

How the supply of water affecting ancient societies history essay



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Water is life - there could be no life without water. Ancient civilizations of Mesopotamia, Rome, Egypt and China understood that water is not simply a valuable resource without which survival is impossible, but also an important prerequisite for further development. Water became an influential tool that shaped economic, legal, technological and socio-political spheres of the ancient societies and a powerful weapon in the hands of their emperors and kings.

Majority of ancient civilizations were located in the river valleys:

Mesopotamia - in the Valley of Tigris and Euphrates, Egypt in the Valley of Nile; Chinese and Roman Empires also grew up on the banks of Yellow and Tiber Rivers respectively. Proximity to water was the very reason of the rapid growth of the ancient cities as soil irrigation gave an opportunity to gather excess food supplies and store them, thus, enabling the support of larger populations. Unfortunately, the growth of the cities created a major problem of water delivery as towns stretched deep inside the mainland. The need of such delivery has sparked the technological development of ancient peoples.

Because the first canals, pipes, and conduits which brought water into cities were built long before the development of writing it is not possible to determine the year of their first use precisely. Nevertheless, archeologists were given an opportunity to trace the technological development of ancient civilizations by studying the excavated remains of their machinery, analyzing land patterns using aerial and satellite images and reading the ancient texts where canal building and soil irrigation were first mentioned.

The aerial photograph of Pre-Roman City, presented in the evidence, reveals older irrigation system used by ancient peoples (Wiesner et al., 2007, p. 8). While it is only a photograph of the old drainage system, it tells a lot about technological and socio-political structure of the early Romans and its development during those times. Considering its shape and even size the broader vertical black strip is most likely a men-made canal which was dug thousands of years ago. The dark lines of drainage ditches clearly reveal the contours of the crop fields that were used by ancient farmers. Interestingly enough, the fields vary in their sizes meaning that the land strips were distributed unevenly - the information that could help in studying civilization that occupied given territory. Furthermore, the fact that the landscape is more or less flat makes water flow in the canal less volatile thus leaving little chance for silting. It is also clear from the picture that the fields that are the closest to the canal have more value if compared to the furthest ones - the further the field the fewer crops. On the other hand, farmers with lands closer to the canal are at the higher risk of losing their crops during the flooding periods.

A satellite picture of the major ancient land irrigation systems between the rivers Tigris and Euphrates, modern Iraq, proves the fact of existence of extensive and complex water delivery networks in Mesopotamia (Wiesner et al., 2007, p. 9). The geographical position of Mesopotamia made agriculture possible only through soil irrigation due to climate conditions where yearly precipitations are quite low. The extent of this network proves that ancient Mesopotamians not only were able to use mass labor to construct and maintain a series of men-made canals but also possessed a technology

required to control water streams. A system of dams and dikes was implemented to allow the water to be distributed evenly and, in case of flooding, prevent the crop fields from being destroyed.

At first glance, looking at the satellite image, it is possible to conclude that the Mesopotamian cities were politically unified into one system. However, taking in consideration evidence from the early Mesopotamian history, the cities were quite isolated from each other which made political unity quite impossible at that time. Water transportation was a difficult task because canals were not suited for that specific purpose. Mesopotamian city-states were stand alone political and cultural units - independent, defensive and often in a state of war with each other.

In a depiction of one of the early kings of Egypt, presented in the next evidence, the importance of water is clearly evident (Wiesner et al., 2007, p. 10). From what is already known about Egyptian society today it could be concurred that the drawing is not an exact representation of the events that took place in Egypt but rather a form visual representation of power and influence of the king and vital importance of water. As it is known, Egyptians favored mass labor when it came to construction of immense projects like pyramids or canal systems. Egyptian kings, undoubtedly, did not take any part in the process of digging ditches themselves - they were the authority, the supreme leaders and the ones whose orders should be immediately carried out. This carving could very well be a form of ancient "propaganda" which not only showed the authority but also inspired ancient peoples to "follow" their leaders and, as in this particular example, dig the ditches.

While digging the water canals and dam construction was important it did not solve the problem of delivering water to the actual crop fields. That is why the assembly of water-lifting mechanisms, pipes, conduits and, in some areas, aqueducts was required. The appearance of first water-raising machine, the shaduf, goes back in time to as far as 2500 B. C. It was the simplest lever mechanism which was using a rock as a counterweight. As seen in the evidence, the shaduf is labor intense and has a low efficiency factor (Wiesner et al., 2007, p. 11). The mechanism required a strong adult to operate it at all times and could have been used in both stationary and flowing waters. The amount of water raised by it is very low, thus, in order to irrigate massive crop fields hundreds or even thousands of shadufs have to be constructed. The advantage of this machine is in its simplicity and relatively low cost. Countries that favored mass labor, like Egypt, could have used this machine with great success.

The saqiya, on the other hand, is a complex, expensive mechanism which involves digging of a well and a use of a two-wheel water-raising system connected by gears and powered by an animal. Despite of its complexity and higher construction and maintenance costs, the saqiya is by far more effective compared to shaduf. It can raise greater amounts of water, however due to the presence of gears and a power source in its construction saqiya's use is restricted to stationary water only. Animal supervision is also required, yet the presence of an adult is not mandatory - the machine could be easily operated by a child.

Square-pallet chain pump is an effective but yet the most labor intense machine of all presented. Being still relatively complex in its construction it <https://assignbuster.com/how-the-supply-of-water-affecting-ancient-societies-history-essay/>

requires fewer raw materials to be built compared to saqiya. It is powered by two strong adults who make the pallet pump move by turning the pedals connected to a chain mechanism. This machine moves the water from the river into canal or a ditch horizontally instead of raising it vertically. Square-pallet chain pump could be used on violent, fast moving rivers like Yellow River in China.

Noria is by far the most effective water-raising machine presented in the evidence. It requires roughly the same amount of raw materials as saqiya to be built, yet it is relatively cheap to maintain, very efficient, does not require man power or supervision to operate - it is totally autonomous. What is most important, however, is the fact that this machine uses kinetic energy of the river to power the rotation of its wheel. In other words, noria is the ancient world's first hydro powered water delivery system!

Turning from visual to written evidence it is important to mention of just how influential the water was to ancient peoples. Code of Hammurabi, for example, resembles a kind of social insurance code for farmers. The replacement and repayment guarantees were all written down and assured by the government. Water, its supply and distribution was able to change the legal development of Babylonians. This document also shows the "flows" in the early irrigation systems many of which were floods due to inability to control water. The disasters made by water are also explained in the memorial from Jia Rang. It speaks of constant floods, sickness brought by moisture and permanent damage to the soil caused by excess water.

Xinchen's water distribution regulations are another instance of how water

supply was able to influence legal development in China. Too important to neglect, water was the main source for disputes, clashes or even wars.

The example of how Emperor Claudius conducted his waterworks projects shows political and economical importance of water supply. Politically, the construction of enormous projects, like the Fucine Lake drainage canal, meant to show the influence and power of the charismatic leaders, in this case Claudius. Economically, such a time consuming and labor intense projects were able to create more jobs and boost the economy by delivering water to more places.

Frontinus's discussion of Rome's water system points out the number of problems the authorities had to face when it came to water distribution. First of all, Frontinus expresses concern in regards to aqueducts length, height and their inability to deliver water evenly and with constant pressures. Secondly, it appears that there were a lot of cases of abuse of the Rome's water supply system: illegal or larger than allowed valves were used as well as storage reservoirs were misused due to a larger amount of outlets were installed than it was allowed. Finally, Frontinus is furious with the so called "puncturers" - businessmen who use a hidden network of pipes all over the city stealing water which otherwise would have been used by the public.

To fully understand the importance of water today it is crucial to look back into history of ancient peoples. Water formed, shaped and influenced cultural, economical, technological and socio-political development of early civilizations. Water was regarded as the most valuable resource simply because a piece of land didn't have any value, yet an irrigated piece of land

was priceless. The ancient legal codes reflected the need for water regulation and its distribution as well as the settlement of any disputes regarding it. Technological development was also closely associated with water as new methods, tools and machinery were developed to extract, carry and deliver water supplies. Emperors, kings and politicians used water as a powerful tool to extend their influence and authority. Today, when the [drinking] water supplies are to become scarce in the near future and the population of our planet is continuously growing, it would be important not to underestimate the significance of water by learning the lessons of the past.