

# The Science and Technology that Ancient China Taught the West

by Robert Trout and Michael Billington

Sept. 24—The incredible pace of development in China since the reversal of the self-destructive era of the Great Proletarian Cultural Revolution (1966-76), and the subsequent launching of “Reform and Opening Up” under Deng Xiaoping, is unprecedented in history. Not only did the GDP per capita increase from \$300 in 1980 to almost \$11,000 in 2019, but China has created an infrastructure boom which surpasses even the transformation of the United States under Franklin Roosevelt’s New Deal. Over these decades the Chinese government has lifted approximately 800 million people out of poverty, and intends to eliminate abject poverty altogether by the end of this year.

Many in the West are shocked by the massive productive power of a nation so long enmired in deep poverty. But most are unaware that China, for nearly two thousand years, was far more developed than the West. In this article we will examine the Confucian culture that created the basis for the Chinese to make a series of remarkable inventions during the period from the 5th Century B.C. to the 13th Century A.D., especially in agricultural science and technology, which were not to be “discovered” in Europe for hundreds or even more than a thousand years. These inventions are the “secret” behind the fact that the Chinese enjoyed a far higher standard of living, a far greater relative population density, and a higher literacy rate than Europeans until the 15th Century European Renaissance.

## China’s Confucian Tradition

Now when food meant for human beings is so plentiful as to be thrown to dogs and pigs, you fail to realize that it is time for garnering, and when men drop dead from starvation by the wayside, you fail to realize that it is time for distribution.

When people die, you simply say, “It is none of my doing. It is the fault of the Harvest.” In what way is that different from killing a man by running him through, while saying all the time, “It is none of my doing. It is the fault of the weapon.” Stop putting the blame on the harvest and the people of the whole Empire will come to you.

—Mencius,  
Book 1, Part A, 3



*Portrait of the teaching Confucius, by Wu Daozi, ca. 685-758 A.D.*

The successes of ancient China in economic development were the result of the influence of the Confucian philosophical school, led by Confucius himself (551-476 B.C.) and his follower, Mencius (372-289 B.C.). Their school of thought, parallel to that of Socrates and Plato in Europe, has served as the driving force for every era of progress in science and the arts in China—including the current one—much as the Pla-

tonic tradition (as opposed to that of Aristotle) has been the driving force for progress in the West.

The crucial difference lies in the concept of the human mind of the different schools of thought. Platonists, like Confucianists, identify the creative power of the mind as that which distinguishes man from the beast, and recognize that the creative power is separate

from and superior to the senses. Only the human mind can break free of the axioms of any given state of knowledge regarding the laws of the universe, to discover entirely new principles of science and culture, and create a new set of axioms.

Mencius expressed this same fundamental concept as follows:

Those who follow their greater part become great. Those who follow their petty part become petty. The senses of hearing and seeing do not think, they are misled by things. Things interact with things and lead them astray. It is to the mind (heart) that is given the office of thinking. It is through thinking that man achieves virtue (truthfulness). If he does not think, he will fail to do so. This (the mind and the senses) are what Heaven has given us. If one stands fast on what is greater (the mind), then what is lesser (the senses) will not be able to take it from him.

—*Mencius*, Book 6, Part A, 15

Confucius taught that society must be governed by the Chinese concept of *ren* (仁) which is very similar to the Platonic and Christian concept of *agapē*—a love of truth and of mankind as a whole. Confucius proclaimed what the West would later call the Golden Rule: “Is there one word which may serve as a rule of practice for all one’s life?” The Master said, “Is not ‘reciprocity’ such a word? What you do not want done to yourself, do not do to others.” (*Analects of Confucius*, 15:24)

Moreover, some 2,200 years before the Preamble to U.S. Constitution was adopted, Confucius and Mencius established the responsibility of government to promote the General Welfare. The Emperor, as well as local rulers, were required to ensure the livelihood of the people, or risk losing the “Mandate of Heaven” and being removed from power. As Mencius stated, “Heaven sees with the eyes of its people. Heaven hears with the ears of its people.” (*Mencius* Book 5, Part A, 5)

But there were also schools of thought at that time, such as the Legalists and the Daoists, that argued that Man’s nature is essentially that of an animal who will do as much evil as possible to satisfy sensual appetites, and thus must be controlled through “punishments and rewards”—i.e., animal training. Under the short Legalist regime of Qin Shi Huang, the “First Emperor” of China from 221-210 B.C., the Confucian scholars were buried alive and the Confucian texts burned, many lost

to posterity.

The Daoists even argued that science was useless, interfering with the peasantry’s “communion with nature,” like today’s Greenies. Lao Zi’s *Dao De Jing* from the 6th Century B.C. urged rulers to “keep the people innocent of knowledge and desires, and to keep the knowing ones from meddling.” A poem credited to Lao Zi reads:

Banish wisdom, discard knowledge,  
And the people will be benefited a hundredfold.  
Banish benevolence, discard righteousness,  
And the people will be dutiful and compassionate.  
Banish skill, discard profit,  
And thieves and robbers will disappear.  
Banish learning,  
And there will be no more grieving.

But Confucianism generally held sway in China over the next 2,000 years, and until the European Renaissance and the foundation of the European nation-state in the 15th Century, the Chinese economy achieved a level of productivity that far exceeded that of Europe.

## Government That Promotes the General Welfare

Chinese governments in antiquity carried out numerous initiatives to develop agriculture, which was by far the largest sector of the economy at that time. *The Lu shi chun qiu*, or *Master Lu’s Spring and Autumn Annals*, written around 250-225 B.C., states:

The ruler shall order the work of the fields to begin. He shall order the inspectors of the fields to reside in the lands having an eastern exposure, to repair the borders and boundaries of the fields, to inspect the paths and irrigation ditches, to examine closely the mounts and hills, the slopes and heights and the plains and valleys to determine what lands are good and where the five grains should be sown, and they shall instruct and direct the people. This they must do in person. When the work of the fields had been well begun, with the irrigation ditches traced out correctly before-hand, there will be no confusion later.

Governments actively promoted the development of new technologies in agriculture, and often took initiatives to ensure their use by the peasants.

This is evidenced by the fact that over 500 tracts were produced, many of them by government officials, dating back over 2,000 years, developing the science of agriculture. These tracts covered a wide range of crops, and the entire range of techniques and technologies necessary to develop productivity, such as plowing, sowing, irrigation and cultivation.

Chinese writings on agriculture were vastly superior to those produced in Europe, until as late as the 18th Century. Roman works on farming remained the main writings used throughout the Middle Ages. These Roman tracts dealt with the management of slave estates to produce wine and olive oil, with little concerning other crops. We must also note that the Arabs had introduced many new techniques into Europe before the Renaissance.

Confucianism—not unlike Alexander Hamilton’s “American System of National Economy”—rejected “free trade,” and promoted government intervention to ensure the General Welfare. The *Han shu shi huo zhi* (Han Book on Food and Money), the first known economic history of China, published in the 1st Century A.D., discussed actions of the government to control speculators, who enriched themselves through actions that impoverished or starved the people. For example, the Han dynasty practiced a policy akin to parity-pricing for agriculture, with its “ever-level price granaries,” or “ever-normal granaries.” The government purchased grain during times of surplus, and sold it during times of shortage, in order to maintain a stable price. The price of many commodities was regulated to reflect the cost of production.

Free trade or “laissez-faire” economics, popularized by British East India Company agent Adam Smith, and adopted by the 18th-Century French Physiocrats, was based on a “hedonistic principle,” which Confucianism rejected.

François Quesnay, one of the creators of the Physiocratic doctrine, stated: “To secure the greatest amount of pleasure with the least possible outlay should be the aim of all economic effort.” The Physiocrats would later falsely claim that the success of the Chinese economy was due to their belief that only agriculture was truly productive—which was the Physiocratic doctrine.

However, to understand agriculture, or any sector of an economy, it is necessary to examine the processes that determine the economy as a whole. Contrary to the assertions of the French Physiocrats, the success of Chinese agriculture was based on technological break-

throughs which gave the Chinese a superior tool-making industry. Indeed, this is illustrated by the *Han shu*, which states, “Iron may be called a fundamental in farming.”

## The Science of Economics

The science of economics was founded by Leibniz and further developed by Lyndon LaRouche. We will discuss some of the basic concepts expressed in LaRouche’s [text](#), *So, You Wish to Learn About Economics*.

Gottfried Leibniz (1646-1716), who carefully studied the Jesuit missionaries’ translations of the Confucian scholars and promoted them across Europe, and also founded the science of Economics, focused on the application of heat-powered machinery to increase the power of the worker. As LaRouche states, “The increase of man’s power over nature is most easily measured as a decrease of the habitable land area required to sustain an average person.” A more accurate measurement is not simply the existing population density, but the potential level of population that a given technology can support: the “potential relative population-density.”

No economy can remain in a fixed level of technology. If a society does not advance to a higher level of technology, it will run into limits, as it exhausts the resources that are available at that level of technology. As LaRouche states, “Only societies whose cultures commit them to successful technological progress, as a policy of practice, are qualified to survive and to prosper.”

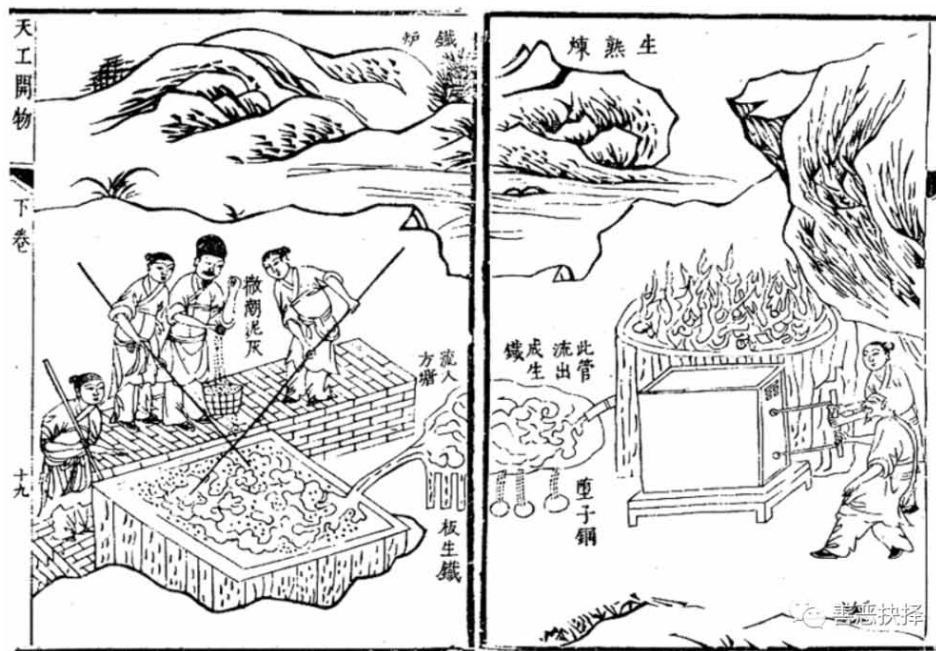
A successful economy must meet a number of conditions. The living standard of the population must rise. However, even as the living standards of the population rise, investment in capital goods must rise even more rapidly, causing the capital intensity of the economy to increase. A successful economy must increase the surplus that it invests in the development of new technology even more rapidly. It must also make necessary investments in basic infrastructure such as transportation, water supplies, health care and education.

We will see how China’s technological breakthroughs led to increases in the potential relative population-density.

## Chinese Metallurgy: The Basis for Superior Tools

The Iron Age is generally considered to have begun around 1200-1100 B.C. The introduction of iron allowed mankind to develop tools that were stronger and





Tiangong Kaiwu encyclopedia, printed 1637

Chinese iron workers smelting iron ore to make pig iron and wrought iron in 16th century. The left side shows a fining process, while the right shows men operating a blast furnace.

superior to stone or bronze. These improved tools increased productivity.

The manufacture of iron requires two processes: First, the iron, which naturally occurs in the form of an ore of iron oxide, must be separated from the oxygen and other impurities, in a high-temperature process, which is called reducing or smelting. The oxygen is removed by combining it with carbon, to form carbon dioxide. This leaves behind the iron in metallic form. The other impurities form a slag, which is then separated. Second, the raw iron must be manufactured into useful articles.

The earliest smelting of iron ore was done at temperatures below the melting point of iron, which is higher than that of copper and bronze. Iron, produced by this method, forms a spongy solid when it is removed from the furnace. Furnaces that reduced iron ore to its metallic form, while operating below the melting point of iron, were called bloom furnaces.

Once the reduction of iron ore to its metallic form has been accomplished, it must be shaped into a useful article. Transforming the spongy raw iron into a useful article was a slow and very inefficient process, which only allowed the production of utensils of simple shape, such as swords.

However, by no later than the end of what the Chinese call the “Spring and Autumn Period,” (770-476 B.C.), the Chinese developed the technology of the

blast furnace. This allowed them to heat the ore above its melting point and produce cast iron. Among the inventions that made this possible, was the double-action bellows. The manufacture of iron, using a blast furnace to produce a molten metal, greatly expanded production: The process could be continuous, as the molten metal flowing from the reducing furnace was poured into molds, and made into a large variety of products.

The blast furnace was introduced into Europe on a wide scale only in the late 14th Century, almost 2,000 years later. Henry VII constructed the first blast furnaces in England in the 15th Century, increasing

productivity in the English iron industry fifteen-fold.

The Chinese capacity to manufacture superior tools with the blast furnace led to a substantial advance in productivity throughout the entire economy. As early as the 3rd Century B.C., the state of Qin appointed government officials to supervise the iron industry and penalize manufacturers who produced substandard products. The Han Dynasty nationalized all cast-iron manufacture in 119 B.C. Around that time, there were 46 imperial Iron Casting Bureaus throughout the country, with government officials ensuring that cast-iron tools were widely available. This included cast-iron plowshares, iron hoes, iron knives, axes, chisels, saws and awls, cast-iron pots, and even toys.

The Chinese also developed methods for the manufacture of steel that were only matched in the West in the recent period. The characteristics of iron alloys are related to the carbon content. Cast iron generally has a high carbon content, which makes it strong, but brittle. Steel, which is an alloy of iron with a low carbon content, is strong and more durable. The use of steel in agricultural implements was introduced, on a wide scale, during the Tang Dynasty (A.D. 618-907). This led to a further improvement in productivity.

In the 2nd Century B.C., the Chinese developed what became known in the West as the Bessemer process. They developed a method for converting cast iron

into steel, by blowing air on the molten metal, which reduced the carbon content. In 1845, William Kelly brought four Chinese steel experts to Kentucky, and learned this method from them, for which he received an American patent. However, he went bankrupt, and his claims were made over to the German, Bessemer, who had also developed a similar process.

### The Song Dynasty Confucian Renaissance

As early as the 4th Century A.D., coal was used in China in place of charcoal, as fuel to heat iron and to rework the raw iron into finished products. The rapid expansion of iron production that occurred under the Song Dynasty (A.D. 960-1279) would not have been possible without the extensive introduction of coal as an energy source in the production of iron. The use of wood to make charcoal was causing deforestation, which threatened to limit the production of iron. Indeed, the development of the capability to use coal in iron manufacture is an example of how a new technology allows mankind to overcome limits imposed by existing levels of technology.

Under the Song Dynasty, which experienced a Renaissance in Confucian thought under the “School of Principle” associated with the 12th-Century genius Zhu Xi (1130-1200), science and technology also blossomed. The iron and steel industry reached a level that was spectacular compared to that in Europe. Between 850 and 1050, iron production increased twelve-fold. By 1078, North China was producing more than 114,000 tons of pig iron a year. In 1788, seven hundred years later, England’s production of pig iron was around 50,000 tons.

The scientific genius of the Song Dynasty, Shen Guo (A.D. 1031–1095), introduced advanced water control methods to reduce flooding and recover swampland for agricultural use, vastly expanding grain output for the nation as a whole.



Wikimedia

*The Chinese cast-iron mouldboard plow, turned up the soil behind the draft animal efficiently as it walked along, allowing more land to be plowed in less time. Hitched to a breast-strap harness, rather than a neck-strap harness, a draft animal could pull heavier loads for longer periods of time without being choked in the process.*

### Chinese Agricultural Productivity: The Result of Superior Technology

*Master Lu’s Spring and Autumn Annals* describes how each spring, the Emperor and his chief ministers initiated the growing season with a ceremony in which each took turns plowing the ground. The plows they used were dramatically superior to the plows that were used in Europe until the 18th Century. Writer Robert Temple has observed that,

Nothing underlines the backwardness of the West more than the fact that for thousands of years, millions of human beings plowed the earth in a

manner which was so inefficient, so wasteful of effort, and so utterly exhausting, that this deficiency of sensible plowing may rank as mankind’s single greatest waste of time and energy.

Plows prepare the ground for planting, by using an iron share to cut into the ground, and a mould-board to turn it, burying the weeds and loosening the soil. In 1784, the Scottish agricultural scientist, James Small, enunciated the following principles of scientific plow design: “The back of the sock [share] and mould-board shall make one continued fair surface without any interruption or sudden change.” Chinese plows, from the 3rd Century B.C., already met these requirements. They had a cast-iron mould-board, which was a curved device that shifted the soil with the minimum of drag. The European plow simply had a wooden board coming off to the side which turned the soil that had been cut.

Lyndon LaRouche, in *So, You Wish to Learn All About Economics?* wrote:

Generally speaking, the power applied to the work by a machine is not the same power supplied to the machine as a whole. A very simple machine, a simple knife blade, illustrates the point: the pressure applied by the sharpened





Detail of Landscape with the Fall of Icarus, ca. 1558, by Peter Bruegel the Elder, showing a man plowing with an inefficient European plow.

edge of the blade is vastly greater than the pressure exerted upon the handle of the knife. The power is more concentrated. We measure such concentration of power as increase of energy-flux density.

The Chinese plow concentrated the force much more efficiently on the sharp blade of the plow, with the mould-board designed to turn the soil with a minimum of drag. With the European plow, the entire straight wooden mould-board pushed against the soil. Therefore, the Chinese plow achieved a far higher energy-flux density, and accomplished far more work with far less effort. Chinese plows were so efficient, that they required only one or two animals to pull them. Four, six, or even eight draft animals were often needed to pull the inefficient European plow. The Chinese plow was vastly more efficient than the European plow, both per worker and per unit of

energy used. As LaRouche states, “This difference is Leibniz’s definition of the subject matter of technology.”

### Row Agriculture and Weeding

The method used in Europe to plant seeds, as late as the 18th Century, was extremely wasteful and inefficient. The painting, **Figure 1**, by the Limbourg Brothers for the Duke of Berry, as part of *Les Tres Riches Heures du Duc de Berry* (ca. 1415), to illustrate the month of October, demonstrates the inefficiency of the methods for planting that were used in Europe until the 18th Century. In the lower right corner, a peasant tosses seeds from a sack he carries, onto the ground. Behind him, another peasant is riding a horse that is pulling a rake, intended to cover the seeds with soil—a very unreliable method, that left many seeds exposed. Appropriately, pictured in the lower left, is a flock of birds, who are busily eating the seeds.

This method was so inefficient that most of the seeds never germinated to produce a crop. The plants also grew up in a disorganized mess. Weeding the fields was impossible, so the plants were left to compete with the weeds until harvesting season, considerably reducing the crop. In Europe, it was often necessary to save one-half of the harvest to use as seeds in the next year.

FIGURE 1



The wasteful and inefficient European planting method, as shown in Paul de Limbourg’s illustration for the month of October in the Duke of Berry’s book of hours, *Très Riches Heures du Duc de Berry*, c. 1415.



The Chinese seed drill improved agricultural yield by planting seeds in a row at a uniform depth and covering them immediately.

Wikipedia

By no later than the 6th Century B.C., the Chinese adopted the practice of growing crops in evenly spaced rows, and using a hoe to remove the weeds. *Master Lu's Spring and Autumn Annals* states "If the crops are grown in rows they will mature rapidly because they will not interfere with each other's growth."

At first, the seeds were placed by hand in furrows, in a ridge-and-furrow pattern. Around the 2nd Century B.C., the Chinese introduced the seed drill, which became almost universally used in northern China. This device consisted of small plows that cut small furrows in the ground, a mechanism that released the seeds evenly spaced into these furrows, and a brush or roller that covered the seeds with soil. The seed drill could be adjusted for different types of soil and seeds. This method of planting could achieve an efficiency 10 or even 30 times greater than sowing the seed by scattering it.

It should be easy to see that the difference in productivity between Chinese and European agriculture was dramatic. The area of land that could be brought under cultivation in Europe was constricted by inferior technology, and by the need to leave more land as pasture to feed the extra draft animals. Obviously, we are comparing two large areas, over a long period of time. However, Chinese yields have been estimated at two, five, or even ten times higher than yields in Europe, at various times. China's higher yields allowed for an increased population density, and also for an increased division of labor, as we will see below.

Eventually these technologies were transmitted to Europe, largely through the Jesuit missionaries who had arrived in China in the late 16th Century, which led to a large increase in agricultural production. The Chinese plow and seed drill were introduced into Europe during the 17th Century, and gradually adopted throughout Europe. Growing crops in rows was championed by British agricultural reformer Jethro Tull, who printed a treatise in 1731 to persuade farmers to adopt what he called "horse-hoeing husbandry." Tull published arguments similar to those used 2,000 years earlier in China. Tull also devel-



CC/Lars Ploughmann

*A scale model of one of Admiral Zheng He's enormous treasure ships in the 1405-1433 voyages, compared to the Santa Maria, one of the three ships of Christopher Columbus in the 1492 voyage to America.*

oped one of the first successful European seed drills.

## Transportation and Infrastructure

The development of inland water transport, which is far less costly than overland transport for bulk commodities, was essential for the growth of a large-scale iron industry, and for transporting the large quantities of grain needed by China's cities. Even into modern times, the length of China's transportation canals has exceeded those of Europe.

The Jesuit missionary-scholar, Matteo Ricci, who first established a presence in China for the European missionaries who brought the scientific discoveries of the European Renaissance to China, wrote in 1615: "This country is so thoroughly covered by an intersecting network of rivers and canals that it is possible to travel almost anywhere by water." He also estimated that there were as many boats in China as in all of the rest of the world. And from 1405 to 1433, huge Chinese fleets under Admiral Zheng He carried out seven expeditions in ships far larger than any existing in the West, reaching as far as Africa and the Red Sea. The first fleet consisted of 317 ships and 26,800 men.

Around 215 B.C., the first contour canal was built in China, which linked the Chang Jiang (Yangtze) and the



FIGURE 2



Photo by Zhao, 1974

*The Anji (Zhaozhou) Bridge in Hebei Province was built by the architect Li Chun from 595 to 605 AD, during the Chinese Sui Dynasty. It is the world's oldest fully stone, open-spandrel, segmental arch bridge.*

Zhu Jiang (Pearl) river systems. During the Sui Dynasty (A.D. 581-618), the Grand Canal was constructed, connecting the Chang Jiang to Beijing, extending 1,250 miles, the longest and largest of all navigation canals in the world. During the Tang Dynasty (A.D. 618-907), over 2 million tons of grain were shipped, yearly, north on the canal. This increased to 7 million tons during the Song Dynasty.

### Roads and Horse Harnesses

The Chinese also developed an extensive network of roads. An old Chinese proverb, often quoted today in the context of President Xi Jinping's Belt and Road Project, says: "If you wish to prosper, first build a road." By 210 B.C., 4,000 miles of imperial highways, equal to the distance built by the Romans, had been constructed in China.

The Chinese made major innovations in bridge construction. A number of bridges were so well designed, that they are still in use over 1,000 years later. The Anji bridge in Hebei, **Figure 2**, built in A.D. 610 during the Sui Dynasty, still survives after 1,400 years. The bridge bears the inscription to its designer, Li Ch'un: "Such a masterwork could never have been

achieved, if this man had not applied his genius to the building of a work which would last for centuries to come."

Under the Roman Empire, even the horses had an inferior existence to those living in China. The Romans used a throat-and-girth harness that went around the horse's neck. This choked the poor horse with the least exertion. In the 4th and 3rd centuries B.C., the Chinese made two improvements in horse harnesses, which placed the force of the load on the horse's chest bones, rather than its throat. Studies have shown that the Chinese harnesses allowed a horse to pull a load six times greater than that of a horse in a throat-and-girth harness. These Chinese harnesses were brought to Europe through Central Asia, thereby liberating Europe's horses from choking harnesses, and improving Europe's ability to transport goods. This same path was followed by the stirrup, another Chinese invention, which greatly improved man's ability to ride a horse for long distances with less exertion.

### Ancient China's Remarkable Cities

The superior Chinese technology made possible a much higher productivity in agriculture, both per-person and per-hectare, which in turn allowed the Chinese economy to support a larger proportion of its population in non-agricultural employment, and allowed the development of a level of urbanization that was unprecedented in Europe until after the 15th-Century Renaissance.

The largest city of the Warring States Period (475-221 B.C.), Linzi, the capital of the state of Chi, reached a population of approximately 300,000. In 300 B.C., at least nine cities, containing more than 100,000 people each, can be identified. Approximately 4.3 million people, or approximately 14% of the population, lived in urban centers (defined as 2,000 or more persons).

During the 2nd Century B.C., Xi'an was the largest city in the world with about 1 million inhabitants. Luoyang, the capital of the Eastern Han Dynasty, reached a population of 500,000 during the 1st Century A.D. It had an imperial observatory, where Zhang Heng cre-





Walking on a Mountain Path in Spring, by Ma Yuan, 13th Century, Southern Song Dynasty.

products of all the hundred crafts. If everyone must make everything he uses, the Empire will be led along the path of incessant toil.

—Mencius,  
Book 3, Part A, 4

The urbanization also facilitated advanced scientific research facilities, education and culture, which is expressed historically by the extraordinary output of art, music and poetry in the Tang and Song Dynasties, from the 7th to the 13th centuries.

The Chinese were also the first to develop printing—woodblock printing in the 2nd Century A.D.,

and movable type in 1040, during the Song Dynasty, centuries before the Gutenberg printing press in 1450. Books circulated widely across China during the Song, many of them on agriculture and related scientific topics.

### Scientific Discovery Is Necessary for Survival

In the 13th Century, China was hit the catastrophe of the Mongol invasion. The level of genocide is illustrated by the drop in the population from approximately 120 million in 1200 to half that level 125 years later.

With the overthrow of the Mongols in 1368, the Ming Dynasty returned to the Confucian teachings of Zhu Xi, launched the great maritime explorations of Admiral Zheng He, and restored population growth and urbanization—but never reached the levels of the Song Dynasty. Near the end of the Ming, and well into the Qing Dynasty which followed after 1644, the Jesuit missionaries arrived in China, were warmly received, and the scientific and cultural cooperation between Confucian China and Christian Europe flourished.

However, that cooperation was sabotaged, not by the Chinese, but by Venetian intrigue against the cooperation between Confucianism and Christianity, leading to a papal decree demanding that Christians in China must denounce Confucianism. Since government positions in China were achieved through demonstrating excellence in the moral and cultural teachings of the Confucian texts, the Papal Decree constituted a

ated his seismograph, and advanced his theory that the Earth was spherical. Luoyang had an Academy attended by 30,000 students, and a granary for times when food relief was needed.

Under the Song Dynasties (960-1279), China's cities reached their height of development. Lin-an (Hangzhou), the capital of the Southern Song, reached 2.5 million by 1200. In addition, there were two other cities of 350,000 each, and others had more than 100,000 each. By contrast, in 1200, the largest cities in Western Europe were Florence and Venice with about 90,000 each, and Milan with 75,000. The largest European cities during the Middle Ages were Constantinople and Cordoba. Constantinople, in today's Turkey, reached around 600,000-800,000 in 1100. Cordoba, in Muslim Spain, reached 400,000-500,000, but then declined.

The level of urbanization in China has been estimated at around 20% in 1200. France and England did not reach a 20% level of urbanization until the 18th Century.

### Successful Economic Development

The development of a large urban population allowed the Chinese economy to achieve a higher division of labor, which was the basis for further increases in productivity. Mencius described the importance of a large division of labor:

Moreover, it is necessary for each man to use the

direct attack on the government, forcing the banning of the Jesuits from China in 1721. The loss of this critical historic connection between East and West led to the second catastrophe for China—the arrival of the British gunboats and two genocidal Opium Wars in the mid-19th Century.

China ended the era of monarchical power in the Republican revolution of 1911, under the leadership of the American System advocate Sun Yat-sen. But the 20th Century was a century of colonial and global wars, preventing any dramatic development until the “Reform and Opening Up” under Deng Xiaoping in the 1980s, which included a return to the Confucian traditions with a focus on science and technology. Deng asserted:

We often say that man is the most active productive force. “Man” here refers to people who possess a certain amount of scientific knowledge, experience in production and skill in the use of tools to create material wealth. There were vast differences between the instruments of production man used, his mastery of scientific knowledge, and his production experience and skills in

the Stone, Bronze and Iron Ages, and in the 17th, 18th, and 19th centuries. Today, the rapid progress of science and technology is speeding up the introduction of new production equipment and new technological processes.

The phenomenal transformation of China during these past 40 years, and the launching of the Belt and Road Initiative in 2013 by Xi Jinping, taking the Chinese miracle to the rest of the world, has brought China again to a position of world leadership in a growing number of scientific and technological areas of development.

As the world is now experiencing the greatest crisis of modern history, a truly global crisis—with the COVID-19 pandemic, economic collapse in many parts of the world simultaneously, a financial bubble unprecedented in history, and the cultural decay of drugs, anarchy and perversity infecting especially the trans-Atlantic region—Americans would do well to study the 5,000-year history of China, examine the ideas which lay behind the current Chinese Renaissance, and help the LaRouche movement to bring the great historic cultures of the world together to meet this crisis.

## The New Silk Road Becomes the World Land-Bridge

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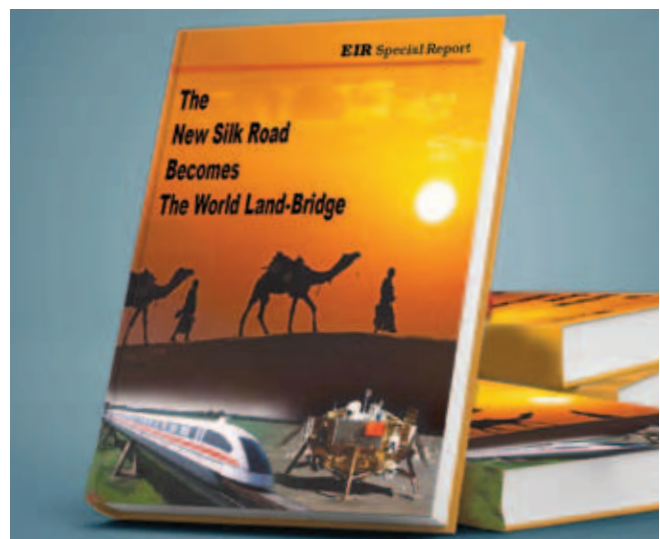
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