

P200 African Agriculture Assignment Workbook

The origins of agriculture was one of the major economic changes that took place in human history. Scientists originally thought that agriculture was invented only once, and spread throughout the world -- associated with new technologies invented to store and process cereals (grinding stones and pottery for cooking and storage). This scenario is what V. Gordon Childe called the "Neolithic Revolution."

However, archaeological evidence now demonstrates that different plants and animals were domesticated independently, at different times, in many parts of the world, and that grinding equipment and pottery are not necessarily associated with agricultural ways of life.

This assignment gives you the opportunity to work with a partner to test the "Neolithic Revolution Hypothesis" for yourself with archaeological evidence for early food production in Africa. You will use a computer program called *TimeWeb* in a cluster on campus to do some research. P200 students will use the results of the research to write up short answers to two questions about the patterns of evidence for animal and plant domestication in Africa.

This workbook will help you work through all the steps you will need to use TimeWeb to answer the questions.

Professor Sept will be available to help you with this project during two scheduled 75 minute workshops. We expect that you will be able to complete most of the research for **PART I** of the project (workbook questions 1-6) during the first class workshop, and finish most of the remaining research for **PART II** (workbook questions 7-10) during the second class workshop.

Thank you for participating in this project! I hope you find it interesting and enjoyable. JMS

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TimeWeb Workshop I: Domestic Animals

For this first project you will use TimeWeb to explore the African Archaeology Database to determine when the first evidence of **domestic animals** appears in different regions of Africa. You will be looking for evidence of two main animals: cattle and sheep and goats. Team up with a partner to collaborate on the research.

PLEASE NOTE your starting time: _____

1. Start TimeWeb. Your first objective is to find sites with **cow** remains! When the query window appears, select the **EVIDENCE** tab at the bottom of the left-hand query choice screen. Open the **animal evidence** choice, and select **taxonomic** categories. Cows are classified according to the following taxonomic hierarchy:
mammal (Biological Class of animals)

Artiodactyla (Biological Order of even-toed ungulates)

Bovidae (Biological Family that includes antelope, buffalo, etc)

Bos (Biological Genus of cattle)

B. indicus (domestic "Zebu" species native to India/Pakistan)

B. taurus (domestic species possibly native to Africa or Europe)

B. primigenus (wild species native to Africa)

B. bubaloides (North African species)

B. ibericus (North African species)

Try running some queries to find sites with cattle bones. **Note** that individual species can sometimes be identified from bones at archaeological sites, but often remains are so fragmentary that only the genus is identifiable.

Briefly list your initial cow query results here:

Query for sites containing (write your selection):	Number of sites found:	Total time range of sites found (oldest-youngest):
For example: <i>Bos</i>	?	Oldest site date to youngest site date

Note that a wild ancestor of cattle in Africa is *Bos primigenus*, which was hunted for many years. **Suggest a query strategy** you could use to distinguish sites with *Bos* hunted for game from sites with early domestic cattle bones:

2. View the results of your cow queries to decide what time periods cattle first appeared in different regions in Africa. **View the map** and use the time-zoom bar on the bottom of the map to look at where cattle sites are during different time periods. **Sketch** your sense of **how these geographic distribution patterns change through time** on the map sequence below, continuing onto the next page if necessary.



Time range: _____



Time range: _____



Time range: _____



Time range: _____



Time range: _____



Time range: _____

3. Use the **timeline to view the same cattle sites** with icons and duration bars. The icons are symbols which identify the general region of Africa in which the site is located. For each region, list a site and dates that represents the **earliest evidence** you can find of domestic cattle in that region. If you're not sure, explain why:

	site	Average date & time range
North Africa		
East Africa		
West Africa		
Central Africa		
South Africa		

4. Try a third approach. Design a query that will find **all the sites with domestic cattle in one region** of Africa. View the results either as **a list**, and/or on the **timeline view**, and fill in your results on the table below.

One Region	Earliest site name & date range	Latest site name & date range

How long has it taken you to get to this point? _____

5. Now that you have done preliminary research on early evidence for cattle in Africa, use TimeWeb to investigate evidence for the herding of **sheep or goats**. They are mammals within the Order of **Artiodactyla**. Sheep and goats belong to the **Bovidae** family. Goats are in the **Caprini** Tribe, and the genus **Capra** . Sheep are in the genus **Ovis**. Importantly, sheep and goat bones are often difficult to distinguish archaeologically, and are often grouped together as "**Ovi-caprini**" with unspecified genus.

Choose your own query strategy to research and answer the following question:

When and where did the herding of domestic sheep or goats first appear and spread in Africa. Does the pattern differ from that of cattle herding?

How long did it take you to find this answer to question 5? _____

6. P200 EXTRA CREDIT: Did early herders in Africa continue to hunt wild game animals? Did this pattern seem to change through time or vary by region?

HINT: Start researching this question using TimeWeb by looking at animal bone assemblage data on web pages for some early herding sites you have already looked at.

- First, from the TimeLine view, click on the **site icon** to take you to the site web data pages.
- On the site pages, look for types of common game animals (such as wild antelope or other bovids or equids.).
- Look for the presence of these wild game species and domestic animal remains at other sites by querying the database.

How long did it take you to find this answer to question 6? _____

TimeWeb Workshop II: Domestic Plants

For this second project you will use TimeWeb to explore the African Archaeology Database to determine **when the first evidence of domestic plants** appears in different regions of Africa. Botanical evidence is poorly preserved at many sites, but can indicate at least a minimum age for the use of different types of plant species in different regions.

PLEASE NOTE your starting time: _____

7. Start TimeWeb. Your first objective is to find sites with remains of SEEDS from plants, since seeds have the best chance of being preserved archaeologically. When the query window appears, select the **EVIDENCE** tab at the bottom of the left-hand query choice screen. Open the **plant remains** choice, and select **morphology** categories and run a query for **SEEDS**.

What is the name and date range of oldest site in each region with evidence for seeds?

region	Site name	Type of plant(s)	Date range
North Africa			
East Africa			
West Africa			
Central Africa			
Southern Africa			

How long did it take you to finish Question 7? _____

Refer to the list of African plants available on the following web page for more information about these particular plant species. It will also be linked from the P200 project page.

http://www.indiana.edu/~puzzles/classroom/projects/origins_of_agriculture/dom_plant.pdf (This is a pdf document you can print if you want to.)

8. Not all of the seeds you just found are from domestic plant species! Click on site icons to explore the data for these sites, and discover the oldest evidence for **domesticated food plants** in each region. Can you find any examples of wild seeds at sites that might have been used intensively, like domestic species?

region	Site name	Type of domestic plant	Date range
North Africa			
East Africa			
West Africa			
Central Africa			
Southern Africa			

9. Briefly sketch your sense of the geographical patterns and timing of plant domestication in Africa, based on your research with TimeWeb. Note that different types of plants were probably grown in different regions because of climate.



Time range: _____



Time range: _____



Time range: _____



Time range: _____



Time range: _____



Time range: _____

10. Look for evidence in the database **other than seeds** that could suggest the origins of agriculture. (e.g. the remains of artifacts that could be used to farm or process domestic plant foods). Any luck?! How does such evidence change your overall impressions of the origins and geographical patterning of plant domestication in Africa?

P200 Essay assignment I:

(1-2 typed pages, ~300-400 words)

Compare what you have learned about the origins and spread of herding economies in Africa to the patterns described in your *Images* textbook (chapter 5) for patterns of animal domestication in the Near East and India/Pakistan. What major similarities and differences do you see in terms of:

- How do the dates compare?
- Did herding spread suddenly or gradually in the different regions after it first appeared?
- Were cattle herded (domesticated) in Africa before Zebu cattle were introduced from Asia?
- Were sheep/goats domesticated in Africa before the Near East, or could they have been introduced and spread from there?
- EXTRA CREDIT: Many early communities of herders in Eurasia continued to hunt wild game, but later became much more dependent on domestic animals. Was this true in Africa too?

P200 Essay assignment II:

(1 typed page, ~250 words)

Compare the evidence of African plant domesticates you have learned about on this project to the descriptions of the plants domesticated in the Near East and Asia in your textbook (*Images* book chapter 5). If you wanted to argue that agriculture originated in the Near East and spread from there into Africa, what evidence could you use to support this idea? If you wanted to argue, alternatively, that agriculture developed independently in Africa, what evidence could you use support that idea? What do you think?

P200 EXTRA EXTRA CREDIT:

In the Near East, people first settled into villages while exploiting wild cereals. They used grindstones to prepare the grains, and stored them in bulk. This process led to the domestication of plants. Animals were domesticated after that, and later they began using pottery to cook and store foods. Was the sequence similar or different in Africa, and how did the time periods compare? Support your answer with research using TimeWeb.