

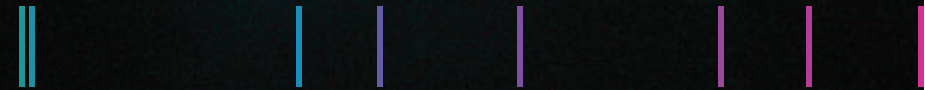


BIG HISTORY PROJECT

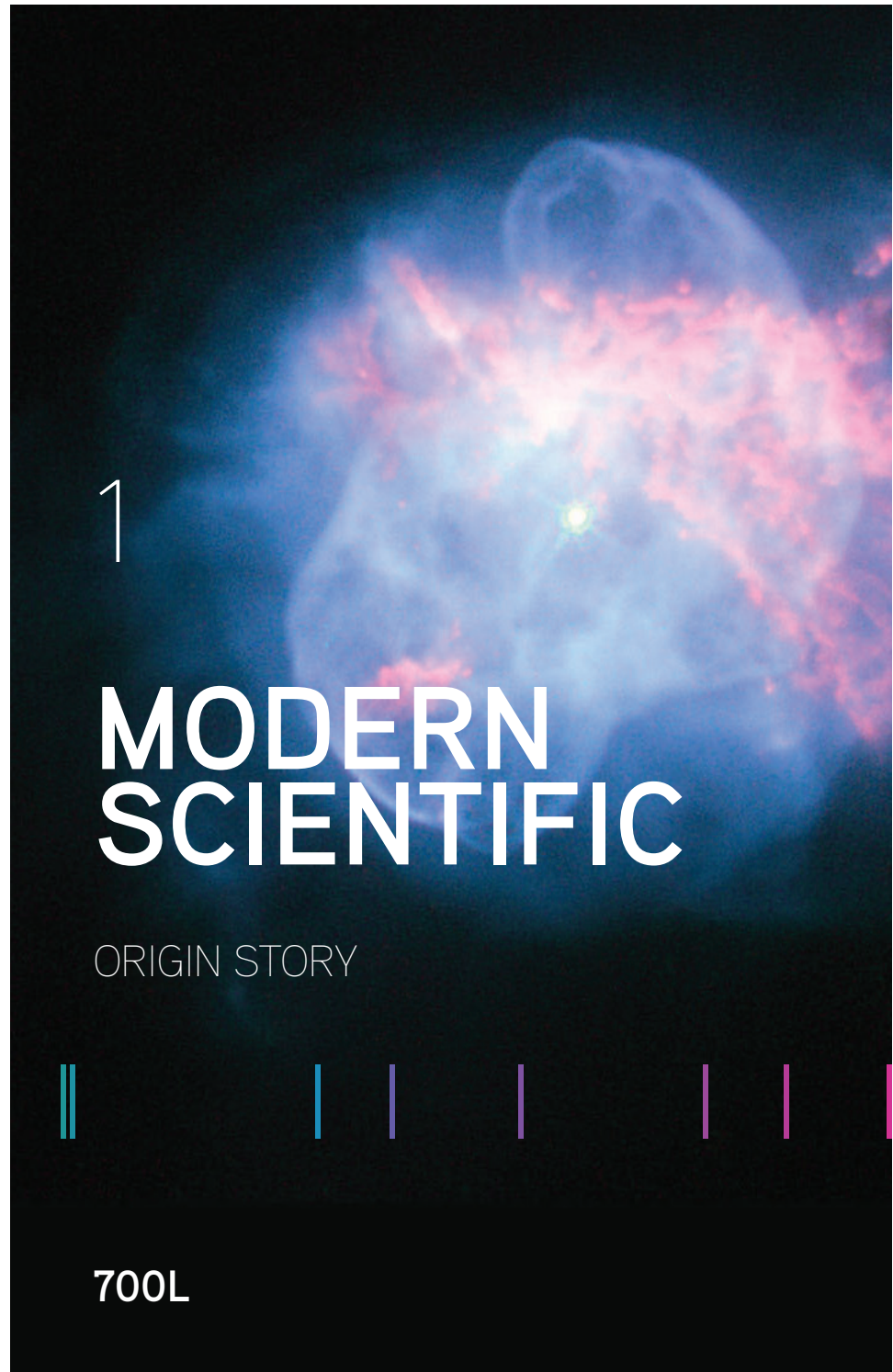
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# MODERN SCIENTIFIC

ORIGIN STORY



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# MODERN SCIENTIFIC

THE BIG BANG

By Cynthia Stokes Brown, adapted by Newsela

From vast nothingness  
to a Universe of stars  
and galaxies and our own  
Earth.

*This version of an origin story is based on modern science. It summarizes a great collection of historical and scientific information.*

In the beginning, there was nothing. There was just darkness. Suddenly, from a single point, all the energy in the Universe burst forth. That moment was 13.8 billion years ago. Since then, the Universe has been expanding. And as it gets bigger it cools down.

Gradually energy cooled enough to become matter. One electron could stay in orbit around one proton to become an atom of hydrogen. Great clouds of hydrogen atoms swirled around space. Then gravity pulled some atoms so close together that they began to burn as stars. Stars swirled together in giant clusters called galaxies. Today, the number of galaxies is in the billions.

After each star burned up all its matter, it died in a huge explosion. The explosion was so hot, some of the atoms got stuck together. As they joined, they got more and more complex. That allowed them to form many different elements, including gold and silver.

One giant star, our mother star, exploded. The explosion scattered clouds of gas containing all the elements needed to form living beings. About 5 billion years ago, gravity pulled these atoms into a new star that became the Sun. The leftover pieces of matter stuck to each other and formed eight planets. These planets revolve around the Sun and make up our solar system.

## Perfect size, perfect distance

The third planet out from the Sun, Earth, became our home. It was the perfect size — not too big, not too small. And it was the perfect distance from the Sun. If it had been too far away it would be too cold. Too close, and our planet would be too warm.

A thin crust formed over Earth's hot interior. The temperature on the surface was just right for water to form. Gradually the chemicals in the water formed inside of little sacks called membranes, which protected them from the water. Inside the membranes one-celled living things appeared. Those organisms were able to survive and reproduce.

For 3 billion years these one-celled creatures reproduced almost exactly, but not quite. They gradually changed in response to their environment.

But they also changed their environment. They learned to burn energy from the sun. And they released oxygen into the atmosphere. The oxygen formed an ozone layer around Earth that protected life from the Sun's rays.

Eventually cells stuck together to form creatures with many cells. Plants and animals came out of the sea and onto land. They became more and more complex and aware. Then about 200,000 years ago human beings came onto the scene. We evolved from a shared common ancestor of apes.

Humans could talk in symbols and sing, dance, draw, and cooperate more than the other animals could. Humans learned to write. Importantly, we began to collect our learning together so that it kept expanding. Humans increased in skills and in numbers. In some places, there were too many people and too few big animals.

Then humans learned to grow their own food and herd their own animals. Some animals learned to cooperate with humans. This gave humans new sources of food and animals helped them do work. This led to people living in larger and larger groups. These groups expanded into cities and empires. As humankind grew it used more and more of the resources of Earth. Humans collaborated and learned collectively in more complex ways; they traveled, traded, and exchanged inventions. They created vast civilizations of astonishing beauty and complexity.

Humans were always looking for more energy to use. About 200 years ago, we learned to use the energy from coal. We found this hard rock buried underground. Coal actually came from trees that grew more than 300,000 years ago. Over time the trees became fossils. Now we burn coal for heat and electricity.

Humans also learned to burn oil to create energy. Like coal, oil helped create heat and electricity. It also powered cars and planes. Like coal, we have to dig it up. Oil comes from the remains of tiny animals like algae and plankton buried long ago under the sea and fossilized. As we burned these fossil fuels, the gases they released drifted up into the atmosphere. The human need for more and more energy began to change the climate quickly.

Now humans are in a difficult situation. Fossil fuels are running out. Yet, our population is growing quickly. We are pushing many plants and other animals into extinction. As a result of all this, we are changing the climate. What are we humans going to do next?

# Image credits

Planetary nebula NGC 6210 in Hercules Constellation

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