
 - b. Passing the shuttle under the first warp string, over the second, under the third, etc. until the end of the row is reached (leaving a tail of yarn at the beginning).
 - c. Passing the shuttle back through the warp strings in the reverse direction, making sure that the shuttle is on the opposite side of the warp string as the previous row.
 - d. Continuing to weave rows until the end of the yarn, making sure to leave a tail at the edge.
 - e. Repeating with another piece of yarn until the loom is full.
5. Students will finish the weaving by (Figures 5 & 6):
 - a. Tying a knot in each of the tails of yarn on the side of the weaving as close to the cloth as possible and then cutting off the excess yarn.
 - b. Turning the loom over, carefully removing the tape, and cutting through all of the warp threads.
 - c. Forming a fringe from the cut warp ends by tying pairs of adjacent strings together in double knots.
 - d. Cutting the fringe ends so they are even.

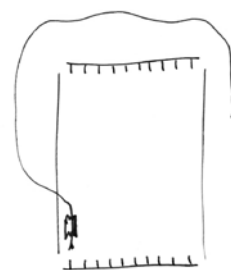


Figure 1

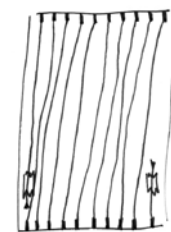


Figure 2

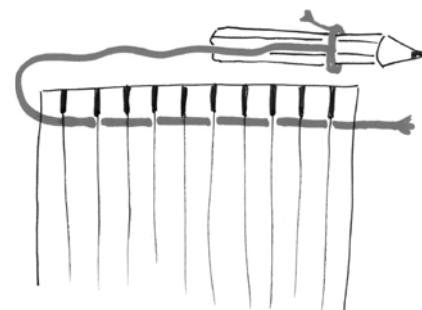


Figure 3

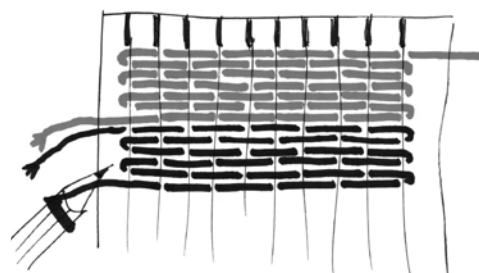


Figure 4

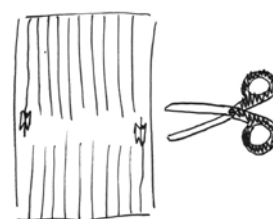


Figure 5



Figure 6

POST-VISIT ACTIVITY

You Can't Take It with You

STANDARDS

World History: Era 2: Early Civilizations and the Emergence of Pastoral Peoples, 4000-1000 BCE

OBJECTIVE

Students will personify themselves as pastoral nomads.

SUGGESTED TIME

50 minutes

PROJECT NEEDS

- ✂ Images of everyday life items of pastoral nomads, as discovered in the *Secrets of the Silk Road* exhibition.
Found online at <http://www.penn.museum/silkroad>

DIRECTIONS

1. As a class, students will define *pastoral nomad*.
2. Students will reflect about the daily pastoral life objects they observed in the exhibition.
3. Students will review images of everyday life objects belonging to pastoral nomads.
4. Students will imagine themselves as pastoral nomads of the Tarim Basin, 1000 BCE.
5. Each student will make a list of ten items they would carry with them if they were a pastoral nomad.
6. Students will compare their lists as a class. Where any similarities discovered?

UNIT FOUR

SACRED AND SPIRITUAL LIFE

A. RELIGION

In addition to the objects and technologies of their native lands, visitors to the Silk Road also brought their religious beliefs. Very little is known about the religious customs of the earliest settlers in the Tarim Basin, although they probably practiced ancestral worship and *totemism*, and there is documented evidence of *shamanism* in the area. However, as the Silk Road became a more regularly traveled route, a series of other religions were introduced to the area, including Islam, Judaism, Christianity, and more. *Zoroastrianism*, a religion of Persian origin, arrived in Xinjiang as early as the 4th century BCE; it gained popularity, and continued to be prevalent until the late 6th century CE. *Buddhism* arrived from India around the beginning of the Common Era, and reached the height of its popularity during the 3rd to 9th centuries CE. *Taoism* was brought into Xinjiang by the Han Chinese from the east, challenging Buddhism's popularity, but quickly followed in Buddhism's decline. A *heretical* branch of Christianity called *Nestorianism* was widely practiced in the Tarim Basin from the 7th century onwards, and continued to be prevalent in the region until the 14th century. Another Persian religion, *Manichaeism*, grew in popularity as Buddhism declined, to be replaced by Islam. Islam eventually became the primary religion of the region. The interplay between all of these faiths and their changing influences on the people of the Tarim Basin created a rich and extensive tradition of cultural diversity.

THE RELIGIONS OF THE TARIM BASIN

Buddhism	a religion originating in India which teaches that life is full of suffering, and that people can only be liberated from it by meditation and humility
Manichaeism	a religion based around the balance of the forces of good and evil, founded in the 3rd century CE by the prophet Mani
Nestorian Christianity	a branch of Christianity outlawed in Rome, but common in Central Asia, which emphasized the human characteristics of Jesus Christ
shamanism	a set of beliefs and practices concerning mediation between this world and the spiritual world
Taoism	more a way of life than a religion, Taoism is a Chinese philosophy which teaches that a force, Tao, provides the order of the universe
totemism	the use of totems, or animal representations, which serve as social or religious emblems of groups
Zoroastrianism	a religion founded in Persia by Zarathrustra; it is thought to have influenced many Christian, Jewish, and Muslim beliefs, and may be the oldest monotheistic faith

VOCABULARY

heretical	going against established religious teaching
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B. MUMMIFICATION

Over the past 40 years, excavations at about a dozen sites in the Tarim Basin have generated around 500 mummies, not including those that were excavated in expeditions during the first half of the 20th century. However, those mummies that survived in varying states of preservation account for only a small proportion of those discovered. For various reasons, including looting, lack of facilities, and political tensions, the remains of thousands of mummies have already been destroyed. It is estimated that several thousand mummies have already been excavated in the Tarim Basin region, with many more still undiscovered. The amount of skeletal human remains is, of course, far greater.

The mummies found in Xinjiang (*shin-jiang*) were primarily preserved by natural circumstances, rather than by intentional measures. Many of those mummified are dressed in warm clothing, which suggests that they died in winter, helping to explain why they are so well preserved. If a person died in winter, the extreme cold allowed the frozen or near-frozen bodies to dry out completely and mummify naturally. By the following summer, when the

weather became hot again, there would be no moisture left in the body, preventing decomposition. If someone died in the summer, however, the heat caused decomposition, thus preventing *mummification*. The high salt content of the soil in the Tarim Basin also contributed to the *desiccation* process, as salt absorbs moisture out of the surrounding areas, thus preventing bacterial growth and decay. The mummification of the Tarim mummies is due to the harsh climate conditions and particular geological features of the area, but also to chance, depending on what time of year death occurred.

There is some evidence of intentional preservation related to the Tarim mummies. Conservators have found a residue of animal protein smeared onto the skin of the dead, which may have aided preservation. Furthermore, the mummies sometimes rested on branches laid above pits or upon wooden planks, which increased the airflow around the body, thus promoting desiccation. Despite these efforts, the preservation of the Tarim mummies was, for the most part, natural. This may account for their life-like appearance, unlike the ancient Egyptian mummies, which are often blackened and shriveled. The oils and chemicals Egyptians applied to the body for the purpose of preservation, actually caused a level of decay.

VOCABULARY

desiccation the state of extreme dryness, or the process of losing moisture

mummification the intentional or accidental preservation of the skin and organs of a corpse, due to exposure to chemicals, extreme cold, extreme humidity, or lack of air

C. BURIAL PRACTICES

Although the mummification of those buried in the Tarim Basin appears to be primarily natural, it is clear that they were buried with a great deal of care and attention. The objects buried alongside the mummies can help to explain the beliefs of their communities about death and the afterlife. The Tarim mummies are not only dressed in elaborate clothes and decorated with face-paint and other ornaments, but they are also buried with an array of objects. Some of these objects appear to be for everyday use, such as combs, jewelry, and cosmetic items—objects perhaps used by the deceased during his or her lifetime. Other objects were made specifically for the funerary ritual. For example, a *qin* (*chihn*), a musical instrument found buried with one of the mummies, is much smaller than life size, with painted rather than actual strings. This object clearly would not have been used in real life, but it may have played a part in the religious beliefs of the community and their conception of the afterlife. Similarly, the burial of some mummies with food and other objects related to eating, such as cups and food baskets, seems to indicate that the dead were thought to need sustenance in the next world. Also, a significant number of mummies have been found buried with sexually symbolic objects, which seems to imply a preoccupation with fertility.

VOCABULARY

qin an ancient Chinese instrument, originally with five strings, which is plucked to produce sounds

THE MUMMIES

The Beauty of Xiaohe:

The Beauty of Xiaohe (*she-ow-HUH*), the oldest of the mummies on display at Penn Museum, was found at a Bronze Age burial site in the eastern part of the Tarim Basin. She may date as far back as 1800 BCE making her almost 4,000 years old. She is so well preserved that she looks like she is merely sleeping. She is just over 5 feet in height, and wears a fine felt hat and leather boots. She is dressed in a string skirt with a wide waist band around her waist which is thought to be a funerary item, rather than normal everyday clothing. She is also shrouded in a tasseled woolen cloak. She was buried with a wooden phallus near her chest, which was a common feature of female burials of this period, and may symbolize fertility. She has several pouches filled with *ephedra* branches, which were thought to have medicinal qualities, and was also sprinkled with grains of wheat.

UNIT FOUR

SACRED AND SPIRITUAL LIFE

The Infant Mummy:

The infant would have been under six months old when it died. It was buried in a shallow grave in a willow coffin. Archaeologists are not certain whether the infant was male or female. The child is wrapped in a burgundy-colored blanket, bound with cords of red and blue wool. It wears a soft cap of barely-felted cashmere and lies on a white woolen blanket. Blue stones, not native to Xinjiang, have been placed over each eye. A man buried nearby in identically dyed and woven cloth is thought to be the child's father.

The infant mummy was discovered at Zaghunluq (*zag-un-LUKE*), a site along the southeastern rim of the Tarim Basin. The child may have died around 700 BCE. Its family was probably horse-riding herders, inferred by the style of their clothing and the saddles, horsehides, and horse bones found nearby. The abnormally high salt content of the soil in this area led to greater preservation of the mummies, along with the preservation of the bright colors of the clothes they wear. The infant was buried with a drinking cup made out of a goat's horn, and a sewn-up sheep's udder thought to be one of the earliest baby bottles ever found.

Yingpan Man:

The mummy known as "Yingpan Man" was probably around 30 years old when he died, and at around 6 feet and 6 inches is the tallest Caucasoid mummy excavated in the Tarim Basin. He was discovered at the ancient city of Yingpan, an important oasis town with a large public cemetery, which yielded a huge amount of extravagant textiles. The textiles date the cemetery to 300 BCE–500 CE, somewhat later than the other sites in the Tarim Basin. Yingpan Man is thought to have died in the mid-5th century CE.

His body was wrapped in strips of cloth, and supported by shaped wooden armatures, features which are not observed with any other mummies in the Tarim Basin. Yingpan Man's expensive clothes and grave goods indicate that he may have been a wealthy traveling trader. He was buried with objects from across the continent, including a cushion from China and a glass bowl from the west, and his clothes are made of heavily brocaded silk in many colors. His face is covered with a mask made of hemp cardboard with painted features and a strip of gold foil decorating the forehead. The actual body of Yingpan Man could not be brought to the United States from China because it is extremely fragile, so only his magnificent *trappings* can be displayed.

VOCABULARY

ephedra	any of a genus (of the family <i>Ephedraceae</i>) of jointed, nearly leafless shrubs of dry or desert regions with the leaves reduced to scales at the nodes
trappings	outward decoration or dress

PRE-VISIT ACTIVITY

Mummification of an Apple: Freeze Dried Mummification versus Embalming Mummification

STANDARDS

Science: Science as Inquiry; Physical Science; Science and Technology; History and Nature of Science

OBJECTIVE

Students will conduct a science experiment, comparing and contrasting the Tarim Basin mummification process (freeze drying) and the ancient Egyptian mummification process (embalming with natron). Students will freeze dry an apple and record observations at home. As a class, students will observe the embalming with natron process.

SUGGESTED TIME

The *Freeze Dried Mummification* activity is an at-home activity, which will take seven days to complete. The *Embalming with Natron Mummification* activity is an in-class activity, which will take five class days.

Freeze Dried Mummification**PROJECT NEEDS**

- ✘ Freezer
- ✘ Apple, cut into paper thin slices (be sure parents are aware of this). The thinner the cut, the less time the experiment will take.
- ✘ Cookie cooling rack, metal mesh tray, or any other tray with perforation
- ✘ Worksheet to record observations (page 34), located in the *Secrets of the Silk Road Educators' Guide*

DIRECTIONS

1. Parents will slice an apple into paper thin slices.
2. Students will arrange apple slices onto the rack or tray and put them in the freezer. Students will do this fairly quickly or else the apple slices will discolor.
3. In half an hour, students will look at the apples. Students can touch them, but will not remove them from the freezer.
4. Students will record observations on the worksheet provided.
5. Every day throughout the week, students will look at the apple slices. Students will record daily observations on the worksheet.
 - a. What will happen is that the water in the slices will sublime away. That is, the water in the slices will be released as water vapor, instead of melting.
6. After a week or so (depending on the temperature of the freezer and how thick the slices are), the slices will be completely dry. To test apple for complete drying, students will take one slice out and let it thaw. It will turn black almost immediately if it is not completely dry.
7. When all of the slices are completely dry, they can be “reconstituted.” Students will put the slices in a mug and add $\frac{1}{4}$ cup of boiling water. Students will record observations on the worksheet.
8. Students will try eating the apple slices. Students will record reactions on the worksheet.

Embalming with Natron Mummification**PROJECT NEEDS**

- ✘ Apple, cut into fourths
- ✘ 1 plastic bag (Ziplock bag is preferred)
- ✘ 1 disposable bowl
- ✘ $\frac{1}{4}$ cup of salt
- ✘ $\frac{1}{2}$ cup of sodium carbonate (powdered bleach detergent)
- ✘ $\frac{1}{2}$ cup of bicarbonate of soda (baking soda)
- ✘ Disposable gloves
- ✘ Worksheet to record observations (page 35), located in the *Secrets of the Silk Road Educators' Guide*

UNIT FOUR

SACRED AND SPIRITUAL LIFE – POST-VISIT ACTIVITY

DIRECTIONS

1. Students will observe as an apple is cut into four equal sections. Only two sections of the apple are needed for the experiment.
2. The students will record their observations of each apple and will predict each apple's appearance outcome as a result of the experiment.
3. Students will observe salt, sodium carbonate, and bicarbonate of soda being mixed together in the disposable bowl. This is natron, the embalming agent.
4. The teacher will put on a pair of disposable gloves and completely submerge one fourth of the apple into the natron. The teacher will place the bowl aside.
5. The teacher will place another one fourth of the apple into a Ziplock bag. This is the "control" apple.
6. On a daily basis for an additional four class days, one student will put on disposable gloves and remove the apple from the natron. All students will record their observations on the worksheet.
7. Students will evaluate their predictions for the control apple and the embalmed apple. How accurate were they?

Once the *Freeze Dried Mummification* and *Embalming with Natron Mummification* activities are complete, students will evaluate their experiments. Possible discussion points include:

- a. Which method is a natural process? Which method involved chemicals?
- b. Which method is more like the process the ancient Egyptians used to preserve their dead?
- c. Which method retained the natural appearance of an apple the best?

POST-VISIT ACTIVITY

Mapping World Religions

STANDARDS

Geography: The World in Spatial Terms; Places and Regions; Human Systems; The Uses of Geography

World History: Era 4: Expanding Zones of Exchange and Encounter, 300–1000 CE; Era 9: The 20th Century Since 1945: Promises and Paradoxes

OBJECTIVE

Students will research religions that traveled the Silk Road.

SUGGESTED TIME

2–50 minute class periods or one evening of homework plus 30 minutes class time

PROJECT NEEDS

- ✘ Reserved time in the school's computer lab (if in-class activity)
- ✘ Classroom textbook
- ✘ 8 pieces of poster board
- ✘ Markers or crayons
- ✘ Image of *Stone Tablet with Nestorian Cross* and *Wooden Buddhist Sculpture* from the *Secrets of the Silk Road* exhibition, found online at <http://www.penn.museum/silkroad>
- ✘ Physical World Map, one per student, printed online from the Houghton Mifflin Harcourt Publishing Company: http://www.classzone.com/cz/books/wh_survey05/get_chapter_group.htm?cin=1&rg=map_center&at=outline_maps&var=outline_maps
- ✘ Newspaper

DIRECTIONS**Day One:**

1. Students will discuss the religions that they know about. Some discussion points to consider:
 - a. What do the people who practice each religion believe in?
 - b. Where did each religion originate?
 - c. Did each religion travel the Silk Road?
2. Students will discuss the religious objects they observed in the *Secrets of the Silk Road* exhibition.
3. Students will discuss the religions that traveled the Silk Road that were not mentioned in the *Secrets of the Silk Road* exhibition.
4. Students will be assigned into small groups for a total of eight groups. Each group will be assigned one of the following religions to research:

a. Zoroastrianism	e. Manichaeism
b. Buddhism	f. Nestorian Christianity
c. Confucianism	g. Judaism
d. Taoism	h. Islam
5. For each religion, each group will answer the following questions:
 - a. What are the major tenets of the religion?
 - b. What are some images/symbols associated with the religion?
 - c. Where did the religion originate?
 - d. What percentage of the world's population practices this religion today?
 - e. Is the practice of this religion concentrated in a particular region of the world? Where? Students will research the above questions on the Internet and in their textbooks for approximately 50 minutes (if in-class activity.)

Day Two:

1. Each group will create a poster board illustration of their religion.
2. Each group will receive a copy of a world map.
3. Each group will create a legend, assigning colors to their religion's country/region of origin and their religion's present-day concentration of practitioners.
4. Each group will map out their religion's country/region of origin and the area(s) of concentration of their religion.
5. Each group will share their religion, poster, and map with the class.
6. Students will discuss the following questions as a class:
 - a. Do the areas of concentration for each religion correspond to each religion's birthplace?
 - b. Which religions moved from their birthplace and concentrated in another area of the world today?

Extension: Students will explore a newspaper for articles about religion. Students will discuss the current events associated with religions and the religious dialogue between cultures.

POST-VISIT ACTIVITY**Burial Collage****STANDARDS**

- Visual Arts:** Understanding and Applying Media; Choosing and Evaluating a Range of Subject Matter, Symbols, and Ideas
- World History:** Era 2: Early Civilizations and the Emergence of Pastoral Peoples, 4000–1000 BCE; Era 3: Classical Traditions, Major Religions, and Giant Empires, 1000 BCE–300 CE

UNIT FOUR

SACRED AND SPIRITUAL LIFE – POST-VISIT ACTIVITY

OBJECTIVE

As a class, students will reflect about the burial items and burial practices they witnessed in the *Secrets of the Silk Road* exhibition. Students will map the similarities and differences in Venn Diagrams.

SUGGESTED TIME

50 minutes

PROJECT NEEDS

- ✘ Images of Egyptian burial sites and tomb goods
- ✘ Poster board
- ✘ Glue sticks
- ✘ Scissors
- ✘ Magazines (or classroom computer lab time)
- ✘ Images from the *Secrets of the Silk Road* exhibition found online at <http://www.penn.museum/silkroad>
- ✘ Venn Diagrams (page 36), located in the *Secrets of the Silk Road* Educators' Guide

DIRECTIONS

1. Students will discuss their knowledge of various cultural beliefs in the afterlife.
2. Students will discuss their knowledge of tomb goods associated with the ancient Egyptians and will write a list of these objects on the board.
3. Students will review sample images of tomb goods associated with ancient Egyptians and compare these with the list on the board.
4. Students will discuss the following questions as a class:
 - a. What types of tomb goods from the Tarim Basin's inhabitants did we observe in the *Secrets of the Silk Road* exhibition?
 - b. Were any similarities between the Tarim Basin tomb goods and the ancient Egyptian tomb goods observed? Any differences?
 - c. Were any similarities between the Tarim Basin inhabitants' burial practices and the ancient Egyptian's burial practices observed? Any differences?
5. Students will receive a piece of poster board, magazines, and other art materials.
6. Students will create a collage of objects they would choose to accompany them into the afterlife. If a computer lab activity, students can locate images online and create a Word document of images.
7. Students will examine images of burial objects from the *Secrets of the Silk Road* exhibition.
8. Students will examine their burial collage.
9. Students will record similarities and differences between the objects in their collage and the objects in the *Secrets of the Silk Road* exhibition on the Venn Diagram.

The Silk Road and the people who traveled and traded along its routes all seem to belong to the very distant past. What is their relevance today, in 21st-century America? The Silk Road was instrumental in bringing many items into the markets of the western world, items we now take for granted and use every day. The arts of papermaking and silk production originated in China, spreading to the rest of the world via the Silk Road. Many foods and everyday items, such as watermelons, spices, and bars of soap, which we find in supermarkets today, also traveled along the Silk Road hundreds of years ago. Although technologies and items such as these may well have developed and arrived later— from other sources or via different routes—their early passage from the east marked significant changes in the marketplaces of Europe.

In an age of *globalization* and air travel it is easy to forget that many of the items we use, and much of the food we eat on a daily basis, come from places thousands of miles away. The Silk Road was the first major trade link between Europe and the Far East, and it spread not only technology, food, luxury items and cultural practices, but also created commercial links between distant parts of the world, which have remained in place ever since. The Silk Road created a precedent for international trade that has strengthened over the last 2,000 years, to the point that we now view items which travel thousands of miles, ending up on our supermarket shelves as everyday necessities.

VOCABULARY

globalization the development of an increasingly integrated global economy marked especially by free trade, free flow of goods, and the tapping of cheaper foreign labor markets

PRE-VISIT ACTIVITY

Global Trade Today

STANDARDS

Mathematics: Probability and Statistics

OBJECTIVE

Students will examine global trade today by examining the objects in their bedroom and reporting statistical data of their finds.

SUGGESTED TIME

One evening homework assignment plus 20 minute class discussion.

PROJECT NEEDS

- ✂ *Global Trade Today* assignment sheet, located in the *Secrets of the Silk Road* Educators' Guide
- ✂ Newspaper

DIRECTIONS

1. Students will receive the *Global Trade Today* assignment sheet (page 37) to record their observations.

At home:

2. Students will inventory the items of their bedroom.
3. Students will list ten objects and write where each object was manufactured. Knowing the country of origin is a must.

UNIT FIVE

RELEVANCE – POST-VISIT ACTIVITY

In class:

4. As a class, students will define the word *globalization*.
5. Students will discuss their findings, writing a collective list of product origins on the blackboard.
6. Students will calculate the percentage of products produced in each country.
7. Students will discuss the following questions as a class:
 - a. Do the students find this list surprising?
 - b. Why might so many of the objects be manufactured in other countries?
8. Students will create a bar graph illustrating their finds, where the x axis is the number of products and the y axis is a listing of countries.

Extension: Students will examine a newspaper for articles about trade and globalization. Students will discuss current issues concerning trade politics and the global economy.

POST-VISIT ACTIVITY

Silk Road Timeline

STANDARDS

World History: Era 2: Early Civilizations and the Emergence of Pastoral Peoples, 4000–1000 BCE; Era 3: Classical Traditions, Major Religions, and Giant Empires, 1000 BCE–300 CE

OBJECTIVE

Students will reflect personal meaning about the history of the Silk Road.

SUGGESTED TIME

50 minutes

PROJECT NEEDS

- ✘ Copy of Silk Road Timeline (page 38), located in the *Secrets of the Silk Road* Educators' Guide, one copy per student
- ✘ *Secrets of the Silk Road* catalog or images of objects from the exhibition, found online at <http://www.penn.museum/silkroad>
- ✘ Newspaper

DIRECTIONS

1. Teachers will draw a timeline on the black board, labeling the line from 3000 BCE to 1600 CE.
2. As a class, each student will share his/her favorite object discovered in the *Secrets of the Silk Road* exhibition.
3. Students will place their objects on the timeline. The *Secrets of the Silk Road* catalog and the website images will be consulted for accuracy.
4. Students will examine the timeline handout.
5. Individually, students will select what they feel are the ten most important events that still impact society today.
6. Each student will defend their decisions to the class.

Extensions:

- a. Students will draw pictures associated with each event on the timeline. The pictures will be hung around the classroom to create a visual timeline.
- b. Students will explore a newspaper. Students will discuss the current events, political and social issues, and technologies that they feel will impact history in the next 100 years.

UNIT 1: POST-VISIT ACTIVITY TRADE GAME HANDOUT**Welcome to the Far East!**

Travel to the far reaches of Eastern Asia, walking along the Great Wall and sailing down the Yellow River. China is the world's oldest continuous civilization, ruled by dynasties of emperors who succeeded in governing the huge population wisely and effectively. You—the inhabitants of the Far East, filled with great thinkers, such as Confucius, and mythical dragons and fireworks—must now embark on a lucrative but perilous journey along the Silk Road.

WHAT YOU HAVE

Rice	Rice is your staple food crop! Nutritious, easily transported and able to be stored for long periods of time, rice is your most practical good.
Silk Brocade	Silk production began around 3000 BCE. One of the most beautiful and desirable goods, silk merchants traveled across the continent to trade for this fabric. The blue, yellow, red, and green checked <i>Silk Robe</i> (2nd – 4th century CE) is a fine example of silk brocade from the <i>Secrets of the Silk Road</i> exhibition.
Tea	The Chinese have been growing tea leaves for thousands of years. Known widely for its mildly stimulating quality, tea was brewed both as a common beverage as well as a healing aid.
Pasta	Although accredited to the Italians, the peoples in the far western region of China have been noted to have eaten a “noodle-like food” as early as 3000 BCE. A romantic myth claimed that the explorer Marco Polo brought pasta on his return from China; of course, this has long been debunked. The <i>wonton</i> from the <i>Secrets of the Silk Road</i> exhibition is a fine example of pasta from China.
Porcelain	Porcelain is the most beautiful, as well as the most valuable, type of pottery made in China. Many cultures attempted to create their own version of porcelain; however, none succeeded in surpassing the Chinese in this craft for a long time.
Zhicheng weaving technique	<i>Zhicheng</i> , or “woven in shape,” is dateable to the Han dynasty and was popular among court officials and the nobility. The <i>Shoes with Embroidered Characters</i> (4th century CE) illustrate a fine example of zhicheng from the <i>Secrets of the Silk Road</i> exhibition.

YOUR MISSION

Trading only with your neighbor, Central Asia, you need to obtain:

- ✘ Glass
- ✘ Amber
- ✘ Red Carnelian
- ✘ Jade
- ✘ War Horses
- ✘ Lapis Lazuli
- ✘ Teachings of the Buddha
- ✘ Geometric patterns
- ✘ Wool felted garments

UNIT 1: POST-VISIT ACTIVITY TRADE GAME HANDOUT

Welcome to Central Asia, South Asia, and the Tarim Basin!

Greetings and welcome to Central Asia, south Asia, and the Tarim Basin: lands of snowy mountains, temperate woodlands, hilly pastures, the desert wastelands, and sandy beaches! Your diverse terrain and resilient cultures have stopped Alexander the Great in his tracks, given rise to the great empires of the Mauryas and the Guptas, and provided you with an abundance of natural resources! Your central location provides you with an advantage in the trading route. However, this prime location also places upon you a great responsibility to keep goods flowing between the eastern and western cultures. Make sure to get more than one of each good so you can trade them along to other cultures in the hope that they will eventually reach the far corners of the Asian and European continents.

WHAT YOU HAVE

- Jade** This beautiful green stone is extremely hard, making it very difficult to carve. The tedious process employed in mining and working jade makes this good incredibly desirable as well as incredibly valuable! Jade is coveted for both its beauty and its association with religious and curative properties.
- Gold** Gold is one of the most precious metals in the entire world. Gold is very easy to work with and is also beautiful, making it a desirable commodity to almost every culture.
- Silver** Silver, like gold, is both beautiful and easily worked into goods such as jewelry, statues and bowls. Even more abundant than gold, silver is an excellent trading commodity!
- The wise teachings of the Buddha** South Asia is the birthplace of the original “enlightened one.” You are all great students, learned in the ways of the Buddha, however you must not keep these amazing teachings to yourselves! Spread Buddha’s words of peace and “the middle way.”
- Wool Felted Garments** The earliest piece of felt dates to 2600 BCE and was discovered in present-day Turkey, but this product is a must-have for the cold nights in the desert. The nomadic peoples of Central Asia today still rely upon this fabric-making technique for their livelihood. They live in felt structures called *yurts*.
- Spices** India and Central Asia are renowned for their pepper, ginger, cinnamon and other spices that traveled by land and by sea. Spices were truly a luxury item and used for medicinal purposes in addition to flavoring food.

YOUR MISSION

Trading only with your geographic neighbors, the Far East and the Middle East, you need to obtain:

- ✘ Red Carnelian
- ✘ Greek Pottery
- ✘ Lapis Lazuli
- ✘ Silk
- ✘ Tea
- ✘ Porcelain
- ✘ Olive oil
- ✘ Teachings of Christ
- ✘ Teachings of Moses

UNIT 1: POST-VISIT ACTIVITY TRADE GAME HANDOUT**Welcome to the Middle East**

Travel to the waters of the Red Sea, land of great and glorious things. A cradle of religions, the Middle East is home to Christians, Jews, Muslims, and indigenous religions. Surrounded by desert dunes, petrified forests, beaches and valleys, traders journey along the waterways of the Spice Route for many valuable resources.

WHAT YOU HAVE

War Horses	Known for their agility and speed, these ancestors of today's Arabian stallions, the fastest in the world, comprise the most valuable commodity of Middle Eastern trade.
Arabic Scrolls	The main Islamic art form, Arabic calligraphy is used to adorn tile work, architecture, furniture and pottery. Kufic, the earliest form of Arabic script is known for its angular and elegant form.
Geometric Patterns	Generally used for tiles and architectural embellishment, these patterns created by the best artisans in the world were often printed on cloth to be easily transported and recreated by other artisans across the world.
Lapis Lazuli	This precious stone, originated in modern day Afghanistan, was traded into Egypt and the far reaches of the Middle East. Used mainly in statues and jewelry, this blue stone was a sign of wealth and power.
Teachings of Christ	Christians believe in a single God and that a man named Jesus Christ was the Son of God. Christians feel that they should model their lives on the teachings of Jesus. When Christianity traveled to the Tarim Basin, the peoples developed a form of Christianity called <i>Nestorian Christianity</i> . A Nestorian Christian artifact, the <i>Stone Tablet with Nestorian Cross</i> (14th century, CE), is on-view in the <i>Secrets of the Silk Road</i> exhibition.
Teachings of Moses	Though oppressed by foreign rulers, Judaism was able to survive and prosper in Jerusalem. Israelites: spread the word of the Torah and the laws as communicated to Moses through God.

YOUR MISSION

Trading only with your neighboring regions, Central Asia and the Mediterranean region, by the time the Silk Road period ends, you need to obtain:

- ✘ Amber
- ✘ Rice
- ✘ Tea
- ✘ Jade
- ✘ Gold
- ✘ Silver
- ✘ Olive oil
- ✘ Tin
- ✘ *Zhicheng* weaving technique

UNIT 1: POST-VISIT ACTIVITY TRADE GAME HANDOUT

Welcome to the Mediterranean!

Greetings, and welcome to the Mediterranean region! The great waters of the Mediterranean Sea have provided resources, trading routes and temperate climates for many of the greatest western empires, like the Greeks and the Romans. You are a part of the grand tradition of philosophers, artisans, politicians and merchants who shaped the course of western society. Always leaders in trade and exploration, your curiosity and perseverance have brought you to the wonders that lie along the great Silk Road!

WHAT YOU HAVE

- Glass** Originally created in the Middle East, Roman craftsmen mastered the production of this useful material and were able to produce it cheaply and abundantly.
- Amber** This beautiful orange-yellow stone forms from the hardening of tree sap over many, many years. This stone was traded from the Baltic region around 30,000 BCE along the trade route known as the Amber Road. Profile portraits, or “cameos” were often carved onto the surface of amber and then set into rings or necklaces.
- Red Carnelian** Red Carnelian is a beautiful red stone often carved into beads. Widely traded around the Mediterranean area, this stone appears in many articles of jewelry such as necklaces, rings and bracelets.
- Red and Black Figure Pottery (“Greek” Pottery)** Symbols of Greek craftsmanship, Red and Black Figure pottery were some of the most sought after wares produced by the Greeks. Both functional and beautiful, these bowls, cups and jars spread Greek imagery and culture to every region that acquired them.
- Olive Oil** The olive has been an integral part of life in the eastern Mediterranean from the first stirrings of civilization. Olive oil was valued by many cultures for its medicinal and religious properties. Some scientists today still believe that consuming olive oil can reduce the risks of heart disease and some cancers.
- Tin** The largest industry in the Roman Empire was mining. During the period of the Silk Road, tin mostly came from present-day Britain and was one of the metals used for making weapons and coins.

YOUR MISSION

Trading only with your neighboring geographic area, the Middle East, you must obtain:

- ✘ Spices
- ✘ Silk
- ✘ Rice
- ✘ Pasta
- ✘ Silver
- ✘ Geometric Patterns
- ✘ Arabic Scrolls
- ✘ Gold
- ✘ War Horses

UNIT 1: POST-VISIT ACTIVITY TRADE GAME HANDOUT**Trade Game Conversion Chart****FOR FAR EAST**

All Mediterranean goods:	Trading value of 3 to 1
All Middle East goods:	Trading value of 2 to 1
All Central Asian/Tarim Basin goods:	Trading value of 1 to 1

FOR CENTRAL ASIA/TARIM BASIN

All Mediterranean goods:	Trading value of 2 to 1
All Middle East goods:	Trading value of 1 to 1
All Far East goods:	Trading value of 1 to 1

FOR MIDDLE EAST

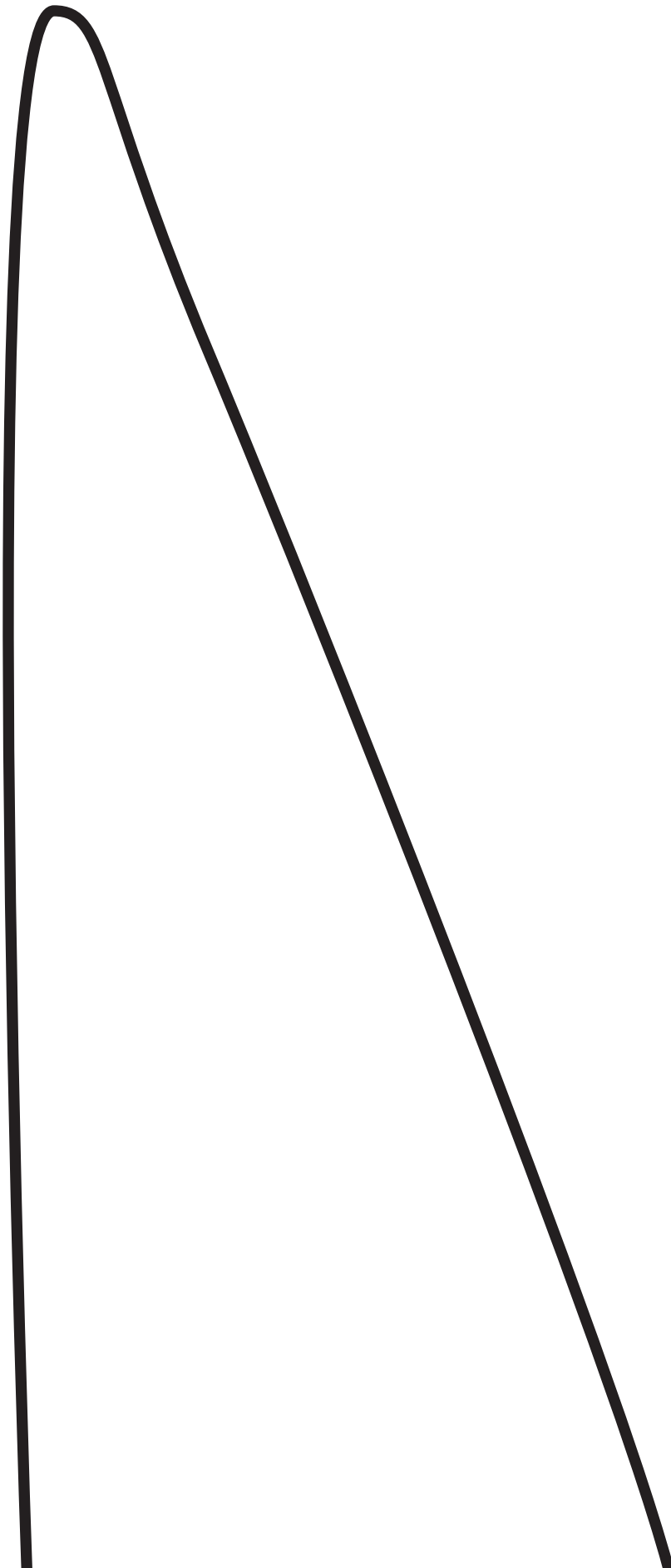
All Mediterranean goods:	Trading value of 1 to 1
All Central Asian/Tarim Basin goods:	Trading value of 1 to 1
All Far East goods:	Trading value of 2 to 1

FOR MEDITERRANEAN

All Middle East Goods:	Trading value of 1 to 1
All Central Asia/Tarim Basin goods:	Trading Value of 2 to 1
All Far East goods:	Trading Value of 3 to 1

STUDENT ACTIVITY HANDOUTS AND WORKSHEETS

TEMPLATE FOR HAT - PLEASE ENLARGE TO LEGAL SIZE (8.5" X 14")



STUDENT ACTIVITY HANDOUTS AND WORKSHEETS

UNIT FOUR

NAME: _____

UNIT 4: MUMMIFICATION OF AN APPLE Freeze Dried Observations Worksheet

Experiment Start Date: _____ Experiment Conclusion Date: _____

Time Apple Slices Were Placed into the Freezer: _____

Observations of Apple Slices after ½ Hour of Freezing: _____

RECORD DAILY OBSERVATIONS IN THE CHART BELOW:

Day Two Date:	Time Observed	Observations
Day Three Date:		
Day Four Date:		
Day Five Date:		
Day Six Date:		
Day Seven Date:		

Day Seven:

Is your apple completely dry? To test apple for complete drying, take one slice out and let it thaw. Observations after thawing: _____

If your apple slice did not turn black, it is completely dry. If the slice did not turn black, place several apple slices in a mug and add ¼ cup of boiling water. Record your observations: _____

After placing in boiling water, try eating the apple slices. Record your observations: _____

NAME: _____

UNIT 4: MUMMIFICATION OF AN APPLE
Embalming with Natron Observations Worksheet

Experiment Start Date: _____ Experiment Conclusion Date: _____

I predict that the apple in the Ziplock bag will: _____

I predict that the apple in the salt, powdered bleach, and baking soda mixture will: _____

RECORD DAILY OBSERVATIONS OF EACH APPLE SLICE IN THE TABLE BELOW:

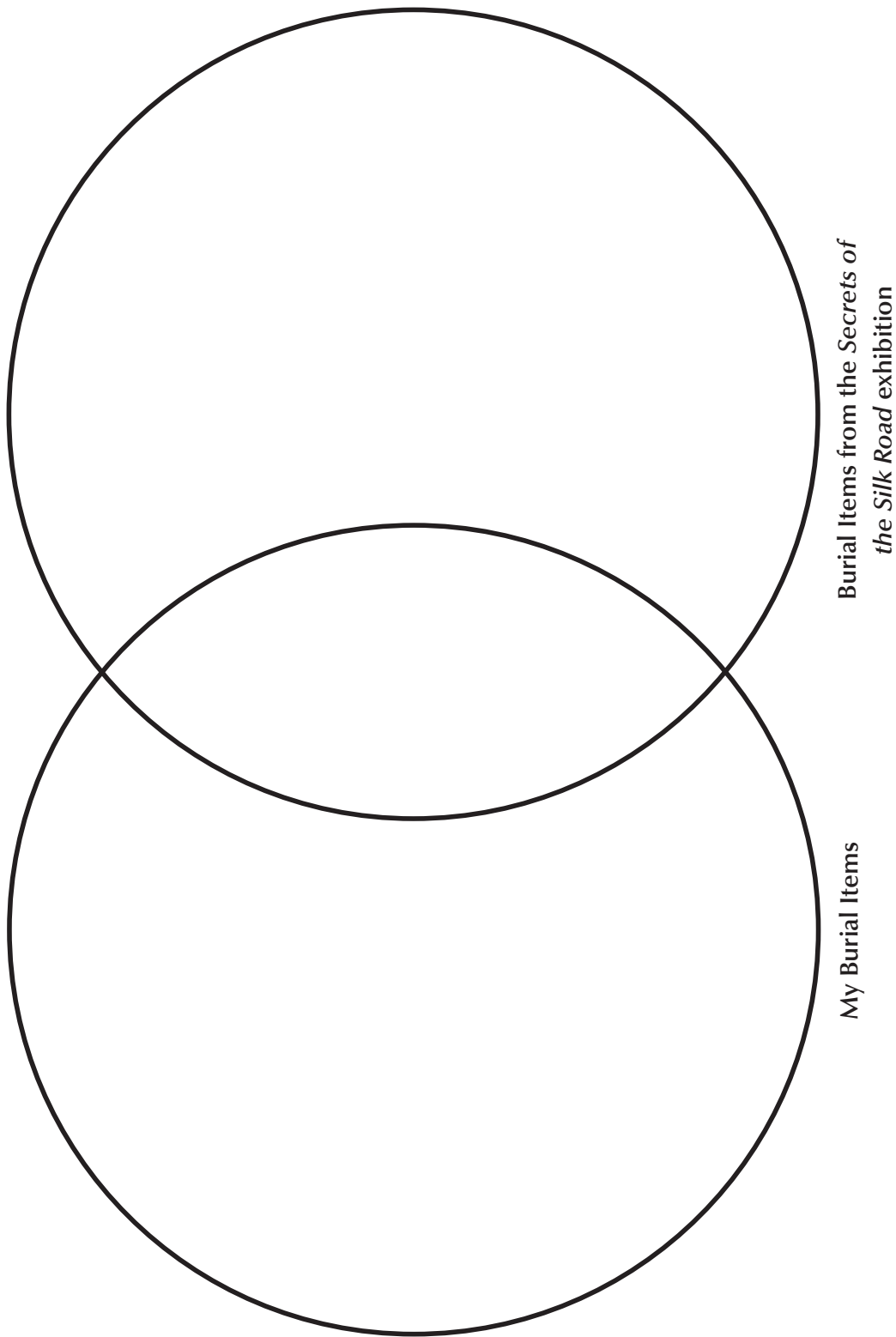
	Mummified Apple	Control Apple
Day One Date and Observations:		
Day Two Date and Observations:		
Day Three Date and Observations:		
Day Four Date and Observations:		
Day Five Date and Observations:		
Day Six Date and Observations:		
Day Seven Date and Observations:		



NAME: _____ DATE: _____

UNIT 4: BURIAL COLLAGE REFLECTION

Map the similarities and differences of your collage and the burial items discovered in the exhibition in the Venn diagram below:



NAME: _____ DATE: _____

UNIT 5: GLOBAL TRADE TODAY

Take an inventory of your room. Notice the production tags on your clothes, shoes, and other personal items. Select ten of the objects you examined and indicate where they were made:

Object 1: _____ Made in: _____

Object 2: _____ Made in: _____

Object 3: _____ Made in: _____

Object 4: _____ Made in : _____

Object 5: _____ Made in: _____

Object 6: _____ Made in: _____

Object 7: _____ Made in: _____

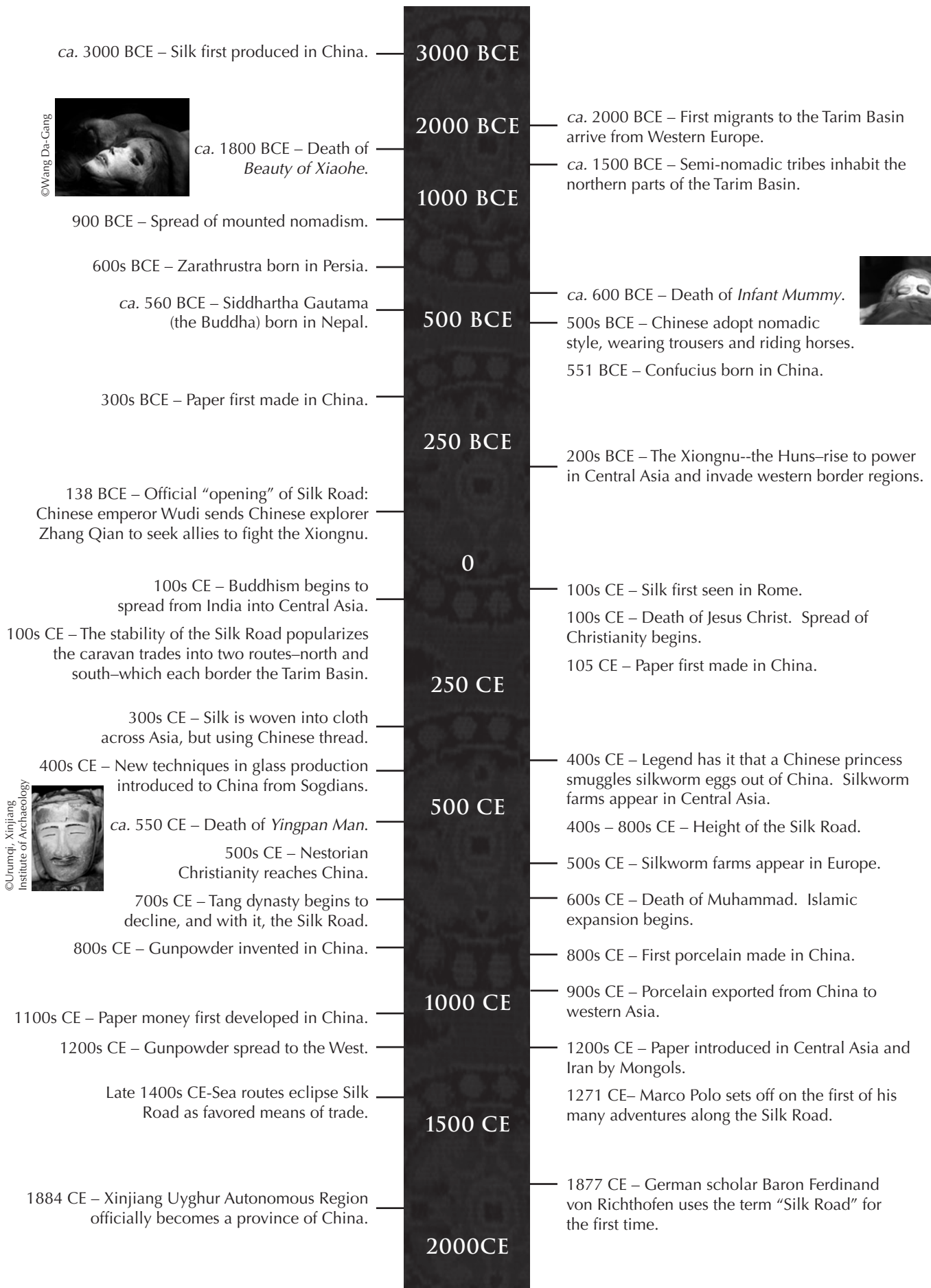
Object 8: _____ Made in: _____

Object 9: _____ Made in: _____

Object 10: _____ Made in: _____



SILK ROAD TIMELINE



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- Mair, Victor, ed. *Secrets of the Silk Road*. California: Bowers Museum, 2010.
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ADDITIONAL RESOURCES

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- Expedition: The Magazine of the University of Pennsylvania Museum of Archaeology and Anthropology* 52, no. 3 (Winter 2010).
- Hadingham, Evan. "The Mummies of Xinjiang." *Discover* 15, no. 4 (April 1994). <http://www.discovermagazine.com/1994/apr/themummiesofxinj359>
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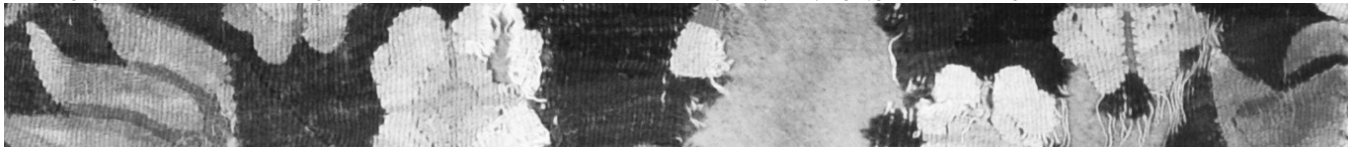
Video

- China's Secret Mummies*. National Geographic Explorer, 2007. www.hulu.com/watch/127586/explorer-chinas-secret-mummies
- China's Tocharian Mummies—Silent Witnesses of a Forgotten Past*. PBS Nova, 1988. <http://video.google.com/videoplay?docid=-1362674044731979808#>

Websites

- Asia Society. <http://www.asiasociety.org>
- PBS. "Mysterious Mummies of China." <http://www.pbs.org/wgbh/nova/chinamum/>
- Stanford University. "The Silk Road Project." <http://virtuallabs.stanford.edu/silkroad/SilkRoad.html>
- China Institute. "From Silk to Oil." <http://www.china360online.org/2009/05/resource-archives/from-silk-to-oil/>

Wall Hanging with Warrior and Centaur Design, 2nd Century BC-AD 2nd Century, Excavated from Sampul, Lop, ©Xinjiang Uygur Autonomous Region Museum Collection



RESERVING A SCHOOL GROUP VISIT

February 5, 2011 to June 5, 2011, Only East Coast Appearance!

Discounted timed tickets for groups of ten or more (includes admission to the rest of the Penn Museum):

Teachers and Chaperones:	\$15.00	Students (High School and below):	\$12.00
College/University Students:	\$15.00	Audio Tour:	\$2.00

To purchase: (215) 746-8183 or grouptickets@museum.upenn.edu. For more information on individual tickets, please visit <http://www.penn.museum/silkroad>. Museum hours during the *Secrets of the Silk Road* exhibition are Tuesday through Sunday, 10:00am - 5:00pm, Wednesday, 10:00am - 8:00pm. Open holiday Mondays (February 21 and May 30). *Secrets of the Silk Road* is also open Fridays, 5:00pm - 8:00pm, when the rest of the Museum is closed. Contact (215)746-8183 or grouptickets@museum.upenn.edu to inquire about special group hours.

MORE. . .

RELATED PENN MUSEUM PROGRAMMING

For more information on the programs below, as well as additional Silk Road-related activities, please visit: <http://www.penn.museum/silkroad>

November 13, 2010

Religions along the Silk Road: speakers on Islam, Buddhism, Christianity, Judaism, and more. (Act 48 and NJ Professional Development credits available.)

February 8, 2011

Educators' Evening Open House

March 19, 2011

Secrets of the Silk Road Symposium and Reception (Act 48 and NJ Professional Development credits available.)

March 26, 2011

Silk Road Culture Day

Silk Road Lecture Series

(Act 48 and NJ Professional Development credits available.)

December 1, 2010

'From Macedon to Ai Khanum: Alexander the Great and Early Greek Contact with the Silk Route,' Dr. Jeremy McNerney

January 5, 2011

'From Baghdad to Bukhara and Back,' Dr. Renata Holod

February 2, 2011

'The Plague: Deadly Travel Companion of Trade Routes,' Dr. Lester Little

March 2, 2011

'Samarkand in the Age of Tamerlane (Timur Lang),' Dr. Renata Holod

April 6, 2011

'Afghanistan,' Dr. Fredrik Hiebert

May 4, 2011

'Looking East from Constantinople: Byzantium and the Silk Road,' Dr. Robert G. Ousterhout

June 1, 2011

'From Venice to Xanadu: Marco Polo's Silk Road Adventure,' Dr. Paul M. Cobb

THE SILK ROAD

