

## Week 06 Slides

# Native American Influences on Architecture

# Native American Contributions to American English

# The Inca - The Maya

(Weatherford chapters 12 - 14)

Montclair State University Department of Anthropology  
Anth 140: Non Western Contributions to the Western World  
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# Week 06; Lecture 01

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## Native American Influences on Architecture; Native American Words in American English; The Inca; The Maya

The learning objectives for week 06 are:

- to discover some of the architectural contributions from Native Americans
- to note some of the English words from Native American languages
- to learn a few of the achievements of the Incas and pre-Inca peoples of the Andes
- to learn a little about Maya astronomy and mathematics

## Native American Contributions to Architecture, American English; The Inca; The Maya

Terms you should know for week 06 are:

- great room
- hurricane
- Canada (linguistic origin of)
- Quipus
- Nazca
- Tikal-is one of the most important Maya cities and archaeological sites, now in Guatemala. It had up to 50,000 inhabitants in 600 AD.



# Native American Contributions to Architecture, American English, Inca, Maya

## Week 06 Sources:

- Aveni, Anthony. 2000. *Nasca: Eighth Wonder of the World?* London: British Museum Press. Overview of 80 years of scientific and non-scientific attempts to explain the lines and drawings of Nazca.
- Bauer, Brian S., and David S. P. Dearborn. 1995. *Astronomy and Empire in the Ancient Andes: The Cultural Origins of Inca Sky Watching*. Austin: University of Texas Press. An astrophysicist combines with an archaeologist to unravel the impressive level of Inca astronomical knowledge.
- Hughes, J. Donald. 1999. Ripples in Clio's Pond: Conservation in the Inca Empire. *Capitalism, Nature, Socialism – A Journal of Socialist Ecology* 10(4):69-76.
- Moseley, Michael E. 1992. *The Incas and Their Ancestors: The Archaeology of Peru*. London. Thames and Hudson. Best overall introduction to the Incas and their ancestors.
- Patterson, Thomas C. 1991. *The Inca Empire: The Formation and Disintegration of a Pre-Capitalist State*. New York: Berg. History and social structure of the Inca empire.

# Native American Contributions to Architecture, American English, Inca, Maya

## Week 06 Sources: -- Continued

O'Brien, Jane. 2015. Inca Road: The ancient highway that created an empire. BBC News Magazine, 02 July, 2015. Washington. <https://www.bbc.com/news/magazine-33291373>

Weatherford, Jack. 1991. *Native Roots: How the Indians Enriched America*. New York: Fawcett Columbine. Pages 199–202.

Zuidema, R. Tom. 1990. *Inca Civilization in Cuzco*. Austin: University of Texas Press. Translated from the French by Jean-Jacques Decoster. Details of Inca astronomy, architecture, surveying knowledge, and their calendar.

### Video

*Peruvian Weaving—a Continuous Warp for 5,000 years*. [Sprague Library Video #4010]. Archaeologists trace one of the oldest known textile processing traditions.

# Native American Architectural Contributions

- The Stockade: Algonquian speaking Indians of Virginia taught settlers to build walls of posts with sharp points. The Indian stockade was the prototype of the American military fort
- The Sod House: White settlers in the American Plains copied the Native American pit houses or "earth lodges" that provide protection against tornados; can be cheaply insulated
  - Sod house today called "earth berm" construction - widely used in environmental house building in cold North American climates - combines with "heat pump" to cut energy costs

# Native American Architectural Contributions

- The Plank House: on northern Pacific Coast. European settlers copied Native American rectangular house built above ground and with attractive woods such as redwood or cedar
- Frank Lloyd Wright: used Native American building ideas such as
  - minimal interior walls,
  - free-flowing space;
  - led to idea of the "great room."



## Native American Words in American English

- canoe
- moccasin
- parka
- pancho
- toboggan
- hammock

Arawak or Carib

Algonquian

Aleut

Auricanian/Mapuche

Micmac

Taino

# Native American Words in American English

- cigar
- tobacco
- maracas
- kayak
- teepee
- tomahawk

Mayan

Arawakan

Tupi

Eskimo

Dakota

Algonquian

## Native American Words in American English

- Hurricane
- Chinook
- blizzard
- Pogonip

Carib

Salish: moist warm  
wind, now also a type  
of helicopter

First known white use  
by Davy Crockett in  
1834

Paiute: ice fog;  
common in far west  
of US

# Native American Words in American English

- Quinine                      Quechua
- Savanna                      Taino
- Hickory                      ?
- Pecan                      ?
- Potato                      Quechua
- Tomato                      Nahuatl (Aztec)



# Native American Words in American English

- Avocado Nahuatl
- Chocolate Nahuatl
- Mangrove ?
- Raccoon ?
- Caucus Algonquian
- Barbecue Taino
- hootchy-kootchy Hochinoo (Alaskan group)
- Punk Delaware

Source: Weatherford, Jack. 1991. *Native Roots: How the Indians Enriched America*. New York: Fawcett Columbine. Pages 199–202.

## Native American State Names

- |                |                                      |
|----------------|--------------------------------------|
| 1. Alabama     | Choctaw for panther-<br>three-killed |
| 2. Alaska      | Aleut for peninsula                  |
| 3. Arizona     | Papago for small<br>springs          |
| 4. Arkansas    | ?                                    |
| 5. Connecticut | Algonquian for long<br>river         |
| 6. Dakota      | Dakota for friend                    |

# Native American State Names

- |              |  |
|--------------|--|
| 7. Hawaii    | Hawaiian for<br>homeland                 |
| 8. Idaho     | ?  |
| 9. Illinois  | The Illini people                        |
| 10. Iowa     | Siouan for beautiful<br>land             |
| 11. Kansas   | The Kansa People                         |
| 12. Kentucky | Algonquian for dark<br>and bloody ground |

# Native American State Names

- |                          |   |
|--------------------------|---|
| <b>13. Massachusetts</b> | <b>The Massachusetts people</b>                   |
| <b>14. Michigan</b>      | <b>Ojibwa for great water</b>                     |
| <b>15. Minnesota</b>     | <b>Siouan for waters that<br/>reflect the sky</b> |
| <b>16. Missouri</b>      | <b>Dakota for water flowing<br/>along</b>         |
| <b>17. Mississippi</b>   | <b>Algonquian for big river</b>                   |
| <b>18. Nebraska</b>      | <b>Omaha for flat river</b>                       |

# Native American State Names

19. Ohio	Iroquoian for good river
20. Oklahoma	Choctaw for red people
21. Oregon	Algonquian for beautiful water
22. Tennessee	Cherokee name of a village
23. Texas	Caddoan for friend
24. Utah	The Ute people

## Native American State Names

25. Wisconsin

Algonquian for place of the  
beaver

26. Wyoming

Algonquian for large prairie

27. Delaware

Origin in dispute --

Delaware people, or  
from Lord De La Warr,  
a colonial official

## Native American State Names

Canada

Iroquoian for  
village

Mexico

Nahuatl for place  
of the Mexica  
(Aztecs)

## Non Western Words in American English 2013 Update

If you like the study of word origins - etymology - wait for Week 11 Lecture 02 where there are many more examples and links to sites with lots of Non Western words in English.

Also Week 08 the Black Athena debate has examples of Ancient Egyptian and Ancient Hebrew words in English



## Non Western Words in American English 2014 Update: Navajo Code Talkers

A major cause of the U.S. military victory over the Japanese in World War 2 was a group of about 430 Navajo Native Americans who developed the only oral military code that has never been broken.

Navajo "code talkers" devised catchy phrases that - even if translated into words - could not be understood except by Navajo speakers. Because the Navajo language was understood by no one in Japan, this double-level code could not be broken.

Many Navajo code talkers worked right in the fox holes of battles - identifying enemy positions from the front lines. Many died.

## Non Western Words in American English 2014 Update: Navajo Code Talkers

Ironically, the code talkers had been punished in white controlled schools prior to the war for speaking their own language - fortunately for U.S. forces, many had secretly kept their language alive.

Read more about this Native American contribution in the obituary of Chester Nez, one of the code talkers who died on June 4, 2014. The article includes examples of how the code worked. Click on the link below:

Source:

<https://www.nytimes.com/2014/06/06/us/chester-nez-dies-at-93-his-native-tongue-helped-to-win-a-war-of-words.html?module=Search&mabReward=relbias%3Ar&r=0>

## Non Western Words in American English 2014 Update: Navajo Code Talkers

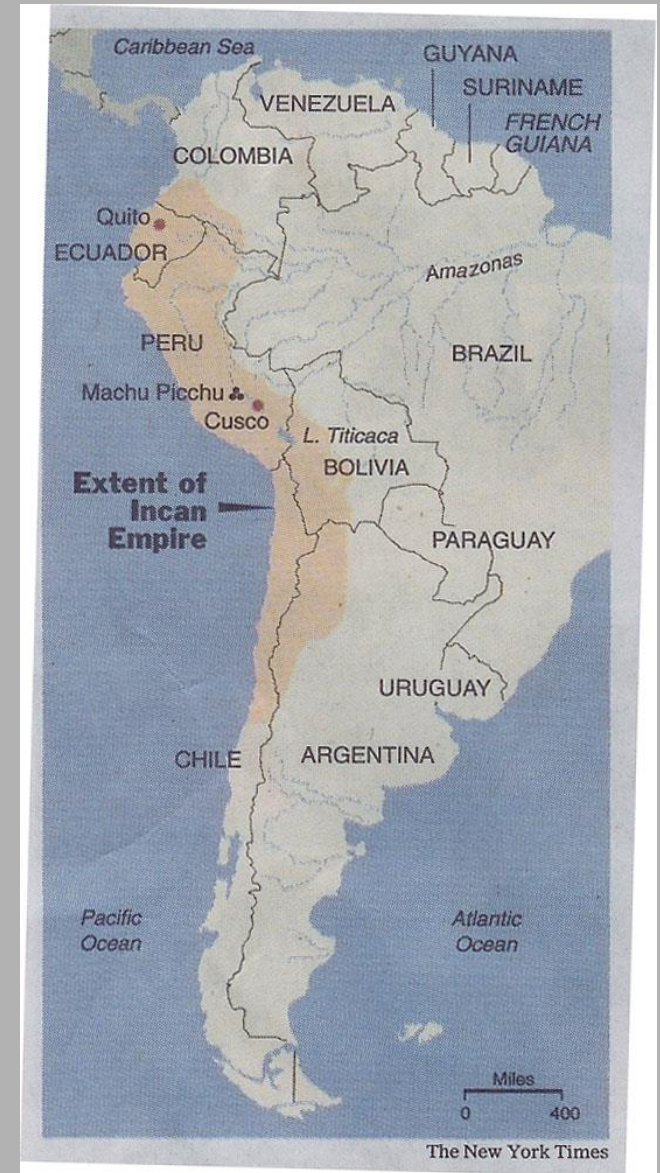


See also:

<https://navajocodetalkers.org/>

# The Inca

- **Empire in 1531**
  - 1. Was probably the largest nation on earth at the time (larger than Ming China or the Ottoman Empire, the other two large empires of the time.)
  - 2. Was the largest state ever created in the western hemisphere.
  - 3. Was built on the second most difficult terrain on earth, after the Himalayas.



## The Inca

4. The Inca themselves called it *Tahuantinsuyu*, the "land of the four quarters." This referred both to administrative boundaries and to astronomical concepts.
5. Had a population of 10 million or more.

Source: Moseley, Michael E. 1992. *The Incas and Their Ancestors: The Archaeology of Peru*. London: Thames and Hudson. Pages 7-8.



## The Inca Capital of Cuzco in 1531

The city [was filled with]...spacious malls with sparkling fountains...paved avenues flanked by cut-rock palaces, villas, halls, temples, stone walls shimmering with brilliant hues of gold and silver, and shrines...The city was unbelievable [to the conquistadors] because there was nothing of comparable splendor in [Spain]...was home of Inti the Sun god whose temple of Coricancha was decorated with gold and precious stones.

# The Inca

- Roads

By the time of the Spanish conquest in 1532, Inca and pre-Inca peoples had constructed the world's longest high quality road system. The Inca main roads ran through some of the world's most difficult terrain for more than 5,000 miles, from Ecuador to Chile.

## The Inca

- Inca roads had *tambos*, or storehouses and inns, every 14 miles. Their system of *chasquis*, or runners, was faster than the US pony express. The Inca and their predecessors also built some of the world's finest bridges.



## 2014 Update: Inca Roads

As of 2014, the United Nations Educational, Scientific and Cultural Organization's World Heritage Committee has received a proposal from 6 South American countries for making several sections of the Inca road network a World Heritage Site. Read more about the road network and its historical significance -

Source:

<https://www.nytimes.com/2014/06/19/arts/design/protection-sought-for-vast-and-ancient-inca-road.html?module=Search&mabReward=relbias%3Ar%2C%5b%22RI%3A9%22%2C%22RI%3A17%22%5d&r=0>



## The Inca

- The total road length built by ancient Peruvians is at least 14,000 miles.

Source: Weatherford, Jack. 1988. *Indian Givers: How the Indians of the Americas Transformed the World*. New York: Fawcett Columbine. Pages 241–45.

The Inca called their network the the *Qhapaq Ñan*, or Main Andean Road.

To see the official UN site with details of the proposed 2014 heritage site stops, click [here](#).

# The Inca: Forerunners of Sustainability?

Modern engineers are now studying Inca road building techniques to see why Inca roads are resisting the collapse experienced by many modern roads in the Andes area. For details about this recent discovery, click on the link below:

<https://www.bbc.com/news/magazine-33291373>



# The Inca

To watch a 3 minute youtube video of modern Peruvians building a bridge as their Inca ancestors had done, click [here](#).

(Includes some beautiful Andean background music; note also how the bridge is built using some of the ancient weaving techniques for which the Andean people are famous.)



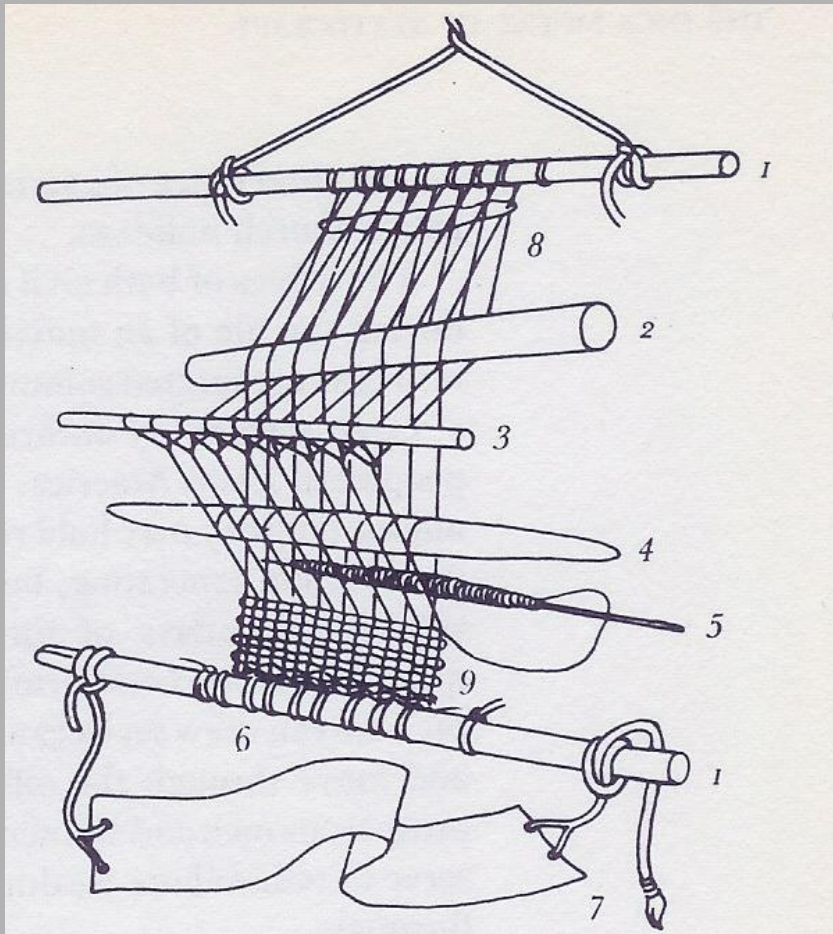
## The Inca

- Canals
  - Inca and pre-Inca peoples built hundreds of miles of canals to an accuracy of  $\frac{1}{2}$  degree of incline and made many innovations such as wide versus narrow flows to control water speed. Western scientists did not equal pre-Inca surveying and building techniques until 800 years after the Peruvians built their canals.



## The Inca

- The Backstrap Loom
  - Inca and pre-Inca peoples invented one of the finest weaving devices ever. The quality of Peruvian weaving today is still among the best in the world.



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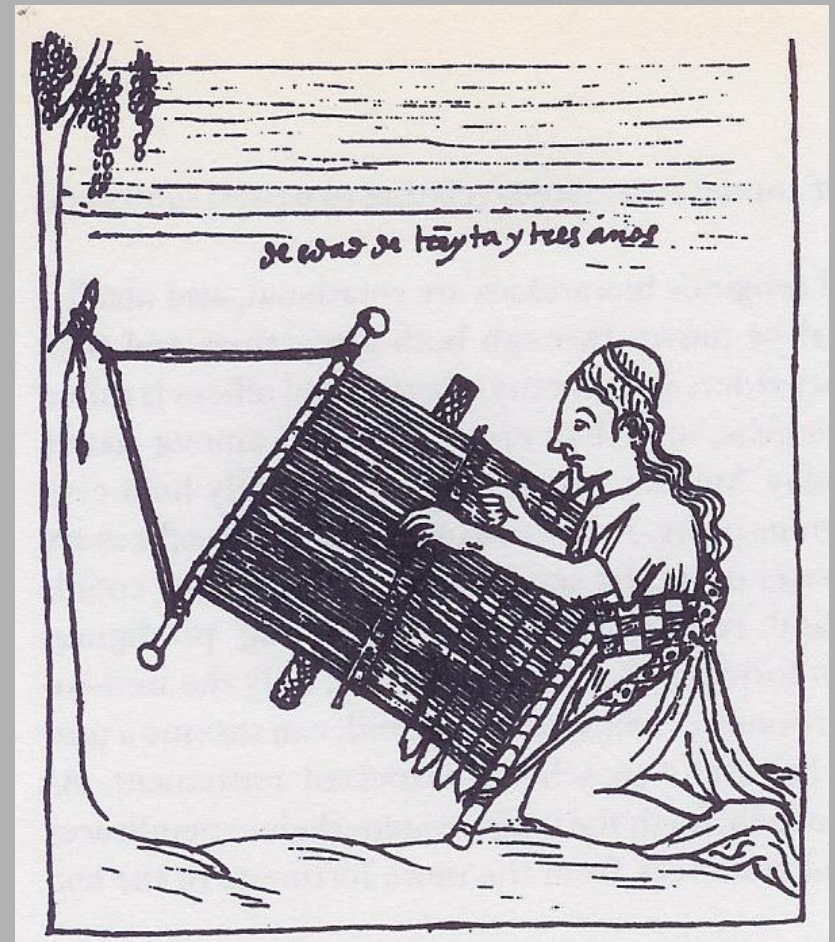


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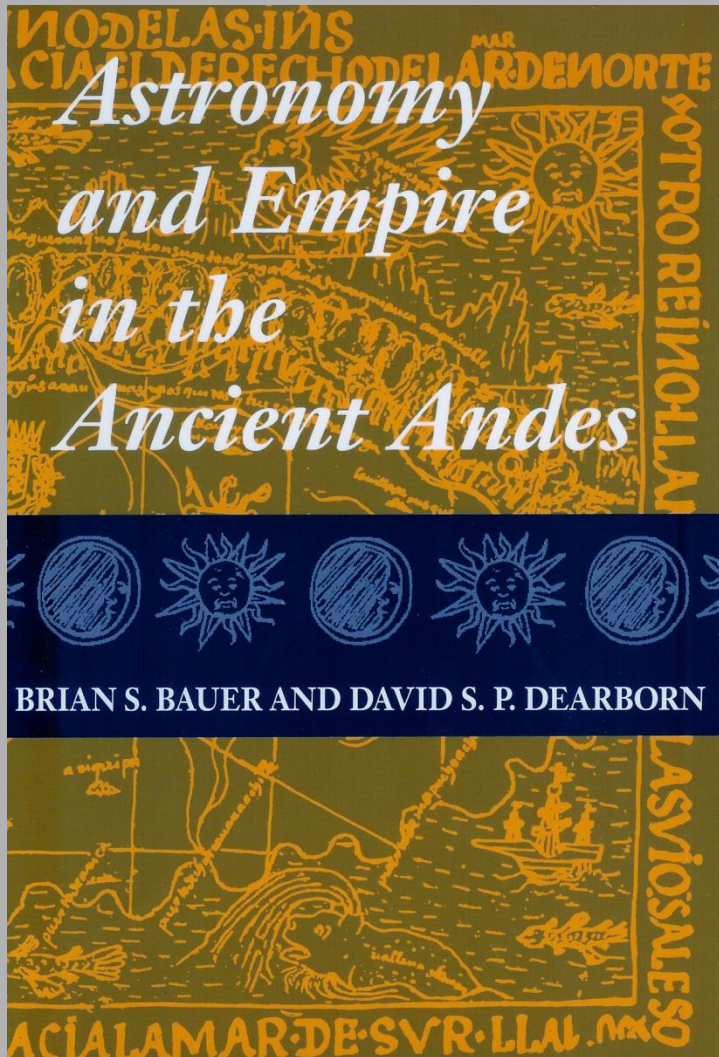


## The Inca

- Much of our knowledge of the Inca comes from drawings by Guamán Poma -- a Spanish-educated Inca who wrote a 1,200 page letter to the King of Spain in 1613





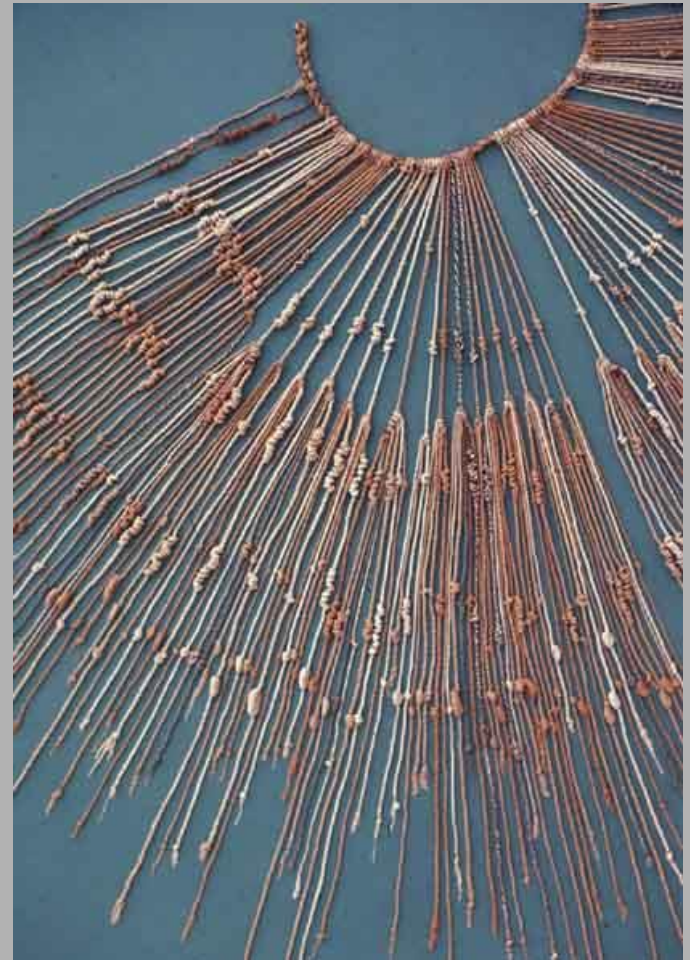


## The Inca

- Astronomy
  - Inca and pre-Inca peoples observed the movements of the sun and moon, and were familiar with several constellations and the movements of star systems through the night sky. Their astronomical knowledge is today being rediscovered by modern astronomers.

## The Inca

- Only world empire without writing
- But did have a written mathematical system called “quipus”



## The Inca

- Quipus are knots
- Different knots have different numerical values







## The Inca

- Now thought quipus used for tax calculation;
- Also probably for calendar
- Other uses?



## Inca Quipus: 2016 Update

On 3 January, 2016 the New York Times reported on some new discoveries of the uses of quipus now understood to have possibly been part of a food storage or sales management system. Different colors may have referred to different food items. Click the link [here](#) or just below to read the article and see additional photos of quipus:

[https://www.nytimes.com/2016/01/03/world/americas/untangling-an-accounting-tool-and-an-ancient-incan-mystery.html?ref=world&\\_r=0](https://www.nytimes.com/2016/01/03/world/americas/untangling-an-accounting-tool-and-an-ancient-incan-mystery.html?ref=world&_r=0)

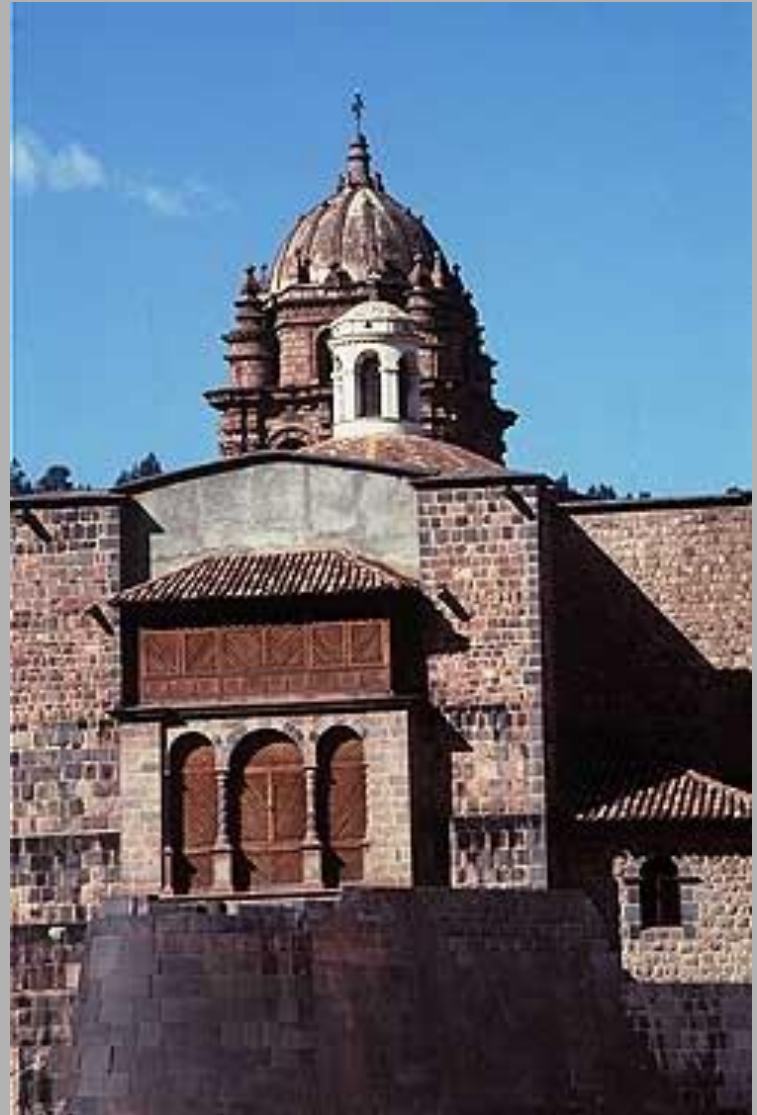


## The Inca

- The Inca capital city of Cuzco laid out in the shape of a giant puma.
- Significance of this surveying design still not known.

## The Inca

- The Coricancha, or main temple was dedicated to the Sun.
- The temple forms the tail of the puma.



## The Inca



- The Ceques of Cuzco
  - Several lines or “ceques” emanate from the Coricancha
- The 41 or 42 ceques lead in straight lines to points on the hillsides above Cuzco.

## The Inca

- On these points, the Inca built stone pillars called gnomons by astronomers today. These gnomons apparently cast shadows from the sun during the day, or pointed to the location where star groups of particular religious significance to the Inca rose or set in the night sky.

## The Inca

- Inca called these small shrines “huacas”
- Four of the ceques of Cuzco divided the Inca empire into four regions (suyus). Additional ceque lines subdivided the regions into smaller administrative zones.

## The Inca

- One major ceque line follows on the ground the exact path of the Milky Way. Inca astronomers had names for several stars and constellations and knew about the movements of the stars in the night sky at different times of year. It is likely the layout of Cuzco and the Coricancha had something to do with star patterns.

## The Inca Ceques: A Calendar?

- The ceques emanating from the Coricancha line up with 328 huacas or sacred sites on the hills above Cuzco.
- Colgate University Astronomy Professor Tony Aveni notes that 328 is the precise number of days in a 12-month lunar sidereal year.

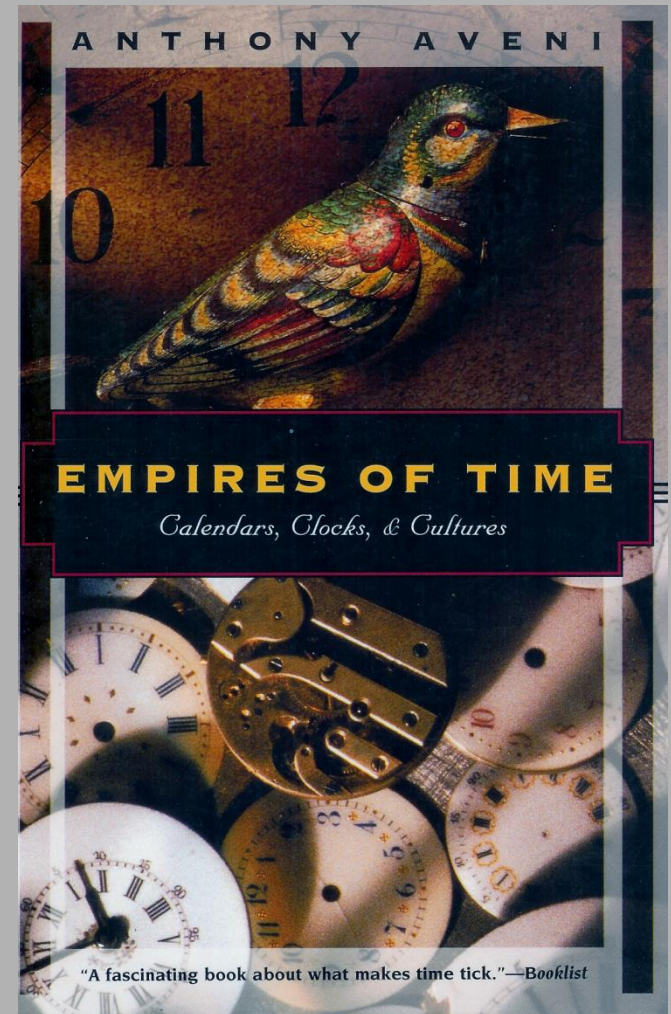
## The Inca: A Calendar?

- A sidereal calendar uses the observation of when the moon appears and reappears against the backdrop of the same star pattern



## The Inca: A Calendar?

- It is possible the Inca used more than one kind of calendar



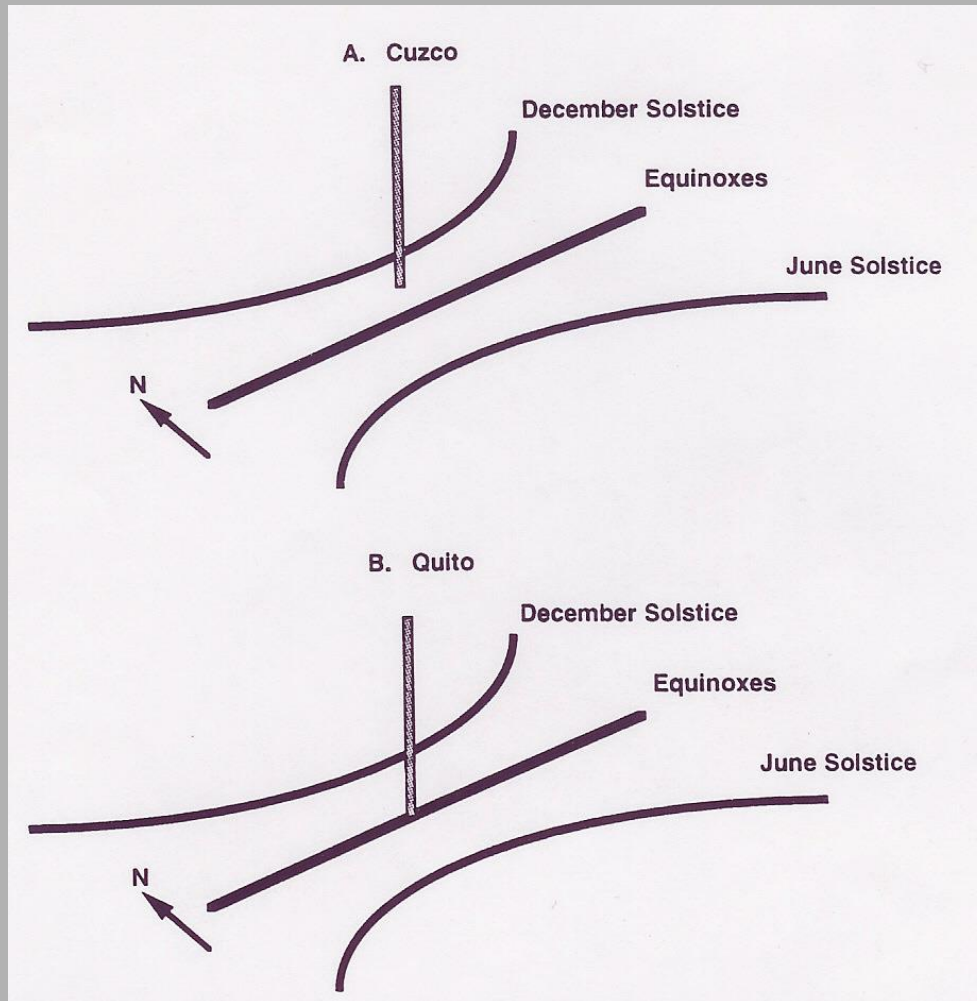
## The Inca

- We know the Inca – probably pre-Inca – cultures found the exact location of the equator
- Shown here outside Quito Ecuador



## Inca Solar Knowledge

- Mapped shadows at various locations at
  - Solstice
  - Equinox



## Studying the Sun

- Equinox
  - The two days of the year when the sun passes the equator;
  - Night and day of equal length all over the earth
  - March 21 and Sept 23

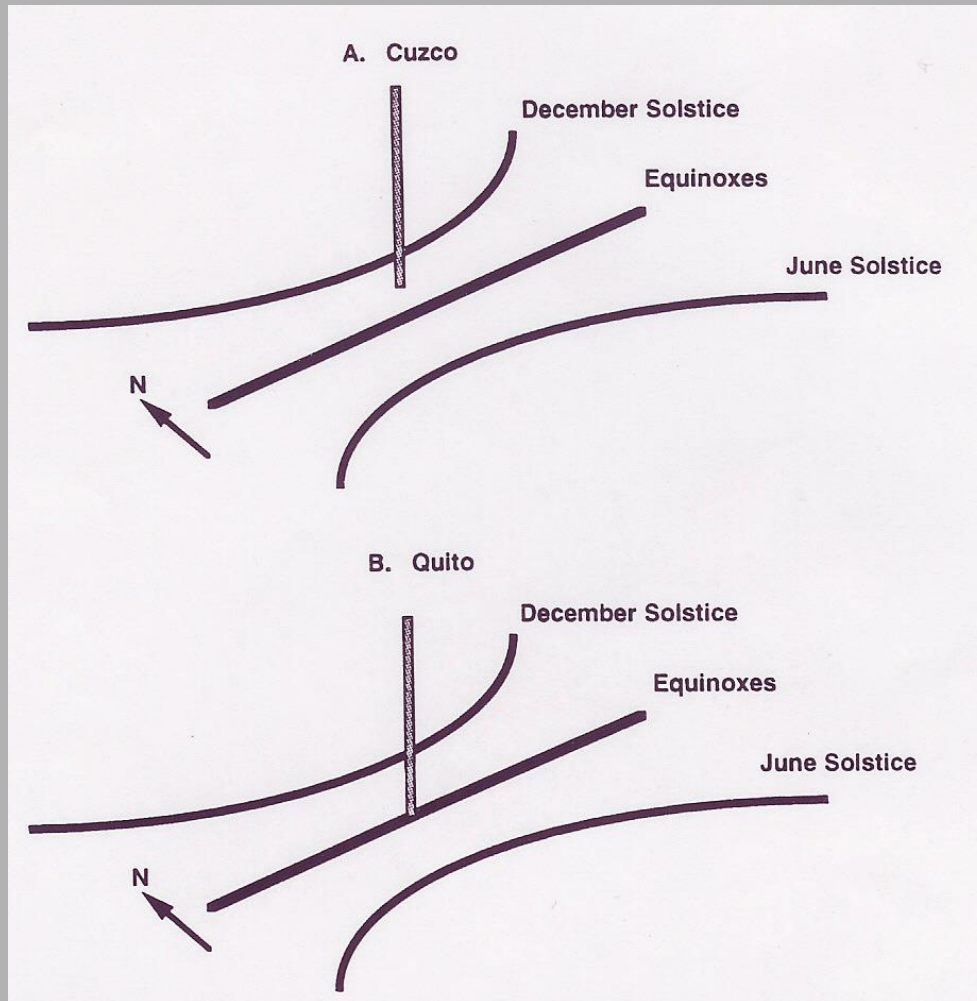
## Studying the Sun

- Solstice
  - The two days of the year when the sun is at its greatest distance from the equator
  - Is about to turn back towards the equator
  - June 22 and Dec 22



## Inca Solar Knowledge

- Mapped shadows at various locations at
  - Solstice
  - Equinox



## The Inca Empire: Organized Conservation?

The Inca Empire included a stretch of land 2,500 miles along the West coast of South America, encompassing a wide range of environments. Among the reasons to think the Inca instituted environmental protection as part of their rule:

## The Inca Empire: Organized Conservation?

1. The Inca developed a vast system of storehouses, connected by the world's greatest road system. The Spanish conquerors were amazed at the amount of goods in the storehouses – which they looted after the conquest.



## The Inca Empire: Organized Conservation?

2. Inca set aside parts of their lands for widows, orphans, the handicapped, and soldiers.
  - Inca thus did not have problem of dispossessed degrading environment to make a living

## The Inca Empire: Organized Conservation?

3. Inca agriculture involved extensive terracing that was consciously understood as a means of protecting the soil. Inca had specialist engineers to design terraces and irrigation canals.

## The Inca Empire: Organized Conservation?

### 4. The Inca understood and practiced agroforestry:

- in areas such as around Lake Maracocha they reforested areas that had become barren.

## The Inca Empire: Organized Conservation?

5. Inca protected certain species of animals such as sea birds and regulated the hunting of many animals.
  - Only predators such as foxes and wild cats could be hunted without restriction.

Source: Hughes, J. Donald. 1999. Ripples in Clio's Pond: Conservation in the Inca Empire. *Capitalism, Nature, Socialism - A Journal of Socialist Ecology* 10(4):69-76.

## Inca and Pre-Inca Basics

### 1. Chan Chan

- Pre-Inca capital of the Chimú culture that flourished in the northern Peruvian desert between 1,000 and 1,400 AD. At its height in 1250 AD, Chan Chan had over 30,000 inhabitants.

# Inca and Pre-Inca Basics

## 2. Pacatnamu

- A religious complex near Chan Chan; also possibly the name of a Chimu military leader.

## 3. Nazca

- A pre-Inca culture of the Ica Valley in southern Peru. It flourished between 250 and 750 AD. The Nazca developed a unique pottery style and laid out and built the famous lines and geoglyphs of Nazca.
- [Next lecture in pdf.](#)
- [Next lecture in powerpoint](#)

## End of Week06 Slides on:

- Native American words in American English
- US state names in Native American Languages
- Inca