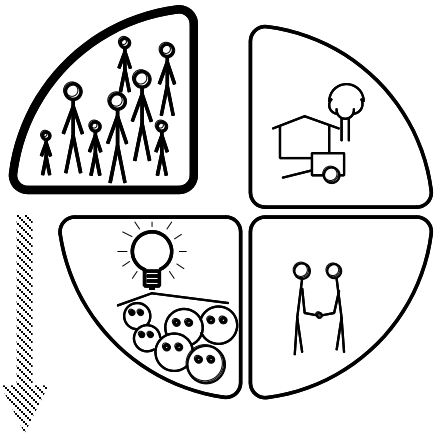
5: Ancient Egypt *Model Category: Demographics*

People: How many? How close together? (Etc.)

Understanding a particular event, situation or society, whether in the past or present, requires some knowledge of the people involved—how many, how they're distributed, the number of young and old, how these numbers are changing, and so on. Study of this kind of information is called "demographics."



For example, in an area where neighbors live miles apart, it probably doesn't matter much if they throw their garbage or other waste in a stream. But if there are several thousand people living close together along that stream and doing the same thing, it matters a great deal.

Change the number of people, or how they're distributed, and history's story almost certainly will change, sometimes in surprising ways.

Of special importance in understanding an event or situation:

- The total number of people involved
- Population density
- Population distribution
- Age distribution
- Ratio of males to females
- Changes in any of the above. Changes in population occur because of births, deaths, and migration into or away from a place.
- Sub-groups: ethnic, religious, occupational, social class, etc.; their size and distribution
- Other significant Demographic information, such as health conditions, birth and death rates, and so on.

These are sub-categories of demographics.

Investigation: Demographics in Egypt

Demographic statistics for ancient Egypt are below and on the next page. Convert this information to graphs or show it on a sketch map. You'll use the information in some of the investigations that follow. [1]

ESTIMATED TOTAL POPULATION BY PERIOD

Pre-dynastic period (5500-3000 BCE)	350,000
Old Kingdom (2700-2200 BCE.)	1,500,000
Middle Kingdom (2100-1700 BCE)	2,000,000
New Kingdom (1550-1050 BCE)	5,000,000
Late Period (670-330 BCE)	7,500,000

ESTIMATED POPULATION DENSITY BY REGION

	Inhabitants per square kilometer
Nile River Delta	more than 200
Nile River Valley between Herakleopolis and Thebes	less than 100
Faiyum Oasis	more than 100
Nile River Valley between Thebes and Aswan	more than 200
Other (desert and oasis)	less than 10

ESTIMATED POPULATION DISTRIBUTION BY REGION

Nile River Delta (Lower Egypt)	40%
Nile River Valley between Herakleopolis and Thebes	10%
Faiyum Oasis	10%
Nile River Valley between Thebes and Aswan	35%
Other (desert and oasis)	5%

DISTRIBUTION OF POPULATION BY AGE

Between 0 and 10 years	35%
Between 10 and 20 years	25%
Between 20 and 30 years	15%
Between 30 and 40 years	12%
Between 40 and 50 years	10%
Over 50 years	3%

APPROXIMATE AVERAGE LIFE EXPECTANCY BY GENDER AND SOCIAL CLASS

Peasant farmer (men)	30 years.
Peasant farmer (women)	26 years
Noble men	60 years
Noble women	53 years

(Continued)

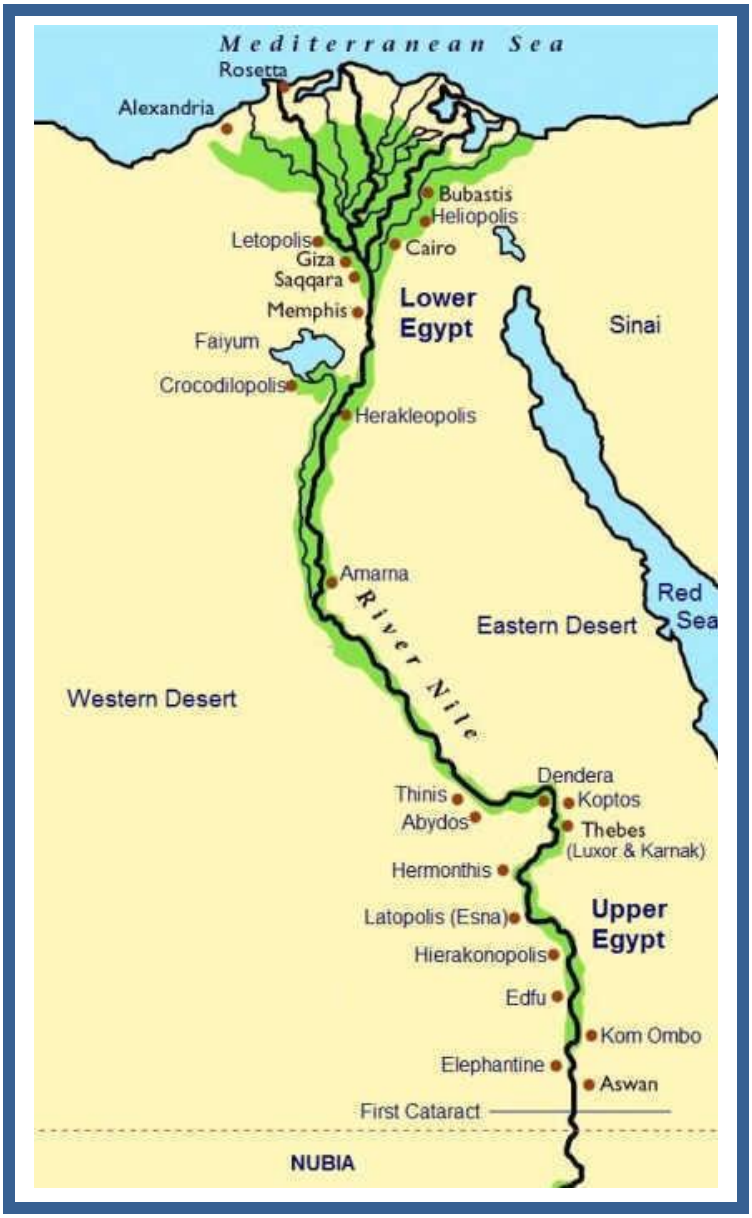
[1] (General Demographic statistics) http://reshafim.org.il/ad/egypt/people/index.html

OTHER DEMOGRAPHICS

Mortality rate in infants (before one year)	30 %
Mortality rate in children (ages 1 through 4)	20 %
Average number of children born per woman	Between 6 and 7
Population growth rate	0.1 % annually

ESTIMATED POPULATION BY SOCIAL CLASS AND ORIGIN

Native peasants	greater than 80 %
Native artisans, merchants and professionals	greater than 10%
Foreigners	between 5 and 10%
Egyptian nobles	less than 5%



http://www.mummies2pyramids.info/geography-cities/geography-cities-index.htm

The Model category “Setting” is closely related to demographics. For example, a change in Setting such as preventing disease by improving sanitation can cause total population to increase. Unit 3 (Muddy Rivers) gave you a first look at Egypt’s setting.

http://ancientvine.com/

Irrigation canals, large and small, ran through all the farming areas in ancient Egypt. These were built and maintained by large groups of workers

The illustration above shows use of a “shaduf” to lift water from a canal into irrigation ditches. Shadufs are still used today in the Middle East.

Identify probable relationships between this part of setting (improved irrigation) and demographic changes in ancient Egypt.

(Science expansion) Build a model shaduf and test its operation.

Investigation: Demographics and Social Class

About 2200 BCE, a man named Ptah-Hotep, the Pharaoh's Vizier (chief executive or main assistant), wrote a long list of guidelines ("precepts"), for a younger person or persons, probably including his own son. Below are a few of them.

One part of demographics is identification of social class characteristics. Pages 2 and 3 provide relevant data for this. How do the precepts below relate to social class? (E.g. "slaves" working in emerald mines, second paragraph)?[1]

Don't be a know-it-all because you think you are smart. Treat those who know less than you the same as you treat the wise. No one knows everything, and you can learn from anyone.

Wise words are harder to find than emeralds. It takes the work of slaves to find an emerald in solid rocks.

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If you are among the persons seated at meat in the house of a greater man than yourself, take that which he gives you, bowing to the ground. …Do not speak to the great man more than he requires, because you don't know what words might displease him. Speak when he invites you and you will make a good impression.

If you are one of those who bring the messages of one great man to another, be careful to say exactly what your master has told you to say. Even if your master's words are offensive to the other great man, don't change them in any way. He who changes the message to please the listener, great or small, is a detestable person.

If you are a farmer, gather the crops in the field which the great god Ptah has given you. Don't boast in the house of your neighbors; it is better to make yourself respected by your actions.

If any person who has power over others seizes their belongings (acting like a greedy crocodile), his children will be scorned and hated because of what he does. His father will be extremely distressed, and his mother will be unhappy. But a man becomes a god when he is chief of a tribe which has confidence in following him.

If you humble yourself in obeying a superior, your conduct is entirely good before Ptah. Knowing who you ought to obey and who you ought to command, don't be resentful of a superior. As you know that he has authority, give him the respect he should receive.

[1] From: Charles F. Horne, *The Sacred Books and Early Literature of the East* (New York: Parke, Austin, & Lipscomb, 1917), Vol. II: Egypt, pp. 62-78. (adapted)

(Ptah was the primary creator god in ancient Egyptian religion.)

You may become great after having been little; you may become rich after having been poor. When you become a leader of the city, don't take advantage of your high position. Do not act superior because you have been promoted. You are only the administrator, the prefect, of Ptah's possessions. Do not treat your neighbor as inferior, but be a companion to him.

Keep a cheerful face. When we see someone leaving the storehouse with a sour face, after bringing his share of provisions, it shows that authority is offensive to him. Do not have that attitude.

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Honor the superintendent more than his workers. Manual labor is little respected. Inactive hands are better than hands that work.

What important pattern of action is suggested by the second paragraph in the data above? How would this relate to demographics? To government?

The Bible has a story that shows ancient Israelite knowledge of patterns of action in Egypt:[1]

Joseph said to Pharaoh… "There will be seven years of great plenty throughout the land. After this will come seven years of famine. All the years of plenty in Egypt will be forgotten, and the famine will ruin the country…

"This is what Pharaoh should do: Appoint controllers over the land, and take one-fifth of the produce of Egypt during the seven years of plenty. They should collect this share of food produced in the good years that are coming, put the grain under Pharaoh's control in city storehouses, and keep it under guard. This food will be a reserve against the seven years of famine which will come upon Egypt. Thus the country will not be devastated by the famine."

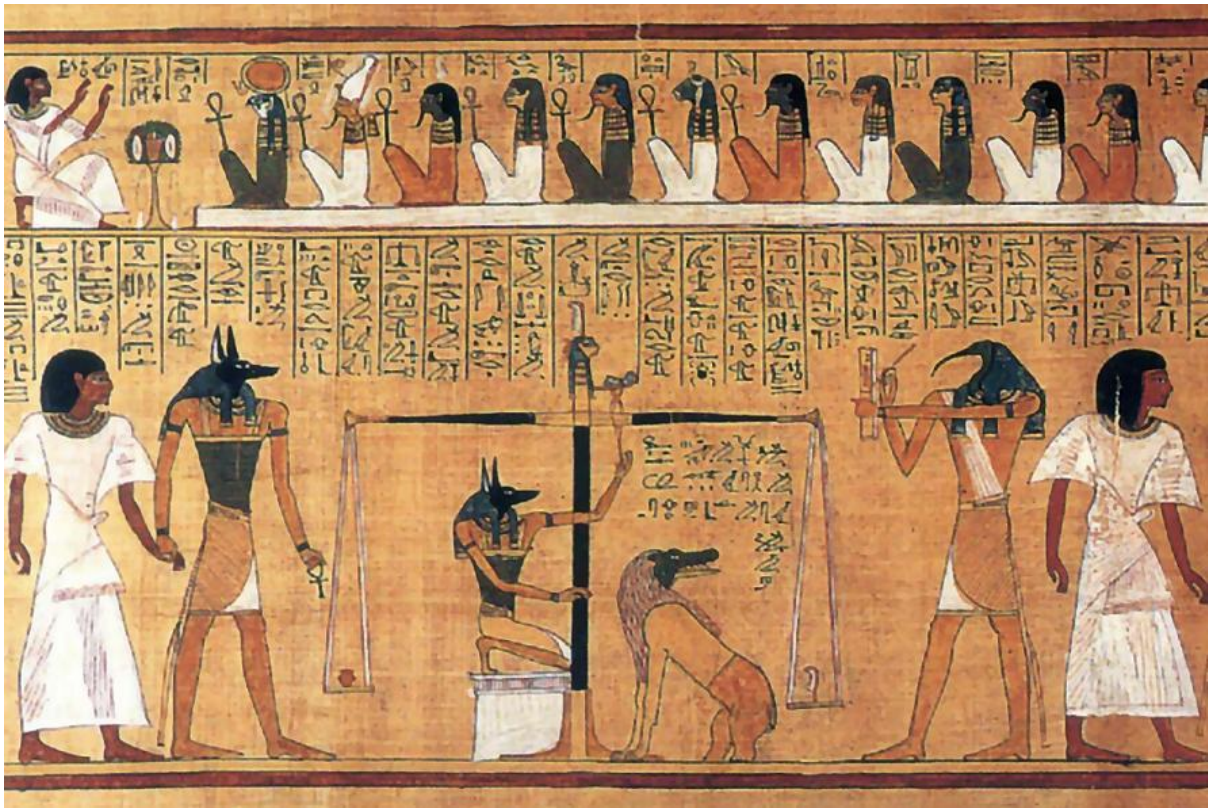
The plan pleased Pharaoh and all his courtiers, and he said to them, "Can we find another man like this one, who has god's spirit in him? ...I hereby give you authority over all the whole land of Egypt."

…During the seven years of plenty there were abundant harvests, and Joseph gathered all the food produced in Egypt during those years and stored it in the cities, putting in each the food from the surrounding country. He stored the grain in huge quantities; it was like the sand of the sea, so much that he stopped measuring it—there was too much to measure.

[1] Genesis 40:29, 30, 34-37. 47-49. (adapted)

Most of the ancient Egyptian art still visible was preserved, on papyrus, in dry underground tombs or painted on tomb and temple walls.

Some Egyptians were interested in, even obsessed by, what happens to humans after they die. The data below indicate one small aspect of their religion. How might this concern for death and its aftermath be related to demographics? (For example, which social classes and other groups were probably most involved in this part of religion?) Record your hypotheses.



http://www.britishmuseum.org/explore/young_explorers/discover/museum_explorer/ancient_egypt/death/weighing_the_heart.aspx

The Egyptians believed that the heart was the central human organ, where thoughts and soul were located, and that bad deeds weighed it down, making it heavy. This drawing depicts the gods weighing the heart of a dead person against the feather of truth. The god Anubis (represented with a black jackal head) leads the person and performs the test. Thoth, the god of truth (black ibis head) watches to make sure the weighing is fair, and records the results. If the heart is lighter than the feather, the person proceeds to the afterlife. If the heart is heavy, it is eaten by the Devourer, the monster made up of parts of a crocodile, a lion, and a hippopotamus—three of the most dangerous beasts known to the Egyptians. Wearing white clothes in ancient Egypt was a sign of upper class or nobility.

Investigation: Pyramid-Building

http://egypttraveltrips.com/king-tut-program-7

The Great Pyramid, the Sphinx, two smaller pyramids (only one is visible here), and a temple were all erected on this site (Giza) by Pharaoh Khafre, (also referred to as "Khufu" and "Cheops") during his lifetime, 2520-2494 BCE. Huge even by present-day standards, the great pyramid was originally 280 cubits tall, and 440 cubits along each of the four sides at the base. It was oriented and built with remarkable precision, with the sides aligned with true north/south/east/west directions. The pyramid was built as a tomb for the Pharaoh.

Originally the pyramid was encased in polished white limestone, but earthquakes have caused most of this outer stone layer to fall off.

One cubit = 0.523 m., 1.72 ft. Convert the dimensions to terms familiar to you.

Experts estimate that it took up to 40,000 skilled workers working continuously for ten to twenty years to build the great pyramid. Recent archaeology indicates workers were not slaves, and were paid for their work.

Construction methods used for the pyramids are disputed. Most of the stone used in their construction were quarried on the other side of the Nile. Quarry workers removed stone using copper chisels, hammers, and dried wood wedges pounded into holes or cracks. Water was poured on the wood, which caused it to expand, splitting the stone. A few huge interior stones made of granite, the largest blocks used in the pyramid, were quarried 800 km (500 mi.) up the Nile at Aswan.

The stones were transported via barges through specially-built canals across the Nile to near the pyramid base, then were likely slid or rolled over logs up stone ramps that spiraled around the pyramid. Large groups of men pulled them using ropes. At the top of the ramp, the blocks of stone were apparently levered into final position.

http://lessons-from-history.com/books/future-publications/-history-project-management/history-project-management-book

Assume that Pharaoh Khafre has picked the location and assigned the task of planning and managing construction of the great pyramid to your team. Based on the information given so far, how do you proceed? Identify:

1. ***The numbers of various kinds of workers and the work they'd be doing,***
2. ***How and where these workers would be recruited,***
3. ***How they'd be organized,***
4. ***The facilities and equipment needed (barges, tools, food transport boats, etc.), and***
5. ***The logistics (food, water, sanitation, etc.) to support the work teams.***

Develop your project plan in a form to present to the Pharaoh.

Note locations of Giza and Aswan on the map (page 3). What are the advantages of the location of Giza for your project planning?

Summarizing: Demography and Monuments

Based on what you've decided about pyramid construction, what demographic conditions were needed before such a large project could succeed? What kind of setting and patterns of action were also needed—for example, what kind of goods and food production, and what kind of decision-making authority?

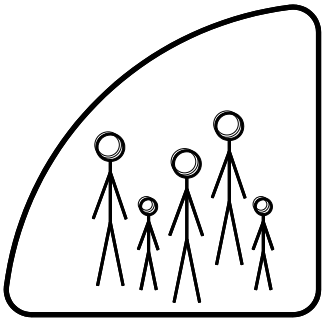
Investigation: Use of Government Wealth

One of the by-products of civilization is surplus wealth—money, time, products, and resources—that becomes available for use by authorities. You've already seen one use of surplus wealth in Egypt—constructing monuments such as pyramids. Here are some other possibilities:

- Building and maintaining canals to increase food productivity
- Creating and supporting armies for protection
- Creating and supporting armies for conquest
- Building palaces
- Supporting priests and temple workers
- Setting up trade with outsiders
- Supporting learning for specialists (artisans, experts, professionals)
- Creating transportation systems—roads, canals, boats, etc.
- Creating storehouses to prevent famine during years of drought
- Mining gold, silver, and gemstones.

With your work group, discuss the possible benefits and problems that might come from each of these actions, and its effects on patterns of action, setting, and demographics. Prepare reports to show your conclusions.

Follow-Up: Demography Here and Now

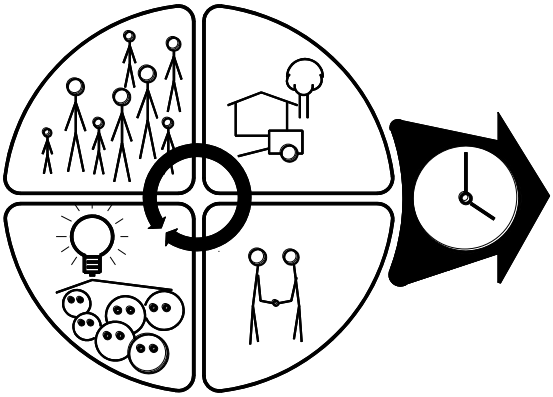


U.S. demographic data is readily available from the Internet (http://www.census.gov/) and from sources such as the *World Almanac*.

1. ***Find and graph changes in U.S. population over the past 50-80 years. Based on this graph, estimate the probable population 40 years from now, if the present trend continues.***

2. Irrigation is used to raise crops in many parts of the world, including areas within the United States. However, a major problem is rapidly developing—insufficient water due to reduced rainfall and excessive water use. Almost 25% of the plant-based foods sold in the United States come from irrigated farms. (http://quickstats.nass.usda.gov/results/7712D572-E5B9-3718-AA29-8E0FA6359B67)

   What effects might a possible scarce-water future have on U.S. population? On U.S. setting and patterns of action? State and defend your hypotheses in your journal.



For Teacher/Mentor—Overview:

The object of this unit is to introduce the concept "demographics," its components, and the relationships between demographics and the first two systemic elements investigated earlier—"Setting," and "Patterns of Action."

Demographic changes—population growth, migration, changes in mortality rates, increased or decreased population density, and the like—are both causes and effects of other changes in setting and patterns of action. Almost universally, the development of effective agriculture (part of "setting") resulted in increases in total population and population density. These changes, of course, required changes in patterns of action such as some kind of authority to control conflict and manage irrigation and other shared infrastructure.

The first three systemic Model factors—setting, patterns of action, and demographics—are *not* deterministic. Two societies with identical situations with regard to these three elements will still likely differ significantly, because of differing shared ideas or worldviews—the fourth element of the Model (next part). There are obvious similarities in the "muddy river" settings in Mesopotamia and Egypt, and some similarities in patterns of action (e.g. management of irrigation facilities), along with population growth and development of social hierarchies. However, in Egypt, the upper-class and royal emphasis on death and its aftermath was very different from the Mesopotamian this-worldly focus, with important consequences for the two societies.

Notes on the Investigations:

Investigation: Demographics in Egypt

This is a bit of old-fashioned classwork—converting data into graphs or annotated maps. Assigning this as a group project will reduce the drudgery a bit. One possible way groups might present this is as a single large graphic—a map annotated with some data (geographic distribution and density of population), surrounded by graphs showing the rest of the data. Even simple processing of the information in this way will make it easier for learners to grasp its significance and apply the information to the investigations that follow.

The relationship between Demography—population levels and distribution—and irrigation (an element of Setting) should be a fairly simple one for learners to illustrate.

Investigation: Demographics and Social Class

The Precepts of Ptah-Hotep clearly indicate the presence of social hierarchy in Egypt at the time, although they also suggest that at least some social class mobility was possible. However, it's likely that he was only addressing young members of the upper classes—the mention of farming in one precept doesn't mean that this was directed to anyone who got his hands dirty, but someone responsible for overseeing farming activity.

It's possible some students may have trouble grasping the concepts of social class and hierarchy. If so, calling attention to phrases such as "a man greater than yourself," and "bow to the ground" should help.

The Egyptian obsession with after-death concerns was almost certainly most intense among members at the top of the status hierarchy, but these concerns led to development of specialists—artists, priests, embalmers, scribes, stoneworkers, and the like—that would have expanded the ranks of those between the leaders and the farming peasants. This should become more apparent to learners during the main activity that follows—the pyramid-project-planning.

Investigation: Pyramid-Building

By the time Pharaoh Khafre had the monuments erected at Giza, Egypt had developed agriculture efficient enough to create a large food surplus. Population expanded, and the society developed a hierarchy that included royalty, bureaucrats and officials, priests, professionals and artisans. Obviously, all those tens of thousands of workers erecting pyramids and temples weren't available for agricultural work, yet were fed adequately. Recent archaeological investigation indicates the presence of many ovens for bread baking around the site. Grain and other food were obtained by the government appropriating a portion of each farmer's crop—a form of taxation.

Recent archaeological work also indicates that the pyramid workers weren't slaves. Many were obviously skilled at the kinds of work they were doing. Given the level of technology available at the time, the scale of the work is doubly impressive.

In the first draft of this activity, we inserted the phrase, "If your pyramid plans aren't acceptable to the Pharaoh, you'll be executed." You may wish to reinstate this imperative.

The logistics of building the great pyramid required a great deal of forethought in program planning. Developing the technology was probably a gradual process—previous smaller pyramids are on the site, albeit of a somewhat different design with stepped sides, but their construction no doubt required the development of special tools and techniques that would have been used in constructing the Great Pyramid. A partial list of tasks:

- Supplying drinking water to prevent heatstroke of those toiling in the desert sun,
- sanitary facilities (probably avoiding desecration of the pyramid),
- making large, long, strong ropes,
- quarrying the stone (most of it from the opposite side of the Nile)
- obtaining logs used as rollers and levers (probably requiring cutting a forest of hardwood acacia trees from the tropics far up the Nile, such as were used for boat construction. Except for some date palms, few trees grew in Egypt.)

Simply dealing with food—warehouses for grain, building and managing boats for transporting grain to the site, grinding it and baking huge amounts of bread—apparently the main staple for workers—was certainly a major task. The list of requirements goes on and on. This is a daunting series of tasks, but the pyramid was built, so some very sophisticated program planning was done by people prior to the Bronze Age (their metal tools were made of soft copper).[1]

This investigation should be continued so long as learners are making good progress with their plans, and appreciating the magnitude of the task.

[1] See https://www.pbs.org/wgbh/nova/lostempires/obelisk/cutting01.html

Summarizing: Demography and Monuments

Conclusions: The pyramids and other projects at Giza couldn't have been done until demographics were adequate—population, specialized expertise, a ruling class—and until other aspects of capital such as control of a large food surplus to feed workers were in place.

Investigation: Use of Surplus Wealth

This activity, used in class by Marion Brady decades ago, gives a nice change of pace. There's a tendency for governments to become "kleptocracies," taxing the populace for the benefit of the rulers. Too much of this, and the civilization degrades or the populace rebels.

Of course, as with most economic principles, what's happening is complex. Pharaoh Khafre was certainly wasting capital on the world's largest tomb, but the capital being spent wasn't going into the tomb—it was being redistributed among thousands of workers, both professional and laborers, keeping them employed. The primary question is whether basic societal needs are adequately supported or funded—a question of priorities.

(HLB) July 2015