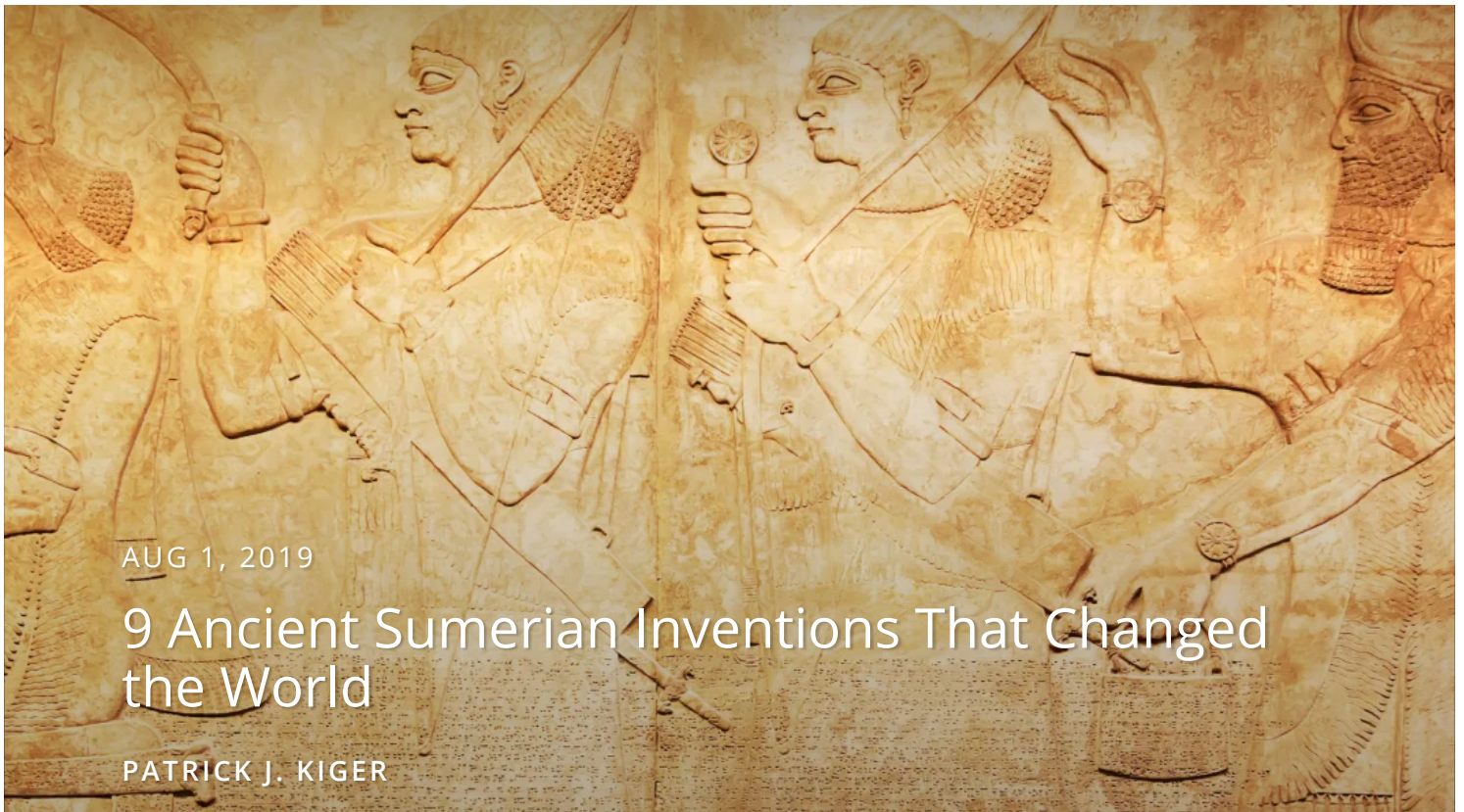


## HISTORY STORIES



*Swisshippo/Getty Images*

The Sumerian people of Mesopotamia had a flair for innovation. Here's how they left their mark.

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The ancient [Sumerians](#), who flourished thousands of years ago between the Tigris and Euphrates rivers in what today is southern Iraq, built a civilization that in some ways was the ancient equivalent of Silicon Valley. As the late historian Samuel Noah Kramer [wrote](#), "The people of Sumer had an unusual flair for technological invention."

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In what the Greeks later called [Mesopotamia](#), Sumerians invented new technologies and perfected the large-scale use of existing ones. In the process, they transformed how humans cultivated food, built dwellings, communicated and kept track of information and time.

The Sumerians' creativity was driven to an extent by their land's lack of natural resources, according to Philip Jones, associate curator and keeper of the Babylonian section at the [Penn Museum](#) in Philadelphia.


"They had few trees, almost no stone or metal," he explains. That forced them to make ingenious use of materials such as clay—the plastic of the ancient world. They used it to make everything from bricks to pottery to tablets for writing.

But the Sumerians' real genius may have been organizational. They had the ability to take inventions that had been developed elsewhere and apply them on a much bigger scale. This way they could mass-produce goods such as textiles and pottery that they could then trade with other people.


As Kramer writes, there was something in the Sumerian identity that drove them to dream big and think ingeniously. "Spiritually and psychologically, they laid great stress on ambition and success, preeminence and prestige, honor and recognition," he explains.

The Sumerians' innovations gradually spread and led to the development of the


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Mediterranean at the University of Pennsylvania. That enabled them to churn out large numbers of items such as containers for workers' rations, sort of the ancient forerunner of Tupperware.

## Writing

Jones says that it's likely, though not 100 percent certain, that the Sumerians were the first to develop a writing system. Either way, it's clear that they were using written communication by 2800 B.C. But they didn't set out to write great literature or record their history, but rather to keep track of the goods that they were making and selling.

"Their very first texts are just numbers and commodities," Jones explains. They did that with a system of [pictographs](#), which essentially were drawings of various objects. Eventually, though, they began to combine pictographs to express ideas and actions. The pictographs evolved into symbols that stood for words and sounds.

Scribes used sharpened reeds to scratch the symbols into wet clay, which dried to form tablets. The system of writing became known as cuneiform, and as Kramer noted, it was borrowed by subsequent civilizations and used across the Middle East for 2,000 years.

# Hydraulic Engineering

The Sumerians [figured out](#) how to collect and channel the overflow of the Tigris and Euphrates rivers—and the rich silt that it contained—and then use it to water and fertilize their farm fields. They designed complex systems of canals, with dams constructed of reeds, palm trunks and mud whose gates could be opened or closed to regulate the flow of water.

## The Chariot

The Sumerians didn't invent wheeled vehicles, but they probably developed the first two-wheeled chariot in which a driver drove a team of animals, writes Richard W. Bulliet in [The Wheel: Inventions and Reinventions](#). Goodman says that there's evidence the Sumerians had such carts for transportation in the 3000s B.C., but they were probably used for ceremonies or by the military, rather than as a means to get around the countryside, where the rough terrain would have made wheeled travel difficult.

## The Plow

According to Kramer, the Sumerians invented the plow, a vital technology in farming. They even produced a manual that gave farmers detailed instructions on how to use various types of plows. And they specified the prayer that should be recited to pay homage to Ninkilim, the goddess of field rodents, in order to protect the grain from



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explains. He notes that the Sumerians were the first to cross kiln lines and form larger working organizations for making textiles—the predecessors of modern manufacturing companies.

## Mass-Produced Bricks

To make up for a shortage of stones and timber for building houses and temples, the Sumerians created molds for making bricks out of clay, according to Kramer. While they weren't the first to use clay as a building material, "the innovation is the ability to produce bricks in large amounts, and put them together on a large scale," Jones explains. Their buildings might not have been as durable as stone ones, but they were able to build more of them, and create larger cities.

## Metallurgy

The Sumerians were some of the earliest people to use copper to make useful items, ranging from spearheads to chisels and razors, according to the [Copper Development Association](#). They also made art with copper, including dramatic panels depicting fantastical animals such as an eagle with a lion's head. According to Kramer, Sumerian metallurgists used furnaces heated by reeds and controlled the temperature with a bellows that could be worked with their hands or feet.

## Mathematics



Primitive people counted using simple methods, such as putting notches on bones, but it was the Sumerians who developed a formal numbering system based on units of 60, according to Robert E. and Carolyn Krebs' book, [Groundbreaking Scientific Experiments, Inventions, and Discoveries of the Ancient World](#). At first, they used reeds to keep track of the units, but eventually, with the development of cuneiform, they used vertical marks on the clay tablets. Their system helped lay the groundwork for the mathematical calculations of civilizations that followed.


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