Technology and innovation in the Middle East

By WGBH, adapted by Newsela staff on 01.09.18
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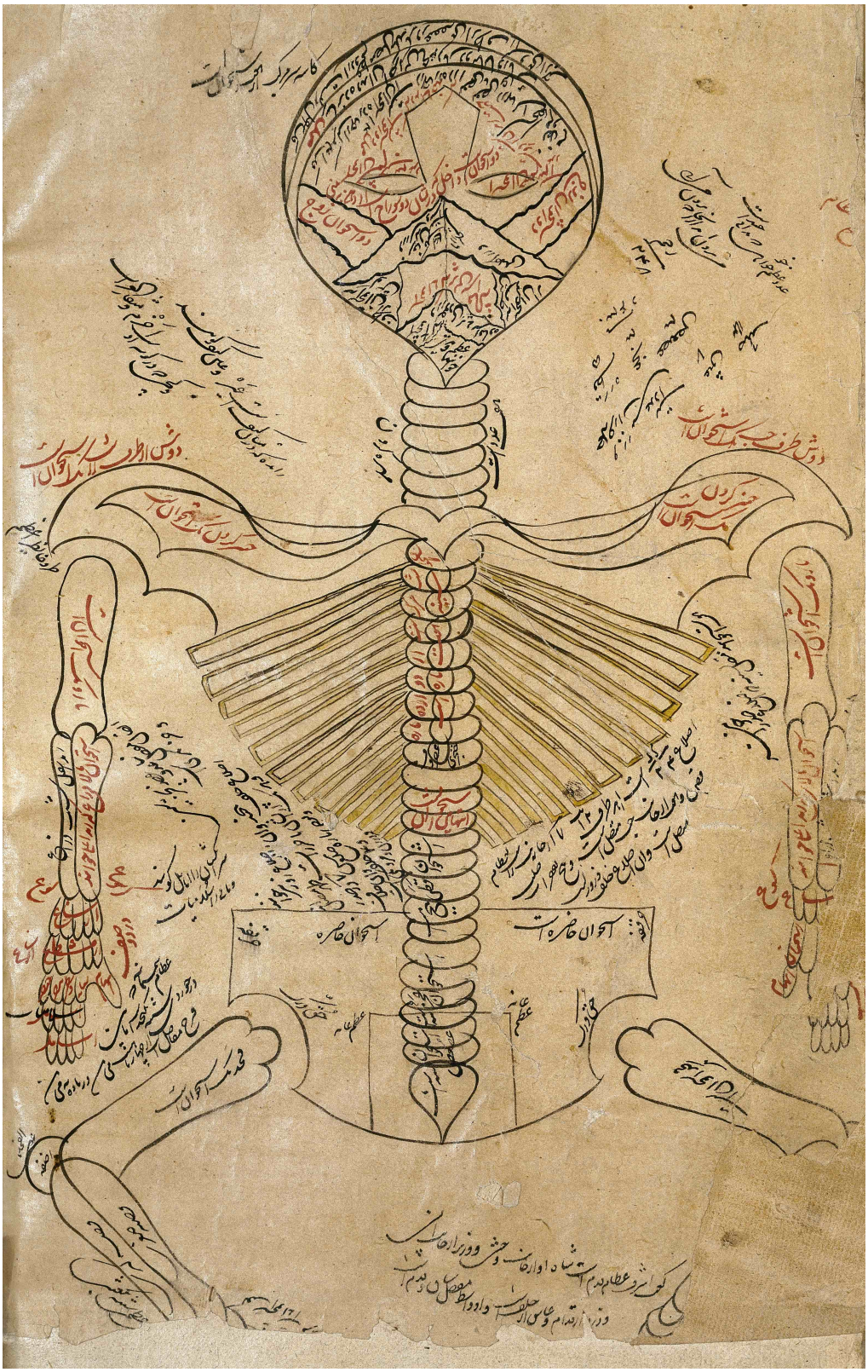
Image 1. The stars of Canis Major on the Manuchihr Globe. The globe was made almost 400 years ago, under the orders of Manuchihr Khan, a Middle Eastern ruler. Photo from the Adilnor Collection/Wikimedia

The religion of Islam started around 1,400 years ago. Followers of Islam are called Muslims. For hundreds of years, Muslims made new discoveries in math and science. During that time, science in the Muslim world was far ahead of Europe.

In math, Muslims used the number zero before Europeans. Muslim astronomers learned a great deal about the stars and planets. They knew the Earth was round and were able to find out how wide it is. This was 600 years before European astronomer Galileo discovered that the Earth moved around the sun.



Ibn Sina was a Muslim thinker who lived about 1,100 years ago. In Europe, he was also known as Avicenna. He was an expert in medicine, and wrote five books called the "Canons of Medicine." They talked about how to treat certain diseases and medical problems. European doctors used the books for 700 years.

The West Catches Up

Around 400 years ago, many Muslim leaders stopped supporting science and new discoveries. Many wanted to keep things as they were. These leaders became more powerful than those who wanted change.

Meanwhile, Europe's scientific and industrial revolutions began. Europeans were inventing new technology and building factories to make more goods. They were using what they learned from Muslim thinkers. The West, or European countries and the U.S., were able to form more powerful armies and gain more wealth than Middle Eastern countries.

By the 1800s, Middle Eastern countries like Egypt, Iran and the Ottoman Empire (now Turkey) decided to build railroads and start using electricity. They had to hire businesses from Europe who knew how to do it. But they did not have enough money to hire these companies. So, they had to sell these projects to European businesses. In other words, foreign companies were able to make money from the railroads and other technology in the Middle East.

Soon, European governments got more involved in Middle Eastern governments. Europeans wanted to make sure they could keep getting money. The West strengthened its power in the region. At the same time, Middle Eastern countries began to dislike the West. They thought the independence and freedom of the Islamic world were under threat.

Technology And The Environment

Some of the most important technologies in the Middle East involve the use of water. For example, the ancient qanats were underground canals in the country of Iran. They brought water from the mountains to the deserts.

In 1898, the Aswan Dam was a major dam project in Egypt. The dam controls the water that flows from the Nile River to the farmland. This stops the river from flooding, while the water is used to make electricity. The dam also caused problems for the environment, though.

Before the dam, the Nile flooded every year. It would leave behind nutrients in the fields. These nutrients made the soil fertile and allowed plants to grow. Now, because of the dam, these nutrients are sent to Lake Nasser behind the Aswan Dam instead. Farmers are forced to use chemical fertilizers to grow their crops. These fertilizers end up in the Nile and pollute the river.

Since much of the Middle East is dry, some countries have used new technologies to handle water. They have become experts in water recycling, solar energy and removing salt from seawater.

Access To Technology Varies

Technology is used differently in different areas in the Middle East. For example, the country of Israel is a leader in computer technology. But, some people in the Middle East still don't have access to the Internet.

Cellphones, however, are getting more popular in the Middle East. They allow people in more remote, faraway communities to communicate. Internet cafes have also sprung up. This has allowed people who cannot afford a computer to access information. TV stations, like Al-Jazeera in the country of Qatar, are also able to bring information to people.

Poorer countries cannot take advantage of these new technologies. The ability to use new technology depends on a country's wealth and how strict its government is.

Quiz

1 Read the sentences summarizing the MAIN ideas of the article below.

For a long time, the Muslim world made many important discoveries in math and science. After Muslim countries stopped valuing discoveries, European countries made many important advancements and were able to make money off Muslim countries.

Which answer choice would complete the summary?

(A) Technology is on the rise again in many Muslim countries, although some still do not have access to new technology.

(B) In response to European advancements, Egypt, a Muslim country, built a very large dam, but it actually hurt farmers.

(C) Technology is not as important in the Middle East as it once was, which is why some countries do not even have access to the Internet.

(D) Because many Muslim countries spent so much money paying European countries, they do not have enough money to make new technology.

2 Which of the following are two MAIN ideas from the article?

(A) European countries benefited from the early advancements Middle Eastern countries made in math and science; Europe was able to create advancements like railroads because of Middle Eastern achievements.

(B) Middle Eastern countries were able to lead the world in science and math while their leaders valued innovation; once leaders stopped valuing new discoveries, the Middle East fell behind in science and technology.

(C) European countries did not understand the advanced science and math concepts that began in the Middle East until about 400 years ago; once Europeans understood these concepts, they became leaders in science and technology.

(D) Middle Eastern countries were once leaders in almost every field of science and technology and even created the world's first dam; nowadays, the Middle East borrows most of its technology from European countries.

3 This article is organized using chronological order.

Why do you think the author chose to organize the information this way?

(A) to compare early Middle Eastern technological achievements with modern European technological achievements

(B) to explain historical background information that helps readers imagine how people in different times reacted to new technologies

(C) to highlight the relationship of sharing between Europe and the Middle East so the reader can understand that great ideas require teamwork

(D) to present key events in the Middle East's past clearly so the reader can understand when and why these events happened

4 Read the article's introduction [paragraphs 1-3] and the final section, "Access To Technology Varies."

What is the connection between those two sections?

(A) The introduction lists two important Middle Eastern leaders who led all of the Middle East's scientific advancements; the conclusion explains that the Middle East no longer has any scientific leaders.

(B) The introduction highlights key Middle Eastern achievements in science and technology; the conclusion suggests that the Middle East no longer values technological advancement.

(C) The introduction provides background information about the Middle East and technology; the conclusion explains what technology is like in the Middle East now.

(D) The introduction summarizes the impact the Middle East had on technology, science and math; the conclusion emphasizes that the Middle East now benefits from other countries' hard work with advancing technology.