



# TECHNOLOGICAL IMPROVEMENTS

Era Two: 4000-1000 BCE

# THE STORY OF TECHNOLOGY...

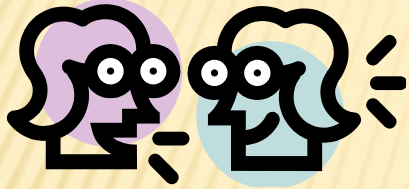
✘ Watch the video clip:

<http://www.youtube.com/watch?v=VJILUAWPe20>

✘ Stop and Jot, then Turn and Talk:

- What does this video make you think of?
- What connections can you make to problems and questions we have already studied?
- How does the story of technology help tell the story of human history?
- What is the role of collective learning (sharing and passing along information) in human history?

# WHAT IS TECHNOLOGY AND WHY DOES IT MATTER?



*Turn and Talk and prepare to share with these questions:*

- What is technology?
- What does “innovation” mean?
- How does technology impact our lives today? Give concrete examples from your life.

# HOW DID TECHNOLOGY CHANGE HUMAN SOCIETIES IN ERA 2?

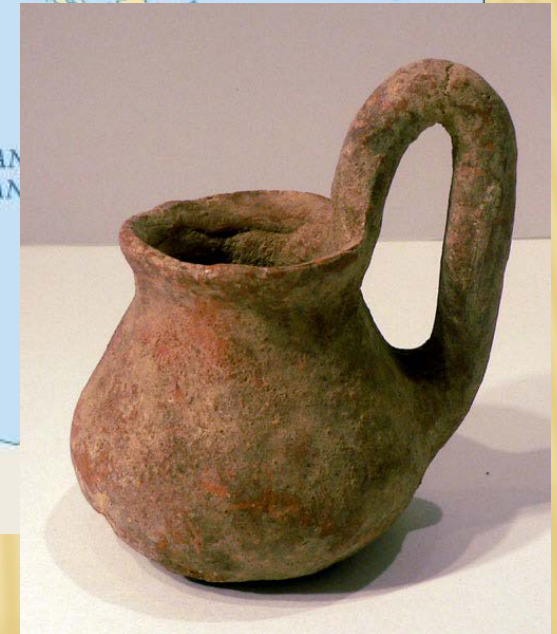
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- **Pottery**
- **Plows**
- **Irrigation**
- **Woven textiles**
- **Metallurgy**
- **Wheels and wheeled vehicles**

- ✘ As we go through the PowerPoint, take notes on the History of Technology handout for each type of technology.
  - + How do you think this technology changed people's lives?
  - + How might it have led to other changes in technology?

## The Beginning of Agriculture, 9,000–500 BCE

# POTTERY



### Stop and Jot:

1. What is this map about?
2. What seems to be the connection between agriculture and pottery?
3. How do you explain this connection?
4. What else do you notice?

# TURN AND TALK:

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- ✘ In what ways is a pot a form of technology?
- ✘ What are the possible uses of a ceramic pot?
- ✘ What do you think it takes to make a pot?
  - + What type of knowledge?
  - + What type of skills?
  - + What type of resources?

# VIDEO CLIP:

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## SEE A WOMAN MAKING THE CLAY & POTTERY

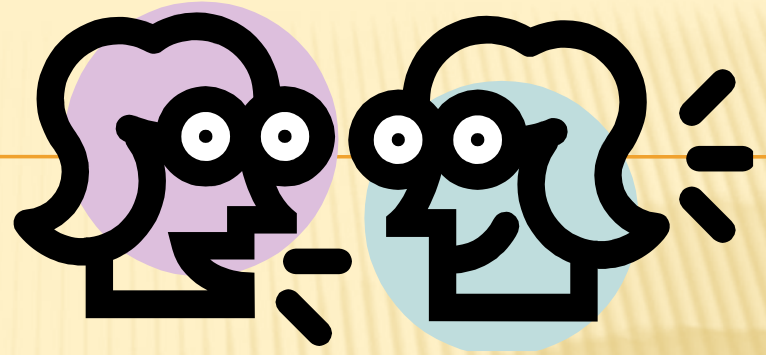
<http://www.youtube.com/watch?v=Br7t2k5fKnQ>



The Potters of San Marcos The Clay and the Pot - YouTube.mp4

**Turn and Talk:** “I used to think and now I know”

## TURN AND TALK:



- What do you notice?
- What was interesting or surprising?
- Do you see anything in this process of making ceramics that relies on modern technology?
- Could this have been done 4,000 years ago? What do you think? Why or why not?
- Why would someone still make pottery this way today?



# THE PLOW

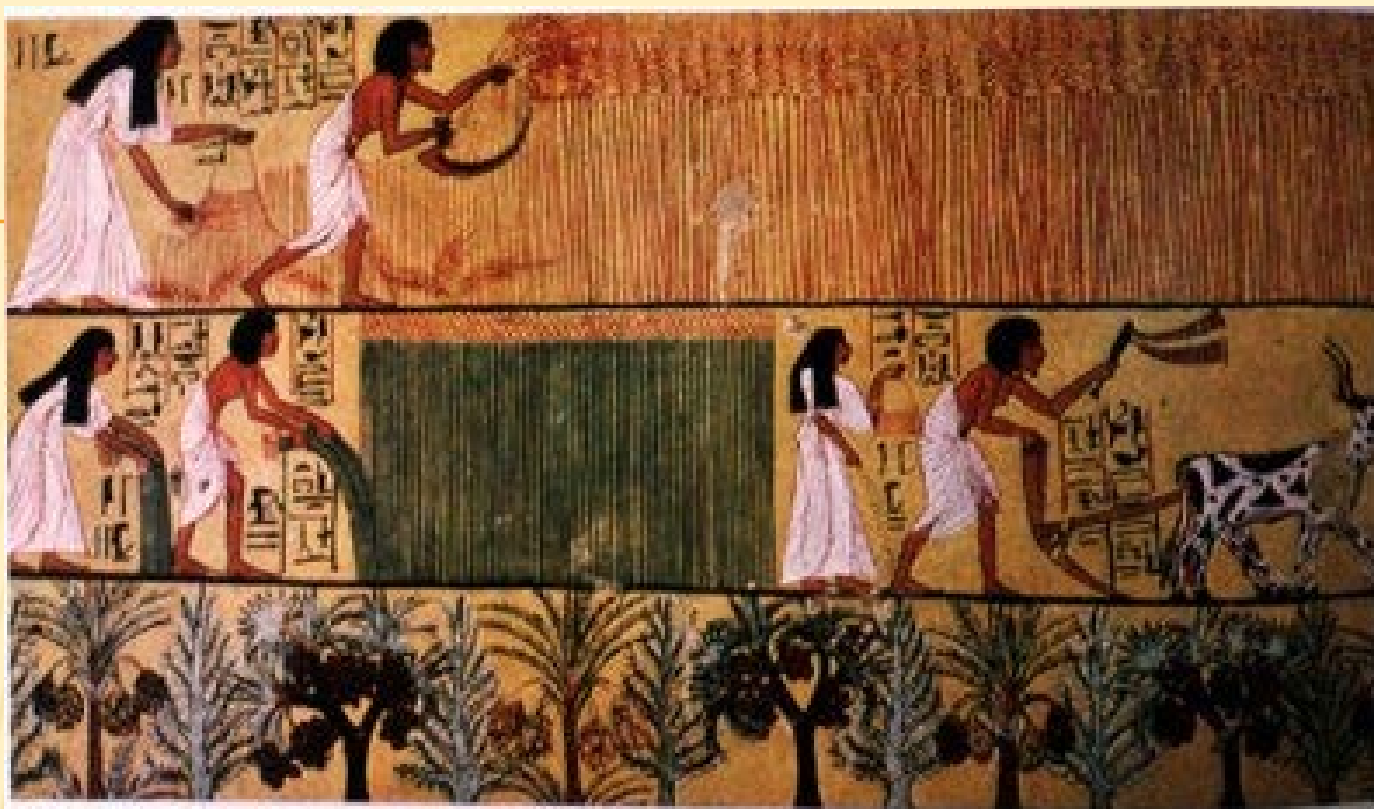
How do you think this technology changed people's lives?

How might it have led to other changes in technology?



From the Louvre, Paris, France

# THE PLOW



From the Louvre, Paris, France

## Stop and Jot:



1. Describe what you see.
2. What is a plow and how is it used?
3. How would it change farming?
4. What might we learn from these images about gender in ancient Egypt?

# THE PLOW

- A plow is used to turn and break up soil.
- Plowing is the most difficult part of farming.
- It was especially difficult in Egypt because of the heavy clay soil (which came from the flooding of the Nile).
- The clay made it difficult to make furrows.



Notice in the picture a man is plowing a furrow with an ox while a woman scatters the seeds behind him. It also depicts the man cutting the grain with a sickle while a woman picks up the cut grain and ties it into bundles.

# THE PLOW

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- ✘ **The plow is considered the most important agricultural implement since the beginning of history.**
- ✘ The invention of plow, pulled by animals, made agricultural production vastly more efficient than before, and permitted far more land to be farmed by fewer people
- ✘ **Results:**
  - + A food surplus
  - + Freed people to do other types of work
  - + Specialization intensified
  - + Beginning of a social class system

# IRRIGATION

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- The supplying water from a source other than rain in order to grow crops.
- The artificial application of water to the land or soil.



**STOP AND JOT PREDICTION:** How do you think this technology changed people's lives? How might it have led to other changes in technology?

# IRRIGATION

Study these two pictures.



1. Describe what you see.
2. What is irrigation and what did it do?



# IRRIGATION

(SUPPLYING DRY LAND WITH WATER... MAINLY TO GROW CROPS)

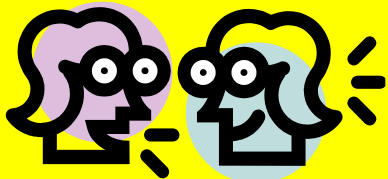


This frieze (c. 2000 B.C.E.) depicts Egyptians using water from the Nile River for irrigation.

In ancient Egypt, the construction of canals was a major undertaking of the pharaohs and their servants. In many places where fields were too high to receive water from the canals, water was drawn from the canals or the Nile directly by a *swape* or a *shaduf*. These consisted of a bucket on the end of a cord that hung from the long end of a pivoted boom, counterweighted.

# IRRIGATION

- Early irrigation consisted of the digging of canals to pull water from rivers or lakes into planted fields.
- Large scale farming was not possible without irrigation.



## Turn and Talk:

What challenges or problems may arise from many people depending on same water supply?



# IRRIGATION

- Irrigated agriculture depended on arrangements among people, including farmers, that allowed them to cooperate in maintaining irrigation ditches.
- To create larger irrigation projects, such as those along the Tigris-Euphrates and the Nile, large groups of laborers were need.



# IRRIGATION

Regulations assured that users along the river would have equal access to the water supply.



Excerpt from Hammurabi's Code from Babylon (About 1700 BCE):

55. If a man opens a canal for irrigation and neglects it and the water floods a nearby field, he shall pay grain to the owner of the adjacent field.

# WOVEN TEXTILES

## Textiles:

- cloth or fabric that is woven, knitted, or otherwise manufactured
- raw material used for making fabrics: raw material that is used for making fabrics, e.g. fiber or yarn



## Stop and Jot Your Initial Thoughts:

- How do you think this technology changed people's lives?
- How might it have led to other changes in technology?

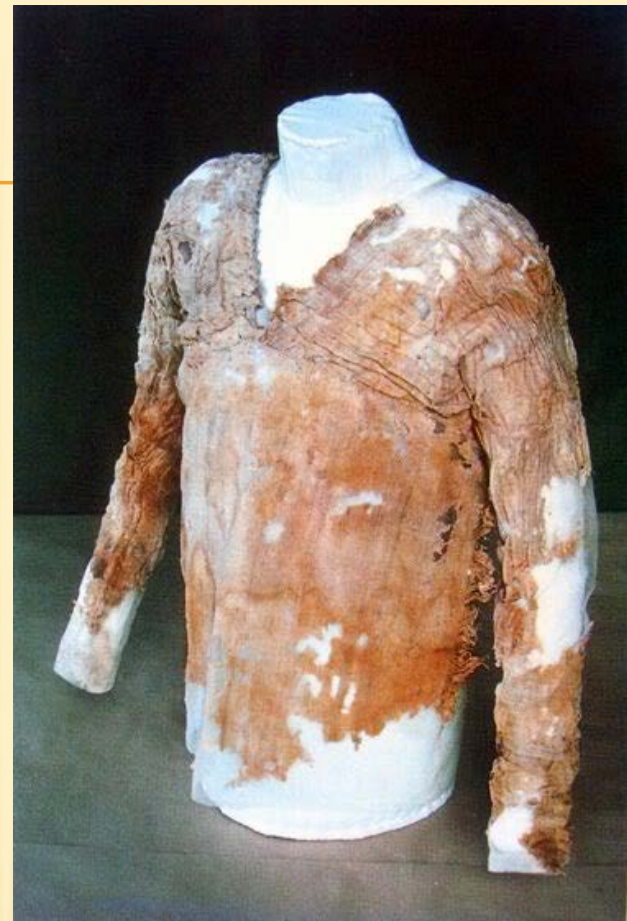


# WOVEN TEXTILES

Study the pictures on this slide.



1991-1786 BCE depiction of Egyptian Aamu people.



Oldest known garment,  
from Tarkhan Egypt, ca 3,000 BCE

## Turn and Talk:



- What do you notice? What catches your interest or attention?
- What can we learn about an ancient culture from studying their clothing?

# WOVEN TEXTILES



Study this is tomb mural from the 15<sup>th</sup> Century B.C.E.

**Social Hierarchy :** an order of social classes with producers at the bottom and leaders or kings at the top.

- ✘ How does this mural help explain social hierarchy in ancient Egypt?
- ✘ Who do you think is in charge?
- ✘ How might the clothing provide evidence of social hierarchy in ancient Egyptian society?

# STUDENT HANDOUT 2: TEACHER MODELING AND THINK-ALOUD

## Student Handout 2: An overview of the history of technology

**As you read about each type of technology and its development, talk to the text. In the space provided, jot down questions and connections... what does this make you think about? What questions do you have? What do you wonder?**

### **Teacher Model- Fire: from 500,000 years ago**

An event of crucial importance in the development of technology is man's taming of fire. This probably happened 500,000 years ago in China, where the caves occupied by Peking man contain what appear to be hearths. Some experts believe there is evidence of the use of fire much earlier in south Africa.

It would be many millennia before fire is adapted for any purpose other than for warmth and for roasting meat and root vegetables. But more than 250,000 years ago hunters realized that the sharpened point of a wooden spear can be hardened by charring it in embers.

# METALLURGY...

*The art and science of producing metal goods, all the way from mining and extracting metal from mineral ores to the shaping of metal objects.*



## Turn and Talk:

- Why is it such a big deal that humans learned to make bronze?
- Why didn't foragers figure out how to make bronze?

# BRONZE AGE METAL ARTIFACTS...



The Rillaton Gold Cup,  
Early Bronze Age, 1700-1500 BC  
From Rillaton, Cornwall, England

[http://www.britishmuseum.org/explore/highlights/highlight\\_objects/pe\\_prb/t/the\\_rillaton\\_gold\\_cup.aspx](http://www.britishmuseum.org/explore/highlights/highlight_objects/pe_prb/t/the_rillaton_gold_cup.aspx)



A unique shallow , bronze basin on three wheels of Eastern Zhou, China (6th - 5th century B.C.E.).



Gold dagger with lapis handle and sheath, from Royal Cemetery at Ur, dating circa 2,400 BC



## Stop and Jot:

- How are these artifacts evidence of specialization?
- What jobs and resources were needed to make them?



# WHEELS AND WHEELED VEHICLES



## Turn and Talk:

- In what ways do you think the invention of the wheel changed the lives of people in ancient civilizations?
- What tasks would have been easier to do with wheels and wheeled vehicles?

# CHARIOTS... TUT'S WHEELS

## Stop and Jot:

- What is a chariot?
- What made it move?
- How do you think King Tut used his?



# CULTURAL DIFFUSION...

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## WHAT IS IT AND WHAT DOES IT HAVE TO WITH TECHNOLOGY?

- ✘ Culture: The way of life of a group of people... include all of their customs, their food, language, music, etc.
- ✘ Diffusion: The spreading out of something; something spreading out from a central point
- ✘ So what is cultural diffusion? With your Turn and Talk partner, take the two definitions above and combine them to create your own definition of cultural diffusion.

# SPREAD OF CHARIOTS... BCE

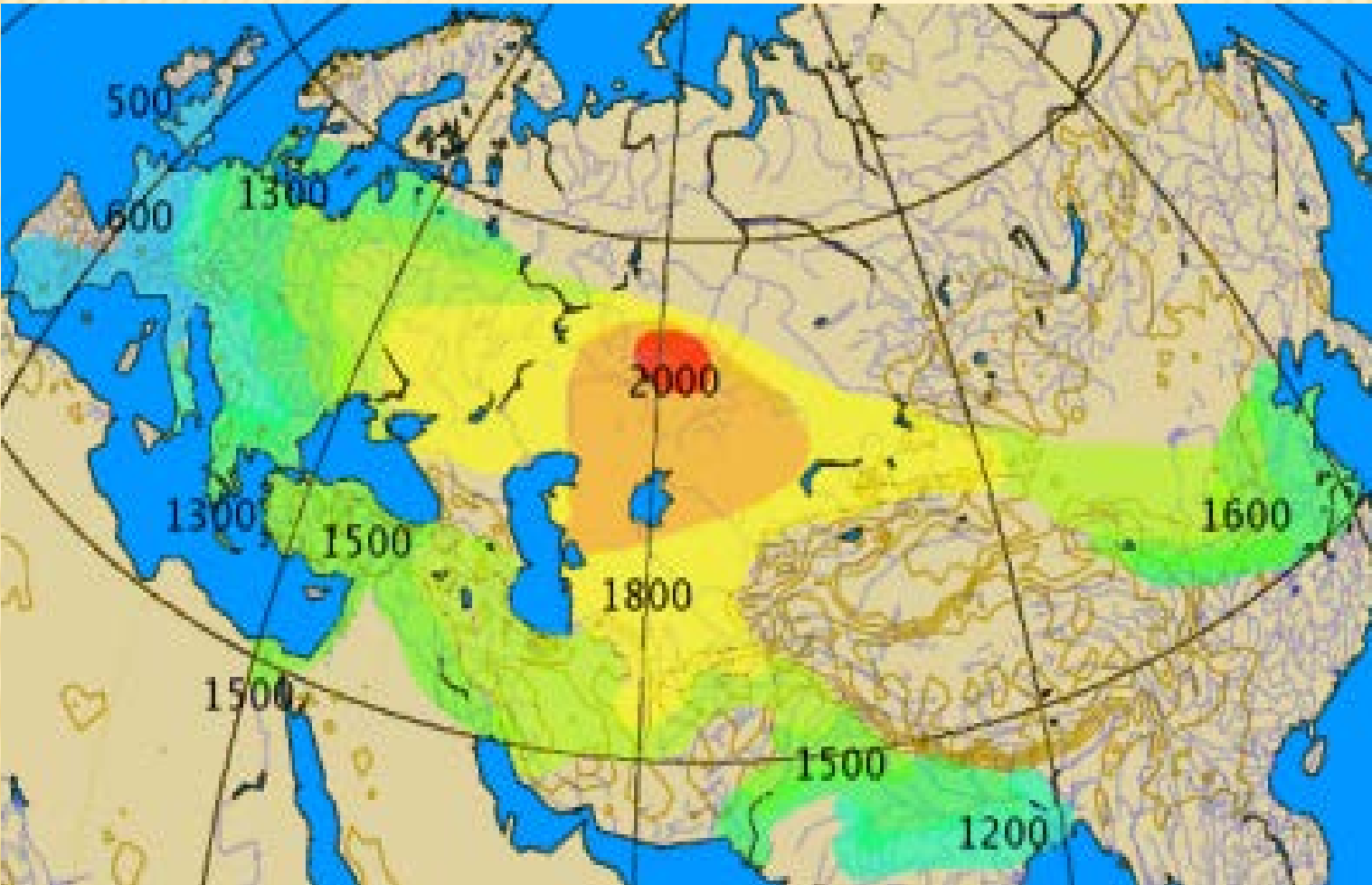


## Turn and Talk:

What do you notice? Where was the chariot probably invented?

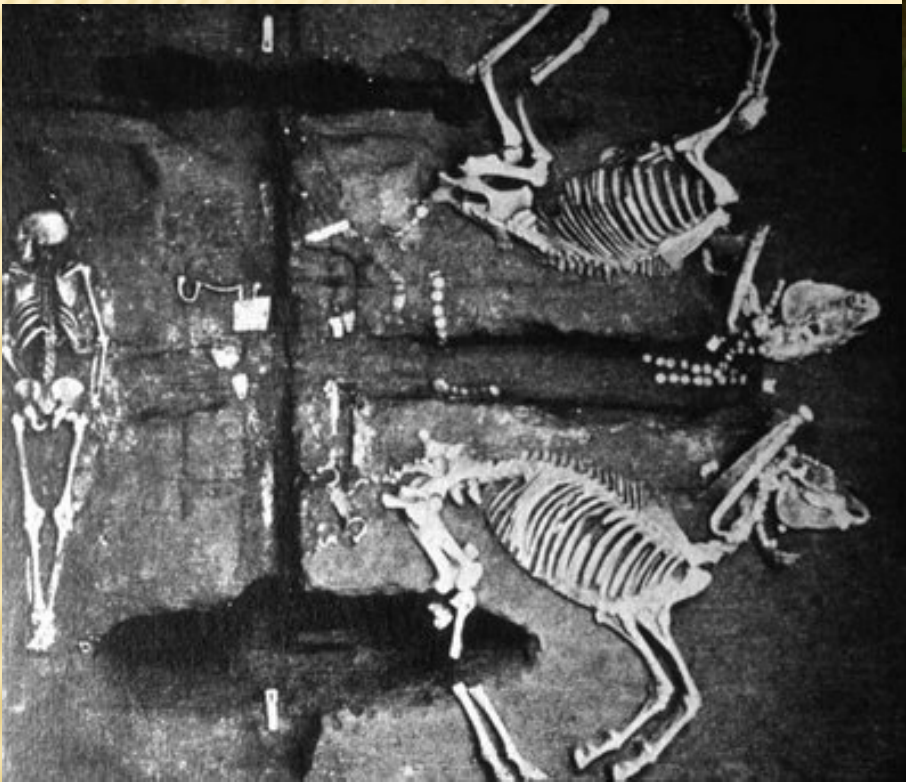
How long did it take to spread it over Eurasia?

How is the chariot an example of cultural diffusion?



# CHARIOT IMAGES...

FROM THE MEDITERRANEAN TO CHINA



China: Shang Dynasty Burial of Horse and Chariots (1700-1000 BC/BCE)



Mycenaean Chariots (mid 2nd Millennium)

Turn and Talk:



- Why do you think chariots were important?
- How did the chariot intensify the speed of cultural diffusion?

# THINKING ABOUT CHANGE OVER TIME:

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Turn and talk with your partner, and then compare ideas with another turn and talk pair on these questions:

- 1) How would trade have been different before these technologies? What would have been traded and how? What would people have needed from other places?
- 2) How would conflict between groups of people have been different before these technologies? Why and how would people have fought?
- 3) So how do you think these technologies (bronze and wheels, for example) changed trade and conflict?
- 4) How do you think these technologies changed over the next 1,000 years? Why do you think they changed over time? To what extent are they still important today?

# THE TECHNOLOGY FEEDBACK LOOP....



# BUT... SO WHAT?

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## EXIT SLIP:

- How did these technologies change the way in which people:
  - lived?
  - worked?
  - and interacted?



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