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The World in 2050: Technological Elevation, Environmental Regression

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Introduction

Science is full of theories and hypotheses about almost everything in the world. Proofs of these theories are fundamental to the discovery and innovation in today's society. In this article, some predictions and theories of the future of Earth will be discussed, for example, artificial intelligence (AI) being introduced into the workforce, the consumerisation of self-driving cars, climate change, and potential changes in human beings.

Artificial Intelligence

Self-Driving Cars

Since 1886, when cars had first been invented, the notion of a driverless car has been conceptualised, but in over a century, it has only been partially introduced into our society[1]. In the 1920s, the first driverless cars were created, which required someone driving another car, sending radio signals to the car to imitate the actions of this car[2]. One hundred years after the official invention of the car, the first fully driverless car was invented. Created by Ernst Dickmann, the Mercedes van used several sensors and cameras to instruct the steering wheel, accelerator and brakes to suit the environment[3]. The slow computer speeds required the engineers to create models of the road and estimate the potential velocities and trajectories of the van.

There is a race between tech companies currently to make self-driving cars mainstream, and so far, Tesla has already introduced affordable cars that are semi-driverless[4]. There is still a wait for fully self-driving cars to drive on the roads, because of errors and 'glitches' in the technology. A big debate right now is whether self-driving cars are safer or less safe since this is such a complicated process.

Figure 1. Example of where the cameras and sensors are located [4]

The car first has to detect its environment and maintain a constant velocity, as well as detect and respond to road signs, traffic lights, road markings, etc. *(Figure 1).* These variables can be automated, since they will always be the same, and any changes are consistent. Other variables are sudden and unpredictable, like cars and pedestrians. The car needs to react to these motions and be able to adapt safely to protect everyone involved in the obstacle. Using the same technology mentioned prior, the car can calculate the vectors of the obstacle and itself, and can calculate a safe route to avoid an accident. Thanks to the technological advancements since 1986, these processes can be sped up to be instantaneous[5]. Unfortunately, computers are notorious to freeze, 'glitch' or 'lag' sometimes. If a computer 'lags' during a fatal accident, and the car is not able to avoid it, lives would be lost.

With computers getting faster, and processors being less loaded with information used in the computers of these cars, these glitches are rare and the computers are more reliable than humans. Predictions of fully self-driving cars to hit the road are for 2025, so by 2050, there is a possibility that almost everyone will have a self-driving car, and the accident rate will be almost 0%[2].

Jobs Being Replaced by Artificial Intelligence (AI)

Humans of the present worry that their jobs will be taken over by robots in 2050, but big factories and businesses are only looking for robots to automate tedious and precise tasks, and jobs where humans often make errors. This boosts the efficiency of work and allows humans to work in more innovative and creative fields, where AI is not necessarily viable. Artificial intelligence is most suitable for jobs that require the same few actions being repeated over and over again. These actions can be slightly complex, for example, transcription or mass data entry, and one perfect job is a receptionist[6]. A receptionist usually gets asked similar questions, and has data entry jobs that would be easy for a machine to do. Machine learning is a concept where a robot can learn information about the environment around it. Although this is not as effective as a human doing research on a specific topic, a robot can learn things, adapt, and essentially code itself for new actions. It can significantly increase a human's productivity if worked beside one[7]. Many developed countries have already made use of robots in their workforce *(Figure 2).*

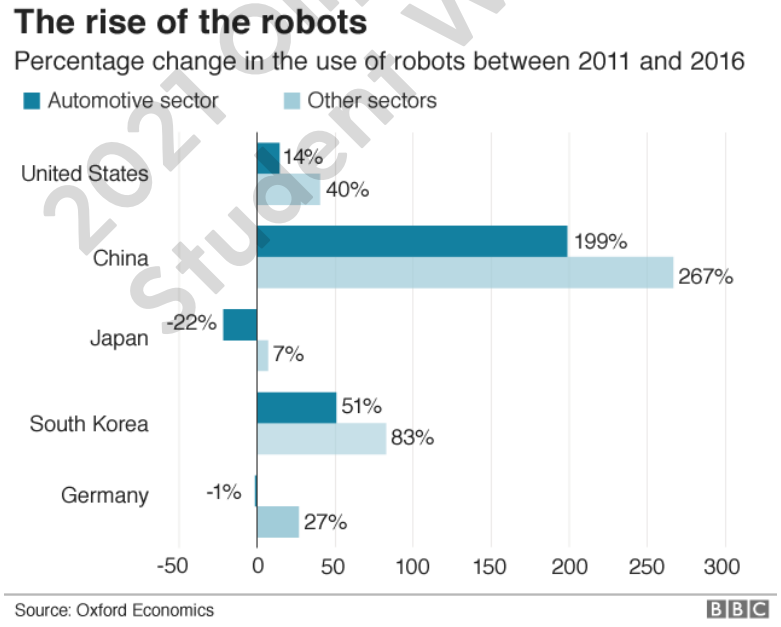

Figure 2. Percentage change in the use of robots in various countries between 2011 and 2016[7]

Climate Change

Rise of Temperature

Earth's temperature has already risen 1°C since 1900[8]. This may not seem like much, since we do not feel the difference between these minimal changes in the temperature, but this significantly affects areas where cold temperatures are vital. The temperature does not raise on its own, but has been raised by humans over the last few hundred years[9]. The most drastic changes have been after the industrial revolution, and the temperature just increases exponentially. This means that the temperature raise will come closer to the 2°C mark by 2050. This temperature increase comes from greenhouse gases produced by humans. Methane emissions from cars, factories and burning, etc. can harm the ozone layer[10]. When it rises into the polar stratosphere, it breaks down and releases hydrogen, which combines with hydroxyl ions to form water, which freezes clouds. Since it breaks down, there is no more ozone in that area to block the radiation coming from the sun *(Figure 3).*

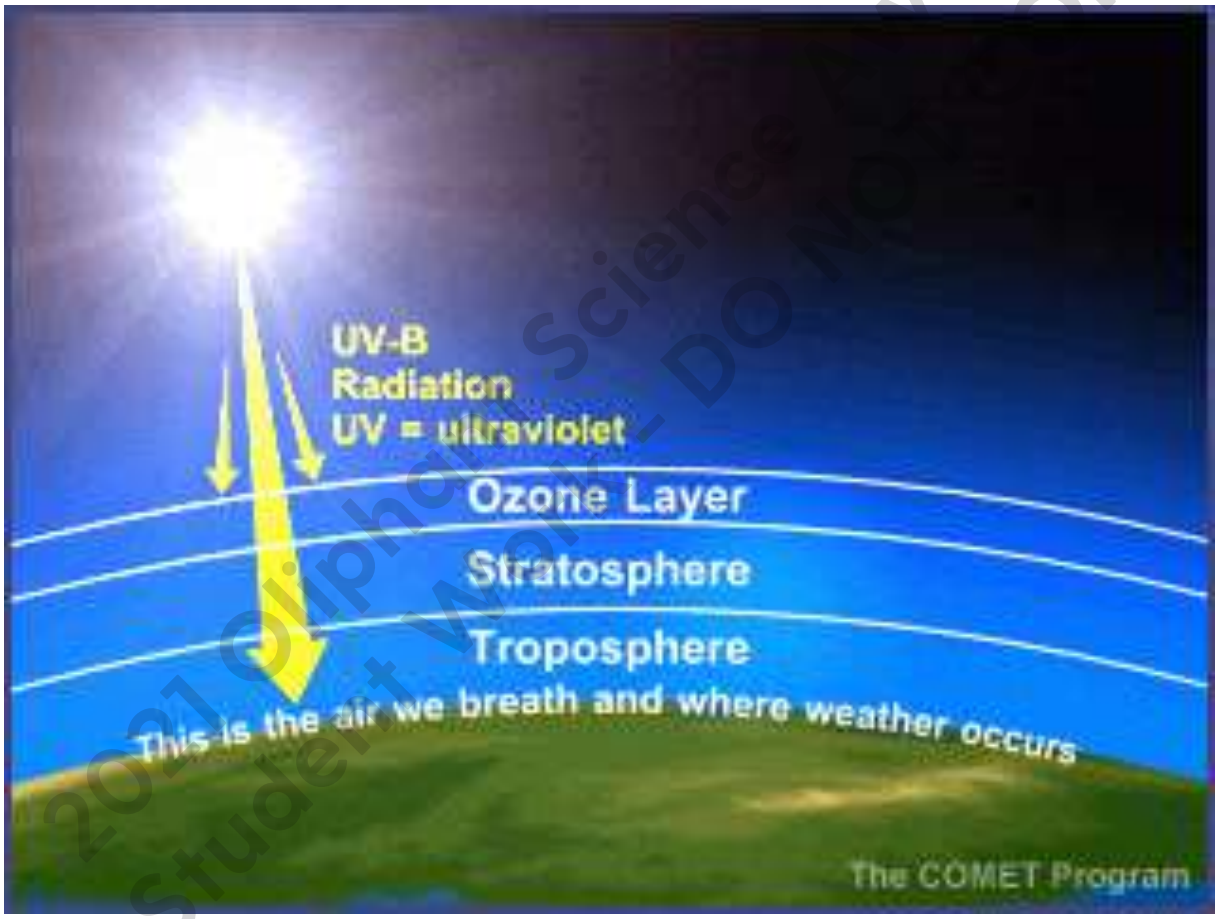

Figure 3. Diagram of the ozone layer[10]

This increases the heat energy received, making the overall temperature of that area warmer. In colder areas, where temperatures should be minimal, such as the Arctic and Antarctic, the icebergs are melting at a rapid rate[11]. The season of summer seems to be extended, and this will make water levels rise in the ocean *(Figure 4)*. This increased water level and increased evaporation from the hot climate will cause more often and severe floods.

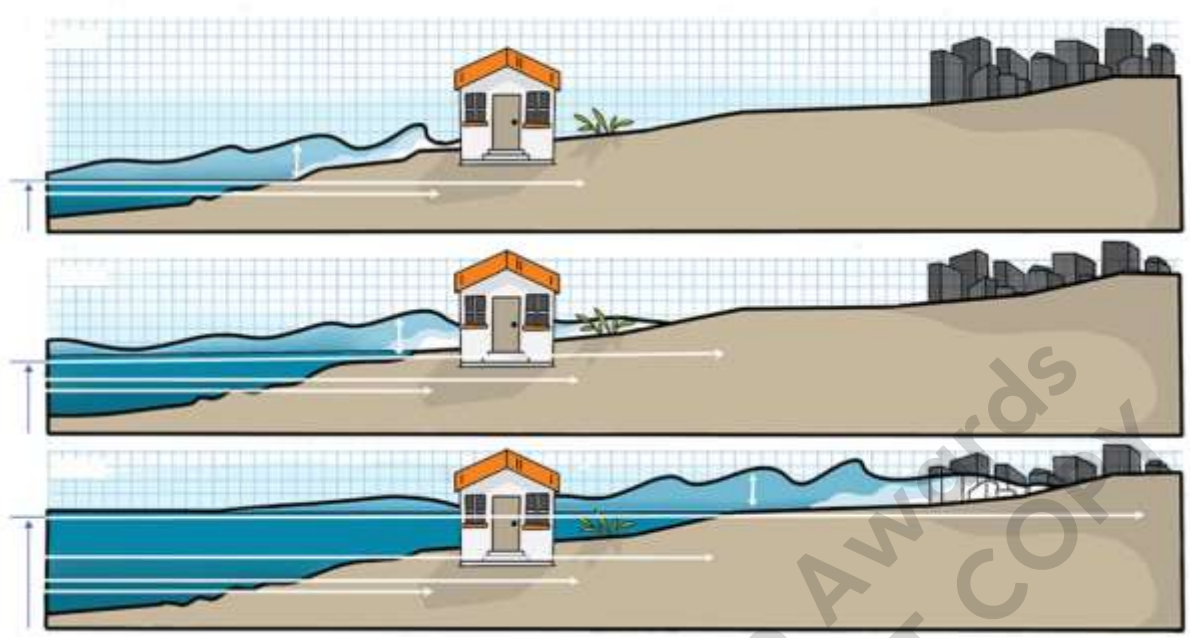

Figure 4. Estimation of increased ocean levels [11]

Places where precipitation is rare, will struggle from droughts more in 2050, since water will be evaporated faster[12]. This may sound like droughts will happen less, but as soon as the little precipitation happens, it will be evaporated shortly after. In simple terms, it will rain a lot in the rainy season, but will barely ever rain in dry and hot seasons.

An unexpected change will be the increased strength of hurricanes[13]. Hurricanes, while it may not seem, are fuelled by heat. The humid air, which will develop because of the climate change in 2050, helps the water vapour rise up and turn into a colossal violent storm.

Flora and fauna will be heavily affected since they will need to migrate to other habitats after their own current one gets damaged[14]. This in turn will affect humans, because of their lack of food and resources. Plants are vital for the conversion of carbon dioxide into oxygen, so if all the trees die out or get removed, humans will, eventually, struggle to produce enough oxygen for everyone[14].

Change in Humans

Evolution

The evolution theory consists of 3 main components: natural selection, variation and geographic isolation[15]. One species of animal will get affected by one of these factors, evolve, and become a whole new species. Humans went through this process thousands of years ago, but scientists believe that there will be no more evolution of humans. Humans are the leading race right now, the world revolves around them. No animals, environment, nor weather are too difficult for humans to handle, which means natural selection will not affect them[16]. Humans are variating in different ways, and they were all once geographically isolated, but now all humans are breeding with each other, and ethnicity barriers are no longer a problem.

A concept called the ‘grand-averaging’[16] has emerged. This means that as time goes on, humans are slowly becoming more similar[16]. This is because people are breeding with other

ethnicities, and eventually, there will be so many offspring with multiple ethnicities where it will be less common to have a child with only one ethnicity. Therefore, in 2050, there will not be any big changes in humans, but they will slowly become more alike.

Conclusion

There are several theories about the future, many of which have been around for years while some are prominent and in heavy debate in the present. Autopilot cars have been in the news a lot recently, because there is competition between the companies to be the dominant company. Artificial intelligence is also talked about a lot, because it will be the key to efficiency in the coming years. Global warming is feared by many scientists because it could be the end of humanity, and there are many effects which people may not know about. The 'grand-averaging' is a rarely discussed topic, since it is not a significant evolution, and not many people know about it. Some of these theories are stronger than others, because they have more proofs leading to them, but theories aren't always fully true.

Word count: 1462

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