**The Printing Press - Script**

Hi. Good afternoon. Thanks for coming. Today, I want to talk to you for five minutes about the printing press. OK. This is going to be tricky but I'm going to do my best. Here we go. Five four three two one go.

OK. Many people say the printing press is the most important invention after fire and the wheel. And there are many arguments to … that agree with that. I mean, do you read? Do you read books, newspapers, magazines, textbooks, adverts, posters? Everything pretty much we have in the world around us has been made because of the printing press. Do you know anything? Do you have knowledge? That's because of the printing press and we're going to talk about that in a second.

OK. A long time ago, when people first started to read, we used to write on scrolls. Now scrolls are very good. You can roll them up and you can store them, but scrolls are very difficult to read. You have to unroll them, very long, very difficult to read. Also, when you do store them, they can crack. They can rip. They’re not very strong.

After scrolls we have codexes. Codexes are collections of velum or papyrus or different kinds of papers, bound together. Those are a lot easier to read and they're a lot easier to store, of course. However, we didn't have printing presses back then, so any book you wanted to buy had to be handwritten. Any copy of the Bible you have before about 1436 was written by hand. Basically, usually monks, because they were educated, would spend their whole days praying and then copying from Bibles or books. They would have the original copy here, handwritten, and they would copy it verbatim onto another manuscript, and that became another copy of the book. So, if you wanted a copy of a book, you had to hire a monk to copy the book for you. Very, very expensive, very, very time consuming. And, of course, sometimes the monks make mistakes. So, you get changes in the books. They are not quite the same as the original. Obviously, you cannot mass produce books that way, unless you have millions and millions of monks.

Then we start printing. In the beginning you have wood block printing. Wood block printing works very well. You put the paper down, you have a carving, you put ink on it, bang, you print it. That's easy. Of course, though, if you want to carve the picture or the writing, you have to basically, literally carve it into the wood. You cannot change it easily. If you want to do another page, you have to carve another piece of wood. It takes a long time.

Then, in 1040 in China, they invent ceramic type. This is movable type. That means you can change the characters and makes it very, very easy to print a page. 1377, in Korea we have the first real book written with movable type … printed with movable type I should say. Of course, the problem with Chinese and Korean languages though, is they have thousands and thousands of kanji … of characters. If you want to write a book, you have to have all of these characters. The advantage of English, of course there is, with the Latin alphabet, we only have twenty-six letters, so you can make words much, much more easily than you could in China or in Korea.

So, 1436, Johannes Gutenberg … not sure how to pronounce that, he invents the printing press in Europe. Why then? Why did it suddenly happen then? Well, in Europe we have the … we have an increasing merchant class. We have wealthier and wealthier people, and what these people are interested in is knowledge, basically learning. The merchant class came around because of the horse collar, as you would know, of course, if you had seen my talk about the horse collar. We also have the invention of real paper. That comes across from China, into Europe around about this time. We also have inks invented, and we have reading glasses. Of course, it's very difficult to read if you cannot see. I'm starting to realize that myself, right about now. So, we have reading glasses. So, the environment is ripe for the invention of a printing press.

Now, Johannes Gutenberg, he comes up with a few things. He makes a press based on an olive press. So, basically just a press like that. He comes up with oil-based inks because he realizes that regular inks don't stick to his movable type characters. And, he comes up with a way of casting the letters. He was originally a goldsmith and he came up with a lead-based alloy that we still use today, which made casting the movable characters very, very easy to do, and they were very very, very clear. So, he made hundreds of thousands … hundreds or thousands of different characters, so it then became a simple task to print the page of a book. All you had to do was arrange all the characters in place. I mean, it took a long time, of course, but it took a lot less time than carving a block of wood. … forty-five seconds! …

OK. So, once that happened, he creates the first real, after the Chinese ones of course, the Korean ones of course, the first real printed book. He makes the Gutenberg Bible. Right now, there are forty-nine copies, not all of them whole, of that Bible in existence. At the time, if you wanted one of those Bibles, it would have cost you about three years' salary, which was a lot of money of course. However, if you wanted to buy one of those now. If you could, if one came up for sale, it would cost you about $35 million. Occasionally, single pages come up for sale and you can buy those, and those cost hundreds of thousands of dollars on their own. So, keep a look out. You might find one one day. You never know.

Now, with any technology of course, once it's introduced, once it's created, it starts to snowball. Now, printing of course, takes off and … Times up! I’m going to keep going. I'm sorry. I keep doing this. I'm very sorry. I'm going to keep going. … It snowballs. It spreads across Europe. It spreads across the road … It spreads across the world. Soon you have printing presses in most of the major cities around Europe. In the fifteenth century, we have two million printed manuscripts. By the sixteenth century, two hundred million. Seventeenth century, five hundred million. Eighteenth century, we have one billion printed books and manuscripts and documents because printing is taking off.

Now, “So what?” you might say. Why did I say it was the most important invention? Well, of course, because of the things that were introduced or made possible because of the printing press. The first one, of course, is the newspaper. With no printing press you couldn’t have a newspaper. With newspapers you can learn about daily events. People can find out about world situations. People can act to change the world. That they couldn't do before because they didn't know about it.

Science. Science takes off. People are suddenly able to publish their findings. Newton, for example. Newton's book spread around the world. People can publish their findings and people can do research based on those findings and they can find other things. Without a printing press, all you can do is talk to the people around you and hope it spreads through word of mouth. If you can publish a book and send it out then your knowledge, your research, your findings, can go around the world and that can snowball too. One finding can make thousands or millions of findings in other places, all because of the printing press.

Literacy rates go up, of course. Before the printing press, if you wanted to hear someone read you had to go to the church and listen to somebody read the Bible. Once we have the printing press, and once the price of books comes down, people can buy books. They can read books at home. Literacy rates go up.

We have schools start to take off because now you can buy textbooks. You can buy textbooks more cheaply. You don't have to have handwritten books, you don't have to listen, so the merchants they start sending their children to schools and worldwide knowledge starts to increase. Worldwide intelligence starts to go up. Worldwide literacy rates start to go up.

Local languages … native languages start taking off. Up until this point, every book was written in Latin, pretty much. But, after this point, they start to use local languages. English, French, German, the local languages start to be used. Spelling is decided … finalized. Before the printing press, in England you had about six different spellings for egg: “eg”, “egge”, “egg”, “ege”. Different spellings for egg. Once you have the printing press, one spelling is chosen and they stick to it. So, spelling is unified.

The merchants start to get richer because you can have record keeping. You can have more trading. You can have records of all the business you're doing, so industry starts to take off as well. You could even argue that because of the printing press we have the industrial revolution that comes in a couple of centuries. In fact, that's definitely what happened. Because of the scientific research, it starts to snowball. In two hundred years, thanks to the printing press, bang, we have the industrial revolution. Thanks to the printing press I'm talking to you right now here on YouTube. Because of the connected knowledge, because of the connected discoveries, because of the connections all the way down the line through history. Isn’t that absolutely incredible?

OK. The first printing press, 1436, they could print a hundred pages per hour. Now, a newspaper, you can print a hundred thousand pages an hour. The basic advance that made that … I mean there are a lot of advances of course, and one of them was the engine. The steam engine and then the motorized electric engine, that make printers turn faster. But, one of the biggest advances was using rolled paper rather than sheets of paper because if you used rolled paper you could just have it continue and it gets cut by a machine at the far end. Makes it much, much faster. I think a modern machine can do about twelve newspapers a second, I think. It's an incredible number. Incredible number. OK. But, these days, of course, everything is online. We don't read newspapers anymore, we read online. We don't read books anymore, we read them on our Kindle. We don't read magazines, we read them on the Internet. So, the printing presses are stopping, of course, and we're moving online, which saves on paper, saves on ink, saves on a lot of things. But, that isn't to say it's a waste of the printing press invention because without that invention we would not have the Internet. We would not have that technology. We would still be living in the Dark Ages. So, the printing press is probably the biggest invention after fire and the wheel. Thank you.

OK. Thank you for listening. If you have any questions or comments put them in the section down there and I'll try and answer them. If you have any ideas, things you'd like me to talk about, put them down there as well. If you click on the link in the description down then you can find the script for this talk, you can find questions, and answers and you can find the MP3 for download. You can practice writing, you can practice listening, you can practice all your skills if you want. Keep practicing your English. You will get better. If you liked this, click “like”. If you want to subscribe, click “Subscribe” and you can get these talks whenever I make them. Thank you very much for listening. I'm going to have a cup of coffee and read the newspaper.

**The Printing Press – Questions**

1. Which of these is NOT a problem with a scroll?

A: They are very long.

B: They rip very easily.

C: They crack when stored.

D: They can be rolled up.

2. What is a codex?

A: A type of storage system for scrolls.

B: A collection of papers bound together.

C: A method of printing.

D: The method by which monks copy books.

3. Why were monks chosen to copy books?

A: Because they were educated.

B: Because they could work in the dark.

C: Because they were very cheap.

D: Because there were not many of them.

4. Steven says, “They would have the original copy here, handwritten, and they would copy it **verbatim** onto another manuscript, and that became another copy of the book.”. Which of these words is closest in meaning to “verbatim”?

A: enthusiastically

B: rhetorically

C: methodically

D: literally

5. What is the main disadvantage of movable type in China and Korea?

A: They have so many characters.

B: They are made of ceramic which breaks easily.

C: They don’t make many books.

D: They only use wood.

6. Which of these was NOT a development that happened before the invention of the printing press and made it possible?

A: Reading glasses

B: Oil-based ink.

C: An increasing merchant class

D: Paper

7. What was Johannes Gutenberg’s previous occupation?

A: A blacksmith

B: A printer

C: A journalist

D: A goldsmith

8. Which part of the scientific world does the printing press have the greatest impact on?

A: The dissemination of ideas

B: Newton

C: The theory of gravity

D: The use of logic

9. Why did the printing press cause worldwide intelligence to go up?

A: Because people didn’t have to go to church any more.

B: Because merchants could keep records.

C: Because more people bought copies of Gutenberg’s bible.

D: Because more people started to go to school.

10. What advance with the printing press had the biggest impact on printing speed.

A: Rolled paper.

B: A steam engine.

C: An electric engine.

D: Smoother paper.

11. Explain Steven’s statement that the printing press made the Industrial Revolution possible.

12. The printing press was extremely damaging for the church. Discuss.

13. The printing press or the Internet. Which is the greatest invention?

14. Print is dying. Is this a good or bad thing?

15. Explain another invention that has had a huge impact on society.

**The Printing Press – Answers**

1. D 2. B 3. A 4. D 5. A 6. B 7. D 8. A 9. D 10. A

11. Explain Steven’s statement that the printing press made the Industrial Revolution possible.

The Industrial Revolution started in the 1760s. It was the point where England transitioned from a largely agriculturally society to an industrial one. What made this possible? A series of technological innovations across a range of fields, mainly steam power, textile manufacture, iron making and the manufacturing of machine tools. These inventions did not suddenly just happen. There was a process and a series of refinements over many years. For example, in 1712, Thomas Newcomen invented the first piston steam engine. Through various refinements this engine would go on to be the backbone of the Industrial Revolution. However, Thomas Newcomen did not sit down one day and come up with all of the concepts necessary to develop the engine. He built upon previous discoveries such as the discovery of atmospheric pressure by Evangelista Torricelli in about 1640. How did Thomas Newcomen hear about these ideas? He read them. And that is the crux of what Steven is saying. The printing press allowed ideas that would previously have only existed in a small circle to get international exposure. And once you have one discovery, you get more based upon it.

12. The printing press was extremely damaging for the church. Discuss.

I disagree with this statement. I think the church thought it would be damaging and acted appropriately, but, in the end, I don’t think it was.

When the printing press was invented, most of Europe was under the control of the catholic church. Any church survives on the superstition of its congregation. The catholic church made its money by selling people a place in heaven. You could buy things called indulgences. In catholic law, once you die, you have to go to purgatory to pay penance for the sins you have committed in your life. You stay in purgatory for as long as it takes to be purified of these sins, and then you can go to heaven. An indulgence is a piece of paper that grants the sinner forgiveness for a certain sin or knocks a few years off the amount of time it will be necessary to spend in purgatory. These indulgences became the bread and butter of the church. For this system to work, the church needed to be the sole distributer and the one voice of God, as written down in the Bible.

Once the printing press is developed, two things happen. Firstly, people start to read at home and the church feels its control slipping. Secondly, scientific discoveries speed up and the church fears that people will realize the word of God that the church is preaching is not infallible. If that happens, people might not be so keen to pay. The church reacted instinctively and cracked down wherever it could. Galileo, for example.

However, it turned out that the church was wrong. Yes, many people did turn away from the church, but the majority did, and still do, believe in God and the church. The printing press helped spread scientific ideas, but it also helped spread the word of God in local languages, making it much more pervasive and accessible to common people. if anything, the printing press strengthened the power of the church.

13. The printing press or the Internet. Which is the greatest invention?

I don’t think that is a valid question because you could not have the Internet without the printing press. As Steven said when he talked about the Industrial Revolution, a series of discoveries led to further discoveries. Without the sharing of scientific breakthroughs that the printing press made possible, we wouldn’t have the Internet.

However, if I take this as a straightforward question, then I guess the obvious answer is the Internet because of its shear reach. It has made all information instantly accessible. It has created as many problems as it has solved, but it has reshaped our society in ways that we could never have predicted. Instant information can help revolutions, and it can exponentially speed up scientific discoveries.

Still, and I think this is so important that it bears repeating, without the printing press the Internet would not exist. We would still be farming.

14. Print is dying. Is this a good or bad thing?

I don’t think it is a bad thing generally, but I can see an unfortunate disadvantage. Just because print is dying doesn’t mean we are losing the ability to read or write or draw. All of these things are still possible. Printing is simply one medium to get my words to your eyes and my thoughts to your mind. Digital printing is just as effective as printing on a page in a book. I can write, and you can read. However, as we turn from print to online data, we are losing the ability to leave a record, a cultural footprint. We have scrolls and writings from thousands of years ago. Will civilizations two thousand years from now be able to read what I am writing. Technology is advancing so rapidly that it is doubtful people in twenty years will be able to read what I write. What data storage devices did we use twenty years ago? 5.25 inch floppy disks. Can you read one of those now? No. So, the end of print won’t effect the transmission of ideas, but it will significantly damage our ability to leave a trail of ourselves for future peoples to follow.

15. Explain another invention that has had a huge impact on society.

The airplane has probably had the biggest impact on society as any other invention this century. The airplane has allowed the mass global movement of people, the international distribution of food, the easternization of labor, the ongoing march of globalization. It has made our world smaller. Before the airplane, travelling to another country would be a major voyage. Now you can leave London in the morning and be in New York by lunchtime. The airplane has changed us psychologically. We see the world far differently to our grandparents.