**MAIN IDEA**

**EMPIRE BUILDING** During the Tang and Song dynasties, China experienced an era of prosperity and technological innovation.

**WHY IT MATTERS NOW**

Chinese inventions from this period, such as printing, gunpowder, and the compass, changed history.

**TERMS & NAMES**

- Tang Taizong
- Wu Zhao
- movable type
- gentry

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**SETTING THE STAGE**

After the Han Dynasty collapsed in A.D. 220, no emperor was strong enough to hold China together. Over the next 350 years, more than 30 local dynasties rose and fell. Finally, by 589, an emperor named Wendi had united northern and southern China once again. He restored a strong central government. Under the next two dynasties, the Tang and the Song, China experienced a prolonged golden age. It became the richest, most powerful, and most advanced country in the world.

**The Tang Dynasty Expands China**

Wendi declared himself the first emperor of the Sui (sway) Dynasty. The dynasty lasted through only two emperors, from 581 to 618. The Sui emperors’ greatest accomplishment was the completion of the Grand Canal. This waterway connected the Huang He and the Chang Jiang. The canal provided a vital route for trade between the northern cities and the southern rice-producing region of the Chang delta.

About a million peasant men and women toiled five years to dig the more than 1,000-mile waterway. Perhaps as many as half of the workers died on this project. Thousands more toiled and died rebuilding the Great Wall. The endless labor on state projects turned the people against the Sui Dynasty. Overworked and overtaxed, they finally revolted. In 618, a member of the imperial court assassinated the second Sui emperor.

**Tang Rulers Create a Powerful Empire**

While short-lived, the Sui Dynasty built a strong foundation for the great achievements of the next dynasty, the Tang (tahng). The Tang Dynasty ruled for nearly 300 years (618–907). The Tang emperor who began these achievements was **Tang Taizong**. His brilliant reign lasted from 626 to 649.

Under the Tang rulers, the empire expanded. Taizong’s armies reconquered the northern and western lands that China had lost since the decline of the Han Dynasty. By 668, China had extended its influence over Korea as well. The ruler during the campaign in Korea was the empress **Wu Zhao** (woo jow). From about 660 on, she held the real power while weak emperors sat on the throne. Finally, in 690, Empress Wu assumed the title of emperor for herself—the only woman ever to do so in China.
Tang rulers further strengthened the central government of China. They expanded the network of roads and canals begun by the Sui. This helped to pull the empire together. They also promoted foreign trade and improvements in agriculture.

Scholar-Officials To manage their large empire, the Tang rulers needed to restore China's vast bureaucracy. They did this by reviving and expanding the civil service examination system begun by the Han Dynasty. The relatively few candidates who passed the tough exams became part of an elite group of scholar-officials.

In theory, the exams were open to all men, even commoners. However, only the wealthy could afford the necessary years of education. Also, men with political connections could obtain high positions without taking the exams. Despite these flaws, the system created a remarkably intelligent and capable governing class in China. Before the Tang Dynasty, a few noble families dominated the country. As the examination system grew in importance, talent and education became more important than noble birth in winning power. As a result, many moderately wealthy families shared in China's government.

The Tang Lose Power To meet the rising costs of government, Tang rulers imposed crushing taxes in the mid-700s. These brought hardship to the people but failed to cover the costs of military expansion and new building programs.

Moreover, the Tang struggled to control the vast empire they had built. In 751, Muslim armies soundly defeated the Chinese at the Battle of Talas. As a result, Central Asia passed out of Chinese control and into foreign hands. After this time, border attacks and internal rebellions steadily chipped away at the power of the imperial government. Finally, in 907, Chinese rebels sacked and burned the Tang capital at Ch’ang-an and murdered the last Tang emperor, a child.

The Song Dynasty Restores China After the fall of the Tang Dynasty, rival warlords divided China into separate kingdoms. Then, in 960, an able general named Taizu reuniited China and proclaimed himself the first Song (sung) emperor. The Song Dynasty, like the Tang, lasted about three centuries (960–1279). Although the Song ruled a smaller empire than either the Han or the Tang, China remained stable, powerful, and prosperous.

Song armies never regained the western lands lost after 751. Nor did they regain northern lands that had been lost to nomadic tribes during the Tang decline. For a time, Song emperors tried to buy peace with their northern enemies. They paid hefty annual tributes of silver, silk, and tea. This policy, however, ultimately failed
to stop the threat from the north. In the early 1100s, a Manchurian people called the Jurchen conquered northern China and established the Jin Empire. The Jurchen forced the Song to retreat south across the Huang He. After 1127, the Song emperors ruled only southern China.

The Song rulers established a grand new capital at Hangzhou, a coastal city south of the Chang Jiang. Despite its military troubles, the dynasty of the Southern Song (1127–1279) saw rapid economic growth. The south had become the economic heartland of China. Merchants in southern cities grew rich from trade with Chinese in the north, nomads of Central Asia, and people of western Asia and Europe.

### An Era of Prosperity and Innovation

During the Tang and Song dynasties, China’s population nearly doubled, soaring to 100 million. By the Song era, China had at least ten cities with a population of 1 million each. China had become the most populous country in the world. It also had become the most advanced.

#### Science and Technology
Artisans and scholars made important technological advances during the Tang and Song eras. Among the most important inventions were movable type and gunpowder. With **movable type**, a printer could arrange blocks of individual characters in a frame to make up a page for printing. Previously, printers had carved the words of a whole page into one large block. The development of gunpowder, in time, led to the creation of explosive weapons such as bombs, grenades, small rockets, and cannons. Other important inventions of this period include porcelain, the mechanical clock, paper money, and the use of the magnetic compass for sailing. (See the Social History feature on pages 328–329.)

The 1000s to the 1200s was a rich period for Chinese mathematics. The Chinese made advances in arithmetic and algebra. Many mathematical ideas, such as using negative numbers, spread from China southward and westward.

#### Agriculture
The rapid growth of China resulted in part from advances in farming. Farmers especially improved the cultivation of rice. In about the year 1000, China imported a new variety of fast-ripening rice from Vietnam. This allowed the farmers to harvest two rice crops each year rather than one. To make sure that farmers knew about this improved variety, Chinese officials distributed seedlings throughout the country. The agricultural improvements enabled China’s farmers to produce more food. This was necessary to feed the rapidly expanding population in the cities.

#### Trade and Foreign Contacts
Under the Tang and Song emperors, foreign trade flourished. Tang imperial armies guarded the great Silk Roads, which linked China to the West. Eventually, however, China lost control over these routes during the long Tang decline. After this time, Chinese merchants relied increasingly on ocean trade. Chinese advances in sailing technology, including use of the magnetic compass, made it possible for sea trade to expand. Up and down China’s long coastline, the largest port cities in the

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**Making Inferences**

How might the spread of mathematical ideas from China affect other countries?
world bustled with international trade. Merchant ships carried trade goods to Korea and Japan. They sailed across the Indian Ocean to India, the Persian Gulf, and even the coast of Africa. Chinese merchants established trading colonies around Southeast Asia. Many foreign traders, mostly Arabs, resided in Chinese cities. Through trade and travel, Chinese culture spread throughout East Asia. One major cultural export was Buddhism. This religion spread from China to Vietnam, Korea, and Japan. The exchange of goods and ideas was two-way. For example, foreign religions, including Islam and some Eastern sects of Christianity, spread to China and won followers.

**A Golden Age of Poetry and Art** The prosperity of the Tang and Song dynasties nourished an age of artistic brilliance. The Tang period produced great poetry. Two of its most celebrated poets were Li Bo, who wrote about life’s pleasures, and Tu Fu, who praised orderliness and Confucian virtues. Tu Fu also wrote critically about war and the hardships of soldiers. Once he himself was captured by rebels and taken to Ch’ang-an, the capital city. He had sent his family to the village of Fuzhou for safety. Here he describes their separation:

> Text is not available for use on this CD-ROM. Please refer to the text in the textbook.

Chinese painting reached new heights of beauty during the Song Dynasty. Painting of this era shows Daoist influence. Artists emphasized the beauty of natural landscapes and objects such as a single branch or flower. The artists did not use bright colors. Black ink was their favorite paint. Said one Song artist, “Black is ten colors.”
Changes in Chinese Society

China’s prosperity produced many social changes during the Tang and Song periods. Chinese society became increasingly mobile. People moved to the cities in growing numbers. The Chinese also experienced greater social mobility than ever before. The most important avenue for social advancement was the civil service system.

Levels of Society
During Tang and Song times, the power of the old aristocratic families began to fade. A new, much larger upper class emerged, made up of scholar-officials and their families. Such a class of powerful, well-to-do people is called the gentry. The gentry attained their status through education and civil service positions rather than through land ownership. Below the gentry was an urban middle class. It included merchants, shopkeepers, skilled artisans, minor officials, and others. At the bottom of urban society were laborers, soldiers, and servants. In the countryside lived the largest class by far, the peasants. They toiled for wealthy landowners as they had for centuries.

The Status of Women
Women had always been subservient to men in Chinese society. Their status further declined during the Tang and Song periods. This was especially true among the upper classes in cities. There a woman’s work was deemed less important to the family’s prosperity and status. Changing attitudes affected peasant families less, however. Peasant women worked in the fields and helped produce their family’s food and income.

One sign of the changing status of women was the new custom of binding the feet of upper-class girls. When a girl was very young, her feet were bound tightly with cloth, which eventually broke the arch and curled all but the big toe under. This produced what was admiringly called a “lily-foot.” Women with bound feet were crippled for life. To others in society, such a woman reflected the wealth and prestige of her husband, who could afford such a beautiful but impractical wife.

The social, economic, and technological transformations of the Tang and Song periods permanently shaped Chinese civilization. They endured even as China fell to a group of nomadic outsiders, the Mongols, whom you will learn about in Section 2.
China's Age of Invention

Printing, paper money, porcelain, tea, restaurants, gunpowder, the compass—the number of things that Chinese of the Song Dynasty (A.D. 960-1280) gave to the world is mind-boggling. This vibrant period in Chinese history was marked by economic prosperity and remarkable technological innovation. In this interview, China expert Robin D. S. Yates, Professor of History and East Asian Studies at McGill University, describes this exceptional era and how it influenced the course of world history.

TUESDAY, FEBRUARY 29, 2000

A cosmopolitan culture

NOVA: Let's begin by providing a worldwide context for the Song Dynasty. In 1271, the Italian merchant Marco Polo is believed to have visited China. What was his impression of this very different world?

Robin Yates: Well, there's a debate as to whether Marco Polo ever did, in fact, visit China. However, assuming Polo's account is real, what comes across most obviously is that he was utterly astonished at the size of the cities and the extent of commercial activity in China. The number of ships on Chinese canals and rivers far exceeded what Polo was familiar with in the cities of Italy, such as Venice or Genoa.

The Chinese had a very cultured and civilized society. Song Dynasty silks, for example, were remarkably advanced. The Chinese were using very sophisticated looms with up to 1,800 moving parts. China was simply far more developed technologically and culturally than any state in the West.

But one wonders whether Polo had actually visited, because of the things that he doesn't write about at all. He doesn't mention paper money and the bank note, which were both invented
during the Song Dynasty. You would have thought that if he'd lived there for 20 years, he might have noticed it, because Western Europe didn't have it.

**What are some of the things that made these large, bustling Chinese cities unique in their time?**

There is a strong connection between the increasing urbanization and the burgeoning commercialization of Chinese culture at this time. Merchants traveled from one place to another, and a new group of scholar-officials was appointed to administer the country. The traveling merchants and officials wanted to eat the cuisine that they were used to in their local region. And people with some extra wealth in the urban centers also wanted to try food from different regions. So what developed was a new urban type of culture that included eating out in restaurants and the drinking of tea.

It was really in the Song Dynasty that tea reached its cult status. It was drunk out of very beautiful, extraordinarily exquisite tea bowls made from porcelain, one of the glories of the Song Dynasty. The word "china" is appropriate for porcelain, because the Chinese developed the technology for its production. The Song Dynasty ceramic industry was basically the first commercialized industry. They produced the pieces in mass quantities for the imperial palace, but also for this newly arisen class of scholar-officials and an urban elite and for these restaurants. Eventually, two of the main products the West wanted in the 17th, 18th, and 19th centuries were porcelain and tea, so much of the trade between East and West was based on those items.

With restaurants, common folk could eat out very, very cheaply on food such as fried noodles, which, it is said, Marco Polo introduced to the West. Although there's a lot of debate about that, the idea of spaghetti probably comes from China at about the time of the Song, possibly carried across the ocean by Arab traders, who are known to have established themselves in ports such as Canton by the ninth century.

**The power of gunpowder**

Tea and restaurants are certainly two important gifts the Song people gave to the world. **What were some of the other Chinese inventions of this period that had a profound influence on the course of civilization?**

Gunpowder completely transformed the way wars were waged and contributed to the eventual establishment of might over right. In my own research, I have been able to refute the common notion that the Chinese invented gunpowder but only used it for fireworks. I'm sure that they
Detail of a painting showing a small banquet hosted by the emperor for scholar-officials.

Tea drinking in China dates back to at least the Han Dynasty (206 B.C.-A.D. 220), when its medicinal use was recorded, but it reached new heights during the Song Dynasty.
Song Dynasty porcelain in a floral design

The Chinese used gunpowder for more than mere entertainment. In addition to fireworks, it fueled weapons of war during the Song Dynasty.
discovered military uses for it. I have found the earliest illustration of a cannon in the world, which dates from the change-over from the Northern Song to the Southern Song around 1127, which was 150 years before the development of the cannon in the West. The Song also used gunpowder to make fire lances - actually flame throwers - and many other gunpowder weapons, such as anti-personnel mines, which are thankfully now being taken out of general use.

Needless to say, the cannon was used by the kings of Europe to fundamentally alter the social structure of the European world. It enabled kings to destroy the castles of the feudal lords. And it enabled, therefore, the centralized nation-state to develop.

By the end of the Song Dynasty, the Chinese invented multiple-stage rockets. If we hadn't had that, maybe we would not have been able to put a man on the moon. It was that fundamental an idea. Joseph Needham, an historian of Chinese science and technology, also argues that the notion of an explosion in a self-contained cylinder also permitted the development of the internal combustion engine and the steam engine. Our basic modes of transportation would not have been possible without this Chinese invention.

**How did the Chinese invention of gunpowder move from East to West?**

Although scholars often consider the Song Dynasty to have been very weak, its use of gunpowder was the reason it was able to hold off the Mongols for many decades. Eventually, the Mongols were able to capture Chinese artisans and use the latest gunpowder technology against the Chinese. The Mongols used those people who had a special knowledge of technology and employed them in their own armies as engineers. They carried that technology to the West very rapidly because it was very helpful in their conquests.

What was interesting with this transfer of technology is that it goes both ways. After the introduction of the cannon and gunpowder to the West, Westerners very quickly became expert with cannons. They cast bronze cannons that were eventually much better than those the Chinese could produce. The Western bronze cannon was then brought back to China by the Jesuits in the 16th and 17th centuries. The Ming Dynasty, which fought the Manchus, employed Jesuit priests to cast cannons that were more advanced than the Chinese had at that time.

**Impact of the printed word**

You've made a strong case for the impact of gunpowder all over the world. But were there major non-military inventions during the Song Dynasty that had an impact worldwide?
Printing and movable type were certainly two of them. Printing was actually invented by the Buddhists in the eighth century for dissemination of religious images and texts. But in the Song Dynasty, the government promoted the publication of the Confucian texts called "The Canons." These texts had to be studied by examination candidates. Once you passed the examinations you were eligible to become an official. So many copies of the Confucian texts were published at this time. In addition, the government popularized the use of printing for the dissemination of technical manuals, such as agricultural manuals and works on medicine. Eventually, private printing presses started, which fundamentally altered the world of letters and dissemination of knowledge.

In the 11th century, a famous literary artist by the name of Shen Gua records the invention of movable-type printing by a man by the name of Bi Sheng. It was this invention that was eventually taken over to the West and used by Gutenberg for the printing of the Bible. Needless to say, this had a profound effect on the nature of knowledge and the development of literature. So this is probably the number-one invention of the Song Dynasty.

Did the development of printing change China the way it would change Europe?

The effect of printing was different in East and West because of the nature of the Chinese language. The Chinese language, when it is written, uses characters or graphs, sort of like ideograms. It is not an alphabet like we know it. As a consequence, there are literally thousands of Chinese characters. Obviously for most types of writing, you don't need the 48,000 different Chinese characters. You only need to use 3,000 to 10,000, something like that.

Movable-type printing was more practical, with a very limited number of symbols, such as the letters used in European alphabetic languages. In Chinese writing, you had to have a very large number of characters, each individually carved to set in the press. So even though they invented movable type, it actually was never as useful as wood-block printing—carving the blocks of each page separately and independently. So that was the reason why there were some books printed using movable type, but it never really replaced wood-block printing in the way it did in the West.

Was movable type another example of technology moving from East to West, or was it an example of an innovation developing in the East and West simultaneously?

It's very unclear, but it does appear that there was a transfer from East to West. The Mongol invaders of China were able to use their highly developed organization and cavalry to conquer all of Central Asia, including parts of India, the Middle East, and Europe. So the invention was probably transferred to the West as a result of the opening up of the trade routes and the lines of communication established by the Mongols. I'm not saying that Gutenberg actually had access to a Chinese press; that's highly unlikely. Rather, he probably got wind of the idea of printing
The *Pen ts'ao*, printed with wood block and dated to 1249, is an illustrated book that describes Chinese herbal medicine. Printing not only enabled the spread of cultural wisdom but also allowed Chinese officials to distribute important documents.

Then, as now, rice was the staple of the Chinese diet. Faster growing rice distributed during the Song Dynasty helped prevent famine.
through some unknown and lost source. It's rather ironic that Gutenberg was recently voted the man of the millennium, when it was the Chinese who actually invented the technology.

**What influence did these printing innovations have on Chinese history?**

Well, that's a question that brings us into the political realm. One of the major social changes that took place in the Song Dynasty was that the old aristocratic order ended and the nature of the social elite changed dramatically.

Specifically, a new class of scholar-officials came to the fore. To a large extent, they were chosen on the basis of their success in the official examinations. The scholars had to be very familiar with the Confucian classical texts, which were originally produced more than 1,000 years earlier. As a consequence, political power and social dominance were dependent upon knowledge of the written text. Printing allowed books to be very much more widely disseminated and therefore allowed political power to be shared on a much broader scale than it had been in the past. The class of so-called literary or scholar-officials that evolved basically dominated China until the 20th century with the founding of the Republic in 1911.

**Was it a type of meritocracy?**

That's right. Official status was open to individuals who studied hard and passed the examination. A very important development that Joseph Needham points out is that doctors were tested on their medical knowledge. It would be impossible to measure people's ability and skill and knowledge without examinations. Could you imagine education without examinations?

**Without exams, you might be out of a job.**

Yes. And our society would not be able to survive. We depend on this Chinese examination system that was brought to the West. Before the introduction of examinations and the bureaucratic system that came from China, society was very much hierarchical and dependent upon who you were, in what family or occupation you were born into, and your social status. In democratic systems, you know, your status ideally depends upon equality of opportunity, and that's really one of the things that the Song ultimately gave to the rest of the world, along with all these other technologies.

**A booming economy**

**Did printing play a role in the economic boom of the Song Dynasty?**
A major role. The Chinese political philosophy held that the emperor and his officials were responsible for the welfare of the people - and that included the country's economic welfare. With that in mind, they took the agricultural innovations being made in one small region of China and disseminated printed texts about it across the entire Empire.

One of the major agricultural innovations that we talk about in the NOVA documentary is that a new type of rice was introduced from Vietnam that grew faster. It prevented famine and allowed people to grow a double crop of rice each year, giving them a surplus that they could sell on the open market. This led to more wealth in the rural sector.

They became more than subsistence farmers and began growing crops they could sell in the open market for cash. This spurred on the development of a commercial and agricultural economy, and also fed the increased urbanization that Marco Polo is reputed to have seen. So it was a very complex process.

**It sounds like these technological innovations and the economic boom went hand in hand.**

That's right. In order for the markets to develop and the circulation of goods to be achieved, for example, you needed a good system of communication. So one of the other major developments in the Song Dynasty was the rapid expansion of the canal and of the waterway system, which was particularly true in the southeast and southern parts of China.

To move goods from place to place in the open seas the Song developed the mariner's compass. Originally, the compass had been developed for divination purposes, a sort of magnetic spoon going back as early as the Han Dynasty 1,000 years before. The Song began to trade with Southeast Asia, because in the north they were cut off from the Silk Road by other empires. So they started to use the compass for navigational purposes to help them know the direction in which to sail.

Gradually the Chinese people traveled to Southeast Asia and into Taiwan, of course, and into the Philippines and places like that. In the early part of the Ming Dynasty, after the Mongols, the Chinese Admiral Zheng He led several significant expeditions around to India and even as far as Africa. Chinese porcelains have been found as far south as Zanzibar and Tanzania. This was just before the Age of Exploration in the West.

Accompanying the invention of the compass were other inventions, such as the development of new types of locks along the canals. The Chinese previously had invented the sternpost rudder, actually in the Han Dynasty, but the sternpost rudder was very, very important for controlling a vessel. They'd also invented sails that could move. In earlier times, in the Mediterranean, sails were fixed. They had to wait for the wind to change in order to be able to move. But the Chinese invented sails that could be trimmed so that they could travel regardless of which way the wind
was blowing. They also developed the structure of the ship's hold, dividing it into different watertight compartments. The result was that if one chamber in the hull sprang a leak, then it wouldn't damage the rest of the cargo.

If all oil tankers had double hulls like this, they wouldn't cause the kind of ecological problems that they've caused. All of these technological developments were interconnected with the commercialization and urbanization.