



The Mini Page

Betty Debnam, Founding Editor and Editor at Large



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Changing Ideas of Space and Time

Earthshaking Technology



photo courtesy NPS

For more than 5,000 years, people relied on big animals for transport. In the 1850s, the train transformed transportation. It conquered the problem of distance. This steam locomotive is at a national historic site, Steamtown, Pa.

All of a sudden, in what seems like the blink of an eye, the world can change forever. A few inventions have had such a powerful effect that they changed the way people think and act.

The printing press, steam power, the telegraph and the computer were giant forces for change. Thousands of other inventions sped along behind them, changing the world in smaller ways.

These super-powerful inventions allowed knowledge to fly from person to person in ways never seen before. They closed distances between people.

The Mini Page talked with an expert on the history of technology to learn more about these revolutionary inventions.

The printing press

In about 1450, a German goldsmith, Johann Gutenberg, invented the first practical printing press. His press used **movable type** — metal letters that could be moved around.

In the centuries before the press,

most books were created by hand. Books took years to copy and were very expensive. Only rich people, churches or governments could afford them. Few people even knew how to read. The press made it possible for regular people to own books. Newspapers sprang up all over.

Changing the world with words

The printing press changed every part of civilization, including religion. For centuries, the Catholic Church had been the main religious force in Europe. Church officials told people what the Bible said.

The first complete book Gutenberg printed on his new press was the Bible. Soon, people were reading the Bible themselves, without someone else telling them what to think about it.

This helped lead to a revolution in religion. Within about 70 years after the invention of the printing press, Martin Luther was leading a movement to break away from the Catholic Church. New religious ideas were born.



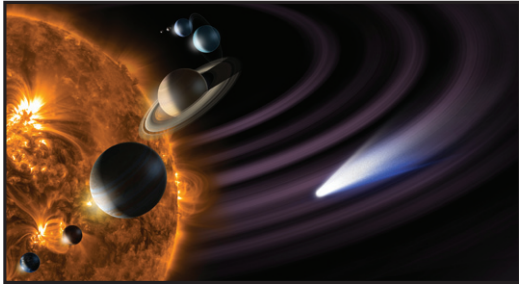
art by Jost Amman

This woodcut from about 1568 shows the man on the left taking off a printed sheet from the press. The man on the right is putting ink on the metal type.

Changes in Thought

The scientific revolution

Discoveries in the sciences changed the way people saw the universe. The period between the 1500s and the 1700s is often called “the scientific revolution.”



art courtesy NASA

Experts believe the scientific revolution started when Nicolaus Copernicus tried to convince people that the Earth and planets moved around the sun. Until then, people had thought the Earth was the center of the universe. This is a modern artist's view of the solar system, with the planets orbiting the sun.

Other advances included: the invention of the microscope and telescope; Galileo's improved telescope that allowed him to view closer images of the moon and some planets; and Isaac Newton's discovery of the laws of motion and gravity.

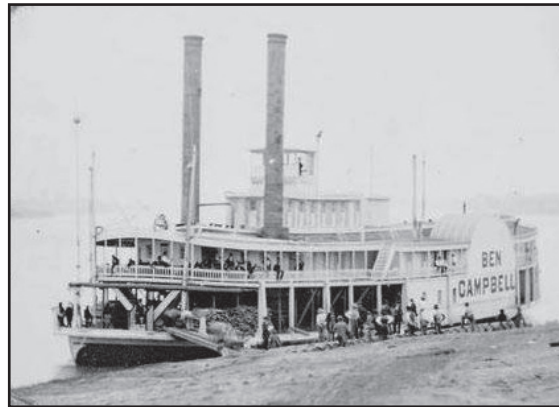


photo courtesy LOC

In 1814 steamboats could travel about 8 miles per hour downstream and about 3 miles per hour upstream, about as fast as a person can walk.

Advanced technology

In the late 1700s and early 1800s, technology changed history again. For most of history, the only way to increase human strength or speed was to work with a stronger animal, such as a horse or ox.

The invention of practical steam engines gave people a much greater ability to power up. Steam power was the most advanced technology people had ever seen.

Steam travel

In 1800, it might have taken five or six days to travel from New York City to Washington, D.C., by horseback or stagecoach. By the 1830s, steam-powered trains allowed people to make the journey in less than a day at an affordable price.

Steamboats allowed people to travel up and down a river and cross the ocean more quickly.

Steamboats and steam locomotives gave people the ability to move themselves and goods into remote parts of the country.

Imagine that you lived on the frontier in the early 19th century. Before steam engines, you could get a piano, for instance, only if you carried it in a wagon drawn by animals. People in the frontier didn't buy a lot of pianos.

But with steam engines, it became possible to have a piano delivered to your hometown. Transportation became affordable for the regular person. People could visit family and friends. Ideas and news spread faster.

Ready Resources



The Mini Page provides ideas for websites, books or other resources that will help you learn more about this week's topics.

On the Web:

- bit.ly/Ifk9gk
- bit.ly/1h1zikv
- nps.gov/stea/index.htm

At the library:

- “Locomotive” by Brian Floca
- “Computer” by DK Eyewitness Books
- “Giants of Science: Johann Gutenberg” by Anna Sproule



Technology

TRY 'N'
FIND

Words that remind us of top technology changes are hidden in the block below. Some words are hidden backward or diagonally. See if you can find: BOAT, BOOK, COMMUNICATION, GUTENBERG, HORSE, INVENTION, NEWS, PRESS, RAILROAD, READ, REVOLUTION, SCIENCE, SPACE, STEAM, SUN, TECHNOLOGY, TELEGRAPH, TIME, TRAIN, TYPE.



WHAT WILL
WE THINK OF
NEXT?

G S N O I T A C I N U M M O C
U T P D A O R L I A R T Y P E
T T I A H K N O I T N E V N I
E B R M C O H P A R G E L E T
N S O A E E R L E C N E I C S
B T R A I K L S S S E R P N V
E E E V T N N N E K O O B E S
R A A Y G O L O N H C E T W U
G M D N O I T U L O V E R S N

Mini Spy . . .



Mini Spy loves to use her new computer. See if you can find:

- exclamation mark • ice cream cone • seven number 7s
- letter B • pencil • lima bean • carrot
- bell • ring • key • word MINI
- steak • sailboat • safety pin • ladder
- letter D • arrow • tin can • letter E



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Rookie Cookie's Recipe Egg Sausage Casserole

You'll need:

- 1 (16-ounce) package turkey breakfast sausage
- 6 eggs
- 1 1/2 cups reduced-fat milk
- 3 cups bread, cut into cubes
- 1 cup grated cheddar cheese

What to do:

1. Brown sausage in skillet; allow to cool.
2. Beat eggs and add milk in a large bowl.
3. Stir in cheese and bread cubes.
4. Add sausage and mix gently.
5. Coat an 8-by-8-inch square baking pan with cooking spray.
6. Chill in refrigerator for at least one hour.
7. Bake at 325 degrees for one hour.

You will need an adult's help with this recipe.



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Meet Kristen Wiig



photo by Wilson Webb, TM & © 2013 Twentieth Century Fox Film Corp.

Kristen Wiig stars as Cheryl in the movie "The Secret Life of Walter Mitty." She was the voice of Lucy in "Despicable Me 2" and Ruffnut in "How to Train Your Dragon 2."

She has also acted in several TV programs and has been the voice of several characters in animated TV shows. She has co-written a movie script and wrote many of her comedy sketches.

Kristen, 40, was born in Canandaigua, N.Y., and grew up in Lancaster, Pa., and Rochester, N.Y. She studied art and theater in college. After college, she worked in a comedy troupe in Los Angeles and then joined the cast of "Saturday Night Live."

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Gus Goodsport's Report

Supersport: Russ Smith



Height: 6-0
Weight: 165

Birthdate: 4-19-91
Hometown: Brooklyn, N.Y.

After suffering a concussion, breaking his foot and injuring his knee, Russ Smith wanted to leave the University of Louisville his freshman year and go back home to Brooklyn. Instead, he decided to tough it out. Good thing. After that rocky beginning, Smith has rocketed to college basketball stardom.

He helped Louisville win the national title last year, averaging 22.3 points in the NCAA tournament, and made third-team All-America. The senior guard is expected to lead the Cardinals again this season.

Nicknamed "Russdicolous" for his unconventional moves, Smith also has an outgoing personality and sense of humor.

On a more serious note, Smith lists English as his favorite academic subject and says that "Work harder every day" is the best advice he has received. Staying at Louisville and working harder has paid off.

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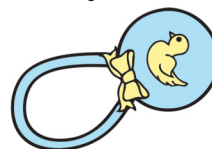
MIGHTY FUNNY'S

Mini Jokes

All the following jokes have something in common. Can you guess the common theme or category?

Barry: What makes it easy for babies to cheat on exams?

Betty: Crib notes!



Barbara: How is a baby like an old car?

Bob: They both have rattles!



Bill: What division of an army is best for babies?

Ben: The infantry!

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Bringing the World Together

Fast communication

When the first complete telegraph line was laid in 1844, instant communication was possible for the first time in history. News could spread across the country in moments. By 1850, cities and small towns in the United States were connected by telegraph lines. By 1866, a telegraph cable was successfully run on the floor of the Atlantic Ocean. People could now instantly communicate with people in other countries as well.



photo courtesy LOC

A telegraph operator prints a telegram in about 1908.

The Mini Page thanks William G. Thomas III, chair, University of Nebraska-Lincoln department of history, and author of the adult-level book "The Iron Way," for help with this issue.

Next week, The Mini Page takes a look at the new year with a 2014 calendar.

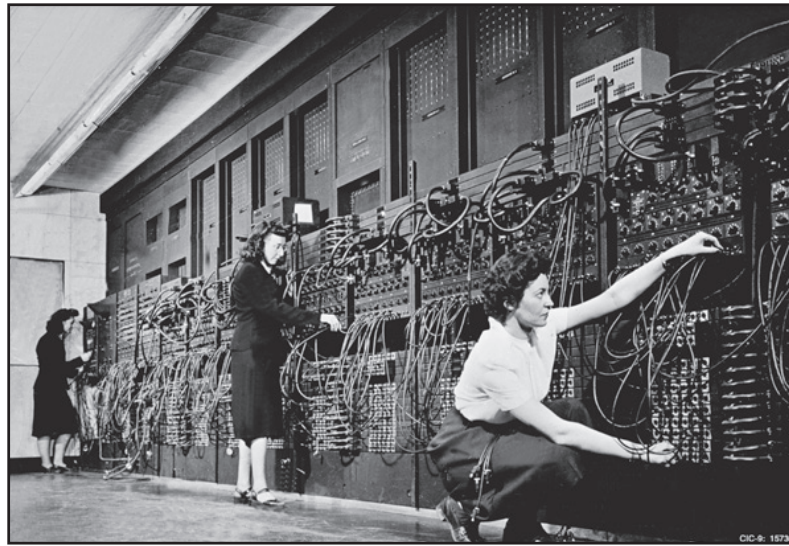


photo courtesy Oak Ridge National Laboratory

Computer programmers for ENIAC had to physically reprogram it by inserting cables into plug boards. ENIAC could not store programs.

ENIAC was designed by John Mauchly and J. Presper Eckert at the University of Pennsylvania. ENIAC weighed 30 tons and filled a room the size of a school gym.

Changing time and space

Together, steam engines and the telegraph changed the way people thought about time and space. The world seemed to shrink. People in the 1800s understood that new technology was changing the world. It was an exciting time.

In 1869, the first transcontinental railroad was completed, connecting the United States from coast to coast.

People could transport goods across the country, and they could travel easily. They were no longer stuck in one region for their whole lives. People could reach the frontier without months of dangerous travel. Homesteaders rushed to settle the land in the West.

These changes were not all good. The railroad also meant that men could be rushed to battlefields during the Civil War, and it sped up the removal of Native Americans from their homelands.

Computers change the world

With the invention of computers, everything changed again. The Internet connects people on one side of the planet to those on the other.

The first general-purpose electronic digital computer, the ENIAC, or Electronic Numerical Integrator and Calculator, was built in 1946. For the first time, computers could be programmed to solve many different problems. By 1995, the Internet was up and running.

We are still at the beginning of the computer revolution. Computer-driven robots are performing surgeries. Computers can respond to eye blinks, turning on the TV or turning up the heat for people who are paralyzed. Computers are running the Mars Curiosity rover.

Can you imagine what the world might be like when you are grown up?



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