

## Science Fiction versus Science Fact

---

In 1963 the new British Prime Minister, Harold Wilson, said in his speech at the Labour Party Conference in Scarborough on the 1st October 1963 that 'Britain is going to be forged in the white heat of this revolution'.

What revolution was he talking about? What does the word revolution make you think about?

Harold Wilson was not talking about civil wars or overthrowing governments. He was talking about a revolution in science and technology. He saw Britain becoming a powerful nation through new scientific discoveries that would be used to make helpful products for our society – the process of technology. This was one of the most dynamic periods of scientific change in the 20th century.

What sort of scientific visions did people have in the past – you could call them science fiction – and have they come true? How right was the science fiction of the future? What influences whether science fiction becomes science fact?

---

Look at your teachers, they were all young once! Let's be generous and say that in the 1970s they were your age. What everyday things did they grow up without, that now we take for granted? For example, dishwashers, solar calculators, mobile 'phones and cash machines. The interesting thing is that the scientific knowledge required to make these products was already known in the 1970s. So why were they not commonplace then? And why have these applications of science become part of our everyday lives now, whilst other things have not?

---

For science to be useful we must be able to apply it to something – to make it work for us. You could say that all science is science fiction unless it can be used! To be useable the science must be known to a large enough group of people who can then think about it, and it must be practical to help us perform a task. Mobile 'phones, dishwashers and cash machines have become a reality because people wanted them. People are willing to pay for items like mobile 'phones, so it is profitable for manufacturers to spend money developing the science into reality. If people had not bought mobile 'phones, this would not have happened.

---

Science fiction writers believe that in true science fiction stories the author develops a plot that is close to well-known science. They try to imagine what the next steps will be from the way things are now. In the early 1930s science fiction stories discussed rocket ships and atomic power, both of which have become reality. Huge invading bugs have also been very popular in science fiction, but they have not become reality (as far as we know!). Perhaps the scariest science fiction is that which is very close to reality, a way of using science that we almost have to do something destructive.

---

In the film *Gattaca* new born babies are all genetically screened. Anyone who does not pass certain standards is not given the best opportunities, and cannot hold certain jobs. They are disadvantaged and become second-class people. Current science allows us to look for genes that give people a genetic disease, and this is used by doctors to advise people on the risks of passing on an inherited disease to their children. We can also look for genes that make a person likely to develop diseases, such as certain types of cancer or heart disease. At the moment this screening is not widely used, but some people think it should be. For example, insurance companies may use this information to decide if they want to insure your life. Life insurance is especially important for parents. If a parent dies life insurance money helps pay a mortgage and bills whilst their children are growing up. At the moment everybody shares the risks of life insurance, because genetic screening information about individuals is not known. If you had genetic screening information about yourself, it might help you reduce your chance of developing the disease because you could take care to avoid other factors that might increase your risk. As a society, do you think that other people, such as insurance companies, should be allowed to know your genetic screening results? It could put some people at a disadvantage in life through no fault of their own. This is a question that people are debating at the moment. As members of society we can join in this debate, to decide whether the science knowledge we have (science-fiction?) becomes a reality (science fact).

---

In 1964, a telephone company in America showed off its next great product – the Picturephone. This was a telephone linked to a video screen in your house. It was put on the market linking New York, Washington and Chicago. The company spent 500 million dollars developing it, predicting that by the end of 1969 Picturephones would be common all over America. They were a flop. When the company researched with customers why they had not bought the Picturephones, they said the price was too expensive. Very few people could afford them, and you could only use them to talk to someone who also had a Picturephone link put into their home. Cheaper Picturephones were produced, but they still did not sell – customers did not want to have to worry about what they looked like every time they answered the phone! Today the process of video conferencing has become fairly common. Businesses set up cameras so that employees in different countries can have a meeting without leaving their office. Video conferencing uses the new digital phone lines to transmit the information – the same technology that has given us high-speed Internet access. Mobile phone companies are developing phones with small video screens. Once again it will be up to us whether this science, which has been known about for years, becomes reality.

---

In 1967 one of the new words listed in dictionaries was 'cryogenics'. Cryogenics means freezing people after death to hopefully revive them in the future. In 1964 an American professor of physics had written 'Pay now, be frozen and live later' in his book *The Prospect of Immortality*. In 1980 a research scientist in California predicted that the first successful reviving of a frozen human being would be achieved by 1992. Today we use freezing to preserve individual cells, for example sperm and eggs, but many of these do not survive the process. Most biologists do not believe that cryogenics will ever be made to work, but it is estimated that 80–90 people are already frozen in storage in the United States with hundreds more signed up for the process when they die.

---

In 1939 the first prototype housework robot that was designed with human features was unveiled. Predictions were made that in twenty years no one would ever have to do housework again. Today most robots do not look very human. They are programmed by computers and work on factory assembly lines for example, painting cars. Others work in conditions where it is not possible for us to go, exploring our deepest oceans or outer space. So why do we not have personal robots to clean up afterwards? It is possible to programme a robot to do the same task, such as painting a car door that is always the same size and in the same place, but it is much more difficult to programme a robot to avoid an object on the floor when it is vacuuming, or to know where everything belongs when it is tidying up. This makes personal robots too expensive for most of us at the moment. They need to become more versatile and a lot cheaper before people will buy them.

---

On July 20th, 1969, Neil Armstrong became the first man to walk on the Moon. Predictions were made that the first human colony on the Moon would be there by the 1980s. The Hilton hotel chain started to take reservations for a hotel that it planned to build on the colony. What we have today is the International Space Station, home to seven scientists from different countries, working together on experiments in micro-gravity environments. It is hoped that results from these experiments will lead to discoveries such as new materials, improved computers and better medicines. But why are we not living on the Moon? Mainly it is the cost – by the time the International Space Station is finished and run for ten years, it will have cost between 30 and 50 billion dollars, paid for by 16 countries, including Britain. The expected scientific benefits of running the station are considered by many to be worth the cost. Little was found on the Moon to persuade people that it would be worth living there. It is a very harsh climate for humans, and it would be hugely expensive to build an environment that we could live in comfortably.

---

So when will we have warp drive? Warp drive and hyper speed – travelling through space faster than the speed of light – are common occurrences in science fiction. Is it likely in the foreseeable future? At the moment the answer is no, because we have not discovered the science that will allow us to travel at such huge speeds with a method of propulsion that does not use fuel (fuel would be used up far too quickly to travel the huge distances in space). But if we had solved the scientific problems, would this science fiction become science fact? Do you think people would be happy with governments spending large amounts of money to make hyper speed a reality? What could happen on Earth to persuade people that travelling to distant planets is worthwhile?

---

In order to be able to join in the debates about what science we want to become reality in our society, we need to be able to understand enough of it to make our own decisions about what we think is the right path for society. It may not always feel like it in science lessons, but society has the power to decide which scientific discoveries will become part of tomorrow. Not many of us will be making the scientific discoveries of the future, but we need to be able to discuss the pros and cons. Why should we bother getting involved in scientific debates? Well, in the words of Captain Kirk himself, William Shatner, "The future is coming, it always does."