



Non-fiction

Group 1

Gunpowder Power

Carmel Elementary School, Shapiro, Charlie – 6

I chose to write about gunpowder because I am interested in space rockets and I want to become an astronaut. I learned when researching about gunpowder that rockets evolved from simple gunpowder, and wanted to learn more. I also like studying Mandarin and learning about China.

Gunpowder was invented in the 9th Century by Chinese monks who were looking for a recipe for something that people could drink or eat in order to live longer or even to live forever. But instead of discovering a formula for helping people to live longer, the monks discovered gunpowder which had the opposite effect. It is very interesting that they actually invented something that was used to hurt or kill people instead of helping people to live longer.

I learned in my research that the use of gunpowder was first developed as a weapon by the Chinese military during the Song dynasty. The Song dynasty soldiers used gunpowder in explosive weapons such as fire arrows, bombs and even a kind of flamethrower! Gunpowder was such a military advantage for the Song military that they tried to keep it a secret from their enemies. The Song dynasty government even banned the sale of saltpeter to foreigners to try to stop China's military enemies from using gunpowder, but the technology was spread by the Mongols who used it to conquer other parts of the world.

People mostly know gunpowder is used in guns, but it is also used in other things like fireworks and mining. It is very interesting to me that gunpowder is used for something deadly (like guns) and can be destructive (such as explosives when used in mining), but also to make beautiful fireworks.

What other uses are there for gunpowder and are there some uses that have not been invented yet? The history of gunpowder should encourage people to keep inventing things because you never know what will be made out of it.

Jaozi – The First Paper Money

Carmel Elementary School, Turner, Adi – 8

Before paper money existed, people used items such as rocks and seashells to trade for houses and horses. The earliest currency was born in ancient Mesopotamia 5000 years ago, and since then, currencies have evolved from commodity money to metallic coinage and paper money. Nowadays, digitized currencies run the global economy, partaking in billions of transactions every minute. However, the history of money is far more complex.

The foundation for the development of paper money was laid by two inventions: the paper and ink technologies, both of which are part of the ‘big 4’ Chinese historical inventions. The paper was invented during the Han dynasty around 100 BCE. Beforehand, materials such as bamboo strips, silk, and animal skin were used as surfaces for writing, but they were relatively expensive, not accessible, and not reliable. The ink technology was developed more or less simultaneously with the paper. The traditional ink, mostly known as ‘carbon ink,’ was made by grinding inkstick (a mixture of soot from burned pine wood and glue) on an inkstone with water. These two innovative technologies allowed the invention of the first paper money, the ‘Jiaozi’, and opened the door to a new era of global trade.

Jiaozi was the first paper note born in the Northern Song Dynasty in Chengdu, the Sichuan district capital of China, and it was first issued on April 1st, 1024. Before the Jiaozi, the traders had to use expensive metal coinage that suffered a few significant disadvantages. Firstly, the metal coins were hefty, and therefore difficult to carry around, resulting in divisibility and inefficiency issues. Moreover, they were easy to counterfeit and fast to wear and tear. The Jiaozi was revolutionary, solving all of the prominent issues of the metal coinage system. The portability of money increased due to the paper bills being lightweight and easy to carry. Durability also improved with the outstanding quality of the Chinese paper, due to the evolving paper technology. Divisibility stopped being an issue, and counterfeiting became much more difficult.

The impact of the Jiaozi was enormous, not only on the Chinese economy but on the whole world. Local and foreign traders distributed this new form of money all over the world, allowing improvements in financial intermediation, enabling merchants to conduct business more efficiently, and encouraging economic growth. Today, Jiaozi is displayed in the Chinese Finance Museum of Chengdu. It is an incredible milestone in global finance and is the first of many paper notes developed and printed over the years, which still serve as a crucial part of our daily lives.

The Chinese invention of Jiaozi is an excellent example of using leading technologies to invent a “game changer” in globalization. By improving trade efficiency, this Chinese revolutionary invention helped to make the world smaller, better, and more united than ever.

New Tales of China's Inventions

ESF Beacon Hill School, Wu, Ava – 7

Do you have an idol? Well, my dad does. That was a famous statesman, strategist, and engineer that I know in ancient China called Zhu Ge Liang. He was born in the year 181 and died in the year 234. He lived in the Three-Kingdoms period which was quite chaotic, and invented a lot of things like Mantou, landmines, Kongming Lantern, and repeating crossbows.

To my surprise, some inventions are still in use, for example, Kongming Lanterns. Although the others are not, outdated inventions give us ideas to upgrade them into newer and better ones.

One of his best inventions is the wooden ox and flowing horse (or Mu Niu Liu Ma in Chinese), which he created at 49 years old. He made it because his country went to war and the army was carrying heavy rice on the move. After he made a wooden ox and flowing horse, the army could just put the rice in its body which was actually an empty container so that the self-walking carrier could save people's energy!

Almost a month ago my dad bought a toy of the wooden ox and flowing horse for my brother and me. It was a pack of pieces, and we had to connect the body and the legs with bolts and nuts. Amazingly this hand-made animal walks with the right front leg and the left back leg stepping out at the same time, and so are the other two legs moving – It worked perfectly! It is of a baby puppy's size and my lower arm's length. All parts including its head and horns are wooden so it is light brown. As long as you softly pull the long rope in its nose, it starts to walk easily, unlike a box container.

It has no facial expression but I can still imagine that it is a happy ox, or a curious one.

Nowadays, people replace it with bags, wheel suitcases, and even newer driverless cars. In case you don't know, a driverless car can drive by itself when you are seated inside. You don't have to worry if it bumps into other cars because there are a lot of sensors all around it. There is also a map navigator inside the car so that it knows where to go as soon as we type in the destination. Unlike Mu Niu Liu Ma, there is a supercomputer inside the car that functions like the brain of a human. It can understand and respond to all the information from many sensors at the same time. I'm excited not only because it is cool but also because it can help people. Even blind people can have their cars in the future. And I don't need a driver's license anymore.

Recently when my family took a plane to South Korea for a skiing holiday, my uncle gave me a ride on his new Tesla. I was really surprised when I saw his hands off the steering wheel but the car did not bump into anything. The steering wheel was slowly and slightly turning by itself as if someone I couldn't see was steering it instead of my uncle. Sitting in the car, my family felt they were on the road to the future.

I feel curious about what Zhu Ge Liang would invent if he were here, but I'm sure that he would at least be as inspired as I am now by so many new inventions in the modern world.

What Do You Think?

German Swiss International School, Luan, Xavier – 7

Chapter 1: Introduction

Many kids want to be a scientist to calculate and to make their own inventions. I would think you will become one when you grow up. But I guess your inventions might be like a train, bottle or boat. I would like to invent something like a robot friend or magical medicine. Oh, and one more fun fact! Did you know that the wires we use for electronic devices, like the ones that connect your computer or TV, were inspired by Star Wars?

After Many centuries, China might even invent a machine that can help your parents with chores. If I'm wrong with what you might invent, what would you invent? Even if you don't want to be a scientist, it's okay too. Not being a scientist, you can also invent! You can use your imagination and create amazing things with paper, toys, or anything you can think of. And who knows, maybe one day you'll come up with an invention that changes the world!

Chapter 2: Old inventions

China has invented many things including paper making, moveable type printing, gunpowder, compass, mechanical clock, silk, umbrella, alcohol, acupuncture, tea production, iron smelting, porcelain, earthquake detector, racket, bronze, kite, seed drill, raw crop farming, toothbrush and paper money, and much more!

Chapter 3: Future Inventions

Now that we've learned about all the amazing things that China has invented, let's dive into the exciting world of future inventions! There are so many cool ideas and possibilities waiting for us. Are you ready?

Flying Cars: Imagine zooming through the sky in a car! In the future, we might have cars that can fly. How awesome would it be to soar above the clouds and go on adventures in the air?

Talking Animals: Wouldn't it be amazing if we could talk to animals and understand what they're saying? In the future, we might have devices that can translate animal language, so we can have conversations with our furry and feathery friends.

Magic Food Machines: Hungry? In the future, we might have machines that can instantly make any food you want. Imagine pressing a button and getting a delicious pizza or a yummy ice cream cone. It would be like having a magical kitchen!

Chapter 4: Dream big

Isn't it exciting to think about all the incredible inventions that might be waiting for us in the future? Remember, you don't have to be a scientist to invent things. So, keep dreaming, keep imagining, and always believe in the power of your ideas. The future is full of possibilities, and you can be a part of making it even more amazing. Have fun exploring and inventing, my friend!

New Tales of China's Inventions

Hong Kong Baptist University Affiliated School Wong Kam Fai Secondary and Primary School, Lau, Ho Yeung Avery – 9

The Invention of Gunpowder in China Gunpowder is one of the four greatest inventions of ancient China, alongside the compass, papermaking, and printing. This impactful innovation was developed by Chinese alchemists in the 9th century. Its accidental discovery shaped the course of human history. In this report we are going to talk about the origins and impacts of this powerful invention. In China, gunpowder is referred to as huoyao, translating to "flaming medicine".

Unlike papermaking and printing, the discovery of gunpowder was serendipitous. Alchemists, in their quest to concoct an elixir of immortality, stumbled upon a mixture of sulfur, saltpeter, and charcoal that produced explosive reactions. This new substance was initially used for creating fireworks to celebrate festivals and other significant events.

By the end of the Tang Dynasty, gunpowder began to see military applications. The Song and Yuan Dynasties' frequent wars accelerated the development of cannons and fire-arrows, launched from bamboo tubes. By the 12th and 13th centuries, gunpowder technology had spread to Arab countries, Greece, and other European regions, eventually reaching every corner of the globe. This invention profoundly influenced Chinese civilization and had farreaching global impacts.

The effects of gunpowder invention can be observed from ancient times to the present day. Gunpowder revolutionized warfare. It led to the creation of powerful new weapons such as cannons, muskets, and other firearms. Consequently, military strategies evolved, and the effectiveness of castles and fortresses diminished. Gunpowder technology spread from China to the rest of the world via trade routes like the Silk Road, fostering cultural exchange and economic growth. The production and trade of gunpowder and firearms became pivotal industries, stimulating global economies. In contemporary times, gunpowder's impact is still significant, but its applications have diversified. Modern firearms and explosives, rooted in gunpowder technology, have reshaped the conduct of wars and influenced military strategies.

The widespread use of guns has affected the outcomes of conflicts and shaped the world's political landscape. Apart from warfare, gunpowder is used in several essential areas. It's employed in mining, construction, and the creation of fireworks and special effects. Controlled explosions using gunpowder aid in mining operations and building demolitions, while adding excitement to celebrations and cultural events.

While gunpowder has many uses, the availability and misuse of firearms pose significant challenges. It's crucial to establish regulations and laws to ensure public safety. Debates surrounding gun ownership rights and preventing illegal trade constitute a global issue. Gunpowder's influence on the world throughout history is significant. It has revolutionized warfare, shaped technology, and impacted global trade. Today, it continues to influence military strategies, contribute to various industries, and raise safety concerns.

As the saying goes, "Knowledge is like gunpowder; it can be used to build or destroy, depending on how it is wielded." Understanding the history and current impact of gunpowder helps appreciate its importance and the dialogues surrounding its use in our modern world.

China's Future Inventions

Kowloon Tong School (Primary Section), Chan, Justin – 10

Do you know the four great inventions of China? They are papermaking, printing, gunpowder and compass.

The first invention is papermaking. During the Han dynasty, paper was made of plants, fishing nets and old pieces of cloth. Later, they were used as toilet paper, teabags as well as paper currency. The second invention is printing. It was first done by using wood. People carved Chinese characters on wood. The third one is gunpowder, which was used for fireworks for celebration. In battles, gunpowder was used as bombs and explosions. Now, gunpowder is also used in firearms. The last is the compass. Originally called Sinan, it used the sun, moon, and the stars to determine directions. Later, people began using a needle, with one end pointing north and the other pointing south to tell directions.

Nowadays people use apps such as Wechat, Alipay or even electric cars. One future invention will be robots which can communicate with us. They will act like humans, write poems, use mobile phones, play on computer tablets, read books, drink water and play sports. They also look like us having nails and teeth.

The second future invention will be flying electric cars. They will have the ability to expand or shrink, and we can give them directions to go to specific locations or destinations. The flying electric cars do not require manual driving and can take us to our destinations. They can also travel underwater.

The four great inventions of China have been passed down and improved over the years with technological advancement. In the foreseeable future, there is no doubt that human-like robots and flying electric cars will be possible inventions as well.

New Tales of China's Inventions

Kowloon Tong School (Primary Section), Chung, Cheuk Hin – 9

One day, I woke up with a strange robot beside my bed, it was very small. It had small cute eyes. It had a speaker that could talk to you. It had a flat body. It also had six wheels that automatically drove by itself, so you didn't need to carry.

It actually all started like this. Yesterday night a scientist sneaked into everybody's houses and put a robot in everyone's bedroom. The scientist said "Giving robots to everyone will make their lives very convenient, now when people go out to do something, most of them will bring their intelligent robots out. For example: We don't need cashiers now, since the robots can help us count how much we need, then we can put our credit cards on the robot for just two seconds, then the robots will just use WI-FI to send the money to the company.

You can also use the robot to remind you and tell you what you need to bring things, after the robot reminds you and tells you what you need to bring for the day, you can open the back of the robot and put your small things in it. But, in case something doesn't fit in there, you can use the special gear to clip your bigger things on it. It also has a lock. You must enter your passcode to open the back of your robot, and nobody will even know what your passcode is, because it is your fingerprint! If you ask your robot where you could go, if you want to go to a place, the robot can automatically tell you what to do.

The best thing is, this robot is very Eco-friendly, because it uses a solar powered battery, so when the weather is sunny or hot, it is very suitable for taking your robot outside!

It also has a water-sucking function. If there is very bad weather today, and even your house is flooding, you can activate the water-sucking mode just by pulling out two tiny pipes from the robot. If the robot detects just 0.1% of water, it'll suck it.

It's A.I. (Artificial Intelligence) so it can literally detect how you feel, if you feel bored, it'll play with you, if you feel sad, it'll tell you away to feel better, if you feel angry, it'll tell you ways to calm down. Doesn't that make you feel better?

At last, it knows how to come back to your house automatically, so you can tell it to do something outside while you rest or play.

Would you want a smart robot? I would love to have one!

A “FAB” Invention

Kowloon Tong School (Primary Section), Law, Siu Wai – 10

Our world is in danger. We need to protect it. The world population has reached 80 billion by the end of 2023. Most of us are using cars every day. Traditional cars produce exhaust gas which pollutes the air. Air pollution causes a lot of harmful effects on human beings, such as dizziness, fatigue and chronic respiratory diseases. So we should try our best to keep the world clean.

In China, we have 1.4 billion people and 426 million cars, air pollution is also a key problem to solve. Luckily, many people in China have a habit of using bicycles when they go out. In 2023, there are about 200 million bicycles in China. Moreover, more and more people started using new energy cars like electric cars. But these are not enough!

A new device is going to be invented to help solve air pollution. It is called “FAB” (Fresh Air Bike). FAB is a bike which can make air freshener on the road. On the bike, there is a small filter which is fuelled by the resistance of the bike (kinetic energy) and energy from the solar panels. When you are riding the FAB on the road, the wheels will produce energy for the filter. Then the filter will take the polluted air on the road in and change it into fresh air. The filter will keep working all the way. When more and more people use FAB, the air will be fresher, with less pollution and then, fewer illnesses.

The FAB filter uses clean energy: kinetic energy and solar energy. Clean energy does not cause pollution and harmful effects on nature. The material of the filter is all from recycled cans and plastic.

In addition, we can do exercise when we are riding on FAB. Everybody knows, riding a bike is good aerobic exercise. Aerobic exercise brings oxygen to our bodies, which can keep our bodies fit and healthy. When more people are healthier, they will have fewer illnesses. In this case, there will be less burden on national medical service. Therefore, we can spend the money on other sectors like housing, social welfare and education. Then everybody will be happier!

If the air is fresher, more plants will grow and more oxygen will be produced. Oxygen is very important for all the lives on Earth because we all need oxygen to survive. To save the Earth, we should develop FAB as soon as possible. I hope that we can have FAB, and a more beautiful and healthy Earth very soon.

My Health Buddy – The Smart AI Health Friend

Kowloon Tong School (Primary Section), Yau, Ka Man – 9

In the big world of super cool things like smart robots, super-fast trains, and apps like WeChat and Alipay in China, something really awesome is coming – our new friend, the AI Health Friend!

Imagine having a friend who's like a superhero with a super-smart brain, knowing a lot about keeping us healthy and always ready to help with our questions. What makes this friend extra cool is that it's connected to apps like WeChat. It's just like chatting with friends on WeChat – we can talk to our health friend there and learn cool things about our heart and sleep, like a detective always watching out for our health.

This AI Health Friend is also a buddy who helps us stay healthy, like a coach. It mixes the power of smart tech and super-fast trains. It learns about our bodies, our health history, and how we live. With all this special info, it gives us advice through WeChat that's just right for us. It tells us about the foods that are good for our bodies, reminds us to take medicine, and even finds possible health problems before they become big issues – just like having a super-smart doctor always with us. It sends us friendly reminders on WeChat all the time.

When we visit the doctor and need to pay for it, it's super easy! We can use Alipay, which is like magic money on our phones. All these super cool technologies together make our health experiences easier, more special, and really fast. It's all about making sure we stay happy and healthy with the help of our awesome AI Health Friend!

Robotic Chair

Maryknoll Convent School (Primary Section), Lee, Zoe – 6

This Robotic Chair is made by Zoe.

Zoe is a Hong Kong Scientist in the future. She likes to do a lot of things, like playing with friends, skateboarding and swimming. She enjoys inventing something that is not available now. She also likes to make something from recycled materials.

The invention that Zoe makes can help and make people's life easier, especially for the disabled, and those people that work very hard.

This Robotic Chair has many functions such as move, talk, sing, massage and transform. It is very smart, as smart as a computer.

When you are busy but hungry, it will feed you.

It can even help the disabled to walk and do many household chores. It can clean the windows with its lazer beam eyes.

This Robotic Chair can change into a telescope. You can use it to see anything in the space. It can be your companion to share secrets. You can also put the trash into the head to recycle into whatever you want, but if you make it angry, it will be invisible till the next day.

Actually, it can do more than you can imagine. Do you want to have one?

Embracing Modern Innovations: A Journey of Gratitude and Inspiration

St. Joseph's Primary School, Chan, Ho Shing Brandon – 8

On a rainy September day, I rushed to catch the bus with my mom, eager to head back home. As we approached the bus, an old woman was struggling to count her coins. She just caused a delay in boarding. My mom urged me to assist her with my Octopus card, while she used her smartphone to pay for our fares. With a swift beep, the payment was completed smoothly, and the old lady expressed her gratitude for our help.

I wondered why people still rely on coins for payment when we have such convenient methods available. I took the opportunity to introduce the old lady to the wonders of QR code payment, she eagerly learned the new way within that short 10-minute trip. It warmed my heart to share my knowledge and help her adapt to modern technology.

As I dream of becoming a scientist when I grow up, I find joy in educating others about new technologies. Apart from e-payment, I seek to share some remarkable inventions from China that have significantly improved our lives.

China now stands at the forefront of modern innovation and technology. The country continues to amaze the world with its groundbreaking inventions, such as online shopping, e-payment, high-speed trains, and shared vehicles, which have modernized our shopping, travel, and payment experiences. Let's dive in!

Have you ever left your wallet at home? With e-payment, we can pay by using their smartphones. A simple scan or tap allows for transactions. There is no need to carry cash or deal with dirty coins. Who wouldn't appreciate the convenience of e-payment?

Online shopping, another fantastic invention from China, has transformed the way we shop. With just a few steps on our phones, we can order anything and have it delivered to our doorsteps. It's like having a magical store where everything is at our fingertips! I will never forget my dad ordered me a tailor-made Spider-Man birthday cake on the internet. That's an amazing Spider-man cake!

China's renowned high-speed trains have redefined long-distance travel. These trains can reach incredible speeds, making journeys swift and enjoyable. I took the high-speed train many times for family trips. Traveling at speeds of up to 300km per hour, these trains offer comfort and contribute to the reduction of air pollution.

The fourth remarkable invention for me to share is shared vehicles. It enables people to rent cars and bikes for short trips. It also promotes eco-friendly lifestyle and relieves the traffic congestion. My dad can also save a lot of time to find the parking lots.

These incredible inventions have made my life more efficient and convenient. They have inspired me to think the new inventions I could contribute in the future. Perhaps I'll invent something that will positively impact people's lives, just like these amazing innovations from China!

Let's express gratitude for these inventions and remain open to new ideas. Together, we can create a more innovative and promising future!

Hua Tuo the Inventor

St. Joseph's Primary School, Chow, John-Henry – 7

A Chinese governor had some sashimi. Not long after, he developed an illness. The governor suffered chest stuffiness and had lost his appetite. He then sought help from a physician. The physician had the governor drink two pints of decoction. Later the governor vomited up three pints of parasites.

Once upon a time, there was a wise Chinese physician named Hua Tuo. He was a master of acupuncture and surgery, and he had a special talent for making his patients feel better. Hua Tuo was also very creative, and he loved to invent new things that could help people.

One day, Hua Tuo was walking in the forest when he saw a group of monkeys playing. He noticed that they were very agile and flexible, and he wondered if he could use their movements to help people who were sick. So he invented a new kind of exercise called the “frolics of the five animals.” It involved imitating the movements of a tiger, deer, bear, monkey, and bird, and it was a lot of fun to do. People who did the frolics of the five animals felt more energetic and healthy.

Hua Tuo was also interested in anaesthesia, which is a way of making people feel less pain during surgery. He discovered that a mixture of hemp and wine could be used to make patients fall asleep, and he called it “mafeisan.” This was a great invention because it made surgery less painful and more successful.

Another invention of Hua Tuo was the “anaesthetic ball.” This was a ball filled with mafeisan that patients could inhale to fall asleep. It was a very simple and effective way to administer anaesthesia.

Hua Tuo's inventions were very important because they helped people feel better and live longer. He was a great physician and a great inventor, and his legacy lives on today.

Face Recognition

St. Joseph's Primary School, Hon, Hei Ching Horace – 8

Face Recognition is a popular technology. It provides a secure way to unlock devices and protect our information. Face Recognition has transformed the way and interact with our life.

At first, I think it is convenient because Face Recognition provides an easy way to unlock electronic products and even make payments. So that users just look at the devices and it can scan their face. Secondly, it's more convenient for elderly than using fingerprint. It creates detail map so as to uniqueness.

When I use Face Recognition, something bad happened on me. It makes me feel upset.

So here are three things that I think is bad.

If someone's face has a big change, it cannot be recognized. Also, Face Recognition is easily to be hacked or replaced by a simply photo, so it is not high secure enough.

Lack of privacy, family members or best friends may use relatives to unlock and access personal information.

Face Recognition is wholly dependence on the internet data. If there is no internet, the only personal device to be accessed, other functions will be limited and useless. And also, some poor people cannot have this kind of devices because devices are too expensive.

China has improved the face recognition technology to capture face by a 3D camera in order to enhance accuracy. For example, one of the largest restaurant chain KFC, have been combined 3D camera and liveness detection, "Smile to Pay" can prevent others to use photos as source. Nowadays, Smile to Pay is widely used in China, not only restaurants but public transport and physical stores as a new digital-payment method in 300 cities.

Lastly, I think Face Recognition can do better especially to have more security management on the database. It is really convenient, high technology so as to improve the way of life. Face Recognition has changed to a better and nicer life. At the end, I am very happy to share my opinions, hopefully it's useful to you all.

China's Legendary Duos

St. Joseph's Primary School, Hui, Yiu Lang Ethan – 7

Two inventions that China may create in the future are flying cars and frost guns.

I believe China can create flying cars because China is already a pioneer in manufacturing electric cars. Flying cars can support fast transportation because there should be less traffic jam in the sky. Flying cars can fly up and down to avoid clashing other cars. There will neither be buildings nor people blocking their routes. With the different colours of flying cars in the sky, it will look like candies flying around!

The second invention that China may invent in the future is frost guns. Frost guns can solve global warming because frost guns can make snow and ice in a short time. This is particularly useful for polar bears and Arctic foxes suffering from global warming. Frost guns could be a revolution for the world too as they could build an ice barrier quickly in dangerous situations preventing people from falling off! When the ice from frost guns are melted, it could also become freshwater so people in Africa or the homeless can quench their thirst like a self-defence "weapon".

However, if flying cars and frost guns are used wrongly, they could make a deadly combination for war purposes or become national disasters affecting the climate of the world. I believe China will set rules to control the use of their new legendary inventions.

New Tales of China's Inventions

St. Margaret's Coeducational English Secondary And Primary School,

Chow, Ching Wang Jasper – 7

The toothbrush was invented in China over thousands of years ago! It was made of bone sticks, rope and animal fur. It was invented in the Tang Dynasty in 6000 BC and it was called the Chew stick at that time!

The Chew stick had two sides. One end was a toothpick and the other was for brushing teeth. It had kept evolving and the Indians called it Chew Wood because every morning, they had chew one end of it. We now have electronic toothbrush.

The toothbrush is a hygienic item. It can be used to brush teeth to prevent cavities happening. Before the Tang Dynasty, people would get a lot of cavities. When you eat, food bits stick to your teeth if you don't brush and germs will drill through tooth and a black circle will appear.

Today's electronic toothbrushes are faster, cleaner and they are easy to use. It is important that we brush our teeth every day to have healthy teeth!

New Tales of China's Inventions

St. Margaret's Coeducational English Secondary And Primary School, Lee, Man Chun – 7

Gunpowder is one of the four great ancient China invention. Gunpowder can use to produce fireworks, rockets, cannons, bomb and mines. It is useful and helpful to build up the society. Among all products produced by gunpowder, I like fireworks the most. We can watch the fireworks during New year and other celebrations. Therefore, I am impressed by the inventor of gunpowder and fireworks in ancient China.

Gunpowder was first invented in the late Tang Dynasty in ancient China. Some Chinese Monks discovered the chemical formula of gunpowder when they are holding the life extending ceremony. Later in the Han Dynasty, an alchemist Wei Bo Xing wrote about a substance with gunpowder-like properties and pushed the development of gunpowder with other alchemists with experiments. Although original purpose for the alchemist to do experiments was to explore the immortality of life, they accidentally contributed in the development if gunpowder technology. The Technology of gunpowder was then transmitted to other countries such as Europe and Middle East and the technology was helped to produce weapons, such as fire arrows, bombs and fire lance and ever produce gun in the 13th century. These weapons are powerful in wars.

Despite the military purpose, gunpowder can be used in entertainment – Fireworks, which is usually seen during New Year celebration, it is one of the great invention with the help of gunpowder. Fireworks was invented by Chinese Monk Li tan in the medieval China. He was a fire cracker and he accidentally created fireworks when he tossing the bamboo into the fire, so that fireworks appear.

Although Fireworks appear long time ago, it has limited colour and shape; I hope firework come in different colors and patterns, long lasting time to make more people can see it.

The Magic Door

St. Paul's Co-educational College Primary School, So, Suet Ying – 8

Have you heard about the fantastic inventions from the ancient China? Chinese inventors invented things like paper and gunpower. They were super creative! Now, I have an idea for a magic door that can bring you to different places around the world in just one second. Let's explore this cool invention together!

Do you want to know how to make it? If you do, I will teach you. First, get some wood. Then, use a hammer to put the wood together. After that, attach a button to one part of the wood. Now, put some pictures of different places into the door. Press the button and choose a picture that you want to go there. Finally, open the door to adventures like a secret path through the place you want to visit.

Let's talk about the magic door's amazing powers. First, picture the door getting big, so ambulances and fire trucks can rush through for emergency. It is like a superhero door! If there's a big problem, the magic door can help heroes like doctors and firefighters get to people who need help fast. This is important during things like earthquakes or when the roads are really busy.

The second thing it can do is taking people on trips wherever they want. Since many people in China travel from their hometowns to work in cities, they can use the door to return to hometowns to visit their friends and relatives shortly. Then, they will not feel sad about missing home. During the Chinese New Year, families get together, but some family members are separated from Hong Kong and China and it takes time to travel for a reunion. Fortunately, they can use the magic door to visit grandparents and the elderly in China.

The third thing is traveling around the world in a flash. Usually, we have to take a plane and it can take hours or even days. Some people cannot fly because they are scared of heights or air crashes. Now, the magic door can help them to visit famous places like the Great Wall and the Forbidden City quickly and safely. It can even take people to places that are hard to reach by plane, like the polar regions.

Lastly, people can taste fresh food from all over the world. Fresh food is good for us, but it can spoil during long delivery times. With the magic door, we can get fresh food right away from farmers and fishermen and enjoy tasty and healthy dishes. Imagine you love strawberries, but they don't grow where you live. No problem! The magic door can bring fresh strawberries from a farm far away, and you can enjoy them whenever you want.

With the magic door, we can imagine a future where help arrives fast in emergency, families reconnect easily, everyone get a taste of the world's wonders, and we can have fresh food and become healthy. Step through the door, and let's have adventures together!

The Amazing Dialect Learner

St. Paul's Co-educational College Primary School, Tam, Hoi Kin Pascal – 8

China is a vast country and has many places to travel. There are also various kinds of languages and dialects such as Cantonese and Hokkien. Travelers might be confused when they explore different provinces. Some local Chinese youngsters cannot even communicate with their grandparents effectively. Many people might find it hard to learn because they do not have enough exposure to the language and culture of Chinese dialects. Some would feel shy to practice with their friends. But what if you can learn freely, and without the worry of others laughing at you? And, it's even at the tip of your fingers! We try to solve this problem by creating "The Amazing Dialect Learner". The feature of this app is for people to learn more languages by having a lesson with either a virtual teacher or a real teacher. It's up to you! There are also mini games to play. The goal is to help people pronounce the dialects correctly and connect people closer together.

First, you can choose the class size in the app. There will be private class or group class to choose from. Next, you can pick a virtual teacher or a real teacher. Each lesson is interactive which includes games. Users can store and revise all the lessons they have learned on the app anytime. You may unlock a special feature when you pass level four which is you can connect with other real users who are native speakers of the language you want to learn. You contribute to the community by teaching your mother tongue to other users while learning a new language. Users can make new friends and have a pressure-free environment to communicate with. The user's language skills will improve because of these special features. The Amazing Dialect Learner is designed to change the way Chinese people interact with each other. It can help people learn useful phrases and expressions in that language. Thanks to this technology, the people who didn't share the same language now can communicate effectively. Moreover, learning language is no longer boring with its fully interactive mode and enjoyable games. The learning progress is measurable by record of learning time and game points. Best thing of all, there are plenty of opportunities to practice with real speakers.

In conclusion, language is a door to cultural appreciation, a bridge connecting people, and a ground for respect. When we learn a language, we set off on a journey to understand the traditions and values within it. The Amazing Dialect Learner, by assisting language learning, is not just improving vocabulary; it's showing you a wider understanding of the world and promoting a friendly exchange of ideas and experiences. Hop on and give this app a try!

The Wonders of Lost Ancient Machinery

St. Stephen's College Preparatory School, Chiu, Matthew Jonas – 8

The ancient Chinese believed that events related to earthquakes or other vibrations of the Earth were important signs from Heaven. However, historic inventions were actually the first attempt to explain Earth's movements in a scientific way. The first earthquake detector was invented about 2000 years ago in China. The creator of the first seismograph was Zhang Heng who lived during the Han dynasty (25–220 AD). He was a brilliant astronomer, a mathematician and mechanical engineer. Zhang was famous for many inventions, such as the first water-powered armillary sphere to support astronomical observations; he improved the water clock by adding another tank and invented the world's famous seismoscope, which could predict the direction of an earthquake as far as 500km away. Moreover Zhang was also well known for his poetry which was studied by later Chinese writers. A true intellectual mind!

Out of all of Zhang's inventions, I was really fascinated by the first earthquake detector in history. The first seismograph invented was made of bronze, giant in size and very beautifully designed. Its surface was decorated with details of mountains, tortoises, birds, other animals and some antique writing. Some scientists question the meaning of its beauty – was it made to such detail to look more believable or function better? Perhaps it was a way for Zhang to express his artistic talents along with the brilliance of his engineering mind.

The detector featured eight dragon heads positioned in a circular pattern, each holding a bronze ball in its mouth, and there were eight toads placed under the dragons. The inner parts of the detector were complicated, but the mechanical function was basic; When the Earth shook, the pendulum inside would rock back and forth, causing a ball inside to roll down each of the channels. The ball would then hit a lever which opened one of the dragon's mouths. Then, another ball in the dragon's mouth would drop into the corresponding toad's mouth. Therefore, depending on which toad received the ball, this would indicate which direction the ground's vibrations came from.

The device had its first test in 138 AD when an earthquake was detected west of Luoyang, the capital city where Zhang studied. Very few believed that Zhang's invention worked. But after a few days, a messenger from the west of Luoyang reported that an earthquake had occurred there. This finally made people believe that Zhang's invention was brilliant and very accurate. Some people even called him the "Leonardo of China", naming Zhang after the great Leonardo Da Vinci.

Many types of machinery were invented in ancient China, however, many of them did not survive. Zhang Heng's seismograph was unfortunately one such type of machinery. Even though his invention was lost in time, the records of its mechanics and design survived and many research teams from around the world studied them in hope to recreate this remarkable invention. This made me wonder how Zhang could create something so incredible and so ahead of its time.

The Creation of Single's Day

St. Stephen's College Preparatory School, Fong, Kyra – 8

Every year, at the stroke of midnight on the 11th of November, people rush to their computers, ready to grab the best deals on the internet. Do you know why? In fact, this is a recent Chinese invention!

Another name for the 11th of November is “Singles’ Day”. This is because the four “1”s of the numerically written date (“11.11”) look like 4 lonely people standing together. Singles’ Day was invented back in the 1990s, by four male college students at Nanjing University, who wanted to celebrate the idea of not being in a relationship.

The celebration became more and more popular among young people in China, and they soon treated the day as an anti-Valentine’s Day. Maybe single people were sick and tired of lovey-dovey couples on the street during Valentine’s Day and wanted a celebration for themselves! Singles used this day to organize parties and have fun with other young people.

In 2009, Alibaba, a famous online-shopping platform in China, had the brilliant idea of offering discounts on Singles’ Day. People soon flocked to the website to get the best discounts to treat themselves and celebrate being single.

Afterwards, other international online shopping platforms realized how powerful this day was, and they began offering big discounts on their websites on the 11th of November, too!

Nowadays, the 11th of November is one of the largest shopping events in the world. This shows how powerful new Chinese inventions are. What began as a silly idea among four Chinese college students soon became an international shopping event. Large retailers surely have those four students to thank, especially Alibaba, who earned more than \$71 billion US dollars during Singles’ Day in 2020.

In my opinion, this is a good holiday to remind us to love ourselves for who we are, but we must remember not to let our self-love be determined by materialistic things. Instead, we should focus more on spending time with family and friends and doing things we love.

An Invention to Protect Our Treasures

St. Stephen's College Preparatory School, Ng, Yik Fung Oliver Charles – 8

Can you keep a secret? My home is filled with treasures! Yours too! Have you heard of the Chinese idiom: 「家有一老，如有一寶。」 It means that if you have a senior in your family, you are blessed with a real treasure. I have two great-grandparents on my mum's side. My great-grandmother is 98 years old, and my great-grandfather just turned 102 years old recently. They are precious to me. How can our family treasures be protected?

Why was there a need for the invention?

In an August 2022 publication by the Non-Communicable Disease Branch under the Department of Health of Hong Kong, I read that a “fall was the most common type of unintentional injury, accounting for 39.4% of all injury episodes” that happened within a year. The publication was based on “The Unintentional Injury Survey 2018”. It found that 88.6% of injuries in older adults above 75 were due to a fall. Internationally, the World Health Organization published a “WHO Global Report on Falls Prevention in Older Age” in 2007. The percentages differ between countries, but the fall-accident numbers get bigger as age increases. And more seriously, “falls account for 40% of all injury deaths”.

What was invented?

The muscles of older people are weak, so they can easily lose their balance, fall and injure themselves. Some falls appear because older people might not be able to see properly or they might have chronic diseases. In 2015, a Chinese company designed an airbag vest to protect older adults from falls. The company that designed the vest is called Guangzhou S-AIRBAG Technology Company Limited. Airbags are inflatable cushions found in cars to protect humans from injuries when a car crash happens. S-AIRBAG puts airbags in a vest for older people to wear that protects the hip, head, neck, shoulders, back and tailbone. The Intelligent Vest was born.

How does the Intelligent Vest work?

The Intelligent Vest has two built-in helium inflators. When the vest receives the sensor data that the person is falling, the helium will be released within 0.08 seconds, and the vest will puff up before the person accidentally hits the ground. Older people in many countries, including nursing homes in China, are using it. The design team had started developing new materials and inflation methods five years before the vest was launched. The company has also created a mobile phone application called the “Proprietary App”. The vest can be connected to the application, which sends an alert when a fall occurs. The vest is chargeable with a magnetic USB charging cable, which costs about \$7,800 Hong Kong Dollars. S-AIRBAG has already created an airbag belt that protects older people's hips and pelvis when there is a fall. It costs about \$5,500 Hong Kong Dollars.

What will we see in the future?

In the 2022 Hong Kong publication, injuries from falls in children aged 4 were 66.4%. I wonder if an intelligent vest for young children will be made soon.

New Tales of China's Inventions

St. Stephen's College Preparatory School, Yeung, Lok Hei Gemma – 7

China's inventions have always been fascinating! Let's travel back in time to see what some of the amazing inventions were that still have an immense impact on our lives today. The compass, invented by the Chinese between the 2nd century BC and 1st century AD, was commonly used in Feng Shui for the layout of buildings. By 1000 AD, navigational compasses were also commonly used on Chinese ships, enabling them to navigate. Nowadays, we have compasses in smartphones, making it convenient for activities like hiking or traveling.

Another great invention was the kite, which was developed in China around 1000 BCE. It is very interesting that large kites were used to lift people and as a way for the army to signal warnings. Even though we mainly use kites for leisure now, they are still interesting items that help us navigate wind direction and provide a means to gather with friends.

The invention of paper was commissioned by the Emperor of China to find an inexpensive and portable writing surface. The Chinese government official Ts'ai Lun produced and recorded a technique for the mass manufacture of paper during the Han dynasty. Without the invention of paper, we wouldn't have books to read, paper to draw on, or exam papers to write on. Would there even be libraries?

With the rapid growth of technology in China, let's now take a ride on an imaginary path to unlock a one-of-a-kind future invention. Picture this: a star-shaped, rainbow-colored seed that humans can ingest, and it will magically grow inside the body. After 5 minutes of ingesting the seed, a robot will be developed within your body and reside inside your brain. It will control the body with its built-in GPS, like having a smartphone inside your body, and turn you into an ultra-smart machine. Similar to AI machine learning, the robot can learn about your habits, likes and dislikes, and recommend new activities or hobbies. What makes it even better? It can help you improve your weaknesses and strengthen your strengths. On a daily basis, it will wake you up, remind you of all the tasks you need to do, help you choose the food you need, schedule appointments with people you should meet, and make all decisions for you.

If this seed were an imaginary-come-true, would you be brave enough to take it? Do you want a robot to control you, or do you want to control your own body?

The Woman who Saved the World

The French International School, TKO, Kim, Seeun – 8

Do you know what Malaria is?

Malaria is a type of disease that can be cured now but not in the past.

Malaria is a disease that is spread by mosquitoes. Tu You You saved the world after Malaria spread.

Tu You You was born on December 30th 1930 in Ningbo, China. She was sick with Tuberculosis for 2 years from 16 years old and was forced to stay home. Tuberculosis is a bacteria that makes it hard to breathe.

She could have just lied there doing nothing for 2 years but she did not! She stayed home studying medicine.

After she was cured, she went back to school and she kept studying medicine. Soon in Vietnam, a disease called Malaria spread all over the country. Tu You You joined a group called Project 523. It was a code name for a secret military project in China to find a cure for Malaria in Vietnam. Tu had to spend a few years away from her family to join the military project. She found a plant called Sweet Wormwood which had the power to treat Malaria.

When she came back home after the project, all her work had paid off by saving many people's lives. She was known all over the country. In 2015, she was awarded the Nobel Prize for her amazing cure of Malaria.

Tu You You invented a cure for malaria. Therefore she is one of the most famous Chinese inventors in the past.

Rosie The Red Robin

The French International School, TKO, Lee, Lauren – 7

Have you ever wanted a pet bird that can take you from place to place?

Then let me show you a sweet friend that can take you anywhere!

Did you know people in China used to write letters then tie them to a pigeon's feet to communicate with one another? Rosie the Red Robin from China helps people to go from place to place and do a cleanup for the earth. When you first see Rosie the Red Robin, she is very small but as time goes by, she grows bigger and she can carry a lot of you. Rosie the Red Robin only needs one battery plus when it grows it likes to consume trash. It also likes to breathe in carbon dioxide and breathe out oxygen.

When it grows big enough, you can go inside and take a seat. You can also press the room mode button if you are sitting in the driver's seat and there will be shelter for you with air conditioning. It consumes trash to produce energy and electricity. If you are sitting in one of the passengers' seats, then you can use some control buttons to make the seat comfortable for you. When driving, you can pick whether to go fast or slow.

If it is rainy, I recommend going slowly when driving but if you are stuck in a storm, activate the emergency mode by pressing the weather button. That will help you get out of the storm quickly.

If your friend's bird and your bird are close to each other, you can transfer any amount of fuel to each other. Planes use a lot of fuel, and they emit tons of carbon which is bad for the environment. Rosie, on the other hand, will only emit oxygen. That way, our earth will be very clean and healthy.

You can also travel underwater even if you are riding on the bird, you just have to activate the submarine mode then the bird will transform into a perfect sub. It also can help marine life if you press the ecosystem button.

You can drive on land as well, just activate land mode and there you go. If you are tired of driving just press the auto drive button to have a break and relax.

Did you know every year we dump a massive 2.12 billion tons of waste and there are about 5.25 trillion pieces of plastic estimated in our oceans?

Rosie the Red Robin can help people clear all this trash if we all work together and help the earth because it is our home, the place we live in.

Rosie the Red Robin can also travel through space. You just need to activate the space mode, then you will be able to travel through space. You will discover new planets and find a way to live on them, but the earth is still our home for many years to come.

We cannot wait to see the next Chinese invention!

China's Most Famous Invention: Chopsticks!

The Independent Schools Foundation Academy, Cao, Caitlin – 7

Chopsticks! Chopsticks! Over one and a half billion people eat food with chopsticks every day. In China, people use 80 billion disposable chopsticks every year. Did you know chopsticks were first used for cooking?

Chopsticks were invented 5000 years ago. The first few chopsticks were used for cooking because they were long sticks reaching the bottom of the cooking pots and stirring the mixture. Around 2000 years ago, people in the Han Dynasty started using chopsticks to eat. Rice, dumplings, noodles and stir fry were some of the first foods people ate with chopsticks. Compared to knives and forks, chopsticks were safer to use. During those days, food started to be chopped up into small pieces and chunks before cooking in Chinese cuisine, so chopsticks became a perfect match with such bite-sized food.

The first chopsticks were made from twigs and sticks. Now, they are mostly made out of bamboo, wood and plastic. The wood and bamboo are cut to the length of chopsticks and then milled to the shape. Next, they are sanded smooth in preparation for painting. Finally, they are painted with decorations and waterproofed. Wooden and bamboo chopsticks are mostly only used one time. Plastic and metal chopsticks are mainly used in homes and restaurants but are more slippery and challenging to handle.

Most Chinese children start using training chopsticks when they are four years old. These chopsticks are helpful because they teach children how to pick up food and keep it steady. When kids use chopsticks, they improve their fine motor skills and hand-eye coordination.

When eating in China, people should behave and pay attention to table manners. It is polite to wait for the guest or an elder to put their hand on chopsticks first. Always remember to hold your chopsticks properly by holding them close to the top end and stabilizing the bottom using the middle finger. Then, use the index finger to move them around. Avoid having one in each hand, and never shovel food into your mouth. If you are not using them, put the chopsticks on a rest instead of the table. Using chopsticks as drumsticks and pointing your chopsticks at someone are both considered poor manners.

Chopsticks can be used in many different ways. In the kitchen, you can use chopsticks to skewer meat and vegetables and put them on the grill, beat eggs to make scrambled eggs, test cakes to see if they are baked, and pit cherries and olives. For dessert, you can use chopsticks to make do it yourself popsicles and toast marshmallows over a low flame. Other creative ways to use a chopstick include: poking and unclogging glue bottles, cleaning dirt from small spaces, propping up plants, and so on...

Chopsticks are an important tool in our daily life, not only for food but also for many other uses. Let's use fewer disposable chopsticks to protect the earth and keep good eating habits and table manners to use chopsticks properly.

AI Squash Robot

The Independent Schools Foundation Academy, Wang, Youying – 7

Hello, dear readers! Welcome to the stories by Katherine Wang! Guess what I'm writing about today? It'sChina's next great invention! I will convince Chinese scientists to create an AI squash robot!

First, the mighty AI squash robot I have in mind will develop my custom-made squash, help me do my physical exercises program. Of course, it will know everything about squash, and how to play the game well. It will arrange my squash timetable based on how much time I have and on my body conditions of the day. After collecting the daily data of my body, it will quickly plan my training. Usually, it will categorise my exercises with warm up routines to start the day. Then I will proceed to specific squash skills practices, match simulations and at the very end, exercises for reflexes and fitness. After I have completed all the exercises it will give me recommendations on how to play better! However, there are more wonders!

Playing squash is just like playing tennis, they both require strategy and tactics. I may invest a lot of energy in striking a ball that would eventually prove useless. For example, the ball lands on the middle of the court on my opponent's side, that would favor her in returning a killer shot, which I should not be able to catch after all! To avoid this, my AI squash robot will study and analyze my opponent's play patterns then make recommendations as to how I can combat her. In addition, the robot would do the same with the world's best young players and teach me how to play like them! If I do it often, it will make me more quickly to get used to the style and habits of my opponents, play as smart as the world's best young players, then win the competitions much easier! Though, I believe the AI squash robot can help more!

I love watching squash tournaments in my spare time. My AI squash robot will be the perfect partner to watch the games with me. We will talk about the performance of the world-famous squash players – how they tackle the stress when facing stronger players? How they handle the emotions after the games? I will also share my feelings in the competitions with its robot, seeking its objective view and constructive advises.

All in all, I hope Chinese scientists will invent this AI squash robot. Not only that it will be fun, but I will also be able to improve my squash techniques dramatically! I hold a little dream in the bottom of my heart that one day I would be able to stand in the court of the world-class squash tournament to fight for the Champion for Hong Kong, China. I would be so proud of myself and my trustworthy partner – AI squash Robot on that day!



Creative Writing
Non-Fiction

Group 4

New Tales of China's Inventions

Chan Sui Ki (La Salle) College, Chew, Kai Milo – 17

China has become a global innovation powerhouse, awe-inspiring the world with its astounding breakthroughs and inventive inventions. China's creativity has catapulted the country to the forefront of global innovation, with innovations ranging from technological wonders that have completely changed industries to revolutionary infrastructure projects that have revolutionized transportation. Exploring the new invention stories from China reveals a colorful tapestry of creativity, tenacity, and the unwavering quest of advancement. This essay examines a few of China's most famous innovations, illuminating their significance and the fascinating backstories. These innovations, which range from innovative technologies to environmentally friendly solutions, demonstrate China's steadfast dedication to influencing the future and making an impression on the global scene. Come along on an exploratory journey with us as we uncover the intriguing tales of China's innovation and their global repercussions.

1.e-commerce

Many amazing creations that showcase the knowledge and technological capabilities of Ancient China may be found throughout China's rich history. Papermaking, printing, gunpowder, and the compass are often hailed as the four great technologies that advanced human civilization. But when we look at China from a different angle, the dynamic, forward-thinking country invites us to discover more about the country's recent inventive history. However, if you consider things from a different angle, such as the buzz surrounding China's landscape, what thoughts come to mind when you consider the latest innovations from China? The concept of e-commerce will slowly be unveiled and emerge in your mind. Within a fingertip of work, dozens of different items can be purchased from the Internet no matter what kind of item they are. From tip to toe, from little as the articles for daily use to luxury. All the above can be seen within the movement of your hand. As you are interested in this associated subject, let's take a closer examination into it.

When individuals discuss e-commerce, what first comes to mind? As the horsemen of e-commerce and experts in their fields, Alibaba's Taobao and Tmall are the first sites that spring to mind for me. However, what enables them to maintain their dominant position in that kind of specific? Without a doubt, the orderly interaction between buyers and sellers, since vendors can list their own goods for sale to both at a set price or through an auction. Only a small portion of transactions are auctions; most transactions involve the sale of brand-new goods at predetermined pricing. Users of Taobao typically read reviews and contrast products from several stores. Alibaba's Alipay is a widely used payment gateway on Taobao. Additionally, Alipay is under one of the platforms of Alibaba which also functions as the e-commerce community of such. Besides, e-commerce has revolutionary potential that goes well beyond just business. It has been essential in propelling infrastructural development, urbanization, and the digital empowerment of rural communities. This confluence of entrepreneurial energy and technological improvement has opened the door to inclusive growth and societal advancement. It is indisputable that e-commerce is one of the main drivers of innovation, economic prosperity, and global connectedness as we consider the latest invention stories from China. It solidifies China's position as a leader in the rapidly changing fields of technology and business and embodies the nation's unwavering spirit of progress.

Talking about the history of the e-commerce about China, Tao Bao must stand a hard place among one of them as it is arguably one of the most also the most iconic e-commerce company among all of them. To provide some back story for it, Taobao is a Chinese online shopping platform which is well known as the eighth most-visited website globally in 2021 which Taobao.com is first register on April 21, 2003 by Alibaba cloud Computing (Beijing) Co.,Ltd. Taobao serve over 1 billion product listing in 2016, I believe all of us have ever purchased some goods from it which also Taobao has combined transaction volume of Taobao Marketplace and Tmall.com reaching 3 trillion dollar in 2017, which is a very impressive number. But how comes Taobao can become one the largest e-commerce company in China at that time? As there is a market gap when it first launched, as Business-to-business (B2B) platforms dominated the Chinese e-

commerce market. Taobao sought to close a huge gap in the consumer-to-consumer (C2C) market. Taobao capitalized on the enormous potential of independent vendors and customers by concentrating on C2C transactions. Besides, Taobao offered its services for free to both buyers and sellers, eliminating listing fees and commissions. This approach attracted many individual sellers looking for a cost-effective platform to reach a wide customer base. It also incentivized buyers to choose Taobao for its extensive range of products and competitive prices. As Taobao fostered an important sense of community among its users. It provided interactive features such as discussion forums, customer reviews, and ratings, which facilitated communication and feedback between buyers and sellers. This community-driven approach helped establish trust and credibility within the platform. We believe that is one of the reasons why Taobao stood out at that time and became one of the largest online shopping platforms at that time.

In summary, the emergence of e-commerce has embarked on the next avenue of life, providing millions of citizens with a better way of life. Through its convenience, expanded choices, entrepreneurial opportunities, job creation, and improved accessibility, e-commerce has undoubtedly transformed the retail landscape and empowered individuals to lead more fulfilling and prosperous lives. As we move forward, it is important to continue harnessing the potential of e-commerce while addressing challenges such as data security, privacy concerns, and bridging the digital divide to ensure that its benefits are accessible to all.

2.High speed rail

China has the largest population of any country, with an estimated 1.4 billion people living in its cities as of 2022. With such a tremendous size of the population transport is becoming one of the most essential uses for daily life in such a high country. With the help of high-speed railway, covering 38,000 km (24,000 mi) in total length by the end of 2020 as it accounts two third of the total length of world's speedway network. Additionally, a high-speed railway that can reach an incredible top speed of 430 km/h allows individuals to travel throughout the whole nation in the blink of an eye. "At current stage, China has 124,000 kilometers (about 77050.03 mi) of railway and 22,000 kilometers (about 13670.17 mi) of high-speed rail lines, while the latter has transported over 7 billion passengers," Huang Xin, an official with China Railway Cooperation. China's high-speed rail network has become the most widely used network in the world, changing urbanites' lifestyles and standing as an impressive engineering achievement.

Moreover, what brings the rise of the huge emperor of the high-speed railway in China? Historically speaking, the Chinese government recognized the importance of a modern and efficient transportation system to support economic growth and regional integration. Therefore, a significant commitment to developing high-speed rail infrastructure was made. The government made significant financial investments in R&D and construction, which allowed the network to grow quickly. Furthermore, a strong future vision and long-term planning underpinned China's construction of high-speed rail. In order to improve transportation connections within the nation, connect important cities, and expand the network, the government developed detailed plans and set high goals. This strategic approach allowed for coordinated and efficient implementation of high-speed rail projects. In addition to enhancing connectivity within China, the establishment of this vast and effective transportation network has established China as a leader in high-speed rail operations and technology worldwide. Other nations looking to create their own high-speed rail networks can learn from and refer to China as it develops its network and technological capabilities.

Economically speaking, there were first worries about the high-speed rail's cost, debt, and profitability, especially outside of China. Nonetheless, the Paulson Institute's analysis projects that the high-speed rail system will make a net profit of about \$378 billion, yielding a 6.5% yearly return on investment. China's national railway operator has also committed to putting more emphasis on improvements in 2021 that will increase the effectiveness and productivity of its high-speed rail network than on increasing track mileage. With the help of the high-speed rail, the construction and operation of high-speed rail projects have served as significant economic stimuli, generating employment opportunities, and driving local economies. The massive infrastructure projects created numerous jobs in construction, engineering, manufacturing,

and operations. The construction of high-speed rail also boosted allied sectors like retail, hospitality, and tourism, which boosted the nation's economy as a whole. For example, high-speed rail has significantly reduced travel times between cities, making business travel easier. This has simplified the process for businesses to hold in-person meetings, go to conferences, and investigate new markets. Economic growth has been fueled by the effective transportation system, which has expanded trade volumes and company collaborations. To clarify, high-speed rail network has boosted the tourism and hospitality industry in China. Travelers can conveniently explore various tourist destinations, leading to increased domestic tourism. The ease and speed of travel have also attracted international tourists, boosting the revenue of hotels, restaurants, and other tourism-related businesses as High-speed rail provides convenient and efficient transportation options for travelers, allowing them to easily access various tourist destinations across the country. Prominent tourist destinations, natural wonders, cultural heritage sites, and large cities are all connected by the vast network. The ease with which domestic travelers can now visit many parts of China as a result of this accessibility has increased domestic travel.

In addition, barriers to tight relationships between districts arise from their geographical conditions. High-speed rail, meanwhile, offers districts a stronger working relationship. Given the abundance of mountain ranges in China, conventional transportation infrastructure faces difficulties. The design of high-speed rail allows it to go through mountainous areas using elevated rails, tunnels, and bridges. This makes it possible for rail services to run continuously and uninterrupted, linking previously unconnected areas and encouraging economic growth. Furthermore, China's high-speed rail network connects to neighboring nations including Vietnam, Mongolia, and Russia, reaching beyond its boundaries. This strengthens regional cooperation and integration by promoting tourism, cross-border trade, and cultural interactions. Consequently, high-speed rail stations are positioned in urban areas in a way that integrates them with the current transportation networks, facilitating smooth transitions between buses, metro systems, high-speed rail, and other forms of transportation, allowing for convenient and effective movement within and across urban areas. Similarly, senior high-speed rail stations are built with walkways and pedestrian-friendly access points linking them to the nearby metropolitan centers. Easy and safe access between the station and neighboring attractions, commercial districts, residential neighborhoods, and other transportation hubs is made possible via pedestrian bridges, underground passages, and dedicated pathways. The provision of pedestrian connectivity at high-speed rail stations augments their overall accessibility and convenience and facilitates smooth urban movement.

In conclusion, China's high-speed rail network is evidence of both its extraordinary technical prowess and its commitment to enhancing the quality of life for its people. Thanks to its unmatched speed, efficiency, and extensive connectivity, high-speed rail has revolutionized urban living by fostering regional integration, economic growth, and improved mobility. The world's most widely utilized high-speed rail network was constructed by China thanks to meticulous planning, rapid technical improvements, and a dedication to infrastructure development. China's experience and knowledge in this innovative transportation field can teach other nations a lot as they work to build their own high-speed rail networks.

As our investigation into the latest invention stories from China draws to a close, it is evident that the country's inventive spirit is unbounded. China's extraordinary achievements have had a considerable influence on the world stage in addition to changing its own society. China's steadfast dedication to scientific research, development, and fostering an innovative ecosystem has resulted in these achievements. The tales behind these innovations demonstrate the Chinese people's tenacity, resolve, and spirit of cooperation as they have toiled ceaselessly to push the limits of what is conceivable. The world will continue to be shaped by China's inventiveness, as we can see from the latest stories about its inventions. China's innovative path can serve as a source of inspiration for other countries, motivating them to allocate resources towards research and development, foster creativity, and embrace a future centered around technology and sustainability. Finally, the fresh stories about China's creation serve as a reminder of the seemingly endless possibilities that result from combining human intellect with tenacity and a dedication to advancement. We should expect China to continue producing amazing discoveries and technologies in the future, propelling developments that will impact society, our daily lives, and the entire planet.

New Tales of China's Inventions

Chan Sui Ki (La Salle) College, Lam, Ming Chun – 17

China, with its rich history and culture, has emerged as a significant contributor to modern inventions in the contemporary era. These inventions have not only had a profound impact on China's economic and technological development but also influenced the global landscape. In this article, we will explore some examples of modern inventions in China to showcase its significant contributions in the field of technology.

First and foremost, China has made remarkable breakthroughs in the field of electronics and telecommunications. Over the past few decades, China's electronics industry has experienced tremendous growth. It has become one of the largest producers of electronic products globally, including mobile phones, televisions, and computers. Furthermore, China has achieved important advancements in 5G communication technology. Chinese companies' development and deployment of 5G technology have positioned China as one of the leading 5G technology suppliers worldwide. This has not only propelled the growth of China's communication industry but also made significant contributions to the advancement of global communication technology.

Secondly, China has made significant progress in energy-saving and environmental protection technologies. As the global focus on environmental issues intensifies, energy-saving and environmental protection technologies have become increasingly crucial. China's government and businesses have invested substantial resources and funds into research, development, and application of these technologies. For instance, China has achieved important breakthroughs in renewable energy technologies such as solar power and wind energy. China ranks among the top countries globally in terms of solar power generation and wind power capacity, providing valuable insights for global energy transition.

Additionally, China has made important contributions in the transportation sector. China's high-speed railway system is recognized as one of the most advanced and efficient networks in the world. China's high-speed railway technology and construction capabilities have had a significant influence worldwide. The construction of high-speed railways in China has not only improved transportation efficiency but also stimulated economic development and improved the standard of living across various regions.

Moreover, China has made remarkable achievements in the field of artificial intelligence (AI) and big data technology. China's AI technology has made significant breakthroughs in image recognition, speech recognition, natural language processing, and other domains. Chinese enterprises have increasingly applied AI in various fields, including smart cities, intelligent transportation, and smart manufacturing. Simultaneously, China's big data technology plays a vital role in diverse sectors such as finance, healthcare, and e-commerce. The development of AI and big data technology in China has brought about innovative opportunities and advancements for China and the world at large.

Apart from technology, China has also made significant inventions and innovations in the field of healthcare and medicine. Traditional Chinese medicine, renowned worldwide, continues to play a vital role in modern medicine. Chinese scientists and medical experts have made important contributions in areas such as integrating traditional Chinese and Western medicine, herbal research, and traditional Chinese medical diagnostics and treatments. Furthermore, China has achieved breakthroughs in genetic science and biotechnology. Chinese scientists have participated in international projects, including the Human Genome Project and the research and application of CRISPR gene editing technology. These studies and technologies offer new possibilities for human health and medical treatment.

Lastly, China has achieved remarkable milestones in space exploration and aerospace technology. China became the third country to successfully land on the moon and has achieved significant breakthroughs in manned spaceflight, satellite launches, and space laboratory construction. China's manned space program and lunar exploration missions have garnered widespread attention and acclaim globally, opening new chapters in human space exploration.

In conclusion, China has made remarkable achievements in modern technology and inventions. Its inventions and innovations have not only propelled China's economic and technological development but also made significant contributions to global technological advancements and human well-being. With continuous investment and efforts in the field of technology, China is poised to remain a crucial force in global technological innovation.

New Tales of China's Inventions

Chan Sui Ki (La Salle) College, Lee, Chak Ming – 17

Chinese online shopping has emerged as a groundbreaking innovation, transforming the retail landscape both domestically and globally. With the rise of e-commerce giants like Alibaba and JD.com, China has become a force in the online shopping industry. This article delves into the unique benefits of Chinese online shopping, its fascinating history, and its widespread usage in today's digital age.

First, online shopping has five benefits. First, Convenience. Online shopping eliminates the need for physical store visits, allowing consumers to shop from the comfort of their homes at any time. This convenience is particularly valuable for busy individuals, those with limited mobility, or those residing in remote areas.

Second, Variety and Accessibility. Online platforms provide access to a vast array of products, ranging from everyday essentials to niche items. Consumers can explore numerous brands, compare prices, read reviews, and make informed purchasing decisions effortlessly.

Third Cost Savings. Online shopping often offers competitive pricing due to reduced overhead costs for e-commerce businesses. Additionally, consumers can take advantage of exclusive discounts, promotions, and comparison tools to find the best deals.

Fourth, Time Efficiency. With online shopping, consumers can swiftly find desired products using search filters or recommendations. This saves time compared to physically browsing through multiple stores, especially when seeking specific items or rare products.

Fifth, Seamless Transactions. Secure payment gateways and encrypted transactions ensure the safety of personal and financial information. Online platforms also offer various payment options, including credit/debit cards, e-wallets, and digital payment systems, enhancing convenience for consumers.

Then, what is the history of Online Shopping? China's online shopping traces its roots back to the late 1990s when a few pioneering entrepreneurs recognized the potential of e-commerce. Alibaba, founded by Jack Ma in 1999, played a pivotal role in shaping the online shopping landscape in China.

In the early 2000s, Chinese online shopping platforms experienced rapid growth. The increasing internet penetration, rising disposable incomes, and changing consumer behavior fueled the adoption of online shopping. Alibaba's Taobao, launched in 2003, became a game-changer, offering a platform for small businesses and individual sellers to thrive.

Mobile Commerce Revolution, the advent of smartphones in the late 2000s brought about a mobile commerce revolution in China. E-commerce platforms quickly adapted to mobile technologies, creating user-friendly apps and mobile payment systems. This shift allowed consumers to shop anytime, anywhere, leading to a significant surge in online shopping transactions.

Chinese online shopping platforms pioneered the integration of online-to-offline services. Companies like Alibaba and JD.com invested in logistics infrastructure, enabling fast and reliable deliveries. Moreover, they facilitated partnerships with physical stores, offering services like click-and-collect and in-store returns, bridging the gap between online and offline shopping experiences.

Finally, the impact and usage of online shopping. Online shopping has transcended geographical boundaries, enabling consumers worldwide to access products from various regions. This has facilitated cross-border trade, allowing consumers to explore international brands and unique products.

Consumer Empowerment, online reviews, ratings, and user-generated content empower consumers to make informed purchasing decisions. Social media platforms and influencers also play a significant role in shaping consumer preferences and driving online shopping trends.

Many traditional retailers have embraced an Omni channel approach, integrating their physical stores with online platforms. This strategy enhances the shopping experience by offering options such as click-and-collect, in-store returns for online purchases, and seamless cross-channel interactions.

Online shopping has created new business opportunities, particularly for small and medium-sized enterprises and individual sellers. E-commerce marketplaces provide a platform for entrepreneurs to showcase and sell their products to a global customer base, contributing to economic growth and job creation.

Online retailers continuously strive to enhance customer experiences through personalized recommendations, responsive customer support, and hassle-free return policies. This focus on customer satisfaction has become a key differentiator in the competitive online shopping landscape.

China's online shopping has revolutionized the retail industry, providing consumers with an unparalleled shopping experience characterized by a wide product selection, competitive pricing, convenience, and technological innovations. The evolution of Chinese online shopping platforms, from their early beginnings to the mobile commerce era and beyond, has shaped consumer behavior and influenced global e-commerce trends.

The Contactless Payment Revolution in China: A Glimpse into Advanced Features and Implications

Chan Sui Ki (La Salle) College, Li, Ka Hin – 17

Contactless payment methods have revolutionized the way transactions are conducted worldwide. China, in particular, has emerged as a global leader in this domain, with its advanced and widespread adoption of contactless payment systems. In this essay, we will delve into the concept of contactless payments, explore the features and technologies that make China's contactless payment ecosystem unique, and discuss the implications of this transformative trend on the economy, society, and consumer behavior.

Understanding Contactless Payments

Contactless payments refer to a secure and convenient method of making transactions without the need for physical contact between the payment device (such as a smartphone, smart card, or wearable) and the payment terminal. In China, contactless payments are predominantly facilitated through mobile payment platforms such as Alipay and WeChat Pay.

These mobile payment platforms utilize near-field communication (NFC) technology, enabling users to make payments by simply tapping their smartphones or scanning QR codes at participating merchants. This frictionless process eliminates the need for cash or physical cards, providing a seamless and efficient payment experience.

Features and Technologies of China's Contactless Payment Systems

China's contactless payment ecosystem boasts several unique features and technologies that contribute to its widespread adoption and success.

QR Code-Based Payments: Unlike NFC-based contactless payments prevalent in other countries, China has embraced QR code-based payments as a primary method. QR codes offer a cost-effective and easily deployable solution, enabling even small businesses and street vendors to accept digital payments. Consumers scan the QR code displayed by the merchant to initiate the payment, making it accessible to a wide range of users.

Mobile Payment Platforms: Alipay and WeChat Pay are the two dominant mobile payment platforms in China. They offer a comprehensive suite of services beyond payments, including peer-to-peer transfers, bill payments, online shopping, ride-hailing, and more. These platforms have integrated various functionalities into a single app, providing users with a one-stop solution for their financial needs.

Seamless Integration: China's contactless payment systems seamlessly integrate with various aspects of daily life. From retail stores to transportation networks, food delivery services, and even street vendors, contactless payments are widely accepted in almost every sector of the economy. The convenience and ubiquity of these payment methods have made them an integral part of the Chinese consumer experience.

Offline Payments: One unique feature of China's contactless payment systems is the ability to make offline payments. This is achieved through technologies such as dynamic QR codes that allow transactions to be completed even in areas with limited or no internet connectivity. The transaction data is stored locally on the payment device and synchronized when an internet connection becomes available.

Security Measures: China's contactless payment systems prioritize security to ensure user trust and protect against fraud. Advanced encryption algorithms, tokenization, and biometric authentication methods (such as fingerprint and facial recognition) are employed to safeguard user data and prevent unauthorized access.

Implications on Economy, Society, and Consumer Behavior

The widespread adoption of contactless payments in China has had profound implications across various sectors.

Economic Growth: The proliferation of contactless payments has facilitated the growth of China's digital economy. Small businesses and street vendors, previously reliant on cash transactions, can now easily accept digital payments, expanding their customer base and revenue opportunities. This shift has also contributed to the formalization of the informal economy, enabling better tax collection and economic transparency.

Financial Inclusion: Contactless payment systems have played a crucial role in promoting financial inclusion in China. Even individuals without traditional bank accounts can create digital wallets linked to their mobile phones, allowing them to participate in the digital economy. This has helped bridge the gap between urban and rural areas, empowering individuals and businesses in previously underserved regions.

Changing Consumer Behavior: The convenience and seamless experience of contactless payments have altered consumer behavior in China. Carrying cash has become increasingly rare, and consumers now expect merchants to accept digital payments. This shift has influenced the way people budget, save, and manage their finances, with mobile payment platforms offering additional features like budgeting tools and investment options.

Data-Driven Insights: The widespread use of contactless payment systems generates vast amounts of transactional data. This data provides valuable insights into consumer behavior, preferences, and spending patterns. Companies can leverage this information to personalize marketing strategies, develop targeted products and services, and drive innovation across industries.

e) **Challenges and Considerations:** While the adoption of contactless payments in China has brought numerous benefits, it also raises concerns related to data privacy, security, and potential monopolistic practices by dominant payment platforms. Striking a balance between innovation, consumer protection, and fair competition remains a challenge for regulators and policymakers.

China's contactless payment systems have revolutionized the way transactions are conducted, setting new standards for convenience, security, and integration. The unique features and technologies of China's contactless payment ecosystem, including QR code-based payments, mobile payment platforms, seamless integration, offline payments, and robust security measures, have propelled the nation to the forefront of digital payments. The implications of this transformative trend span across the economy, society, and consumer behavior, fostering economic growth, promoting financial inclusion, shaping consumer preferences, and generating valuable data-driven insights. However, as with any technological advancement, it is essential to address challenges related to data privacy, security, and competition to ensure a balanced and sustainable digital payment landscape. China's contactless payment revolution serves as a testament to the power of innovation and highlights the potential for transformative changes in how we conduct financial transactions globally.

The Rise of Electric Vehicles In China: A Paradigm Shift In Sustainable Transportation

Chan Sui Ki (La Salle) College, Lin, Wai Pan – 17

The rapid growth of electric vehicles (EVs) in recent years has transformed the global automotive industry, with China emerging as a dominant player in this market. China's commitment to reducing carbon emissions and air pollution, coupled with its ambitious plans and policies, has propelled the nation to the forefront of electric mobility. In this essay, we will explore the factors driving the popularity of electric vehicles in China, examine the government's supportive policies, and assess the impact of this shift on the environment, economy, and society.

Several key factors have contributed to the surge in electric vehicle adoption in China. First and foremost, it is air pollution. China's rapid industrialization and urbanization have led to severe air quality problems in major cities. Electric vehicles offer a cleaner alternative to traditional internal combustion engines, emitting zero tailpipe emissions and reducing harmful pollutants that contribute to air pollution and associated health issues.

Additionally, China's growing middle class and rising disposable income have fueled demand for personal transportation. EVs have become an attractive option for consumers seeking cost-effective and eco-friendly vehicles. Moreover, advancements in battery technology have expanded the driving range and improved the performance of electric vehicles, addressing concerns about limited range anxiety and charging infrastructure.

The Chinese government has played a pivotal role in fostering the growth of electric vehicles through a range of supportive policies. The central government has implemented stringent emission standards, including a dual-credit system, which requires automakers to produce a certain percentage of new energy vehicles or purchase credits from other manufacturers. This policy incentivizes automakers to produce electric vehicles and has led to a significant increase in their production.

To further encourage EV adoption, the Chinese government has provided generous subsidies and financial incentives for both consumers and manufacturers. These incentives include purchase subsidies, tax exemptions, and favorable license plate registration policies in major cities. Subsidies have made electric vehicles more affordable for consumers, while manufacturers have been encouraged to invest in research and development, production capacity, and charging infrastructure.

Furthermore, the government has invested heavily in the development of charging infrastructure across the country. China now has the largest EV charging network globally, with public charging stations in urban areas, along highways, and in residential complexes. This extensive charging infrastructure has alleviated concerns about range anxiety and has made EV ownership more convenient for consumers.

The rapid adoption of electric vehicles in China has significant environmental benefits. By reducing reliance on fossil fuels, EVs help decrease greenhouse gas emissions and combat climate change. According to the International Energy Agency, China accounted for more than half of global EV sales in 2020, resulting in an estimated reduction of 45 million metric tons of carbon dioxide emissions.

The shift to electric mobility has also created new economic opportunities for China. The government's support for the EV industry has spurred technological advancements and attracted domestic and foreign investments. Chinese automakers such as BYD, NIO, and Xpeng have emerged as key players in the global EV market, challenging established international brands. The growth of the EV sector has also created jobs, particularly in manufacturing, battery production, and charging infrastructure development.

From a social perspective, the increased adoption of electric vehicles has enhanced public health and improved air quality. The reduction in air pollution has led to a decline in respiratory diseases and improved overall well-being. Additionally, the popularity of EVs has shifted the public's perception of electric mobility, leading to a positive cultural shift towards sustainability and environmental consciousness.

China's remarkable progress in the electric vehicle sector serves as a testament to the transformative power of supportive policies and strong governmental commitment. The nation's efforts to combat air pollution, reduce carbon emissions, and foster sustainable transportation have made it a global leader in the EV industry. The factors driving the popularity of EVs in China, combined with the government's supportive policies and investments, have paved the way for a greener, cleaner, and more sustainable future. As other countries seek to emulate China's success, the rise of electric vehicles in China stands as a beacon of hope for a world transitioning towards a low-carbon transportation system.

New Tales of China's Inventions

Chan Sui Ki (La Salle) College, Yau, Tim Yau – 16

If there's a country that marvels at world-renowned inventions, no matter in technology or even medicine, it would be one of the most highly populated countries in Asia as well as the second largest country globally—China. Cultivating an ecosystem to support the manufacturing supply chain, the Republic of China has been regarded as the largest manufacturing country on Mother Earth since the early 2000s. Back in the first millennium A.D., some weapons and communicative instruments had already been invented, like gunpowder, which was a life-extending elixir of a mixture of elemental sulfur, charcoal, and saltpeter, movable type printing techniques, just to name a few. But how can it ameliorate and modernize today's China?

It goes without saying that navigation plays a quintessential role in a wide array of aspects, whether it be tourism or business. Yet, ironically, back in 1000 A.D., the compass was used in feng shui, a superstitious and unscientific belief of harnessing all the good energy. As early as 2000 years ago, Chinese scientists may have already known that the magnetism of the needle occurs naturally by rubbing an iron bar, resulting in pointing south and north. This has evolved into a navigational compass these days.

In addition to the Four Great Inventions, a supplemental therapy was invented by the Chinese Emperor Huangdi in 2500 B.C.. Not only did acupuncture involve utilising sharpened stones and long sharp bones, but it was also used for simple surgical procedures, like abscess-lancing. Words just couldn't depict how impressive it was! It's universally acknowledged that stylostixis involves stimulating sensory nerves in the muscles and under the skin, giving rise to the production of pain-relieving endorphins naturally. No wonder the Canadian singer Celine Dion and the American actor Robert Downey Jr. both desired to have stylostixis.

Back to today's technology, 5G, a swift transfer at a speed which is 20 times faster than existing standards, was launched by the three corporations in China in 2019. Ultra-reliability, low latency and high connection density have edged over the previous ones, for sure. As the old Chinese saying goes, "A thousand-mile journey starts with a single step." Believing that China's inventions with innovation will refine a lot, I am looking forward to the future in China under any circumstances.

New Tales of China's Inventions

Chan Sui Ki (La Salle) College, Yip, Chun Wai – 16

Nowadays, China has contributed many inventions that have changed the world and improved people's lives, such as high-speed rail, mobile payments, e-commerce, bike sharing etc. These new inventions show that China is one of the leaders in science and technology and it makes many advantages in the world. Also, China had some serious problems, and it used their inventions to solve the issues. We can see that China inventions are very important to this world. In this essay, I will introduce some inventions of China and how it changes the world.

In 1955, the European union defined high-speed rail can operate at least 250km per hour on new tracks. Then, the first high speed rail system was launched in Japan in 1964. It was called the Shinkansen or the bullet train. The Shinkansen connected Tokyo and Osaka these two major cities in Japan. After launching them in Japan, France was the next country to develop high speed rail in 1981. In addition, there are many advantages of high-speed rail in China and it changed the world. Nowadays, traffic congestion is becoming a common problem around the world and a lot of countries are trying to implement different measures to address the problem. High-speed rail is the solution to this problem. It connects major cities in a shorter time than trains, cars and buses. Also, this can make it easier for people to travel for various activities. There is another benefit from high-speed rail is the reduction of smog and air pollution. Smog might not have an immediate health impact, but which might lead to chronic illnesses such as cancer. On the other hand, high-speed rail also creates a huge number of job opportunities such as train engineers, crew members, rail drivers...etc. Moreover, ticket sales and operation systems also create job opportunities in field of information technology. Next, high-speed rail is a safer way to travel. There are many accidents in the world. The statistics show that over 38000 people die from car accidents every year. The high-speed rail can reduce these serious problems. It can offer a safer and more efficient to driving, it also provides some safety features such as automatic braking, collision avoidance and fire protection systems. It makes more people to travel by high-speed rail so that it can reduce number of people to drive a car. Therefore, high-speed rail has so many benefits to China or even the world.

Mobile payment is another invention from China. It can explain as mobile money, mobile money transfers and mobile wallets, is a processing services operated under financial regulations from a mobile device. It can be used in physical stores, online platforms.....etc. Here are some benefits from mobile payment technology. It is a way of paying for goods and services using a smartphone. It can use in physical stores and online platforms. In China, there are two main types of mobile payments, WeChat pay and Alipay. Customers can give the QR code to pay for the things. One of the major benefits is that they are fast to pay. They are faster than using credit cards and traditional cash transaction. Mobile payments usually just take about a second because they do not need to swipe any cards. Secondly, Mobile payments are very convenient to pay. Nowadays, people are carrying cash less and less. People always bring their mobile phone with going to anywhere. Therefore, these benefits make mobile payment is the most convenient way to pay. People just need to use their mobile phone to pay so they do not need to go to ATM to get some cash to pay a large amount of money. Thirdly, mobile payments carry out safer transactions. When people are using mobile phone to pay, they do not need to worry about losing cash or having it stolen and they do not need to worry about someone steal your ATM password because mobile payment can make use of biometric authentication such as fingerprints or face id as an additional security. It is difficult to hack your account for some illegal purposes. In a conclusion, mobile payments bring us a lot of benefits on daily life.

With smartphones and mobile payment become popular, e-commerce becomes possible on mobile device. E-commerce is used to buy or sell goods or services over the internet. E-commerce has rapidly evolved to become a combination of online and offline retail. E-commerce can divide into three main categories, such as online marketplaces, retail sales and business-to-business. One advantage of e-commerce is that it has a lower startup cost. Physical stores cost a lot because of rental, furniture and decoration. However, for an e-commerce store, the startup cost can be low as four hundred dollars. Taobao is one of the most successful e-commerce platforms that is easy to use. Another e-commerce benefit list that it is easier to encourage impulse buy. If you have some attractive product photography and with some color human emotion, you can craft online advertisement that drive impulse buy. On e-commerce platform, big data analysis technology has evolved. System can analyze browsing behavior and make suggestion on products that the user may have interest, and hence encourage people to buy more. Latest product that people may have interest can also be suggested by system. The third advantage for cloud-based e-commerce platform is that high number of orders can be processed in seconds. In online, we do not need to physically go to the retail store. In physical stores, they may have long queues for checkout. The long queue may make people leave because they do not want to wait long to complete checkout process. In opposition, with e-commerce, there is no waiting time. A customer just needs to order what they want anytime, anywhere and then pay online without delay. With the e-commerce store operates round the clock, the retailer can accept more orders than physical stores, and operates at a much lower cost.

Finally, bike sharing system is an invention that allows people to rent bicycles for short periods of time. There are two types of bike sharing systems, docking and dockless. Dockless systems allow people to locate and rent a bike using smartphone app and return from a dock. Docked systems require users to pick up and return bikes at fixed station. The first bike sharing system was launched in Amsterdam in 1965 but this system faced some problems such as theft and legal issues. Then, bike sharing system has been developed into different models. China was one of the countries that rapidly deployed bike sharing system. There are some benefits to people and society. For example, bike sharing can make people in better health and promote physical activity. Nowadays, people always drive a car or travel by bus to go to anywhere. These factors will damage their health because they do not have time to exercise. However, bike sharing is convenient for people to ride a bike. It can improve people's muscle, strength and mental well-being. Another benefit of bike sharing is that it can reduce traffic congestion and pollution. Since people always drive a car, it makes the road crowded and leads to traffic congestion. Also, if more people having a car, more toxic gas will be emitted and pollute the world. Bike sharing can alleviate the problems and overcrowded roads. Bikes can reduce the cars on road and address the problem of air pollution because it would not release toxic gases. In conclusion, bike sharing invention brings us to a better world.

All in all, these China inventions are not only beneficial to China, but also to the world. Now we can travel more easily and conveniently. Also, we can make a transaction more safely and easily. In the future, we, as a Hong Kong student, hope we could also create inventions that brings benefits to the world and enhance people's life.

New Tales of China's Inventions

Chan Sui Ki (La Salle) College, Wai, Lok – 17

China, a nation steeped in history and culture, has long been celebrated for its remarkable inventions that have shaped the world. From the compass and gunpowder to papermaking and printing, Chinese innovations have left an indelible mark on human civilization. However, the story of China's inventions does not end with these well-known contributions. In this essay, we will explore some lesser-known inventions from ancient China and delve into the modern innovations that continue to emerge from this cradle of civilization.

The abacus, a counting device that predates the modern calculator, is believed to have originated in ancient China. Developed during the Han Dynasty, this ingenious tool allowed the Chinese to perform complex calculations with remarkable efficiency. Even in today's digital age, the abacus remains an important educational tool, teaching children the fundamentals of arithmetic and fostering mental agility.

In the year 132 AD, the brilliant inventor Zhang Heng created the seismoscope, a groundbreaking device that could detect and predict earthquakes. This early seismograph consisted of a bronze vessel with eight dragon heads, each holding a ball in its mouth. When an earthquake occurred, the direction of the tremor would cause one of the dragon heads to release the ball, indicating the location of the seismic activity. Zhang Heng's invention was truly ahead of its time and laid the foundation for modern earthquake detection technology.

Long before the invention of mechanical clocks, the Chinese devised a simple yet effective timekeeping device known as the hourglass. Consisting of two glass bulbs connected by a narrow neck, this ancient instrument measured time based on the flow of sand from one bulb to the other. The hourglass played a crucial role in various aspects of Chinese society, from regulating imperial court proceedings to aiding maritime navigation.

Traditional Chinese Medicine is a holistic system of healing that has been practiced for thousands of years. Based on the principles of balancing yin and yang and promoting the flow of qi (life force), TCM encompasses various practices, including acupuncture, herbal medicine, and tai chi. Despite the advancements of modern medicine, TCM continues to gain recognition for its effectiveness in treating a wide range of ailments and promoting overall well-being.

China has witnessed remarkable advancements in modern technology, with one notable example being its high-speed rail network. The development of this extensive rail system has revolutionized transportation in China, connecting major cities and reducing travel times significantly. The country's commitment to innovation and infrastructure has propelled it to the forefront of high-speed rail technology, setting new standards for efficiency and sustainability.

China's e-commerce industry has experienced explosive growth in recent years, thanks in large part to the pioneering efforts of companies like Alibaba. This online retail giant, founded by Jack Ma, has revolutionized the way people shop and conduct business in China and beyond. The success of Alibaba has paved the way for countless other innovative e-commerce platforms, creating a thriving digital economy that continues to shape the global retail landscape.

China's rich history of inventions is a testament to the ingenuity and creativity of its people. From ancient tools like the abacus and hourglass to modern innovations in high-speed rail and e-commerce, China continues to inspire the world with its technological advancements. As we uncover new tales of China's inventions, we gain a deeper appreciation for the ancient wisdom that informs these breakthroughs and the enduring legacy of innovation that defines this remarkable nation.

New Invention

Chan Sui Ki (La Salle) College, Wong, Tsz Hin – 16

China has created unprecedented innovations that have transformed the world. We will dig deeper into China's high-speed rail, Alipay, Taobao, bike sharing. By examining the key features and benefits of each innovation, we are going to understand their transformation in transport, finance, e-commerce and urban mobility.

China's high-speed rail: changing connectivity and efficiency

China's high-speed rail (HSR) network has revolutionized transportation by delivering unprecedented speed, safety and comfort. With a 40,000 km network, China has the largest and most comprehensive HSR network. This innovation has transformed transportation by reducing travel times and connecting cities and remote areas

An advantage of high-speed rail in China is a significant reduction in commuting. For example, the Beijing-Shanghai line, which takes 10 hours by conventional train, can now be completed in just four-and-a-half hours. This dramatic reduction commuting has resulted in increased productivity, improved social inclusion and a boost to the regional economy.

Moreover, high-speed rail has increased the accessibility by connecting isolated areas. Improved connectivity has also boosted economic growth, attracting investment, creating job opportunities.

The another advantage of China's high-speed rail is to encourage other countries to invest in similar projects. Countries like Japan, the USA and many European countries have noticed the economic and social benefits of HSR and started to develop their own high-speed railway system.

Alipay: Transforming the Financial Industry and Empowering the Individuals

Alipay, developed by Alibaba Group, has revolutionized the financial services in China by providing a secure and convenient digital payment platform. With more than twelve billion users, Alipay has changed the way individuals and businesses conducting financial transactions, reducing their reliance on cash and credit card.

One advantage of Alipay is its mobility, which allows users to scan QR codes for transactions. This payment method not only made payments easier but also increased the efficiency in financial transactions.

Alipay's success has also advanced financial inclusion by providing financial services to individuals who are underserved by the traditional banking system. Alipay allows individuals to open digital wallets, pay bills, access financial products and services, regardless of location or income. This has enabled efficient economic transaction.

Additionally, Alipay's success has impacted the global financial system and spurred the adoption of digital payment systems. Companies like Apple Pay and Google Pay have added QR code-based payment systems influenced by Alipay's innovative approach. This convergence has accelerated the global transition to cashless transactions and made it more efficient, secure around the world

Taobao: Empowering entrepreneurs and transforming e-commerce

Taobao, an online marketplace, has become a tower of China's e-commerce industry, offering a wide range of products and services. The platform's user-friendly interface, competitive pricing and inclusive business model have changed the traditional trading methods.

One of the main advantages of Taobao is its inclusiveness, providing small businesses and individuals with the possibility to start their online stores without spending a lot of money. This has stimulated business opportunities, and boosted economic growth. Taobao has democratized e-commerce, allowing low-income individuals to contact more customers.

In addition, Taobao's success has influenced global retail trends and consumer behaviour. The rise of social e-commerce, where consumers rely on recommendations and reviews on social networks. This shift towards social e-commerce has transformed how businesses interact with customer and make purchasing decisions.

Additionally, Taobao's extensive logistics network has improved delivery, ensuring timely and reliable delivery. This has boosted e-commerce growth in China.

Bike sharing: Redefining urban mobility and promoting sustainability

China's bike-sharing has redefined urban mobility. Companies like Mobike and Ofo have introduced bike-sharing systems that allow users to rent and return bikes easily. This innovation has reduced carbon emissions and encouraged healthier lifestyles.

Additionally, bike sharing has helped reducing carbon emissions and alleviating air pollution. By encouraging citizens to choose bicycles over motorized vehicles for short journeys, bike-sharing programs have helped to reduce the environmental impact of greenhouse gases and this has implications in combating climate change and building sustainable cities.

Furthermore, bike-sharing programs have increased accessibility and improved last-mile connectivity. In suburbs areas, where public transportation doesn't provide direct access, bike sharing provides an efficient solution for short commutes. Users can rent a bike near the point of origin and return to their destination, providing the distinction between public parking and final destinations.

The success of China's bike-sharing systems has inspired cities around the world to implement similar initiatives. Bike-sharing have been launched in major cities in Europe, North America. By adopting bike-sharing programs, cities are embracing sustainable transportation solutions, improving public health.

Conclusion:

China's high-speed rail, Alipay, Taobao, and bike-sharing have not only transformed industries domestically but globally. The benefits of these findings are far-reaching. China's technological advances have led other countries to invest in similar projects. Learning lessons from these projects is essential to finding sustainable solutions to global challenges and diversifying projects in the future. It is important to acknowledge the impact of China's technological innovation, as it has touched the global financial system, democratized e-commerce and promoted a better lifestyle.

Going forward, it is important to recognize the potential of new technologies in solving global challenges. By learning from China's reform process, we can develop sustainable solutions that benefit societies, the economy and the environment. China's high-speed rail, Alipay, Taobao, and bike-sharing are shining examples of how innovation can change the world. Their continued growth will surely determine the future of businesses. The world needs to recognize the impact of China's technological innovations. China has made incredible strides in technological innovation, affecting the changing economic systems and retail practices around the world.

An Exquisite Mind Stocked Up The National Trend

Chan Sui Ki (La Salle) College, Wong, Yik Chun – 17

Paper making, printing, gunpowder and the compass – the Four Great Inventions of Ancient China, may be the first idea that has fluxed to your mind when it comes to the creations in China. Tracing back through various dynasties in Ancient China, take a closer look onto papermaking, Cai Lun produced the first-ever viable paper from bark, rags, wheat stalks and other materials which was relatively cheap, light, thin, durable and more appropriate for brush writing. Instead of utilizing bamboo or wooden strips, papers produced by Cai Lun has revolutionized the way of writing. As a precursor, Cai Lun's papermaking technique has been widely spread to Europe in the 12th century and America in the 16th century, gradually circulating around the world. An exquisite mind from Cai Lun had contributed to a substantial amount of convenience in our daily lives through the prevalent use of papers in our daily lives, leaving the biggest credit by the global citizens and a momentous mark on the China's civilization.

While you may wonder if China's creation has brought to the end after the centuries, the answer is irrefutably no. Proceeding from the influential invention in the ancient China like papermaking skill from Cai Lun, the endless creativity of the Chinese has never been terminated, while ceaselessly exploring and outreaching their limits to mesmerize the world by innovations. Pony Ma, a China's National People's Congress (NPC) delegate as well as the chief executive of the China's tech giant Tencent, has revealed, "We have a new phrase called the 'New Four Great Inventions' in China, including high-speed railway, online shopping, mobile payment and sharing bikes". Truth be told, the above inventions were previously devised from other countries decades ago. But the claim of the 'New Four Inventions' in China has been construed to be valid, owing to a Beijing Foreign Studies University survey from May 2017. Amidst the survey, young people from 20 countries were interviewed to list the technology they wanted to bring back to their countries from China and the top answers are the above four features. Regarded as the 'New Four Great Inventions' in the foreigners' perspective, there must be several intriguing mysteries to be dived into behind the new tales of China's invention.

To commence with, online shopping should be the most prominent and representable among the four inventions in China, backed up by the worldwide renowned online shopping platform Taobao. Have you all attempted to purchase any appealing products that deeply captivated you and triumphantly brought back the handy loots from the convenient shopping platforms? Indeed, as a city dweller, we are somehow quite keen on something convenient like putting our favorites in the shopping carts and waiting for our hopes to come while remaining within doors. With the rising prevalence of the Internet, citizens gradually found the advantage of using online shopping platforms, catalyzing the paradigm shift of the shopping behavior of Chinese citizens into the more conducive online shopping mode. This phenomenon has probably encapsulated why the viral shopping platforms Taobao was coined.

Taobao, boasted by the largest Chinese business-to-business e-commerce company Alibaba, has been established by Jack Ma in 2003. Being one of the crucial engines of the online retailing industry in China, Taobao renders an online transactional platform for the companies and individual sellers to establish their online shopping stores, targeting the customers throughout China. The giant Taobao has even beaten eBay in 2003 to declare its dominance in the online retailing market. That is certainly not a coincidence after all. Providing multifarious spotlights and features, Taobao would be the number 1 choice when it comes to online shopping, prompting it to stand out from an array of online shopping platforms and be one of the most successful inventions.

It is not uncommon to discover that the stuff you desired or needed are not available in physical shops nearby. Needless to feel the frustration, Taobao would be the idea that will first pop out in your mind. Regardless of how scarce your stuff is, Taobao never fails to provide you with an array of products you required. Rendering a wide-ranging selection of products, from clothing, electrical appliances and cosmetics to even niche items, this versatile platform could never cease to satisfy you with the most tailored shopping experience.

In accordance to a research conducted in Uppsala University, for the respondents who think physical stores cannot provide the products they need, over three fifths of them choose shopping online due to the fact that Taobao can provide various products to everywhere in China through Internet. Even for those expressing that they can buy Taobao's products in the physical stores, there are still implausibly 59% of them prefer to purchase on Taobao. It is evident that apart from being unable to buy their items in physical stores, there are more desirable traits provided by Taobao making it outshine traditional shopping methods.

One of the most effective weapons of Taobao is the competitive prices. Once you have searched any items on Taobao, your first thought must be about the prices. Deeply mesmerized by how economical the items are, you will just simply put them in your shopping carts and go on purchasing without prudent hesitations. This is how Taobao has been captivating us to online shopping. Offering products with a relatively cheaper prices than in traditional retail stores, Taobao has gradually generated a win-win situation. While purchasing on Taobao, not only are the customers benefited by the cheaper prices of items, reducing their living expenditures, but the businesses could also turn to develop their online shopping platforms which requires minimal operating costs. Extending to the macro field, these all are immensely conducive to the local market. While the customers are doing comparison between multitudinous products to find the best deal, businesses are carrying out various tactics to strive competitiveness to be the best deal in the customers' perspective. This has been largely contributive to promoting market competitiveness, and hence its growth.

The invention of Taobao has achieved unprecedented success in recent China's development, acting as a catalyst in the online shopping market and the local economy. The Taobao company is committed to 'creating the world's preferred network of retailing'. In September 2023, about 1.03 billion people in China were actively shopping on their mobile phones. As the predominant shopping platforms in China, there are over 895 million active users in the same period. With the shocking figures, the invention of Taobao has been given the credit in light of its merits in promoting the economic development of China and the host of advantages catering to consumers and businesses.

Following the tremendous accomplishment of Taobao, other markets, that have much correlation with online shopping, have simultaneously flourished, gradually becoming more overarching and all-pervasive in our daily lives. Mobile payment is exactly the case in point. You can see Alipay, WeChat pay, to name a few. These are the prevalent mobile payment platforms that have diffused into our usual payment practices. Whenever you go out in China, the only must-bring is merely a smartphone. While a tourist on the restaurant was about to check the bill, the cashier had frowned and asked, "No WeChat?". The cashless phenomenon has been sprawling throughout distinct regions in China, which is patently reflected by the situation of being perceived as the "odd" one if mobile payments are not used. Perhaps in 30 years ago, China is cash-dominant. However, the invention of mobile payment platforms like Alipay has made an unparalleled transformation.

Still, convenience is one of the most indispensable factors when it comes to inventions, which have the common ultimate goal of comforting everyone's life and improving living qualities. This is undoubtedly fulfilled by Alipay and WeChat Pay. By providing a convenient and secure alternative to traditional cash or card-based transactions, mobile payments outshine them for having faster, easier and more efficient transactions, potentially fostering economic activities.

This is never limited to urban citizens. Without access to traditional banking services, Alipay and WeChat Pay allow individuals to blend into the digital economy regardless of their remoteness. For the rural citizens, once they got a smartphone, everything is under their control, never struggling to make payments, transfer money or access financial services.

It is also not uncommon to say mobile payment and online shopping are interrelated. Mobile payment methods such as Alipay and WeChat Pay are defaulted in online shopping platforms like Taobao. Integrating both convenient inventions is likely to build the way of seamless shop-and-pay experience, triggering the hyped enthusiasm in online shopping. This has significantly shaped the e-commerce market with a skyrocketing development.

With regards to accessibility, China's high-speed railway has been in the limelight. Boasting a geographical coverage of 9.6 million square kilometers, China occupies a quarter of Asia. It is hardly surprising that in the past decades, travelling across different parts of China was like an uphill battle. Predominantly relying on trains for long-distance transportation, Chinese citizens in the 20th century had inevitably ventured on an enervating journey while idling at the train in a daze for half a day before reaching the destination. Gladly, this plight had come to the end and the fantasy of many has come true.

The desire for developing the high-speed railway had been genuinely lit up after Deng Xiaoping, who was the paramount leader of China, visited the world's first high speed rail Shinkansen in Japan. Following the commencement of China's first high-speed rail lines in 2007, China has been developing at a gallop where the world's largest high-speed rail network with a total operating length of 40000 kilometers are possessed. But how has this highly anticipated infrastructure intrinsically assisted the locals?

Simply look at the biggest highlight of such creation — 'high speed'. The high-speed trains in China are specialized to carry passengers in an extremely high speed, reaching a maximum of 350 km/h. This indeed considerably minimizes the duration despite a lengthy route to your destination. How impressive a high-speed train is well illustrated by the distant journey from Beijing to Shanghai with a dispersion of 1200 km. Just imagine how long a conventional train will take along the journey. It is in total around 12 hours. For the high-speed train, it merely spent 4.5 hours to complete the entire journey, requiring less than 40% of the conventional one. You might wonder if the high-speed railway network is still far from being well-established and extensive enough throughout the shortly 10-year development. However, the results come as a surprise.

Under the unimaginably progressive development of high-speed trains, China has been possessing one of the most extensive high-speed railway networks globally, interspersed with all major cities across the countries with a total track length of 37000 kilometers. In this way, almost all regions in major cities become highly accessible by high-speed trains. With the all-embracing high-speed railway network, it is just a piece of cake for citizens to travel throughout China, no longer being perplexed by the limited transportation penetration and intolerably long transport durations. Reaching every single edge in China is no longer a dream for us after the invention of high-speed rails in China.

Deflecting to the field of short-distance transportation, bikes are one of the popular options for a majority of us notable for their convenience and cost-free nature. While it may seem that bikes are merely handy stuff that can be easily possessed by anyone, it was not sufficiently desirable when you have to take out your own bike every time you go out, wasn't it? Here exactly brought up the notion of sharing bikes.

For the status quo in China, bikes are literally present everywhere. Being ubiquitously common, bikes are highly accessible for every citizen. Whether students are hurrying on their road to schools, workers are rushing to their workplaces, or anyone who need a mile-distance transportation, bikes are the options in point. Being readily available in urban areas where docking stations are located densely throughout cities, users can easily locate or unlock bikes by scanning the codes on them using mobile phones. This niche transaction process could be done in a blink of an eye. Bestowing the flexibility of picking up and dropping off the bikes, users can travel whenever they need, being able to make adaptations on their own plans and routines.

Meanwhile, urban sustainable development is partly supported by the implementation of sharing bikes in China. While motorized transport has been dominant, carbon emission has never left the chat in China, unceasingly producing a spate of environmental concerns. For this, sharing bikes proactively incentivize citizens to utilize bikes for transportation in light of their pervasiveness. As an environmentally friendly tactic, sharing bikes undoubtedly foster sustainable development for China.

China's sharing economy maintained steady growth last year despite multiple headwinds, according to a report released by the State Information Center. Transactions within the country's sharing economy reached about 3.83 trillion yuan (555.54 billion U.S. dollars) in 2022, up 3.9 percent year on year, said the report. As one of the main contributors of the sharing economy, the flourish of sharing bikes market has accompanied with the growth of sharing economy in China. The invention of sharing bikes in China is never limited to benefiting citizens by its convenience, but also acts as a momentum to local economy in the macro field.

Not saying that the 'New Four Great Inventions' in China are free of any shortcomings, yet the shimmering spotlights have shrouded the niche dark spots. It is not worth overlooking a multitude of conduciveness incurred from the inventions. As I mentioned, it is never a coincidence that the inventions that have stirred up the far-reaching effects on citizen's daily lives have popped out in a sudden. It must be created by an exquisite and innovative mind in order to enhance our living quality and stock up the national trend.

As Thomas Carlyle said, "every noble work is at first impossible". Entrepreneurs, such as Jack Ma, were never easy on their road to success. Therefore, never stop your exquisite mind, keep venturing on the road of invention. Perhaps one day your dreams will come true and you will be the role model in China. The tale of China's invention has been inheriting from strength to strength, being an epic in China's history.

New Tales of China's Inventions

CUHK FAA Thomas Cheung Secondary School, Chan, Pak Ho AI – 15

All around China, many Chinese people debate over a topic. “Is the past or the future’s technology better?” Some people say that the past is more important as its technology is still very relevant today, some people say that the future is more important because its technology improvises over time and gets more impactful. But has anyone ever thought that both might be equal? In my opinion, I think both different times have very important technology and are on the same level. In fact, I want to talk about the past’s inventions’ creation background and impact it has back then and as of the present day. Then I'd like to talk about what inventions could potentially appear in the modern future and the potential impacts.

To start, I'd like to talk about one of the two past inventions first, and that would be the invention of paper. During the Shang and Zhou dynasties of ancient China, people could only use bamboo, bones and shells to write documents, which were always bothersome due to the material’s heavy weight. Some tried using silk as well, but it was normally too expensive to be considered. Then during the Han dynasty, Chinese court official Cai Lun invented the method of papermaking using rags of cloth, barks of trees, remnants of hemp and fishing nets. Cai Lun submitted the process to the emperor in the first year of Yuan–Hsing and received praise for his work. From this time, paper has been widely used and is universally called paper of Marquis Tshai. From then forward, the use of paper increased greatly. It would be used to padding and wrapping bronze mirrors. Padding doubled as both protection for the object as well as the user in cases where poisonous "medicine" got involved. Although paper was used for writing by the 3rd century Tsein 1985, paper continued to be used for wrapping and other purposes.

With the invention of paper, it has become the one of the most impactful moments to happen to Chinese history, as strong reading culture seems to have developed quickly after its introduction. Textual culture seems to have been more developed in the south by the early 5th century, with individuals owning collections of several thousand scrolls. In the north an entire palace collection might have been only a few thousand scrolls in total. Soon enough, China became the world leader in book production. With the gradual spread of woodblock printing from the late Tang and Song further boosted their lead ahead of the rest of the world. European took notice of China’s mass from paper and had their own papermaking process, being more advanced due to Europeans already developing to mechanical technology by the time. Nowadays in the 20th Century, papermaking is usually done in the European’s mechanical way, China’s papermaking technique now left in the dust. But despite the evolution, China’s papermaking technique will always be remembered as the process that started all the documents in the world.

Now that I’m finished with paper, the next invention I’d like to talk about is fireworks. I believe fireworks are distinct enough from paper to be another invention from China worth talking about. Did you know that fireworks originally came from something that Gunpowder was always used during wars and violence until the Song Dynasty. The earliest form of fireworks, people threw bamboo stems into a fire to produce an explosion with a loud sound. In later times, gunpowder packed into small containers was used to mimic the sounds of burning bamboo. Exploding bamboo stems and gunpowder firecrackers were interchangeably known as baozhu or baogan. It was during the Song dynasty that people manufactured the first firecrackers comprising tubes made from rolled sheets of paper containing gunpowder and a fuse. And so on and so forth, people would keep making new ways to remodel firecrackers, whether it’d be the base design, sound design or flare design. To the current day, fireworks are frequently used to celebrate annual holidays such as New Years, spreading joy from country to country.

I think I’ve finished with talking about inventions from the past and their summaries. Now it’s time to move onto future inventions and their possibilities, to quote Zhuangzi, the famous Chinese philosopher, ‘Human life

is limited, but knowledge is limitless. To drive the limited in pursuit of the limitless is fatal; and to presume that one really knows is fatal indeed!' The first invention that comes into my mind would be self-driving cars. Electricity has been evolving through inventions a lot, one of the most notable examples would be electric cars, as they are very advanced and environmentally healthy. So, I thought that electric cars could soon advance to gain the ability of self-driving, which would be beneficial in many ways. The biggest potential for self-driving cars is to discover undiscovered land, as the cars would mostly be independent and function nicely as a land-seeking drone. The other potential is that self-driving cars could help people in their normal lives, for when someone has a lot to do, the vehicle can drive by itself as the person keeps doing their business in the car without a worry of being late or getting in accidents. Another benefit for people's lives is that it could help disabled people gain access to vehicular transport, as some disabled people would not be able to use an average car's steering wheel or gas pedal.

Another invention that comes into my thoughts would be xenotransplantation. While it sounds way more complicated compared to self-driving cars, I think this would be more impactful than it. Xenotransplantation is the transportation of an animal's organs or tissues from an animal source towards a human recipient. Xenotransplantation has existed but it has not been fully developed yet, as it still has many risks. As of now, xenotransplantation mainly uses pig organs or tissues to transfer to humans in need, while some are successful, there are still some cases which end up leading to failure and bans on xenotransplantation in some countries. With scientists already knowing to change the genetics of the pigs that the organs will be harvested from, I find it very likely for the genetic modifications being more developed and less risky in the future, leading xenotransplantation to be able to be unbanned on more countries. I think xenotransplantation will be very important because just like many surgery or medical related inventions, it can really give people who are in need a second chance in life, especially when there are no donated organs available. Just imagine the smiles of relief that the world can see more with this invention.

Those are all the points about the importance of past inventions and future inventions I'd like to make. I will always believe that both past and future inventions will always be equally as important, and I like to see past inventions as the old and wise teacher that educates the young, and future inventors that take the steps of their teachers and evolve. So, whenever you encounter a similar debate, think of an important past invention and an impactful future invention and it will all balance out as long as you decide to think it through.

My Encounter with Great Chinese Inventors

CUHK FAA Thomas Cheung Secondary School, Chen, Daokang – 17

China is one of the four ancient civilizations in the world, with a long history of 5000 years. As the only existing ancient civilization, China has a large number of extremely sophisticated and influential inventions, including Zhang Heng's seismograph and Cai Lun's papermaking technique in ancient times. In modern times, there are also some groundbreaking innovations like artemisinin, an antibiotic invented by Tu Youyou and optical fibers invented by Gao Kun. These two inventions have made great contributions to the world in the fields of medicine and communication technology respectively. These inventions are the walnuts and pears the inventors plant for human race. It can be said that without these inventions, there would be no better world today. These inventions have made tremendous contributions to society at that time and have benefited the humanity. Why can our outstanding scientists think of such wonderful inventions? What kinds of spiritual support or inspiration enable them to come up with inventions that shocked the world? Let's explore the truth.

Thousands of years ago, China already had many outstanding scientists, such as Zhang Heng and Cai Lun. They are all inventors who made outstanding contributions to ancient China. Zhang Heng, who invented the world's earliest seismograph, was a famous scientist in the Han Dynasty, but his path to this invention was not a smooth sailing. He had to tolerate this distrust and mockery of the people around him as well as overcame lots of obstacles before he could finally achieve success. Before inventing the seismograph, Zhang Heng was not valued by the emperor and was only an official responsible for transmitting documents. However, even though his official position was not high, he still cared about his country and people. As part of his duty, he often received news of earthquakes from various places of the country. Every earthquake always caused heavy casualties and put people in pain. The emperor's support could not help people in a timely manner. After learning this news, Zhang Heng felt very distressed. He began to think about how to help people affected by earthquakes. Therefore, the idea of inventing seismographs gradually emerged in his mind. He began to think about ways to predict the occurrence of earthquakes faster and more accurately so as to reduce the impacts of earthquakes as well as the number of casualties. When the idea of a seismograph first came to his mind, he began to manufacture it. When others heard of his idea of making a seismograph, they all thought he was only daydreaming. Who could create something that could predict earthquakes? In the eyes of the people at that time, this was an unfulfilled wish. Everyone was urging him to give up this useless dream as soon as possible. Zhang Heng ignored people's persuasion and continued to devote himself to inventing seismographs because he sincerely hopes that he could help people avoid the harm of earthquakes for the sake of the country and the people. However, people continued to mock him, thinking that he was not doing his job properly. People believed that Zhang Heng had a job and stable income, and therefore, he should be very satisfied. However, he always wanted to invent the seismograph even though people didn't understand his inner thoughts. Not knowing this invention will benefit society in the future, most people at that time laughed at his foolishness and persistence. . With Zhang Heng's unremitting efforts, the seismograph was finally invented and predicted the occurrence of earthquakes precisely and accurately, allowing people to avoid the undesirable impacts of earthquakes. Zhang Heng's resolute personality and extraordinary spirit of exploration ultimately led him to success. He ignored the ridicule of others and focused on his own invention. No matter what others said of him, he still insisted on his idea of inventing the seismograph. In the end, Zhang Heng fulfilled his wish and made his dream come true, benefiting the country and the people.

Zhang Heng is not the only great inventor in the history of China. In the Han Dynasty, there was another outstanding inventor, Cai Lun. His invention is known as the the Four Greatest Inventions of ancient China, making people's lives more convenient for generations. His great invention is paper. Have you ever thought about what people used to write before paper appeared? Before the invention of paper, ancient Chinese people wrote on turtle shells and bamboo. People not only could not write a large amount of text on these things, but they are also very heavy, so moving books was a very difficult task. As an official beside the emperor, Cai Lun saw thousands of heavy bamboo slips that the emperor had to inspect every day and how difficult it was to transport them. Therefore, he thought of making paper. What is the lightest thing that can be written on? Cai Lun then visited the whole country in search of any materials that could be used for papermaking, no matter fishing nets, bark, or even rags. This process was very cumbersome, and everything went through many processes. However, in the end, he found out that they may not be suitable for papermaking. Under such unremitting spirit, Cai Lun finally found the right material for papermaking and ultimately achieved his goal. The invention of paper has greatly facilitated people's lives, making writing more convenient. More importantly, it also left an extraordinary achievement in the history of invention in China.

The spirit of perseverance and exploration of these inventors has been passed down to generations for thousands of years. Nowadays, it still deeply influences everyone in China. In modern times, another great inventor Gao Kun

has also demonstrated this spirit of perseverance and exploration. Gao Kun was born in Shanghai in 1933 and was born into a relatively wealthy family. He initially studied at an international school in Shanghai. When he was 16 years old, he followed his family to live in Hong Kong. After spending his student life in Hong Kong, he started to work abroad. He first studied information and communications technology at a telecommunication company in the UK. At that time, communication mainly relied on transmission of information by using copper wires. Gao Kun felt that this method was too slow, so with the joint efforts of him and his team, he improved the efficiency of copper wire transmission by nearly 50. Even so, he was still not satisfied. He began to imagine faster communication methods that could enable people on the other side of the ocean to immediately receive information from the other end of the earth. Coincidentally, the laser industry was developing rapidly at that time, so Gao Kun began to envision using lasers to transmit information through glass that was even smaller than a strand of hair. In this way, the transmission of information can become faster and more effective. However, his idea was not accepted at first because glass companies at that time only made glass decorations and bottles, and no company would produce thin glass fibres used for transmitting information. Even though Gao Kun published a groundbreaking paper on optical fiber transmission, he did not receive any response as if his findings had sunk into the sea. Everyone thought he was crazy. How could there be glass as thin as a strand of hair? Nevertheless, Gao Kun is such a perseverant person. The more others thought it was impossible, the more he had to do it in person in order to show that he was right. He always insisted on his research on light brazing and constantly tried testing his new theories and improved his invention. Finally, four years later, a glass company produced glass that was as thin as a strand of hair. Upon learning this, Gao Kun was very excited, indicating that his research could be taken one step further and the possibility of transmitting information with optical fibers has greatly increased. In the end, communication through optical fibers was achieved with the untiring efforts of Gao Kun. After decades of research and exploration in the field of science and technology, Gao Kun was not afraid of starting his research over again even if it failed. Instead, he continued to study optical fibers repeatedly and hence finally achieve unprecedented success in information technology, which made way for the emergence of Internet and other applications, allowing people to live more convenient and enjoyable lives. It can be said that without Gao Kun, there would be no world with advanced technology. The information technology such as 5G network we use was invented with the development in the use of optical fibers. Gao Kun's invention has taken the world's technological development one step further.

Outstanding inventors like Zhang Heng, Cai Lun and Gao Kun not only have brought their outstanding inventions to future generations, but also passed on the spirit of persistent exploration to future generations, allowing us to still hear their stories, learn their spirit, as well as find the inspirations from their stories today. Their spirit of exploration and innovation is constantly influencing young people, inspiring them to create more new inventions. For example, Tiktok, which is a videostreaming platform founded by Zhang Yiming, enables people all over the world to share their shop clips and watch videos. This platform makes our life more interesting, boost our creativity and widen our horizons. Mr Zhang successfully made Tiktok popular worldwide by overcoming all the challenges in the process of accomplishing his goals. Another example is Taobao. Taobao is an online trading platform founded by Jack Ma Yun. Thanks to the innovative online trading system, online transactions between retailers and customers have become more convenient and efficient as potential customers can buy things from all over the world anytime and anywhere. However, before the invention of Taobao, online trading platforms were not favored because most people regard such platform as not user-friendly and unsecured. However, Mr Ma did not give up. On the contrary, he regarded these negative comments as motivations for himself, telling himself not to give up and to stick to his dreams and goals. Finally, Taobao has made shopping no longer limited to traditional way but allows people to shop anytime, anywhere. This has greatly facilitated the shopping process, improved the shoppers' experience and hence raised their quality of lives. These two examples has shown that the spirit of exploration and perseverance has remained unchanged for thousands of years, successors of different generations have therefore inherited these invaluable qualities and created even more influential innovations. Eventually, these qualities will be brought forward to our upcoming generations. By allowing generations to see how the past elites faced failure, persisted in their efforts, and ultimately succeeded, the stories of our innovators have deeply influenced each of us, encouraging our innovators and inventors continue to explore the unknown and strive for excellence.

Looking into the future, the spirit of our Chinese inventors will constantly encourage us to be brave, adventurous and persistent. Just like for China's aerospace technology, with the efforts of every Chinese aerospace scientist, they are all making unprecedented achievements in terms of exploring the unknown space. In order to help people live a better life and make the country stronger, they make untiring efforts in doing research and investigations day and night, only to make more contributions to our country and make our country stronger and more prosperous. This is also what we have always said about inheritance. This spirit of exploration and perseverance has already incorporated into our culture, making us never give up. We believe that in the future of China, there will be more excellent scientists and inventors who will selflessly contribute to people's wellbeing and happiness, sacrificing their

time just to make people live a better life and make our country stronger. The spirit of exploration and perseverance of Zhang Heng and Gao Kun has been passed from generations to generations, leaving seeds for China's development.

The invaluable spirit demonstrated by our outstanding Chinese inventors is worth learning for each and every one of us. The spirit of exploration and perseverance demonstrated by Zhang Heng, Cai Lun and Gao Kun has benefited me a lot. As a high school student, I often encounter problems in my studies. Facing various problems, I always cannot cope with them. Sometimes I feel like giving up and not wanting to continue with my study, which is a very difficult challenge for me. However, whenever I think of inventors like Zhang Heng and Gao Kun and their unwavering spirit, I am encouraged and become enthusiastic about my study again. Our Chinese inventors have never given up in the face of thousands of failures, but rather as a part of the road to success. Without failures, successes cannot be achieved. They treated failures as a part of their successes and did not give up easily. Seeing that they inspire themselves with failures, I am also inspired to learn the spirit from their experience. Whenever I want to give up, I will think about Gao Kun's deeds when he invented the light drill. Since he never gave up on the difficult tasks of inventing optical fibers, why should we, who only need to learn, give up? Whenever I think of our great Chinese inventors, I am always inspired by their perseverance and bravery and wish I can explore my true self and talents, make contributions to my country and help everyone live ha

China's Incredibly Groundbreaking Inventions

CUHK FAA Thomas Cheung Secondary School, Tang, Wing Yan – 14

Are you familiar with China's contributions to global innovation? Chinese inventors are recognised for their game-changing creations that have significantly impacted the world. Notable examples of these groundbreaking inventions include papermaking, printing, gunpowder, and the compass. These innovations have revolutionized fields like communication, warfare, and navigation.

To begin with, China has been breaking new ground with its focus on technological advancement, positioning itself as a global leader in AI and robotics. We may soon witness the emergence of cutting-edge robotic systems, intelligent automation, and sophisticated AI applications across various industries.

I am particularly impressed with Chinese micro-nano technology. The nanocolloidal gold detection method stands out as a real-time detection technique. Compared with earlier methods, it offers rapid results, flexibility in testing locations, and requires less expertise from operators. It is exceptionally suitable for the post-pandemic era.

In terms of treatment, traditional antiviral drugs often suffer from poor stability, low bioavailability, and a high potential for drug resistance. However, antiviral medications enhanced with nanoformulation technology have shown noticeable improvements in stability, targeting, and bioavailability, representing a major step forward in medical treatment!

On the other hand, I have a strong preference for autonomous driving as an innovative technology. Autonomous driving can eliminate risks associated with human error and driver fatigue, potentially leading to a substantial reduction in traffic accident rates. Vehicle-to-vehicle communication and advanced perception systems are poised to enhance road safety by decreasing the likelihood of collisions and mishaps.

Furthermore, driverless vehicles have the potential to lower energy consumption and carbon emissions through the optimization of driving routes and the implementation of energy-efficient strategies. Additionally, the advancement of autonomous driving technology could accelerate the adoption and utilization of electric vehicles, thereby diminishing our reliance on fossil fuels.

All in all, China's vibrant culture, technological advancements, and growing economy create a fertile ground for inspiring new inventions and discoveries. The future holds endless possibilities, and it's exciting to imagine the contributions that Chinese inventors and innovators will make in shaping our world.

From Palace Servants to Unsung Innovators

HKCCU Logos Academy, Liu, Yu Yui Ruby – 16

The invention of paper in the Eastern Han dynasty is a well-known tale among Chinese households. It goes something like this:

Imperial official Cai Lun was frustrated by the quality of writing material. Back in those days, one either had to write on smooth but expensive silk or heavy bamboo slips. Neither of these were very accessible or convenient, especially for commoners. Wishing to improve the efficiency of writing, he proposed a method to create a parchment with tree bark, fishing nets, and rags. This improvement in the papermaking method was a great step towards the recording and dissemination of information and knowledge in ancient China.

That is how the story is usually told. The mass production of cheap paper was a great step towards increased literacy and cultural power. Everyone knows that paper is a great invention, hence why it's listed among the four great inventions of ancient China. But what's often left out, either absent-mindedly or to make the story more suitable for children, is that Cai Lun was not just another run-of-the-mill bureaucrat. He was a eunuch.

What is the significance of this identity? It becomes quite interesting when you take a closer look at eunuchs in Chinese history as a whole. Historically, they were shunned by more "righteous" male officials, who often had conflicting interests with the eunuchs and held patriarchal views that discriminated against them. Cai Lun very impressively overcame this common stereotype. He also had access to resources and funding to support his innovations, and was incentivized to do so by the imperial family. According to historian Yu Huaqing, the positive contributions of eunuchs were rarely recorded in the historical canon written by officials. Even now, it is rare to see people be sympathetic towards eunuchs, let alone praise them.

However, there likely isn't any grand conspiracy trying to erase the efforts of eunuchs in Chinese history. Rather, it's more possible that their contributions to cultural and technological progress have been outshined by their less glorious reputation for scheming and corruption. Judgments towards historical eunuchs can be very inaccurate, especially considering the social norms at the time denied them a fair trial. As a matter of fact, Cai Lun's eunuch identity is rarely brought up, except in cases when he and Zheng He are paired together as examples of "the good ones" or to condemn him further for his behavior as an official.

Even the "good eunuchs" had a side that was rife with controversy. Cai Lun himself had dabbled in corruption, participating in a scheme that culminated in the execution of the mother of a royal and her son. Today, his wrongdoings are outshined by his undoubtedly significant inventions that left a great legacy. However, inventing paper didn't prevent his eventual coerced suicide when his crimes were revealed and new eunuchs fell into favor.

These new eunuchs, known as the Ten Attendants, receive a mention in one of the four classic Chinese novels. *The Romance of The Three Kingdoms* attributes the fall of the Eastern Han dynasty to the incompetence of the Huan and Ling emperors and, more relevantly, the Ten Attendants' misconduct and corruption in their posts. This background is crucial in understanding that there is a lesser-known tale of an invention whose origins can be traced back to this period. In particular, the attendants Zhang Rang and Bi Lan are the key figures.

Zhang Rang was a high-ranking official in the courts of Emperor Ling. He felt that the infrastructure of their capital, Luoyang, was in dire need of improvement — it was so expensive for the citizens to clean the streets by sprinkling, and the palace didn't even have running water! And so he ordered Bi Lan, a skilled craftsman and fellow eunuch, to build something called a *fan che*, what we now know as the chain pump. It could pump water, sand and earth upwards, improving the transportation of these resources and making access to them much more convenient. Bi Lan also made the *ke wu*, which were thin tubes that could transfer water from container to container until the volume was level in both, putting the siphon principle into practice nearly two-thousand years ago. Bi Lan's constructions brought much more than what was requested of him from Zhang Rang; not only did Luoyang have running water but in the years

to come, they would revolutionize China's irrigation system, improving productivity in the agricultural sector and living standards for peasants.

While this is only a highly simplified, semi-fictional reconstruction of events, it is true that one of the first records of the utilization of improved water transportation equipment was found in the late Eastern Han dynasty. While the exact origins of these inventions are still controversial among historians, certain authoritative sources such as the book *A History of China's Agricultural Science and Technology* attribute their invention or significant innovation to Bi Lan. It is greatly inspiring how a eunuch-bureaucrat at the time was able to construct such intricate devices by harnessing the principles of physics, and how his inventions improved the lives of not only the inhabitants of the capital but also many Chinese farmers in the centuries to come.

Seeing that the chain pump was still in use centuries later for irrigation, draining, supplying water and other engineering purposes, it proves to be quite a consequential invention, even if it doesn't have the lasting popularity Cai Lun's paper does. After all, it's much easier to explain the importance of paper than obscure ancient agricultural machinery. However, there was an interesting pattern in the sources recording the history of Eastern Han eunuchs.

Many Chinese biographies omitted the section about the construction of the *fan che* and the *ke wu*. They mostly describe Zhang Rang's crimes; how he accepted bribes and used his wealth and power to exempt himself from punishment, and how he persecuted just officials who dared to take a stand against him. Bi Lan's inventions are mentioned in passing as a part of Zhang Rang's tale, but in many biographies of Zhang there is no mention of Bi Lan. When it comes to information on these specific inventions, many materials simply refer to the inventors as "the ancient Chinese", without specifying identity or status. They claim that by creating such useful devices, the anonymous inventors brought prosperity and joy to the masses. This is great, but seems to contradict the narrative that eunuchs were only self-centered corrupt bureaucrats who paid no mind to the well-being of the common people. Another text took Bi Lan into account, but purported that specifically because Zhang Rang and Bi Lan were evil eunuchs, they could not have invented such technology. To be clear, there is a case to be made about who is the actual inventor of the *fan che* and the *ke wu*. However, it is questionable whether being a corrupt eunuch disqualifies one from being an inventor. As mentioned above, Cai Lun's track record wasn't all that clean either, and he was still mostly revered as a great man with a lasting legacy. Eunuch inventors aren't perfect, but at the same time, no one is.

The treatment this lesser-known tale of invention receives is very indicative of how eunuch inventors are viewed in the collective psyche. It brings to mind how when Cai Lun's eunuch identity is brought up, it is nearly always meant as a shocking revelation of a beloved inventor secretly being an evil villain. The truth is that Cai Lun's identity as a eunuch is very crucial in understanding him, but it should not lead to the assumption that he was inherently malevolent, or that it makes his contributions any less significant. The same can be said for Bi Lan. Eunuchs historically have been very creative, but the full picture is rarely shown.

Most inventions in Chinese history are by anonymous grassroots inventors or created by the collective population over a span of time. Eunuch inventors are outliers in that there is traceable evidence of their actions in the form of recorded history. These actions may be overlooked, or in some cases become a source of scrutiny. It's true that the Eastern Han dynasty was plagued by a corrupt bureaucracy, which eunuchs were a part of, but they deserve a fair evaluation in their legacy and contributions. Pitfalls such as excessive speculation and buying into aged stereotypes should not hinder proper assessment of the origins of important breakthroughs and the context behind their invention. Whether the eunuchs fit the stereotypes or not, it does not take away from the unquestionably positive impact of their inventions. Being more aware of the inventors behind the inventions also allows further insight to be made regarding the social climate of the time and how innovation was incentivized for eunuchs. Perhaps most importantly, it is one step closer to a new, more impartial representation of these unsung inventors.

It is spring in the Eastern Han dynasty. Cai Lun finds the best craftsmen in his department to create a material for writing that is both cheap and convenient so they can offer it to the emperor. It is spring in the Eastern Han dynasty. Zhang Rang thinks of his colleague Bi Lan as he checks the official ledger. They likely did not think about what would happen two thousand years later. Most people do not think about them a lot.

Womanese – ‘a glimpse into Womanese from the perspective of a woman’

Hong Kong Taoist Association Tang Hin Memorial Secondary School, Chan, Man Ching – 15

Womanese – ‘a glimpse into Womanese from the perspective of a woman’

[1853, Jiangyong County, Yongzhou, Hunan Province, the Taiping Heavenly Kingdom]

Since I was small, my mother has been teaching me Womanese, characters which are used only by women. She told me that this type of character was created by an imperial concubine, Yuxiu Hu, in Song dynasty to express her sufferings in the palace towards her mother and friends without being discovered. However, there are also other stories about the origin of Womanese. Some said that it was created by the intelligent nine-pound girl and others said that a girl called Pan Qiao created it to seek help from her friend when she was kidnapped.

Even though Womanese evolved from traditional characters, to me, they look quite different from the traditional ones. I once read my brother’s book by chance. Although I could not understand the traditional characters, the most obvious difference between them and Womanese I could tell was that the former mostly consisted of straight lines and squares, while the latter was mainly made up of curves, dots, and sometimes circles.

Womanese is ubiquitous in our lives. Despite being characters, it does not only appear on papers and books but also paper fans, kerchieves and needlework. Emphasizing aesthetic beauty, it often comes with decoration, such as patterns on the four corners of paper, painting of flowers and birds on paper fans and embroidery on kerchieves and clothes. Together with the inclined and slender characters with delicate, graceful strokes and a balance of strength and softness, the exquisite handicrafts can always draw my attention.

I used to think that Womanese was a tool for confidential communication between women. From ancient times, inferiority of women in the patriarchal society has deprived us of opportunities to study. Womanese was perhaps invented to confront the social injustice inwardly. Well, this is partially correct. In fact, Womanese provides a way for us to express our feelings through words. Besides being written on paper and books, Womanese is also sung by every one of us. Rural women may not know how to write it but almost all of them are able to sing a spontaneous verse of Womanese songs. Thus, Womanese isn’t really a secret, but men obviously don’t pay any attention to it. My father once told me that it was just another humdrum entertainment of women, that was when I realized how our treasure is underappreciated by men.

That being said, Womanese is not just a way for communication or so-called entertainment. It surely is of paramount importance to us. We use it to record and pass on household issues, including birthdays of family members, ritual sacrifice, marriage and mourning. Also, Womanese is used to narrate historical facts, like the origin of clans and our own memoirs. Besides, it facilitates the relationships between relatives and peers. Inviting or comforting others, expressing gratitude and discussing family education are common themes in letters written in Womanese. Sometimes, classical stories written in traditional characters and folktales are translated or recorded in Womanese, and the main characters of these stories are mostly powerful females so as to encourage women’s liberation, self-determination in marriage and gender equality.

The most important thing is that Womanese empowers us to convey our innermost emotions. It has become our only way to pour out grievances and complain about social unfairness. Despite learning Womanese at a very young age, I did not fully understand what Womanese really meant to women when I was young. But after I got married, the death of my parents, physical and mental abuse that I suffered in my husband’s family provoked my thoughts about the existence of Womanese. At that very moment, I abruptly realized that these inconspicuous characters have been bearing the wails of anguish of women for years. We write Womanese to make silent protest against all the injustice we have experienced. Womanese has become the only way for us to release our strong emotions in this oppressive society and to ‘voice out’ our misfortune.

Sometimes, I would ponder whether Womanese is merely a product produced in our compromise towards the dreadful reality or an invention filled with hope and determination.

The Dujiangyan Irrigation System – How it has made Chengdu the ‘Land of Abundance’

Hong Kong Taoist Association Tang Hin Memorial Secondary School, Huang, Tin Shing – 15

Located on the Minjiang River in the Sichuan Province, west of the Chengdu plain, the Dujiangyan Irrigation System was first built in 256 BC under the Warring State Qin and is still in use today. It is honored as the 'Treasure of Sichuan', which still plays a crucial role in draining off floodwater, irrigating farms and providing water resources for more than 50 cities in the province. In addition to monitoring the water flow, the Dujiangyan Irrigation System has helped make the Chengdu Plain rich in agriculture, helping it earn its reputation as the “Land of Abundance.”

During the Warring States period, people who lived in the area of the Min River were plagued by annual flooding. Li Bing, a local official and engineer of the Sichuan Province, investigated the problem and discovered that the river was swelled by fast-flowing spring meltwater from the local mountains. The influx of water would overwhelm the banks of the river when it reached flatland. One solution would have been to build a dam, but the waterway had to be kept open for military vessels to supply troops on the frontier. Hence, an artificial levee was constructed to redirect a portion of the river's flow and then to cut a channel through Mount Yulei to discharge the excess water upon the dry Chengdu Plain beyond. The construction of a water-diversion levee resembling a fish's mouth took four years to complete. After eight years of work, a 20-meter-wide channel had been gouged through the mountain.

The irrigation system consists of three main constructions, including the Fish Mouth Levee, the Flying Sand Weir, and the Bottle-Neck Channel. They work in harmony with one another to ensure against flooding and keep the fields well supplied with water. The key part of the construction, the Fish Mouth Levee, is named for its conical head that is said to resemble the mouth of a fish. It is an artificial levee that divides the water into inner and outer streams. The inner stream is deep and narrow, while the outer stream is relatively shallow but wide. This special structure ensures that the inner stream carries approximately 60% of the river's flow into the irrigation system during dry season. While during flood, this amount decreases to 40% to protect the people from flooding. The outer stream drains away the rest, flushing out much of the silt and sediment.

The Flying Sand Weir has a 200-meter-wide opening that connects the inner and outer streams. This ensures against flooding by allowing the natural swirling flow of the water to drain out excess water from the inner to the outer stream. The swirl also drains out silt and sediment that failed to go into the outer stream. A modern reinforced concrete weir has replaced the original weighted bamboo baskets.

The Bottle-Neck Channel, which was gouged through the mountain, is the final part of the system. The channel distributes the water to the farmlands in the Chengdu Plain, whilst the narrow entrance, that gives it its name, works as a check gate, creating the whirlpool flow that carries away the excess water over the Flying Sand Fence, to ensure against flooding.

After the system was finished, no more floods occurred. The irrigation made Sichuan the most productive agricultural region in China for a time. The construction is also credited with giving the people of the region a laid-back attitude to life, by eliminating disaster and ensuring a regular and bountiful harvest, it left them with plenty of free time.

Unfortunately, the Dujiangyan Irrigation System (DIS) has been wrecked several times due to war and natural disasters. A few examples are as follows: The DIS was destroyed during the war when Mongolia conquered China in the 13th century and during the Sichuan War when the Qing Dynasty conquered the Ming in the mid-17th century. Surprisingly, however, although the irrigation system has been wrecked on multiple occasions it has found its way to recover quickly because of its simplistic architecture and design. Originally, the levee of the Dujiangyan Irrigation System was built with bamboo cages filled with cobblestones. The simplicity of the design and materials enabled engineers to replace or remove issue spots with ease.

During the modern period, starting from 1940, the Chinese have been using modern research and technology to modify the irrigation system to make it more lasting. One of the few modifications the Chinese made to it during this time was in 1962 when the government decided to line the inner river with concrete. The goal was to extend the irrigation project so that the main canals reached nearby terraced land that produced little rice production due to the limited availability of water. To distribute water to these lands, the government installed multiple diversion points along the main canal during the 1950s and early 1960s. The improvement of the DIS substantially increased irrigation water availability, but it still wasn't enough to further expand. Thus, in order to keep the Dujiangyan Irrigation System up to date, scientists and engineers have and continue to conduct experiments on the system. In

fact, The second generation of the Dujiangyan Irrigation project, named Zipingpu was finished just 13 years ago in 2006. The current model of the Dujiangyan Irrigation System is considered a hydraulic model. With this model of irrigation, the total area irrigated has increased 2.2 times. Through all this research and meddling, the construction and reconstruction of the Dujiangyan Irrigation system has been able to withstand multiple events including natural disasters like the 2008 Sichuan earthquake.

Last but not least, the Dujiangyan Irrigation System has a rich history of evolution and modification which has enabled it to last centuries. It has been instrumental in making Chengdu an economic center and has brought water to arid regions, thus creating fields of rich cultivation where there wasn't before. More than anything, unlike other dam projects, the system did not displace the villages living around the dam site.

In addition, the Dujiangyan Irrigation System is significant because it has progressed with the land while maintaining its original function. Even to this day it continues to contribute to the irrigation area and irrigates at least 68 hectares of water. Due to its longevity, the Dujiangyan Irrigation System has become a global case study of hydraulic engineering that has continually exhibited a level of harmony between man and nature. In 2000, the Dujiangyan Irrigation System was deemed a World Heritage Site by UNESCO and scientists around the world admire this irrigation project because Dujiangyan allows water to flow the dam naturally, enabling humans and nature to co-exist peacefully. Furthermore, although modern technology and tools have vastly improved since ancient times, the methods used to build the Dujiangyan Irrigation System continue to be a very valuable reference in modern water diversion and irrigation projects.

Despite being one of the oldest and best-designed systems, many people around the world do not know the Dujiangyan Irrigation System. It is believed that there should be more celebration and conversation surrounding this remarkable project which has lasted many lifetimes.

The Saviour? Or the Destroyer of Worlds? How Gunpowder Rewrote the History of Mankind

Hong Kong Taoist Association Tang Hin Memorial Secondary School, Lee, Sum Yin – 15

China, a country rich in culture and history, has a keen impact on the innovations that the world has made. From ancient times to the present, China has made a huge contribution in various fields, including technology, science, and engineering. The four great inventions of ancient China prompted the development of Chinese society, thus substantially revolutionizing the whole world. Among them, the accidental invention of gunpowder in the Han Dynasty remains one of the most significant contributions to human development. Originally sought as an elixir of life by Chinese alchemists, the discovery of gunpowder, a mixture of saltpetre and sulphur, which are chemical substances, had transformative impacts on the world. There has been plenty of controversy regarding the use of gunpowder and whether individuals should minimize the use of it or take maximum advantage of it. There is no doubt that gunpowder brought fatal consequences that continue to haunt people. It is important to explore the impact of gunpowder in the realms of warfare, society, and ecology to get a full insight into the pros and cons of gunpowder so that the need for responsible usage can be emphasized.

The invention of gunpowder has revolutionized the warfare system. In ancient times, wars were fought on a small scale; soldiers used swords, shields, and simple mechanics. Gunpowder led to the development of different weapons, including firearms, cannons, and bombs. It gave rise to new war tactics, changing the dynamics of war and influencing the outcome of countless conflicts. For example, the famous Southern Song General, Wei Sheng, created a chariot-phalanx by putting together chariots loaded with firearms and commanding soldiers to cast a variety of firearms from the chariots in an attack on the Jin troops. They won many battles against the Jin. The ability to produce firearms in mass and train soldiers with armaments also gave rise to powerful empires and enabled them to take control over vast territories. The transformation of warfare brought by gunpowder played an indispensable role in shaping the political landscape of nations worldwide.

Do you know about the beautiful fireworks we see today in amusement parks or festival celebrations? They are made from gunpowder, too. Gunpowder has had reminiscent repercussions on different cultures. The spread of gunpowder facilitated cultural exchange and integration of values among various civilizations. The Silk Road and other major cultural movements have made other countries from across the world benefit from this extraordinary invention. For example, the invention of fireworks became a symbol of celebration in many cultures—the exchange of knowledge and ideas associated with gunpowder propelled progress, enriching human civilization.

Gunpowder also has a groundbreaking impact on ecological fields. In the past, a longer period was needed for humans to explore new territories and exploit resources. However, these challenges became feasible with the aid of gunpowder. Inventions like TNT and other explosives facilitated the discovery of uncharted lands and enhanced transportation networks. The construction of railways, tunnels, and canals accelerated the exploitation of natural resources. New trade routes, for example, the Suez Canal, were opened. This helped foster economic growth and facilitate the movement of goods and services. Not to mention that the use of explosives helped clear land for cultivation, making uncultivable areas possible to become cultivated. This led to an increase in food production and growing populations.

Additionally, the use of gunpowder in pest control improved farming practices, leading to much better food security. Moreover, gunpowder played a crucial role in the development of early firefighting techniques. Protection of lives and property has significantly improved thanks to gunpowder.

It is essential to note that the devastating consequences of the use of gunpowder cannot be ignored. The scale and intensity of violence and destruction escalated throughout the years, leading to higher casualties and suffering among soldiers and civilians. Automatic guns cause severe injuries and death,

while grenades cause physical harm and psychological trauma. These resulted in catastrophic population losses. The horrors of trench warfare during World War I and the massacres during World War II proved the destructive power of gunpowder-based firearms.

Moreover, the use of gunpowder scrapes the uniqueness of certain cultures. Because of the use of firearms, many indigenous clans in Africa, America, and Oceania were gone in the blink of an eye. Others slowly adapted to the technological differences and began to accept the use of firearms. This reduces the diversity of different cultures. Not to mention that gunpowder distorted the representation of cultures, perpetuating stereotypes and prejudice. For example, since the 9/11 attack in New York, Muslims have been repeatedly described as 'Terrorists wearing a black gown'. These unnecessary biases deeply affected the Muslim community, creating fear, discrimination, and distrust.

Gunpowder also pollutes natural resources and the environment, such as the air, water, and soil. The manufacturing and use of gunpowder release harmful pollutants into the air, contributing to air pollution and climate change. Blast fishing is a destructive fishing method using explosives to stun or kill large amounts of fish. This seriously affects marine life, destroying marine habitats and causing a decline in fish species and quantity. Gunpowder combustion can generate various byproducts, including polycyclic aromatic hydrocarbons (PAHs), which are toxic organic compounds that accumulate in soil. These pollutants have the potential to harm soil microorganisms, inhibit plant growth, and pose risks to human and animal health. Gunpowder endangered and threatened the biodiversity on Earth and the balance of the ecosystem. It might pose a threat and increase the uncertainties of humanity.

Despite its positive impact on various fields, gunpowder has undeniably proven to be a destructive force throughout history. Its introduction has caused unprecedented levels of suffering, whether militarily, culturally, or environmentally. It is crucial to approach the use of gunpowder with caution and responsibility, as well as to consider alternative approaches to conflict resolution and preserve cultural heritage and the environment. Striking a balance between utilizing its potential for progress and lessening its negative consequences will be critical in shaping a peaceful, diverse, and eco-friendly future.

The Chinese Treasure of Invention Art

Hong Kong Taoist Association Tang Hin Memorial Secondary School, Tan, Kai Yuet – 15

When it comes to the famous Chinese invention art in various parts of China, people may think of the meticulously crafted Southern Song official kilns in Hangzhou, or mention the exquisite Peking Opera art in Beijing, or admire the unique shadow puppetry in Liaoning. The above are all ancient crafts that have gradually become legendary legacies for appreciation and reminiscence in the long river of historical circulation. Speaking of Chinese inventions that are still with us in our daily life and can be seen in every household in this rapidly changing era, the beautiful scenario that pops up in my mind is often not directly related to the bustling performing arts, nor is it limited to the rare antiques made by ancient craftsmen, but something that originates from ancient times and still wins people's heart today, which is traditional Chinese art, blue and white porcelain. It blooms everywhere in this era of changing trends, to the extent that its presence cannot be missed in most bustling commercial streets.

Walking into Hollywood Road in Hong Kong, you can see various cultural relics stretching down the street like a long mountain road. The name of the street sounds very Western, but upon closer inspection, one realizes that every corner of the street is filled with precious shops that exude Chinese classical charm. Shuttling through such a street, we can use our pupils to truly listen to each cultural relic that witnesses the changes of the times telling its own story.

A few mahogany cabinets were put together, with a variety of goods laid on top, and a small stall was built. Several blue and white porcelain vases were squeezed together, arranged in an uneven manner, as if they were casually thrown into the debris. They were in the midst of a crowded and chaotic backdrop, yet their dainty and peaceful posture could never go unnoticed to the passers-by. The color scheme that makes up the bottle pattern is only blue and white, but it does not detract from its elegance and nobility at all. Against the one-colour blue, the porcelain body is white with a bluish tint, where its white is clear and flawless, and its flower patterns are crystal without turbidity. The meticulous and vivid brushstrokes showcase a collection of spiritual charm styles one by one through the use of patterns. On the vases, there are neat ancient beauties playing strings to sing music, as well as curved and elongated stripes that create a delightful and interesting Chinese totem, woven into a blue and white reflection. Blue and white porcelain is like a witness to the ever-changing and turbulent history from beginning to end, strolling through the poetry and rhyme of the Tang and Song dynasties, striding along the fiery chariots of the Yuan and Ming dynasties, and quietly preserving the delicate beauty of classical culture amidst the chaotic and disastrous wars. Just like today, surrounded by the cries of vendors and the bustle of crowds, it still stands in tranquility in such a new era, using blue and white carvings to depict the peaceful times of dynasties and the innocent vision of the ancients, telling stories to people of all ages.

This street not only allows you to see the ancient scene with your eyes, but even what you can smell through your nose is an antique atmosphere. I closed my eyes and smelled the sandalwood fragrance emanating from the woodcarving shop. From another direction, the mellow aroma of ink and the fragrance of rice paper permeate the traditional Chinese painting stall, enveloped by the gentle breeze, quietly seeping into people's heart and soul. This distinctive and elegant scent intoxicated me, so I followed it to the ancient painting stall. I gently caressed the wrinkles covered in vicissitudes on the canvas, feeling the kisses left by time on her body, listening to the lingering stories in history with the warmth of fingertips. The various smells in this street mix together, whether strong or mild, fresh or mellow, and they all have a common characteristic, which is that they all come from the outdated yellowing years.

In this fashionable era, countless young minds are eager to catch up with the ever-changing fashion trends day and night, so they neglect to appreciate the crystallization of history and time, and only pursue products of desire and novelty. And among the scurried footsteps that follow the flow, there are still people who stop for this ancient treasure sleeping on the street corner, cherishing their old but timeless beauty. This kind of beauty will not be dimmed by the changes of trends, nor will it vanish with the passage of time, because it comes from the most precious cradle of ancient civilization, and is a unique cultural treasure in the invention art of the Chinese nation.

Chinese Kites: A Legacy of Innovation and Cultural Significance

Ling Liang Church E Wun Secondary School, Alvi, Meher – 16

The Four Great Inventions, a term that encapsulates the remarkable achievements of ancient China, stands as a testament to the enduring legacy of Chinese innovation. These extraordinary creations, including papermaking, printing, gunpowder, and the compass, not only transformed the course of history but also left an indelible mark on the fabric of human civilization. From the humble beginnings of paper, which revolutionized communication and knowledge dissemination, to the awe-inspiring discovery of gunpowder, these inventions reshaped the world's understanding of science, technology, and culture. Embark on a journey through time and marvel at the ingenuity and creativity that gave rise to these Four Great Inventions, forever altering the course of human progress. However, China has a whole lot more other inventions and discoveries that also deserve their attention, here it's going to be regarding kites.

Kites hold a special place in Chinese culture, deeply rooted in tradition and innovation. The tradition of kite-making and flying in China dates back thousands of years, embodying the spirit of Chinese innovation. How has the tradition of kites become so deeply entrenched in Chinese culture, and what does it reveal about Chinese ingenuity?

The origins of kites in China can be traced back to ancient times, with the earliest records dating to around 470 BC during the Warring States period. Initially, kites were used for military signaling and measuring distances, showcasing their practical nature as tools for communication and measurement. How did the humble kite evolve from a military tool to a symbol of leisure and artistic expression, captivating the imagination of people across China?

Kites have become an integral part of Chinese festivals and celebrations, symbolizing freedom, prosperity, and good fortune. The vibrant colors and intricate designs of traditional Chinese kites reflect the rich cultural heritage of the country. In what ways do Chinese kites symbolize wishes for a bright future and harmonious relationships, and how do they embody the essence of Chinese symbolism and tradition?

Chinese innovation in kite-making has led to significant advancements in design and construction techniques. The development of lightweight materials, such as silk and bamboo, has revolutionized kite performance, enabling higher altitudes and greater maneuverability. Furthermore, the implementation of aerodynamic principles has enhanced the flight capabilities of Chinese kites, allowing for graceful and stable aerial displays. How have these technological advancements transformed the art of kite-making and elevated Chinese kites to new heights of performance and beauty?

Chinese kites are renowned for their distinctive shapes and patterns, with dragon and bird-shaped kites being iconic representations of Chinese craftsmanship and creativity. The intricate designs and artistic elements involved in kite-making showcase the meticulous attention to detail and the aesthetic sensibilities of Chinese artisans, making Chinese kites truly exceptional in their visual appeal. In what ways have traditional Chinese kite designs exemplified the creativity and artistry of Chinese culture, and how do they captivate the imagination of people around the world?

The knowledge and expertise gained from kite-making have transcended the realm of recreational activities, influencing diverse fields such as aviation and engineering. The principles of aerodynamics and flight mechanics derived from kite technology have inspired advancements in aircraft design and propulsion systems. Additionally, the study of kite dynamics has contributed to breakthroughs in wind energy technology, fostering the development of kite energy systems for renewable energy sources. How has the humble kite, a symbol of leisure, inspired innovations in fields as diverse as aviation and renewable energy?

In modern times, Chinese kites have found new applications beyond recreational purposes. The utilization of kite technology for military surveillance and communication reflects the adaptability and versatility of Chinese kite innovations. Furthermore, the integration of kite energy systems into renewable energy initiatives underscores the enduring relevance of traditional practices in addressing contemporary challenges. How have Chinese kites

transitioned from traditional leisure objects to modern-day applications, embodying the adaptability and innovation of Chinese culture?

The tradition of kite-making in China symbolizes a harmonious blend of innovation and cultural significance. Chinese kites have left an indelible mark on global innovation, inspiring advancements in technology and serving as a testament to the enduring legacy of Chinese creativity. As we reflect on the importance of Chinese innovation within the tradition of kite-making, we recognize the profound impact of this cultural practice in shaping the world we live in today. The legacy of Chinese kites continues to soar, embodying the spirit of innovation and cultural heritage for generations to come. In what ways does the enduring legacy of Chinese kites exemplify the profound impact of innovation and cultural heritage, and how will it continue to inspire future generations?

The Perfection of Porcelain Elegance

Ling Liang Church E Wun Secondary School, Alvi, Safa Noor – 16

China has been long renowned for its rich history in inventions, with each creation possessing immense cultural and commercial significance. Amidst the vast discoveries, porcelain is undeniably visible as one of China's most astonishing contributions to the world. China's discovery of porcelain is a tribute to their expertise in both art as well as science. This graceful ceramic material has mesmerized the world with its flawless mixture of delicate elegance and resilience. Throughout history, porcelain has been honored as a transcendent form of art, it has not only molded the course of artistic portrayals but also offered as an inspiration for countless artistic manners. This remarkable material holds a deep significance not just in Chinese history but also in the international culture network.

The origin of porcelain in China can be retraced to the Eastern Han Dynasty (25–220 AD). At that point in time, Chinese potters had been experimenting with unique techniques and materials in their pursuit to design functional and beautiful wares. They discovered an extraordinary combination of kaolin clay and petuntse, a feldspathic rock, that, when fired at high temperatures, which then resulted in a refined and lustrous ceramic product. This marked the beginning of porcelain.

Early Chinese porcelain was highly desired for its distinct qualities. Unlike some types of pottery, particularly stoneware and earthenware, porcelain was revered for its distinctive translucency, lightness, as well as durability. These features made it the faultless medium for creating delicate and intricate designs. Due to the production of porcelain becoming a major part of the Chinese economy, numerous kilns had been established all across areas so as to satisfy the increasingly large demand both domestically and overseas.

The production of porcelain reached its peak, throughout the Tang Dynasty (618–907 AD). The imperial kilns of Tang were well known for their exquisite works, with celadon and white porcelain becoming particularly popular. The emergence of these new styles revolutionized Chinese ceramics, pushing the boundaries of artistic expression. While many of these advancements had occurred with the expansion of trade along the Silk Road, they allowed porcelain to reach distant lands and wanted by foreign markets, particularly in the Middle East.

It was in the Song Dynasty (960–1279 AD) when China witnessed further development in porcelain craftsmanship. The time period experienced the development of delicate and refined monochromatic ceramics. The innovations in glaze technology allowed potters to create magnificent celadon and powdered blue wares, while also providing new avenues for artistic expression. The Song kilns were known for their massive scale of production, with millions of pieces created every year for both domestic and international markets.

Nevertheless, it was during the Ming Dynasty (1368–1644 AD) when porcelain truly thrived and met its actual potential. The Ming porcelain was and has become iconic, it is often seen as the summit of Chinese ceramic production success. The imperial kilns at Jingdezhen produced some of the most impressive works that were appreciated and exported worldwide. The Ming styles had a vast variety, ranging from simple monochrome wares to intricately decorated blue and white porcelains. European potters during the Renaissance era had also become inspired by The delicate blue patterns and motifs found on Ming porcelain, which further stimulated the demand for Chinese ceramics across the globe.

In the realm of art, porcelain played a crucial role in China's rich intellectual legacy. The precise craftsmanship and rather complex designs of porcelain vessels showcased the immense skill and artistic vision of Chinese artists, porcelain excelled in capturing the ethereal beauty of nature, imbuing it with a translucent aura. These pieces had not only become masterpieces of aesthetic splendor, but also became functional items for use. The delicate brushwork, vibrant colors, together with the graceful forms of porcelain art demonstrated the impeccable tastes and sophisticated sensibilities of Chinese culture.

Furthermore, porcelain had developed into a major medium for artistic innovation and experimentation, which paved the way for many iconic creations. The selective firing techniques employed by Chinese potters and artists allowed them to achieve the flawless, translucent surface that seemed to radiate an ethereal glow from within. The complex process involved in its creation encapsulated the Chinese commitment for precision and attention to detail. This unique quality gave rise to the intricate design of celadon, with its subtle, jade-like hues. The use of underglaze blue motifs, such as the well known Ming-era blue and white porcelains, introduced a revolutionary artistic style that had a profound impact on the global artistic landscape.

From the scientific perspective, the invention of porcelain showcases China's remarkable understanding of material properties. The invention of porcelain was a remarkable monument to China's unwavering spirit of scientific inquiry. Porcelain is composed of a refined clay composed by the excellent mixture of kaolin, feldspar and quartz. The initial hand shaping of the clay, followed by precise regulation of temperature during firing, contributed to the successful creation of porcelain's resilient yet fragile framework. This mastery of the science behind clay composition and thermal behavior elevated Chinese ceramics to unparalleled heights.

The influence of Chinese porcelain on the world cannot be more overemphasized. It played a significant role in shaping international trade routes around the world, known as the "Porcelain Road" or the "Chinese Trade." The demand for the Chinese porcelain was so high that European traders set sail to find the most direct route to China, so as to be the first to receive the ceramic. This desire led to the Age of Exploration, as expeditions were launched to discover sea routes to bypass the dangers of the Silk Road. The immense commercial value placed on porcelain fuelled a global quest for trade and exploration that fundamentally changed the course of history.

Porcelain's impact was not limited to trade alone. It had also left an indelible mark on the art world. The beauty and elegance of Chinese porcelain inspired countless artists across different cultures and centuries. European porcelain factories were established, attempting to replicate the perfection of Chinese craftsmanship. Although these factories ultimately developed their own unique styles, the influence of Chinese porcelain remained evident in their early works.

In the past, porcelain had practical uses as well. Chinese emperors commissioned porcelain vessels and as symbols of their wealth, power, and refinement. These vessels were utilized in daily activities, such as serving tea and dining. Even today, Chinese porcelain remains highly valued as collectible and contemporary art. However, porcelain's applications have expanded over time. Today, while it is admired for its beauty, it is also widely used in various industries. While preserving its traditional aesthetic charm, porcelain has been found in many contemporary art forms, allowing artists to express their creativity through novel interpretations of this ancient medium. Its heat resistance and insulation properties make it suitable for electrical insulators and components. Porcelain has become a symbol of wealth and power to being a versatile material with countless applications, making it highly valuable in both art and different industries.

In conclusion, China's invention of porcelain exemplifies the seamless fusion of art and science. Its influence on artistic expression and its enduring material properties have created a lasting legacy. From its small beginning in the Han Dynasty to its peak of success during the Ming Dynasty, porcelain has continuously advanced, pushing the boundaries of artistic expression and creativity. Porcelain's elegant aesthetics and complex artistry have fascinated individuals throughout history, while its scientific mastery remains a tribute to China's unrivaled commitment to uncover the mystery of nature. From the exquisite craftsmanship of Chinese artists in the past to its diverse applications in modern industries, porcelain continues to captivate the world with its everlasting enchantment and enduring appeal.

The Inventor of Paper

Ling Liang Church E Wun Secondary School, Cruz, Janelle Anne Matusoc – 16

China is known for their history and ancient civilization, and there have been many inventors who have contributed greatly to the world. From ancient times to the present day, China's has had great inventions that have had a profound impact on various aspects of human life. Even now, centuries later, we continue to rely on and benefit from these remarkable contributions and creations. But Cai Lun is one of the well-known inventors from China.

Cai Lun is known to be the first one to make paper by using the papermaking process. Although there are early forms of paper had already existed since the 3rd century, he still holds the history of paper because of his unique to make paper. Before his invention, ancient Chinese civilizations used materials like bamboo strips, silk, and even animal bones to write on. However, Cai Lun's creation of paper made writing more accessible, affordable, and efficient. His distinctive way was to improve the skill of papermaking systematically and fix a recipe for papermaking, using materials like bark of trees, remnants of hemp, cloth rags, and fishing nets. His innovations in papermaking had a significant impact on human history, leading to large-scale manufacture of paper and the spread of paper production across the world.

The invention of paper had a profound impact on human civilization. The widespread availability of paper led to an explosion in the spreading of knowledge, the development of literature and art, and the advancement of science and technology. Paper became an essential tool for education, administration, and communication, shaping the course of history and progress.

Cai Lun was born in the year 50 AD in Guiyang, which is present-day Leiyang, Hunan province, China. Little is known about his family background or early upbringing. However, it is believed that he came from a relatively humble background and was not born into nobility or wealth. Despite this, he possessed a thirst for knowledge and a strong desire to make a difference in the world. This elevated role granted him an unusual access to the upper echelons of power, allowing him to shoulder significant responsibilities and undertake crucial assignments. It was during his tenure in the opulent palace that Cai Lun's profound realization of the pressing need for a writing material that was both more efficient and long-lasting became increasingly apparent.

Cai Lun's talent and dedication caught the attention of the Han court, and he was eventually appointed as a eunuch in the imperial palace during the reign of Emperor He. As a eunuch, he had access to the highest levels of power and was entrusted with important tasks. It was during his time in the palace that he became acutely aware of the need for a more efficient and durable writing material.

His invention of paper had a profound impact on the world. It not only revolutionized the way people communicated but also played a crucial role in the spread of knowledge, education, and

civilization. With the availability of paper, ideas and thoughts could be easily documented, shared, and preserved.

His improvements to paper-making are considered to have had an enormous impact on human history, and of those who created China's four great inventions such as the compass, gunpower, papermaking and even printing—Cai is the only inventor whose name is known. Although in China he is revered in ancestor worship, deified as the god of papermaking, and appears in Chinese folklore, he is mostly unknown outside of East Asia. His hometown in Leiyang remains an active center of paper production.

When he had invented paper this had not only left a lasting impact on Chinese society but also influenced cultures worldwide. The invention of paper was an important step in the advancement of human civilization, enabling the recording and dissemination of knowledge on a scale never seen before. Cai Lun's ingenuity and his commitment to innovation continue to inspire generations of inventors, reminding us of the immense power of human creativity. He reported his discovery to the emperor, who commended him for it.

Important improvements were subsequently made to Cai's papermaking process by his apprentice, Zuo Bo, and the process was rapidly adopted throughout China, eventually spreading to the rest of the world. Cai Lun's invention of paper ranks as one of the top four Chinese inventions and has had a lasting impact on civilization.

Although Cai Lun was a well-known figure in China, there is no evidence to suggest that he was famous before his invention of paper. His contributions to papermaking and the spread of knowledge were recognized during his lifetime and after his death. Today, Cai Lun is remembered as the father of the modern paper industry and the man responsible for spreading paper all across the world.

In conclusion, Cai Lun's invention of paper stands as a testament to the remarkable achievements of ancient Chinese inventors. His groundbreaking contribution has shaped the world we live in today, enabling the exchange of ideas, culture, and progress. And his legacy serves as a reminder that innovation knows no boundaries and that a single idea can have a profound impact on the course of history.

His determination to find a better writing material, combined with his access to resources and knowledge, allowed him to make this creative contribution to human civilization. The invention of paper fundamentally transformed the way information was recorded and transmitted, leaving a lasting legacy that continues to shape our world today.

The remarkable achievement of Cai Lun in the invention of paper had an incredibly profound and enduring influence on society. His famous creation completely transformed the realm of writing and communication, significantly enhancing the accessibility of knowledge and facilitating the exchange of cultures. Even in the present day, Cai Lun's unforgettable legacy

continues to have a significant impact, as paper remains an indispensable medium for education, literature, and the preservation of our rich human history. It is impossible to overstate the importance of his invention, as it has profoundly shaped the way we communicate and acquire knowledge, leaving an indelible imprint on the evolution of human civilization and its progress over time.

Undead Fairy

Ling Liang Church E Wun Secondary School, Kong, Hiu Yuet – 16

In 2050, the world is a full of technology and there have many investors and they are work hard to researching the new investments. They make a “ocean cleaner” for helping to clean the ocean. Why do we make this investment? That is because the ocean had been having more serious pollution problem in 2025, the chinese investors were hard working to solve this problem. Nowadays, they have some method can temporary relief the problem. However, they did not have any idea could solve the problem from completely.

Until one day of 2035, a chinese investor broke in a place like a fairyland peach forest carelessly. The investor saw this view obsessively. Suddenly, the investor discovered an animal like a fairy on the top of the sea. It was a prehistoric creature lived under the sea and its body was so small like an ant. The investor saw it could decompose harmful substances by accident in unpolluted sea areas. The investor saw it had that function, so he had an idea was built a machine could clean the oceans. And the chinese investor saw it could decompose and devour substances, so he decided to take it back the graduate school for the examination of solving the problem.

In 5 years of researched of the prehistoric creature , the chinese investor gave a name “undead fairy ” to the prehistoric creature. The chinese investor discovered “undead fairy ” could live under the sea and on the land everywhere. And it’s slime could decompose and devour harmful substances, also could help us to solve the problem in the ocean. The other discovery was it had huge of regeneration ability, no matter how injured it were, it would regeneration and it was beautiful like a fairy but it’ quantity was too little not enough 1000. The special feature of “undead fairy ” caused the investor’s interest. The investor took out “undead fairy”’s slime to do experiments, want to learn why and what substances made the “undead fairy ” can decompose the harmful substances for solved the problem to devise a machine. The investor tested the slime and tried to build a machine to clean the color of pollution sea water. When the inventor had learned more about the “undead fairy ”’s slimes how to decompose the harmful substances , he also devised , tested and improved the machine . He hoped that could faster to solve the pollution problem of the ocean.

In 2035 to 2041, the chinese investor had been starting to build a robot and researched what substances could substitute the “undead fairy” ‘slimes to decompose the harmful substances in the ocean. He built the machine for solve the problem completely, but the machine finished the test. The machine only could clean the ocean color be more cleaning, but it could not decompose the harmful substances. The investor had a little bit disappointed of that. However, he was happy with the development of the goal had a huge improve. That was the investor saw the result as fail and he thought could clean the color of the polluted water.

After the fail of the involvement, the chinese investor was more interested of the “undead fairy”, want to quickly find the secret of it for helping to make the investment. In 2041 to 2043, the investor researched and developed the investment again and he found a breakthrough from “undead fairy ”’s body structure. “Undead fairy” body had a special way was using feathery antennas to decompose the harmful substances, that was using algae attached the antennas, and then use high speed rotated it to decompose around “undead fairy ”’s harmful substances for purity water quality. After the investor drank the tea, he began.

Besides, the Chinese investor found the method. He had been working on this idea before other investors found the method to purity water quality solve the problem. In 2047 the investor improved the machine, made it could plant the algae and use high speed fiction the algae to purity harmful substances in water and use the old machine could turned watercolor normal. The investor put the investment into a part of a little bit pollution of the ocean to test the function.

After the test, the investor saw it was working successfully could decompose harmful substances in water and could keep the water was cleaning, being happy and gave name of the machine “ocean cleaner.”

In 2050, the chinese investor announce to the world China successfully manufactures “ocean cleaner” and it can purify harmful substances in water to clean the ocean, is an invention that has contributed to the world at the world press conference. After 2 months, “ocean cleaner” officially launched and purify Pacific Ocean. The “ocean cleaners” are mass-produced, distribute it to other oceans by the chinese investor and the World Health Organization.

After 6 months, the harmful substances in oceans are cleaning up by “ocean cleaner” and the marine ecosystem is back to normal, whole people can swim in the ocean again. This investment help to solve the pollution problem in ocean completely.

The Enchanting Tradition: Exploring China's Twenty-Four Solar Terms and Their Cultural Significance

Ling Liang Church E Wun Secondary School, Lock, Cheuk Him – 16

Do you know that Chinese people always use a traditional method to predict the change in climate? This method is called “Chinese twenty-four solar terms”. It originally comes from a historical and fascinating story.

In the past, Chinese people Using Tugui's actual sundial measurement, the longest solar shadow each year is determined as the "Sun Solstice" and also known as the Sun Solstice, which is the lunar solstice, the Long Solstice, and the Winter Solstice as the four images in the “Tai Chi Diagram”. In the spring and autumn, each day and night have one day, which is designated as the "spring equinox" and the "autumn equinox". Various human nations have these four. In the Shang Dynasty, there were only four solar terms called “four seasons” which included spring, summer, autumn and winter, but by the Zhou Dynasty there were eight diagrams divided from “four seasons”. By the Qin and Han Dynasties, the twenty-four solar terms had been fully established. Each of the twenty-four solar terms corresponds to the position that the sun reaches every 15° of movement on the ecliptic. The twenty-four solar terms are divided into 12 solar terms and 12 middle terms, one by one. The twenty-four solar terms reflect the annual apparent movement of the sun, so the dates in the Western calendar are almost fixed. The solar term in the first half of the year is on the 6th, the middle solar term is on the 21st, the solar term in the second half of the year is on the 8th, and the middle solar term is on the 23rd. The 12 solar terms are also the starting days of each branch in the stem and branch calendar month. For example, the beginning of spring is the beginning of the “Yin month”, and the “Jingzheng” is the beginning of the “Mao month”.

The naming of the twenty-four solar terms reflects the changes in seasons and climate. The Beginning of Spring, the Vernal Equinox, the Beginning of Summer, the Summer Solstice, the Beginning of Autumn, the Autumn Equinox, the Beginning of Winter, and the Winter Solstice, also known as the Eight Bits, are the eight key nodes that distinguish the impact of the revolution on the earth; Rain, Jingzhe, Qingming, Guyu, Xiaoman, Ear, Slight Heat, Great Heat, Sixteen weather conditions, including extreme heat, white dew, cold dew, frost, light snow, heavy snow, light cold, and severe cold, reflect the more subtle climate changes in the four seasons.

The twenty-four solar terms are a knowledge system and social practice formed by the Chinese people by observing the annual movement of the sun and understanding the changing patterns of seasons, climate, phenology, etc. throughout the year. It is the movement of the heaven and the earth that the Chinese ancestors followed in their long-term agricultural production. and the temporal regimes created by the laws of climate change. It is not only the embodiment of the Chinese ecological thought of "harmony between man and nature", but also condenses the ecological wisdom of adapting measures to the times, local conditions and circular development. The twenty-four solar terms are the basic rules for Chinese ancestors to understand and transform nature, society, and life. They demonstrate the uniqueness of Chinese people's understanding of the universe and nature, and are of great practical significance for promoting green development and building ecological civilization today. The twenty-four solar terms also extend to the art culture of China such as “The song of twenty-four solar terms”.

On November 30, the 11th Ordinary Session of the Intergovernmental Committee for the Protection of Intangible Cultural Heritage of UNESCO passed a review and approved China's application for the inclusion of the “Twenty-Four Solar Terms” in the UNESCO Representative List of the Intangible Cultural Heritage of Humanity.

The four seasons have become an extensive and profound invention in the culture of China. Although this is an accurate method for predicting weather, it is replaced by a weather checking app nowadays. I think it is sad that this traditional method has disappeared in our life one day. But hopefully, I think there are still some people who keep the “twenty-four season terms” alive with me!

The Ancient Wisdom of Cupping Therapy

Macau Pui Ching Middle School, Guo, Ana – 15

Recently, Traditional Chinese Medicine (TCM) has been gaining popularity and captivating the attention of individuals in Western countries. The diverse range of treatments it offers leaves many foreigners in awe. In China, there is a well-known saying: "Acupuncture and cupping, more than half of the illnesses cured." While acupuncture is undeniably the most commonly used treatment, cupping therapy usually remains underrated and overlooked. This essay aims to ignite curiosity and deepen understanding of the profound benefits of cupping therapy.

In the vast tapestry of China's inventions, cupping therapy emerges as one of the most intriguing and enduring practices. The procedure begins by immersing the cups in water to expel the air. The practitioner then creates suction by sucking the cup onto the patient's skin, resulting in the formation of circular markings that are often black in color. Meanwhile, certain variations of cupping therapy may involve additional ritualistic ceremonies. However, how exactly does this therapy work?

My first experience with cupping occurred during a period of severe illness that lasted for several months. As a result, my mother decided to explore alternative remedies. The cupping session took place in a tranquil room softly illuminated by flickering candles strategically placed throughout the space. The air was infused with the gentle scent of aromatic oils, creating an atmosphere of serenity and relaxation.

The practitioner stood beside me, holding a small flame to the opening of a glass cup. This created a momentary vacuum before she swiftly placed it on my back. As the cup adhered to my skin, a gentle suction caused my flesh to rise, forming a small, circular dome. With my eyes closed, she carefully proceeded to move from one cup to another, repeating the process. It felt as if the cups were drawing out the weariness and stress that had accumulated within my body. It was a unique sensation – a blend of warmth, pressure, and relief. After this experience, I soon began to recover from the illness that had plagued me. With firsthand experience of the profound effects of this powerful treatment, I delved deeper into this traditional skill.

According to Chinese mythology, cupping is believed to enhance the flow of life force 'Qi' and blood within our body. It is said to aid in the elimination of pathogenic factors. Additionally, many believe that cupping plays a crucial role in balancing 'yin' and 'yang'. By harmonizing these energies, cupping therapy is thought to restore the body's resistance to pathogens, improve blood circulation, and alleviate pain.

The history of cupping therapy can be traced back to the Han Dynasty. Evidence of its usage was found in a silk manuscript discovered in a tomb. Furthermore, more than 200 years ago, a doctor named Li Shizhen compiled a comprehensive book titled *Bencao Gangmu*, known in English as *the Compendium of Materia Medica*, which provides detailed insights into the history, origins, and diverse techniques of cupping. Within this book, Li explores various cup shapes, their functions, and practical applications.

Nowadays, this ancient art is undergoing a renaissance, as modern technology sheds new light on its development. In the past, cupping therapy involved the use of cattle horns or sections of bamboo. Nowadays, modern cupping sets are predominantly made from materials like silicone, offering greater flexibility and ease of use. In addition, the invention of electric and magnetic cupping devices has enabled practitioners to further optimize their techniques and skills.

A few years ago, the renowned American actress Gwyneth Paltrow made headlines when she appeared on the red carpet wearing a backless dress, revealing cupping marks along her spine. Since then, an increasing number of celebrities have proudly displayed these distinctive circular marks on their backs, endorsing the utilization of traditional Chinese

medicine (TCM). The presence of cupping therapy serves as a testament to the enduring legacy of China's inventions. The tales of cupping's journey from ancient times to the present day serve as a reminder of the profound wisdom and timeless relevance of ancient practices in our ever-evolving world.

Experience Everyday Life with Ancient Chinese Wisdom

Macau Pui Ching Middle School, Lu, Meng Fei Kystal – 15

As we are aware, China has been the birthplace of numerous significant inventions throughout history. When contemplating ancient innovations, the prominent ones that often spring to mind are papermaking, the compass, gunpowder, and printing. Nevertheless, it is essential to acknowledge that there exist lesser-known inventors and their inventions that have subtly but significantly influenced our daily lives. These often-overlooked contributions deserve our attention and recognition.

From the primitive period to the Qing Dynasty and continuing to the present day, our ancestors in China have brought forth an astonishing array of inventions. With such an extensive history, it is indeed challenging for individual inventions to stand out, especially when there were countless silent contributors whose names might remain unknown to us. To gain a deeper appreciation for their impact, let us explore an ordinary day and highlight some of the remarkable inventions that shape our daily lives.

When you wake up in the morning, brushing your teeth is an essential part of your routine. However, it may come as a surprise that toothbrushes did not exist until the Ming Dynasty. It all began when Zhu Youcheng, who was known as Emperor Xiaozong during the Ming Dynasty, started experiencing dental issues after meals. Concerned, he consulted a doctor who explained that the decay of food residue was causing moth infestation in his teeth and that the residue must be cleaned out after each meal. After thoughtful consideration, Ming Xiaozong made the world's first toothbrush with pig bristles and bamboo boards to effectively clean teeth and improve dental health.

Not until it rains heavily as you head to school do you realize that you have forgotten to bring your umbrella, so you hurry home and get it. The invention of umbrellas can be traced back as early as 3500 years ago in China. Legend has it that Lu Ban, a Chinese carpenter and inventor created the first umbrella. He was inspired by children using lotus leaves as a rain shelter and constructed an umbrella by crafting a flexible framework covered with cloth. The method is deceptively simple, but it was difficult for people to discover at that time. Until now, umbrellas have become a necessity and even a kind of fashionable accessory when it is raining.

Ding-dong ding-dong. The bell rings, and there is always a test in the first period at my school. Although examinations are frequent, few people know their origin. The story began in ancient China. According to historical records, Shi Le from the Sixteen Kingdoms period established official schools in county countries to recruit students. In order to assess the student's learning outcomes and progress, Shi Le devised a method that is now famous worldwide: exams. Students were required to pass three examinations before graduation, which was quite rigorous. Subsequently, the imperial examination system of the Sui Dynasty constantly improved upon Shi Le's method. Gradually, Japan, Vietnam, North Korea and other countries began to adopt China's implementation of the exam system. The next time you have a test that makes you anxious, you can secretly attribute your frustration to Shi Le. However, we must also acknowledge that exams play a significant role in society. They not only select outstanding talents for us but also provide individuals with greater motivation to advance in a merit-based society driven by school assessments.

My school day wonderfully ends with a PE lesson, and the task for today's class is to play football. Have you ever thought about the origins of football? It is often mistaken to have originated in the West. However, football, originally known as Cuju and made of animal fur, was invented by Chinese ancestors. The credit goes to the Yellow Emperor of China, who introduced this sport. During the prosperous Warring States period, people engaged in various recreational activities to pass the time. Cuju was not just a game; it also served as a means to train soldiers and enhance physical fitness.

After a long and tiring day, there is nothing quite as comfortable as slipping into silk pajamas and enjoying a restful night's sleep. Whenever we come across silk in recent years, our thoughts immediately turn to the Silk Road.

The name itself, "The Silk Road," implies the significant contribution of silk to trade. The earliest traces of silk in China date back to around 3630 BC, during the Chinese Neolithic period. These silk artifacts were discovered in Henan Province, an area widely recognized as the cradle of Chinese civilization. In traditional Chinese culture, silk holds profound symbolic meanings of beauty, elegance, and luxury. Furthermore, silk has become an integral and cherished element of Chinese culture.

In today's rapidly developing world, Chinese inventors continue to achieve remarkable advancements. From my perspective, one of the most thrilling inventions is smart glasses that provide vision to the blind. This groundbreaking invention required extensive research and study, and fortunately, the experimental results have been impressive. These glasses, created by researchers at Zhejiang University, integrate various functions such as navigation, face recognition, and reading to guide visually impaired individuals through sound cues. According to reports, users can navigate, identify contacts, and determine their location and distance through voice commands. With the advancement of technology and the dedication of China's inventors, a range of barrier-free technology products now provide greater convenience for people with disabilities.

The world is moving at an increasingly frenetic pace. I firmly believe that China will continue to lead in the development of inventions that have the potential to transform the world, reshape people's lifestyles, enhance convenience, and benefit special communities such as the disabled. Consider these possibilities: advanced technology that allows individuals to effortlessly brush their teeth while wearing silk pajamas; the convenience of automatic street canopies that eliminate the need for carrying umbrellas; a brain examiner that enables paperless or typing-free test-taking; and the opportunity to play football online alongside virtual avatars of renowned soccer players. Who knows? Perhaps the writer of this article will become the inventor of these items one day! Together, we can become a shining star in the history of Chinese invention!

Bridging the Past and Future: China's New Innovations of Ancient Technology

Macau Pui Ching Middle School, Ng, U Hin Marcus – 15

Technological developments have always played a crucial role in benefiting communities by bringing significant advancements and improvements to various aspects, ranging from medical science to infrastructural engineering. This is evident not only in modern times but also throughout history, with ancient civilisations like China making notable contributions.

Developments in medical science

In ancient China, several medical advancements were made, paving the way for further developments in modern medicine. For instance, the invention of narcotics by doctors in ancient China aimed to diminish the pain of patients during treatments such as amputation. A doctor in the Han dynasty named Hua Tuo first achieved this by allowing patients to drink a bowl of soup containing special plants. Although the exact formula has disappeared, scientists have developed other forms of narcotics based on this early type, such as morphine administered through injection or inhaled through devices like Forane. Some narcotics can even anesthetize humans simply by sticking a sticker containing them on the skin. These forms of narcotics are often used by surgeons during operations to anesthetize patients. If the early narcotics had not existed, modern narcotics would have been invented much later.

However, some patients might be allergic to narcotics, stating that they can only withstand a tiny amount of narcotics in their bodies at the same time. In this case, another invention in the medical science field, acupuncture, can address the problem. Acupuncture is another invention believed to have been invented by doctors in ancient China about 2100 years ago. It was developed as a method for treating patients. Tiny needles would be inserted into specific parts of the patient's body, followed by small movements of the needles after insertion. According to the book "Huang Di Nei Jing," which describes acupuncture theories, this method could help reorganize the "qi" in the patient's body and aid in their recovery. In the past, acupuncture was often used to treat wounds or soreness more than illnesses. However, about 60 years ago, scientists discovered that acupuncture can stimulate the patient's specific nerves and enhance the effect of regular narcotics. This approach allows regular narcotics to have the same effect while reducing the required dosage. It can help solve the problem of patients being allergic to narcotics or prevent them from developing drug resistance.

Moreover, acupuncture itself has also undergone developments. Taking the needles that operators use as an example, they used to be made of bone or bamboo, which are blunter and thicker compared to the needles used today, mostly made of metal. Countless methods to treat illnesses were established, and the theories have become more systematic since their invention about 2100 years ago. I believe that in the future, narcotics might be used in an even safer and side-effect-free environment. Perhaps, by using simpler acupuncture methods, the process of anesthetizing could be greatly simplified, enabling normal people to perform it on their own. I believe that China has tremendous potential for medical advancements. Acupuncture plays an important role in enhancing modern medicine, and narcotics can be used more safely and conveniently.

Developments in infrastructure engineering

Similar to medical science, ancient China also made significant strides in engineering and infrastructure. Hydraulic engineering, in particular, plays an important role in improving the quality of life for communities. The construction of the Grand Canal, a massive waterway spanning 1776 kilometers in the eastern part of China, improved the transportation and trade systems in the surrounding areas since its construction during the Sui dynasty. While boosting economic growth by eliminating time and cost-consuming overland journeys, various innovative designs by ancient Chinese engineers can still be found in the canal.

In parts of the canal where the water level differs, pound locks were used. Pound locks are inventions that modern artificial waterways still use in similar scenarios. Two or more gates are placed between those parts of the canal. When one gate is closed, the other one can open, allowing water to flow through the opened gate and ensuring a balanced water level in that section of the canal. Ships can pass through that part easily and continue to the next section by repeating the same action with the next gate.

Another example of these innovations is the Dujiangyan Irrigation System, which was built during the Warring States Period in the Min River. Similarly, the purpose of this system is to redirect water from different waterways upstream and provide additional transportation methods. But the most eye-catching part is that the system itself does not require any machines or manpower to maintain, nor does it need any surveillance. The only thing that works to redirect and distribute the water is the system's geometrical design. The Yuzui bypass dike is a levee that is shaped like a fish's mouth and diverts the water into an inner and outer channel. Since the river is bent, water that passes through the outer channel would be much faster. Additionally, sand and gravel would be thrown into this channel because of centrifugal force. The sand and water in the outer channel would be further directed to other small water systems through the Feishayan spillway, preventing the inner channel from being flooded or clogged. Water that flows into the inner channel would be directed to nearby plains and satisfy agricultural needs through the Baopingkou diversion channel. Notably, the riverbank of the outer channel is higher than that of the inner channel to ensure that only excessive water would go to the outer channel. This design still works perfectly now with the help of some simple reinforcements on weak parts.

These two examples of infrastructure engineering act as the fundamentals of agricultural, economic, and transportation industries nowadays, proving the value that the products of engineers in ancient China still bring to the community today. It is undeniable that those engineers were far-sighted. I believe that these irrigation systems will inspire future generations of engineers to build infrastructures in developing areas with more innovative ideas and plans on a larger scale.

In conclusion, technological developments undeniably bring value to the community. On one hand, ancient Chinese inventions in infrastructure engineering continue to shape our world, providing us with valuable foundations for modern advancements. On the other hand, ongoing improvements in medical science hold great potential for the future, offering opportunities for innovation. By encouraging technological progress, communities can find new possibilities, overcome difficult challenges, and create a better future for all. Through continued investment in research and development, we can use the power of technology as a tool to tackle the problems that will arise in the future, improve the well-being of individuals and communities, and pave the way for a brighter and better future.

New Tales of China's Trends of Inventions

Po Leung Kuk No. 1 W. H. Cheung College, Liu, Tsz Yu – 15

It is well known that in ancient times, China held the world's leading position in many fields in the study of nature from the 1st century BC to the 15th century AD, having the greatest global significance. With remarkable creations and technology, most notably, the Four Great Inventions – compass, gunpowder, papermaking, and printing, China prides itself on having a respected position in the exchanges between the East and the West and greatly advanced China's productive forces and social life. Not only were the Four Great Inventions appreciated and respected, but also the Chinese people's breakthroughs in farming, exploitation, machinery, medicine, astronomy, and textiles, just to name a few.

Nowadays, the world is fast-paced and constantly changing, where newer aspects of technologies, bringing modern inventions, tend to grab people's attention more as we are fascinated by their novelty. It is easy to overlook the magnificence of past inventions. Is it that we have forgotten the traditional inventions, which once had their glory? Inspired by these ancient techniques and their tools, we renovate and improve them, serving them as the foundation of our future, and they influence our new ideas and creations, thereby opening up a new world of possibilities for tomorrow.

Take the modern seismograph for example. It is widely used in seismology research, earthquake monitoring, and hazard assessment. It works by connecting multiple seismographs digitally to a global seismic network, which enables monitoring and rapid detection of earthquakes. They provide valuable data to analyze earthquake patterns, assess earthquake hazards, and assist in earthquake early warning systems. However, this could not be done without the Chinese seismoscope representing an early attempt to develop a device to detect earthquakes. Through the designs and mechanisms of ancient Chinese seismoscopes, it demonstrates the fundamental concepts of recording and detecting seismic activity. The same applies to other inventions – every inventor gets their inspiration from and pays homage to another inventor and its invention, and therefore they enable us to provide more potential, push society towards ever greater heights, and propel us forward to the boundaries of current technological limits.

Given the non-stop development in technology and innovation, in 2017, a brand new term "Four Great New Inventions" came along in China regarding mobile payment, e-commerce, high-speed rail, and bike-sharing. Even though none of them originated from China, it is China's greatest endeavour to develop them to an extraordinary level, making countries unable to resist the urge to emulate the success of this invention.

To pick one of the four that is most revolutionizing, mobile payment is a common choice for people. Thanks to the expeditious development of China's mobile payment industries with the assistance of third-party platforms, tons of bacteria-hosting and environmentally unfriendly banknotes and coins are eschewed. A survey in 2022 shows that only 0.2 per cent of people don't use mobile payment in their daily lives. China is now moving ever closer to a cashless society, and Chinese people do not have to even carry a single cent just only your phones. Moreover, some don't need to bring a phone with the new state-of-the-art biometric payment methods like face or fingerprint recognition payment systems. Whether you need to make a purchase, take a taxi, or pay electricity and water bills, you can simply show your face or fingerprint for a quick scan to make the transaction. The convenient China high-speed rail network may grab your attention with it being the longest such network in the whole world, with more than 42,000 km, enough to wrap around the Great Wall of China. Given that the travel time has been reduced by a matter of hours, it is easy to understand why as of 2022, the high-speed rail in China transported over 2 billion passengers. All these inventions improve our efficiency and enhance our quality of life significantly.

It is evident that without the ancient Chinese inventions then, there would not be the inventions and the people who invent for the sake of our future now. Going on with the trend, we can speculate that the new inventions will focus on the benefits of efficiency improvement and quality of life enhancement. Just by sight-seeing in China, you can observe that China has become a smart country. As China has been investing heavily in e-commerce, smart cities, and urban technologies, with the advancing development of the 5G and 6G technological deployments, transferring data at a high-speed rate, will only get smarter. It is also safe to say 7G, 8G and so on will be hot topics shortly, which allows us to have rapid data transmission. The inventions can also be seen involving artificial intelligence (AI) because this technology can be applied in various industries, which are already starting to fuse intelligent systems along with automation and robotics to form agile or even unmanned frameworks. The Chinese government has also stated that it is planning to lead the world in AI technology. Aside from the aforementioned biometrics technology,

natural language processing and automated vehicles are also some of the notable advancements in AI technology China has made. Not only that, China is also making good use of virtual reality (VR) and augmented reality (AR) technology, implementing them in education, recreation, and artistry. Therefore, China is seen as a high-technology country and can be foreseen to lead humanity to a new digital-and-reality-fused era.

Although China's inventiveness may still have much room to improve, there have been various policies and initiatives related to technological developments, encouraging inventors to upgrade their technology and foster their innovations, hoping that this will allow future generations' imagination to soar with no boundaries. China's well-known companies in e-commerce and technologies like Alibaba, Tencent, Baidu, and Taobao all are co-creating a vibrant internet and network for more types of digital development and they are great examples of successful combinations of the Internet and reality, which helps the technological developments. Due to China being actively involved with blockchains and big data analyses, we can witness rapid growth in digitization, and foresee trends of digitalization, providing us with new concepts, from digital economy to digital marketing, and even multiple potential digital revolutions.

Apart from technological development affecting the future trend of inventions, it can be seen that the future trends of inventions lie in innovators' creativity, providing us with more convenience and sustainability towards the environment for future generations in unique ways. In a nutshell, we can look forward to days without the requirement to do repetitive tasks, and the transformation of being more digital and eco-friendly with the assistance of both present and future, Chinese and global, inventions, where Chinese inventions specifically, focus on technological advancements.

New Tales of China's Inventions

Po Leung Kuk No. 1 W. H. Cheung College, Lui, Shing Chung – 16

All of us are enjoying the benefits of advanced technology nowadays. It seems like most of these inventions come from the Occident while China is just starting to be a great power in the world. However, China was once very powerful and advanced in history for a long time. Chinese people were good at Mathematics, Medicine, and inventing many things which had become the fundamental technology for the modern world. This brings us to the topic of “The Four Great Inventions”, also known as the Four Great Ancient Inventions of China. It is renowned as four significant technological and scientific breakthroughs which contribute a profound impact on human civilization. They are papermaking, printing, compass, and gunpowder. Each of these inventions revolutionised various aspects of human life including society, culture, and warfare, from communication and knowledge dissemination to warfare and navigation. We are going to delve into the history, significance, and impact on our lives of these immortal inventions.

Considered to have played a crucial role in the development of civilization, papermaking revolutionized communication, education, and the dissemination of information. Imagine the time without paper, when the knowledge of a generation couldn't be recorded easily and efficiently, the later generation didn't have enough prior information and had to explore the world by themselves. Of course, the study of all subjects was slow. In fact, not only did papermaking facilitate the spread of literature, art and ideas, and the advancement in science, philosophy, and culture, but it is also essential for wrapping, packaging, towelling, insulating, and photography nowadays.

The origin of paper can be traced back to ancient China, where it was first developed during the Han Dynasty. Before paper, various materials such as bamboo slips, silk, and wood were used for record-keeping, but these were expensive and cumbersome, making them impractical for widespread use. Therefore, Chinese people tried to use the inner bark of certain plants, such as mulberry and hemp, which were more flexible, and durable compared with those stated above.

It all started back in AD 105 with Cai Lun, an official serving the Imperial Chinese court. He managed to craft paper from mulberry and various other bast fibres, as well as old rags, fishnets, and hemp waste. The fact that he even could produce paper from such rudimentary materials is quite stunning. In those early days, the process was extremely labour-intensive, involving the gathering of raw materials, the preparation of fibres, the shaping of the paper, and finally, its drying. During the spring or early summer, when the fibres were strongest and most flexible, the bark was collected and soaked in water to soften it. The retting process, in which stone hammers or wooden mallets were used to beat the bark into smaller pieces, followed. The fibres were then rinsed and cleaned to remove impurities and boiled to soften them and enhance their flexibility.

Once the fibres were ready, they were mixed with water in the form of a slurry. It was poured into a deckle, a rectangular mould made of bamboo or wooden slats, and dipped into a bucket of water after that. Gentle shaking of the mould to get a uniform sheet and drain away excess water was needed before drying. Finally, it was dried in the sun to prevent warping or wrinkling of the paper.

Over many years, the technique invented by Cai Lun underwent improvements to refine the quality of paper and increased production efficiency. For example, by applying a thin layer of gelatinous material to the surface of the paper, ink absorption was reduced and thus the ability to hold writing or printing ink is increased.

After Cai Lun invented this technique, it was very popular with the Chinese people as it was cheap and convenient. It is even spread to the rest of the world by the Silk Road. Starting from this time, using paper is no longer limited to the rich but accessible to ordinary people. It increased literacy rates and the democratisation of knowledge. Enabling the creation of books and documents, it is possible to record and preserve knowledge in an organised way. It had a great effect on cultural and economic aspects also through preserving historical records and

cultural heritage and creating job opportunities at that time. The impact of papermaking is far-reaching when you think of our everyday life.

When you think of books nowadays, you cannot help associating papermaking with printing. That is another renowned invention of Great China which further facilitates the dissemination of information. Students must have the experience of being punished by their teacher for copying textbooks. And that is how books were produced by hand copying, a time-consuming, labour-intensive, and inaccurate method. Suppose without printing, the production of books would be unbearably slow.

According to information from various sources, printing technology emerged in the 6th century during the Tang Dynasty. People were seeking efficient methods to reproduce written materials when they found copying troublesome. The earliest form of printing was woodblock printing, which involved carving characters onto wooden blocks. By applying ink to the carved surface with a paintbrush, the patterns carved can be pressed onto paper. However, this method was still labour-intensive and time-consuming. Each wood block can only print a certain piece of work and a long indispensable time is needed to carve the characters precisely. In addition, the intricate process of carving made it difficult to reproduce complex and detailed images.

In about 1041–1048, Chinese alchemist Pi Sheng invented movable type, which greatly improved the shortcomings of woodblock printing. In the book *Brush Talks from Dream Brook* written by Shen Kuo in the same period, the Northern Song Dynasty, Pi Sheng conceived of a movable type made of an amalgam of clay and glue hardened by baking. Each character was engraved on the convex surface with a depth of 1 to 2 mm and baked to make it hard. When printing, he placed the types close together in an iron frame. When the paste was slightly melted by fire, he took a smooth board and pressed it over the surface so that the block of type became even. As a rule, he kept two forms going. While the impression was being made from the one form, the type was being put in place on the other. When the printing of one form was finished, the other was ready. In this case, he could print rapidly by using two plates alternately. The movable type printing, including wooden, clay, metal, and ceramic types, provided much greater flexibility and versatility compared to woodblock printing. Texts could be reproduced efficiently with few errors.

Although in 1313, Wang Chen, a magistrate, had had a craftsman carve more than 60,000 characters on movable wooden blocks to publish a treatise and invented horizontal compartmented cases that revolved around a vertical axis, the technology was not followed up in China. Fortunately, it was assimilated by the Uighurs who lived on the borders of Mongolia and Turkistan and transmitted to Korea, Japan, Vietnam, and the Philippines. Nevertheless, movable type printing did not spread to Europe as papermaking did. Not until the 15th century did Europe develop printing technology when Johannes Gutenberg originated a method of printing from movable type. China's invention of printing technology advanced the development of the rest of the world.

The impacts of printing technology were not limited to knowledge dissemination, literacy, and education increase. Printing technology played a significant role in standardising languages and spelling. It reduced spelling variations and inconsistencies and as a result, contributed to grammatical rules and the development of national languages. Moreover, it helped the printing industry to become a significant sector, fuelling the growth of publishing houses, paper mills, ink manufacturers, etc.

While China contributed a lot to papermaking and printing, it also played a pivotal role in exploring the planet. Without compasses, humans could not determine direction accurately or travel to other parts of the world. It was very important for people to shape the course of civilisation, enabled seafaring journeys, trade routes, and the discovery of new lands and consequently, fostered cultural exchange in the past.

There are a few versions of how compasses were invented. One of them says that Si Nan, which was invented in the Han Dynasty and consisted of a magnetic metal spoon that aligned itself with the Earth's magnetic field, pointing south, was the earliest form of compass. However, according to studies by Professor Liu Bingzheng

from Northeast Normal University in 1956 and by Sun Ji from the National Museum of China in 2005, the device recorded was not a real compass.

While this has been proved wrong, others are more authentic. According to the record in the book *Complete Essentials for the Military Classics* written in the mid-11th century, a guide to fish, which was made by rapid cooling of iron from Curie temperature (about 600°C to 700°C) to room temperature by putting it into water in a specific angle to make it magnetic and sealing it after, was invented in the 4th century. When it is in need, place it on a calm water surface. Until now, you may have been surprised by the intelligence and scientific knowledge of Chinese astronomers and geomancers in the past and their fascinating way of making artificial magnetic compasses. This is far earlier than the compasses made by lodestone discovered by mariners in Europe.

Apart from this, another kind of compass called Luo Pan, recorded by De Barbaris *Oceani occidentalis Annales*, was well used during the period of the Ming treasure voyages, in which Zheng He was ordered by the Yongle Emperor to project Chinese power and wealth to the known world and make other countries as tributaries. It has been an essential factor and reliable tool for the exploration of foreign countries.

Several technical improvements had been made after the invention of compasses. In the book *Brush Talks from Dream Brook* written in the 11th century, Shen Kuo said and proved that compasses did not point exactly to the south, but sometimes a bit biased to the east. His observation preceded the West by 400 years, considering English mariner Robert Norman discovered this phenomenon. Since then, using compasses to tell directions could be even more accurate.

The inventions above seem to bring human-only blessings, but the following one has burdened us. This is gunpowder, which has contributed a lot to scientific, technological, and military advancement, while it has made many people perish and destroyed many structures and artefacts. Still, it was not the fault of the Chinese who invented gunpowder unintentionally. Instead, we should praise the significant impact they have brought us. Think of the tunnels underground or underwater we travel through every day, whether by cars or trains, they are mostly built by using gunpowder to blow the rocks except some new ones adopted more advanced ways.

Gunpowder is believed to have originated in the Tang Dynasty of China before the 10th century. It was originally not invented to facilitate warfare. Instead, Chinese monks and alchemists were questing for an elixir of life when they discovered the formula for making gunpowder. The technology was only used for medicinal purposes until it was found to be incendiary and immediately applied to warfare. In modern chemistry, we know that gunpowder is composed of saltpetre (potassium nitrate), sulphur and charcoal and it was the same in the past although the percentages of its content were not refined at that time. The earliest manufacturing process was simply grinding the ingredients together into a powder using a mortar and pestle.

During the Song Dynasty, Chinese alchemists and military engineers figured out the optimal ratio of saltpetre, sulphur, and charcoal, which ensured replicable, stable, and explosive gunpowder. It was used in flamethrowers in the Song Dynasty and even extended to making fire arrows, which were the prototype of rockets, and thunderclap bombs, which were launched from early forms of cannons during the Yuan Dynasty. You may know that the Yuan Dynasty was established by Mongolians if you have learnt Chinese History. The ambitious and violent Mongolian conquests and invasions of China acted as a vehicle for gunpowder to spread to the rest of the world. It is documented that the technology had reached the Middle East by the 13th century. Sorrowfully, it is the European countries which used gunpowder for their empires, causing countless unnecessary tragedies.

Not only did the Chinese invention of gunpowder help people build structures and explore resources, but it also increased the trading of ingredients and cultural exchange. More remarkably, its combustion and explosive nature indirectly cause people to think about the theory behind it, leading to the chemical revolution and the rapid development of science.

The Four Great Inventions of China have revolutionised many aspects of human history, including the promulgation of knowledge, the technology for extracting resources, the exploration of the world, and the pursuit of science. Now, China, as a great country, is still endeavouring to invent a lot more fantastic new technologies in this extremely interconnected modern world. The innovative spirit and ingenuity of the Chinese, which are exemplified by their lasting inventions, will surely persist in the future, and continue to contribute to the world.

A Day in China, A Day in the Future

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We could never resist soaring our imagination of the ways we will live in the fancy future, couldn't we? Hoping that our tedious, routine daily life could be riddled with fun and excitement with novel breakthroughs, we look forward to the unfolding of future technologies. A piece of electrifying news for everyone is that the wait is no longer needed. China has been inventing and adopting a multitude of futuristic technologies and techniques that no one could have thought of months or years ago. From the early morning till the sky is illuminated with lustrous lights at night, citizens scattered across the 9.6 million square kilometres of land embrace the tremendous convenience and possibilities brought by the New Tales of China's Inventions.

China has a prestigious fame for its Four Great Inventions from the ancient times which comprises compass, gunpowder, paper-making and printing. The four remain to serve as crucial elements for our usual daily life after evolution. Time changes fast, and today, China proudly presents its Four New Inventions to the globe again, namely mobile payment, high-speed rail, E-commerce and bike-sharing, let alone other eminent development projects executed by China such as drones and robots. In this article, we will focus on China's development of mobile payment, high-speed rail, drones and robots.

With just a quick scan using your mobile phone, you know that you have successfully conducted a payment after hearing the 'doo' sound. 'Scan, Pay and Go' This kind of instantaneous payment is no stranger to Chinese citizens as it has penetrated their everyday lives.

This is the transformative power of mobile payments in China, which has constructed a new normal of paying through QR codes for Chinese consumers, especially after the pandemic. Renowned for its cost-effectiveness and secured settings, QR codes have become the leading method of mobile payments in China. While consumers in other countries may still be counting coins or waiting for their credit cards to process, the Chinese are already enjoying the items they bought.

The popularity of mobile payment in China has reached a staggering 86%, which proves that China is the pioneer of the utilisation of mobile payment among other countries and regions. The elevated degree of dissemination and accessibility of mobile payments has promoted its prevalence from luxury shops to street food vendors in China. It is not difficult for us to see shops accepting an array of e-payment methods while travelling outside China. However, we recognise the fact that most of the shops in other places still stick to conventional cash. The divergence among these shops will make you have no choice but to prepare yourself some coins and notes for your journey. By no means is this the case in China, where simplicity and convenience are emphasized. Shops may not be accepting a variety of e-payment methods, but Alipay and WeChat Pay, the two leading enterprises in the mobile payment industry, must be welcomed by every business in the Mainland.

Opening an account on these platforms is easy for not only the locals but also foreigners, let alone using it. As China aims to promote the use of mobile payment technology in every corner, keeping everything simple is beneficial for all stakeholders. Simplicity is the key to the great success of China's inventions. Users could not feel safer and more secure in using these mobile payment platforms, as their privacy is well-protected and user experience is considered the top priority. Users have to go through a real-name verification in the app before successful registration to seclude potential risks and to protect the legal rights of users. The QR code will also be refreshed every time after successful payment has been made and the old one will become obsolete. Personal data is also stored under stringent and close protection. There are no worries regarding embezzlement of QR codes for payments or personal information.

The widespread application of mobile payment technology and its correlated techniques in China are simply marvellous. The Chinese have built a comprehensive system, or I would rather call it a cycle in which you can handle

a bunch of daily matters with just one app. Everything is interconnected. Imagine that you have entered an unstaffed restaurant which has no waiters, no cashier, and no cook. You just have to open the payment app to make an order, acquire discounts, and pay it. Everything could be just done in one app. Then, you only have to sit tight and wait for the robots to cook for you automatically and deliver the food to you which will be explored in the later part. The future technology that is being trialled by China makes things adopted from sci-fi movies possible. Though such techniques have not been omnipresent yet, there are still plenty of new things for us to explore in this inspiring cycle. The Chinese have been endeavouring their efforts in innovation and research of cutting-edge techniques even though they already hold many.

We are used to giving facial expressions to convey our emotions and waving our hands to say hello. As modern technology advances, it is time for us to wave our hands again to say hello to the modern way of e-payment methods invented by diligent Chinese scientists. Simply by waving your palm, your payment has been processed. Welcome to China and welcome to the future, where you could grab and pay for everything you need simply using your hand and palm.

Facial recognition and palm scan payment methods are the most recent innovations of the Chinese. It is commonly acknowledged that all 8.1 billion people in the globe contain unique facial characteristics that could be recognised and distinguished by Computer Vision with the help of Artificial Intelligence and the analysis of Big Data. It is no wonder that these facial characteristics of everyone will be utilised in commercial society someday. However, few of us could have realised that there is also a colossal amount of information disclosed in our palms from our distinctive biological features. Applying this technique in various transportation, campus, catering and retail scenarios, WeChat Pay from China is a trailblazer in this newfangled application. Its palm payment feature incorporates the advanced 'palm print + palm vein' recognition technology. A wide-angle optical camera identifies the palm print features, while the infrared camera identifies palm vein distribution characteristics. Only after the successful verification of both factors could payments be completed. It is fast, convenient and secure.

New mobile payment techniques connect us to the door of the future, allowing seamless and contactless transactions. In a similar vein, China also emphasises connections between the places and people on its 9.6 million square kilometres of land. Its high-speed rail is a profoundly pivotal infrastructure which drives passengers to the door of the future.

Until now, the Chinese have built a high-speed railway network of more than 440 thousand kilometres, with a maximum running speed of 350 km/h on the trains. Domestic travelling in the mainland mainly hinges on this fast and convenient public transport system nowadays, associated with the advantages of being cost-effective and environmentally friendly.

While it may be stunning to recognise that China is considered the most sophisticated country in high-speed rail applications, it is more astounding that China went from nothing to something in the aspect of high-speed rail in just merely two decades. While the Chinese had no choice but to hang on importing essential techniques from foreign countries for the development of its high-speed rail twenty years ago, it has now evolved into a stage of independent innovation with China's one-of-a-kind elements.

Back in the early 2000s, China began its domestic production of high-speed trains through bidding and technology introduction from countries including Japan, Germany and France. The bidding processes allowed China to acquire these advanced technologies by opening its domestic market to the firms. Introducing advanced technology, collaborating on production and creating a Chinese brand name is the major belief adopted.

In recent years, with the concerted efforts of researchers and technological advancements, China has achieved technological breakthroughs in high-speed rail development, becoming a leader in the industry. Appreciation must

be given to China's perseverance in insisting on independent innovation and developing core ideas based on the actual needs and limitations of China's geographical and transportation features.

It is equally notable that China owns a comprehensive production chain, a prodigious manufacturing capacity and construction ability, which have all contributed to the unprecedented success of its high-speed railway system. The 'China speed', which symbolises the accelerated efficiency of both the construction progress and transportation speed of its high-speed trains, is a renowned term in the mainland to praise its achievements in this subject. Only through the complementation of the three aforementioned factors could China build such a marvellous and inter-connected high-speed railway network.

Travelling has never been so effortless in China before the launch of its high-speed railway system. Continuous developments and refinements in various aspects related to the high-speed rail also elevate passengers' experience. For instance, passengers could access one-stop services and preparations for their high-speed railway journey on the app Railway 12306 from booking tickets to checking the latest operating status of trains. Aiming to enhance environmental protection and facilitate the smoothness of operations, the Chinese Railway Authorities have transformed conventional paper train tickets into digital forms, which can be conveniently accessed by passengers through the app. Passengers could simply use their ID card or corresponding travel documents to access the gates. This serves to prevent the loss of tangible train tickets, which could delay the passengers' journey.

It is no wonder that every stage in the high-speed railway development of China is designed and implemented carefully after thoughtful consideration, meeting the authentic needs of the system and stakeholders, especially passengers. From inventions to operations, meticulous planning and design are adopted which maximise the splendour achievements of the high-speed railway system in China. Such delicacy forms an integral part of the mesmerising nature of the New Tales of China's Inventions.

Looking ahead to the coming years, the Chinese will not be limited by the success achieved but to continue breaking through bottlenecks and impossibilities with self-developed contemporary technologies. While the Chinese have successfully invented and tested a high-speed magnetic levitation train system with a speed of around 600 km/hour in 2021 in Qingdao, which is the fastest-moving transportation tool on the ground, more is expected to come shortly. The maglev is a product of the independent research and development of China, which also upholds the advantages of being unaffected by the hindrance of external factors such as friction, gravity and air pressure. China also sets to test a 1000 km/h ultra-high-speed maglev train, which will be used for commuting between mega-city clusters in China in the coming decade. By 2035, it is expected that this hyperloop technology will be put into practice. The maglev train will operate in an in-vacuum tunnel which could effectively truncate the travelling time required. Connecting Shanghai and Hangzhou in less than ten minutes, this state-of-the-art technology could foster citizens' geographical mobility, creating substantial benefits for the development of the cities and the country holistically.

Emerging into an automated and smart society, Chinese firms have been enhancing the applications of robots and drones in various aspects of production and daily operations to eliminate the dependence on human labour. Robots and drones give an edge over human workers in terms of accuracy, efficiency and productivity, which are indispensable features for the formation of a futuristic society.

Apart from the conventional manufacturing and industrial industry that utilises robotic process automation in factories, there is a surge in demand for diligent robots in not only the medical and catering fields but also interactive robots that could guide customers in the service sector. The Chinese University of Hong Kong has invented a surgical robot which could undergo urological surgeries. It is expected that the robot will be widely applied on the mainland in 2024 after several clinical trials. The precision for the surgery is augmented and the time required is reduced considerably.

In light of the technological advancements and a growing labour shortage in the catering industry, there is a heightened application of robots in the workplace. Be it the reception or the cooking process, it all lies in the operation of robots solely. Taking a chained restaurant invested by Country Garden which operates in the Greater Bay Area as an example, the entire flow of the work in the restaurant is replaced by artificial intelligence robots. The cooking robots are only secluded by a piece of transparent glass from the customers, which enables customers to observe how advanced the cooking process is. It strengthens their confidence and understanding of this new technology. The cooking robots are equipped with the ability to prepare a wide variety of food, for instance, claypot rice, ice cream and noodles to meet the varied tastes of various customers. The well-prepared food will then be transported to the customer's desk through an overhead track system. This futuristic dining experience riddled with advanced technology comprises a total of more than 200 dishes for the customer's selection. The meals are prepared and delivered to customers within an astonishing time frame which takes merely 20 seconds at least. Such an automated cooking process could minimise the possibility of food contamination caused by humans, ensuring an outstanding level of hygiene and safety. Applications of robots are also more widely adopted in service industries such as hotels and hospitality. Without a doubt, robots are becoming more important tools to customers in the mainland market, facilitating customers' experiences while refining efficiency.

The pandemic has reshaped our everyday life in many aspects, and the most significant change is that we are getting more used to ordering food delivery services from home. In China, delivery services have evolved into a new era during the pandemic in which drones could replace the usual riders' work. This remote delivery mode, which is adopted by Meituan, the largest delivery platform in China, is more than ubiquitous to spot in central cities in China such as Shenzhen and Shanghai. Under the command of an automated system, a delivery drone carrying the food will take off to deliver to a designated airdrop pickup kiosk. Travelling a maximum distance of 10 km in urban areas, the delivery drones could withstand unfavourable weather conditions such as heavy rain and wind. They are also enabled to make on-time deliveries as the hindrance effect of traffic congestion would vanish. This new norm of delivery is expected to bolster the rapid development of the low-altitude economy in Shenzhen, which is one of the emerging industries in this smart city. The low-altitude economy refers to the concept of utilising aerial vehicles such as drones for commercial transportation and logistics services in dense urban areas. It is forecasted to be a paramount factor of contribution to the engine of the new economy.

Since we embarked on the 21st century, China has been accelerating its development to become one of the top-notch nations in the globe with laudable technological breakthroughs. The world is amazed again and again by the creativity of the Chinese and its splendid history of innovations from ancient times to the present. The user-centred designs and wide applications of these innovations have made the everyday life of the Chinese to become easier, more convenient and futuristic. It is my strong belief that more debuts of Chinese technological innovations will be demonstrated in the foreseeable future, which could transcend the limits of our imagination in all likelihood.

Chinese Inventions: The Past, Now and The Future

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China, a mighty country with a history of over 5000 years, has a lot of precious physical and spiritual legacies which reinforce our standard of living in modern society. Flipping through the gallery of China's achievements, those cutting-edge inventions should be placed on the podium of the most glorious kinds of the nation.

When we mention Chinese invention, I bet the memory of the four great inventions will be aroused in everyone's mind. The eminence of them is not about how eye-catching and fascinating they are. These innovations have one collective characteristic which is decisive to their popularity and commendations, which is that they all change human lives slightly, to a degree that we may not recognize. However, our lives are genuinely altered, either to a brighter future or to a grim dystopia.

Past

Being one of the four great inventions, paper making would be a skill that improves our lives most. Could you count how many products that surround our daily life are made of paper? For a student, they could be textbooks, comics or novels; for an adult, they could be documents, reference materials or important hardcopies of contracts. Thanks to the plain and snowy white paper, we can have every word printed while being visible. Nevertheless, can you imagine what would happen if once the technique of paper-making vanishes?

Let's go back to the ancient world thousands of years ago. Before paper was invented in China, people around the world used various types of materials to record their culture and history. The one with the best fame would be papyrus, which was developed by Egyptians in around 3000 BC. Made of papyrus plant, however, it was not pliable enough to fold without cracking, also fragile and susceptible to both moisture and excessive dryness. Other materials such as parchment, palm leaves and tapa were used all over the world. The reason why they were all with very short lives was that most of their surfaces were irregular, which was difficult to write on and the use of them was often with constraints such as environment and climate.

Therefore, here we are to trace back to 105 BC in China. In the past, it was a traditional practice that every book and document was to be written on bamboo and wooden slips. These bamboo slips were ponderous and not flexible enough to be carried everywhere. Envision when you are reading an enchanting book but it is time to go back home. Would you like to carry loads of bamboo slips to your home? Later, a better alternative – silk and cloth seemed to have addressed the issues properly. However, they were indeed very expensive and ordinary people couldn't afford a bulk amount of them. Cai Lun, a eunuch, was initiated to improve these media and was determined to invent a light and cheap one. He boiled materials namely bamboo, hemp waste, old rags, fishnets and bark from trees to a pulp that was beaten with a wood or stone mallet and mixed them with a large amount of water. After processing with wooden sieves and removing excess water, 'paper' was formed. To commemorate his achievement, this paper was called 'Cai Hou Paper'. No sooner had Cai invented this easy and cheap paper-making method than it went viral all over the world. In 600 AD and 610 AD respectively, paper-making expanded to Korea and Japan. It also travelled to the West on a journey very similar to the Silk Road, from Central Asia to Samarkand in Uzbekistan.

Another significant invention of the four great inventions could be mentioned together with paper making, which is movable type printing. Effective printing was a long eagerly awaited desire of ancient Chinese. Chinese, unlike English, already has over 10000 different characters in the Tang Dynasty. Relying on human-written books is not only time-consuming but also expensive to produce and unfavorable regarding on distribution of knowledge. Therefore, the Chinese worked hard on inventing different printing methods. Woodblock printing, known as xylography today, was the first method of printing applied to a paper medium. Since carving the blocks is skilled and laborious work, and if one character is mistakenly carved, the whole woodblock has to be discarded and everything needs to be carved again. It is a waste of manpower and a drain of resources, isn't it? Bi Sheng, an artisan and

engineer in the Song Dynasty, had a great and detailed overview towards the pivotal drawback of woodblock printing and thus invented a brand new method called 'movable type printing' in 1041. Bi Sheng took sticky clay and shaped it into the Chinese character that was going to be used. When he wished to print, he could just take an iron frame and set those character models on the iron plate, slightly burn them and put the medium to be printed on the plate. Eventually, words were printed uniformly and clearly on the medium used. The skill was later spread around the sinosphere including Korea and Japan. Metals were used to replace clay as a better alternative. Until typesetting with computers became prevalent in the 1900s, movable type printing was abandoned and retired out of our sight. Doubtless to say, Chinese inventions on paper and printing have brought unprecedented impacts to the world. Jim Rohn, an American motivational speaker once said 'reading is essential for those who seek to rise above their ordinary.' Books are a crucial medium to carry and propagate the culture and language of a nation. Without paper and methods of printing, we are not able to get in touch with diverse knowledge in the world. Most people may take these for granted and neglect the efforts behind these inventions. That's the reason why I mentioned that we may have overlooked the impacts of these Chinese inventions.

The second-last great invention is the compass. It was actually invented in China during the Han Dynasty between the 2nd century BC and the 1st century AD. Compass, at first, was not used for navigating. It is related to the concept of 'feng shui', a kind of esoteric geomancy that claims to use energy forces to harmonize individuals with their surrounding environment. The prototype of the compass is called 'si nan'. It is made with lodestone, a form of the mineral magnetite that is a naturally occurring magnet and aligns itself with the Earth's magnetic field. The middle of 'si nan' is not a needle like a compass, but a spoon-like object. You may wonder why it must be spoon-like, and the answer is related to the Big Dipper, a large asterism consisting of seven bright stars. In the past, as the Big Dipper was quite prominent and easy to recognize, ancient Chinese used it to clarify their direction. Also, the Big Dipper is one of the most important references for fortune teller to do their divination. Hence, when the Chinese discovered that the magnet would always point toward the magnetic poles, they tried to imitate the shape of the Big Dipper during the manufacture of the magnet. In the end, a spoon-like object was crafted. 'Si nan' had also become essential equipment for 'feng shui' gurus to make their judgements until now. Later, 'si nan' was transformed into a compass in the Song Dynasty by the military for navigational orienteering by 1040-44. The invention of the compass made an indispensable contribution to the Age of Discovery by enabling mariners to navigate safely far from land. Within China, the invention of the compass helped with the development of the maritime Silk Road. The maritime Silk Road connected China to Persian and Arab traders to export a lot of China's products towards other countries such as porcelain, spices and herbs. Not only does it help boost China's economy, but it also facilitates cultural communication between China and Southeast Asia countries. This can also account for the Chinese's spirits on inclusion and racial integration.

Last but not least, we have gunpowder as an invention that has affected us much. Sun Simiao, king of medicine in China had mentioned in one of his books that 'mixing sulphur, saltpeter will form a substance that catches fire. However, since some Taoist alchemists were obsessed with the elixir of immortality, they still tried to mix them with carbon to see what would happen. Eventually, as gunpowder couldn't bring them eternal life, it was taken for military use. The earliest surviving chemical formula of gunpowder dates to 1044. As a result of the Mongol conquests during the 13th century, knowledge of gunpowder spread rapidly throughout Asia and Europe. Besides peaceful usage like matches and fireworks, gunpowder was used for a more violent and brutal purpose: weapons. The explosive and flammable nature of gunpowder had been specifically attractive to strategists. Since then, canons and guns have predominantly occupied the field of war, replacing swords and trebuchets. This invention was innovative and pristine enough, but it was definitely a double-edged sword. We could use it for celebrative purposes such as firecrackers as one of the Chinese traditions, or military purposes, which is disapproving.

Spirits behind

The four great inventions have clearly demonstrated personalities that most Chinese own. British Sinologist Medhurst once said 'the Chinese people's genius for inventions has manifested in many aspects very early' in his book 'China, its State and Prospects'. This comment refers to the four great inventions. As described above, we know that these

inventions are prompted by certain challenges, for instance, economic issues faced when using bamboo strips, convenience issues faced when using silk, etc. When these challenges are here as an obstacle faced by the Chinese, they wouldn't give up trying. Instead, they would make use of what they had learned in the past. Through thousands of trials and errors in order to achieve or come up with a solution. In ancient China, the belief that is rooted in the Chinese mind would be Confucianism, which focuses on the importance of personal ethics and morality. Scholar Xunzi once said 'Learning cannot be stopped' in his famous article 'Exhortation to learning'. Obviously, learning was of paramount importance to the Chinese. Having this attitude, when they have any new and innovative ideas, they can manage to accomplish them step by step with concrete and reliable knowledge.

There is also a reason why the Chinese could be that creative in inventing such useful products. Chinese have a curious soul in discovering the structures and mechanisms behind the world. In fact, the number of myths in China transcends those in foreign countries. Chinese love to find an explanation towards everything in the world. For example, the reason why there is only one sun in the sky would be that Houyi shot the other nine suns down because of the extremely hot weather. Everything you could imagine, from heaven to hell, has its own story relating to different gods. Books such as 'Strange Tales from Liao-zhai' or 'Journey to the West' also show the imaginary world in the Chinese brain. Undoubtedly, the Chinese aren't fearful towards these unknowns or uncertainties. Furthermore, their perseverance in overcoming these unknowns should be praised and learned. Combining these with the Confucian or Mohist belief – to love and treat everyone well, it is not difficult to know why the Chinese could invent so many beneficial products for the world. Gunpowder could be an exception, but it depends on how we use it. We couldn't deny that it indeed brought some advantages to our lives by providing things like fireworks. It also stimulated some kinds of new technology.

Now

After the Chinese economic reform, everything is going back on track. However, it seemed that the Chinese didn't get back their spirits for a while. A few years ago, some scandals had built some distrust towards Chinese new inventions. One of the biggest ones was the 2008 Chinese milk scandal. Once everyone thought that the Sanlu Group had invented a type of cheap and nutritious milk powder and was proud of it. However, it was soon discovered that the milk was adulterated with the chemical melamine, which would result in kidney stones and other kidney damage. Many Chinese and many foreigners couldn't trust Chinese products anymore since this scandal broke out.

The history of Chinese inventions may contain marvellous stories such as the four great inventions, or scandals that deteriorate Chinese products' credit. Nonetheless, the spirits of the Chinese are always in their blood, existing at any moment. After the scandal broke out, the Chinese government worked hard to monitor the quality of Chinese products in order to rebuild the confidence of people in them. Chinese haven't and never give up on making new inventions. In the past ten years, every Chinese enterprise strived to innovate so as to grasp the opportunity to compete with foreign tycoons. They cling to create something that nobody has tried before. Not only because of making money, but also to restore national glory and bring more and more unbelievable creations to the sight of people around the world.

Particularly, I would like to mention a few inventions that swamped the global market in recent years. One of them must definitely be 'short videos'. TikTok, established seven years ago, introduced a new concept of videos to the world. In the past, we usually watched long YouTube videos by turning our phones horizontally. Also, we often have to spend a few minutes to finish watching one single video. Under such circumstances, it is not likely that we could finish it without pausing in the middle. This offered dissatisfied experiences to users. Chinese entrepreneur, Chang, spotted this problem faster than anyone else. He predicted that everyone would own a phone in the future and thus stepped into the technology industry. With his clear mindset, he established 'Toutiao' and 'TikTok' respectively. Both of them were to offer users quick and targeted information. And now, different social media adopted the same techniques, such as YouTube's 'shorts' and Instagram's 'reels', they all originated from TikTok's short videos. To have a successful creation that could be widely accepted around the world, the crucial condition is that the

inventor clearly understands the demand of the market. As Chinese can learn new things rapidly, they can in fact have a clearer image and thus could put themselves into others' shoes. Inventing something that customers want. This is what we should learn about and take advantage of.

In recent years, Chinese enterprises often faced sanctions by foreign countries such as the United States, especially Huawei. The daughter of the CEO of Huawei was even arrested by the Canadian government. However, Huawei showed its spirit of perseverance with its innovative nature. When Android no longer supported Huawei, it invented its own engine called 'HarmonyOS', which is functioning well. What everyone should learn from this is that invention is a one-way path and stopping is not allowed. Whenever we faced obstacles, we couldn't just give up our project directly as there must be another way that could work exactly or even better than the original one. Invention is not only about creativity, but it's more about persistence. We may not see the bright side of the tunnel as there is still a long way until the end, but we have to remain committed to what we believe in. One day, we could eventually make it to our long-awaited products. Chinese, as the 'descendants of the dragon', must know this very well.

Future

China has held a place in different fields such as astronomy and artificial intelligence. It is believed that China can continuously proceed with further inventions on things such as spaceships that can carry tourists to space or artificial intelligence that can chat with people normally like a human. Despite the fact that China has a promising future in innovation, young people in China are facing severe social issues. In China, although the economic growth is significant, it doesn't really benefit young people. As most of them are poor, they are not able to achieve their dreams and can only tolerate the long '996' working schedule. At last, they choose to stay at home and become a lying-flat in response to the emotionless society. The Chinese government has to tackle this problem by providing more support to young people as they are the pillars of society in the future. Without their ideas, it would be difficult to keep China as an innovative country.

From my own perspective, the successful stories of all inventions in China are really encouraging. It would be fabulous if I could become one of them one day. However, even though the government provides a lot of support to Hong Kong youngsters to work on innovations, the details are still not very clear. It is about time the government exposed more statistics reflecting the current situations in the Greater Bay Area so that people could understand the feasibility of achieving their dreams there.

Living in the 21st century, we should be grateful that we are able to enjoy the fruits of the great inventors of the past. Indeed, these inventions improve our lives a lot. We should also be honoured to be one of the Chinese as our ancestors had completed works that may have changed the world. Being Chinese, and also a member living in the world, we should try our best to contribute to our beloved society. Maybe we are not creative enough to invent new products, but we can learn from their spirits and finish our jobs in a favourable manner. No matter we are an inventor or not, we can still make our steps and change the world slightly. Let's prove that the Chinese are not the 'sick man of Asia' by our own efforts.

A Glimpse of China's Future in the Tech Field

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In the past few decades, China has grown significantly and become one of the most technologically advanced countries in the world. As a Chinese, I am very proud of my country's astonishing achievements. China has one of the fastest-growing electric vehicle (EV) markets with an estimated 300 domestic EV manufacturers. Moreover, China has the largest network of high-speed railways in the world, with a total length of 42000 kilometres. In 2021, the China National Space Administration (CNSA) sent Tianwen-1 to explore the Red Planet, making China the third nation to make a soft landing on the Martian surface. Looking back, our nation has really outdone itself again and again, creating a myriad of mind-blowing inventions that have influenced not only the 1.4 billion people in China but the whole population that walks the earth. I can't help but wonder what comes next for China. I'm not a fortune teller but I bet it's going to be something mind-altering!

In the 1989 film *Back to the Future II*, the protagonist Marty McFly travels to the year 2015 where futuristic travelling means such as hoverboards and flying cars have become prevalent. It is quite intriguing – how the world in 2015 looked like to the film writers in the 80s. Of course, we know that hoverboards and flying cars are not a common sight you see every day on the streets. However, I believe that China will be introducing more innovative means of transportation shortly. What I want is a teleportation device. If you ask me who's going to be able to invent such an unimaginable piece of technology, my answer would undoubtedly be Chinese people! In recent years, I've been seeing plenty of fascinating gadgets and gizmos made by Chinese firms, from aesthetic phone cases to handy kitchen gadgets. From all these products, I can see China's boundless creativity, and I believe that this creativity is what it takes to invent a teleportation machine. With this technology, I wouldn't be late for school anymore!

In my mind, digital currency is going to take over the traditional payment method of cash in the future, and the first country that's capable of undergoing this major transformation is going to be our great nation. China is already ahead of other countries by introducing digital wallets like WeChat Pay and Alipay as early as 2003. By now, digital wallets have become the most common method of payment in China, so the Chinese are no strangers to digital currency. In addition, Chinese companies have been developing facial recognition technology. For instance, in Guangzhou Children's Library, the facial recognition system is used for children to borrow and return books without having to take their library cards with them. Besides, businesses in China have experimented with using facial recognition for payment in convenience stores – the ultimate payment method using digital currency in which the payer does not have to bring banknotes or smartphones with them. Since China has already been testing the water for a while now, I have faith in our country that it's going to invent a secure nationwide facial recognition system so that we can pay for purchases empty-handedly shortly. With this system, our lives are going to be a lot more convenient!

As a Biology student, I am very interested in the development of Biotechnology so I really can't help imagining what impressive biotechnology China's going to introduce in the days to come. In 2018, two monkeys – Zhong Zhong and Hua Hua – were cloned by a Chinese laboratory, becoming the first monkey clones created. This example shows that China has been quite advanced in the field of biotechnology. In light of this, I believe that China would be capable of bringing back animals that have disappeared from the face of the earth. Are you thinking what I'm thinking? I believe you are. China has been a pioneer in biotechnology, and would it be possible for it to bring back creatures that have gone extinct – like DINOSAURS? I think that my motherland has the potential to do so – with limitless creativity and state-of-the-art technology. Let's put aside ethical concerns and just imagine. Being able to revive something that vanished from our world 65 million years ago, that's a huge deal! Who wouldn't drool to take a look at these magnificent creatures and gawk with amazement? I believe that China's emphasis on the development of biotechnology is going to be able to achieve something as breathtaking as bringing dinosaurs back to life.

Recently, I watched a film which was about a couple making use of the technology of artificial wombs to have a baby. This thought-provoking film made me think about whether this technology would be feasible. I've done some research and found that China has already been trying to combine artificial wombs with artificial intelligence (AI). Imagine if China could put artificial wombs onto the market. Millions of women would benefit. Over the past decades, China's birth rate has been dropping continuously. One of the reasons for the decline in the birth rate is that women are reluctant to have children as the processes of being pregnant with a child for nine months and giving birth are too agonising and arduous. However, with the use of artificial wombs, women no longer have to go through that excruciating experience in order to have a child. That sounds like music to my ears! With the introduction of this

technology, I believe that many more women would be willing to have children and the birth rate in China would definitely rise.

There's no doubt that China's going to come up with many more spectacular inventions in the future. Perhaps we are going to have time machines or we can travel to Neptune in a spaceship. We do not know for sure. But I do know that the new inventions are going to be exciting and incredible, and I cannot wait to see what the future holds!

Exploring China's Contributions to the Metaverse: Uncovering the Gaming Innovations that Redefine Virtual Realities

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Games have long been recognized as a form of entertainment, but their significance extends far beyond mere amusement. In fact, games hold a unique position as the ninth art form, intertwining with various aspects of human life. From their ability to captivate and engage individuals to their impact on social interactions and personal development, games have become an integral part of our daily existence. Games also have proven to be powerful tools for personal development. They stimulate cognitive functions such as problem-solving, critical thinking, and decision-making. Strategy games, for example, require players to analyze complex situations, devise plans, and adapt to changing circumstances. Additionally, games can enhance creativity and imagination, as players often have the opportunity to shape and create their own virtual worlds. Notably, games have also found their way into various fields beyond entertainment. They are increasingly utilized in education, training simulations, and even therapy. Serious games are designed to educate, teach skills, and address real-world challenges in an interactive and engaging manner. These games leverage the inherent motivation and enjoyment derived from gameplay to facilitate learning and personal growth. Obviously, games as the ninth art form play a significant role in human life. They provide an avenue for escape, foster social connections, and contribute to personal development. As we continue to embrace the ever-evolving landscape of games, it is essential to recognize their importance and harness their potential to enrich our lives in numerous ways.

China's massive population of over 1.4 billion people means it has the world's largest potential market for the gaming industry and digital entertainment. With so many consumers located in one country, China presents immense opportunities for growing the scope and profitability of games. Not only is the population size favorable for the gaming sector, Chinese society has also embraced new technologies that boost access and spending on games. Beyond conventional commuting needs, innovative electronic payment solutions have become widely adopted in China. Options like Alipay and WeChat Pay have made conducting financial transactions via mobile incredibly convenient. This proliferation of contactless and digital payments lays ideal groundwork for the gaming industry value chain from hardware purchases to in-app spending. Game companies no longer face the same barriers and inconveniences of traditional payment processing that hampered some businesses in other markets. China's early embrace of fintech has substantially increased the ease of monetizing games and enabled new business models. In parallel, China's government and Internet giants have proactively invested in building domestic gaming capacity and promoting the industry. Its initiatives range from talent training programs and regional technology clusters all the way to creating the infrastructure needed for esports tournament venues and streaming platforms. Chinese game developers also benefit from robust protection of intellectual property unlike some other Asian markets. The thriving gaming sector has become an influential part of the country's digital cultural and economic transformation with expanding opportunities for global partnerships and trade.

China has an extensive history of inventions and innovations that have greatly contributed to the development of various fields, including technology and gaming. Over the years, China has been at the forefront of creating new tales in the world of gaming, introducing exciting and engaging inventions that have captivated millions of gamers worldwide. One of the most prominent new inventions in Chinese gaming is the Massively Multiplayer Online Role-playing Game (MMORPG) genre. MMORPGs allow players from around the globe to interact with each other in a virtual world, creating a sense of community and camaraderie. China's contribution to this genre can be seen through games such as "The Legend of Mir" and "World of Warcraft", which were developed by Chinese companies and gained immense popularity across the globe.

All of these lay a good foundation so China's gaming industry has witnessed exponential growth over the past decade. With a large population of avid gamers and a robust infrastructure to support the industry, China has become a major player in the global gaming market. Chinese game developers and companies have created some of the most successful and innovative games, attracting millions of players worldwide. The revenue generated by China's gaming industry surpasses that of any other country, making it a powerful force to reckon with in the global gaming landscape. China has been at the forefront of gaming innovations that have shaped the Metaverse. Chinese game developers have introduced groundbreaking technologies and gameplay mechanics that have transformed the gaming experience. One notable example is the game "Genshin Impact," developed by miHoYo, a Chinese gaming company. The game combines open-world exploration, role-playing elements, and multiplayer interactions, creating a captivating gaming experience that blurs the line between reality and the virtual world. "Genshin Impact" has garnered a massive following worldwide, demonstrating China's ability to create immersive and engaging virtual realities.

Genshin Impact is a popular open-world action role-playing game originally developed by the Chinese company miHoYo. Since releasing in late 2020, Genshin Impact has gained a massive global fan following across platforms like iOS, Android, PlayStation, and PC. As a Chinese-created game, Genshin Impact demonstrates the thriving creativity and world-class production values coming from the country's gaming industry. Genshin Impact's success is unparalleled, achieving significant download records on app stores worldwide. Within just two months of its mobile launch, the game surpassed \$100 million in global player spending. On iOS alone, it became the fastest title to reach \$300 million in global player spending, demonstrating incredible mainstream popularity. Genshin Impact's cross-platform model allows the same account and progress to seamlessly carry over between devices, promoting extensive engagement and playtime from fans. A core reason for Genshin Impact's enthusiastic fan reception internationally is its immersive open-world design featuring sprawling magical landscapes to explore. Very much embodying the vision of a metaverse, the game invites endless discovery and adventure. Players embark on quests to advance the elaborate storyline while collecting powerful characters from diverse civilizations. Genshin Impact has established a strong foothold as a cultural phenomenon appreciated across borders. It indicates global audiences have diverse tastes and are growing eager to engage with high-quality games born anywhere in the world. "Genshin Impact" has not only revolutionized the gaming industry but has also showcased China's potential to lead the way in shaping the Metaverse.

In recent years, the concept of the Metaverse has gained immense popularity in the gaming industry. The Metaverse refers to a virtual reality space where users can interact with a computer-generated environment and other users in real time. This revolutionary concept has the potential to redefine how we experience digital entertainment, social interactions, and even work. China, with its booming gaming industry and technological advancements, has played a significant role in shaping the Metaverse. The Metaverse is a virtual reality space that encompasses various interconnected digital worlds. It is a convergence of augmented reality (AR), virtual reality (VR), and the Internet. The key components of the Metaverse include immersive experiences, social interactions, user-generated content, and a seamless integration of physical and digital realities. Users can explore and interact with the Metaverse through virtual reality headsets, mobile devices, or desktop computers. The concept of the Metaverse has gained traction due to its potential to revolutionize gaming, entertainment, education, and even business. China's technological advancements have played a crucial role in the evolution of the Metaverse. The country has made significant strides in areas such as artificial intelligence, virtual reality, and 5G connectivity. These advancements have laid the foundation for the seamless integration of physical and digital realities in the Metaverse. Chinese companies have developed state-of-the-art virtual reality headsets, motion sensors, and haptic feedback devices that enhance the immersive experience of virtual realities. With the advent of 5G technology, users can now access the Metaverse with minimal latency, enabling real-time interactions and multiplayer gameplay on a massive scale.

On the other hand, several technology giants like Tencent and NetEase are heavily investing resources into building metaverse platforms. Local governments have also designated metaverse development as a strategic national priority,

exemplifying high-level support and investment. With these considerable efforts, it's probable that China will cultivate its own metaverses distinctly representing Chinese cultural perspectives and interests. While taking inspiration from early Western metaverse projects, incorporating elements from millennia of Chinese philosophy, art, history, and customs could create experiences that deeply resonate with domestic audiences. For example, virtual recreations of iconic destinations ranging from the Forbidden City to the Great Wall may be coupled with integrated elements of tai chi, calligraphy, shadow puppets or food. Employing classical Chinese aesthetics in the design of virtual goods, assets, and avatars allows users to express themselves through a cultural lens they feel pride and connection with.

Narratives and storytelling taking place within China's metaverses could also spotlight uniquely Chinese folklore, mythology, and modern stories. Interactive learning experiences might bring Confucian classics or Ming dynasty scientific achievements to life. Using cultural sophistication and soft power benefits the nation by introducing global audiences to the richness of Chinese civilization through a digital medium people are eager to engage with. As the metaverse continues maturing, seeing aspects of Chinese culture seamlessly woven into virtual worlds will make them feel like home to domestic users. China's rich gaming culture has had a significant impact on the development of virtual realities in the Metaverse. The country has a long history of gaming, with traditional games like Mahjong and Go deeply ingrained in its culture. This gaming heritage has influenced the design and mechanics of modern virtual reality games. Chinese game developers often incorporate cultural elements, folklore, and aesthetics unique to China, creating an immersive experience that resonates with both domestic and international players. The fusion of traditional Chinese culture with cutting-edge technology has resulted in the creation of virtual realities that are both visually stunning and culturally rich.

Video games have been experiencing unprecedented growth worldwide across time. As technology has advanced, gaming has evolved as both a leading form of entertainment as well as a profitable sector stimulating economic development. Overall, the prospects for gaming continue strengthening on the backs of rising player counts, new markets, and evolving technologies. While certainly facing challenges along the way, the industry's growth trajectory looks poised to endure and even accelerate in the years ahead. For over 2 years now, the pandemic has impacted societies extensively, shifting daily habits, priorities, and technologies at the center of life. Amidst lockdowns and social distancing, digital entertainment served as a welcome escape for billions confined to their homes. Gaming platforms especially saw record engagement levels which helped sustain businesses and bring joy and connection to isolated individuals. This amplified the recognition of gaming's socio-economic value while also expanding the customer base with new and returning players. It drove the realization that online interaction nourishes important human needs.

Moving forward, the connectivity between physical and virtual worlds will fuse further through technological progress and shifting user expectations. Immersive technologies like virtual and augmented reality place gaming at the forefront of our impending interactions. Established gameplay franchises too will move boldly into new genres and platforms with each new generation of hardware and Wi-Fi standards. From ambitious virtual worlds to competitive esports, gaming culture's worldwide footprint and devoted subcultures show no signs of slowing their integration into mainstream entertainment. As the concept of the Metaverse gains momentum, China has the potential to lead the way in its development and implementation. With its vast gaming industry, technological advancements, and cultural heritage, China is well-positioned to shape the future of virtual realities. The country's innovative game developers and companies continue to push the boundaries of what is possible in the Metaverse, creating immersive and engaging experiences that captivate players worldwide. By leveraging its strengths and embracing collaboration with international partners, China can pave the way for a future where the Metaverse does indeed become an integral part of our daily lives.

Experience the immersive world of the Metaverse and discover the gaming innovations that are redefining virtual realities. Join us on this exciting journey and explore China's contributions to the evolution of the gaming industry. Let's dive into the Metaverse together!

When Fantasy Shines into Reality

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Most people know that paper and gunpowder were invented in ancient China, but do not realize that so many other things we use today, ranging from food to transportation means, have been invented by different methods.

Nowadays, Chinese tech-giants and pioneers have researched countless inventions that can affect people's lives, including high-speed rail, digital payment, online shopping, bike-sharing and so on. What's more, smart cities, metaverse, moon hotels, and flying bags are also conceivable.

To begin with, one of the new Chinese inventions is the high-speed rail. It is a type of transport network utilizing trains that run significantly faster than those of traditional rail by using an integrated system of specialized rolling stock and dedicated tracks. While there is no single standard that applies worldwide, lines built to handle speeds above 250 km/h or upgraded lines over 200 km/h are widely considered to be high-speed.

High-speed rail is the fastest and most efficient ground-based method of commercial transportation. However, due to the requirements for large track curves, gentle gradients, and grade-separated track the construction of high-speed rail is more costly than conventional rail and therefore does not always present as economical. Nevertheless, it is still a good choice of transportation for people, since it has a huge passenger capacity that can transport many passengers.

If the journey does not originate and arrive in a megacity center or an overly remote location, the time taken to use the high-speed rail plus the transfer may be similar to driving a car. However, high-speed rail is more comfortable without having to drive yourself. In addition, the frequency of high-speed rail can be higher, and the total passenger capacity is also higher than that of civil aviation, but its noise nuisance to residential areas may affect the frequency of trains at night.

The Express Rail Link connects Hong Kong to 73 stations in the Mainland, with short-distance trains to Shenzhen, Dongguan, and Guangzhou, as well as long-distance trains to more distant destinations such as Xiamen, Shanghai, and Beijing. If people transfer to other high-speed rail trains along the way, they can also travel to more destinations along the national high-speed rail network. It can go directly from Hong Kong to the Mainland so that people don't need to transfer afterwards, and just take a high-speed rail to arrive at the destination.

It is very convenient for passengers and commuters who need to travel between Hong Kong and China frequently. It provides them with faster transportation, so that they can spend less time commuting and save time to handle work. The time saved can be spent on preparing for meetings and reports which enables commuters to work more efficiently, even whilst on the journey.

On top of the invention of the high-speed railway, digital payment is also another great invention for the time being. It is the transfer of value from one payment account to another using a digital device or channel, such as a mobile phone, computer, or a credit, debit, or prepaid card. Digital payments provide numerous benefits to people.

Firstly, digital payment can reduce transaction costs. Digital payment methods have the advantage of being faster, safer, easier to collect, and less expensive for the business. By incorporating electronic payment methods into businesses' account payable process, the accounting department can realize savings on every invoice, which is a great way to keep a reliable record of one's spending.

Secondly, digital payment can secure payment transactions. Electronic payments are much more efficient and safer than their traditional paper-based counterparts. Electronic payment methods and systems offer multiple ways of

securing one's payments, such as payment tokenization and encryption. If one's phone is lost or stolen, others could not access his or her e-wallet without authentication.

Thirdly, digital payments can also save time and resources. They are much more convenient than cash or checks. People can make payments from anywhere, at any time, with just a few taps on their mobile phones. This is especially helpful for people who are on the go or do not have easy access to banks or other financial institutions.

With the improvement of science and technology and economic prosperity, electronic payment came into being and has gradually become an indispensable payment method in people's daily lives. Based on the data collected in 2021, the Bank of China processed a total of 274.969 billion electronic payment transactions, an increase of 39.744 billion transactions from 2020, a year-on-year increase of 16.90%.

It is believed that digital payment services like Alipay have significantly transformed the way people conduct financial transactions. They offer convenient and secure methods for making payments, eliminating the need for physical cash or credit cards. Furthermore, digital payment services like Alipay have contributed to the growth of e-commerce and mobile commerce industries. They have enabled individuals to easily purchase goods and services online, expanding business opportunities and fostering economic development.

Apart from high-speed railway and digital payments, online shopping is another form of Chinese innovation that allows consumers to directly buy goods or services from a seller over the Internet using a web browser or a mobile app. Online shopping is flexible. It is without time and location limited so people can shop anytime and anywhere. Consumers find a product of interest by visiting the website of the retailer directly or by searching among alternative vendors using a shopping search engine, which displays the same product's availability and pricing at different e-retailers.

Except for the flexibility, it can help people make big saves. They can save fuel, energy, as well as time when opting for online shopping. There is no need for them to move anywhere. The only thing they have to do is to tap their fingers on the phone screen. In online shopping, people can easily compare the prices of different products from different sites. Moreover, online shopping sites offer various good deals and discounts to their customers during festive seasons, which can help shoppers save much money.

Looking at it in whichever way, shopping online is convenient and suitable for slothful people. I believe that if we use online shopping apps intelligently and carefully, it will be a great choice for us. Besides, I assume the online shopping model will be soon promoted all over the world because people are more inclined to shop online than in physical stores, which has saved a lot of hassle, as well as making people more willing to shop.

Aside from that, bike-sharing is another Chinese innovation that is currently in effect. It refers to a shared transport service where bicycles are available for shared use by individuals at low cost. In July 2020, Google Maps began including bike share systems in its route recommendations. The programs themselves include both docking and dockless systems, where docking systems allow users to rent a bike from a dock, a technology-enabled bicycle rack and return at another node or dock within the system – and dockless systems, which offer node-free systems relying on smart technology. In either format, systems may incorporate smartphone web mapping to locate available bikes and docks. Bike sharing can alleviate urban air pollution and reduce road congestion during peak hours in the morning and evening. Plus, using shared bicycles as a daily commuting tool can help users increase daily exercise volume of the citizens.

The aforementioned four inventions are the examples of innovation found in China. What about the inventions that may be found in the future? Read on to find out more.

One of the possible future inventions in China would be the smart glasses. They are eye or head-worn wearable computers that offer useful capabilities to users. Many smart glasses include displays that add information alongside or to what the wearer sees. Smart glasses perform different functions, for example, they can add events, map navigation, interact with friends, take photos and videos, play music, start video calls with friends, and other functions through voice or motion control. In addition, it comes with a real-time translation feature that translates more than 100 languages. Users can also see real-time subtitles. For instance, when one finds the professor's or teacher's English too fast and hard to understand, he or she can start the instant translation to translate what they have heard into their native language on the smart glasses. It is especially convenient for international students who are studying abroad as they tackle the language barrier between teachers and students.

Other than the invention of the smart glasses, another Chinese invention that may appear soon is the flying bag. Flying bag is a bag that can make people fly. Yes, you read that right. When people get in the flying bag, they can fly. The bag resembles the equipment and parts of the aircraft, including the turbine engine. As most of the land in the future world may be covered by water, people in the future may have to go from one place to another other by travelling in the sky. When people carry this bag on their back, they can effortlessly fly in the sky. On the assumption that this magical tool is produced, humans can realize the dream of flying in the sky. It is exciting and people are already anticipating for its coming. If people got this terrific tool, they would be able to smoothly fly in the sky as freely as a bird. Who would not want to own such a dreamy backpack?

Besides smart glasses and flying bags, it is also possible to have floating cities in the future. Traditional cities often face limitations in terms of available land for expansion. The presence of floating cities can help solve the problem. The idea behind floating cities is to create self-sustaining communities that are designed to float on water bodies such as oceans, rivers, or lakes. On the one hand, floating cities are a potential solution to various challenges faced by coastal regions due to rising sea levels, overcrowding, and the threat of natural disasters. On the other hand, floating cities can utilize the vast expanse of water bodies, allowing for the creation of new living spaces without encroaching on valuable land areas. With the increasing threat of rising sea levels due to climate change, floating cities provide a solution that can adapt to changing water levels. They can rise and fall with the water, mitigating the risk of displacement and providing a stable living environment for residents.

We will not only find floating cities, but also moon hotels in the near future. The rapid advancements in space technology, robotics, and spacecraft capabilities have made the idea of a moon hotel more feasible. These advancements have reduced the cost of space travel and increased our understanding of the lunar environment, making it more attainable to envision human habitation on the moon. The moon hotel would be situated on the surface of the moon, offering breathtaking views of the lunar landscape. Guests would have the opportunity to observe the Earth from a unique vantage point and witness the beauty of the moon's craters, mountains, and vast open spaces.

By establishing a moon hotel, the focus of human activities and potential environmental impacts could be shifted away from Earth. This could contribute to the conservation and preservation of Earth's ecosystems, as well as provide insights into sustainable practices and technologies that could be applied on Earth.

The outbreak of the COVID-19 pandemic has forced humans to rethink how we teach and learn. The metaverse, a 3D digital space mixed with the real world and the virtual world, has been heralded as a trend of future education with great potential.

The application of metaverse education can be very wide, including language learning in the virtual world, historical investigations, and scientific experiments. For example, in language learning, students can learn language knowledge and skills through scenes and characters in the virtual world. When learning English, students can enter a virtual English environment, talk to virtual characters, read English articles, and listen to English music, so as to improve

students' language communication skills, listening, speaking, reading and writing skills, and understanding of language and culture.

Metaverse consists of many applications, especially in education. Metaverse has a virtual classroom that is 3D, in case people can see some dioramas and brain maps to make the presentation of knowledge clearer and more complete. For example, the metaverse enables people to observe and understand the structure of human cells in a comprehensive and detailed way, and can also observe mutated cells in the form of three-dimensional animations in biology, which helps people to understand the structure of cells and the process of mutation from more aspects, as well as studying more previously undiscovered biological knowledge.

In terms of history, the metaverse can also present historical stories in a holistic manner, so that the historical episodes of ancient times seem to be placed in front of them so that students can truly immerse themselves in history and better comprehend historical knowledge. In addition, there is a certain error between the geographical location in the historical map and the actual location in ancient times, so people cannot know the real location of the historical building and observe its details. Nonetheless, if there is a metaverse, people can be in the middle of a historical building, and observe the details that are missing from multiple angles.

In addition, it can also indirectly expand the curriculum, because modern technology is not developed enough, people learn knowledge to rely on the research of the ancients, but those research materials are not comprehensive, or there are some flaws and omissions, therefore, the metaverse support to help people develop unexplored fields, or supplement and improve the loopholes of research through the comprehensive display of knowledge.

It is believed that the metaverse can also make students more willing to learn and absorb knowledge because it has the function of allowing students to learn knowledge while exploring. As a result, students are engaged and learn in a playful manner. Dull lessons will become interesting, and students will not have to sit in their seats and wait for the school day to end.

Looking to the future, Chinese technological advancement is expected to continue at a rapid pace. The country's commitment to innovation, significant investments in research and development, and the continued growth of its tech companies indicate a promising future. Chinese advancements in AI, quantum technologies, space exploration, and other areas are likely to shape global technological trends and contribute to economic growth and societal transformation. Collaboration and partnerships with international counterparts will be crucial in facilitating the exchange of knowledge, fostering innovation, and addressing global challenges.

China's Inventions

SKH Tang Shiu Kin Secondary School, Chan, Kyle – 17

Mobile payment refers to a payment behavior in which users use mobile terminals (including smartphones, tablet PCs and other mobile tools), access communication networks or use short-distance communication technology to complete information interaction, so that funds are transferred from the payer to the transferee.

China has become the world's largest mobile payment market, with a leading position in terms of mobile payment user scale, transaction scale and penetration rate. In today's China, whether it is the urban agglomeration in the north or the remote countryside in the west, mobile payment such as cell phone "Sweep" has become one of the most commonly used means of payment in daily consumption such as catering, shopping, transportation and medical care.

With the increase in the penetration rate of smartphones, the decrease in the cost of mobile data access, the continuous improvement of government regulatory policies, and the increasing purchasing power of the people, mobile payment has developed rapidly, integrating and innovating with related technologies and business models, resulting in a wide range of mobile payment services, which have provided people with a convenient, safe, and rich way of consumption, accelerating the development of China's digital economy and the process of digitalized life.

1. The development of China's mobile payment market

Today, mobile payment has changed people's lifestyle in ways that were unimaginable a decade ago. Ten years ago, payment methods were mainly cash and card payments. 2000 to 2009, domestic operators, commercial banks and third-party payment institutions have made a lot of efforts to explore mobile payment, but because of the conditions in all aspects are not yet in place, the mobile payment business and the scope of application did not realize the quantitative leap, and it is difficult to significantly expand the market scale.

In June 2011, the central bank issued third-party payment licenses, and 27 companies, including UnionPay, Alipay and Caixit, were granted licenses and became the first licensed payment institutions in China. In the summer of the same year, with the emergence of taxi software, the small and high-frequency application scenarios matched with mobile payment products, and mobile payment gradually penetrated into people's daily life, and taxi payment became the first popularized area of mobile payment. During this period, smartphones began to be popularized in the market, the differences in mobile payment technology were basically eliminated, mobile payment application scenarios were promoted, and mobile payment entered the period of market development. Enterprises with mature payment technology and a large number of users showed positive development, and through continuous innovation and application, they not only adapted to the market needs, but also created market demand, which contributed to the growth of the mobile payment market.

In 2013, Alipay launched the "Balance Treasure" program, opening the way from mobile payment to universal financial management. The launch of "Balance Treasure" has increased the user stickiness of Alipay and opened a window for ordinary people to manage their finances, allowing many people who did not think they needed financial services to take the initiative to manage their finances and realize the preservation and appreciation of their wealth.

In 2014, WeChat launched the WeChat red packet function, which pushed WeChat payment into a rapid development channel. In December 2015, China UnionPay launched the "cloud flash payment" product, in February 2016, Apple Pay officially entered the Chinese market, and Samsung Pay was launched by Samsung in March of the same year, while Xiaomi Mi Pay and Huawei Huawei Pay were officially launched in August. Samsung Pay was launched by Samsung in March of the same year, and Xiaomi's Mi Pay and Huawei's Huawei Pay were formally launched in August, with commercial banks and cell phone providers joining the mobile payment camp on the basis of their user bases.

There are currently a large number of third-party mobile payment companies in China, but those that are closely integrated with the digital scene are doing better. Relying on Alipay and Mobile Taobao, Alibaba has opened the way to mobile payment based on mobile e-commerce, while Tencent has rapidly entered the mobile payment market with WeChat Pay through its WeChat instant messaging application. According to the research report, Alipay and WeChat occupy the absolute share of China's third-party mobile payment market, reaching 92.53%.

2. Mobile Payments Born Out of Momentum

Mobile payment technology, as the most important innovation element on the supply side, has aroused the public's need for new payment methods. The demand for convenient and secure payment in the huge Chinese payment market has accelerated the integration of mobile payment technology with the market.

The mature application of remote payment and near-field payment technology is the main technical driving factor for the rapid development of mobile payment, which not only guarantees the security of mobile payment transactions, but also promotes the simplification of mobile payment procedures. Remote payment is mainly network payment, which is mainly based on the Internet and realized through online banks or third-party payment platforms. 5G mobile communication technology, which is still in the preliminary application stage, will provide more possibilities for remote payment innovation. Near-field communication interaction technology plays a key role in the development of near-field payment. At present, the technical realization of near-field payment mainly includes barcode payment technology, NFC, face swipe payment, sound wave payment and other major solutions. From the perspective of the development results in recent years in China, barcode payment has become the mainstream.

The development of mobile payment has fundamentally changed the traditional payment mode. Driven by the development of the Internet, mobile payment has provided new impetus for economic development and improvement of people's livelihood.

Promote the transformation and upgrading of traditional industries. Mobile payment not only changes the payment method, compared with traditional payment methods, but also shortens the time loss of the payment process, reduces the cost of "trust" between people, improves the efficiency of payment services, and innovates a variety of payment business models, which brings not only the flow of funds to the main participants in the market, but also the flow of talents and logistics attracted behind the funds. It brings not only capital flow to market participants, but also talent flow, information flow and logistics flow attracted by capital. Mobile payment covers all industries in society, deepens the intersection of various advanced technologies, promotes the transformation and upgrading of traditional industries, and is a gas pedal for China to build a moderately prosperous society in all aspects.

Efficient and convenient mobile payment gives people a greater sense of "access". The development of mobile payment with Chinese characteristics is in line with the people's livelihood and the wave of social development, and to a great extent breaks through the limitations of time and space on the payment industry, and its portable and simple payment characteristics meet the people's demand for cash-light and efficient life, and enhance the people's sense of well-being. While changing people's payment life, mobile payment has also entered the field of public services, helping to improve the efficiency and quality of government public services, so that the public can do less errands, less queuing, or even do not have to run once.

3. China's Mobile Payment Ecosystem

From the QR code payment in supermarkets and convenience stores to the instant recharge of phone bills, from the cell phone purchase of train tickets to the password-free payment of online car travel, etc., mobile payment is subconsciously integrating into the lives of the public, making daily consumption more convenient, fast and hassle-free. Mobile payment has spread its tentacles to various industries and involves several parts of the economy and

society.

3.1 Government and People's Livelihoods

Mobile payment has an inherent advantage in enhancing the government's digital governance capability, effectively improving the intelligence of government services, forming a benign interaction among the government, enterprises and the public, and using mobile payment as an entry point to achieve a one-network, complete identification, business processing, and fund flow, forming a closed loop of the entire business. For the public, the value of the program is that it reduces the burden of action, and by using technologies such as online application, face recognition, and mobile money transfer, they can complete procedures that would otherwise require them to run through multiple government windows without leaving their homes. For the government, the value is: moving all government affairs to the cloud, making them more transparent, more open and more honest; cracking data silos, integrating data from departments such as industry and commerce, taxation, labor insurance, environment, safety supervision and fire prevention, etc., and realizing data integration within the governmental affairs system.

3.2 Medical services

The combination of mobile payment and medical service will, to some extent, indirectly affect the reform of the medical industry. China's high-quality medical resources are generally scarce, the traditional medical process is cumbersome, difficult to register to see the doctor and other problems have been accumulated for a long time, medical services access to mobile payment application services, can greatly save the doctor and patient consultation time, enhance the efficiency and level of medical services. At present, there are two application scenarios of mobile payment in hospitals, namely: the user prints the medical guide sheet at the hospital self-service terminal, and completes the payment by actively scanning the QR code; the user pays the fee at the hospital fee window, and the fee collector completes the payment through the scanning equipment by scanning the QR code. In the future, through mobile payment to create a smart version of medical health services, you can move the registration, diagnosis and treatment and payment processes to the line. Early booking, online calling, first see the doctor and pay later and other modes, will effectively solve the previous difficult to register, queuing for a long time, slow payment and other problems, to enhance the comfort of medical treatment, to ease the relationship between doctors and patients.

3.3 Transportation

At present, mobile payment facilitates transportation, mainly in three aspects: First, the bus and subway to realize the scan code ride. In many cities, code-sweeping has gradually become another major way for citizens to pay fares. In addition to bringing passengers a convenient and efficient travel payment experience, this application can also help the Internet transformation of public transportation agencies and promote the upgrading of the business model of the public transportation industry. Second, highway toll payment. By binding the third-party mobile payment account with the license plate number, the system automatically recognizes the license plate when the vehicle owner crosses the highway intersection and automatically deducts the payment directly from the third-party payment platform without arranging manpower to collect the payment. This method can not only improve the traffic efficiency of the highway, but also enhance the smart attributes of the city. Third, parking lot charging. Through automatic license plate recognition and sensorless payment technology, parking lots have opened up businesses such as "Stop Simple", without the need for manual time charging or the installation of charging equipment at the entrances and exits of parking lots. In addition, the mobile payment portal can also provide the service of reserving parking spaces, and even open up the data interoperability between shopping mall consumption and parking fee waiver, so as to realize the effect of promoting consumption through parking.

4. Risks to the development of the mobile payment industry

4.1 Technology Risks

The technical risks of mobile payment mainly include technical security risk and technical system risk. Technical security risks are mainly reflected in the cracking of payment passwords and leakage of user information; technical system risks include system vulnerabilities in the payment process and improper system protection of payment funds. As the main carrier of mobile payment, cell phone is prone to theft and loss, and there are certain risks of payment information leakage and loss of payment account.

4.2 Control system risk

The risk of the control system of mobile payment mainly includes the internal control system and risk warning mechanism. As an important part of the financial industry, the internal personnel of an organization needs to have high moral quality, the ability to control and manage large amounts of funds, and the ability to master financial laws and regulations. Secondly, the industry has not fully established a mature and unified risk warning mechanism, and the ability to grasp unknown risks is still lacking.

4.3 Industry Regulatory Risks

In the past ten years, China's mobile payment has gone through a phase from initial emergence to rapid development. However, due to the late development of China's mobile payment and its rapid development, the relevant laws and regulations in terms of state supervision are still not perfect. Regulators have issued some supporting laws and regulations, but compared with the rapid development of the industry, there is still a certain lag in leading the industry rules.

The State of Invention in China

SKH Tang Shiu Kin Secondary School, Cheung, Ka Chun – 16

Since the dawn of time, innovation and discovery has been a staple of human evolution, from something as trivial as the new iPhone to the revelation of fire, all bringing us one step closer to the increasingly prosperous and sustaining society that we so desire. The Chinese people, being one of the oldest remaining civilisations with over 5000 years of history, is a major contributor to the lifestyle we have today, developing and bringing many modern possessions to life that were fantasies in the past.

Tsai Lun of the Han dynasty used rags and other textile wastes to form a smooth fabric semi-permeable to ink which eventually develops into paper, allowing a more efficient way to document and store information, transforming knowledge from being the sacred treasure of the rich to common wealth for the people, single handedly open the doorway to a more inclusive and larger scale of education, and to this day, is still crucial in reading, writing and other cultural activities. Wei Boyang of the Eastern Han dynasty, famed as the father of alchemy, in search of an elixir to extend life, discovered gunpowder which led to the death of billions and millions more to come. But behind the warfare and bloodshed brought by its destructive capabilities, it could also be considered a blessing as with it land can be terraformed and reshaped for a much cheaper cost, allowing infrastructure such as railways to be built with ease and creations like fireworks to sprout into existence.

These are all familiar stories we've encountered in our childhood, though all existing in the form of chronicles, the wisdom and creativity of our ancestors are apparent, helped shape the world into what it is today. The contributions our civilisation have made are undeniably grandiose and are recognised through these achievements. However as time passes, many have started doubting whether those spirits have been inherited, and if we currently bear the same insight in our blood. These allegations are of course inaccurate, but it does beg a question, what has China accomplished in recent years?

When discussing inventions that are most impactful, many may turn to technological aspects. We are living in an age of science where the internet is most prevalent after all. While many may think that China is inferior to other superpowers such as the US and Japan in terms of technology, that is a false perception that is far from the truth. In recent years China has made many advancements in fields such as automations, engineering and architecture. A research team lead by Pan Jianwei, a leading scientist in China's national quantum research programme, developed a quantum computer by entangling many ultra cold atoms that can solve extremely complicated math problems in just a millionth of a second, achieving a millionth-fold increase when compared to its predecessors, being the fastest computer on earth. Something on a much grander scale would be the BeiDou Navigation Satellite System developed by the Chinese government with aims of improving the national security and aiding social economic developments with it providing all time, all weather and high accuracy positioning, timing and navigation services. Though impressive, they are difficult to relate as they hardly involve with our daily lives, one that is and does bring convenience in our everyday ventures is the switch from cash to recently developed electronic payment systems through third party apps like WeChat Pay and Alipay. This removes the hassle of going to a bank and allows payment and money related problems to be taken to technology and social networks. Though there may be concerns with hacking and fostering a more parasocial lifestyle, it's a sign of a modern change in preparation for an era where our lives will be more closely intertwined with our online personas.

Other than that, China has also made many medical breakthroughs in the past tens of years like the development of artemisinin from *Artemisia Annua*, a cure to malaria, lead by professor Youyou Tu who obtained the Nobel Prize in Physiology and Medicine in 2015 for her discovery. Another important breakthrough is the invention of the prion protein monoclonal antibody therapy for the Creutzfeldt-Jakob disease which is the first in-human treatment programme of its kind, paving the way for prospects of similar solutions for other conditions. These achievements are impressive, but China have only gone and improved its efficiency and effectiveness as shown by the China National

Pharmaceutical Group inventing the Sinopharm vaccine in under a year after the initial outbreak of Covid-19 which was a speed thought to have been impossible just a few years prior.

China has also done a lot in the entertainment industry, producing enjoyment through different mediums and causing waves in the video game industry, namely Pubg mobile from Tencent Games, which for a while was one of the most popular games and often attributed as the cause for the rise of battle royals games, giving gamers a more competitive, exciting and engaging gaming experience. And on the other hand genshin impact, a game developed by Mihoyo with a much more relaxing and laid back gameplay, which grabbed players heart with their interactive story quests and interesting characters with fun personalities. It being an open world multiplayer online role playing game, is hailed as the one that brought the rise of gacha games, a new type of video game which encourages its player to spend money on it to pull for characters with attractive or cool designs. It is a massively popular game as shown by comparing the revenue of Genshin Impact to that of playstation, with Genshin winning by 400 million. Video games aren't they only area China has branched out to as Chinese comic or their official name "manhua" has been receiving more and more attention from foreign countries and some have even been animated in the form of "Donghua" like "link click" in face of demand, opening the industry to a much larger audience. And of course how could we forget TikTok, the problem child of the internet riddled with controversy, yet despite its bad reputation, it still maintains a staggering 1.1 billion monthly active users, being a platform for people to post, share and enjoy short form content, giving people an opportunity to express themselves or even become an overnight celebrity, and to communicate with other influencers.

These projects are of course all funded by the government or large companies but individually, innovation is also blooming . The amount of patents registered by Chinese personals increases every year substantially, reaching 49 % of the worlds total amount of patents. This shows that as a country, people are more motivated than ever to design and to innovate, the spirit of creating something new beneficial to society still exists no matter where it originated from, being inspired by online mediums, having aspirations of reaching the level of precursors or even to become a pioneer of a new age. It is not loss, rather something that is able to nurture and grow as we receive more resources and guidance.

Then, why does it seem as if we've hit a wall, that we have hardly any momentous leaps in our modern developments? Everyone has creativity, but nobody has perfect information, in this day and age where scientific improvements are revered, it begins to stem further and further away from our daily lives, to the point where some mind boggling discoveries made by combining the minds of several masterminds will never be encountered or understood by the average person. Basically, so much has been done that it feels like anything new is ordinary. So the concept of innovation has changed along with it, reshaping from inventing, to refining. To apply new concepts to already made products and enhancing their use and quality. It is not that innovation has began to diminish but that we are so accustomed to choice and comparison that we fail to recognise the small modifications made to further our experience. Like paintings from proficients artists, it's only when we push past the usual, that we could see the sparks of genius involved.

The landscape of inventing, with the implementation of several laws and copyrights, coupled with huge business opportunities, it has become competitive and relentless, it is times like this that we forget our original drive for invention, pushed by our own desire to produce something that encapsulates our imagination. Inventions are visions we have for the world, we leave them behind as meaning for our existence ,not just as a way of income or for others indulgence. So when we delve into tales of China's invention don't just ponder about their practicality , admire their dreams and motives, as we await for more to come.

The Great Inventions

SKH Tang Shiu Kin Secondary School, Ng, Chi Ying – 15

From the Heavens, I watched in awe and wonder as the centuries unfolded beneath me. I, Cai Lun, the ancient Chinese inventor of paper, had always thought that the innovativeness of my people would never cease. As I gazed down upon the world, the beauty of the Chinese spirit unfolded before my eyes.

It all began with the humble invention of paper, my own creation. I remembered the moment vividly, the feeling as I ran my fingers through the delicate fibers, the notion that this simple material would change the course of history. From the embers of my kiln, I had forged an innovation that would endure for millennia and shape the progress of the world.

As I watched the ebb and flow of history, I marveled at the ingenuity of my fellow countrymen. During the Tang dynasty, the artistry of woodblock printing unfurled across the countless scrolls, manifesting knowledge in a way that was previously unimaginable. It soon found its way across Asia and beyond, igniting the flame of wisdom in every corner of the globe.

Then, the intoxicating scent of gunpowder filled the air. Invented not long after my own contributions, it was a revelation that resonated far beyond the Middle Kingdom. The explosive mixture, transformed into a weapon of war, propelled empires and shaped the destiny of nations. As the Europeans laid claim to its power, they built empires and reshaped history, all with the aid of a substance born from the depths of Chinese innovation.

Amidst this cascade of change, I witnessed the elegant mastery of Bi Sheng's movable type during the Song dynasty. The method by which knowledge could be disseminated had irrevocably changed, as the written word began to echo across the nascent empires and burgeoning cities. The impact of such a creation upon the minds and societies of the world was immeasurable, for it rattled the chains that bound thought and spurred the undying hunger for knowledge within the hearts of men.

As I observed these inventions, which sprouted from the fertile soil of Chinese innovation, my heart swelled with pride. The whispers of history sang through the annals of time, highlighting the prowess and resilience of my people. We had carried the torch of knowledge throughout the ages, etching our legacy into the fabric of human advancement.

But as the centuries surged forward, the panorama before me crescendoed into a disheartening vision. Amongst the accomplishments of the past, the present waned, obscured by the pervasive allure of digital fantasies and virtual realities. The children of my children's children had become ensnared in a realm of pixels and screens, relinquishing the pursuit of new discoveries for the sake of transient entertainment.

In the wake of this revelation, a sorrowful lament escaped my lips. How had the exuberant spirit of innovation been dimmed? The monuments to ingenuity that had once risen from my homeland, the monuments that had testified to the ceaseless pursuit of knowledge, now stood neglected and maligned, shrouded in the apathetic fog of fleeting distraction.

I mourned the disparaging disregard for the treasures of our past, for the lineage of genius and triumph upon which these young souls tread. The Chinese spirit, steeped in the ink of ceaseless innovation, was dishonored by the neglect of its heirs. The echoes of our continuous contribution to the march of progress were but faint whispers in the ears of the heedless.

Yet still, amidst the sorrow and longing, my heart beat with a resolute pride. For even as I witnessed the descent of the present, I remained enfolded in the splendor of the past. From the cradle of Chinese civilization to the zenith of global influence, we had sculpted the course of history with the strokes of our unyielding creativity. The inventions that

burgeoned from our land, from the velvety touch of paper to the explosive embrace of gunpowder, had threaded the tapestry of human civilization.

It was in this dichotomy that my spirit found solace and purpose. I recalled the immortal words of Laozi, who had once said, "A journey of a thousand miles begins with a single step." The path ahead may have been shrouded in uncertainty, but as I peered into the heart of China, I caught a glimpse of the unwavering ardor that beat within its soul—a fervor that would endure, inspiring the generations yet to come.

The endeavors of our ancient ancestors and forebears had kindled the flames of innovation and curiosity. And while the present waned, the legacy of the past emboldened me to believe that the Chinese spirit, an unquenchable fire that had sparked the imaginations of nations, continued to endure.

In the end, as I gazed upon the panorama of history, I found myself both grieving and exulting. The lamentations of the present were juxtaposed against the soaring crescendo of a rich and storied past. The Chinese people, perennially creative and insatiable in their pursuit of knowledge, had indelibly etched their mark upon the annals of time. And as I watched from the Heavens, I knew that the spirit of innovation, impulsive and enduring, would forever course through the veins of my countrymen, whispering tales of boundless discovery and the ineffable beauty of creation.

The Greatest Country of Inventions

SKH Tang Shiu Kin Secondary School, Ng, Dick Hei – 15

In the rich tapestry of Chinese history, many different items or tools were invented in different dynasties to assist people in making their everyday lives more convenient. Can you name one or two of them? For example, paper was made in Han Dynasty to make writing more easily recorded.

Nowadays when we turn on our mobile phones and press the app of Google Map, have you ever noticed there's a vane-like icon on the top right corner of the map? It is none other than compass, one of the greatest inventions of ancient China. The invention of compass was firstly recorded as a lodestone compass, made by iron, in Han Dynasty. It worked using the principle of magnetic field from the South Pole, and as a consequence, it differed from the modern one, which has a red vane pointing to the north. Yet, due to the weak magnetic force, it was then altered to a water-floating compass, and finally to a modified one in Song Dynasty. Since that dynasty, compass has been widely used in different sectors, mainly in the navigation of ships, thus boosting the marine trade between China and western countries. Through trade, the technology of making compass was passed to Arabic countries or even western countries for military purposes, laying a foundation of making navigation system. In the twentieth centuries, many of them have been changed to mercury or digital ones, becoming more and more precise and accurate in showing the direction with degrees.

Have you ever seen a paper-like version of a compass in a story book when you were still children? It is a map, showing the whole world in a two-dimensional way, and it is made of paper. A long time ago, ancient people usually wrote on the shells of tortoises, bamboo and even rocks, yet the markings on it cannot be erased and even fade away when coming into contact with water, causing troubles for people to write. Until Han Dynasty, a man called Cai Lun invented paper-making by boiling the cut trunks in a pot of water. When writing with an ink brush, the ink could reveal itself on the paper completely and readers could clearly see the words on the paper. Also, by writing with paper, the cost of production would be lower and transportation of law books to the emperor would be more convenient because of its lightness and thinness. Owing to these reasons, the technique was soon approved by the emperor and spread throughout the whole empire, and as far as to Arabic countries and western countries, leading to the printing and production of books.

Have you ever discovered the formulaic font in a book when flipping through it? It is certainly impossible for human beings to write down each alphabet letter in the same size and shape. Then, how come the writings look identical in books, newspapers or other publications? Right, it's printing, the technology of copying a word, sentence, paragraph or even an article of the same font and leaving the writings on a paper. Long long time ago, there was already printing technology in ancient China, where the civilians carved their writing on a piece of wood or stone, dipped into ink and pasted it on a paper. This sounded great but it actually caused a lot of waste and time loss. For instance, when a worker mistakenly carved a wrong word, the whole paragraph was going to be carved again and again until there were no flaws, resulting in high-priced books. In Song Dynasty, Bi Sheng who was an engineer, invented the first movable type which was like a pile of seals having one word on each and they could all be put in different sequences. Thanks to this great scientist, the invention of movable type has greatly enhanced the efficiency of printing and lowered the production cost of books. After a few decades, following the development of the Maritime Silk Road, the technology of the movable type spread to a lot of countries, leading to the foundation of the invention of the modern printer.

'Ten, nine, eight...three, two, one! Happy New Year, 2024!' It is certainly how everyone celebrated the countdown on the last day of each year. Following the closing of the countdown ceremony, it is the fireworks show. Have you ever thought about what makes up such beautiful fireworks? It is composed of a kind of explosive chemicals -- gunpowder. In Tang Dynasty, gunpowder was listed in a book by Chinese alchemist. It was a sort of chemical created with the mixture of sulphur and other flammable or oxidising substances in order to create an explosion which can be small to burn one's hands and be big to ruin one's house. Till Song Dynasty, the third time to appear in this text, a man who was fond of astronomy tried to tie himself to a chair with some fireworks-like items. At first, everything was

on the right track but it soon exploded and sent him up into the air. Sadly, the man died, but his unprecedented act and courage inspired many people to invent different kinds of weapons, such as guns, cannons, and bombs. Due to these inventions, the Song military won a lot of battles against the enemies. As mentioned before, when the Maritime Silk Road was opened, innumerable westerners came to China for deals and trade. Over time, those fire weapons were shipped to European countries and were improved in both accuracy and strength. Miserably, the western empires were too ambitious to use them to devastate African or other less developed countries and turn them into their colonies for exploitation of natural resources and labour so as to enhance their empires' prestige and status. Nevertheless, on the positive side, gunpowder can help open up a hole for mining, which greatly reduces the manpower and time for digging as well as increases the efficiency and productivity. To cut a long story short, whether gunpowder is good for us, it depends on how people make use of it.

It is time to introduce some other inventions that also originated in China.

While you are flying on a carpet travelling over the city, there is always a loud sound dragging you out of your fabulous dream to reality. It is the clock which comprises various components. In Tang Dynasty, there was a man called Yi Xing who thought of using water to boost the rotation of gears of a clock, named as water clock consequently. The idea was further modified and became the first clock in Europe.

Following water, rain is always accompanied with it. Have you ever thought of how the ancient civilians avoided getting wet? Long time ago in China, people had already known oil and water could not be mixed together. Thus, making use of this property, they created the oil umbrella which could help themselves to prevent from getting wet. They soon invented foldable umbrella which can be flipped to save space and be portable when going out. The design has become the foundation of both modern umbrella and the automatic one.

Without a doubt, China is a country full of imagination, creativity and talent, laying the foundation for a number of modern inventions and technologies. As you can see, after entering the era of twenty-first century, China is gradually gaining power and rise in status and influence, becoming a world dominating figure to its surrounding or even farther countries. As the saying goes, 'no pain, no gain'. Since there have been such a large number of talented inventors or scientists in China who have invested their lifetime to delve into the world no one has ever seen, China became more and more well-known as an epitome to people from all over the world.

Impressive and inspiring stories of 'The Chinese Heroes'

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Have you ever gained deep insights into the breakthroughs and the achievements made by our Chinese inventors in days of yore? It is natural to neglect and ignore the original process of how the products we use nowadays are invented, as the living standard of people has been raised significantly and our lives have become much more convenient, thanks to the advanced technology nowadays. Hence, I believe that the contributions made by our “Chinese heroes” aren’t widely recognised by the general public. In fact, there is a rich history of Chinese innovation. You might not notice that civilization flourished continuously in China from about 2000 BCE, when the first of the historical dynasties emerged. It is known that with more than four thousand years of recorded history, China is the oldest continuous civilization of the world. It is extremely amazing, isn’t it? Chinese civilization is often described as an unbroken thread stretching back thousands of years, making it one of the cradles of civilization. Until now, after the continuous development and improvement of the inventions by the Chinese inventors, they can certainly influence the world, altering our life styles.

The significance and impact of the remarkable discovered by the Chinese inventors are impensable and unimaginable. The most well-known inventions are paper making, printing, gunpowder and the compass, which is the four great inventions of ancient China. They are the significant contributions of the Chinese nation to world civilization. For example, the recipe of making gunpowder which is the mixture of potassium nitrate, charcoal and sulphur was discovered by the Chinese alchemists in the 9th century CE. This marked the important milestone of the technological development of the whole world. Moreover, it has shaped the styles of warfare at the time while resulting in massive political and cultural change in Europe and beyond such as the eventual collapse of feudalism and the Siege of Constantinople. Besides, porcelain which is renowned and famous for its beauty and durability represents a uniquely traditional Chinese style of innovation. China dominated for the production of the porcelains, and they were traded across Asia to different countries during the Silk Road, spreading the Chinese culture towards the world and had established a worldwide reputation. Furthermore, it inspired the development of tin-glazed earthenware in present-day Iraq in the 9th century. All these had shown the talents of the Chinese inventors to invent such an influencing and essential innovation, indicating the impressive achievements of the inventions in China.

So you may be curious about who is the prominent Chinese inventors and have made such a significant contribution in various field? Firstly, created his most intriguing design almost 2000 years ago, Zhang Heng is regarded as Leonardo Da Vinci of ancient China and marks the beginning of the science in the field of geophysics and seismology. The seismoscope consisted of a bronze vessel with eight dragon heads, each holding a ball in its mouth. If earthquake occurs, the balls in the dragon heads will fall. By observing which ball in the dragon was dropped, Zhang Heng knew the direction of the seismic waves. Although the difficulties and obstacles he faced at that time might not be well-documented, I believe that there must be an accumulated and uncountable failures before success. In the past, he had used the available materials and resources to designate the seismoscope, which had been scarce and limited compared to the modern benchmarks, posing challenges for the invention. In addition, the lack of technological advancements on that occasion made the the process of doing experiments and inventing be much more strenuous. He needed to use his own creativity, imagination and ingenuity to overcome the obstacles. Despite the hurdles he encountered, Zhang Heng demonstrated his perseverance and innovative spirit, showing science needs the ongoing inquiries and a critical thinking mindset. His invention has continuously inspired the scientific and technological advancements nowadays, as well as making contributions to the world by having earlier notifications of earthquakes, preventing the negative impacts and the potential risks on human, society and the environment.

Did you know that books in the past were handwritten on wooden boards or bamboos? Therefore, it is hard to imagine that how much time needed to be devoted to the production of books. The time consuming and limited in terms of flexibility production method led to the inefficiency of the work. Yet, created in the 9th century and known as a vital heritage, the Movable Type, which changed the way printing was done originally, was invented by Bi Sheng.

He thought it was of the paramount importance to alter the way of printing and made the price of getting the books more affordable. This contributed to the development of the printing technology and reduced the mistakes made while printing and duplicating the words, facilitating the efficiency of mass production. In the Movable Type, there were several duplicate types for each character, and twenty or more types for certain common characters, in the hope of preparing the repetition of the character on the same page. In spite of his groundbreaking contributions to the advancements in technology, he invented the Movable type to help preserve the knowledge, making it more accessible to a wider audience and for the future generations. Moreover, this benefits the poor to have a greater opportunity to learn and study, achieving opportunity equity. It nurtured the development of literature, creative ideas and science, leading to the sharing of knowledge and information. Consequently, it not only revolutionized the method of printing, but also played a crucial role to spreading education and literacy to the world, as well as human knowledge and culture.

Do you think that the invention and development of the compass are very mighty and noble? Actually, tracing back to ancient China during Han Dynasty, Chinese inventors discovered the natural magnetic properties of some minerals and magnetite. By the 11th century, a significant achievement was made by replacing the device with a magnetized needle which was marked with directional indicator, shifting it to magnetic needle compass. These Chinese inventors exhibited a strong sense of curiosity about the world around them, contributing to have more chances to discover a principle and set up a hypothesis by observing and exploring the things around the world. It is believed that their commitment to observing and questioning the world allowed them to make noteworthy advancements in their respective fields.

Furthermore, why the Chinese inventors are just like heroes? It is because they have a desire to solve problems and improve existing systems, aiming for improving the living standard of the citizens in the world and making a lasting impact on the human civilization. An ancient Chinese inventor said that, “When the winds of change blow, some people build walls and others build windmills.” It shows that the Chinese inventors always embrace changes, are dedicated and determined to improve, as well as building a better world. They must need to face the challenges like the opposition and the existence of distrust of many people who build walls to refuse their ideas. It is brave of them to insist in their own thoughts and endeavoured to build windmills to facilitate the rate of the wind speed. Instead of resisting or fearing changes, they still harness their energy and convert them into something productive and useful which might be a catalyst for growth and innovation. This shows that the Chinese inventors are open to new possibilities, willing to take risks, and use change as the chance to pursuit knowledge and innovations. As they persevered through adversity and limited resources to create a groundbreaking inventions, there is no doubt that their resilience in the face of hurdles make them an inspirational figures, icons and role models for everyone, as well as a source of pride for the Chinese people. They deserved to be respected and admired.

In addition, Chinese inventors not only excelled in science and technology, but also made a far-reaching impact in art and culture. Inventions such as traditional painting skills and paper cutting contributed to the rich artistic heritage of China and influenced artistic traditions around the world. They made the spirit of innovation, creativity and perfectionism deeply rooted in our Chinese culture and their accomplishments led to the national identity of China. Moreover, the Chinese inventors in the past have tremendously inspired generations of inventors in the world. Laying a foundation for further developments for the study, their inventions have paved the way for the stronger connection between the East and West countries through cultural exchange as many of them were traded and introduced to the West to revolutionize the communication. Therefore, they are truly the heroes who are inspiring and altruistic.

Chinese inventors can be called the influential heroes and the legendaries. Not only did the Chinese inventions facilitate the spreading of Chinese culture, but also shaped and stimulated the economy and trade internationally and drastically. For instance, the silk production had a profound effect on the global economy. Chinese silk was the popular good to be exchanged during that time like the journey of Zheng He traveling to the West. They were sought after by numerous westerners, driving the economic activity and shaping the global trade routes, as well as boosting the growth of economies of the East and West at that time. Hence, the Chinese inventors had played an important role in the influence in global economy and it couldn't be underestimated.

A famous Chinese proverb “Don’t be afraid of growing slowly; be afraid only of standing still” represents the spirit and motto of the Chinese inventors. They always strive for continuous personal and professional growth, with the aim of inspiring more and more individuals to take an active role in creating a better future for human civilization. Obviously, they aren’t conservative, but are willing to seek improvement. It is known that they are patient and believe that progress of invention must not be rapid, and their perseverance might be useless or couldn’t be seen by others. However, after a long time, the efforts and achievement must eventually be recognised and make a profound and eternal significance. As a result, this demonstrates the wisdom and intelligence of Chinese inventors, who focused on the present moment and made efforts to progress towards their aspirations.

Overall, undeniably, Chinese inventors are deserved to be regarded as heroes because of their contributions to the technological advancements, determination to build up a better world, their embodiment of cultural pride, ability to overcome difficulties and impact on the global and future generations. Thanks to them, we can live in a better world and pass the spirit down, continuous to strive for the development of human civilization as I believe that improvement of human has no absolute limits. It is believed that the Chinese inventions will definitely have a lasting legacy that continues to inspire, impress and impact the world.

Inventions that may appear in the future

SKH Tang Shiu Kin Secondary School, To, Pak Leong – 16

Introduction

As a secondary school student studying Science, I always feel excited and enjoyable to imagine the possibilities of future inventions in my day dream. Rapid advancements in science and technology have shaped our world, and it is likely that many more groundbreaking innovations await us. In the following time, let's speculate on potential new inventions that can emerge in the near future, exploring various realms of innovation, such as Artificial Intelligence and Robotics, Renewable Energy, Transportation and Urban Development, Healthcare and Biotechnology, and Communication and Connectivity.

Artificial Intelligence (“AI”) and Robotics advancements

With further advancements in AI and sensor technology, fully autonomous vehicles will very soon become a common sight on our roads. These vehicles will enhance road safety, reduce traffic congestion, and provide increased accessibility for individuals with mobility challenges.

Nowadays, AI assistants like Siri and Alexa have become household names, but future iterations can offer even more personalized, intuitive and emotional experiences. It should not be a long time when these personalized AI assistants can anticipate our needs, proactively provide suggestions, engage in natural conversations, and understand and respond to our emotions, revolutionizing the way we interact with machines.

It is foreseeable that AI has the potential to significantly improve healthcare diagnostics. Advanced algorithms can analyze medical data, including symptoms, medical history, and genetic information, to provide accurate and timely diagnoses. As a result, this can enhance early detection of diseases, personalized treatment plans, and overall patient care.

Quantum computers have the potential to solve complex problems at an unprecedented speed. These futuristic machines, leveraging the principles of quantum mechanics, can revolutionize fields such as cryptography, drug discovery, weather forecasting, and optimization algorithms, unlocking new frontiers in scientific research and technological advancement.

Drawing inspiration from the nature, swarm robotics will become a reality in the future. By emulating the behavior of swarms, such as ants or bees, groups of small robots can collaborate autonomously to perform complex tasks. This will lead to applications in search and rescue missions, environmental monitoring, or even building construction.

Renewable Energy Innovations

Solar energy is already a viable renewable energy source, but future inventions will harness sunlight more efficiently and affordably. Breakthroughs in solar panel technology will include flexible and transparent panels, improved energy storage solutions, and integration with other systems, such as buildings and vehicles.

There will be more innovative ways of harvesting energy from the environment. For instance, we can make use of piezoelectric materials to convert vibrations from human movement or ambient noise into electrical energy, powering small devices or even entire buildings. Similarly, we can apply solar paint or coatings to various surfaces, turning them into energy-harvesting structures.

Transportation and Urban Development:

In the future, hyperloop, a high-speed transportation system using low-pressure tubes, will become a reality, allowing for ultra-fast travel between major cities with minimal energy consumption and carbon emissions. This innovation will revolutionize long-distance transportation and reduce travel times significantly.

While still in the early stages of development, the idea of flying cars has captured the imagination of many, including me. But with advancements in electric propulsion, battery technology, and autonomous systems, it is believed that flying cars can become a feasible mode of transportation, offering a new dimension to urban mobility.

With the global population on the rise, vertical farming, utilizing advanced hydroponics and vertical stacking techniques, can provide a solution to limited arable land in urban areas while reducing water consumption and transportation costs for fresh produce.

Healthcare and Biotechnology Breakthroughs:

In the near future, regenerative medicine will revolutionize healthcare by enabling the regeneration of damaged tissues and organs. Stem cell research, tissue engineering, and gene editing techniques can allow for the growth of replacement organs, providing new treatment options for conditions such as organ failure and degenerative diseases.

With the advent of genomics and precision medicine, personalized medicine will be invented to provide tailored treatments based on an individual's genetic profile. Genetic testing will become more accessible and affordable, leading to personalized prevention strategies, targeted therapies, and improved patient outcomes.

The field of nanotechnology holds immense promise in healthcare. Nanobots, microscopic robots, can be designed to travel through the bloodstream, targeting specific cells or delivering drugs precisely. This will revolutionize drug delivery, early disease detection, and minimally invasive surgical procedures.

As our understanding of the human brain expands, advanced brain-computer interfaces can enable direct communication between the brain and external devices, allowing individuals with disabilities to regain mobility, enhancing neuro-rehabilitation, and potentially augmenting human cognitive capabilities.

Communication and Connectivity:

The Internet of Things ("IoT"), a network of interconnected devices, is already changing the way we live and work. In the future, IoT technologies can become more integrated and seamless, enabling greater automation, efficiency, and convenience in various domains such as smart homes, transportation systems, and healthcare. Even more, the integration of IoT technologies into urban environments can lead to the development of smart cities. Intelligent infrastructure, interconnected systems, and real-time data analytics can optimize resource allocation, improve energy efficiency, enhance public safety, and foster a higher quality of life for residents.

Virtual and augmented reality technologies have already made significant strides, but future inventions can take them to new heights. Enhanced immersive experiences, improved haptic feedback, and seamless integration into everyday life will transform entertainment, education, training, and communication.

Conclusion

The future of technology is brimming with possibilities. While we can only speculate on the new inventions that might appear in the near future, it is clear that groundbreaking advancements are on the horizon. From advancements in artificial intelligence and robotics, renewable energy, revolutionary transportation systems and urban development, healthcare and biotechnology breakthroughs to communication and connectivity, our world is poised for transformative change.

However, as we embrace these new inventions, it is crucial to approach them with a responsible and ethical mindset. Privacy and data security, ethical considerations in AI, job displacement, equity and access, and environmental impact must be carefully addressed to ensure that these innovations benefit humanity as a whole.

Ultimately, the future will be shaped not only by technological advancements but also by our collective choices. By fostering collaboration, embracing inclusivity, and prioritizing the well-being of individuals and the planet, we can navigate the challenges and ethical considerations that arise and create a future that is both technologically advanced and socially responsible.

As we eagerly anticipate the emergence of new inventions, let us remember that the power lies in our hands to shape the future we want to see. By leveraging technology for the greater good, we can build a world that is sustainable, equitable, and filled with endless possibilities.