

The Scholar

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thebrilliantclub.org

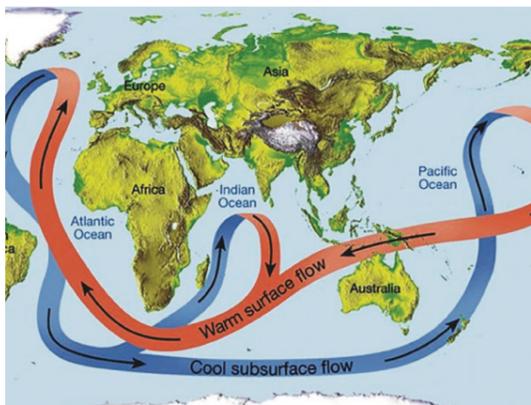


Your Breakfast Cereal or Molecules?

+

*Academic essays on how emotions
influence our financial behaviours
and fighting inequality in education
from Brilliant Club Scholars.*

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Our social science scholars look at fighting inequality in education, international media & politics and planning the future smart city.

Updates

Introduction from The Brilliant Club

Welcome to the latest edition of The Scholar!

We are delighted to be celebrating the incredible work of pupils who have taken part in The Scholars Programme and Uni Pathways from schools across the UK.

In this edition, you will find 30 outstanding assignments with course titles ranging from 'We all want to change the world: Understanding social movements' to 'Black holes and the nature of spacetime'. This edition of The Scholar features some of the most impressive articles ever produced by pupils who have taken part in The Scholars Programme and Uni Pathways. The university-style learning that pupils are exposed to on our programmes is designed to provide pupils with the freedom to develop their own ideas and approaches.

Not only will this help pupils who go on to study at university, but we believe these are crucial skills to develop in the adult world. The development of independent study skills and support with critical thinking provides young people with a platform to share their ideas. We hope it will empower these young people to engage in debates that shape our world, whether they concern the psychology of our eating behaviour or using archaeology to study the Middle Ages.

The Brilliant Club is passionate about exposing pupils on our programmes to these important aspects of university. We hope that these projects encourage pupils to dig a little deeper into subjects that matter to them and to seek opportunities to make unique contributions to their fields. In doing so, pupils can change their own lives by enriching them with opportunities for learning and being inspired by the topics they cover. This year, we had a record number of nominations for The Scholar, so we would like to say a huge congratulations to the pupils published in this edition and to the pupils who completed The Scholars Programme and Uni Pathways. All the pupils who graduate from the programmes should be very proud of themselves! On Page 4, we are delighted to have a guest article from Lord Chris Smith, Master of Pembroke College Cambridge. We would like to say a massive thank you to Lord Chris for taking the time to write his interesting perspective on the power of great teaching.



The map above shows the locations of all pupils featured.

If you are a teacher who would like to find out how your school can get involved with The Scholars Programme, we would love to hear from you! Please get in touch via this email address: tspsschools@thebrilliantclub.org.

Do you want to recruit PhD subject experts to train as teachers in your school? The Brilliant Club's Researchers In Schools programme is a unique teacher-training route for high-quality PhD graduates. The programme recruits subject experts to train on Schools Direct and work in nonselective state schools across England for EBacc subjects including Maths and Physics; they work to promote education research, increase subject expertise and champion university access. If your school is interested in finding out more about Researchers In Schools, get in touch with the team here: hello@researchersinschools.org.

Guest Article

The transformative power of great teaching

Lord Chris Smith
Master, Pembroke College Cambridge

When I was growing up – in Edinburgh – no-one from my family had ever been to Cambridge or Oxford before. I was enormously excited to be encouraged by my school to apply; I was also scared stiff; I had a car-crash of an interview when I came to Pembroke College for the first time; and I was overjoyed to be offered a place, despite the interview, and to come to make a start in this very new and strange world. I really had very little idea of what to expect. But I came, and I overcame all of my fears, and I had some of the best years of my life.

I came to Pembroke to study English. And there were two moments of exceptional teaching that stand out in my memory from those undergraduate years. The first was the very first supervision that I had. "Supervisions" in Cambridge are the very close one-to-one or two-to-one teaching sessions that happen every week, organised by your College; they complement and in many ways are more important than the more formal lectures organised by the University. We were studying "medieval romance" – in a language and with material that was very strange – and as we settled down on the sofa with cups of coffee the supervisor said "You can never understand the medieval world until you have listened to this"; and he put on the record player Guillaume de Machaut's Notre Dame Mass, a piece of the most glorious early music, and we listened spellbound for twenty minutes, when he stopped the record and said "Now I can tell you what the medieval world was like". It made everything come alive for me.

And then a year later I went for a supervision on Wordsworth and Coleridge with a passionate dedicated teacher called Roy Park. The best teacher I ever encountered. We had written essays on Wordsworth and Coleridge, and (as we did in those days) read them out. They weren't terribly good, but Roy was polite. He then said "Let me tell you about the Romantic poets and Romanticism"; and for the next two hours or more he conjured up a new world for us.

He quoted passages, he took books down from the bookcase, he paced up and down, he crouched in his chair to give added emphasis, he spoke about how these poets created a revolution in English thought and literature, about how they opened up our understanding of the power of the human imagination to transform our perception of the world around us. I came out of that room walking on air.

I went on in later years to write my PhD thesis on Wordsworth and Coleridge. I was Chairman of the Wordsworth Trust in Grasmere for fourteen years. I'm still its Honorary President. And it all goes back to that afternoon in a room in New Court in Pembroke, with Roy Park changing my world.

This surely is the transformative power of great teaching. It can happen anywhere, in schools or Colleges or Universities. It depends on an inspirational person and a readiness to be inspired. And one of the reasons the work of The Brilliant Club is so important is that it is all about opening up these possibilities to the widest range of students. Giving anyone, from any background, the chance to be inspired in the way that I was inspired. That surely is a great and a necessary ambition.

Lord Chris Smith
April 2020

Guest article for The Brilliant Club – Lord Chris Smith, Master of Pembroke College Cambridge



STEM



Design a strategy to help stop an outbreak of Malaria spreading through Franklin Village, and was there anything that could have helped to prevent the outbreak to start with?

Year 7, Key Stage 3

Pupil: **I. Russell-Turner**
School: **Ixworth Free School, Suffolk**
Supervised by: **Dr C. Ley**
Tutor University: **University of London**
Course Title: **Disease Detectives**

Introduction

History

The word malaria is Italian from 'mala', which means 'bad' and 'aria', which means 'air'; as it was believed it was caused by polluted air (Youngson, 1995). Malaria is in fact caused by *protozoan*, called *plasmodium* (Vince, 2019) which is a single-celled parasitic organism, that eats tissue and is carried by the female *Anopheles* mosquito, who live around stagnant water (Youngson, 1995).

Facts

The mosquito is worldwide and is responsible for 725,000 deaths per year (Smithsonianmag.com, 2019) and was responsible for 200,000,000 cases in 2015 (Kurzgesagt, 2016). It is estimated a child dies every 2 minutes from Malaria. (Vince, 2019).

Transmission

The transmission of malaria through the mosquito is explained in the below diagram:

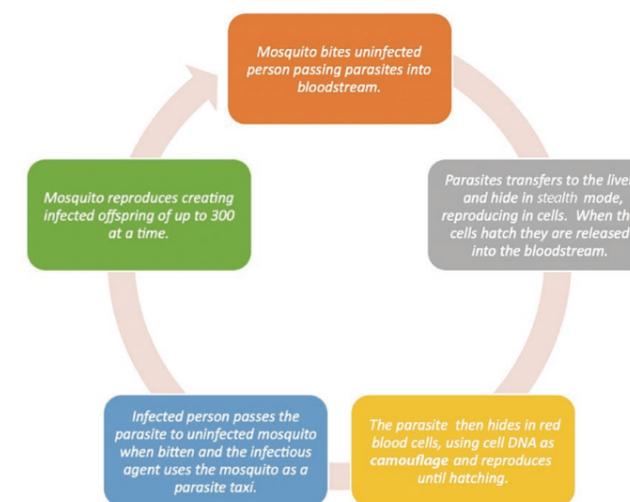


Figure 1 - Malaria infection lifecycle. Source (Kurzgesagt, 2016)S

Symptoms

Symptoms are the result of your immune systems (Kurzgesagt, 2016) response to the infectious agent and are similar to flu, which include:

- Fever
- Chills
- Headache
- Nausea and vomiting
- Muscle pain and fatigue

Difficulty Controlling Spread of Malaria

The spread of malaria is particularly difficult to stop, as there are billions of mosquitos, who reproduce at high rates, who carry the malarial parasite and are prolific in late spring and especially after monsoons (Reisen, 1978). However, many mosquitos are still found in abundance during the dry weather and much research has been undertaken to understand if this is due to mosquitos being dormant or migrating (Abamou et al., 2011).

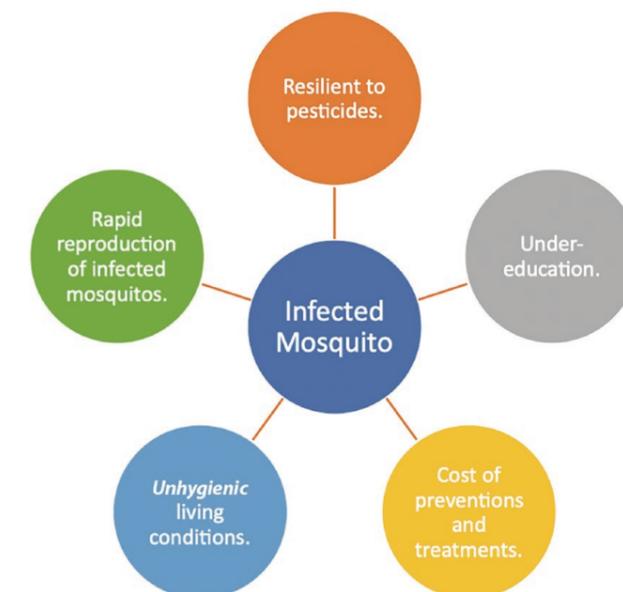


Figure 2 – Difficulty Controlling Spread of Malaria



Strategy to Prevent Spread in Franklin Village

Available Preventions

To avoid an epidemic as occurred in Ethiopia in 1958, where about 150,000 people died from Malaria in one season, it's vital a disease control strategy is implemented in Franklin Village (Vince, 2019). There are a number of preventions proposed in conjunction with treatments to deal with the outbreak in the village.

Spraying houses and cattle sheds with insecticides (Reinsen, 1978) will reduce the volume of mosquitos as opposed to reducing their contact with humans (Athrey et al., 2012).

Painting interior walls with insecticide and using nets impregnated with insecticide to sleep under (MalariaMustDie.com, 2019), reportedly helped reduce cases by 60% since 2000. However, numbers of insecticide resilient mosquitos are on the rise. It is advisable not to

continuously use the same repellents, or the mosquito may become immune. Currently the mosquito is not known to be resistant to Chlorfenapyr and its usage is therefore, advised by World Health Organisation (WHO) (Malariamustdie.com, 2019). As well as this, some insecticides have been banned, due to risks regarding public health.

It is vital villagers are educated about the risks of malaria and how to prevent and treat it, so they can keep cases and fatalities to a minimum. It is important to engage local communities and in particular village leaders, who will be useful influencing others. Crucially, villages need to set up local health care centres for more immediate advice and treatments (Malariamustdie.com, 2019).

Encouraging the sharing of knowledge such as local remedies is key. Additionally, obtaining feedback, which helps the understanding of the life cycle of mosquitos, such as where the mosquito lives, how far it flies and how it reproduces, will aid the elimination of the insect and reduces risk of exposure to the parasite (Malariamustdie.com, 2019).

Cleanliness must be encouraged as simply clearing away stagnant water will bring down the volume of mosquitos, and destroying breeding sites will also significantly help (Malariamustdie.com, 2019).

Depending on the location of the village, working with local agencies for example National Malaria Control Programme in Equatorial Guinea and worldwide organisations such as Malaria Elimination Initiative in San Francisco, WHO, Malaria No More (UK) and Malaria Consortium may also be effective in obtaining access to treatments, preventions and education.

Genetic Approach

Project Needlenose uses Cas9, that overrides parts of an organism's genes and allows a person to manually programme over the top. Scientists have already created a group of mosquitos that are immune to Malaria in a lab and wish to set them into the wild, to slowly eradicate the parasite (Kurzgesagt, 2016).

The original problem was that in genetics, two genes are passed to offspring and the new malaria resistant gene was not necessarily dominant. To deal with this issue, scientists forced the genetically modified gene to be overriding (Kurzgesagt, 2016).

By releasing the parasite resistant mosquito into the wild, malaria could be eliminated. Last year they released a group of genetically modified mosquitos that rendered the female infertile. (Kurzgesagt, 2016). Nature has developed its own genetic modification, in areas where malaria is most common the human blood has evolved changing the shape of the haemoglobin to prevent malaria but, the consequence is sickle-cell anaemia and thalassemia (Vince, 2019). It is therefore, quite possible the malaria resistant mosquito could evolve with disastrous effects, yet unknown. I conclude there is much axiology within this area of research to examine the ethical issues.

Creating parasite resilient mosquitos, would also help to prevent the insect carrying and passing on other diseases like the Zika virus (Kurzgesagt, 2016).

Available Treatments

Antimalarial treatments such as Chloroquine are effective against the parasite. This drug was launched in the 20th century however, it has some adverse side effects such as seizures, deafness, vomiting or anorexia. Over a long period of time the parasite became resistant to it, and this has decreased its reliability. (Vince, 2019)

A new drug called Artemisinin was discovered in 1972 (Vince, 2019) and is usually taken with a combination of two or more drugs to decrease the potency in Malaria (Mayoclinic.org, 2019). As well as this, a new malarial vaccine launched by GlaxoSmithKline (GSK) called RTS-S, is 50% effective for 4 years where it then drops to 40%. At the moment, pilots are being conducted in Ghana, Malawi and Kenya. This has a development cost of £552 million and taken 32 years of research. The limitation of having vaccinations in small areas, are that if it comes back in the future it could be more damaging as villagers could lose their own resistance (Vince, 2019). Another vaccine being used to treat the malarial parasite is Quinine, possibly one of the oldest dating back 400 years, however its poor tolerability and the availability of more efficacious anti-malarial drugs have made it less desirable to be used. This too, has some relatively horrific side effects that can include, ringing in the ears, confusion, nervousness, stomach cramps and vomiting (Katherine Marengo LDN, 2019).

Findings

Planned Strategy

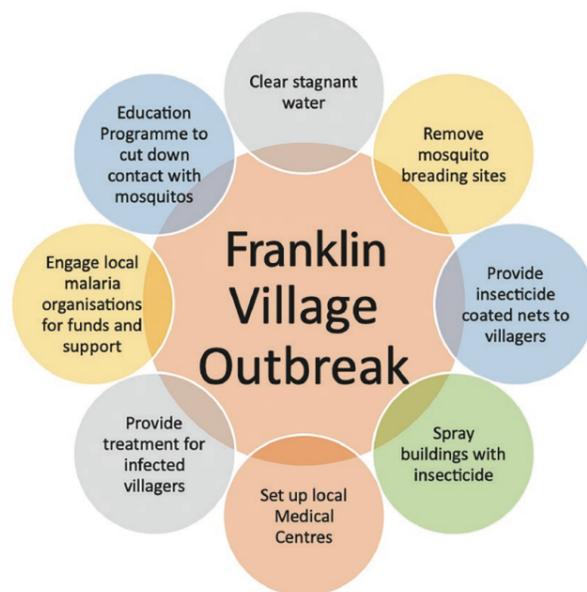


Figure 3 - Franklin Village Malaria Reduction Strategy

Why do chosen interventions work?

The strategy chosen will work because:

- It will reduce the number of mosquitos by removing breeding sites and nests.
- Villagers are better educated to avoid mosquito contact and to reduce risk of bite.

- Most of the action is simple and relatively cheap.
- Support of organisations provide access to needed funds.
- Local medical centre provides quicker treatments.

Strategy to Prevent Future Outbreaks

The number of people catching the parasite can be reduced by adopting the vaccination programme as and when it becomes available, continuing the simple prevention methods as outlined and campaigning for genetically modified mosquitos to be released into the wild.

Conclusion

In summary, the outbreak can be contained fairly easily and without significant cost, using a variety of methods. Preventions can continue afterwards, to halt future outbreaks and contribute to eliminating the parasite. I concur my method of interventions and preventions are the most effective against the parasite, and I believe I have successfully created an arsenal of hindrances that will stop the outbreak of Malaria in Franklin Village using new technology and aggressive prevention techniques.

Credibility

The references used are credible medical books, reliable websites campaigning for advancement in Malaria treatment and articles by established authors with knowledge in their field.

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Tutor comment:

I was very lucky to teach some very bright and diligent pupils at Ixworth Free School. I enjoyed teaching I. and was always very impressed with his subject knowledge and high level of interest. He wrote an excellent final essay. It was very well researched and showed very good critical thinking skills. Well done I., keep up the good work!

Climate has always been changing, so humans cannot possibly be responsible for the current climate change. Discuss.

Year 8, Key Stage 3

Pupil: E. Stringer

School: St Gregory's Catholic College Bath

Supervised by: T. Abdel-Magid

Tutor University: University of Bath

Course Title: The Anthropocene vs. deep time – A journey through Earth's climate history

Introduction:

The climate is the average weather of a large area over a long period of time compared to the weather which is the short term conditions of the atmosphere at a specific location [NOAA,2018]. Climate change is a large scale, long-term shift in the planet's weather patterns [Met Office, 2018]. Scientists measure the climate through averages of precipitation, temperature, humidity, sunshine, wind velocity, fog, frost, hailstorms and most other forms of weather over a season.

There are two types of climate change: natural climate change and human-induced climate change.

Natural climate change occurred in periods like the Karoo Ice Age and is affected by the currents, volcanic activity, the amount of sun spots, the placing of the continents and the different levels of gases in the air. The greenhouse effect is a natural cause of climate change that is human-induced; this means that due to human activity the effect has been made more severe and a problem. Human-induced climate change has been caused by things like deforestation, combustion, the industrial revolution and chlorofluorocarbons.

In this essay we will explore how all of these affect natural and human-induced climate change.

Natural climate change:

The Karoo Ice Age is one of the strongest examples to show that climate change occurs naturally. 2,700,000,000 year ago, the first cyanobacteria began to grow. [Astrobiology Magazine, 2004]. The bacteria conduct photosynthesis, which uses sunshine, water and carbon dioxide that were already in the atmosphere to produce oxygen molecules and glucose [BBC, 2019]

The cyanobacteria began to adapt to the different environments on the earth. Chemical reactions which included the cyanobacteria took place and caused the first plant to be formed. Plants also photosynthesize which caused the Atmospheric Oxygen Level to increase. Over time the carbon dioxide levels started to decrease as there was more photosynthesis than respiration occurring.

The earth began to cool down as carbon dioxide is one of the main greenhouse gases. The greenhouse gases keep the heat that is radiated onto the earth from the sun inside its atmosphere, and only allows some of the reflected heat out. Once this barrier was removed it meant no heat was being contained inside the atmosphere and that the sun's rays were being reflected.

This affected the albedo of the earth's surface. The albedo of a surface is decided by how much solar energy can be reflected off its surface. The more that's reflected; the higher the albedo. High albedo surfaces usually appear white, but if a surface has a low albedo it will appear black. The Earth's average albedo is 0.30 but can increase and decrease over time. [NASA, 2012] Because the albedo levels were at 0.75 [NASA, 2012], no heat was being trapped on the surface and that meant it was getting cooler therefore snow and ice began to form.

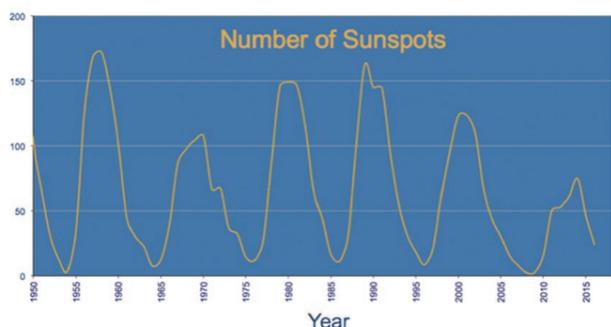
The summer wasn't warm enough to melt the snow and ice, so the albedo level was continuously increasing and caused more snow and ice to form. The plants also continued to suck more carbon dioxide out of the atmosphere through photosynthesis.

715 million years ago, the planet became completely covered in snow and was given the name snowball earth. [Kate Ravilious, 2015]

It became so cold and the air contained too little carbon dioxide that plants and other living creatures couldn't survive. Because there were no plants to photosynthesize over time carbon dioxide returned and began to warm the plant through the greenhouse effect. The summer became warm again and the snow and ice melted but left two large frozen land masses which are now known to us as the Arctic and Antarctica. This is proof that is climate change must be natural as humans weren't around during this period.

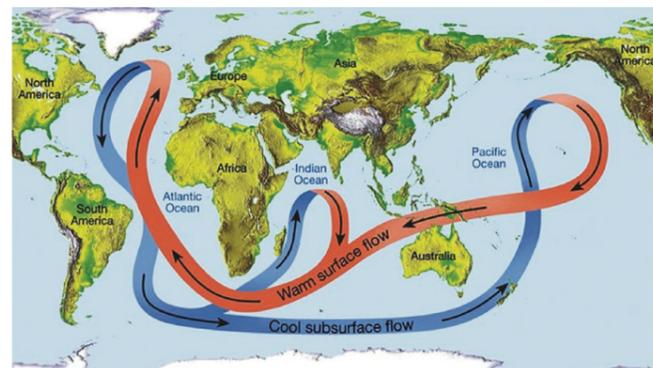
Sun spots and continental positions also affect the earth's climate. Sun spots are the areas of the sun's surface that appear dark. They appear dark as they are cooler, and therefore emitting less light than the surrounding area. [Matthew Templeton, 2011] Although, they would appear extremely bright if not placed next to the rest of the surface of the sun.

Sun spots are caused by the sun's strong magnetic fields; these magnetic fields cause the heat being radiated off of the sun to be trapped [Matthew Templeton, 2011]. They also cause the sun spots to be extremely active. Sometimes the activity can cause material to lift off the sun or solar flares. This then affects the earth because they can generate x-rays or cause large storms of energetic particles to be released into space. [National Weather Service, 2018] The number of sun spots on the sun's surface increases and then decreases in a cycle of 11 years. This cycle was named the solar cycle [Matthew Templeton, 2011]



The 11-year sunspot cycle: [Randy Russel, 2019]

The continental position and the oceans have also affected climate change. When solar radiation hits the equator earth's surface, it hits the same strip of the earth; between 10 degrees south and 10 degrees north of the centre line of the earth. This area is called the equator. The equator is a lot warmer than other parts of the earth that are not hit by the sun's rays regularly. On the parts of the equator that are sea, it will not be as hot as the areas on land as the currents are constantly moving the water: the warm water is pushed by the current to the colder regions of the earth. Because the water coming from the equator is warmer it is less dense which means it travels over the colder, more dense water. When the water reaches the north near the Arctic, the water becomes cooler and therefore denser. This means that it sinks before it is pushed along again. This process means heat is spread over the world and keeps the naturally colder areas like the north of Europe slightly warmer than they would be otherwise. [NOAA, 2018] This cycle would change due to where the continents are placed which affects how hot different parts of the world are.



The currents: [Astronomy Online, 2013]

This is evidence climate change has always occurred and couldn't possibly be caused by humans as it hasn't had a sharp incline since humans have evolved.

Human induced:

There are many notable examples of human induced climate change. In fact, there are so many that a new epoch has been proposed: The Anthropocene. The Anthropocene shows the sheer size of humans' influence on the earth. [Trevor M. Letcher, 2009] Epochs are defined by a spike in levels of sediments across the world. For some it has been meteorite strikes or sustained volcanic eruptions but for the Anthropocene they include plastic pollution, concrete production and aluminium use. [Dr Simon Lewis and Professor Mark Maslin, 2015] Each epoch has a golden spike; the area that shows the largest layer of sediment in the world for that Epoch. The golden spike for the Anthropocene is a cliff near Meishan in China. [Colin Barras, 2018]. The beginning of this epoch was not natural as they are usually expected to have a life span of around 12,000,000 years and the Holocene period lasted a mere 11,500 [James Owen, 2010].

EON	ERA	PERIOD	EPOCH	Ma	
Phanerozoic	Cenozoic	Quaternary	Holocene	Late 0.01	
			Pleistocene	Late 0.8	
		Tertiary	Neogene	Pliocene	Early 3.6
				Miocene	Late 5.3
				Oligocene	Middle 11.2
		Paleozoic	Paleogene	Eocene	Early 33.7
				Oligocene	Late 28.5
				Eocene	Early 49.0
				Eocene	Middle 41.3
				Eocene	Late 54.8
	Paleocene			Late 61.0	
	Paleocene			Early 65.0	
	Mesozoic	Cretaceous	Late 99.0		
			Early 144		
			Late 159		
		Jurassic	Middle 180		
			Early 206		
		Triassic	Late 227		
			Early 242		
		Paleozoic	Permian	Late 248	
				Early 256	
Pennsylvanian			Late 290		
	Early 323				
Mississippian	Late 354				
	Early 370				
Devonian	Late 391				
	Middle 417				
Silurian	Late 423				
	Early 443				
Ordovician	Late 458				
	Middle 470				
Cambrian	Cambrian	Early 490			
		D 500			
		C 512			
		B 520			
		A 543			
Precambrian	Proterozoic	Late 900			
		Middle 1600			
		Early 2500			
		Early 3800?			

Geological timescale showing the usual length of an epoch: [SERC, 2018]

Another human-induced cause of climate change is the rise in greenhouse gas levels. Deforestation is a main reason that carbon dioxide levels have increased. It is the process of cutting down trees on mass; every year an average of 18 million are cut down to clear land for other purposes [Alina Bradford, 2018]. This is a cause of the rise in greenhouse gases because trees photosynthesize which removes carbon dioxide from the environment. They also store the carbon dioxide that is taken in, which means that when they are cut down carbon dioxide is released.

Another source of the rise in greenhouse gases and carbon dioxide is combustion. Combustion is the burning of fossil fuels to power vehicles. The carbon dioxide produced through this process also stays in the atmosphere as it isn't being used in photosynthesis. Due to this and the final reason of cows producing methane the levels of greenhouse gases have rocketed.

Greenhouse gases cause the natural process of the greenhouse effect. The greenhouse effect is the warming of the earth through a layer of gases in the atmosphere; greenhouse gases trap the sun's energy in the form of heat which will keep the earth warm [NASA, 2019]. The build-up in the gases causes the greenhouse effect to be induced. In this case, it means that more heat energy is being stored than it would naturally, causing the climate to become warmer. This is a cause of climate change as when the earth is warmed, the ice caps will melt causing higher sea levels and more flooding, storms and more extreme seasons. The only logical reason this was caused is human activity; the great acceleration is evidence for this. The great acceleration is the 24 indicators which show the drastic difference in the earth's climate caused by human activity since 1950.



The great acceleration indicators: [W. Steffan, 2015].

There are only 11 years until these changes that caused the suggestion of a new epoch will result in a climate disaster. [Maria Fernanda Espinosa Garces, 2017]. There may be some solutions to prevent this "climate disaster" one of those being carbon capture. A Canadian company called Carbon Engineering has come up with the ground-breaking idea. The "magic bullet" as it is being called by the BBC, exposes air to a chemical solution that concentrates CO2. It then can be purified into a liquid fuel or a form that can be stored. This is both cost effective and solves the problem of combustion. [BBC, 2019] Although, the magic bullet could take a long time to create. So, to start helping with emitting less carbon dioxide we could all turn off lights when they are not in use and take less car journeys. Instead of using fossil fuels to power our homes, cars and cities; we can use clean energy like wind, wave, tidal and solar power. [Greenpeace, 2019]

Conclusion

In conclusion, climate change is a natural process, it can be shown through periods like the Karoo ice age. It can also be visible through the 11-year sun spot cycle and the oceans.

Although humans are affecting the climate to such a point that a new epoch has had to be suggested: the Anthropocene. It shows how much of a geological force humans are and that as such a massive force we need to be careful what that means for the earth. Humans only have 30 years to stop what they have caused becoming irreversible; and they have the tools to be able to do so. Even as 1 person in a world of 7.7 billion [Max Roser et al, 2019], you could help change several things you do everyday to reduce carbon dioxide emissions. There are also ways to help on an industrial scale too, for example switching to renewable energy sources or to put money towards machines like carbon capture and "magic bullets".

Surely you wouldn't want to see a climate disaster? No matter who you are there will be ways to help prevent it.

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Tutor comment:

During my first placement I had the honour to work with the welcoming staff and knowledgeable pupils of St. Gregory's Catholic College in Bath. E. was one of the most promising in the group I worked with, while she stood out with her friendly personality, supported arguments and eloquent assignments. Her final assignment was the cherry on top of her remarkable previous work. I was extremely happy to read her work and impressed to see how well she applied the new material she got throughout the tutorials. I have the utmost confidence that Elizabeth will shine and continue to dazzle throughout, and after, her university years.

The chemistry of a cupcake

P7

Pupil: L. Zheng
School: Highpark Primary School, Glasgow
Supervised by: H. Jones
Tutor University: University of Edinburgh
Course Title: What is the difference between a cupcake and a pancake?

Welcome to the first page of my writing! In this text the topic I will be telling you about is the difference between a pancake and a cupcake.

Both pancakes and cupcakes have many differences like their ingredients, textures, and taste. Apart from that, they are both brilliant snacks for parties and celebrations! Especially on Pancake Day.

The writing will be split into three parts; ingredients and mixture, batter, and lastly in the oven. I have also included a fact page with fascinating facts you may have known about. So, what are the main differences between a pancake and a cupcake? Let's dive deeper into the text to explore the chemistry of the two famous treats and find out how they develop and change!



Picture of a cupcake [20]

Here is a small table of what will be on what page:

Introduction	Page 1
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Ingredients

Cupcake [16]	Pancake [17]
Flour	Flour
Baking Powder/Soda	Baking Powder/Soda
Eggs	Eggs
Butter	Butter
Sugar (Optional)	Sugar (Optional)
Salt (Optional)	Salt (Optional)
Milk	Milk
	Vegetable Oil

To start off with, let's talk about what ingredients are used for both a cupcake and pancake. As you can see in the table above, I have listed the ingredients for cupcakes and pancakes. Because websites are all different they will sometimes use other ingredients. If you are going to bake something I would recommend using a recent cookbook as it is more reliable and it will have instructions that you can follow, including how long to bake something for. Cupcakes and pancakes both have quite similar ingredients but of course, they all have a certain role. Some have only one role whilst some have more. I will explain them further down below. The first ingredient listed is flour. Flour is a common thing used for baking. It is very important as it holds all the other ingredients together and gives it a light, stable structure. Without it your baking won't be as stable and the ingredients in it may not be completely combined. It can also fall apart due to less proteins. Flour is high in protein and that's what keeps the baked goods stable. Proteins are made up molecules called amino acids joined together with bonds. They are what change during baking. I will introduce what proteins are on another page.

The next ingredients are baking powder and baking soda. Baking powder and baking soda are also called "leavening agents". It is called that because it's an ingredient always used last before baking. The baking powder/soda helps the baking goods to rise but releasing carbon dioxide (CO₂), a type of gas responsible for inflating the baking goods. Without it, the food won't rise when baked and it may result in a dense, heavy texture. Therefore, they are also both very important ingredients.

The next two ingredients are sugar and butter. Both cupcakes and pancakes use the ingredients sugar and butter because the butter gives it a soft and moist texture, whilst sugar gives it a goldish brown crust and sweet taste. You can decide whether you want to add sugar or not but without it you won't get a goldish brown colour when the baked goods have finished baking. Normally you would need butter for cupcakes and pancakes but in my opinion, it is quite important to add butter into the mix as it gives the cupcake/pancake a soft and moist texture. Otherwise it won't be as spongy and soft, instead it could be dry and crumbly.

The final two ingredients are milk and vegetable oil. The reason why milk is used in both cupcakes and pancakes is because it also gives a moist, hydrated texture, but for cupcakes it helps it rise more easily whilst adding flavour. For the pancake it makes it more tender, thick and also quite fluffy.

A pancake uses the ingredient vegetable oil but a cupcake doesn't according to my research. The reason why vegetable oil is used is for pancakes is because it's good for cooking and again helps to maintain moisture and helps it fluff up. You wouldn't normally use vegetable oil for cupcakes as there would be flour to help add moisture and keep it stable. If the flour can't mix, it can't form gluten [1]. As a result, you may need to use the vegetable oil.

Batter Mixture

Now that we know what ingredients are used in cupcakes and pancakes let's find out what the texture and colour of them is and what the difference is between them.

Colour

The normal colour for a cupcake or pancake would be a goldish brown colour. The reason why it would be that colour is because both a cupcake and pancake have sugar in them. Sugar is often used to make things sweet but not only can it do that, it can also give a goldish brown crust. Therefore, when the cupcake/pancake is baking it should turn goldish brown, unless if you have added food dye into the mix.

Texture

Quite often, pancakes and cupcakes are soft but why? This is because of what ingredients are used. Sometimes it depends on what order the ingredient are put in. The ingredients, milk, butter, eggs and flour are the ones that help make food soft and moist. They appear in both cupcake and pancake which means that both are soft and fluffy.

Ingredients can also be sorted into two groups; wet ingredients and dry ingredients. For cupcakes, it has two wet ingredients; milk and eggs, and four dry ingredients; flour, baking powder/soda, sugar and salt. Pancakes have three wet ingredients; vegetable oil, milk and eggs and only four dry ingredients; flour, baking powder/soda, salt and sugar. As a result, pancakes have more wet ingredients than cupcakes and cupcakes have same amount of dry ingredients than pancakes. This means that pancakes are slightly moister than cupcakes, whereas cupcakes are slightly dryer than pancakes.

Acid or Alkaline?

After getting all the ingredients, we will need to mix them all together. During the process of mixing the ingredients, there are many reactions occurring but what and why? I will explain more, further down in the text.

Ingredients can be either be acidic or alkaline (or be neutral) and we can measure this on a pH scale. A pH scale is a scale numbering from pH 0 to pH14. It looks a bit like this:



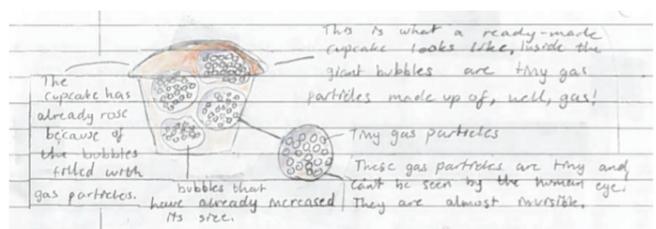
As you can see above, the coloured blocks there are numbers from zero, being the most acidic, to fourteen, being the most alkaline. On the right of the colours is a list of examples that have the same pH. pH 14 would be the same as bleach, whilst pH 0 would be the same as battery acid. Anything from pH 6 to 0 is an acid and anything from pH 8 to 14 is an alkaline. Now that we have found out what a pH scale is, let's find out what each ingredients pH is. The first ingredient is flour. Flour has a pH around 6 and 6.8 which is slightly acidic but is still neutral on the pH scale [2]. Another ingredient that has a similar pH as flour is salt. Salt is exactly pH 7.0 which is neutral [3]. The next ingredient is eggs. The pH for eggs is around 7.6 at the time of laying and can increase in alkalinity as the eggs ages [4]. Two of the most important ingredients – baking powder and baking soda! Baking soda has a pH around 8.3 [5] which is slightly alkaline. Baking powder doesn't have a pH and I will explain to you why. Baking powder is a mixture of acidic and basic components; sodium bicarbonate and cream of tartar which react when moistened. The only way to find out what the pH of something is, is to turn it into a liquid. By the time you have dissolved the baking powder into water there will be no baking powder left [6]. This is also the reason why we wouldn't put baking powder first as the wet ingredients (milk, water, eggs etc.) will dissolve it and there would be no point adding the baking powder at all.

The next two ingredients are milk and butter. Milk is between pH 6.5 and 6.7. Distilled water also has a pH around 6 and 7. Butter has a pH around 6.1 and 6.4. Again, it also has a similar pH as distilled water. You may have noticed that many of the ingredients are very near neutral (pH 7) and are either slightly acidic or slightly alkaline. When ingredients are being mixed together the pH is getting altered as the ingredient combine. When an acid meets an alkaline the pH increase to 7. As the ingredients are being mixed together the pH is always going up and down on the pH scale. When a combination of acids and alkaline meet it produces a gas called carbon dioxide (CO₂). Acid plus alkaline can also be written as salt plus water (plus carbon dioxide).

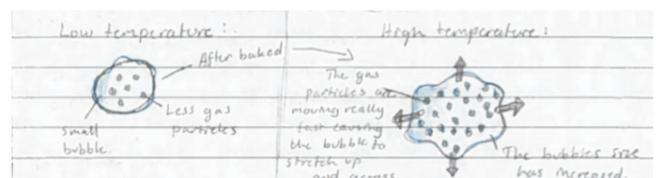
This is just another way of saying acid plus alkaline. Carbon dioxide is a very important gas when baking. Why is that? Let's start our next topic and find out more!

Rising in the Oven

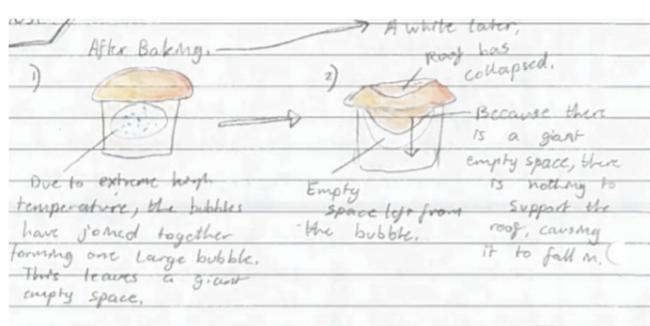
Why is carbon dioxide important when baking? Carbon dioxide is produced from the ingredients that were used. Just like what was written above, carbon dioxide can be made when an acid and alkaline meet. Once the mixture of ingredients are in the oven the baking goods will start to rise. This is because the carbon dioxide is inflating it. Let's take a look at this picture here:



As you can see there are two things mentioned in the picture, the bubbles and the gas particles. When the cupcakes are baking the gas particles fill up the bubbles as the temperatures rises. It continues to do this until the temperature starts to drop. It's a bit like a balloon getting inflated with air. There would ask be bubbles and gas particles in a pancakes just like a cupcake but another differences is that cupcakes are normally baked whereas pancakes are often cooked on a griddle or frying pan, often frying with oil or butter [8]. When the temperature increases the gas particles inside the bubble will start to move and accelerate. This is because when the temperature is high the gas particles take in a lot of energy allowing it to move rapidly inside the bubble. Whilst the gas particles are moving around they are always banging into each other and also hitting the wall of the bubble. Because of this the bubble is being stretched upwards and across, as a result its size increases and even more gas particles appear. This helps the cupcake/pancake to rise, but if you leave something baking for too long it wouldn't be a good idea because as we all know there can be other consequences. Because heat causes gas particles to move quickly inside bubbles, increasing the temperature too much can cause it to almost break the bubble, forcing it to connect with the other bubbles in the baking good. This can result in a burst or burnt cupcake. Therefore, you should always keep an eye on how long you bake something for. Here is a small picture showing how a bubble increases its size:

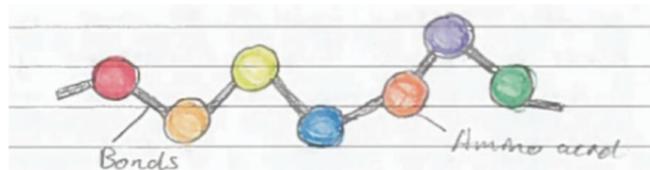


If the bubbles inside the cupcake are all joined together the roof, the roof of the cupcake would collapse as the bubble will have left a giant empty space allowing it to fall in like a roof collapsing from a 70 year old house.



Proteins

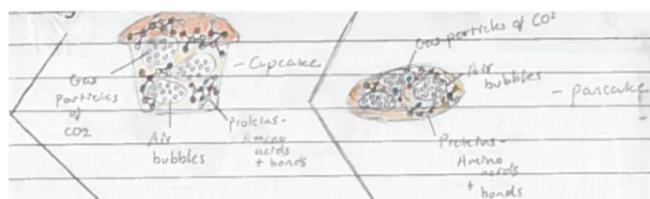
What are proteins? Proteins are tiny structure of amino acids and bonds all joined up in a line. This is what an amino acid/protein looks like:



Amino acids are tiny molecules and there are 20 different types [9]. These proteins can be found in many foods such as milk, meat, fish, eggs, oats, oatmeal, nuts and lots more. These proteins don't stay the same during baking instead they go through four stages when heated; normal, unravelled, bonds break and lastly new structure. Here is a small diagram to show you what happens in each stage:

Normal:	Normal is where it's just the way it is with no changes yet. It always starts off curled up.
Unravelling:	Once the temperature rises, it starts to unravel just like the picture on the left.
Bonds break:	This is when the temperature reaches up to 40°C causing the amino acids to break into random bits whilst separating from each other.
New structure:	Before the temperature starts to cool down, all the amino acids join together from random directions creating a new structure!

When an egg is not fried yet, it is wet and mostly just a yellow egg yolk in the middle but after frying it, it has a white layer around the egg yolk. This happens because the order of the proteins has been altered. Some things don't have proteins at all as a result they don't change much when heated or baked. Cupcakes and pancakes both have proteins in them which are mostly from ingredients used. Where do the proteins go? They are always outside the bubbles of gas filling up the extra spaces. Here is a small picture showing where the proteins go:



Now that we know about what proteins are let's go over the steps during baking and what changes happen:

1) All the ingredients have been mixed together put into the trays and have started to bake.

2) The temperature starts to rise. The gas particles are now moving faster due to higher energy. The air bubbles are starting to stretch (upwards and across the ways) and increase in size. The proteins are now unravelling.

3) The temperature is now high and the gas particles have lots of energy allowing it to go super-fast banging into each other and banging into the wall making the bubble even more larger. The amino acids have now separated into random bites and have been moved around.

4) The cupcake has finally reached its full size! The gas particles are now slowly slowing down as the temperature drops. The protein has also joined together creating a new structure.

Short Conclusion

After finding out how a cupcake and pancake changes over time during baking, here is a short text about what the main difference is between a cupcake and pancake [18]. Cupcakes take about 20 minutes to make but pancakes only take approximately 15 minutes [19]. Cupcakes are slightly more crumbly than pancakes, and pancakes are slightly softer and smoother than cupcakes. They both use similar ingredients but cupcakes are normally baked whereas pancakes are normally fried on a grill or frying pan. Because cupcakes are baked in a cupcake case it becomes cupcake shaped! Pancakes however are usually fried and as a result its shape is flat. Cupcakes were invented in 1776 and was introduced in 1919 [10] but pancakes were made a lot earlier than cupcakes. They were thought to have existed around the 1st century made by the Romans. It was said that the first pancake was made of milk, flour, eggs and spices.

Cupcakes are often brilliant treats for parties and celebration and pancakes are often eaten just before Easter which is known as Lent. There are many different types of cupcakes and pancakes. Some

people like vanilla flavours, some like strawberry or raspberry flavours whilst others prefer blackberry or blueberry. Many think chocolate flavours are popular, what flavour do you think is popular?

Facts

- 1) Did you know? These are around 117 million pancakes eaten on Pancake Day [12]
- 2) Did you know? In the US there are over 770 million cupcakes eaten every year [13]
- 3) The world's largest cupcake weighed over 1,200 lbs and had over 2 million calories [14]
- 4) The biggest pancake in the world weighed 3 tonnes [15]

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Tutor comment:

It was a joy to work with the pupils and staff at Highpark Primary and LCR School during my Brilliant Club placement. All the pupils were enthusiastic and worked incredibly hard throughout the programme to produce excellent final essays. During the tutorials, L was engaged, inquisitive and contributed great ideas to class discussions. L's essay showed an outstanding level of understanding, creativity and ability to develop an argument which resulted in a fantastic mark of 73 out of 100 (1st). L should be very proud of her work and achievement.

Would you be able to prevent a viral epidemic?

Year 9, Key Stage 4

Pupil: **C. Darby**
 School: **Denton Community College, Tameside**
 Supervised by: **S. Monteil**
 Tutor University: **The University of Manchester**
 Course Title: **Fantastic viruses and how to find them**

A viral epidemic is the rapid spread of infectious disease to a large number of people in a certain population in a short period of time 'derived from a common source' (The Conversation, 2015). These viral epidemics could be anything from chicken pox and cold sores to AIDS and avian Influenza. The focussed virus for this paper will be Ebola. Research will be conducted to establish the possibility of the Ebola virus being eradicated.

What is Ebola?

Ebola (also known as Ebola haemorrhagic fever) is

an extremely rare viral infection that leads to internal and external bleeding. Studies suggest that the virus originated in Africa (NHS, 2019). The Ebola virus (Figure 1) was first discovered in 1976 near the Ebola River in what is now the Democratic Republic of Congo. Scientists have declared that the Zaire Ebola virus is the deadliest Ebola virus (Gholipour, 2014). This virus was linked with the 2014-2016 outbreak in West Africa, which is the largest outbreak of Ebola to date with more than 28,600 cases of the virus.



Figure 1 The Ebola virus magnified 108 000 times. (Ars technical, 2014).

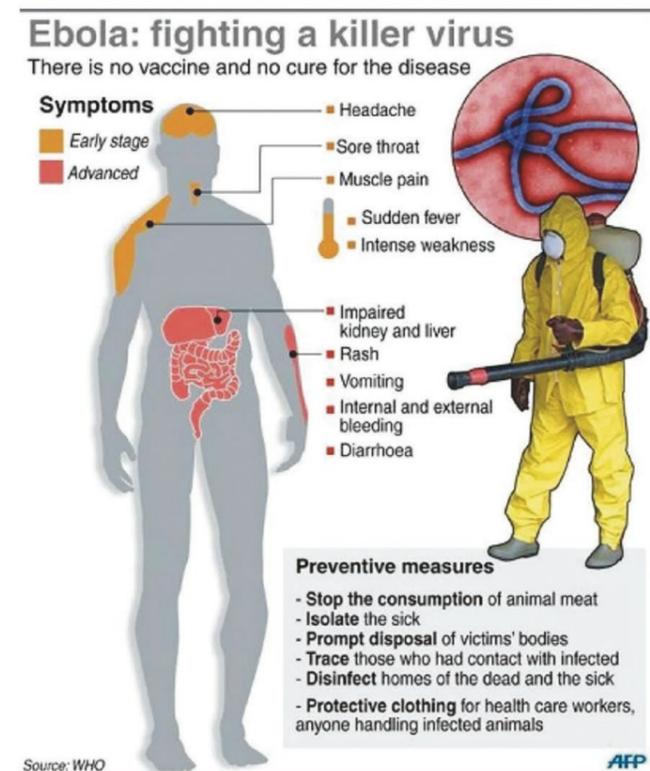


Figure 2 (The Telegraph, 2014).

How does the virus spread?

The viral infection was originally transmitted to humans from wild animals. Although, animals are still the cause of the virus, Ebola is also passed on by humans through direct contact with a person infected by the viral disease. Research suggests other methods of virus transmission includes, broken skin or mucous membranes in the eyes, nose, or mouth with body fluids of a person who is infected, the consumption of infected meat and touching contaminated objects (Centres for Disease Control and Prevention, 2019).

Signs and symptoms typically start between two days and three weeks after contracting the virus. Symptoms start with a fever, sore throat, muscular pain, and headaches. Vomiting, diarrhoea and rashes usually follow, along with decreased function of the liver and kidneys. Ebola is highly contagious. Doctors and nurses caring for an infected person with the disease are also at a high risk of contracting the infection. Public Health England (2018) advise all health professionals to use barrier nursing techniques such as masks, goggles and protective gowns. Once the virus is contracted, Ebola is life threatening or at best very dangerous (Figure 2).

As well as humans, Ebola also most commonly infects monkeys, gorillas and chimpanzees. Scientists have identified five strains of the virus; with four strains causing sickness (WebMD, 2018). After entering the body, the Ebola virus kills cells, making some of them explode which wrecks the immune system; causing internal and external bleeding (Figure 3). In addition, the occurrence of death within those infected in Africa is reported to be between 50-90% (On Health, 2016).

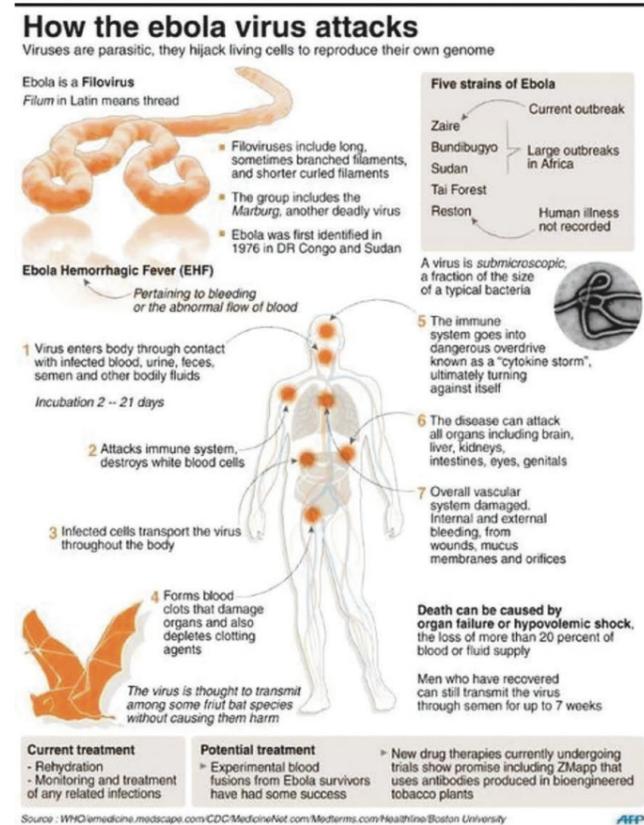


Figure 3. How the Ebola virus attacks (Johnson and Taggart, 2014).

Ways to detect the virus

Research suggests that Polymerase chain reaction (PCR) is one of the most commonly used method to diagnose Ebola (CDC, 2019); due to its ability to detect lower levels of the virus (Figure 4). The method detects the presence of some virus particles in small amounts of blood. Their ability to detect the virus increases as the amount of virus increases during an active infection. Scientists claim that polymerase chain reaction can reproduce 'millions or even billions' of a particular DNA (Khan Academy, 2019).

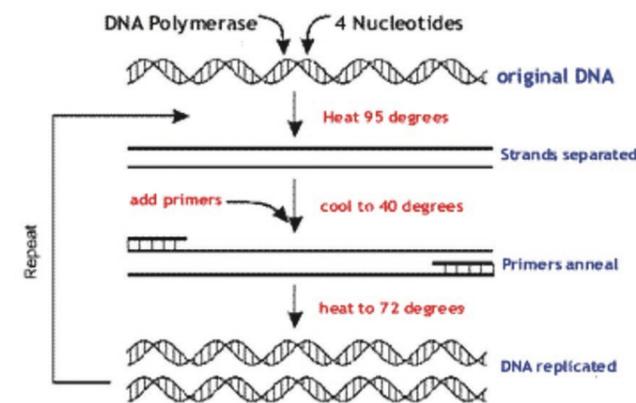


Figure 4. Polymerase chain reaction (The Sciency Fellow, 2015).

Sometimes, doctors will also use ELISA (enzyme-linked immunosorbent assay). This method uses a plate-based technique to detect substances. During ELISA research suggests that, 'detection can be accomplished by assessing the conjugated enzyme activity via incubation with a substrate to produce a measurable product' (Thermo Fisher Scientific, 2019). It uses an enzyme linked to an antibody, to discover how much of an antigen is present in the sample. ELISA has good reproducibility, taking only hours to complete. This method proves cost effective and is ideal for use in a low-income developing country (LIDC) economy.

Furthermore, the use of Hemagglutination assay is used to quantify how much of a virus is needed to agglutinate red blood cells. It also has good reproducibility, takes hours and is affordable. In addition, it would be suited to a LIDC country more because of the examination time being ideal if an Ebola outbreak was to occur. Therefore because of the good reproducibility, the quick and responsive examination time and the affordability of the methods, they may be better suited to detecting Ebola. Hemagglutination assay is reported to be a classic, rapid method, requiring no equipment which is still used in the present day for viral detection of influenza, however, the sensitivity can be restricted (Ryu, 2017).

How to develop treatment for the virus

Treating Ebola consists of supportive care towards the patient which includes IV fluids, monitoring, oxygen and regular blood pressure checks. These interventions can improve the patient's survival rates and make it drastically more comfortable for the patient. Dr Ireland, an Ebola survivor, describes the disease as humiliating and debilitating; describing severe diarrhoea and vomiting whilst witnessing patients around him dying and fearing for his own life (Actionaid, 2014). Although the experience for patients is severe and life-threatening, a cure is presently non-existent; the monitoring of their infection and helping out in every way is essential. Medical professionals, through monitoring and isolation, increase patients' chance of survival and reduce the risks of further spreading.

Currently there is no vaccine to prevent infection with the Ebola virus, nor are there any approved drugs for its treatment (Strauch, 2014). Treatment for Ebola focuses on offering supportive care so that the patient's immune

system can fight off the virus. If an outbreak was to occur, individuals would benefit from familiarising themselves with the symptoms of Ebola. Preventative measures to reduce the spread of the virus may include, washing hands regularly (more than usual), wearing protective medical clothing especially around infected patients and to attempt to disinfect all medical hardware. An Ebola outbreak in a developed country would be rare but may be easier to contain with health services having routine access to the facilities and equipment already; such as gloves being used regularly and basic hygiene during treatment. However, in LIDC's this may be problematic due to a difficulty in accessing basic healthcare and funding.

Fortunately, Ebola does not have an effect from AMR (antimicrobial resistance). Antimicrobial resistance occurs when microorganisms such as bacteria, viruses, fungi and parasites change in ways that render the medications used to cure the infections they cause ineffective. Scientists are researching to discover a vaccination for Ebola; The National Institute of Allergy and Infectious Diseases (NIAID) are testing several Ebola vaccines following the outbreak of Ebola in Africa (On Health, 2016). Medicines are also improving. Experts suggest that a new treatment for Ebola named ZMapp is proving successful during trials (National Institutes for Health, 2016). However, doctors and scientists may struggle to make a medically approved substance that can cure Ebola infected patients completely; with trials proving difficult to conduct 'with the waning Ebola epidemic' (National Institutes for Health, 2016).

In contrast, some people believe that alternative treatment such as Green tea, honey and vitamin C may attempt to prevent Ebola (Live a little Longer, 2016). This may be due to the fact that Green Tea contains excellent antioxidant properties: this has been used as preventive medicine for ages by the Chinese people and other nationals across the world. The Latest research shows that a compound called epigallocatechin gallate (EGCG) present in green tea is effective in blocking the Ebola virus successfully. However, drinking Green Tea has not been scientifically proven to cure the Ebola virus and is currently just a suggestion by medics across the world. Dr Ireland's recovery from Ebola was successful due to his understanding and quick diagnosis of his illness; he had been treating two colleagues with the virus and was aware of the signs and symptoms, quickly identifying his headache and fever as Ebola. This rapid detection proved vital in receiving quick treatment for his recovery. However, not everyone is equipped with the knowledge of the virus. In areas at risk of the infection, communication is key for the public to have greater knowledge on the risks and symptoms of the virus to prevent spreading within communities and increase survival rates. In developed countries, news can spread quickly through televised news reports, advertising and social media to assist the public on how to manage an illness and prevent contamination. In contrast, LIDC's may find prompt communication challenging; with poor internet and television access and reduced access to local health services.

A participant based focused group from Monrovia outlined problem areas which they believed needed solving to prevent the disease from spreading: adequate food for those in quarantine, effective communication between treatment centres and families, improvements to health services and greater support for bereaved families (Kutalek *et al*, 2015). Risk factors for the spreading of Ebola may also need to be widely available to prevent further outbreaks. Experts suggest some risk factors that may be unknown to the general public such as, individuals travelling to Africa, people who are associated with animal research with animals from contaminated countries, and people who are in charge of burying those who have died from Ebola as they are still contagious (Mayo Clinic, 2018).

To conclude, the possibility of a viral epidemic of Ebola being prevented may vary depending on the country of origin, the facilities available and the funds and communication available. This would support the prevention of the spreading of the virus. Through greater research and knowledge regarding Ebola, scientists can produce potential cures or treatment for patients infected with Ebola. However, this research and training may take time and be costly for the country involved. Until a treatment or cure has been identified it is vital that barrier methods for treating those with Ebola continue to be used effectively to reduce the chance of further spreading and to reduce the fatality rates.

Furthermore, the public should be educated surrounding the dangers of Ebola and be familiar with the signs and symptoms of the virus. This would enable quick and reliable diagnoses, treatment and to enable individuals to be segregated from their families and communities to prevent further virus outbreaks; eliminating the chance of a viral epidemic. Countries who wish to remain Ebola free may need to invest in resources to take care of an outbreak; such as segregation units and protective clothing such as aprons, masks and gloves. In addition, the access to basic healthcare may also need to be improved in some low income developing countries to increase hygiene, individual's basic health in order to be fit and healthy to be able to fight off a virus and to reduce fatalities; this would also reduce the impact on individuals, families, the economy and communities.

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Tutor comment:

Being a tutor at Denton Community College was an amazing experience. Pupils were really enthusiastic, and C. was always contributing to tutorial discussions with convincing arguments. C.'s essay is absolutely outstanding, I was especially impressed by the clarity with which he explained complex points. He did really well with university-style learning, and I believe he would excel at any university.

Will it live, will it die: Can we save the greater one-horned rhinoceros?

Year 9, Key Stage 4

Pupil: O. Hope
School: Marple Hall School, Stockport
Supervised by: S. Scott
Tutor University: Manchester Metropolitan University
Course Title: Evidence based conservation: Can we save the rhino?

Abstract

I have chosen to assess the threats the greater one horned rhinoceros *Rhinoceros unicornis* is currently facing. In this essay, I discuss the primary threats of poaching, habitat fragmentation and habitat loss as well as the strategies that the Nepalese and Indian wildlife authorities are using to mitigate these risks, such as: tracking rhinos using GPS, electric fences and armed guards. I also outline the scientific research that has been done on the greater one-horned rhino and what research should be done. I conclude by explaining how we could save the greater one-horned rhino and how I think we should save the species.

Introduction

This essay is answering the question: can we save the rhino? I have chosen to specifically answer this question on the species of the greater one-horned rhino *Rhinoceros unicornis*. Greater one-horned rhinos are unique because they only have one horn (hence the name) compared to the two that is encountered on all of the other rhino species – except from the Javan rhino – and has a horn length of 8-25 inches[1] which, like all rhino horns, is made of keratin.

The greater one-horned rhino's geographic range previously existed across the entire northern Indian subcontinent from the Pakistan-India border in the west to the India-Burma border in the east[2]. This large territory range meant that at one point in time the greater one-horned rhino roamed across Nepal, India, Bhutan and Bangladesh – whereas their areas of occupancy are only in Nepal and India currently[1]. In Nepal, the greater one-horned rhino has 4 protected areas of occupancy: Chitwan, Bardia, Suklaphanta and Parsa as well as 8 protected areas of occupancy in India: Kaziranga, Pabitora, Manas, Orang, Jaldapara, Gorumara, Dudhwa and Katerniaghat[2]. The rhinos in certain protected areas (such as Gorumara National Park in India) also frequently visit the adjoining areas of forest[2]. Rhinos that are from Nepal also roam adjacent land in India[2].

These protected areas are within the traditional areas that the greater one-horned rhino inhabited and are made up of riverine grassland on the banks of the Terai and Brahmaputra Basins but have been sighted in the adjacent swamps and forests[2]. Unfortunately, they are restricted by urbanised areas and so often cannot reach the preferred areas which they traditionally occupy.

Due to extremely heavy poaching in the 19th century, at the beginning of the 20th century the greater one-horned rhino was on the brink of extinction, with only 200 greater one-horned rhinos alive[1]. Today, greater one-horned rhino numbers have increased exponentially and are currently at approximately 3,500 worldwide. However, the greater one-horned rhino is still classed as 'vulnerable' on IUCN Redlist, with only 2,575 estimated mature individuals globally[2]. Whilst these figures are low, population numbers are continuing to increase year on year and there is currently the largest number of greater one-horned rhinos seen in Nepal for decades: at 649 (in 2018)[2].



Threats

The greater one-horned rhino is primarily at threat from two interlinking issues: habitat loss and habitat fragmentation. I shall begin by explaining the former; animals are adapted to live in certain habitats, if these habitats are destroyed then the animals would be unable to survive. The same should apply for the greater one-horned rhino – they have adapted to eat the food that is available to them within their area of occupancy. The greater one-horned rhino is, like all other rhino species, a herbivore and this means that they graze on plants[1]. The plants that greater one-horned rhinos consume include: grasses, leaves, shrubs, branches and aquatic plants[1]. Currently, these plants are available in abundance; however the plants which are necessary to the greater one-horned rhino's diet are being removed by a multitude of causes.

An example of habitat loss would be in Chitwan National Park, Nepal, (home to the second largest population of greater one-horned rhinos in the world at an estimated 592 individuals in 2018[2]) the invasive plant *Mikania micrantha* is smothering and retarding the fodder that greater one-horned rhinos eat[3]. Approximately 44% of greater one-horned rhinos habitats sampled in a study contained *Mikania*, with 15% having a high infestation rate[3]. Consequently, greater one-horned rhinos in Chitwan National Park will become malnourished and could possibly even die because of malnutrition or starvation – because the rhinos wouldn't have access to their normal food sources in their habitats, due to both being destroyed by invasive species.

Another reason mentioned previously as a threat to the greater one-horned rhino is habitat fragmentation; occurring when the habitats of a species are split up or 'fragmented' – hence the name. The causes of habitat fragmentation are normally due to urbanization, as in the case of the greater one-horned rhino which occupies land in two rapidly developing countries – leading to worse fragmentation than usual. One of the most common effects of habitat fragmentation is that mating partners are unable to meet, therefore not reproducing and meaning that there would be an aging population because all the rhinos are growing older. An ageing population would eventually lead to the species dying out because there wouldn't be enough new rhinos to balance out the amount of dying rhinos.

A threat which was not previously mentioned is from poaching, as with all rhinos. Poaching is where a rhino is killed or mutilated for their horn so that the horn can be sold on the black market for medicinal purposes. These 'medicinal purposes' have no scientific evidence – but the belief is so deeply ingrained in the culture where the horns are bought (primarily China and Vietnam) that people are still willing to buy the horn to "heal" themselves or as a status symbol[4]. However, due to strict protection from the Indian and Nepalese authorities the threat is of lesser concern than for other rhino species, e.g. the black or white rhino. This protection must be maintained at all times, though, because the threat is constant and the poachers will be aware of any weaknesses in the protection systems[2].

Conservation Strategies

As stated in the former paragraph, the Nepalese and Indian wildlife authorities and government have made major steps in reducing poaching – along with help from non-governmental organizations, such as: the World Wildlife Fund for Nature (WWF) and others[2]. These steps include advanced countermeasures that are in place to prevent poaching. These strategies are mainly involved with the monitoring of the rhinos, such as the use of GPS collars to track the rhinos' movement[4] and note any anomalies – such as a rhino not moving when the rhino normally does, which may indicate an injury as a result of poaching. However, more recently, the GPS collars (which are relatively heavy and bulky for the rhino to carry) are being replaced with GPS chips embedded into the horn of the rhino. The new GPS chips are better for monitoring the movements of the rhino because the bulkiness and weight of the collar may cause the rhinos to try and remove – sometimes successfully – the collar which could cause rangers to believe the rhino to be injured. The GPS chips are also better because they reduce the attractiveness of the horn to poachers because the poachers believe the horn to be damaged and therefore people will not buy the horn.[4]

As well as tracking the rhinos' movements, the other way of preventing the poaching of rhino horn is to stop the poachers from being able to access the rhinos – hence the 'protected areas'. These areas, which are a mix of national parks, wildlife reserves, conservancies and sanctuaries[2] have been set up so that the rhinos cannot be poached. There are several safeguarding measures in place, such as armed rangers and electric fences[4], which means that poachers have difficulty penetrating the perimeter of the protected areas – due to the fact that they will either be shot or electrocuted.

Nonetheless, other threats still remain, including habitat loss and fragmentation. There are currently little to no conservation strategies to counter these issues. The latter problem, habitat fragmentation, has had minimal response other than to set up national parks and wildlife reserves for greater one-horned rhinos to live in and breed. The complication is that all of the national parks and wildlife reserves are dispersed across the north of the two countries[1] and so rhinos from different parks and reserves are unable to access each other[4]. Consequently, action must be taken to set up wildlife corridors – a section of habitat that connects different areas of habitat to each other[4] - to allow rhinos from different areas contact with each other.

Habitat loss must be approached with other strategies, such as destroying invasive plant species and fencing off areas to prevent the natural fodder that the greater one-horned rhino eats being grazed by domesticated animals. An education plan must also be put in place to teach the indigenous people that live around some parks about the vitality of greater one-horned rhinos and how to protect them; education will be extremely important in Chitwan National Park, Nepal, where the second largest population of greater one-horned rhinos live, because of the native people collecting the fodder for firewood so the rhinos don't have enough.

Scientific Research

There is a limited amount of research into the greater one-horned rhinoceros, primarily on the habitat and ecology of the rhino. These papers generally study the preferred terrain of the greater one-horned rhino and the threats to those habitats – an example would be the paper titled: Invasive mikania in Chitwan National Park, Nepal: the threat to the greater one-horned rhinoceros *Rhinoceros unicornis* and factors driving the invasion[3]. This scientific paper explains that the researchers have found that the invasive plant species mikania destroys the habitat that the greater one-horned rhinos live in within Chitwan National Park, Nepal.[3] The research conducted examines the density of mikania infestation in the greater one-horned rhinos' preferred habitat – riverine grasslands – and how the variation in the density of mikania has affected the greater one-horned rhino population in the areas with different density rates. The research found that the higher the density of mikania the greater the decline of population numbers in those areas.[3]

However, not all the scientific research that has been published has been done on the habitat and ecology of the greater one-horned rhino. There has been a scientific paper on the demography of the greater one-horned rhino populations in Nepal[5]. In this paper, the researchers measured: the size, the sex and age composition, seasonality of births, birth rate, interbirth interval, survivorship, mortality rate and population growth rate[5]. The researchers measured these variables to find the demography of the population in Chitwan National Park in Nepal and to see whether the population size was increasing or decreasing and why.

The demography of a population is vital to knowing the factors to the continuing increase or decline of the population numbers and this paper would have presented the relevant factors for when the paper was published, 1991. Therefore, the information is surely outdated and new research must be conducted to determine the current demography of the greater one-horned rhino population in at least on protected area, preferably an area with a large population so that the evidence can come from a spectrum of animals with high genetic diversity; the protected areas with the highest populations are Chitwan National Park in Nepal (592 individuals[2]) and Kaziranga National Park in India (the largest population with over 70% of the worldwide population located in the national park[2]).

This research should then be used to further develop conservation strategies to advance the effectiveness of the strategies and so the population numbers can be increased at a faster rate.

Conclusion

To conclude, the greater one-horned rhinoceros *Rhinoceros unicornis* had a historical range spanning across northern Greater India but are now limited to 12 protected areas in Nepal and India[2]. This decline in territorial range was a result of extremely heavy poaching during the 19th century which led to their being approximately 200 greater one-horned rhinos left at the

beginning of the 20th century[1]. Consequently, there is now strict protection from the Nepalese and Indian wildlife authorities to protect the remaining estimated 3,500 rhinos left. Habitat loss and fragmentation are the other primary threats to the greater one-horned rhino. To protect the greater one-horned rhinos habitats from being urbanised the protected areas were create as they cannot be built on[4]. However the habitats are now being destroyed by invasive species, such as mikania, causing a decline in rhino population numbers in the areas which were invaded by the alien species[3]. Although a bleak picture may have been painted, the greater one-horned rhinoceros population size has been increasing steadily[1] and so I believe that if the invasive species can be destroyed and wildlife corridors are established – to allow rhinos from different areas to access each other – as well as more scientific research is conducted into multiple areas, such as the demography of different populations, then the greater one-horned rhinoceros can be saved from extinction.

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Tutor comment:

It was a pleasure teaching O. at Marple Hall School. He always contributed insightful ideas during class discussions, and I was impressed with his level of understanding and engagement with the many topics covered. For his final assignment, O. produced a very well-written essay on the threats the greater one-horned rhinoceros faces in the wild, and whether conservation strategies and scientific research can prevent the extinction of this species. His essay demonstrated an excellent understanding of the topic, and his evaluation of the evidence provided was outstanding.

To forecast the potential size and location of large earthquakes along subduction zones, scientists just need to determine the spatial pattern of interseismic coupling on an active fault.

Year 9, Key Stage 4

Pupil: **S. Khan**
 School: **Oak Wood High School, Hillingdon**
 Supervised by: **L. Tsang**
 Tutor University: **Imperial College London**
 Course Title: **A beginner's guide to earthquake forecasting**

Sumatra is an island closest to mainland Asia and it is positioned on the top of two faults: the Indian/Australian plate on the southwest ocean floor, and the Eurasian plate on the other side^[1]. Ecuador is in the northeast of South America, next to the Pacific Ocean, and it is dominated by the subduction of the Nazca plate

beneath the South American plate^[2]. Interseismic coupling is a measure of how stuck a fault is, and the higher the interseismic coupling fraction is, the more stuck a fault is. The more stuck a fault is, the more likely it is that it will slip and the more likely it is to produce a large magnitude earthquake. As well as that, some scientists believe that the spatial pattern of interseismic coupling could help them to predict large earthquakes. In this essay, I will critically analyse how effective interseismic coupling has been in forecasting future earthquakes, and I will discuss how the other various types of earthquake processes (postseismic slip, aftershocks, interseismic strain accumulation and slow-slip events) correlate with earthquake rupture areas. Finally, I will end the essay with an overview of the usefulness of spatial patterns of interseismic coupling in the process of predicting large-scale earthquakes.

In the Sumatra subduction zone, the 2005 earthquake epicentre is at the place on the fault where the interseismic coupling fraction is 1, the highest on the plate. The earthquake itself was a magnitude of 8.7 on the Richter scale, which proves that interseismic coupling can be used to forecast large scale earthquakes in the future. In addition, the earthquake rupture areas spread out from the place where the strain on the plate is most. On the map, it spreads out from the crimson dots in the middle towards the orange dots and more mellow colours. In the Ecuador subduction zone, there are several dark spots on the fault on the South American tectonic plate, indicating considerable interseismic strain on the fault. The most recent earthquake in Ecuador was in 2016, when the South American plate slipped and caused a 7.8 magnitude earthquake just off the coastline. On the Ecuador subduction zone map, you can see that the epicentre of the earthquake is practically touching the top of the earthquake rupture area. As well as that, the slow-slip events that either preceded it or occurred after the earthquake had taken place are surrounding the earthquake rupture area. In both cases, interseismic coupling helped to forecast these large-scale earthquakes. However, sometimes the patterns don't match to the earthquake rupture areas of some earthquakes. For example, in Sumatra, there was an earthquake that had a magnitude of 7.7 in 2010^[4], and the interseismic coupling patterns did not match with the location of the 2010 earthquake rupture zone. Ideally, it would have occurred at the site where the most interseismic coupling was, but it was actually in the region where there was the least interseismic coupling^[6]. This implies that other indicators such as slow-slip events should also be considered when forecasting earthquakes.

In 2004, there was an earthquake that measured 9.1 on the Richter scale. The rupture area was immense: it stretched for 900 miles^[3] along the Andaman (Burma) microplate near the edge of the Eurasian plate. In the rupture area, there are three more rupture areas^[5]. All of them occurred at least fifty years before the Great earthquake that took place in 2004. The earliest earthquake was in 1847. It had a magnitude of 7.5, and it happened further down the 2004 rupture area. The 1881 earthquake was more powerful than the 1847 earthquake. It was M_w 7.9, and its

rupture area is located a little off the centre of the 2004 earthquake rupture area. The latest earthquake in the earthquake rupture area of the 2004 M_w 9.1 earthquake was the 1941 earthquake. It measured a magnitude 7.7 and is situated near the top of the area. The map shows all three inside the rupture area of the 2004 earthquake, and their rupture areas are small in comparison to it. Before the 2004 earthquake, there had not been any earthquakes in the area for over sixty years. Scientists could have used this as an implication that a high magnitude earthquake would occur soon as there had been strain accumulating for much of that time. Also, there was a pattern with the previous earthquakes: the magnitude of the first was lower than the second, and the third was lower than the second. This could also have told the scientists that an earthquake with a magnitude of 8 or possibly greater would soon happen. In Ecuador, the 1958 Ecuador-Columbia earthquake (M_w 7.7)^[7] was not on the region of the subduction zone that had the most strain. It was on the region where less strain had accumulated, and the rupture area spread for approximately 340 miles. However, the majority of the earthquakes in the Ecuador subduction zone match the interseismic coupling patterns, so this implies that much of their earthquakes can be predicted with interseismic coupling, but they still should utilise other processes in the earthquake cycle to forecast earthquakes.



Tohoku-Oki earthquake

Slow-slip events are when slip events on the fault that happen at faster velocities than the speed of the interseismic strain accumulation and they can happen at any stage of the earthquake cycle. Researchers and scientists are still studying these relatively new discoveries in how useful they potentially could be in forecasting earthquakes. In 2011, the Tohoku-Oki earthquake reached a magnitude of approximately 9.2 on the Richter scale. Scientists have recently discovered that several slow-slip events happened before the earthquake itself. This stemmed the theory about how slow-slip events can essentially "nudge" a fault to rupture an earthquake. However, there are others who think that slow-slip events release the interseismic strain on the fault, and that they defuse earthquakes before they happen, rather than speeding up the process. Therefore, slow-slip events are not used as a primary indicator for predicting earthquakes, because there is no evidence to suggest that there is a definite correlation between slow-slip events and earthquakes. Even though some previous earthquakes have had slow-slip events leading up to

them, there is a possibility that it was just coincidence that they happened before the earthquakes. Until recently, the Sumatran subduction zone had been used as an example of an area with no slow slip events^[8].

However, in coral microatoll records, a slow-slip event has been discovered that lasted for 15 years. When the scientists first discovered the coral, they tested four hypotheses, including regional sea level changes and various tectonic mechanisms. Their results revealed that that the coral observations likely reflect a 15 year-long slow slip event (SSE) on the Sunda megathrust. The SSE started in 1966 and came to an end in 1981 in the Banyak Islands of Sumatra^[9]. A few years later, on 17th November 1984, a M_w 7.2 earthquake occurred in Northern Sumatra. Whether or not the 15 year-long slow-slip event was what caused the fault to slip and rupture the earthquake is unknown. In August 2010, there had been a week-long slow slip event that had triggered intense interface seismicity on the Ecuador subduction zone^[10]. In the same month, there had been an earthquake in Riobamba, Ecuador, measuring 7.1 on the Richter Scale. This proves that there is a link between earthquakes and slow slip events, and we could forecast earthquakes using slow-slip events in the future. A study from the *Journal of Geophysical Research* suggests that slow-slip events (SSEs) nucleate (form from) areas of unstable friction under drained conditions, but scientists are still uncertain of the mechanics of slow slip events and how they work^[11].

Postseismic slip (or afterslip) happens after an earthquake happens, and it represents the relaxation of stresses on areas of the fault surrounding the earthquake rupture areas. The spatial relationship between areas of postseismic slip and earthquake rupture areas is that the areas with the most postseismic slip tend to be outside of the earthquake rupture area, although there is a bit of postseismic slip within the rupture area, it is weaker than the postseismic slip outside of it. If a region has postseismic slip, it is unlikely that a major earthquake will happen. The amount of postseismic slip gives us an idea of where the next major earthquakes are going to occur as it highlights the relaxation of stresses on the fault, so those areas are not likely to produce a large-scale earthquake. However, there are some cases (like the 2010 M_w 7.8 Mentawai tsunami earthquake rupture zone) where postseismic slip from other earthquakes in the region had loaded the rupture zone and potentially promoted its rupture.

For example, scientists discovered that afterslip from the M_w 8.4 2007 earthquake in Bengkulu may have increased the strain on the fault due to the distribution of stresses from the 2007 earthquake^[12]. At the end of the abstract of the article, it says "The cumulative contribution of stress changes due to the coseismic event and the ensuing afterslip likely increased strain rates in the shallow portion of the megathrust adjacent to the Mentawai earthquake rupture area, potentially promoting its rupture in 2010". This means that strain built up from the postseismic slip from the 2007 earthquake in the shallower region of the fault, so it was not that deep, which may have been why the 2010 Mentawai earthquake had not been as

powerful as the previous earthquake. After the M_w 7.8 2016 Pedernales earthquake in Ecuador, the High-Rate (HR) GPS time series suggest significant postseismic deformation occurring in the early postseismic period (the first few hours after the earthquake^[13]). Afterslip plays an important role in redistributing stresses on and around megathrusts following subduction zone earthquakes, so it was important for scientists to map out and interpret the patterns of postseismic slip around the subduction zone and the spatial correlation between them and the other processes in the earthquake cycle.

Aftershocks are smaller, less powerful earthquakes that happen after an earthquake has ruptured. The stress on the mainshock's fault changes during the mainshock and most of the aftershocks occur on the same fault. Sometimes the change in stress is great enough to trigger aftershocks on nearby faults as well^[14]. A research article on the linear relationship between aftershock productivity and seismic coupling in the Northern Chile subduction zone proves that aftershock productivity is proportional to the coupling coefficient^[15]. The interseismic coupling coefficient is related to the ratio between slipping velocity on the fault during the interseismic period and the long-term plates velocity^[16]. Since aftershocks can often be predicted more easily than the actual earthquake, or mainshock, scientists can forecast these using extensive research of aftershock patterns and derive the approximate location of the earthquake and its rupture area. An article from the *Journal of Geophysical Research* on the spatial correlation of aftershock locations and on-fault main shock properties says in the abstract "Our findings imply that aftershocks are preferentially located in regions of low-slip". This may be because the region of the fault or subduction zone that the earthquake ruptured released a lot of stress, which potentially could increase the stress on other areas of the fault/subduction zone. Therefore, the spatial correlation between the earthquake rupture area and the aftershocks is that the aftershocks are mainly outside the rupture area. If scientists forecast the locations of future aftershocks, they can make out the approximate location of the rupture area.

In conclusion, interseismic coupling can be used to forecast large earthquakes, like the 2005 8.7 M_w earthquake in Sumatra. However, sometimes the earthquake rupture areas and the earthquake epicentres do not match, like the 2010 M_w 7.7 Sumatra earthquake, which is why it would be reasonable to triangulate the location of the earthquake using lots of different indicators. For example, if a subduction zone/fault has a lot of afterslip, it is probable that another earthquake will happen due to the change of stresses on the tectonic plates. Also, you can also use aftershocks to rough out an area where an earthquake is likely to rupture as they are often outside of the earthquake rupture zone. Looking at a map of earthquake rupture zones, you can make out where the next earthquake is going to be by picking out different areas that have not had any earthquakes recently. On the other hand, I would not use slow-slip events to forecast earthquakes until scientists have discovered a definite link between them and earthquakes because you may get inaccurate locations

of earthquakes. There are many other reasons why you may get inaccurate locations, but it is unlikely that slow-slip events will be helpful in forecasting earthquakes as there are so many things we still don't know about them, like the mechanics of slow-slip events. From these factors we should get a good idea of where future earthquakes are likely to be and how large of a magnitude it will be.

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Tutor comment:

It was an absolute pleasure to teach C. throughout this course. As the course progressed, her interest in the subject and confidence truly blossomed, which is clearly exhibited in her final essay. Her final essay shows advanced mastery of argumentative techniques and consideration of nuances within the essay prompt, both traits highly sought after at the undergraduate level. C.'s enhanced critical thinking skills and fiery curiosity will make an excellent contribution to any undergraduate institution.

Do you think nuclear fusion a viable solution to the energy crisis?

Year 10, Key Stage 4

Pupil: **C. Cormack**
 School: **Didcot Girl's School, Oxfordshire**
 Supervised by: **N. Thoitu Mburu**
 Tutor University: **University of Oxford**
 Course Title: **Can we build a sun on Earth?**

In this essay I am going to look at the advantages and disadvantages of nuclear fusion and assess whether it is a viable solution to the energy crisis. Additionally, I will compare nuclear fusion to my chosen alternative energy source of wind power.

Our planet is facing irreversible change if we do not act now to lower our carbon emissions. For hundreds of years humans have been burning coal and other fossil fuels to produce energy however this must stop. When fossil fuels such as coal combust, they release carbon dioxide. When carbon dioxide enters our atmosphere, it covers the ozone layer and traps heat. This is known as the greenhouse effect and is causing our globe to warm up at unprecedented rates. In the past it took the planet 5000 years to warm 5 degrees, now the predicted rate of warming for the next century is at least 20 times faster [1]. Our world is confronting changes that could damage our planet forever. Furthermore, we will continue to see changes in our natural world. The Greenland ice caps will continue to melt. Between 2003 and 2008 alone approximately 2 trillion tons of ice melted [2]. Wildfires will become more frequent and uncontrollable; flash flooding will cause more and more damage and droughts will take more lives each year.

To combat climate change energy will need to be generated in a clean way. It will need to be efficient, accessible and renewable. Currently there are renewable energy sources on the market such as solar panels, wind turbines and hydroelectricity however these all have pros and cons. For example, the average solar panel is less than 20% efficient [3]. We should consider that this information is from a company situated in America and so cannot be directly compared to the UK as the climates differ. In my opinion, the most promising way to generate electricity is nuclear fusion. However, although the question refers to nuclear fusion becoming a viable solution for the energy crisis, it is important to remember the clock it is up against.

Nuclear fusion is a nuclear reaction that involves smashing two atoms together, so the light nuclei make a heavier nucleus. [4] During the process excess energy is released which can then be used to produce electricity. Nuclear fusion is a very promising energy source as it is extremely efficient. One kilogram of fusion fuels can provide the same amount of energy as 10 million kilograms of fossil fuels [5]. Moreover, deuterium and tritium are two isotopes of hydrogen that can be used as reactants. They are the most likely elements to fuse at the lowest temperature [6] and are very accessible. Deuterium can be extracted from sea water making it a globally available resource [7]. This means that it is sustainable and not a finite resource. Although nuclear fusion has many positives scientists face one big dilemma. Currently, no nuclear fusion reactor can produce more energy than it uses. This means this source of energy cannot yet be put to use and there are other challenges.

For a nuclear reaction to take place there must be extremely high levels of heat. Deuterium and tritium would require temperatures of approximately 39 million degrees Celsius [8]. Scientists are struggling to sustain temperatures this high. While the record temperature so far achieved was 100 million Celsius it was only for a brief moment [9] and reactors would also need a material that can withstand this continued heat. With all of these problems nuclear fusion is a controversial energy source. Other renewable energy sources sometimes seem to be more plausible options.

Nuclear fusion can be used to solve the energy crisis if solutions are found for the problems however we are up against a clock, so the real question is it possible to get these solutions before a tipping point is triggered?

Wind turbines are another example of an alternative energy resource. They are more viable to use than nuclear reactors as of December 2019 the UK recorded 10,267 turbines [10]. They are also cheaper than a nuclear reactor as it is estimated to cost 16 billion euros to construct the ITER's nuclear reactor, while a turbine costs between 1 million and 4 million dollars. Additionally, they are also approximately 98% reliable [11] and wind is free, unlimited and renewable. Furthermore, the average wind turbine needs winds speeds of 7 knots [12] and over the past 2 decades the UK has an average of 10 knots [13]. Although with all energy sources wind power has disadvantages. Wind turbines are completely weather dependant and therefore on days with little wind cannot produce energy. As a consequence, although the structure of a wind turbine is reliable, we have no control over the wind which therefore means electricity production is unpredictable. Another point to take into consideration is the aesthetics, many people are concerned that the huge metal turbines detract from the beautiful scenery.

Weighing out the pros and cons of each energy source wind turbines at this moment in time is the most viable resource as are currently in use and the technology is working better than nuclear reactors, however looking at the future Nuclear Fusion would be a much better way to generate electricity if solutions can be found. This is because nuclear fusion reactors are far more efficient than wind turbines. Also, whereas wind turbines produce moderate amounts of energy per turbine only a few nuclear reactors would need to be built in the UK to power the national grid. If nuclear fusion could be perfected it would be an infinite source of energy which would be a far more viable solution for the energy crisis.

In conclusion, I think that nuclear fusion could be a viable solution to the energy crisis assuming the challenges can be resolved. Nuclear fusion has the potential to be the key to a carbon neutral future and therefore could potentially save the planet from triggering a tipping point and for that reason it is so important that nuclear fusion is pursued. Although alternative energy sources like wind turbines are a positive movement, they simply do not produce enough energy and rely on forces that humans cannot control such as weather. Overall, I think nuclear fusion is a viable solution to the energy crisis.

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Tutor comment:

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Using research and evidence to support your arguments, analyse the potential future effects of climate change

Year 10, Key Stage 4

Pupil: **C. Dorrington**
 School: **Lord Grey Academy, Milton Keynes**
 Supervised by: **S. Alexander**
 Tutor University: **The Open University**
 Course Title: **Climate Change: Is the past the key to the future?**

The potential future effects of climate change are devastatingly clear - the world is warming up more quickly than ever before and despite scientists being aware and trying to warn those in power - their knowledge is largely being ignored (1). Evidence shows that global warming and rising sea-levels, melting ice-caps, extreme weather such as floods, droughts and wildfires are collectively responsible for our ecosystems failing to thrive and food sources becoming scarce.

To explain the potential future effects of climate change it is necessary to understand what each of these words mean (2). **'Potential'** (future effects) infers that there is a choice about what is possible as opposed to probable because it has the capacity to develop in a particular way. (Potential) **'future'** (effects) infers that whatever is likely to happen is to come at a period of time that is later than now.

(Potential future) **'effects'** infers a change which is the result or consequence of an action or other cause. **'Climate Change'** infers the change in global or regional climate patterns, in particular a change apparent from the mid to

late 20th century onwards and attributed to the increased levels of atmospheric carbon dioxide produced by the use of fossil fuels.

To analyse the potential future effects of climate change on Earth's future, it is necessary to acknowledge the work being done by current climate scientists and to delve into the past and understand how geological evidence is a source of information, that can help to predict the way life may be in the future. Global Warming is the major issue which is making us (the people responsible for the earth's future) so vulnerable right now, and I will try to explain that it is, and will be, how people respond to Global Warming that will trigger which way our future Earth may pan out, and the effect this has and potentially has on Ecosystems and Food Security.

The climate has been changing for hundreds, thousands, and millions of years and more. Different geological periods linked to climate and the climate determined what lived on Earth at these times. The PETM (Paleocene Eocene Thermal Maximum) represented a time when there was relatively high global warming in the past, but humans didn't exist. Climate data wasn't collected methodically before 1958, so information prior to this relies on scientific reconstruction data known as Palaeoclimatology data which is collected from various natural sources such as tree rings, corals, ocean/lake sediments and air bubbles in ice cores. All data points to small fluctuations in Earth's orbit that adjusted the amount of energy that the earth received from the sun. (3)



This graph, based on the comparison of atmospheric samples contained in ice cores and more recent direct measurements, provides evidence that atmospheric CO₂ has increased since the Industrial Revolution.

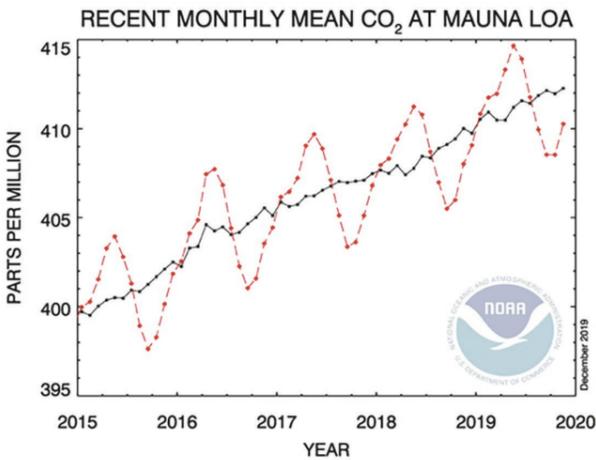
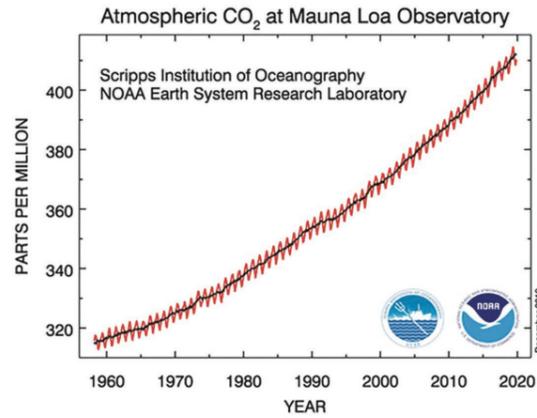
(Credit: Luthi, D., et al., 2008; Etheridge, D.M., et al. 2010; Vostok ice core data/J.R. Petit et al.; NOAA Mauna Loa CO₂ record.)

This graph shows that for millions of years, atmospheric carbon-dioxide has never been higher than it is now. There have been seven cycles of glacial advance and retreat in the last 650 000 years, and the abrupt end of the last ice age about 11,700 years ago marked the beginning of the modern climate era - and of human civilisation (4).

Research studies focusing on climate change weigh up the natural carbon cycle whereby human respiration and

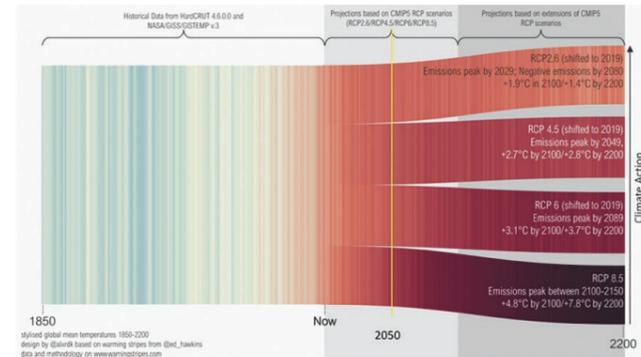
volcanic activity release CO₂, and plants and rainforests absorb this during photosynthesis, as well as focusing on whether human activity has influenced the rise in levels of CO₂ in the atmosphere. Some climate skeptics may argue that because climate has changed in the past, it cannot be anything to do with the CO₂ emissions from the modern world, and that life and eco-systems will adapt. Scientists who have studied and continue to study the climate tell us otherwise and the Keeling Curve data which continues to be collected from the Mauna Loa Observatory in Hawaii clearly shows a marked increase in CO₂ levels since the late 1900s. More than 97% of scientists agree that this has a direct link to fossil fuel emissions (5).

will look like over the final 20 years of the century, (from 2081-2100 inclusive). The section mentions anthropogenic activity and references RCP data. Anthropogenic activity is the changes caused to the environment by humans. RCP stands for Representative Concentration Pathways which show different (alternative) emissions scenarios for the carbon dioxide present in the atmosphere, and how it will affect the world, depending on how people continue to live. Research scientists are united because the 4 RCPs mentioned - RCP2.6, RCP4.5, RCP6.0 and RCP8.5 - communicate shared intelligence related to assumptions based on population, economic growth, energy consumption as well as sources and land use over time. All these scenarios indicate a rise in surface temperature and sea level.



The Graphs show monthly mean carbon dioxide measured at Mauna Loa Observatory, Hawaii. The carbon dioxide data (red curve), measured as the mole fraction in dry air, on Mauna Loa constitute the longest record of direct measurements of CO₂ in the atmosphere. They were started by C. David Keeling of the Scripps Institution of Oceanography in March of 1958 at a facility of the National Oceanic and Atmospheric Administration [Keeling, 1976]. NOAA started its own CO₂ measurements in May of 1974, and they have run in parallel with those made by Scripps since then [Thoning, 1989].

Indeed Section 2.2 of the latest IPCC (Intergovernmental Panel on Climate Change) report in 2014 explains why scientists believe that our future climate will be warmer and wetter than it has been in the past. It uses information from the 20 years at the beginning of the 21st Century, (from 1986 to 2005 inclusive) and forecasts what the climate



This diagram of extended warming stripes by Alexander Radtke (7) which is based on Ed Hawkins' climate stripes methodology, is a visual image of the RCP outcomes which show the different (alternative) emissions scenarios depending on the carbon dioxide present in the atmosphere in the future. It is clear that the RCP2.6 is the least worst path, but at present the world is on track to follow RCP8.5.

This evidence shows that humans need to intervene and adapt their lifestyles to ensure that by the end of the century the 'worst case scenarios' do not occur. The outcomes show that it is 'virtually certain' land will become hotter, severely impacting on peoples' lives and ecosystems, and the floods in Africa and ongoing wildfires in Australia are signs that this is already happening. This is the Science that prompted Greta Thunberg to say 'Our House is On Fire' (8).

Since it is now clear that Global Warming and CO₂ emissions are responsible for the future of Earth as we know it, and that it is humanity's choice whether to continue in a 'business as usual' way with dire consequences or quickly lower emissions, it is possible to analyse the potential future effects that Climate Change will have on Ecosystems and Food Security.

In the past it was the natural ecosystems that controlled the climate through land cover and using or emitting greenhouse gases (rainforests) and the presence of ecosystems like coral reefs and wetlands reduced the amount of damage caused by coastal storms while vegetative cover helped soil retention and prevented landslides. Sir David Attenborough tells us that 'A healthy planet is an essential part of human life' and "The natural world is not just a matter of beauty, interest and wonder,

but a coherent ecosystem on which we depend for every breath we take, every mouthful of food we take" (9).

Essential means absolutely necessary, so any changes in ecosystems will destroy human life as well - across the whole world. When pollinators die, plants cannot continue to grow. Put simply, no plants means no food and no oxygen to breathe.

BBC Bitesize GCSE Geography tells us that 'An ecosystem is a natural environment including flora (plants), fauna (animals) and bacteria that live and interact within that environment. They are the biotic or living components of the ecosystem and they share the benefits and depend on abiotic or non-living components, such as particular spaces, air, food, water and soil. These factors determine whether particular species can thrive, survive or die' (10).

Even by lowering emissions to the RCP 2.6 level in the future, many of our ecosystems will die, as they are disappearing already. No ecosystems could survive any of the other pathways. Indeed, while natural temperature controls continue to be ruined by human activity, and have exacerbated Climate Change, Camille Parmesan (climate change scientist) states 'Climate extremes can cause substantial mortality (death) of individual species and contribute to determining which species exist in ecosystems.' This is because when the abiotic (non-living) components change, the biotic (living components) have to try to adapt to stay alive, and it is not always possible (11).

Biological systems on all continents and in most oceans are already being affected by recent climate changes and information in the Climate Change 2014 Synthesis Report (2.3.1) stresses that many plant and animal species will be unable to adapt locally or move fast enough to track suitable climates during the 21st Century (12).

The Global Assessment Report on Biodiversity and Ecosystem services for Policymakers (May 2019) shares evidence that natural eco-systems have lost about half their area and a million species are at risk of extinction. Coral reefs and polar ecosystems are highly vulnerable, and a large fraction of terrestrial, freshwater and marine species will also face increased extinction. The ongoing fires in Australia are having a devastating impact on ecosystems there, and ocean acidification threatens entire marine food chains. It is clear, therefore, that the potential future effects of climate change will obliterate ecosystems that are already struggling to survive.

Greta Thunberg clearly states that 'we can create transformational action that will safeguard the living conditions for future generations. Or we can continue with our business as usual and fail' (13). The potential future effects of climate change are, therefore, in our hands but the way people live their lives - especially in UK and richer countries - will need to transform. Indeed,

Greta Thunberg is very open when she says "We have to stop our emissions of greenhouse gases. And either we do that or we don't. Either we prevent a 1.5 degree

Celsius of warming or we don't. Either we avoid setting off that irreversible chain reaction beyond human control - or we don't. Either we choose to go on as a civilisation or we don't" (14).

These words patently emphasise how our living world could be wiped out. The future effects of climate change on Food Security is equally as significant and as devastating as the effect it has and potentially has on Ecosystems. Even by following the lowest emission pathway (RCP2.6) the four pillars of food security (15) will be negatively impacted and huge disruptions in food availability, access to food, how food is prepared and consumed and whether these can remain stable and provide food at all times will prove difficult. The IPCC (16) confirm that the rise in global temperatures could increase pressures on fertile soil and could jeopardise food security for the planet. Increased temperatures also destroy the oceans' ecosystems by disrupting the natural balance through rising sea levels, ocean acidity and poorer air quality which forces fish to move to cooler spots, potentially become diseased or find no food to eat or are eaten themselves.

It is predicted that populations in already poorer countries such as Africa will be more affected and because these countries generally have less capacity to adapt to changes, any future climate change will make pre-existing inequalities within the world even worse. No vegetation means that no soil is retained so there will be more landslides and the warmer temperatures will affect the abundance of bacteria and viruses and increase diseases like malaria because disease carrying organisms like mosquitoes can thrive. When foods which are readily available in richer countries become scarce, the prices will rise and become unaffordable to the majority. Climate skeptics may argue that food has been rationed in the past, crops have been flooded in the past, and it will become available again in the future, but it can only become available if it can be grown and be transported around the world. The way land is used across the world could be changed and we could potentially secure food sources but only if emissions are drastically and quickly reduced.

Ecosystems and Food Security depend on a natural climate so potentially if world leaders heed Greta's advice, use the science available and remove emissions to net zero it would stop the existential crisis that the world is facing. It is the only future effect of climate change that provides hope and life as we know it. Ecology must be valued above Economy otherwise our future Earth will no longer exist with us in it.

In conclusion it is clear that the potential future effects of climate change will be determined by what the human race do about CO₂ emissions from today onwards. If the World's Governments work together to permanently secure net zero CO₂ emissions within the next 8-9 years then potentially Earth's Future will be saved from the existential crisis that it faces if these emissions are not reduced. (17) Otherwise the irreversible chain reaction beyond human control will lead to the end of Ecosystems and Food Security and of civilisation as we know it. Since

the World's Governments at the Madrid COP25 meeting in December 2019 didn't respond to the science as a matter of urgency, the future looks bleak. Potentially the future effects of climate change will not be known by the human race, because as Sir David Attenborough said, "We are destroying the natural world, and with it ourselves" (18).

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Can we cure a brain disease that we do not fully understand?

Year 10, Key Stage 4

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Supervised by: C. Hall

Tutor University: University of Brighton

Course Title: Neurodiseases – Can we cure something we don't fully understand?

Abstract

By evaluating the current theories present on my chosen disorder/disease, I will explore the advantageous and disadvantageous effects of current treatments used. I will also demonstrate the risks of these treatments, finally evaluating this essay by answering the question with an opinion formulated from the evidence discussed. For this essay, I have chosen the neuropsychiatric disorder of depression, whose underlying causes are still relatively poorly understood [1]. The term 'neuropsychiatric' is a blanket medical term that encompasses a broad range of medical conditions that involve both neurology and psychiatry [2]. This disease has sparked my interest since it has many theories which propose an explanation for its causes. My overall answer to this question (as a hypothesis) is no, we cannot completely cure depression given the fact that as a whole, this is a disorder not yet fully comprehended in terms of its neurobiological origin, and within it, there are many more factors which still need to be understood, such as different types of the disease itself.

Intro

Depression itself partitions into many different types of the disorder; discovering treatments for individual types of the disease, exploring the underlying origin of its development and analysing previous studies will support the development of my conclusion. Depression is a disease which triggers many behavioural changes, and its effects seemingly increase over time. It makes its victim view life through a pessimistic perspective; in many cases the victim struggles to enjoy everyday activities; becoming negatively introverted with time. The two of many theories I shall discuss in this essay include the monoamine theory of depression and cognitive behavioural theories.

What is depression?

Depression is a common and debilitating mental health condition [1], as briefly touched upon, which affects its victim in several ways that may not meet the eye. It's the most common psychiatric disorder with 10-20% lifetime prevalence [7]. Through a neuroscientific perspective, the pathological features identified so far have stimulated a wide array of theories, all of which accommodate a different neuroscientific description [1].

Due to the variety of theories surrounding depression present, the causes of this disease are not yet fully characterized in terms of which theory articulates a definite explanation. Depression, however, can differ in terms of its severity. This means that you can have a mild, moderate, or even severe form of depression [3]. Each

type corresponds with the significance of its impact on daily life - with severe depression, some may also experience psychotic symptoms.

Depression divides into several different forms, but the two which will be discussed in this essay include clinical (a common form) and psychotic depression, a more complex form. Clinical depression is used to describe a mental illness, which cannot be caused by life events or grieving.

Usually, a chain of traumatic/upsetting events can trigger clinical depression, often one event on its own is not significant enough. A person can go through a stressful life event such as bereavement and feel very low as a result, small cumulative events contribute to this and in turn, trigger depression [4]. Past physical, emotional or sexual abuse is an example of an event which can increase vulnerability to clinical depression later in life. The symptoms of clinical depression can be complex and vary widely between people [3]. Symptoms can affect one's social, psychological and physical habits and could persist for weeks or months. Examples of symptoms one may experience while in the state of clinical depression include;

- feeling anxious or worried
- having low self-esteem
- disturbed sleep
- change in appetite or weight
- avoiding social activities and contact with friends
- neglecting hobbies and interests.

There are many more symptoms to clinical depression however, the few listed are quite prevalent in society.

Psychotic depression is defined as "a subtype of major depression that occurs when a severe depressive illness includes some form of psychosis" [5]. The psychosis could take the form of hallucinations, delusions "or some other break with reality" [5]. People suffering from other mental illnesses may also experience psychosis, though the hallucinations and or delusions of a person suffering from psychotic depression are "consistent with themes of depression" - worthlessness or failure [5]. The answer for what causes psychotic depression is once again unknown, but a few theories suggest that a combination of genes which both responsible for psychotic symptoms and depressive symptoms may be present to cause a particular vulnerability to this disorder [6].

Symptoms of psychotic depression include:

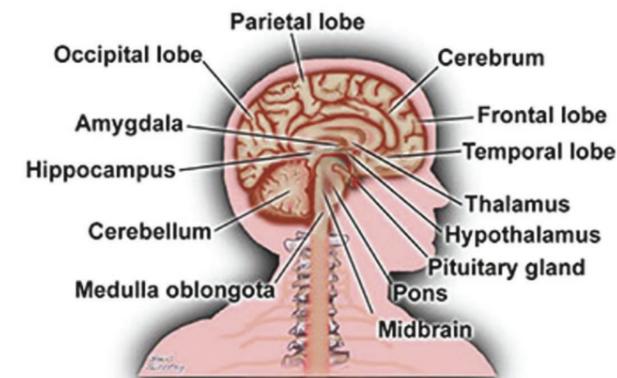
- Suicidal thoughts
- Insomnia [6]
- Intellectual impairment
- Delusions or hallucinations
- Anxiety [5]

Theories of depression

Currently, there is no universal explanation which stands to answer how depression is caused and the neurobiological processes behind it since there are also several types of depression. Nonetheless, there are many theories present which explain the corresponding treatment according to its causes.

The Monoamine Theory of depression

The monoamine theory of depression is one which overall suggests that the underlying cause of depression is a depletion in levels of particular neurotransmitters in the central nervous system, those being dopamine and serotonin [8]. The central nervous system controls most functions of the body and mind and consists of the spinal cord and the brain. The spinal cord carries signals back and forth between the brain and the peripheral nerves, and the brain controls most bodily functions, including awareness, movements, sensations, thoughts, speech, and memory [9].



Dopamine and serotonin are neurotransmitters which help regulate several bodily functions in the central nervous system [10]. The dopaminergic neurons which secrete this signaling molecule are located in the brain at the substantia nigra and ventral tegmental area, which are both located in the midbrain as well as the arcuate nucleus of the hypothalamus [11].

Neurotransmitters are defined as chemicals released by neurons to transmit an electrical signal chemically between one neuron to the next to pass on a signal to and from the central nervous system [11]. Dopamine, as an individual neurotransmitter, plays an integral role in the reward system, a group of brain processes that control motivation, desire, and cravings [12]. An imbalance in this particular neurotransmitter consequently will have a significant impact on simple brain processes, such as motivation. In addition to this, dopamine also heavily influences other bodily functions such as mood, sleep, arousal, vigilance, and more. Many theories of psychosis suggest that dopamine may also play a role in psychotic symptoms.

Serotonin, on the contrary, sends signals between your nerve cells yet is mostly found in the digestive system despite also being in blood platelets and throughout the central nervous system. Serotonin, also known as 5-HT, is made from the essential amino acid tryptophan [13] and is responsible for regulating mood and social behaviour, appetite and digestion, sleep, memory, sexual desire and function [14]. This amino acid must enter your body through your diet and is generally found in foods such as nuts, cheese, and red meat [13]. A deficiency in tryptophan can lead to a depletion in serotonin levels; this can further result in mood disorders, such as anxiety or depression [13].

Reviewing the crucial roles and responsibilities of the two neurotransmitters, it can easily be inferred that their imbalance consequently can affect our mood and attitude.

Nevertheless, we are only deficient of these two neurotransmitters due to an enzyme called monoamine oxidase. Formed in your liver, monoamine oxidase (MAO) is involved in removing the neurotransmitters, serotonin and dopamine from the brain [15]. In response to this, one of the very first antidepressants produced were called monoamine oxidase inhibitors (MAOIs). Monoamine oxidase inhibitors are drugs made to inhibit the activity of the enzyme monoamine oxidase, both A and B. The inhibition of MAO is particularly aimed toward the catalysing of serotonin and dopamine. Use of MAOIs typically require diet restrictions and avoiding particular other medications because MAOIs, when ingested with certain foods or medications, can cause dangerously high blood pressure [15]. MAOIs ease depression by affecting the neurotransmitters involved with communication between brain cells, ultimately making changes in the brain chemistry which habitually contribute to depression [15]. MAOIs currently approved to treat depression are as follows: Isocarboxazid (Marplan), Phenelzine (Nardil), Selegiline (Emsam) and Tranylcypromine (Parnate).

Despite the relief of depression for some, MAOIs usually result in many side effects; this is one of the main reasons why MAOIs are often used as a last resort medication when other antidepressants don't work [15]. In addition to this, their usage has faced a decline due to the introduction of newer antidepressants. Some of their side effects include dizziness or light-headedness, skin reaction at the patch site, headache, insomnia and many more. Monoamine Oxidase Inhibitor Toxicity is a rare occurrence where MAOIs have the potential to interact with many other medications and certain foods to produce nonspecific symptoms which can range from mild to life-threatening [16]. This also results in the reduced intake of MAOIs as treatment.

Subsequently, the monoamine theory of depression adequately explains the connection between a depreciation in levels of dopamine and serotonin, however, it is unclear whether low serotonin levels contribute to depression, or if depression causes a fall in serotonin levels. According to this theory, one of the first advances in depression medication was the monoamine oxidase inhibitors (MAOIs) which inhibit the action monoamine oxidase however they come with many side effects and even risk of toxicity, which in some cases can be fatal. In spite of all the medications in the market treating depression on a biological level, it does not deem an ultimate solution for depression.

Cognitive behavioural theory of depression - Aaron Beck

The Cognitive Behavioural Theory of depression can branch out into many different theories, though overall, Cognitive Behavioural theorists suggest that depression results from maladaptive, faulty, or irrational cognitions taking the form of distorted thoughts and judgments [17]. For example, depressed people tend to view themselves,

their environment, and the future in a negative, pessimistic light [17]. Cognitive distortions usually involve our mind convincing us of something that is not entirely true. These inaccurate thoughts, in turn, reinforce negative emotions, as well try to rationalise things which in reality only make us feel bad about ourselves [19]. An example of cognitive distortions can include overgeneralization; a person may see a single, unpleasant event as part of a never-ending pattern of defeat [19]. Being a cognitive theory, this theory is centred around mental events such as thinking or feeling, to put them into a behavioural framework [18].

Depressive cognitions can be learnt as a result of growing up experiencing traumatic occurrences, or on the other hand facing a lack of experiences growing up, which would facilitate the development of adaptive thinking skills [17]. People suffering depression think differently to those who are not, therefore their thinking and judgement is almost entirely consumed by a negative mindset. They hold themselves accountable for negative phenomena and as a result, this cynical judgment makes them perceive things graver than they are [18]. Therefore, their risk of facing depressive symptoms is heightened, due to their response to stressful situations.

Dr Aaron Beck is a theorist who finds the origin of depression in correlation to a directly proportional relationship between negative thoughts and depressive symptoms [17]. The severity of the negative thoughts directly impacts the severity of depressive symptoms. According to his unique twist on the cognitive way of thinking, negative thoughts, generated by dysfunctional beliefs are typically the primary cause of depressive symptoms [17].

He also refers to three particular dysfunctional belief themes which dominate the mindset of a depressed person [17]. These include feeling inadequate or defective, fearing defeats or failures as a result of your experiences, and holding no expectation or hope for the future to come [17]. This negative cognitive triad will also make a person focus on the negative things in everything they come across in their day to day life [17]. They tend to magnify the importance and meaning placed on negative events and minimize the importance and meaning of positive events.

Methods of treatment for this theory include Cognitive Behavioural Therapy - Cognitive Behavioural Therapy is based on the concept that your thoughts, feelings, physical sensations and actions are interconnected, and that negative thoughts and feelings can trap you in a vicious cycle [20]. Having said that, this therapy focuses on your mental stability and shows you how to overcome negative thoughts and emotions healthily. Limitations of this treatment include the fact that this only focuses on your current problems rather than reviewing ones from your past. Throughout a session, you and your therapist work to break down your negative thought processes by interpreting what's behind them, and after your therapy course has reached an end, you are expected to grasp the life skills learnt in therapy in terms of how you can rationally overcome a negative thought/emotion.

Conclusion

To evaluate this essay, I believe that there is no definite cure for depression regardless of the numerous treatments available which relieve its symptoms. For some people, treatments such as antidepressants or therapy aren't very effective, and the disorder's underlying causes are still unknown. Each theory present has its understanding of what causes depression, and so work to discover a treatment accordingly; the theories we reviewed today both have valid explanations, as I believe the cause consists of both neurobiological causes as well as environmental ones. There are different forms of depression and for that reason, I think it is not possible to formulate a cure, which targets all types.

Glossary

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Tutor comment:

A.'s ability to not only assimilate knowledge, but to then apply it to unanswered questions and propose her own theories is incredibly impressive. In this essay, she demonstrates an understanding of how scientific research is conducted, and applies her own critical thinking to evaluate what she has learned. I'm incredibly proud to have taught her and all of her colleagues at Eastbury, we had many memorable discussions and debates, as I'm sure you'll get a flavour of from A.'s essay!

What is the future of drug design

Year 10, Key Stage 4

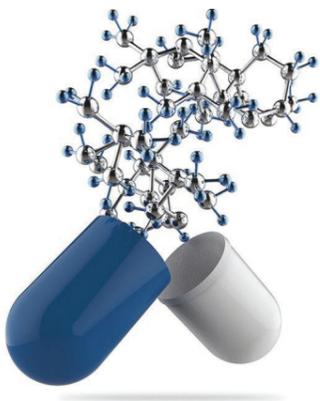
Pupil: C. Thorley-Lawson
School: Crofton Academy, Wakefield
Supervised by: L. Nelson
Tutor University: Newcastle University
Course Title: Breaking Bad (design): Designing the best drugs

For thousands of years, medicine has saved and improved lives all around the world. Medicine and its evolution over time has contributed to changing how the world functions and it is almost certain that without medicine, mortality rates would be significantly higher^[1]. It is often debated what the future of medicine may bring for life on Earth, and there are multiple possibilities and arguments for and against many different opportunities which time and improving technology may bring.

Thousands of years ago, natural products were typically used to treat pain and disease^[2]. Early civilisations used both rational science and other irrational methods to treat illness. The use of "magical formulas" was commonly seen as a prescription from doctors^[3]. Around 3000BC, the Ancient Incas were known to chew on the leaves of a coca plant (which is now synthesised to create cocaine) ^[4] to decrease their heart rates and therefore slow their breathing. This allowed them to survive higher up on mountains, where the air was much thinner^[4]. Another application of natural products as drugs is the use of willow tree bark as a painkiller. The earliest identifiable use of this method is the Ancient Egyptian times^[5]. The active compound in the willow tree bark – salicylic acid - is now synthesised to create aspirin^[5]. In around 400BC, Hippocrates showed another early use of aspirin as he left records of the use of a powder from willow tree bark, which relieved pain^[6]. Hippocrates is known as "the father of modern medicine" due to his numerous medical works. He was the first to describe diseases and categorise them. Many of his methods share similarities with those used today^[3]. More recently, in 1928, Alexander Fleming, in an extremely improbable circumstance, accidentally founded one of modern society's most revolutionary discoveries - penicillin^[7]. Fleming left an agar plate of staphylococcus bacteria, which became contaminated. Upon his return, he identified that in the area of contamination, the bacteria had failed to grow. This discovery was the creation of the first antibiotic and has proven vital to life ever since^[7].

Over time, drug design methods have been improved and adapted to use newer and more advanced technology. Drug design is the process in which a drug is created specifically to work against a biological

target, based on previous knowledge. Currently, the two common ways that drugs are developed is either by synthesis or computationally^[9]. Synthesis, the more traditional method, involves directly trialling drugs. Hundreds of thousands of drugs begin in a process known as High Throughput Screening. This involves testing the potency of these drugs. The most potent are identified and move on to further stages of testing^[9]. They are then often modified and optimised, using structure-activity relationship studies, which identify the chemical group that is responsible for creating a specific effect on a biological target^[10]. This process typically takes around twenty years^[9]. In comparison, testing drugs computationally, which is the more modern of current discovery methods, relies on 3D imaging of proteins which cause disease. Chemists must find a drug which binds well to the active site of the protein in order to prevent it from causing disease. Functional groups are bonds which give a molecule its characteristics for chemical reactions^[11] and can be altered in order to improve the drug^[8,12]. One computational method is fragment-based design, -used to identify which sections of the drug bind to the protein best in which areas; these fragments are then connected. The program also automatically ranks drugs^[13].



When considering these methods and which method is best for possible future use, there are many arguments for and against both types of drug design. For example, computational drug design requires a shorter testing time than purely synthesised drugs. This would make computational design a more likely option as drugs could reach those who need them much faster^[9]. However, others would argue that the rigorous testing process and the fact that synthesised drugs are tested directly against the protein targets makes them the better option. Some disagree and argue that as the computer programs used in designing drugs computationally are designed specifically to mimic nature and that the most potent drugs are still biologically tested, the direct testing of all drugs is unnecessary^[9]. As drugs which are unlikely to have an effect aren't biologically tested, less drugs are wasted, which has less impact on the environment. Those who consider cost as an important factor are much more likely to choose computational drug testing due to it being a significantly cheaper process^[9]. As computational drug design tests only the most promising drugs biologically, money isn't spent on testing drugs which are highly unlikely to be potent. People who argue that synthetic testing is correct, say

that due to how recent computational design is, there may be inaccuracies in the programming and therefore it is unreliable^[9]. Both computational and synthetic drug design have many positive and negative points.

With the use of better drug synthesis methods, it is thought that- in the future- the time taken to design and synthesise new medicines will decrease. This may result in more lives being saved due to the medicines being available in a shorter period. If the process was shorter, it would also benefit pharmaceutical companies as they could begin selling their drugs much earlier, increasing their profit^[14]. Pharmaceutical companies would also benefit from computational drug design as it requires less biological testing of drugs; therefore, it is a cheaper process. It is believed that machine learning may be the next step in accelerating drug design. This process involves a computer collecting a large amount of data about a disease and analysing all the data to find the most useful and relevant information. This would take a significantly shorter time than for a human to complete the same process^[15].

By using technology, new connections and patterns, pharmaceutical companies will have more information about complex diseases. It is predicted that the use of machine learning is likely to lead to the development of new drugs becoming much more affordable and with much better hit rates^[15]. Hit rate refers to the percentage of drugs which are tested that are identified as being potent^[9]. The process is also believed to be useful as it can identify other effective uses for drugs, meaning that a wider range of diseases can be treated without having to go through lengthy design processes. Human work is much less likely to identify this^[15]. By using such technology, another expected change in the future of medicine is the exploration of a larger amount of chemical space, reducing problems caused by bacteria becoming resistant to drugs. Drug resistance is when a medicine shows a decrease in effectiveness in treating a certain disease^[16]. Resistance is caused by mutations in bacteria, causing them to have different properties^[16]. As medicines are developed to work specifically against bacteria, any slight change can result in the medicines becoming less effective^[16]. The non-resistant bacteria will be destroyed by a drug, leaving the resistant bacteria to reproduce, which quickly increases the number of bacteria which can't be killed^[15].

The misuse of antibiotics may be largely to blame for this problem^[17]. The more antibiotics are used, the more likely bacteria are to adapt and evolve, meaning that the unnecessary use of these drugs is more dangerous than it may seem^[16]. One of the largest factors leading to antibiotic resistance is the use of these medicines on farm animals^[17]. The use of the drugs allows them to live in bad conditions with a reduced risk of disease^[17]. It is estimated that 73% of the world's antibiotics is used on farm animals^[17]. One way to solve the issue may be to begin using a wider range of chemicals. As the chemicals would be used less often, this would lead to a decreased likelihood of bacteria forming resistance to a drug^[9]. A larger chemical diversity is likely to mean that drugs could be used for much longer, and that their misuse would cause less of an issue as its overall use would be remarkably less^[9].

Another future medical possibility is the use of robotics. It is thought that robotics will have a large impact on the development of surgical procedures in the future. Although some robotic-assisted surgeries already occur^[18], it is widely believed that as technology adapts, robots will participate in completing more delicate and precise procedures^[19]. This may occur by creating even smaller surgical instruments to be used on patients^[19]. Long-distance surgeries may begin to occur where a patient has access to a medical centre with a surgical robot and surgeons could control the technology from around the world, meaning that they don't have to be present to help the patient^[19]. Despite this, another surgeon must be present with the patient during the surgery due to unforeseen complications which may occur that a surgeon not present could not deal with^[18]. There are many positives to this method of surgery. For example, much more precise incisions can be made by robots. As more precise incisions mean less blood is lost during the procedure, this typically leads to shorter recovery times for a patient. Such technologies could eliminate human error^[20]. As less human work is required during these surgeries, surgeons are less tired, and therefore less surgical teams would be required. The robots can also be worked continuously^[21]. Despite being a seemingly positive option, robotic surgery is often not considered as a likely option due to its higher cost. Due to many of the supplies being disposed of after each surgery, replacement and running cost are expensive^[20]. As well as this, it is argued that the lengthy training process for surgeons is not worthwhile^[19].

One way in which disease may be more effectively targeted in the future is the use of personalised medicine. By using a person's genetic information, drugs which would work better for them could be produced to fight illnesses^[9]. For example, people with the 'same type' of cancer may receive different treatments as their genetic make-up is different^[22]. More information about people's genes may also result in better prevention of diseases to which they are susceptible and a better understanding of what causes these diseases^[23]. Despite the many benefits of personalised medicine, many fear that its negatives will have terrible impacts. Gene sequencing has caused people to doubt who owns their genetic information^[24]. The issue causes an ethical debate about how people's information can be used, whether individuals can fully consent to their genetic information being used in new tests, and how much information has to be reported back to the person who the genetic information belongs to^[24]. Also, as the process is extremely individualised, a notably longer time and higher cost would be required to find the best drug for a person. Much more testing would have to be done as each bit of research would only benefit fewer individuals when wider research, which could help millions of people very effectively, could be carried out in its place^[9]. Finally, the medicine could not be shared as the dosage of medicine and its side effects may differ between individuals^[9].

In another area of medicine, molecular delivery is suspected to have a vital role in the future of treating illness. One example involves using carbon nanotubes to target the delivery of drugs very specifically^[8,25]. It would make the drug more effective as it could work in the required area, and cause less damage to other areas,

resulting in less side effects. The use of carbon nanotubes is currently being explored in chemotherapy, to treat cancer^[26]. One common side effect of chemotherapy is hair loss. This occurs due to the drugs targeting rapidly dividing cells^[27]. As the use of carbon nanotubes could allow the drugs to only target cancer cells, this side effect could be prevented. Therefore, cancer patients could seriously benefit from this new treatment method.

Carbon nanotubes would also protect the drug as it travels through the body and allow its release to be timed and controlled^[9]. It is clear to see that the future of medicine holds many opportunities to improve lives. As technology is constantly being created and improved upon, it is being used in the effective treatment of disease. As drug design becomes faster and cheaper, it is widely expected that we find cures for diseases, more effective treatments and new ways to help those who are ill. Medicine has been a vital part in saving lives for thousands of years and is likely to improve and save many more in the future.

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Tutor comment:

When I designed this course, I had sixth form pupils in mind, so when I taught it to a Year 10 group from Crofton Academy, I was apprehensive about how much we could cover. The entire group exceeded my expectations and shocked me with their capacity to take on really advanced topics. C.'s essay was outstanding and a pleasure to read. Not only did she address the points we had discussed in the tutorials, but took the time to do her own research to enhance the final essay, achieving a high 1st overall! C. should be incredibly proud of this essay and even more so with a feature in The Scholar too. She was a joy to teach.

Can fossils predict the future?

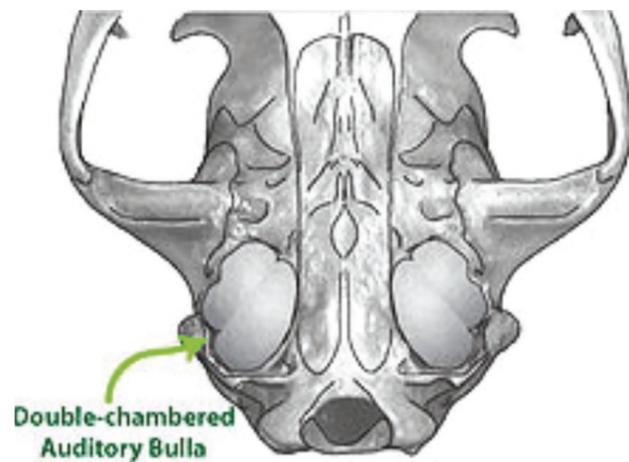
Year 12, Key Stage 5

Pupil: L. Houghton
School: St. Paul's School for Girls, Birmingham
Supervised by: E. Dunne
Tutor University: University of Birmingham
Course Title: Can fossils predict the future?

Fossils are like real-life magic, they hold within them secrets and stories which we can only uncover by their composition, shape and discovery sites. They tell us facts about animals no human has ever been alive to see, and from them, we can learn about these animals, how they looked, what they ate and how they lived. They show us past trends and how the biodiversity of our planet morphed over time, holding within them the tales of the five mass extinctions of the past, and their possible causes. We can use this fossil data to compare the conditions in our society today with that of the past, and unfortunately, the trends show we are heading towards another possible extinction. However, fossils can be used to our advantage, as with them we can identify the successes and the failures of the animals that were there at the time, and try to better help the species on our Earth today, to stop this possibly fatal reoccurrence.

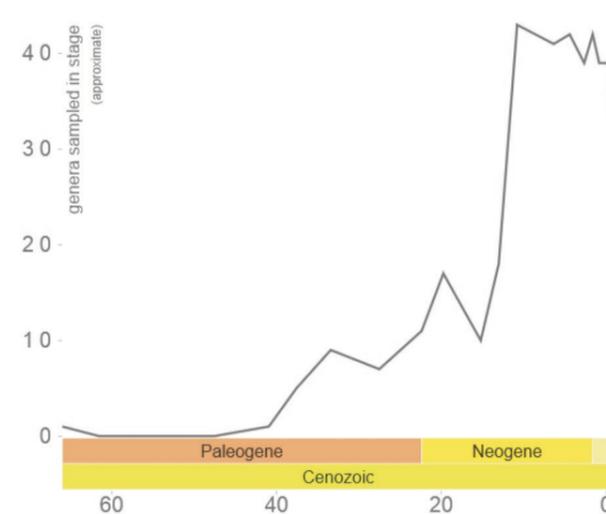
In this essay, I focus on the particular line of fossils from the *Feliformia*, suborder of the *Carnivora*, which specifically means "Cat-like Carnivores"[1]. In comparison to other lines of fossils, they have only evolved relatively recently, and first appear in the fossil record during the Cenozoic period which began 66 million years ago [2]. Which in comparison to when life first evolved on our Earth, at least 3.77 billion years ago, is extremely recent [14]. In fact, the oldest fossil connected to the *Feliformia* up to the present day is more specifically from the Danian period, which is right at the beginning of the Cenozoic [2]. The first species of *Feliformia* would have looked similar to the present-day cat, as a shared characteristic of all *Feliforms* is the "Auditory Bullae", bony capsules enclosing the middle and inner ear, see figure 1 [1].

The oldest and most primitive cats are called *Nimravids*, however, there is some argument as to whether these should be classed as *Feliformia* as they are not as closely related to modern cats as other species, and went extinct without leaving any living descendants. The earliest known true *Felid* was *Proailurus* from early Miocene. These cats resembled modern cats more, with the main difference being that they still had five toes. Several early cats also developed enormous canines, which is very similar to modern-day Lions and Tigers. Deeper genetic analysis suggested that the diversification of modern cats began in the late Miocene period, the first modern cat lineage being the *Panthera* which includes Lions, Jaguars, Tigers, and Leopards, all of which still roam our Earth today [3]. A recent famous *Feliformia* fossil development was in Ankara, Turkey, where although the fossil was discovered 10 years ago, after taking a second look, they now believe that it belonged to a predator which is considered to be the ancestor of *Feliformia* and lived 20M years ago [8].



Many fossils have been found where the similarities to modern cats are apparent, (see figure 2) but, a lot of the fossils that have been discovered to this day will have been affected by fossil biases. One of the Biases that can be related to my Fossil Data is the Geographic area, as most of the fossils discovered related to this suborder are located in Europe and North America [2]. In general, Europe and America have more money and financial aid to spend time searching for fossils and on equipment, and there is better education there with many Universities where people will likely be studying Geology and Palaeontology and will know what to be looking for when searching for fossils. Another issue is that *Feliformia* is not a particularly popular group of fossil study as they only have 1,497 fossil collections worldwide, which in comparison to *Dinosauria* (a particularly popular area of fossil study), which has 11,204 collections, is very low [2]. This could be because *Feliformia* is only a sub-order that has developed relatively recently in comparison with other species, hence not as many fossils are available.

However, more recently more of these fossils have been being discovered and documented, which could be due to a fossil bias known as the 'pull of the recent'. This is the term used to describe how diversity curves will inevitably show an increase in fossil diversity towards the present day.



This is because, now that felines are a common animal today, the fossils are a lot easier to identify and describe in comparison to living species, and if someone was to discover a *Feliformia* fossil they would be more likely to be able to identify it as such. Also, it is a lot easier to find more recent fossils as their rocks are younger and easier to access [4]. Hence, the diversity of *Feliformia* in the fossil record does show an increase towards the present day (See Figure 3) [2]. Another possible bias is related to where the fossils are found. Some common discovery areas for *Feliformia* fossils are in Mudstone where there were previous floodplains, caves, and sandstone [1]. The particular abundance of these fossils in caves could be a problem for fossil discovery as caves can be hard and dangerous to access.



However, the fossils that have been discovered are still useful. By looking at the fossils of these cats from the past we can predict how present-day cats will react to certain changes in the environment and certain conditions, predicting the future, and try our best to conserve our Earth's biodiversity. A well-known example is the cats that lived through the Ice Age, made famous by the film series "Ice Age", which was first released in 2002 [5]. The character "Diego" represents the *Smilodon* (a sabre-toothed cat). *Smilodons*, which were the largest felines to have ever prowled the Earth, lived in North and South America during the Pleistocene Epoch. They were built more like bears than cats with heavy, stocky bodies

built for powerful predation (see figure 4) of Bison, Tapirs, Deer, American Camels, Horses, and Ground Sloths (like the character "Sid"). Christiansen of Aalborg University in Denmark described their predatory technique saying, "They delivered a quick, powerful and deep stabbing bite to the throat or upper neck of their prey"[6]. Its jaw had a bigger gape than that of modern cats, and its upper canines were slender and fragile, being adapted for precision.



But unfortunately, they went extinct 10,000 years ago in the Quaternary extinction event. The latest *Smilodon* fossil recovered from the "Ranch La Brea" Tar Pits has been dated back to 13,025 years ago. From studying fossils such as this one, scientists have been able to link its extinction to the extinction and decline of other large herbivores around that time, which were replaced by smaller and more agile ones like deer. Hence, *Smilodon* could have been too specialised at hunting large prey (as aforementioned) and may have been unable to adapt. Some other writers theorised that the last Sabre-toothed cats became extinct through competition with faster and more generalised *Felids* that replaced them. However, another key explanation is climate change and competition with humans (who entered the Americas around the same time that *Smilodon* disappeared) which is very similar to the situation on our Earth today [7].

By using the fossil record, we can use fossils to compare current and past biodiversity events and forecast future patterns i.e. predicting the future. From this, we can see that current extinction rates are fifty times higher than expected background rates, suggesting that another mass extinction event is underway. Mammal diversity across the past 100 million years has been steadily increasing, but today there is evidence that it is in decline and, most importantly, that this decline is extraordinarily rapid compared with previous declines. However, scarily, the cause is the same as the extinction the *Smilodons* went through: us [4]. Today, *Feliformia* has 121 extant species consisting of 6 families. There is a wide range of modern species that are in the *Feliformia* suborder, from large cats, such as the commonly known tiger, small mammals such as the lesser-known African Palm Civet to the common domestic cat[9]. Sadly, a lot of these species are at risk due to our changing climate.

In our World currently, more than thirty thousand species are threatened by extinction. From my research, I have discovered that out of all the *Feliformia* species on the IUCN Red List, 47.4% of them are vulnerable or endangered, which is almost half. This is unacceptable! At the moment, there are ten key threats that are specifically affecting *Feliforms*. The largest threat is them unintentionally getting hurt due to hunting and trapping of other terrestrial animals, but the second largest is intentional hunting of them not only for control but for intentional use [10]. An example of this is that tigers are

commonly hunted for use of their fur which can be sold on for thousands of pounds. One of the largest and most sought after animals on the black market is the tiger. A dead tiger would cost you five thousand dollars, whilst a live tiger costs ten times more. Tiger bone can sell for up to two thousand dollars, while a paw is worth up to one thousand dollars [11]. People can get so rich from this that they do not see the problems they are causing in our World. Tigers are now classed as "Regionally Extinct" on the Red List [10] and only 3,890 now remain in the wild, even though their numbers are on the rise.



Another key threat to *Feliforms* in the wild is due to farming and development of housing, urban areas, roads, and railways. Their habitats are being taken away for these purposes, and they are getting pushed out of their homes. A species that acts as an example of this is the Snow Leopard. Snow Leopards are currently classed as "Vulnerable" on the Red List but, their numbers are rapidly decreasing [10]. The main problem for Snow Leopards is that they share their range with Pastoral communities, who also require healthy rangelands to sustain their livestock and livelihoods. Moreover, the high altitude mountains the leopards live in, serve as Asia's 'water towers', providing fresh water for hundreds of millions of people living downstream in Central, East, and South Asia. The pace of rural development there has also increased, which has opened up previously remote parts of snow leopard range, and livestock grazing has expanded and intensified, all of which is slowly depriving the Snow Leopards of their habitat [12].

As you can see, the common theme between all of these threats is humans: humans are causing these detrimental effects and humans will end up causing our world to be ruined. It is already too late for some species such as the Caspian Tiger, which went extinct around the 1980s. The cause of their extinction was them being hunted by large parties of sportsmen and military personnel for fun, who also hunted the tigers prey of wild pigs [13]. Nevertheless, there are people out there who have noticed these trends. The trends between the fossil data of what happened during the previous mass extinctions and today are obvious, and so people are doing their best to reverse these effects and protect these endangered species from the obvious threats which we know were so disastrous in the past, thanks to fossils and fossil data.



Around the World, many active conservation programmes are working tirelessly to improve our World and support the hundreds of threatened species. Some of the top projects around the globe include Asian Elephant conservation, Sea Turtle conservation, and Giant Panda conservation [15]. There are also many charities such as Defenders of Wildlife, World Wildlife Fund (WWF), Charles Darwin foundation and RSPB [16]. A big charity that specifically focuses on supporting *Feliforms* is Panthera. Panthera is the only organization in the world that is devoted exclusively to the conservation of the world's 40 wild cat species and their landscapes. They develop and implement conservation initiatives that protect wild cats and their landscapes in 47 countries around the world. One of their largest initiatives is called "Tigers Forever", where they are working at key sites across Asia to increase tiger numbers by at least 50% over ten years. They are supporting efforts in countries such as Bhutan, India, and Indonesia where they are identifying and protecting tiger habitats, using new technology to prevent poaching and are closely monitoring tiger and prey populations, [17] and their results are incredible. In 2018, in Manas National Park, India, their cameras recorded 39 tigers vs. 8 that they had recorded in 2011. Similarly, hopeful results emerged out of Nepal, where the government announced a remarkable 19 percent increase in the country's tiger population estimate in just four years [18]. By comparing fossil data with the data we are collecting from our World today, it is obvious why supporting charities like these is so important, before it's too late.

As I hope you can see from my essay, I am extremely passionate about these animals and the fact that we need to protect them, and I do think fossils are a useful tool in achieving this. Even though there are a few downsides to them due to fossil biases, they can tell us so much about the past. They are the only tool we have to accurately look at and learn about past biodiversity and conditions that animals before us lived through. We can predict future patterns from those of the past and try to learn from the stories the fossils tell. For *Feliformia* in particular, I feel that it is so important to look at what we can do now to stop the past repeating itself, protect the species that are living on the edge, and try our best to reverse the predictions that the fossils show.

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Tutor comment:

L. is an inspiration. Her exceptional work throughout the course was completed with such dedication and enthusiasm, and I very much valued her insightful input during tutorials. L.'s expertly composed final assignment was truly the cherry on top of a wonderful experience at a fabulous school with an extraordinary group of students. I have no doubt that L. will be an invaluable presence on any degree programme and will go on to do magnificent things in her future!

Arts and Humanities

How democratic is the United Kingdom? Is there anything we should do to make it more democratic?

Year 5, Key Stage 2

Pupil: **H. Sadowska**
 School: **Kenningtons Primary Academy, Thurrock**
 Supervised by: **E. Amoateng**
 Tutor University: **University of Warwick**
 Course Title: **Power to the people?**

Assessing democracy in the United Kingdom: decreasing the age limit for voting and to be elected to become a peer in the House of Lords.

This essay is about democracy in the United Kingdom. It is going to assess how democratic the United Kingdom is and what we can do to improve democracy. In this assignment, I am going to be arguing about decreasing the age limit for voting to the age of 16 and for people to be elected to become a member of the House of Lords. I believe that the United Kingdom is a democratic country as anyone over the age of 18 can vote and that everyone has the right to say what they think about issues that take place in Parliament [1]. The United Kingdom has been a democratic country since the Representation of the People Acts of 1918 and 1928 that gave the vote to all men and woman over the age of 21 [2]. The United Kingdom is a unitary state with devolution that is governed within the framework of a parliamentary democracy under a constitutional monarchy; in which the monarch (currently Queen Elizabeth II) is the head

of state while the Prime Minister of the United Kingdom is the head of government [3]. People vote in elections for Members of Parliament (MPs) to represent them [4].

In the UK, Wales and Northern Ireland, you must be 18 years of age on voting day and appear on the electoral register to vote in local government elections [5]. This includes elections for mayors and police and crime commissioner elections in England and Wales [6]. In Scotland, voters in elections using the local government franchise must be 16 years of age on polling day and appear on the electoral register to vote [7]. For voting in Greece, you must be 17 years of age [8]. For the past decade, Austria has been the only country in the EU that allows voting at the age of 16 at all political levels [9].

The business of Parliament takes place in two houses: the House of Commons and the House of Lords [10]. Their work is similar; making laws (legislation), checking the work of government (scrutiny) and debating current issues [11]. The members of the Commons are voted for by the public [12]. The country is divided into regions and each one has a Member of Parliament (MP) who represents a specific region [13]. There are about 780 members of the House of Lords [14]. Members of the House of Commons (MPs) debate the big political issues of the day and proposals for new laws [15]. It is one of the key places where government ministers, like the Prime Ministers and the Chancellor, and the principal figures of the main political parties, work [16].

I believe that the voting age should be decreased by 2 years to the age of 16 [17]. The general rule is that a young person under school leaving age (16) can get a part-time job at the age of 14 [18]. If the young person is working a part-time job and earn money they should be able to pay taxes and also pay the government, which means that the young adult is able to vote [19]. I also believe that to become a peer in the House of Lords people should be elected by the public [20]. This should be no harder for people with less money, women or ethnic minorities [21]. As United Kingdom already is a democratic country, could it be more democratic? If it is changed to being elected in both Houses of Parliament, it would be more fair for all the people in the country as they can have a chance to be a peer in the House of Lords [22].

At the moment, the government has been thinking about Brexit for some time now [23]. Brexit is that Britain is thinking about leaving the Europe Union (EU) [24]. The country has been recently voting about leaving the Europe Union or not [25]. The main point of having a deal between the UK and the EU is to ensure as smooth as possible an exit from the EU for businesses and individuals- and to allow time for the two sides to hammer out a permanent training relationship [26]. A referendum - a vote in which everyone (or nearly everyone) of voting age can take part [27]. It was held to decide whether the UK should leave or remain in the European Union [28].

To conclude this essay, overall I think that the United Kingdom is a democratic country as people over the age of 18 can vote. I argued about decreasing the voting

age to 16 and to become a peer in the House of Lords by being elected like in the Commons instead of being appointed. If a young adult has a part-time job, they can pay taxes and also the government which means that they can vote. This can be the way they make the UK more democratic. In the United Kingdom, democracy is an important thing. It is extremely crucial because if an election or vote is not fair, then the end results can be incorrect.

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Tutor comment:

H. was very determined in class to further her understanding of democracy and how it works in the UK. Her hard work paid off in the final assignment as she engaged extensively with relevant secondary sources to define UK's democracy and also compare certain aspects of UK's democracy with democracies in some other countries. In particular, H.'s critique of UK's voting age and the House of Lords is highly pertinent as more and more young people across the country continue to demand for greater democratic participation and accountability. I really enjoyed reading H.'s work as she meticulously used insights from class discussions and the guidelines in the course handbook to write an excellent essay.

In the eleventh century, the difference between invader and native was a matter of perspective. Do you agree?

Year 6, Key Stage 2

Pupil: **S. Omid**
School: **Upton Cross Primary School, Newham**
Supervised by: **E. Brot**
Tutor University: **King's College London**
Course Title: **Invasion, integration, and identity: Britain in the eleventh and twelfth centuries**

The information and evidence covered over the previous tutorials try to show the difference between invader and native from different people's perspectives. What their opinions were depended on their personal and wider relationships or interactions with those people. That is, if they were treated well and had good relations then their view would be more positive, and vice versa. I must say that the difference between invader and native was a matter of perspective in the eleventh century, mainly the perspective of the author, which was almost always biased and selective. I will outline my reasons for agreeing with this statement below.

Geoffrey of Monmouth was a historian and bishop who believed that the Britons were the true natives and Anglo-Saxons invaders. He did not seem to like the Anglo-Saxons since he had a negative opinion of the way they behaved - they 'destroy the landscapes' of the city and 'oppress' the native people. To Geoffrey, the Saxons were 'foreigners'. He did, however, blame the natives for what had happened as he said that it was 'their pride' that 'brought divine retribution down upon them'.

This was mentioned in a section of his book *Historia Regum Britanniae* called *The Prophecies of Merlin*. He was of the opinion that one day though, the natives would again oppose the cruelty of the invaders, and reclaim what was theirs. William of Newburgh, however, had the opposite view. He was a priest from Yorkshire and was an Anglo-Saxon himself, and so did not see the Anglo-Saxons as 'invaders'. He thought that they had a right to be in Britain. He was harshly critical of Geoffrey of Monmouth owing to the fact that Geoffrey used Latin to tell his story. William thinks that the language carries a kind of authenticity with it, and will therefore help Geoffrey to fool his audience', especially as he felt Geoffrey wrote fictional histories about the Kings of Britain, who were made out to be greater than the Macedonians and the Romans. William thought that this was ridiculous, and was not afraid to tell people that Geoffrey had written fictional fantasies which were being portrayed as real history. William added that Gilad, another historian, who was a Briton, was more honest in his account of the Britons than Geoffrey. Therefore, the way people see things or think about things can depend on how authors write about them. Those loyal to Geoffrey, for instance, would believe him, and others would believe William.

The Vikings were another issue that divided opinion. Archbishop Wulfstan, an important person in the church, was not a fan of the Vikings. In his most famous homily, he said that the Vikings were a sign that the end of the world was coming. He thought that the Vikings were 'evil and a sign of God's displeasure'. He was clearly biased and wrote negatively about them. Others thought otherwise; they saw the Vikings as an important and positive part of British society, as illustrated by the Havelock story. According to this author, they came to this country in search of new homes and worked hard to build their lives. Some Vikings, like Havelock, had difficult lives in their own countries so they were more likely to try and live peacefully in Britain. The story about Havelock is a romance, and so less likely to be accepted as true evidence, but the writings of Wulfstan, who was a big archbishop, would probably be believed more.

Medieval queens played a significant role in medieval times and tried to influence opinion too. John Carmi Parsons, historian, explains that medieval queens had to be good, pious role models, and had to try and bring kingdoms together by helping make peace if they were at war². Emma of Normandy was such a queen; she was from a Norman family who married an Anglo-Saxon king, and then a Viking king. She was active in running the country and worked hard to make peace between the Vikings and Anglo-Saxons. She was not a 'native' really but came from Normandy, but because of how she behaved and acted as a queen; people came to love her and possibly even forgot that she was from an invading race. The English did not like her second husband, Canute, a Viking. Emma had a poem written about herself, in which she tried to promote Canute as a good king, rather than an invader. Here she was trying to bring the Anglo-Saxon and Viking cultures together, so they would not think of the Vikings as invaders, but treat them like natives.

Welsh people also had their own perspective on who were the real natives. They claimed that they were true descendants of the Trojans and were the rightful people of Britain. *Translatio imperii*, meaning 'The Translation of Empires' was the medieval idea that all great civilisations pass through the rise and fall cycle, so Welsh people like Gerald of Wales, thought that one day they would form a new empire³. Clearly, Gerald of Wales' writing is biased towards his own people and his country. He believed that the English wanted to drive the Welsh from Britain. Reading such writings, Welsh people might have believed him and thought that the Anglo-Norman English were invaders.

From what I have discussed above, I can conclude that the difference between invader and native was clearly a matter of opinion, usually that of the author. I cannot say that they were unbiased in their texts because they would be selective in what they would include or leave out, depending ultimately on their own personal views. It is clear that during medieval times, writings and stories would have been very important because they were usually written by famous and respected scholars or churchmen. These writings were usually a representation of peoples' beliefs and attitudes so people would believe them. They were written because it was a record of what was happening at the time, something that would be part of history later. These writings are still important today because it gives us an idea of what life was like in those days, and what the different races were like. We use these writings and stories today to form our own opinions and ideas.

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Tutor comment:

I really enjoyed my time teaching at Upton Cross Primary School. The students were very enthusiastic and engaged with the programme. Throughout the course, S. was an active participant, contributing to class discussion in a thoughtful and productive manner. S.'s essay demonstrated a well-developed structure and sophisticated writing style. S. showed an in-depth understanding of the complex topics that we discussed throughout this course, which is amply evidenced in her paper.

Is there an external world?

Year 8, Key Stage 3

Pupil: **C. Moran**
School: **Pensby High School, Wirral**
Supervised by: **N. Morocza**
Tutor University: **Liverpool John Moores University**
Course Title: **Is there an external world?**

On the 1976 album *The Wall*, by Pink Floyd, the lead character, Pink, builds an emotional wall around himself as a form of protection against the perceived wrongs he has suffered. During the emotional journey he asks, "Is there anybody out there?" A more accurate question might be is there anything out there? To answer this question, I will draw on the work and ideas of both past and present thinkers. Highlighting where I believe their theories are flawed and where they have merit. I will draw conclusions based upon theirs and my own reasoning.

Rene Descartes proposed that we are no more than a soul or a mind. "I think therefore I am" (1). He imagined that if the external world was just the construct of a powerful demon (2) then all our perceptions of having a mind and body are no more than an illusion or a deceit. George Berkeley advanced this idea, but argued further that there was no such thing as the material world and that perception is the basis for existence. The material world only exists as a mind or alternatively when being perceived by a mind (3). "To be is to be perceived" (4). Clearly both their propositions only work if one accepts the influence of an omnipotent God. Indeed, given the time they were writing it would have been heresy to omit God from any discussion on the nature of the external world. Even today billions of people, of varying faiths, accept the influence, existence and intervention in our world, of an all-powerful God. This is their reality. I wonder whether Descartes himself with his belief in the search for "certain knowledge" (5) saw the flaw in his proposition.

If all is perception, further questions are raised. If the external world is just a construct of our minds, we could perceive of a God and bring him/her into existence. Alternatively, he/she would cease to exist if not perceived or believed in. We make God exist. Similarly, the tree in the forest would never make a sound, it would not fall, it would have never grown. It only ever existed as a fallen tree in our perception (6). The logical conclusion is quite disturbing. We are all Gods. I am God, everything is a construct of me. This essay exists because I perceive it, the reader only exists because I perceive them reading it. Why then if perception is all, do we perceive of the death of loved ones and even our own mortality. Surely, we would perceive of an Eden type world. We or I have become Descartes demon, but with no moderating God. Alternatively, if we are just a brain in a box being fed experiences and memories by an alien, it would be external to our existence. The alien may also be in a box. What is its perception? The consequent mind games would result in a hall of mirrors, with countless boxes and aliens. If perception is all, nothing can exist but perception. Whilst perception is clearly very important as a key tool in our kit for survival, it is only useful when used in conjunction with our senses, a more ancient means to interact with the external world.

Beau Lotto proposed (7) that humans can only access the external world and reality through the filters of our sensory organs, which interpret meaningless data in ways that are useful. As homo sapiens we have evolved five senses that allow us to interact with the external world. Ophelia Deroy cautions (8) that to focus on a singular sense would be nonsensical. If one looks at the natural world our senses are not the most developed. Birds of prey have a greater field of vision; elephants can hear a wider range of frequencies over a greater distance and we regularly use dogs' superior sense of smell to locate contraband. It is by working together that our senses help develop meaning, understanding, clarity and our orientation in the world (9). Once the information gathered by the senses is passed to the brain, it is then able to make predictions which we can act upon. It is my belief that these predictions become memory, which inform our future actions and expectations. Our senses are our only access to the external world, and we can never be entirely certain that the brains interpretation and perception of that stimulus is accurate. The brains interpretation is necessarily historic and draws upon its experiences to make sense of the world (7). We know instinctively that a stick placed in water does not bend (parallax view) even though our eyes tell us it has. It is our experience of the natural world that determines our perception, understanding and gives the brain the ability to order the information as well as make sense of it. Having said that, it is the brains need to make sense of the world that can create problems. To make sense of the vast amount of data it receives the brain uses shortcuts, both to conserve energy and to carve out speedy outcomes (10). It does this by drawing upon past experiences and by making connections between disparate pieces of information to give it a real-world view. Indeed, Susana Martinez-Conde argues (11) that our reality and experience of the world is generated in the brain. Reality is simply composed of electrical impulses. Experiences inform our memory, and this will influence our perception. Once we have a model of the world, based on our experiences this then modulates our perception and expectation (higher functions). We will try to fit that perception of the model to our preconceptions. However, by drawing on past experiences and by making connections between disparate pieces of information the resultant assumptions can give rise to flawed outcomes. Illusionists use this perceived reality view to subvert our brains into seeing what we instinctively know not to be true.

In addition to those higher functions, the brain also applies, what Martinez-Conde refers to (12) as a basic and hardwired functions to interact and respond to the world. These hardwired functions operate irrespective of our presumptions or preconceptions. She explains that a grey circle on a white background will always appear darker than that same circle on a black background (11). It is impossible to overcome this basic brightness illusion simply because that is the way your brain has been hardwired from birth (12). It functions in this way despite your experiences. However, to my mind these intuitive ancient responses are equally as important as the learned, when it comes to interacting with the external world. We know that if something smells offensive, the

chances are it would be harmful. We instinctively know to recoil from a heat source. Like the starfish, with no brain, we can simply react to outside stimulus.

Karl Friston (13) poses the question, is all experience the product of inference? This inference is derived from sensory evidence and then fabricated in the mind to explain the evidence. Effectively then there is no more than the mind. He recognised the difficulty here. By receiving sensory inputs there must be an external source, our external world. More interestingly, he notes the devastating effects that the deprivation or corruption of sensory information has on our mental state, hallucinations and delusions. The brain requires sensory information to function normally. The use of solitary confinement in prisons is still considered the ultimate punishment in this country.

In conclusion. Simple organisms evolved some 3.5(14) billion years ago and interacted with the external world through rudimentary senses, such as reaction to sunlight (taxis, kinesis) (15). We as a species evolved two hundred thousand years ago (16) drawing on the evolutionary journey of earlier species and hominids. As far as we know we are the only species of millions on the planet that have considered the existence of the external world. Some species have been able to demonstrate self-awareness (dolphins, chimpanzees) but in general they seek to respond and react to the external world. Through our developing senses, experiences and reason, we have successfully interacted with an external world. Our growing perception became an integral part of our toolkit for survival, but as we have moved on from that basic requirement, it now enables us to question the substance of that external world. However, given the different make up of individual brains, their varying experiences and perception it would be true to say there is an external world but not one definitive version of it (17). Furthermore, as advances in neuroscience are made it is predicted that we will better understand our brains function and how its processes inform our view of the external world. Unless of course I am just a brain in a box.

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Tutor comment:

C. is an incredibly kind, insightful, and enthusiastic student and worked very hard throughout the programme. His contribution was invaluable to the discussion during tutorials: his general knowledge, his skills in understanding and presenting complex philosophical arguments and linking different scientific fields suggests that he is already performing well above the standards of his age group. He was always eager to learn about theories that were not covered in the curriculum and find connections between theory and practice. I was very impressed by his writing skills and the original arguments he made in his essays. I am confident that he will have contributed greatly to any academic field he chooses to study.

How are the social impacts of new technologies represented in 19th-century literature?

Year 9, Key Stage 3

Pupil: **S. Jonas**
 School: **The Thomas Lord Audley School, Essex**
 Supervised by: **H. Thompson**
 Tutor University: **King's College London**
 Course Title: **The Victorian internet: Technology in 19th-century literature**

19th century literature documents the many technological changes which occurred during that period; it shows the technology's development from the point of view of the people experiencing it, which reflects directly how it changed ordinary people's everyday life forever. It also documents how the technologies redefined relationships between people. Literature such as 'The telegraph Girl' by Anthony Trollope, 'The Night Signalman' by T.N.D. Dundee and 'The Progress of the Electric Telegraph' published in *The Atlantic* (all of which I will be discussing) document this through both fiction and nonfiction, as primary sources of this. For a more modern perspective, I will be discussing the texts 'Victorian Time: Technologies, Standardizations, Catastrophes' by Trish Ferguson and 'My Sisters Telegraphic' by Thomas C. Jepsen, both of which show a view of how the introduction of the electrical telegraph and the railway system into people's lives changed their attitudes towards the sense of space and time. Overall, in this essay, I will determine whether the changes that the invention and impact of new technologies in the 19th century united communities as a network or encouraged individuality.

The Jobs and Facilities Women

One group of people whose lives were changed (for better or worse) by the new technological developments were the people working the machines. In telegraph offices, women were seen to be ideal workers in the circumstances: there were many

unmarried, unemployed women available for the job; it was acceptable to pay women less than men, making them extremely cost efficient and the job was not based on traditional manual labor, but rather a new type of work to do with communications, deemed suitable for women to perform. Therefore, the workers employed in telegraph offices were primarily women, although there were a vast number of men also employed in the business.



The shift from only allowing women to have domestic jobs to allowing them to do work involving communications changed their main role, decreasing the divide between them and men and allowing women more job opportunities. However, at the time, that might have felt unnatural even for the women living in the situation themselves. The novella 'The Telegraph Girl' by Anthony Trollope is a story documenting the fictional life of Lucy Graham, a young woman who finds herself alone in the world and decides to become a 'telegraph girl' to earn her living during the 1870s. Lucy described her position as "unfeminine", feeling that she would have to try to carry on "just as though were a young man," - for it was thus that she described to herself her own position repeatedly(). Lucy's comparison of her position to a "young man's" illustrates her old-fashioned views and the social 'norms' accepted in society at that time; she is so negatively conscious of her gender that she accepts it would be more appropriate for her to be a man in order to live her lifestyle.

It could be argued that this apparent lack of women's belief in themselves and in gender equality in the 19th century would have made their pursuit of their own careers (separate from men in their families) seem less significant. Nonetheless, it is also documented that whilst some women may have still felt they were lesser than men, there was not an extremely significant amount of gender discrimination in the industry of the electric telegraph. The text by Thomas C. Jepsen 'My Sisters Telegraphic' describes the lives of women working in telegraph related jobs from 1846 to 1950. After the initial "novelty" of seeing either sex use the electrical telegraph machinery at all had faded, Jepsen evaluates women's place in that region of employment;

"Although women were predominantly employed in

lower-paying positions and in rural offices, women who persisted and made a career of the profession could work up to managerial or senior technical positions that, except for wage discrimination, were identical to those of their male counterparts"().

Despite the apparent (and expected) favoring of men in the industry in the 19th century, it seemed for the most part that gender was not important at all compared to the amount of skill the person has doing their job. The writer uses the adjective "identical" to describe the jobs that women and men could 'work up to' to portray clearly that jobs were based solely on the skill of the person and not of their gender.

Conservative people might have argued that it was negative for women to be more independent in the context of having jobs, as women's job options had expanded from being a servant to being able to work in communications alongside men. They might say that the more traditional roles that women and men conformed to previously were better for each sex: the men being the breadwinners and general providers for the family whilst women being caregivers and home keepers. As these roles were passed down through generations, it was not uncommon for people to still believe them despite the new ideas about equality.

One person who thought this was Charles Dickens, as shown in his short story 'The Signal Man', a story about a signalman who is haunted by a ghost who warns him of accidents that are about to happen on the railway line where he works. When the speaker and the man are talking, the worker describes his job, saying that although it involves a lot of exactness and watchfulness, "of actual work—manual labor he had next to none"(). As "manual labor" connotes strongly to stereotypical 'men's work' at the time, the use of the word "actual" contrived the idea that work that women would have stereotypically done – not containing any "actual" work, for example being a signal man- were not 'real' jobs, denying their credibility. This gives the impression that they do not think that women should work at all in conjunction with men; tradition-driven people might view the social development brought by women being allowed to work jobs alongside men as damaging the roles set out by many previous generations. However, I would reciprocate that these points are invalid as the kind of system in the 19th century set out for women and men was extremely stereotypical and did not account for either sex wanting to be able to have their own life or independence from family. In the novella 'The Telegraph Girl', despite Lucy Graham feeling guilty about being an independent, young woman working for her living in a time it was not widely accepted, she knew that she had the right to work in an environment that she felt comfortable in (being the telegraph office) rather than working full-time for a wealthy family. Lucy rebels against the advice of the council to obtain a job in service, asking "why should she not be independent, respectable and safe?"(). Her use of a rhetorical question puts emphasis on the idea that they council is not interested in her personal wellbeing, placing other things above it. It is presented to be accusatory in the name of rightness,

presenting the injustice and arguing against it.

It can be argued that it was a positive thing for women to be introduced into the workers of the new technology in the nineteenth century as it brought the community closer together.

For example, prior to this, women and men had very distinct differences in the types of jobs that they could choose; women worked mostly in childcare, housekeeping and being a servant as these were seen as more womanly jobs while men's work usually was based around manual labor, as that was seen as a more manly job to do. By creating a different type of job altogether (communications work), men and women worked side-by-side with mostly the same conditions applied, decreasing the distance between the two genders and allowing them to explore a job outside of their assigned roles. It brought people closer as a community as men and women (at least in this context) were equals to each other.

Working Conditions

Moving onto the workers overall, the people who had jobs to do with the new technologies in the 19th century were affected by the working conditions they dealt with. When the electrical telegraph was first used for a railroad signaling in 1851, it introduced the new job of the signalman: this was someone who operated the telegraph to send messages to make sure that the train's passing was safe and there were no accidents. However, the job proved to be incredibly emotionally and physically strenuous, as well as being incredibly isolating. In the poem 'The Night Signalman' by T.N.D. Dundee, this stressful nature of the job is portrayed through the repeated onomatopoeia "click, click, click" to represent the sound of the keys of the typewriter and the jumbled yet thought out layout of rhymes throughout the poem. It produces an effect on the reader which makes them feel as if they were in the place of the signal man themselves, causing them to sympathize with the worker - the nonstop, attention-demanding conditions that they endured (along with the pressure of knowing that it was only them between a train full of people and their deaths) had significantly damaging effects on their mental and physical health.

Furthermore, the job itself made the people less social as they often had to be at work for most of the day (or night) and resting for its remainder, often not being able to connect with other people for extended periods of time.

Although for some, working with the new technology was extremely lonely, as in the 'Night Signalman', for Lucy Graham in 'The Telegraph Girl', it was anything but. When describing her employment, Lucy mentions her feeling as if she were working with "eight hundred female companions"(). The use of the word "companions" emphasizes how she feels she had a community, and a kind of family, within her colleagues.

Despite some work environments feeling as though it were a community, it could be debated that the

working conditions of the people with jobs to do with the telegraph and railway systems encouraged unsocial behaviour above all else; people working on the railway often did it alone, so their day-to-day experiences were (for the most part) lonesome and solidarity. This brought people apart as it detached them from society for long amounts of time.

Time and Time-Space Compression

Time-Space Compression

A different way in which the new technology in the 19th century affected people's lives was through time-space compression: the idea that travelling and communication being made faster makes distances feel as if they were smaller.

An example of this happening is when the electric telegraph was first used, and it became a lot easier to communicate to people further away. 'The Progress of the Electric Telegraph' published in *The Atlantic* provides a positive, optimistic view on how the use of the telegraph could help to unite all areas of America. In the article, it is stated that it would help by "bringing all parts of our republic into the closest and most intimate relations of friendship and interest" (). This can be perceived as meaning all areas of the US would have felt as if they were closer as the time taken to communicate with areas further away was decreased, making the distance seem shorter, although it had not actually changed. The writer further shows this through his choice of language; the use of the word 'closest' reflects how the previously distant areas were suddenly able to be connected through the telegraph.

The phenomena of time-space compression were also experienced due to other new technologies at the time, but in a more physical way. The railway and the invention of the steam train introduced a method through which journeys previously taking all day or more to complete suddenly could be done in a few hours. This made it infinitely easier to travel further distances than people would have before, opening a variety of new opportunities not previously possible. In the text 'Victorian Time: Technologies, Standardizations, Catastrophes' by Trish Ferguson, this idea is reflected, and she states that "before the advent of steam trains, travel could never exceed the pace of a galloping horse"(). The sudden ease with which people could travel at that time brought about many positive effects including that it brought rural towns closer to the cities (in the context of time-space compression), it made it possible for villagers to seek higher paying jobs in more rural areas and tourism was allowed to thrive more for middle class people as travel was more easily-accessible.

I would argue that time-space compression as a result of the railway and the electrical telegraph brought people together through making it seem as if the world were shrinking; it opened close-knit communities in small villages and brought them together to create one nation.

Time

For the modern person, time is one of the main aspects which govern our everyday lives. We strongly regulate

ourselves to the concept of time and our society practically revolves around it. Nowadays, the whole of Britain is set to the same time, as our society heavily relies on it. However, when the railway system was first set up for travel during the 1830s, each area or village had its own time zone due to time being based around sun dials (first used by Romans) which depended on the position of the sun in the sky to tell the time. The railway changed all that as, in the words of Ferguson, "it was no longer practical for each town to keep their local time and thus in 1840 Railway Time (London time) was applied in all town railway stations to facilitate the scheduling of trains"(). The adjective "practical" has connotations of something or someone who holds no emotional value but is instead used singularly to serve its purpose. The use of this word proves that the business-like approach to life was beginning to be used in day-to-day circumstances. Trish Ferguson also states that the railway had a "revolutionary impact on the pace of industrial life which became a competition of precision, efficiency and punctuality"(8) . The use of triplets within the description of the basis of 'industrial life' exaggerates how vital the three factors truly are, accentuating their importance in the clockwork of industry.

It could be argued that the presence of a national time brought people together in Britain to work not just at the same time in their individual towns, but rather to help the whole nation cooperate in accordance with trains and so forth, helping everyone. However, that could be countered as some believe that it is this move towards prioritizing business has contributed to bringing our community further apart and deeper into the world of strict 'precision, efficiency and punctuality'. Although it may have seemed insignificant, they might say that the coordinating of times across our nation was another step towards a world focused and directed singularly around time and money.

In conclusion, having surveyed the evidence, I believe that the literature shows that the technology of the electrical telegraph and the railway (developed in the nineteenth century) overall brought the people of the UK closer together as a community.

I would argue this firstly as women could work with the machines in conjunction with men, helping to eliminate the idea that people should be a certain way in accordance to their gender. As the genders began to see each other as equals, it brought the men and women together so that they could all be viewed as equal rather than having them live in separate worlds. Furthermore, my point could be argued as the time-space compression brought about by the inventions I have been discussing helped to further create a connection between the individuals in our nation; as Britain seemed to be decreasing in size, it became easier to travel to and communicate with those further away. Additionally, where rural towns were previously difficult to contact, time-space compression meant that they could communicate with others and feel as though they were part of a network of places rather than an individual location.

However, it could be argued that the technology

separated people from each other; it could be argued that the predominantly lonely, yet pressuring working conditions overworked those employed in those positions, along with the idea that the changing of the time to coordinate with the whole of Britain helped to bring the stress of strictly keeping time, which ultimately helped people to focus on themselves rather than their communities.

Contrary to this, I would argue that, despite the bad working conditions, the employees helping to run the railway in a safe way contributed to bringing communities together through helping them to be able to travel and connect to other places conveniently. Moreover, I would argue that coordinating time was seen to be "practical" and just that: it helped trains to be able to run smoothly and without any confusion.

Overall, nineteenth century literature documents the social impact of people being brought together by new technologies.

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Tutor comment:

It was a pleasure to teach S. during our Brilliant Club tutorials on English Literature. I was really impressed with her final assignment which demonstrated exceptional understanding of both the literary texts and the historical issues we had studied on the course, particularly questions of gender and technology in the 19th Century. The assignment is a testament to her ability as a writer and researcher – skills that will serve her well in her future studies.

Seeing beyond the obvious: My place, my view

Year 9, Key Stage 4

Pupil: **A. Benton**

School: **Colne Valley High School, Huddersfield**

Supervised by: **S. Jamson**

Tutor University: **Manchester Metropolitan University**

Course Title: **Making up real stuff: Bringing place to life with creative non-fiction**

A Walk to Bunny Woods

The air is so warm and thick that even breathing seems an effort. Tonight the sun is painting a sky that goes on endlessly, beautiful and calm. Its last burst of rays spotlight down upon us. I'm losing track of time. The journey from my home, down through the rough zombie estates of the neighbouring village go as quick as a blur. The smell of weed and that edge of danger are definitely present as we pass by the gangs of stoned roadmen. Adrenaline races through all of us, I'm excited but fearful, anticipating a confrontation. I'm begging time to go faster.

Eventually we pass and we reach the open fields that

lead us to Bunny Woods, things have worked out and now we run to our secret paradise, a place only we know. Even in the 20th century, this vast area of land remained untouched. It's cool to imagine that through the whole industrial revolution it managed to survive. It kind of gives itself hope – in a way. I looked at a map of the area from 1854 and amazingly the woods have nearly doubled in size. However, over time I am afraid to admit I think it will be consumed, inch by inch, by business parks and housing developments. Three new estates are being built at the moment, but thankfully not on Bunny Woods.

I am almost at the top of this steep and unforgiving hill. There are seven of us. It's mid-summer and the humidity is finally settling in for us, the innocence of the day sweeps away as we run into the forest. I'm watching the sun dance in and out of the distorted branches and leaves.

We find our fire, next to what someone dubbed the Shag Shack. Our giddiness and excitement fits in with the environment almost perfectly. There are no adults around – people couldn't hear us if we screamed the whole night through, pure freedom and experimentation. We have found a dream place and no one is going to demolish that, not tonight anyway.

The fire crackles and whispers, it enthralled and holds us close, like a spirit wrapping around us. Hot ribbons of light spark off creating the most transient of beauties. As soon as the wood is fully inflamed I see the world become illuminated: a shrieking flame tries to leap out but nevertheless it is smothered way back down with its own skin.

Sometimes it's hard to spot all the details when your mind is so full. Like the greyish-green log speckled with a mint mould and a dewy, sticky residue that quivers almost out of sight. Or the old hanging rope with all of its memories. It's fragile, yes, but it still has the stiff frays that grasp onto the broken, dead tree. I think about this tree, how it has been passed by many strangers; sometimes ignored, rested on, even looked upon and admired. I mean these trees and these woods must have seen everything over the years. It made the night ever so trippier.

I can feel the thrill when my first sips of cider are being taken: rotten faces pulled as I quickly resolve to giggling with my mates. This is freedom. I take another a sip and a deep breath once more.

All of a sudden, a silhouette of a doe and fawn appear dreamlike at the bottom of the mound. Eagerly we begin to creep out for a better look, clamping our hands against our breath to keep it steady. Then one of my friends yells out and they dart off in an instance. Our bellowing laughs unfortunately making sure they don't return.

It makes me wonder of all the sounds that have woven in and out of these woods before. I mean, in the 2011 Census the population had increased to 18,033, obviously it is even more now. In 1593, the population was 9108 which is pretty crazy for a small village that is nestled high up in the hills of the Pennines. The thought of

all of those thousands of people that have echoed in this space blows my mind really. What unrecorded stuff has happened here? What hidden secrets lay buried under the well-trodden soil?

High-pitched whistles echo in the distance where the setting meets a steep wall of nettles and vegetation that borders off the area. The 'homie' tree perches against it perfectly now, so we can all use it as another place to hang as opposed to the campfire.

This unopened space of land is a place we come often. I retrace the trails of my dog walks from the weeks before – feeling like an explorer guiding the pack to the new, potentially exciting area. We cross the dainty wooden bridge and spread out some more. I guess if the dog walkers spotted us they would feel intimidated and confused but we are on our own and continue.

I begin to wonder if my family know what I am up to at this moment. They wouldn't mind I tell myself; they would want me to have fun!

By day this is an almost flawless ideal of nature, but now at night it is a secretive hive of activity. I am making the most of everything right now. I put my parents out of my mind as I drink and laugh with my friends. I will never forget the joys of Bunny Woods this night.

Thinking of maps, if I remain here (and if Bunny Woods remains here too) by the time I have kids, a detailed map of my view on the woods could be interesting. A trail to the 'Shag Shack' as we call it, and our different experiences of the place. Writing about my teenage years going on mad benders all holiday, that is if they're even interested. The future is uneasy to think about. I can't imagine a utopia better than this, only alien structures stripping away the memories and eating away at the place I call home. Through the mist and grey sky, the curious trail I have been following will come to an end. And the joys of Bunny Woods and the summer will remain with me entirely. I don't plan to stick around in this area anyways when I'm older. What if I go next summer? Maybe the summer after that? And then one day, without knowing it at all, I stumble home and never see the distorted twigs or unstable Shag Shack ever again.

Reflection

The easiest part of writing this was the actual story I could provide. I had so many ideas and thoughts and they reluctantly came down on paper pretty easily. I want the reader to feel my passion towards the place, my excitement and love of it all. I chose this place primarily so I could mix the surrounding beauty of its nature with one of my favourite experiences of last summer. Honestly as well, I wanted something that would stick out and stray from the other's pieces of work since I know I am quite different to them all. I really felt the need to add a lot of "lols" in there too – but it's hard to recognise being informal to being too informal.

Thankfully, I didn't. The place means a lot to me, I never went in to too much detail of my emotions to it because there's too many. Even now, five or six months

after summer it still has so much reflection in me. I guess the silly name strips away any unchildish thoughts on it but The Shag Shack really is some type of safe haven to me, you know one of them places where you can't not be happy? This piece shows how I view the world as a 14-year-old. There are many different opinions of the place: ones to dog walkers, the surrounding houses, the people who work in the allotments. But they are all adult ones, and I think my personal teenage view is pretty cool to compare it to. From the tutorials such as Number 3 – Why Walk? - I learnt how to write vivid and visual descriptions and the examples really helped me with my piece. I always work well off examples. I need to compare my work all the time just for the comfort if I'm doing it right; so the extracts provided really held me on through this whole experience. From my knowledge on creative non-fiction I have understood what 'presence' to write it on. Incorporating very descriptive language is necessary and vital to the piece, but I had to learn what came exactly after fictional writing. I've learnt how similar the two become. Creative non-fiction must be exciting, powerful, something to draw the reader in. This isn't categorically found in non-fiction, though. Nonfiction is dull and factual. Creative non-fiction, however, is factual AND exciting. It was challenging to combine the two without swaying on either particular side. You want to show the memory. Put it in their minds. Not incorporate something that isn't true even if it was more exciting – it's just unrealistic. I wanted to make mine the best I could provide yet stick to the story and stick to the facts.

My resources for this piece were old map passages or old village descriptions. They were incredibly interesting and I learnt this trick through Tutorial 4: Using maps to share your place. Websites such as www.visionofbritain.org.uk gave me insight to what Golcar looked like in the 20th century and supplied my ideas of the past and future of the place. It also informed that after all 'Bunny Woods' is just a nickname revealing the actual name to be: Pig Hill Wood. Maybe I don't know as much as I thought. My writing could be further developed in what I think may come of the future. Not a lot of reasoning is provided which lowers the reliability on my whole judgement of the place. Who knows what will happen in the future anyway? It's such a dodgy kind of topic. Using evidence may not be of best standard in my piece anyway. I don't feel as though I've linked to more factual based stuff, only focusing on imagery for the reader. I need to prove how my evidence relates to my point, be convincing and supporting my ideas but I really lacked in that.

I felt as though I've addressed my assignment, I have included that only of what is needed. I've tried my best to not 'blabber' on and ruin the formality (without destructing my chatty nature as well). All information has been relevant. My point of view is clear and an explanation/description is evident also. I don't want to tell people my opinion is correct and that is the way it should be looked at, because I think the advantage of it is how it is regarded so differently to someone like me as opposed to someone who you would stereotype to enjoy a woodland-walking type environment.

Personally, I believe my use of language has performed

especially well. The meaning is clear and my flow is easy to follow. I think I've wrote with some comfortableness and I feel as though the reader could potentially feel a chill vibe when reading it. An issue I see however, is the mix between formalness and slang. I would argue that I was using an appropriate formality and a reader wouldn't be confused when reading it over. The structuring was ok; at a few scenes I've changed the focus and setting quite drastically without a particular journey. I guess when I was writing it I didn't think that was important. It needs to be a movie not a slide show and I didn't prioritise that much unfortunately.

In conclusion, I am most confident of my language and development in the piece. The structuring and evidence side weighs down the scale. Although I thoroughly planned this, some aspects slipped my mind. I didn't consider everything I had to include in order to benefit my marks. A positive is the evaluation that I'm doing right now, it's critical and I believe exposes my missteps. I feel as though I have addressed all my blunders and victories and argued how this has affected my piece in the long run.

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- 1 <http://www.visionofbritain.org.uk/maps/>
- 2 "Kirkless Ward population 2011". Neighbourhood Statistics. Office for National Statistics. [Retrieved 25 February 2016.]
- 3 <https://ukga.org/england/Yorkshire/WRY/towns/Golcar.html>

Tutor comment:

Colne Valley High School was a delight, and I enjoyed working with every one of the students. A.'s work, however, stood out because she took complete ownership of the creative task I set for the final assignment. Her essay captures a particular moment, exploring questions of place, time and identity in a mature response with echoes of Laurie Lee's Cider with Rosie.

'In wartime, the scientist belongs to his country'. To what extent do you agree with this statement?

Year 9, Key Stage 4

Pupil: T. Smith
School: Caludon Castle School, Coventry
Supervised by: M. Noble
Tutor University: University of Nottingham
Course Title: A battle of brains: The mobilisation of science in the First World War

In this essay, I aim to discuss the statement '*In wartime a scientist belongs to his country.*' I will introduce the context of the argument and then further explore this with supporting evidence. I will present some historical background of WWI and WWII, up to the Cold War and I will discuss examples of scientists working for opposing governments and the research and inventions they worked on. I will discuss the impact of science post-WWII and the scientist's moral and ethical standing which changed over time. I will explore how for certain scientists their country's political ideologies still impacted their research in terms of funding and economical support. I

will summarise if ethics still play an important role in how scientists work within and outside times of war, and their future contributions to evolving humanity.

To begin it may be useful to define the meaning of the phrase "In wartime a scientist belongs to his country". An easier starting point might be to consider the nation a scientist belongs to *outside of wartime*. When a country is not in conflict scientists can work on collecting data, researching, making discoveries and solving problems faced by their countries. However, a sense of national and patriotic duty is not always the driving force behind their work. During times of peace, the scientific community often share their discoveries across political borders to further the knowledge and understanding of mankind. Whereas during wartime, countries will require all the advantages and benefits they can attain so as to benefit the country they are affiliated with; so they conserve research and classify important discoveries until the war is over. Simply, in wartime a scientist belongs to their country, and patriotic duty, as well as the control of the state demands and often, dictates that they only support their country, rather than the 'enemy' states.

For those in the field of research and development during the First World War, there was almost no choice as to what their new occupation would be, and as to whom they belonged to. Either they would take up the position researching solutions to problems during the war, and devising new designs of weapons, or they had the unenviable options of going to the front lines and almost certainly be killed, or court marshalled for being a conscientious objector. Additionally, the First World War (Or Great War) was also known as a *total war*, where all the of resources and the economy and infrastructure of society was used to fight the war. This means that people in Britain were trying their hardest to support the troops, and if a scientist were to object to taking up a position, they would have most likely been shunned and despised by society.

The impact that manufacture of chemical weapons *had on warfare and casualties* has been documented with astonishing findings related to that era. However, it cannot be denied that research in WWI had a very large impact. Developments such as new chemical weapons created "1.3 million casualties caused by chemical weapons, including 90,000 to 100,000 fatalities, primarily from phosgene" (Everts, 2015). During a time of war, strong moral integrity can be difficult to maintain, such as if a proportion of those within a person's social group are devoting all their efforts towards a morally dubious, but ultimately helpful area. And sometimes, standing one's ground instead of uncritically following the government can have certain benefits.

An example of this was Fritz Haber who was a well-known German nationalist, and the creator of the statement in question. While his professional life was famous, his personal relationships and in particular that of his wife, were marred by his choices. She was known to be committed suicide as a result and tragically the rest of his family, were killed using chemicals of his creation.



Fritz Haber

But a key question to consider were if the inventions were deemed as 'completely terrible'? Not all of the creations had such a traceable impact, like defensive weapons being researched at Hawkraig, an "Admiralty Experimental Establishment Station" in Aberdour, Scotland (Maxwell, 2014). Advancements into fields like hydrophonics (underwater microphones) and the study of wavelengths were made by teams of scientists (Wood, 1965). These helped the English to detect the German U-boats (submarines) and could have prevented events like the sinking of the Lusitania, a passenger ship the scale of the titanic, with 2000 citizens onboard. It could be argued that Hydrophones do not have the same level of responsibility attached in their creation, unlike a chemical weapon, because of their indirect impact on loss of life. While weapons are used directly to kill people, hydrophones could help prevent deaths from German submarines. Hydrophones are even used in modern applications, like seismic surveying, which is used to locate undersea deposits of natural gas and oil (Richard C. Selley, 2015).

There are also several famous examples of weapons of mass destruction being used for good. After the first gas attacks, scientists and doctors searched for a cure or any possible reversal of the terrible damage that could be inflicted by chemical weapons like mustard gas. While conducting this research, it was noted that the gas had destroyed bone marrow cells, as they were one of the most rapidly dividing. It was theorized that the compounds may also be effective against cancer due to their high number of cell divisions. After many trials and improvements of the compounds, the first chemotherapy drug was born (Smith, 2017). In 1955, the TITAN family of inter-continental ballistic missiles was created, and was designed to deliver nuclear warheads and cause mass destruction. Eventually, after a lack of use, the rockets were repurposed, and the MK II denomination of the rockets was used to send Clementine (a lunar survey satellite) and Project Gemini (a manned flight in orbit to test equipment and usage for the lunar landing) into Space (May, 2011) (NASA, 2013).

If a scientist does belong to their country, does the ethical environment around the inventions developed, change as well? Out on the front lines, everyday ethics shift dramatically. Fatalities, mutilation and bodily harm are the main goal and are encouraged during war. Although,

while the regular code of ethics is modified during war, it does not necessarily connote the complete cessation of all morals and ethical codes. This can be seen within the numerous conventions and rules established by entities like the UN, or the Hague and Geneva conventions. These organizations give a moral framework as to the laws of war. Ostensibly, the same change in ethics and baseline morals are also present in science. The scientist is burdened with the complex decision of whether to follow orders from their country and to what extent. Perhaps an exemption akin to that of the Nuremberg defence could be applied, where scientists are partially relieved of their responsibilities due to them being forced to follow orders issued by the government (International Criminal court, 1998) (International committee of the Red Cross, 2014).

Scientists can also belong to a country, but not necessarily their country of origin. From 1945 – 1959, America covertly relocated over 1,600 German scientists under the name 'Operation Paperclip'. Many of these scientists were former Nazi party members and paramilitary groups such as the SS with some of them having links with leaders high in the political chain of command. Among these scientists were some who were influential members of the Nazi party, but escaped prosecution by being given refuge in America from 1945.

A notable example is Wernher Von Braun, a developer of rockets with close ties to the Nazi party, who was alleged to have used slave labour from concentration camps. Another notorious example was Kurt H. Debus, a member of the Nazi party who later became the director for NASA's launch operations centre. In exchange for avoiding war trials, incarceration or execution, the expertise of Nazi scientists was used to develop rockets during the inception of the Cold War from 1947. America also benefited through acquiring these scientists reduced the Soviet Union's pool of talent, as they were implementing a similar but larger program. These operations followed quite a literal meaning of belonging to a country, as though scientists were an asset to be utilised, rather than part of a war effort. Although scientists did not necessarily belong to their country, just the one that benefitted them to the greatest extent. The absence of any review of their past after working for the country also has some disturbing implications as to the extent that countries are willing to push ethical boundaries to win battles such as the cold war (Jacobsen, 2014).

A similar yet quite different example is the esteemed physicist and mathematician Albert Einstein. During 1933, when his reputation was fairly well known, Albert travelled to the US. He realized that he could not return to Germany as it was under the rule of the Nazi party, well known for its antisemitic stance. After his house was raided Einstein moved from residence to residence, eventually being granted residency in the US as a scholar, studying at the institute of advanced technology. In 1935 he finally applied for citizenship in the US. Four years after this, many scientists were starting to grow concerned of the Nazi party's research into developing the atomic bomb, most notably Leó Szilárd. Einstein and Szilárd decided to collaborate, creating the Einstein-Szilárd letter. It warned the Americans about the possible rising threat of the

development of the atomic bomb by the Nazi party and strongly advised president Roosevelt to start development of their own bomb. The letter is commonly noted as one of the main reasons for the creation of the Manhattan Project. Instead of belonging to his country, Einstein switched sides and then actively countermanded his own nations research (The Philadelphia Bulletin, 1955) (Clark, 1984) (Isaacson, 2007).

Given all of the above, it can be deduced that scientists do belong to their country. This is evident in the social and societal pressures faced by scientists in wartime such as during WWI. Due to this, scientists were essentially forced to concede to their government's commands. If a country requires expertise to gain the upper hand during war, which had been demonstrated by the United States during the cold war, then certain patriotic pressures were exerted. Through this concession, scientists traded their support of their country for beneficial personal gain or for the safety-net of political asylum. And while scientists and their discoveries are owned during wartime, outside of war these discoveries help everyone. Additionally, although scientists are coerced by their nation-state in a time of war, they also have an ethical dilemma in terms of their personal or 'national' responsibility.

While the debating of ethics of wartime may seem far off from modern applications, its conclusions may well influence issues being experienced now. One key question is 'if a scientist does belong to their country, then who takes the blame for creating amoral weapons?' (such as chemical warfare or thermonuclear explosives). My understanding and opinion is that, at least during the world wars, the ethical responsibility falls upon the country.

But as the modern world, it's society and politics have changed, so have the methods that countries access conventional instruments of warfare. Through the modern global weapons market military hardware is available to countries with the required funds, a state no longer needs to rely on domestic scientists to research and develop weaponry for their country's needs as combatant countries were forced to do in the first half of the 20th Century.

Military research and development have in a way plateaued with the advent of the atomic bomb and Mutually Assured Destruction ideologically there was no reason for the continued invention of any other weapon. But since the nuclear bomb is a total loss for all sides, weapons research continued. Even then, the same problem has arisen even in regular warfare, with only marginal improvements being made. Therefore, the need for scientists during wartime is essentially redundant. An even father factor is that perhaps scientists aren't needed in modern warfare. Weapons development, production and buying can be outsourced across the world in a way drastically different from the world war, meaning scientist and their invention might not belong to any singular country. In this scientifically advanced, digital age the methods of warfare are transforming rapidly and platform of warfare has radically shifted. Virtual battles are now waged over misinformation, digital propaganda, politic interference privacy and data, as a free for all of offensive encryption,

individual hackers, and even wide-scale attacks. This has led to scandals not just involving the privacy violating techniques, but also in controlling the flow of information to the populous, and most notably, influencing political persuasions, like in the aftermath of Cambridge Analytica. Perhaps scientist might be able to help their countries in psychological and cyberwars, better than conventional warfare.

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Tutor comment:

T. was an outstanding participant in the course. He grasped the core philosophical ideas that emerged from the historical material and applied them to his understanding of the contemporary world, which is very much the aim of university-level history. He made it his personal objective to do well with the course and it was a delight to award him a Distinction for his assignment, a grade that he so richly deserved.

Using original sources, evaluate the significance and contribution to the American Revolution of the previously excluded

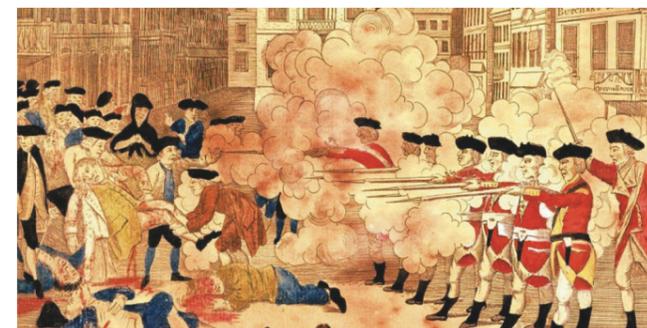
Year 10, Key Stage 4

Pupil: A. Alderman
School: Chiswick School, Hounslow
Supervised by: N. Kyriacou
Tutor University: King's College London
Course Title: The American Revolution: Who makes history?

In my opinion the minorities and/or excluded parties from the declaration of independence contributed quite significantly to the revolution and egalitarianist ideals of the American people. In this essay I will evaluate the significance of minorities to the "American dream" using original sources. If Thomas Paine was to be believed when he said, "The cause of America is in a great measure the cause of all mankind"[1], the cause of America would be its faith and support for equality and freedom for all. Thomas Paine said that this cause and belief is so important that it should be the cause for all mankind. This all-important belief is what any significant

person would contribute to a revolution as permanent as the American Revolution. Therefore, in my essay, I will be looking at any significant person(s) to contribute to this idea of equality and freedom for all or people who significantly contributed to war efforts and battles. In my opinion, these people were the bringers of the revolution.

African Americans contributed significantly to war effort and persevered for more equal rights for themselves. One specific man who endowed his life for the American Revolution's war efforts was Crispus Attucks a Native American/African American dock worker who was the first man to die in the Boston Massacre. As the Boston Massacre was the first real act of war in the revolution, he is widely viewed as the first man to die in the American revolution [2]. In my opinion your life is one of the most valuable things you can contribute to anything and Attucks' murder was a massive sacrifice for the revolution.



Paul Revere's engraving of the Boston Massacre, 1770

Attucks' sacrifice was one significant contribution to the war effort, but many African Americans contributed to the Revolution's cause. Slavery was the foundation of the mere possibility of the Revolution [3]. If settlers and Americans hadn't had help from cheap, unpaid labour, it would have been very hard to maintain a prosperous economy built on agriculture and hard labour like many other developing countries, especially since the US was growing in size so quickly (encroaching on Native American territory). This reliance on slavery and mistreatment was why many began to protest and was the reason for so many activists who fought for equality. The main idea of the revolution was one of egalitarianism and by fighting for rights and equality one would be contributing a great deal to this idea.

Many African Americans campaigned with significant actions to combat this mistreatment and abuse of human rights like Frederick Douglas. Frederick Douglas wrote the "What to the slave is the fourth of July" speech. This famous speech written in 1852 describes with a sad heart the underlying disparity connected with the situation. Douglas says, "the rich inheritance of justice, liberty, prosperity and independence bequeathed by your fathers is shared by you, not by me" 4]. This quote is a direct line drawn in the sand by slaves and their white slave owners. Even though slaves liked and supported the idea of freedom, the 4th of July was still a bittersweet idea celebration for many still enslaved. When Douglas talks of "prosperity and independence"[4], he talks of how it's for whites only. This celebration means nothing to him except the continuation of white privilege. But

later in the speech, Douglas says "allow me to say, in conclusion, notwithstanding the dark picture I have presented of the state of the nation, I do not despair of this country"[4]. This hope in the ideals and beliefs of a document that still denied people of his heritage rights is an example of massive optimistic belief in an idea. Douglas hated the celebration of the 4th of July due to its connotations but overall, he supported this idea of egalitarianism presented on a document that bound many African Americans in slavery.

By saying this in a speech designed to critique and shame celebration of the Declaration of Independence which condemned many to slavery is to hold a torch up to this original belief in equality and by supporting this Douglass supported the revolution and the proposition of a new country where anyone could be free.

Another previously excluded party that contributed both to war efforts and in campaigning for rights was in the Revolution were women. One example of a woman who helped with war efforts was a woman called Deborah Simpson of Massachusetts. She disguised herself as a man and enlisted in the army as Robert Shurtliff but was wounded in a battle. As she was being treated by a doctor, she didn't tell him she was shot in the thigh as she was scared of being found out. She took out the musket ball herself and sewed up the wound. When she was later discovered, she was honourably discharged and awarded a pension [5]. This dedication to a cause shows just how devoted many people, including women (not just men) were to this idea of equality. For a person to go through that much stress and commitment to a cause shows just how much people supported the Revolution's causes and is a good example of how a good cause can unite people even when they have differences.

A second example of a woman who was committed to war efforts was Molly Pitcher. This is the nickname that could apply to Mary Hayes or Margaret Corbin but is generally credited to Mary Hayes who fought in the Battle of Monmouth. Not much is known about her, but this famous print [6] shows her helping to operate a canon. This print [6] depicts her with a determined face and this determination to win a battle for a cause one believes full-heartedly shows the powerful motivation the revolution and its ideals installed in people.

One woman who looked for respect for women in the Declaration of Independence was Abigail Adams, who was imploring her husband to "remember the ladies"[7] and was laughed at by her own husband, the second president of the United States. Abigail Adams didn't even say she was equal, or try to argue for voting rights. All she wanted was to be treated with respect. This severe lack of respect and refusal to see women as equal was why, more than 70 years later, Sojourner Truth was still trying to fight for equality and why women only got the vote in America in 1920, 144 years after Abigail Adams's original letter.



Print depicting Molly Pitcher helping to operate a cannon

Sojourner Truth was an example of a woman who campaigned for equality. Her speech "Ain't I a woman" [8] powerfully illustrates her battle to be viewed as equal. She says "Look at me! Look at my arm! I have ploughed and planted, and gathered into barns, and no man could head me! And ain't I a woman?" [8]. Here, Truth is saying that she is as strong as a man. But the quote "ain't I a woman" [8], spoken in an almost condescending tone, challenges the stereotype of women being weak and dainty. Yes, she is as strong as a man, but she is still a woman and she is powerful and un-yielding and she won't be pushed around because she is equal and not lesser. This is why Truth's speech was so powerful- more than 70 years after the Declaration pledged equality for all, and Truth was still fighting for her equality.

This powerful belief in equality was why so many women still campaigned for the right to vote and why the Declaration of Independence is still valid today. It also illustrates the changing of attitudes and the slow change to more and more people demanding their equality. This difference in attitudes illustrates changing times. Rights hadn't changed for women over the 70 years since Abigail Adams, but the women's perspective had. They were now motivated by the Declaration that had promised them equality, written by those who denied them it. This change in attitudes was what ultimately led to a change in women's day-to-day lives.

Overall, previously excluded parties did significantly contribute to the Revolution and its cause. From people like Fredrick Douglass and Sojourner Truth, who campaigned tirelessly for equality and people like Crispus Attucks or Deborah Sampson, who fought for America's freedom,

many people believed in the founding fathers' message that "all men are created equal". Whether they were activists or soldiers, being excluded from a document did not stop them from fighting for what they believed in. That is why the Declaration of Independence and American Revolution are still so relevant today. There were flaws in ethics, but the concept fuelled many revolutions past and still to come, because its message was so inspiring to so many people. Although the American revolution happened centuries ago, its equality concepts are still as valid and innovative as they were today. In my opinion, without these campaigners for the Revolution and egalitarianism, we would not be where we are today, so therefore, people previously excluded did contribute very significantly to the American revolution and what it stands for.

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- [2] <https://www.pbs.org/wgbh/aia/part2/2p24.html> PBS website, People and Events, Crispus Attucks
- [3] James Walvin, Freedom the overthrow of the slave empires (Robinson: London 2019)
- [4] "What to the slave is the 4th of July", Fredrick Douglass July 5th, 1852
- [5] <https://www.khanacademy.org/humanities/us-history/road-to-revolution/the-american-revolution/a/women-in-the-american-revolution>
- [6] Abigail Adams to John Adams, 31st march, 1776
- [7] Sojourner Truth, "Ain't I a woman" speech, Ohio Women's Rights Convention, 1851.

Tutor comment:

The level of engagement and enthusiasm from all the students at Chiswick School was outstanding. A. exemplified their approach and aptitude with difficult and complex subjects, such as the contributions made by the enslaved and women to meet the promise of the American Revolution. In particular, A.'s accomplished writing style allows a sophisticated expression in her critical analysis of the major issues involved.

What discipline is best for studying the Middle Ages, Archaeology or History?

Year 10, Key Stage 4

Pupil: L. James
School: Fullhurst Community College, Leicester
Supervised by: B. Fathy
Tutor University: University of Leicester
Course Title: No fairy tale: Using Archaeology to study the Middle Ages

Spanning from roughly 500-1500 AD, the Middle Ages were a phenomenon that left a lasting imprint across Europe. Over these one thousand years, cultural, societal and architectural developments were made that have proceeded to form the foundations of how we live today. Despite the longevity of this period and the significant changes it brought, there is sparse documentation of this era as only the "educated elite" possessed the ability to read and write ("Introduction to Reading and Understanding Religious Documents"). Although quantity is limited, historical evidence has helped to unveil key aspects of medieval life. Equally, archaeological findings have contributed much of what is known about this time. In this essay, I will be evaluating which of these disciplines, history or archaeology, is superior in the rediscovery of the

Middle Ages. To do so, I will be comparing the usefulness of evidence, acquired through both of these means, that has allowed us to determine some of the medieval period's most notable legacies: religion, violence and towns. For each, I will evaluate the advantages and disadvantages associated with both disciplines when studying the areas, beginning with religion.

Through both historical and archaeological sources, it is evident that religion held much prominence in medieval society. This can be seen as religious manuscripts form a large sector of what little written evidence there is available from this time. Many of the entries within the Anglo-Saxon chronicle, "a chronological record of important events" (Giles V), revolve around the actions of the church and figures affiliated with it. These records describe ceremonies of baptisms and ordainments, as well as giving the erection dates of various churches across the country. From this document, the presence of Christianity in England is clear. This is corroborated through the existence of Anglo-Saxon translations of the Bible. The preaching and subsequent spread of Christianity can also be interpreted through historical sources (Life of Ansgar AD 875: Chapter XIV).

However, there is a likelihood that these sources may be lacking in reliability. For example, 'Life of Ansgar' is the biography of a saint and would have been written with the intention of being looked back upon. This purpose would have been taken into consideration by the author and, as a result, it is possible that the great deeds and achievements of Ansgar that would have consolidated his position as a saint to future generations may have been heightened on paper to embellish the church and its capabilities with higher prestige. As access to literary skills was exclusive, those with religious responsibilities being one of the selective groups to which it was granted, this subjectivity and bias is likely to have been present in more than just this one biography. In spite of this, information regarding the position of religion in the Middle Ages can still be obtained. Potentially exaggerated sources should not be disregarded as they can show the church's high level of influence - if the matter of religion had no weight, there would be no reason to augment its reputation. Yet there is another limitation of using historical sources to study religion. On account of the low literacy rates, transcribed references would only date so far back, meaning knowledge of religion prior to the earliest account is restricted.

It is at this point that archaeological evidence can be used to delve further into the past. Church remains can confirm the expansion of Christianity proposed in historical documentation. In contrast, burials are able to challenge the validity of these statements by illustrating how many people, and in what areas, truly converted. This is because Paganism, the polytheistic religion of England prior to Constatine's introduction of Christianity during the Roman era, have burials with specific characteristics (Anders 2002: 54). As death was viewed as the "next stage of...existence" and the afterlife as "a realm with no form" (Wigington), cremation was often used because it was believed that the soul did not require a vessel to pass on. The inhumation burials that did occur

placed bodies underground directly exposed to the soil. Along side them were various artefacts, such as tools, weaponry or jewellery (Scull 2009:178), presumably there to aid or give comfort in the individual's transition to the next phase. Attributes of a Christian burial greatly differ from this. Due to their belief of a Judgement Day, there was an attempt at preservation of the body through inhumation in closed caskets. Within, no grave goods would be present. If the corpse was to be accompanied by any object, it would have been in the design of a cross/fish (symbols of Christianity). Through distinctness of method, discerning between each religion's burials becomes clear. They can therefore be used as a physical, objective piece of evidence to show who Christianity reached, where and when.

While human hands are unlikely to adjust the credibility of this physical evidence, the same cannot be said for the test of time. For reasons unclear, excavation sites may uncover empty graves which lack definitive links to either religion (Scull 2009:178). Furthermore, considering the potential weathering of certain aspects of the burial, Christian tombs could be mistaken for Pagan and vice versa. There is the additional issue of not every person being buried in the manor that corresponds to their religion, or being buried at all. If attempting to calculate the specific numbers of how many followed each religion through the use of medieval burials, accuracy would be amiss.

One conceivable reason as to why someone may not have been ceremonially buried is murder. This links to the prevalence of violence in the Middle Ages. From the bones that are found, archaeology is able exhibit the physical damage inflicted upon a person. A famous example of this is the skull of Richard III, through which trauma to the head is clearly visible (*Photos of Skull of Richard III*). By totalling the number of skeletons with damage that undoubtedly suggests that they departed unnaturally, we are able to uncover the most violent areas and times, as skeleton age can be identified, of the Middle Ages. Archaeology also allows a glimpse at violence through the imprints left on architectural structures. Besides excavating medieval weaponry, in some cases, we are shown in what circumstances they were used through damage done to the surroundings. For example, a large hole in a surviving medieval wall with cannon ball remains nearby would be strongly suggestive of a past attack. The fact that towns had walls surrounding them (*Photo of Great Yarmouth medieval town wall*) is itself an indication of violence. This is because only the threat of attack warrants the precaution of protection.

Archaeological evidence is unable to reveal all elements of violence though. This is because some incidents, for instance a stabbing, may not leave a physical trace on the skeleton. As this is the only part of the body that can withstand prolonged periods without rotting, it is the only part that archaeology can provide to examine, meaning many violent occurrences go undetected. Moreover, despite the ability of a bone to remain in a state of preservation, it is not guaranteed that the remains of every individual subjected to violence will be unearthed.

This makes it difficult to form an accurate representation of the scale at which brutality was perpetrated. Arguably most critically, archaeology is blind to the catalyst of violence; it cannot show the reason behind it.

Clarity can be gained through historical evidence. In the Anglo-Saxon Chronicle, dates, locations and descriptions of every significant attack is noted. The abundance of recordings present the prominence of violence but more so the fact that it was regarded as a serious matter. Justifying this attitude are historical sources that divulge the information that living in fear of violence was common practice in the Middle Ages. Specific scenarios are listed, such as "slaughter", "beating", "ambush", and "canings" (Harari 2011), which provide a clearer image of the different, specific types of violence that transpired. Another way in which history gives a broader perspective is through the inquests recorded in medieval coroners' rolls. Unattached to partiality as the information collected was for legal purposes and would only become archival, these documents give categorical data regarding the frequency of death on behalf of numerous weapons (*Calendar of Coroners Rolls*). This level of detail is unattainable through archaeology.

Nonetheless, using history to study violence does not come without drawbacks. Although primary accounts of various violent happenings are supplied ("How Bloody was medieval life?"), there is uncertainty concerning their reliability. Many reports, having no archaeological evidence to confirm their claims, were just transcribed recounts, meaning they are wholly subjective. Either purposefully or unintentionally, this could mean that they stray from the truth. An instance where deliberate adjustment of the facts may have occurred is in the retellings of major battles, a famous example of which includes the Bayeux Tapestry. Depicting the Norman Conquest, specifically the Battle of Hastings, there is the potential that the winning party (the Normans) and their feats are portrayed in an overly distinguished and heroic light seeing as it was commissioned within their period of rule. Bias is not the only obstacle linked with historical evidence; there is the added problem that it does not always date that far back. The coroners' rolls previously mentioned only began to surface in the late Middle Ages, meaning that the hundreds of years prior are lacking this type of documentation. Thus, using history to study violence throughout the entirety of the medieval era is impossible.

When studying towns, the final noteworthy legacy, history does not bear this same disadvantage. This is because they were a development that occurred during the Middle Ages - a fact that has been established as there is evidence, from the Middle Ages, of their evolution. As their transition from villages took place in a documented period, it does not concern the study of towns that anything prior may be undocumented. Confirmation of this change can be found in Domesday Book. Part of its contents comprises data that depicts each area across the country owned a substantial amount of horses, oxen and plough teams (Langdon 1986:29). On account of this, it can be inferred that farming was a crucial part of medieval society. As this can be viewed as an indication

of livelihood, these statistics, and how they change, can roughly indicate the formation of a town. For example, a decrease in horses would suggest a decrease in farming and subsequently an increase in other trades, a trait synonymous with the societal trends of a town rather than a village. Through history, the appearance of a medieval town can also be revealed in the form of old maps and drawings (Crabtree 2018:60).

As these would have been hand created, it is undeniable that they may be lacking in accuracy. To determine the layout of a town to a degree of further precision, archaeology can be used. Remains of roads, walls, fences, buildings, piers and ditches not only aid the reconstruction of a medieval town's structure but illuminate the way of living. Considered too trivial to be put in writing by people living at the time, some of the fundamental aspects that formed normality in towns can only be viewed through physical remnants. For instance, ditches have been found positioned parallel to medieval streets (Fathy 2019:29), which signifies the implementation of early drainage system. These findings supply information in regards to how a town functioned but would have been likely overlooked by history due to the unexceptional nature.

Restricted availability of archaeological evidence means gaining a complete image of a town can prove challenging. Despite the technology of today, weathering can leave so little architecture remaining that reproducing a town's arrangement is unachievable. Our interpretations are therefore based upon the presumption that each town had the same features as their counterparts that endured the elements in order to be excavated. Additionally, using archaeology is futile when trying to learn about the vital component of a town which, without, it could no longer be classed as such. Archaeology does not grant an insight into the people of a town, their roles, responsibilities or behaviours.

To effectively build the most comprehensive view of a medieval town, evidence from both disciplines should be combined. I believe this to be the case when studying the other legacies, religion and violence, also. Single-handedly, neither archaeology nor history can allow a fully complete and conclusive study of the Middle Ages. Both methods have their issues. Generally, there is the question of reliability when using historical sources and archaeology is limited in what it can show. Both methods can elucidate areas which the other cannot so, when used in conjunction to either disprove, corroborate or fill in the gaps, evidence can be refined to generate an exhaustive overview of the medieval period. Therefore, I do not believe that either discipline has superiority over the other when being used to study the Middle Ages as a whole. It is only when a particular component of this era is being investigated do I believe that one discipline may be better suited than the other.

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Tutor comment:

It was a joy working with L. in my placement. L's essay creatively synthesises many disparate and extracurricular sources into a sustained and nuanced argument that both disciplines have their unique strengths and limitations. The essay is critical of every source, but the author is nonetheless able to identify their merits, frequently with her own original interpretations. Should she choose to pursue an undergraduate degree, L. would doubtlessly be a benefit to her department.

To what extent did the media impact the image of George III?

Year 10, Key Stage 4

Pupil: L. White
 School: Sir Christopher Hatton Academy, Northamptonshire
 Supervised by: P. Emerick
 Tutor University: University of Leicester
 Course Title: Monarchy and the media: Royal image in Georgian Britain

Throughout the life of King George III, his portrayal in the media varied as his kingdom developed and important political events unfolded. In fact, the image of the king has remained a changing one even after his death and up to the present day, as his impact and that of the events that occurred in his lifetime - such as the Revolutionary War and development of the concept of a royal family - still remain significant to contemporary society. Due to the scale of such events, the portrayal of him in media has changed over time, and, as a consequence, so has his image in the eyes of the public. However, the extent of the influence the media had over the image of King George is disputed, as this too fluctuated during his time as the monarch. This essay will argue that the king himself had more influence over how people saw him than the media, and even though there are some occasions where this was not the case, the king did seem to be able to impact the public perception of himself and the monarchy more successfully than the media at times where he attempted to.

It did have some impact on the image of King George III, as many caricatures and personalities were constructed around him during his life through mediums such as etchings, which were easy to produce on a large scale. This meant that they could be published and displayed in a multitude of places for the public to see and be influenced by, as David Morgan writes: "This veritable explosion in the quantity of politically barbed printed

visual satire did much to condition, inform and direct the development of popular political and social self-awareness on the part of the metropolitan public".



Johan Zoffany, King George III and his consort Queen Charlotte and their six eldest children, [Oil on Canvas], (Royal Collection Trust, 1770)

An example of this method of visual bombardment being used to construct a personality of the king is his portrayal as "Farmer George". As a monarch King George had a somewhat unorthodox interest in agriculture and farming; he was a keen gardener who cultivated crops and often let sheep graze on the land around his home at Kew Gardens. He would also travel across the British countryside in a manner not expected of a king, engaging with farmers over their mutual interests, and these farmers were often unaware they were even talking to the king until he had left. These actions left him vulnerable to criticism by the media, as George did not act in a way which would be expected of him as monarch, and as a result was easy to mock for behaving unexpectedly and out of the ordinary. This criticism took the form of a vast array of satirical prints produced over many years, portraying the king as an uncharismatic, lower class farmer partaking in unimportant and sometimes ignoble activities such as horse riding and hassling farmers. This, in turn, also affected his wife, Charlotte, as he and George were both depicted in negative ways. As mass media produced images of the king in this light, "Farmer George" went on to become one of his most popular nicknames, and continues to be today, along with what is arguably his more commonly used title: "the Mad King". Events like this show that the media could manage to have a rather large impact on the image of King George. However, the king was able to influence how the public saw him and the monarchy in quite a powerful way as well - potentially better than the media could.

The Royal Family in modern Britain seems inseparable from the concept of the monarchy, as relatives of Queen Elizabeth II aren't shown to be of much lesser importance of her by the media, and therefore the public has created a connection between all people of royal blood, forming the idea of the royal family which is seen as standard in contemporary society. This was not always the case, though; before the reign of King George III it was rare for a king or queen consort to be given

similar amounts of attention to the monarch, let alone for members of their wider family to be considered near equal to them in terms of royalty. George changed this, however, and used both his ability to influence people and his power as king to develop a sense of family more akin to what is thought of as normal for the monarchy today. One way this was done was through the king commissioning portraits, not just of himself, but of his wife and children, such as *King George III and his consort Queen Charlotte and their six eldest children*, in which the King and Queen are shown in conjunction with their children. Another example of this is *King George III and his Family*, in which even more of the king's children are shown alongside him. This practice was seen as unusual at the time, as the king already had a closer relationship with his wife than what would be expected of a British monarch at the time, but that weakened neither the credibility nor the strength of the idea he was pushing: that a monarch should not be seen as separate from their family. This strategy was complemented and supported (although probably unintentionally) by the expanding press coverage of both the ceremonial and general activities of the royal family at the time of the French Revolution of 1789, which gave George's marital fidelity and close relationships with his children even more public attention. These factors ultimately culminated in the emergence of a concept of a royal family that had not before been seen as important or prominent, but which still endures to the present day and is ingrained within Britain's monarchy and its citizens. However, another way this was enforced unintentionally was, as his mental state eventually started to deteriorate, George's family life and relationship with his wife became more scandalous, but this worked to the advantage of his goal of developing the idea of a royal family. Marilyn Morris writes that "Royal personages, even when subverting social mores, serve as moral exemplars, so scandal, rather than threatening monarchy, contributes to its social relevance". In effect this meant that, along with all of George's other efforts, a problematic marriage unintentionally contributed to further development of the notion of a royal family by humanising him. It made it easier for the public to see themselves in the king, and thus view his family as similar to theirs, which ultimately forged a greater relationship between the people of Britain and King George's wife and children, which has persisted through time and is perhaps even more relevant in modern Britain than it was in the 18th century.

Unfortunately for George, unfavourable depictions of him in the media followed him to his death. In 1788 the king began to develop a mental illness, which caused political uncertainty and eventually led to the Regency Crisis. This was the main event that led to George acquiring the nickname of the "Mad King", which, it could be argued, was mainly due to a dishonest representation in the media of both his personality and his condition. As the Regency Crisis began, it was made clear that the Prince of Wales would potentially dissolve the current Parliament headed by William Pitt and replace it with one headed by Charles James Fox, if he was given the power to. As a consequence a debate began over how much power the Regent should be given. Charles Chenevix Trent wrote that: "If the Regent's powers of patronage could

be restricted, there was hope that the king, if and when he recovered, would restore Pitt and his friends. It was, therefore, in the Opposition's interest to persuade other Members of Parliament that the king's illness was fatal or incurable". The eventual outcome of this event was the return of King George to the throne, and it seemed that supporters of Fox had failed to achieve their goal of convincing parliament that the king was unfit to rule. However through their attempts to make people see the king as incurably mad, lots of media had been produced portraying the king as such, which would go on to influence the public more as George's reign continued. Immediately following the return of the king, it seemed that the majority of the public had not been swayed by these representations of him. Fanny Burney, a member of the Royal Court during the Regency Crisis, wrote of George's return to the throne and the celebration that accompanied it in her diary, which was later published: "The journey to Weymouth was one scene of festivity and rejoicing. The people were everywhere collected, and everywhere delighted. We passed through Salisbury, where a magnificent arch was erected, of festoons of flowers, for the King's carriage, and mottoed with 'The King restored' and 'Long live the King', in three divisions". The public perception of the king seemed to have remained positive. However, as George fell ill in 1801 and again in 1810, the consistency of these events reinforced the idea of the "Mad King" previously dismissed by the majority of the British public. George had finally earned one of his most famous titles which persists to this day as arguably the most iconic aspect of King George's reign. Again, this shows the scale of influence that the media had over the king, with another aspect still relevant today, as the idea of George as a "Mad King" has remained one of the most common ways he is depicted, even in modern media.



Thomas Stothard, *King George III and his Family*, [Oil on Canvas], [National Trust Collections, 1787]

In conclusion, the contributions King George made to the British identity and the way he used the media to impact his own image are often overlooked in favour of more negative viewpoints, such as the degrading nicknames attributed to him. This is understandable, as things like the idea of a royal family seem completely normal to the people of modern Britain. It is easy to overlook the effort that went into building that concept, which is why people do not tend to link its inception with King George

III. It is clear that the media had a large impact on the image on the king, but the way he was able to use the power of the media to his advantage shows us that he may have been the main beneficiary of this impact, and it seems that the contributions he made outweigh the negative images constructed of him by external media at the time. While many of the ways the king was represented in the media are still relevant today, it seems that none are more so than the concept of the royal family. The construct of a family is, by nature, not tied to one individual, so it is understandable that over time, the idea of the royal family has become detached from its point of origin, and it is rare that people now associate it with King George. In contrast to this, titles such as "Farmer George" and "the Mad King", were specific to George himself, and as a consequence have become the most iconic parts of his legacy. This is unfortunate, as it means the impact the king had is generally underappreciated, but without a doubt the contributions he made have been very important and have become integral to British society, demonstrating that the king was able to use the media to impact his own image in a positive way, and the repercussions of this persist into the present, continuing to be a defining aspect of British culture. This shows that the media did have a large impact on the image of King George III, but what is more important is how that impact was utilised to benefit both the royal family and the British public.

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- 5 Charles Chenevix Trench, "The Royal Malady: Some Aspects of the Regency Crisis 1788-9", *History Today*, 12:6 (1962), pp.386
- 6 Fanny Burney, *The Diary and Letters of Madame D'Arblay* (London: Vizetelly and Co., 1890)

Tutor comment:

I received a warm welcome at Sir Christopher Hatton Academy, and the students had eagerness to learn. L.'s essay demonstrates not only a comprehensive understanding of eighteenth-century British culture, but a strong ability to apply this knowledge to formulate a persuasive argument which is well supported with both primary and secondary sources. The skills developed throughout the course and the sophisticated style of writing is all very promising for further study.

Create your own dystopia. Provide a critical commentary on your creative piece using our discussions of different types of dystopianism

Year 12, Key Stage 4

Pupil: **W. Brook**
School: **Merthyr Tydfil College, Merthyr Tydfil**
Supervised by: **E. Jones**
Tutor University: **Cardiff University**
Course Title: **Dreamlands and Hellscape: Creating the (im)perfect world**

There he awoke, alone, imprisoned in an empty room. The four rough, grubby walls seemed to be moving towards him. No doors. No windows. It was so familiar to him, yet so unusual. It was as if he had ended up at the bottom of a bottomless pit. There was no ceiling. The walls stretched up above him, extending into nothingness. It was impossible to see what was up there, whether it stopped just beyond the dark or continued into the darkness forever. He was only aware of the walls and the cold, hard floor; a floor of spiked stones that made every footstep agony. The features of the room were illuminated from above by a dark blue hue overshadowing from far away. Was it daytime? Was it night-time? How was he to know? He had no recollection of how he even got there or where 'there' even was. The only thing that remained within the depths of his mind was that he was alone, he did not belong there and wherever he came from, it was not as bad as the nightmare in which he now resided.



Lakonian kylix, c. 570-560 BCE, depicting the Titans Atlas carrying the world on his shoulders and Prometheus being tormented by an eagle sent by Zeus to eat his liver as punishment for giving mankind the gift of fire, stolen from Hephaistos. (Gregoriano Etrusco Museum, Vatican).

He would have pinched himself to see if he was dreaming, but the lifeless, piercing chill radiating from the solid walls overshadowed and numbed his senses, making it too difficult to even move his hands. However, the cold couldn't numb the pain from the cuts, blisters and bruises that covered him head to toe. Another one of the mysteries of how and why he ended up there. He peered down at his scrawny, trembling arms. They presented the only prominent colours of the room. They were covered in various blotches of purple and red. His crippling pain and numbed limbs did not stop him from attempting to get out. He would sling his weak arms towards the wall, dragging the tips of his fingers and toes up the wall in the hopes of pulling himself up. Each time making it a little bit further. Each time his back hitting the jagged stones below him as he fell, beating the soul out of his chest. Winded, he gasped what little breaths he could from the thin air that surrounded him. This process would continue until his hands and feet were shrouded in dirt and blood; his back even more scarred than before. His confusion and panic shadowed any fear he may have felt as he tried to reminisce and remind himself of what his life was before he landed in this place. No people came to mind. Only a society. A society of ruin and despair.

The world in which he lived, was once like ours. A mostly civil world with little war, poverty or suffering. At least that is what the people were led to believe. The attempt to achieve a perfect society involved covering up the true problems that it faced. However, this façade of a perfect society could only last so long. The people were cursed with their blissful ignorance, their only worries were how they could improve their seemingly perfect world. The focus of a whole country was on their impressive financial success, the beauty of their cities, their rapidly improving technology. This worked on some levels, but the natural environment, the poor and the refugees were ignored, so their suffering grew to such a tragic extent that it could no longer be covered up. After years of being suppressed it began to seep through the cracks of the beautifully paved society, until it eventually consumed and replaced all that was good.

Now everyone was exposed to a society filled with war, poverty and suffering, and what little hope they had, came from imagining a better future and how their lives would be improved. The danger of this way of thinking was that it was peddled by politicians. They promised the people a bright future, for the small price of their complete support and undying devotion. Once the politicians reached their place of power, their sinister plans began to blossom. They brought about an idea of working together to improve the world. The work began with manual labor in factories, building and fixing, but as the work got harder, the people began to question how their work was helping. These people would disappear day by day and the questions started to change from 'What is becoming of our work?' to 'What is becoming of the people who go missing?'

Around this time the work went from being optional to mandatory. Before people knew it, they were living in the factories, working near constantly and always being watched by cameras and soldiers. The workers were always on best behaviour and were terrified to do anything other than conform. If they questioned what was going on, showed signs of becoming too weak for work or rebelled against their work, the soldiers would drag them away, kicking and screaming. The soldiers were tall, solid, soulless figures. They wore dull grey armour covering their face and whole body. They moved in a robotic manner and never spoke. The only noise they ever made was when they used their loud sirens to alert a worker to wake them up. Their only purpose was to watch the workers, to discipline them, and to inject them with a brown sludge. This liquid was filled with nutrients allowing them to work continuously. Lunch breaks were a relic of the past.

Each person worked in their own station, alone in a small room, completing whatever job they had been given. They would wake up to a new task each day. Once their work was complete, an ominous red gas filled the room, knocking them unconscious. The next day they were woken by the siren, and it began again. Their room would be filled with various tools and items and a voice like a warped broken record would play from the soldiers. The voice would tell them their job and then the worker would get on with it. No one knew where all the tools

came from whilst they were asleep or who the voice was, though they got on with their work out of fear of the consequences they would face if they did not. There was only one way out of the room, a single door which was guarded constantly by a soldier blocking it. The soldier's face would follow the worker around the room, always watching every move. Many workers had tried to overpower the soldiers and escape. An impossible task. They remained completely still no matter the strength of the attack, they only came to life when it was time to then take a worker away. It was a hell to live in.

As bad as it was, it wasn't as bad as where he was now, but all he could remember from his old life was the misery, it swirled through his head as he lay among the stones trying to figure out what was going on. His hopes of escaping diminished further with each second that passed. Was he being punished? His attempts to get out were becoming futile, along with his attempts to recall what had happened to him. He was left with no other choice but to remain there and starve until his demise.

But what was this? Before he had the chance to succumb to insanity, the ground began to rumble fiercely as one of the walls jittered and slowly rose, letting through a harsh yellow light as if it was revealing the sun. The light crawled up his back and glistened in his eyes and tears as he turned around and faced it, was this his way out? But what was the dark, sinister silhouette slowly piecing together in front of him? It struck a sense of familiarity with him as it eventually came into sight. Unfortunately, this sense divulged into a sickening sense of fear as he realised, this was no man, it was a soldier. It lurched towards him as he screeched for someone to help. With nowhere to run, he used all the effort he had left to try and fight. The soldier was reactionless to this and firmly grabbed him by the wrist and pulled him away across the floor as he began to pass out, looking at the door descending behind him. Sometime later he awoke in a daze, in a room very similar to the one before. What was going on? It was as if it was happening all over again.

Analysis

The beginning of the prose presents the 'man' waking up, 'trapped' in this 'room'. The way I have described the surroundings does not make it obvious that he is in a room, though when writing this I wanted to make sure that the description was presented from his perspective. This was inspired by the novel 1984, where they live in their small rooms, being constantly monitored. It also links to 'Room 101' from the novel, which is the place that citizens go if they break the rules and are forced to face their worst fears to scare them back into conforming [1]. I decided not to write the prose in the first person as a third person narrative creates a sinister feel of him being watched, which also links to the 'Big Brother' in 1984 who is the superior always watching [1]. The reason why I decided that the man would not be able to remember is to build a character who has lost his identity. It also helps to enforce the theme of hopelessness.

I chose a man for the main character in the prose because even though male protagonists are stereotypically expected to be strong and brave in

literature, this is juxtaposed by him being 'scrawny' and 'weak', emphasising his helplessness. This also links to the protagonist of 1984, who ends up losing his defiance of the government and returns to conforming in society, he also has little control over his life. The man has not been given a name to present the loss of identity dystopian societies bring, with pieces of literature such as *The Handmaid's Tale*, where various women in the novel are named after who they are 'owned' by, with the protagonist of the novel being Offred, showing she is 'Of Fred' [2]. The prose begins without mentioning the context of his situation, this builds mystery of what circumstances have led him to this point, engaging the reader.

The overall atmosphere that I attempted to create was inspired by Ted Hughes poem 'The Horses', a poem about the persona being lost and alone in a forest but then comes across a team of imposing horses presented as if they are from a dream. This is shown in ways such as with the 'dark blue hue overshadowing' being linked to the 'hour-before-dawn dark' used in the first stanza of the poem to create the eerie and lonesome atmosphere. [8]

When writing the prose, I wanted to focus on the isolation that many fictional dystopian novels use, such as 1984 [1]. It is difficult to create a dystopia without interference or interaction from other characters. This is because most dystopian novels are from the perspective of a typical citizen trying to survive in a world governed by higher powers. If the character is isolated, they have no one to control them, or to rebel against. Isolation can be presented as positive, for in Christianity, Adam and Eve lived isolated in the Garden of Eden, presented as the perfect place on earth [3]. As the genre of my piece is dystopian, I had to make sure that I didn't only mention one person in the whole prose, as it requires other characters to build a hierarchal society.

The ambiguous 'soldiers' are meant to personify the hopelessness and advanced, futuristic technology of dystopian society. This connects with *Brave New World* to show how technology has altered the world, with it often having negative implications even though it could be used for good, as in that novel it is used to clone people for them to work [4]. They are 'grey' as this presents them as scarier due to the colour grey's connotations of lifelessness, darkness and evil. I got this idea from the poem *The Horse* by Ted Hughes where the horses are said to be 'huge in the dense grey' and 'grey silent fragments' which inspired how the soldiers 'never spoke'. It also makes them more intimidating with them being 'tall' and immovable, like how the horses are 'megalith-still' [8]. I made sure that the soldiers were supposed to be impossible to take down as in novels such as 1984, where 'Big Brother' was not taken down in the end [1].

The idea of the government being dictated and overtaken links with real life events such as the state that Nazi Germany was left in after the first world war due to financial problems and the damages and deaths after the war [10]. As shown in this society, people become desperate which bears links with our current society. Due to the fear surrounding terrorism

and global warming the public could be susceptible to a politician whose popularity comes from exploiting people's fears. A clear link to this is the rise of the Nazis and Hitler's promise of a better future to the people who were facing many financial problems after losing the first world war. I drew inspiration from this to create this society, which like Nazi Germany, made life worse for near everyone [5]. The difference is that I made sure that this society did not face war as this is how Nazi Germany was destroyed, but the people of the dystopia I made were not given this hope as I found this to be a problem in various dystopian novels such as *The Hunger Games* because this is arguably not truly dystopic, as the people who rebel succeed [6] which is not what would occur in a dystopic society, such as with 1984, where the protagonist does not succeed in the end and is forced to return to society [1].

I decided to base the main character's suffering on the punishment that Prometheus faced in Greek Mythology. This was where he was 'chained to a rock (or pillar) and Zeus sent an eagle to eat the Titan's liver. Even worse, the liver re-grew every night and the eagle returned each day to perpetually torment Prometheus'. This also links to the way his punishment is repeated at the end [7]. Another reason for this is that it prevents him becoming comfortable or familiar with his location. It also links to many other religion's depiction of hell such as Islam's where the people are trapped in agony [9], though not quite as far-fetched, as it would then be too unrealistic, and would undermine the dystopian society that I have created.

I found it important to give an illusion of hope by describing his valiant attempts to escape, each time making it further up the wall of the room, which is not enclosed at the top. I found this to be useful as it does not rule out the idea that escape is possible. I did this, as if there is no hope, then it would not be a very effective dystopia and it would not engage the reader. I aimed to achieve the ideal level of hope/hopelessness to create a suitable dystopian society that someone would want to escape from, while also providing them with just enough free-will to create a strong character with an interesting story arc.

The basis of my dystopian society is the enforced labour of the community. Without this, there is little explanation for the main character's situation. I drew the inspiration for using the people to work from *Brave New World*, where the people are cloned and conditioned to work from birth. [4]

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Tutor comment:

W. took a unique approach to our study of dystopianism in his creative final assignment. He synthesised several features of dystopian societies to unsettling effect in his creative piece and offered incisive evaluation of his story in the critical essay. This fantastic final assignment is testament to W.'s creativity, curiosity, hard work, and thoughtfulness. I am delighted that W.'s work has been published in *The Scholar*, and hope that this recognition will encourage him to have more confidence in his abilities and ideas. I'm sure W. has a very bright future ahead of him!

Why did the novel emerge in the eighteenth century? Analyse the social context for this new literary form and refer to the work of at least two critics

Year 12, Key Stage 5

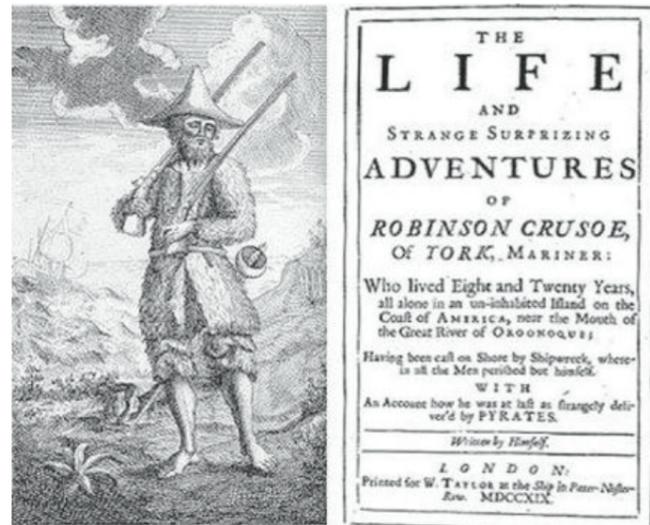
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Supervised by: S. Bankes
Tutor University: The Open University
Course Title: The strange, surprising history of the novel

This essay will explore the key factors that helped the novel emerge in the eighteenth century, such as the role of women, marriage and other societal changes in the late seventeenth to early eighteenth century. To do this, I will be examining the works of Ian Watt, who wrote about novelists such as Daniel Defoe and Samuel Richardson, and J Paul Hunter, who wrote about non-fictional works which influenced the development of this literary form. Both Watt and Hunter trace how changes in social trends were significant in leading to the rise of the novel.

The Cambridge English Dictionary describes the noun 'novel' as a 'long printed story about imaginary characters and events'. However, this word was not always used in this modern-day context and can be dated back as early as the sixteenth century where the meaning was very different to what 'novel' means in society today. This early definition of novel means something that is new, this denotes a divisive and controversial thing as it implies change, which is not always received positively. 'Novel' then evolved into a word meaning tales or a fable, suggesting an element of falseness involved, especially since it could be used in relation to 'old women' gossiping about certain matters; however the addition of realism and complexity improved the image of the novel as it gave the impression of respectability and was eventually, given the definite article when it was established as an important literary genre. Many novels of the eighteenth century are associated with themes of love, both familial and romantic, incorporated into a story with a much more central theme of self-discovery. These themes were carried on to the twenty-first century and also portrayed in modern day literature where fiction is related to imagination and creativity and is given a sense of worth widely recognised by prizes and popular acclaim.

As the definition of the novel changed from the sixteenth

to eighteenth century, several developments in society were helping contribute to the rise of the novel. In his work *The Rise of the Novel: Studies in Defoe, Richardson and Fielding*, Ian Watt suggest that the novel became established due to new discoveries, the demand for a variety of literature and an increase in the number of readers who had time for leisure activities. Watt examines the work of Daniel Defoe and his novel *The Life and Strange Surprising Adventures of Robinson Crusoe*, an early eighteenth century novel about the life of a man, Robinson Crusoe, who lived on an "island on the coast of America". Defoe's novel is of great significance as it was written during a time of adventure and exploration and therefore, was a very specific but popular point of interest for English readers. It has a further appeal for readers as it is presented as an autobiographical account of Robinson Crusoe's life through the narrator giving a brief history of his life and going into detail about his roots. This presents the character of Robinson Crusoe as a particular individual with his own story and unique perspective of exploration and adventure. Watt explains that novels such as Daniel Defoe's pinpointed a particular point of interest in readers and made people want to follow in these footsteps and proceed to write their own novels about discovery and exploration, and others were interested in reading about other people's experiences. However this desire to read exploration novels was also due to the reader's interest in the lives of other people, for example Defoe's fictional hero, Crusoe, as it was an escape from their day to day lives and helped them discover and define their own hopes and wants – society deemed individuals interesting enough to want to learn more about them.



furthermore, Watt suggest that another societal change during this time was the heavy influence of religion, in particular Protestantism. Many people had certain fears associated with religion, such as the afterlife and therefore, wrote spiritual autobiographies of their own journey with religious exploration, providing excellent material for a novel about the workings of the heart and mind. John Bunyan's account in *Grace Abounding to the Chief of Sinners* clearly demonstrated this fear and worry felt and notes an inner conflict concerning religion – he writes "spending so many years in sin...O that I had turned sooner". These types of accounts were very

helpful in proving that people were among the most faithful and loyal to their religion and deserved to go to heaven. This theme of inner conflict is very significant as it is also presented in Defoe's novel when Crusoe sees a strange footprint in the sand – "innumerable fluttering Thoughts" prove quite disturbing for him and leave him utterly confused and in self-doubt. This, perhaps, shows a common issue faced by those in society in the eighteenth century and therefore, a popular aspect of life to read and write about, since it was so relatable for readers, it was well received. In addition to this, increasing numbers of people being able to read and write meant that people were making more time and effort to read for leisure. This generated an interest in the lives of other people, making the demand for a large variety of topics to read about increasing and creating a market for writers like Defoe and novels about new and uncommon ideas such as travel and the discovery of new land.

Watt goes on to suggest that another very significant factor in the rise of the novel was the role of women in society and towards the novel. "Greater freedoms of women in modern society" for example new freedoms in marriage, such as selecting a partner, freedoms that were "achieved earlier and more completely in England than elsewhere". Many eighteenth and nineteenth century novels dealt with current affairs and issues in society, therefore novels were and still are of great importance. This element of realism and topicality was considered dangerous, especially to young girls who were seen as being very impressionable, but it provided liberation from and defiance of societal bounds. Watt looks at the work of Samuel Richardson's epistolary novel *Pamela* in which a teenage girl, Pamela, writes a series of familial letters to her parents, discussing the unwanted advances of her master after her Lady's death. Evidently, women had the freedom and ability to write openly about their personal stories and emotions. The fact that the entire novel consists of personal letters from a young female's perspective provides an honest and emotional insight to the life of one particular girl and represents a much larger group in society – women. This was appealing for an eighteenth century reader who was interested in the individual and it reinforces the idea that the novel was gradually moving from a male-focused perspective that presented ideas of masculinity and exploration and now payed close attention to an emotional and realistic portrayal of life for English women. Pamela writes to her parents "it is my Duty...to love and cherish you both", demonstrating how these letters contain personal details about her feelings towards her loved ones and how these emotions she experiences leads her to write many letters. A new desire for writing letters created a new purpose for literature as people were writing factual accounts about themselves and also creating fictional accounts for entertainment and familial letters, such as the ones that Pamela writes to her parents prove very important in the advancement of the novel.

Familial letters are significant to the rise of the novel as they show the change from an objective orientation of literature that mainly focuses on the role of society on the individual to a "subjective, individualist and private orientation" which creates a more personal relationship

between the reader and novelist, especially, as Ian Watt mentions, it is a "more unreserved expression of the writer's own private feelings" which again, emphasised a single person's perspective in matters as opposed to the general views of people in society. Letter writing was so influential that Samuel Robinson created a conduct book consisting of a series of letter templates that could be used for many situations in which a person who had to write a letter may have been unsure of how to express themselves. For example, many of the template letters written by Richardson were about the topic of marriage and courtship, such as from the perspective of a daughter asking for her father's approval of a suitor or a man asking a woman's father for permission to marry his daughter. One of his template letters 'Letter XVI' is about a father disapproving of a young man for his daughter's hand, it reads, "I by no means approve of him for your Husband" which clearly shows a situation in which a father may not have known how best to word a letter to his daughter about his feelings towards a man; however, this template by Richardson makes it easier to guide the father. Through this template letter writing, Richardson cannot help but create a mini drama of domestic life which is also intended for the purpose of entertainment for both him and his readers. The fact that Samuel Richardson was a printer shows that he was a working man – writing novels and in particular letters was not just for the rich and elite anymore, but for working people as well, especially since marriage was an affair dealt with by people of all classes. Many women took to letter writing as a result of greater freedoms and the ability to share their private thoughts and feelings with their close friends and family and these developments in society were important factors in the rise of the novel.

However, J Paul Hunter examines other aspects of historical context and questions why people wanted to read as an explanation for the rise of the novel. Hunter mentions a key feature of literature that Watts dismisses – surprise. He argues that novels both in the eighteenth century and in the modern world are full of surprises that help engage a reader. This may be why so many people wanted to read novels in the eighteenth century – they contained twists and turns that were not so present in their day to day lives and made reading all the more appealing – to experience similar emotions. This is evident in Samuel Richardson's *Pamela* where the reader presumes that Pamela is appalled by her master's unwanted advances; however, she goes on to marry him, much to the reader's surprise. Similarly, in Defoe's novel, *The Life and Strange Surprising Adventures of Robinson Crusoe*, the title page promotes Crusoe's story and this added element of surprise in the title is appealing to the reader as it is exactly what they wanted to read, thus supporting Hunter's claim that early readers wanted a new and refreshing story. The element of surprise links to the old definition of 'novel' – something that is new. The desire to constantly have something new to read or talk about could have been due to the rising popularity of coffee houses. Coffee houses were places for men to meet with each other and discuss the latest news and new ideas from across the British Empire so that people were "in the know". However, because of the need to write something new, the literature that Hunter examines is quite informal and less

respectable in comparison to that which Watts writes about. For example, a gossip paper, 'It cannot Rain but it Pours' (1721) writes about "the Arrival of the two Marvellous Black Arabian Ambassadors" which highlights new ideas, such as migration, which seemed almost strange to people reading these types of newspapers. This element of informality was appealing to "ordinary human beings who communicate in informal language" as it was more relevant to their everyday lives and seemed relatable. Something new was fresh and exciting to read about and thus led to the need for new information, usually in the form of stories of other people's personal lives, to constantly be written in papers.

Another example of this less formal literature that Hunter writes about is John Dunton's work. He writes about stories that were "never handled before" and were new to readers. An article about unmarried people meeting their husbands and wives in the afterlife is an example of how these works offered guidance for people that had problems in their everyday lives and could get solutions through reading new stories in the papers. These types of works fed the reader's need for something 'surprising'; however, this need was also satisfied by novels such as *Pamela* and *Robinson Crusoe*, which also explored new themes.

To conclude, there were many societal changes and developments that contributed to the rise of the novel. The greater freedoms of men to write about their exploration and adventures and of women to write about their emotions and personal stories. Religion was also a key factor that influenced writing and gave it a new purpose in society. The need for people to know about other people's lives gave them a sense of inclusivity as they were taken into the private lives of strangers. Ultimately, the novel emerged in the eighteenth century due to a dramatic increase in emotional and social freedoms, this literary genre thrives today, reflecting changes in attitudes and new interests.

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Tutor comment:

am delighted that S.'s essay has been selected for inclusion in The Scholar. She was part of a talented and thoughtful group which shared some wonderful ideas and worked well together. S. engaged creatively and very intelligently with the subject and has delivered a focused, well-constructed and very accomplished piece of writing. She demonstrates so many scholarly qualities in the way she has listened, reflected, read broadly, and applied her excellent understanding to present her ideas. As ever, it was a pleasure working at Swakeleys School and I am grateful to Mr Riches for all his support and the school for its kind welcome.

How effectively did peasants resist the demands of their landlord in the fourteenth century?

Year 12, Key Stage 5

Pupil: M. Poon
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Supervised by: J. Peake
Tutor University: University of Nottingham
Course Title: Conflict between lords and their tenants in fourteenth-century England

Throughout the fourteenth century, peasants were able to resist the demands of their landlords in varying degrees of success. Although in many cases, lasting developments were made that favoured the peasants, they almost always lacked the significance, magnitude and extremity of change that was called for by many rebelling members of the peasant class, some of whom wanted to completely overhaul the structure of society. Ultimately, the success of any resistance depended on several factors. One of which was peasants understanding their position within society, whilst another was their ability to utilise manorial documents through understanding their importance. Additionally, using collective action to obtain freedom reaped results. The greatest chance of success in resisting demands came in times of weakness on the part of the landlord; this was often after the Black Death and during the Peasant's Revolt.

Within the Palatinate of Durham during the decades following the Black Death, tenants used the present weakness of the upper class to their own advantage. Thomas Hatfield, the Bishop, used many strategies to maintain a favourable income; lords doing similarly across England in the same period is a phenomenon referred to as Feudal Reaction¹. The Black Death had a considerable impact on Durham, with over half of the tenants having perished, therefore, the financial burden upon those remaining was immense, with the Bishop attempting to keep revenue constant as the epidemic passed². This was done through the enforcement of legislation such as the Ordinance of Labourers (1349) and the Statute of Labourers (1351)³. Harsh measures such as these were met with opposition that was widely ineffective; the exception to this was runaway tenants, who had a large, cumulative impact, and for the most part, were not retrieved. An example of one such tenant is William Bacon, who, after being ordered to return to Ryton in 1353, was not back after four years⁴. This kind of defiance was, in many cases, permanent, and undermined the rigorous exercise of Feudal Reaction in the Palatinate.

Moreover, fugitive tenants contributed to the decline in population, that was already prevalent after the Black Death. As a result of this same decline, Hatfield was unable to lease all of his lands, with hundreds of acres lying waste⁵. This gave peasants the opportunity to negotiate in order to land on terms that favoured them when taking on untenanted land⁶. So, the effects of running away

were twofold: resisting Hatfield's demands, undermining his power, and increasing the bargaining position of those remaining. The peasants taking advantage of this position demonstrates an understanding of the interests of the Bishop, and his present weakness. Evidently, this understanding allowed for the peasants to resist Hatfield's demands; many tenants struck deals that were favourable to an extent that was not possible before the Black Death or in usual circumstances. Such was the case in Easington, where the court book entry depicting the formal lease of demesne to bond tenants from 1355 onwards suggests that the deal was negotiated with officials⁷. This was only possible as the Bishop and his officials preferred to concede in order to tenant the land as opposed to leave it lying waste⁸. Therefore, in the case of Durham, the bargaining position that remaining tenants were bolstered into by the decline in population allowed for them to resist the demands of the Bishop by taking advantage of their increased power. Fleeing the Palatinate contributed to this decline, weakening the position of Hatfield further, as well as providing permanent or long-term resistance to his demands.



Medieval illustration of men harvesting wheat with reaping-hooks

The case of Alrewas, Staffordshire, highlights the efficacy of using manorial documentation to resist demands in comparison to other ways that were less effective. Philip de Somerville, the landlord, used particularly lucrative methods against his tenants to maximise financial profit, not unlike practices in other manors within the county of Staffordshire, where tenants typically paid less in rents and services than throughout the rest of England⁹. So, to compensate, de Somerville claimed money by other means. He increased heriots, so that they extended beyond the usual custom of claiming only one animal upon a death, ranging from taking several pigs, male horses and beehives¹⁰; in a mere five years, de Somerville collected over £8¹¹. To evade being financially crippled as a result, many tenants resorted to what was deemed by the steward as 'fraud', disposing of animals and selling them before they came to be the property of the lord. Ultimately, this tactic was generally unsuccessful, as in the manor court the remaining family members were often reprimanded and amerced¹². The jury of neighbours attested to the Lord the animals possessed by the deceased tenant; this often led to personal financial benefit for the juror. In this way, peasants could incriminate themselves (in disposing of heriot) and others (in giving inventory on their livestock). Both circumstances come in the pursuit of money or loss thereof, as well as

resisting and complying with the system. This raises the question as to whether economic benefit came more from compliance or resistance. Regardless, the peasants were definitely ineffective in resisting the demands of their landlord when it came to avoiding having to pay heriot, as ultimately, tenants were either amerced, or the animals were recovered and claimed by de Somerville.

In an act of resistance that was short-lived, ineffective and sporadic, tenants refused the demands of de Somerville in the election of the reeve. Out of the two candidates proposed by the peasants, the one left without the position was fined by the lord. Against this practice, the tenants resorted to proposing free tenants, who were not eligible for the position. This occurred twice, in October 1333, and 1339, by choosing a cottager and a free sokeman, and two free sokemen respectively¹³. Above all, these acts would have been an inconvenience for de Somerville, given it caused a disruption within the justice system of the manor. Furthermore, the fact that it involved the entire 'community of customary tenants of Alrewas'¹⁴ implies how the peasants perhaps understood their position and the advantage that it provided, using it to resist de Somerville's demands. This is a concept that we can later see in the wider context of England in the Peasant's Revolt of 1381. The fact that the tenants banded together against de Somerville demonstrates a level of widespread contempt held for him within the community, a tension that clearly lay underlying throughout the decade, shown by the proposal of ineligible candidates occurring twice therein. Although the tenants were disruptive and inconvenient, their prevailing discontent in comparison to the effects of their defiance is vastly different, and shows how ineffectively they were able to resist de Somerville. Furthermore, the efficacy of their non-compliance is ultimately undercut by the timescale of the proposals of ineligible candidates; they occurred six years apart, with serfs being proposed as candidates during years between and after their defiance, showing how their subversion didn't result in permanent change. Therefore, the tenants' short-lived resistance against de Somerville's practices was wholly ineffective and sporadic. This fact is only magnified by a repeated use of the same unsuccessful method, demonstrating the extent of their hostility.

Contrastingly, an effective procedure employed by the peasants of Alrewas was using manorial documentation. The rental of 1341 contains a custumal, compiled at the tenants' request after disagreements and disputes between the current lord, Philip de Somerville, and themselves. It draws upon a royal writ that details a conflict between Roger de Somerville, lord some years prior, and his tenants, who obtained a writ of *monstraverunt* in order to claim the protection of ancient demesne¹⁵. Alrewas had been the property of the king until 1204, whence the de Somerville family became its owners. This custumal allowed the tenants of Alrewas to pay a rent that remained fixed. For example, the rent for a virgate of land is 2s. per annum, which is relatively cheap¹⁶, so undoubtedly improved their quality of life. What is particularly interesting in this case is the frankness that the conflict between Roger de Somerville and his tenants is depicted in, especially in a document

compiled by Philip, his own great-grandson¹⁷. Typically, any documentation favoured the literate nobility, the lord it was compiled by, and, as an extension, his family; this straightforward style of writing was usually reserved for court records. Perhaps the more objective and unbiased way the document was composed is an attempt, on the part of the peasants, to preserve its legitimacy, as it was created at their request and its purpose was to detail their fixed rents. Peasants were typically suspicious of documents and writing in general – the way in which the tenants used manorial documentation for their own benefit defies convention and is vastly different to other ways of obtaining more liberty, such as acts of open defiance, including those discussed above, that were, as aforementioned, ineffective. What this demonstrates is 'document awareness', and the benefits it can reap for the peasants when employed by them. Therefore, in the case of Alrewas, the greatest way that the tenants were able to resist the demands of their landlord and improve their quality of life was through the use of manorial documents, aided by the lasting protection provided by ancient demesne.

Like Alrewas, the peasantry of St. Albans was able to use documentation for their own benefit and to improve their quality of life. The success of the townspeople's resistance can be attributed also to the period in which they acted, during the Peasant's Revolt of 1381, when the upper class was weaker.

Situated in Hertfordshire, the town of St. Albans was an area particularly prevalent in the uprising, and was ruled by a monastery and abbot. The people were promised certain rights by Richard of Wallingford, the abbot some fifty years prior. Under William Grindcobbe, the townsmen attained a letter under the privy seal, addressed to the abbot from the King. Presently, Richard II granted audience to all¹⁸, so evidently, the rebelling St. Albans peasantry took advantage of the government's present weakness for their own ends¹⁹. Similar to Alrewas, the case of St. Albans demonstrates the peasants' document awareness. Understanding the importance of charters and similar records meant that tenants could use the power they provided to negotiate terms, despite their own illiteracy. This awareness effectively reaped results for the St. Albans peasantry. Under the threat of a march on London and his execution, the abbot granted them their request, to attain certain seigneurial rights²⁰ that were commonplace in many other towns²¹. These rights include setting up hand-mills 'at whim', which meant that peasants were no longer limited to milling their grain at certain locations within St. Albans. Undoubtedly, this was viewed as a victory for the 'commons', shown in their celebratory bonfire, burning the now unnecessary bonds made between the prior St. Albans tenants and Richard of Wallingford²². However, their success is perhaps diminished by viewing the extremity of other demands made by rebelling peasants at the same time. Others proposed the abolition of ecclesiastical law, civil law and the noble class, in place of commons and the king²³. These demands were ultimately left unmet due to the death of Wat Tyler, re-established power of the nobility, and perhaps their extremity. So, it is worth noting that the reasonably feasible magnitude of the changes

the St. Albans townspeople wished to implement allowed for their acceptance on the part of the abbot and monastery. This is supported by the nature of their later demands; the townspeople wished to be granted an 'ancient charter', 'whose capital letters were one of gold and one of blue', in order to obtain more liberties²⁴. Evidently, this document was most likely fabricated in the minds of the townspeople, perhaps inspired by the freedoms just granted to them. Thus, this demand was not met by the abbot. Therefore, the tenants were effective in defying their landlord in asking for relatively small and feasible liberties, as opposed to the extreme changes described by many rebels in the wider context of the Peasants Revolt in 1381. The way in which they obtained these liberties can be attributed to both the use of documentation and in taking advantage of the King's present weakness.

In conclusion, it is clear that in the 14th century, peasants were able to resist the demands of their landlords effectively in some cases. However, the efficacy of their resistance was most commonly provided through the use of intellect, as opposed to less sophisticated agents, such as brute force. The tenants' use of documents, most commonly implemented against them, allowed for their gain of liberty, as was the case with Alrewas. The weakness of the lord and upper classes in times of national crisis placed the tenants in a position of power, allowing for them to take advantage of the situation for their own gain – such was the case with St. Albans in the Peasant's Revolt and Palatinate of Durham in the decades following the Black Death respectively, with the former using documentation to aide their resistance also. These kinds of successes clearly illustrate a level of understanding of the peasantry's importance within society and the mutual nature of Feudalism. However, the success of any resistance ultimately was a result of the feasible magnitude of the peasants' demands.

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Tutor comment:

In terms of ability and work ethic, M. is already working at an undergraduate level, as this essay shows with its clear and forceful argument, skillful engagement with evidence, meticulous referencing and fluent writing style. She consistently produced high-quality work for the baseline and homework assignments and though she was not often the first to speak up in discussions, her contributions were always valued. I'm sure this skill set will help her in whatever she chooses to pursue.

Social Sciences

Critically analyse the extent to which our outdated Education Paradigm is the most important influence on education inequality. Describe one strategy that schools could use to make education equal for all students

Year 10, Key Stage 4

Pupil: E. Cowieson

School: King Alfred's Academy, Oxfordshire

Supervised by: H. Mozley

Tutor University: University of Southampton

Course Title: It's not fair! Fighting inequality in education

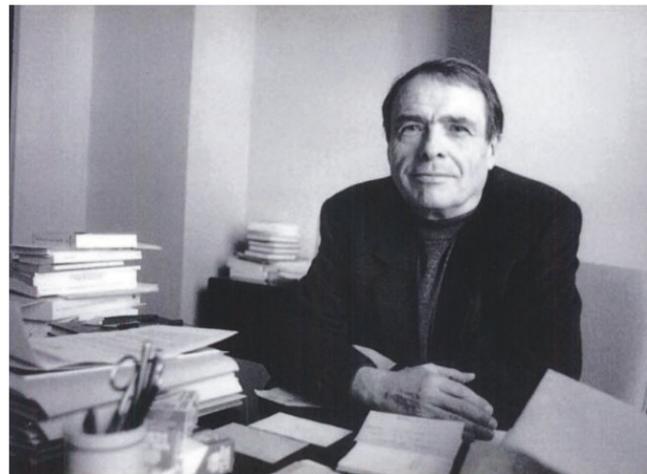
In the modern day, many inequalities within our Education Paradigm (which encompasses both our curriculum and the way that school classes are formed and taught) have led the system to fail students across the country for many years. This inequality leads pupils to leave school with grades that they are less than happy with and thus lessening their self-efficacy and, consequently, their abilities to do tasks. Self-efficacy refers to an individual's belief in his or her capacity to execute behaviours necessary to produce specific performance attainments [1]. This paper will cover some of the reasons that this outdated Education Paradigm is causing great inequalities throughout all levels of the British Education system. The Education Paradigm is the system by which the youth of Britain are being moulded to fit into society. However, as aforementioned, this system is outdated and created for the Industrial Era which obviously is no longer working to produce 'society-ready' people. The testing and endless categorising that the Paradigm enforces could be the reason for the inequalities within Education. The first, and most outstanding, problem with the current Education Paradigm is the use of testing. Schools in the UK are using the majority of their resources to teach students how to pass tests and leaving little resources for

other important matters. The Education Paradigm has enforced the logic that schools are only succeeding if their test results are impeccable and achieved by all the students [2]. The learning mindset encouraged by schools at the moment is one of memorising facts and failing to do anything else leading students to become bored and distracted by the same old curriculum used to get them to pass. This view is culling creativity and the ability to critically think within the younger generation. Ironically, these are the exact skills which the modern day working community encourage and look for in employees [3]. The testing encourages the ability to memorise facts, which are soon forgotten due to the inauthentic knowledge. This causes an inequality; if some children fail to learn in this academic way then they struggle to do well in school and in tests which causes them to fail in the eyes of the Education Paradigm. This is because children learn in different ways and the uniformity of the way in which children are taught may help the kids who find it easy to learn via listening and copying it down but bypasses the needs of those kids who may learn differently. This leads students to suffer from boredom if they already know the facts which are being memorised, or other pupils to panic and feel like they are failures if they cannot succeed to memorise the facts [3]. However, some students may enjoy the testing process as it gives them the opportunity to review their learning and track their progress and the areas that they know they need to study. So, it would be unfair to say that testing is always a bad teaching method.

This testing leads students to separate themselves into groups contrived of those who do well in tests and are thus deemed "academic" and those who do not do as well being consequently deemed "non-academic" or even "stupid". This separation is also built by teachers who separate students into "sets", which are tailored to help the groups grow individually and work at the pupils own speed while this does have merits for the students who need to be stretched, it does leave the students to clearly see who the teachers consider "academic" as the students can see who is being given more difficult work and who is being taught basics. This is obviously the wrong way to do things due to the fact that intelligence cannot be judged by a test which only values one type of learning despite the fact that pupils may learn in a plethora of ways. The fact that students are this way categorised means that even teachers view some pupils as likely to achieve success and other students as likely to fail. This, in turn, means that teachers are found to favour some students who they deem likely to succeed and in doing so help them to succeed by giving them more attention and more feedback [4]. These labels of "will succeed" and "will not succeed" lead students to lower their self-efficacy and thus their capabilities, damaging their confidence and their ability to succeed. By contrast, the students who are separated into the higher sets find that they can be stretched and it ultimately leads them to accomplish more, develop their self-efficacy and receive the grades that they had hoped to receive.

The gap left due to the fact that teachers place students into "sets" and because students organise themselves into groups of "academics" and "non-academics"

impacts the self-efficacy of the students. The self-efficacy of a student and the impact that it has on the way that they function and behave at school depends on the way that the student views themselves. For a student who does well at school, thrives in a testing environment and has been sorted into the "academic" group, their self-efficacy will blossom as they find themselves becoming more and more successful. This is because as you succeed you increase your assurance in yourself. According to Bandura, people with this sense of assurance in themselves "approach difficult tasks as challenges to be mastered". This makes them more likely to succeed at these challenges and thus further develop their strong sense of efficacy, starting a chain reaction leading to success. The advantages to such an efficacious attitude are that those with this attitude can face more difficult tasks with ease and maintain strong levels of commitment to them and when they fail they quickly recover and continue with these difficult tasks quickly. This leads to personal achievements, reduces stress and lowers vulnerability to depression [1]. However, while self-efficacy leads these people to success and a positive life outlook, those who are led to doubt how capable they are by tests, teachers, sets and other students are left with low self-efficacy which leads them to shy away from complicated tasks and give up when they face difficulty. They dwell on their flaws and they easily lose faith in themselves after a setback. These people also fall easy victims to stress and depression [1]. This leads students to fail more often and lower their self-efficacy even more. The gap between the kids who have low self-efficacy to those who have a high self-efficacy grows increasingly as the later succeed and their success continues to grow and flourish and those with low self-efficacies fail and continue to fail, doubt themselves and compare themselves to those with high self-efficacies. Because of this, many have argued that the self-efficacy of the students is what leads to the inequalities in education rather than the Education Paradigm.



Pierre Bourdieu

Another point made by those who argue that the Education Paradigm isn't the source of inequality is that poverty also plays a big part in inequalities. In a recent study, it was found the 14.6 million citizens of the UK are living in poverty. 4.6 million of this number are

children [5]. This means that 34% of children are living in poverty. Poverty effects cultural and social capital of the children. Cultural capital was defined by Pierre Bourdieu as 'familiarity with the legitimate culture within a society' [6]. He made this comment after viewing parents and families providing children with cultural capital from exposure to dance, music, theatre shows, art galleries, historical sites and conversations over literature and art over the dinner table [7]. A child living in poverty has less chance of being exposed to any of these experiences, as spare money would most likely go to paying for items that the family need. Consequently, children from these families have very little cultural capital due to lack of funding for these endeavours. Furthermore, those who find themselves in poverty tend to have poorer educations on average. This limits the amount that the children will be exposed to cultural capital expanding conversations, further limiting their cultural capital. Another aspect of education impacted by poverty is that of a child's social capital. Pierre Bourdieu defines social capital as "the sum of the resources, actual or virtual, that accrue to an individual or a group by virtue of possessing a durable network of more or less institutionalised relationships of mutual acquaintance and recognition" [6]. Social capital is the intellectual benefits such as resources, knowledge or even helping to appeal to certain groups or cultures that one receives from the network of people with which they have relationships.

This can be impacted by poverty as a lack of money often means parents have to work long hours to help their children thus limiting the amounts of social events that kids and parents may go to. Parents in poverty also tend to have limited education meaning that they themselves tend to socialise with those in similar positions thus meaning that the child cannot socialise with those who can impart knowledge to them or provide them with resources to give the child knowledge. Because of the damage poverty does to a student's social and cultural capital inequalities are found in education as the students who had parents or relatives able to invest in their cultural and social capital often have a wider range of knowledge and a wider network of people who can help them to pursue a certain path. While this does benefit those who are not living in poverty, those who do live in poverty are at a severe disadvantage. This leads students to do less well in school and to lessen their self-efficacy due to the fact that their grades may not meet the grade standards and they may also lessen their self-efficacy due to their situation as they may feel like they cannot escape the poverty and therefore stop trying to improve their grades.

The impacts of all these categories that schools sort kids out into are clearly detrimental to the education of the students as only those in certain groups feel as if they are likely to succeed and those who do not fall into these groups lessen their self-efficacy so that they further struggle to succeed. To combat the grouping of students, schools could remove standardised testing. This would lessen the gap between students deemed "academics" and those who are deemed "non-academics" as a variety of testing could be done highlighting different skills and ways of learning, showing that kids learn in

different ways and that it is okay to not learn in the same way as others would increase the self-efficacy of students and also give teachers the opportunity to teach in other ways and teach their students other things, creating variety between classes and leading to discussions that widen a pupils cultural capital through conversations. An example of this working in a country is Finland, they removed standardised testing and are ranked in the top spot for global education systems [8]. In Finland, students also go to school later they start their day between 9:00 and 9:45 am and tend to leave anywhere between 2:00 and 2:45 this combined with the fact that they have less homework and outside requirements allows students to spend more time developing their interests and therefore cultural and social capital [9]. This style of learning clearly works and creates a more relaxed learning environment as students are not subjected to meeting grades or the pressure to be best in the class. Thus, removing stress and inequalities from students. When you contrast this amazing Education Paradigm with Britain's Education Paradigm it is clear to see why the UK's system is failing students, with such a rigid, one way system it is hard for students to find enjoyment and properly stretch themselves. They work long hours and then have long hours of homework to complete, the stress of exams and pressure to do well and meet standards lessens self-efficacy and the time to stretch social and cultural capital.

In my opinion, the Education Paradigm has the biggest impact on educational inequalities. I believe that the testing and categorisation that schools force onto pupils effects the way students view themselves and their capabilities and, more often than not, lead students to lessen their self-efficacy rather than improve it. Testing and results lead students to further doubt their own capabilities and often leads them to conclude for themselves whether they will succeed or not leading them to try harder or to not try at all. Testing also leads students to think that if you learn differently or fail to do well in testing based on memory and recall that you simply cannot succeed and sends the message that those who cannot think in this bleak and standardized way are not "smart". This leads to more and more gaps between students appearing and leads to competition, jealousy and pressure. While poverty and self-efficacy also play a part in educational inequalities these often stem from the education system originally. Those in poverty may not have done well in these uniform testing and employers have therefore written them off as not able to work which may place them unemployed and poor in the first place.

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Tutor comment:

It was a pleasure to teach E. during my placement; I was consistently impressed by her engagement with the programme and willingness to embrace the challenges. She is an exceptional academic, and her thoughtful and generous contributions to group discussions made a positive impact on our tutorials. Her response to the essay question is compelling and demonstrates a sophisticated and critical understanding of a highly complex topic.

Why does homophobia in sport exist and what is being done to stop it?

Year 10, Key Stage 4

Pupil: W. Kirk

School: Castle View Academy, Portsmouth

Supervised by: R. House

Tutor University: University of Brighton

Course Title: Homophobia in sport: Why does it exist and how can we stop it?

For centuries, there have been a multitude of ideologies which depict the expectations of men and women in society; how they should act, where they should work, and who they should be attracted to. Unfortunately, this way of life is still prevalent in modern culture, in a time where diversity should be celebrated. Gender stereotyping is also a continuing issue in the world of sport, where sportsmen and women of the Lesbian, Gay, Bisexual, Transgender and Queer community (LGBTQ+) are facing extreme and unacceptable abuse for their sexuality and identity as a result of toxic masculinity and femininity, and it is bringing forth a plethora of physical and mental impediments, such as depression and anxiety. In the last few decades, it has been recognised that homophobia in sport is a serious issue and demands the attention of the public after some shocking events in recent memory, such as the tragic suicide of Justinus "Justin" Fashanu in 1998, Britain's first openly gay football player [1]. During this time, many organisations have surfaced to combat the issue, two of which will be discussed and analysed in this essay, namely the Kick It Out and Rainbow Laces campaigns, as well as the history and impacts of gender stereotyping in sport. While homophobia affects members of all areas of sport, this assignment will focus predominantly on the action against it in football; as it has the largest following of any other sport in the world with approximately 3.5 billion fans [2], and is popular in almost every country globally [3]. Succeeding this will be a definitive conclusion which will concisely summarise the arguments made throughout.

First to be discussed in this assignment is the concept of toxic masculinity (or hyper masculinity) and its pertinence in sport. While only being utilised as a general term as recently as the 1980s [4], as an ideology it has existed in society for many hundreds of years. Toxic masculinity defines the "cultural concept of manliness that glorifies stoicism, strength, virility and dominance"

[5], and emphasises the cultural expectations of a man; that he must be physically strong, and he must not show his emotions. Toxic masculinity also is associated with a negative outlook on homosexuality and the exploration of identity, as a gay man can be perceived as physically or mentally inferior, due to his typically greater inclination to express his emotions, clashing with the traditional expectations of a man put forward by toxic masculinity. In football, this is still an issue that presents itself frequently, as football is generally depicted as a masculine sport, which favours physical prowess and the display of dominance in a competitive environment, rather than gay men who could be perceived as physically or mentally weaker than their heterosexual teammates. A journal published in April 2011 by Eric Anderson cites a passage from *Power at play: Sports and the problem of masculinity*, written by Michael Messner in 1992. Messner determined that "Boys (in sport) learn early that to be gay, to be suspected of being gay, or even to be unable to prove one's heterosexual status is not acceptable" [6]. While the original work of Messner was some 19 years old by the time of its citation by Anderson, this shows that it is still a relevant statement in a contemporary analysis of homophobia in sport. In addition to this, the concept of toxic masculinity can also be associated with homo-hysteria.

Anderson describes in his work that a culture of homo-hysteria is the fear of being perceived as a homosexual [7]. When someone is observed as a homosexual, it may entice them to be homophobic themselves, in order to prove their heterosexuality. This method of protecting their masculinity is supposed to prevent them from being viewed as effeminate or weak. Pastimes such as football have, for a long time, attracted a predominantly male following. For example, of the entirety of people in the United Kingdom who attended football fixtures in 2016, 67% of those were male, where females made up a minority of just 33% [8]. The greater presence of male spectators in football may encourage a sportsman or woman to suppress their sexuality in order to protect their image, as they would be playing in an environment which is potentially abusive towards homosexuals. Another survey of 5,000 LGBTQ+ individuals in Europe who are active in sport showed that 1 in 3 of those surveyed have not revealed their gender identity or sexuality, for fear of discrimination [9], supporting the idea that football, and the world of sport in general, encourages individuals to develop a façade of their sexual orientation to avoid facing homophobia and transphobia. However, as this survey only covered 5,000 people on a continental scale, its reliability is limited, and does not provide definitive statistics for LGBTQ+ sports participants as a whole.

The second part of this assignment will focus on the actions which are being taken to combat homophobia in sport, one of these being the aforementioned "Kick It Out" campaign. The inception of this organisation began in 1993 as the "Let's Kick Racism Out of Football" campaign and was formed by the Commission for Racial Equality and the Professional Footballers' Association, hereinafter referred to as the PFA [10]. From 1995 onwards, the campaign began to attract attention from the media and some of football's

most famous participants, such as Eric Cantona from Manchester United [11]. The name of the "Let's Kick Racism Out of Football" campaign was shortened simply to the Kick It Out campaign in 1997 and has remained the title of the organisation to this day. It has always strived to "encourage inclusive practices and campaign for positive change." and "to cover all aspects of discrimination, inequality and exclusion." [12]. The organisation has support and funding from multiple of football's governing bodies, such as the PFA, the Football Association, and the Premier League [13].



The Kick It Out campaign has multiple strengths as an organisation against discrimination in sport, whether it be homophobia, racism, sexism, transphobia or otherwise. It has a broad influence in social media, especially towards young people, as their message is displayed on multiple social media platforms, and they have a substantial following on these sites [14]. It is imperative that young people, as well as adults, are aware of discrimination in sport and the effects it has on its players and its fans; so that they may be less likely to be discriminate themselves, and reduce this kind of abuse occurring in future generations. However, while the Kick It Out campaign has certainly been invaluable in combating homophobia in sport, it confirms itself to be "NOT a regulatory body and therefore not responsible for administering sanctions and punishments." [15] on the campaign's official website. It also states that: "The organisation's role is to raise the complaint with the club, governing body or legal authority and monitor the case to ensure appropriate action is taken." [16]. As a result of this, the Kick It Out campaign is forbidden to personally act against discrimination in sport, and their efforts to combat it may be undermined by a governing body who may not appreciate the necessity that is preventing homophobia. Despite this, it is a generally successful organisation, and it promotes a positive message about LGBTQ+ inclusion and has the capacity to influence people of all backgrounds and ages.

The second campaign to be analysed in this assignment is the Rainbow Laces movement. Instantly recognisable by their iconic rainbow-coloured laces to be worn on a player's boots, this campaign was launched as the 'Right Behind Gay Footballers' campaign in 2013, founded by Stonewall

in conjunction with Paddy Power [17]. Together they distributed rainbow-coloured laces to every professional football player in the United Kingdom, and a Twitter campaign was launched to show support for members of the LGBTQ+ community [18]. This campaign became one of Twitter's most successful to date, receiving over 320 million impressions [19]. One of the founders of the Rainbow Laces campaign, Stonewall, is a clear advocate for LGBTQ+ equality. Its website highlights that "4 in 10 LGBT people don't think sport is welcoming" and encourages people to "play our part to make sport everyone's game." [20]. However, there is no survey or statistic to prove this.

Similar to the Kick It Out campaign, the Rainbow Laces campaign has gained lots of media attention, especially from the Premier League, who have officially supported the campaign and occasionally promote it during fixtures with Rainbow Laces pitch flags, armbands and ball plinths [21]. This level of promotion from the Premier League is vital to the Rainbow Laces cause, as the Premier League is by far the most followed football league in the world. In the 2016-2017 season, the Premier League accumulated a total of 13,612,316 spectators from fixtures and the television viewership audience became approximately 4.7 billion across the season's 380 matches [22]. This amount of viewership makes the Premier League the best medium to promote and advertise LGBTQ+ equality, as well as the Rainbow Laces campaign, as it is likely to reach and influence the most spectators. However, the campaign has come under criticism for using messages which "rely on sexualised innuendo and stereotypes about gay men." [23]. An article from BBC Sport written by Alistair Magowan includes a quote from the body Football v Homophobia, stating that "terms such as 'Right Behind Gay Footballers' reinforced 'stereotypes that ensure homophobia exists' and 'blurred the territory' between homophobic language and football banter." [24]. Football v Homophobia have also described this usage of language by the Rainbow Laces campaign as "incongruous" as it reinforces the stereotypes that ensure the persistence of homophobia. [25]. As a result of this, it would be safe to suggest that while the morals behind the Rainbow Laces campaign are most definitely positive, there needs to be an emphasis on the delicacy surrounding the LGBTQ+ community and homophobia in sport, thus influencing the choice of language in favour of more respectful terminology.

As of the last few decades, it would be ignorant to state that homophobia has been allowed to reign unopposed in the world of sport. Organisations such as Kick It Out and the Rainbow Laces campaign have made great strides towards eradicating homophobia and discrimination in football. Unfortunately, neither campaign is without its flaws. The Kick It Out Campaign is unmistakably passionate in supporting victims of homophobia. However, it is personally unable to prevent homophobia and is reliant on the necessary governing body to act upon a complaint, possibly reducing the impact of Kick It Out's cause. Equally so, the Rainbow Laces campaign can find

itself under scrutiny for its shortcomings in using respectful, consciously chosen language, while promoting individuality and unity, regardless of sexuality or identity. It is in these shortcomings that outdated stereotypes such as toxic masculinity and its subsequent effects, such as homo-hysteria can infest the sporting industry, leaving many individuals in a vulnerable position where they can be subject to homophobic abuse. The reality that 4 in 10 LGBTQ+ people do not feel welcomed in sport is a harrowing testament to this. Ultimately, it conveys the idea that not enough is being done by governing bodies and organisations in football to eradicate homophobia and leaving much to be desired by the victims of this abhorrent act of hatred which disgraces the sporting industry.

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Tutor comment:

I really enjoyed my time teaching at Castle View Academy, where the pupils were enthusiastic and worked hard during the programme. W.'s excellent effort, attention to detail and in-depth understanding is evident in his final assignment, where he scored a mark of 85% and was graded with a 1st. W. demonstrated an excellent understanding surrounding the area, showed evidence of applying academic research skills, can critically analyse and evaluate relevant topics, and can appropriately structure an assignment with the use of academic language. Therefore, it is clear that W. has many of the essential skills needed to thrive at a university. Overall, this is an excellent piece of writing for a KS4 individual and W. should be very proud of what he has achieved. Well done and congratulations to W. for being published in The Scholar!

Writing a research proposal: Investigating the effect of variety on food intake in the laboratory

Year 10, Key Stage 4

Pupil: E. Parfit
School: Aberdare Community School, Aberdare
Supervised by: R. Embling
Tutor University: Swansea University
Course Title: Is variety the spice of life? The psychology of our eating behaviour

Introduction

Numerous studies have concluded that older adults are more likely to develop and suffer from malnutrition than other age groups. It is estimated that 1 in 10 (around 1.3million) individuals over the age of 65 are malnourished or at risk of malnutrition (Malnutrition Task Force, 2014). According to the Mini Nutritional Assessment (2017), a high prevalence of malnutrition was found in both genders in people over the age of 65: 26% of female and 16.3% of male were classified as being malnourished and 40.9% of female and 35% of male were at risk of malnutrition. If malnutrition goes untreated, the risks include: poor immune system response and increased risk of infection, reduced muscle strength and poorer health outcomes (Specialist Nutrition, 2019). Older persons are shown to have an increased loss of appetite as they age in comparison to younger age groups. For example, they are shown to eat 16-20% less food and report feeling 25-39% less hungry and being 37% fuller after fasting overnight (Giezenaar et al., 2016). Indeed, food energy intake can fall by as much as 25% between age 40 and 80 (Specialist Nutrition, 2019). This suggests that it can be hard to maintain a healthy diet with such a decreased appetite. A small appetite will mean that there is less consumption of foods and less nutrient intake. This will consequently result in the potential loss of nutrients that are required for a balanced diet.

Micro and macro nutrients are essential to maintain a healthy and balanced diet. Macronutrients are nutrients that come from large portions of food that provide energy and are needed for growth and repair. Micronutrients are vitamins and minerals that are needed to be consumed in smaller amounts. When eating a meal that has a variety of different foods, there is an increased chance of intaking adequate amounts of macro and micro nutrients. Therefore, when having a meal that has a greater variety of foods there is a better chance of consuming a healthy and balanced diet.

A previous study (Wijnhoven et al., 2015) tested if an increased variety of foods within a cooked meal results in a higher meal energy intake in older women with a poor appetite. The study found that older women with a poor appetite consume more in terms of energy of a cooked meal when it contains three varieties of meat (or fish), three varieties of vegetables different in colour, or three varieties of a starch component than of a control meal that contains no variety within meal components.

Therefore, they found that their study could suggest that in older adults with a poor appetite, increasing meal variety may be an effective strategy to increase energy intake. However, the study that they have carried out only focuses on older women, and not both genders. My study is necessary because I aim to observe the eating habits of both genders to see if there is a difference between their intakes of food.

Another group of researchers (Ramic et al., 2011) studied malnutrition in older adults. Their objective was to determine differences in nutritional status of elderly people living alone compared to those who live in family surroundings. They found that loneliness is a significant predictor of the risk of malnutrition. They believe that the results indicate that it is necessary to work on improving the status and protection of the elderly. In more than 10,000 elderly persons, the mean prevalence of malnutrition is 1% in a community of healthy elderly persons, 4% in outpatients receiving home care, 5% in patients with Alzheimer's disease living at home, 20% in hospitalised patients, and 37% in institutionalised elderly persons (Guigoz et al., 2002). My study will focus on institutionalised persons as there seems to be a higher percentage of them living with malnutrition there than anywhere else.

The purpose of this study is to investigate the amount of food the participants eat in terms of calories. Also, it is to encourage older adults to include a variety of different foods in their overall consumption so they will have a higher nutrient intake to decrease their risk of malnutrition. A meal will be presented to the participant and they will have the option to eat as much as they like. My hypothesis of this study is that the participant will have consumed most of the high variety meal because they will be more inclined to eat a range of different foods that contain different sensory characteristics.

Method

Participants

The ideal candidates to participate in this study are those who are aged 65 or over. The participants involved in this study will be chosen specifically with poor diets and with a decreased appetite. They will be chosen from an institutionalised background as there seems to be a link between institutionalised elderly persons and malnutrition. Should the participant have any allergies that will be in the test foods or if they have any dietary requirements such as having a vegetarian/vegan lifestyle or if they are intolerant to certain foods, they may not be eligible candidates. They will be informed about what foods are being used if or when they choose to apply to the study. The persons that are willing to participate and are suitable candidates will be further informed about the study and will be told the requirements of the study. A description of their lifestyle will be taken (e.g. appetite, any eating disorders they may have had in the past) to see if this will have any influence on the amount consumed.

Design

The study will be conducted in a within subject design. The candidate will receive two meals: a meal with a high variety of food and a meal with a low variety of food.

There will be a record of the amount of food consumed in terms of calories (dependent variable) to see which meal is eaten the most. The independent variable of the study is the variety of the food that will be given.

Materials

The participants will be given a meal for both the high variety and low variety meal, but the content of the meal will differ. It will be a large meal so the participant can choose how much they want to eat. For the high variety meal, they will be given a portion of chicken, chips, salad (lettuce, spinach, tomatoes and peppers) as well as a choice of sauce. For the low variety meal, they will be given only a small portion of chicken and a large portion of chips. The number of calories in the meal will be measured before it is given. When the participant is satisfied with the amount they have eaten, any remaining food will be taken as a sample and will then be weighed (in grams) to be converted to calories to help calculate how much they have eaten. This will then be used to compare the difference and affect the low variety has on intake in contrast to the high variety meal.

The purpose of the study will not be explained to the participants as it may affect the overall food consumption or influence them to eat a greater or lesser amount of food. To remain inconspicuous about the study we will request that the participants complete a survey at the end so that the actual intention will not be obvious. They will be asked their opinion on the food and if there is anything that they did not like about the food. This will also determine if this might interfere with the intake.

Procedure

The study can take place when enough people are eligible and have given consent to take part. The procedure will consist of the candidate consuming two meals: one with a high variety of food and one with a low variety of food. To avoid affecting the consumption of food, participants will eat the meals on separate days. The high variety meal will be eaten on the first day and the low variety meal will be eaten on the next day. Both meals will be large portions of food so the participant can eat as much as they like, and they will not be informed about the number of calories they are consuming as this may encourage them to eat more or less of the food. There will only be participants in the room where the study is being conducted so that they don't become uncomfortable or feel they need to eat faster/slower or eat more/less. After consuming the meals, the candidates will be instructed to complete a survey that contains questions about the meal so that it is not obvious what the true intention of the study is. The study should last approximately 20-30 minutes, and this may differ depending on how long the participant takes to eat all the food that is given.

Discussion

The hypothesis of this proposed study is that the participant will consume the meal with the greatest variety of food due to its range of sensory characteristics (e.g. taste, appearance, smell) and the desire to eat a more varied meal. It is assumed that the participants

will eat the least of the meal that contains the lowest amount of variety due to sensory-specific satiety, which is the decline of appeal that is experienced for a food, or habituation, which is the decline of a person's response to a stimulus after repeated exposure to a food.

This proposed study has several strengths. If the proposed hypothesis is correct, then the participant will eat more of the varied meal which will contain more macro and micro nutrients that are required for a balanced diet. This research will hopefully encourage older persons to eat more varied meals to increase overall consumption so they will be exposed to a healthier and balanced diet. Past research (Wijnhoven et al., 2015) has assessed malnutrition in older women, but not both genders. A strength of this proposed study is that it will develop research further so people can have a further insight in malnutrition in older women and in older men. It will also inform people if there is a significant difference between the intake of a man and a woman. According to a previous study (Robinson, Kersbergen, Brunstrom, & Field, 2014) there tends to be reduced consumption when the candidate suspects that intake is being measured. This is therefore the reason that they will be completing a survey about the meal so that they won't suspect that intake is being measured and it will not influence less consumption.

There are a few possible limitations in this study. For example, participants will be given specific foods in the meal and if they dislike a food then they may not eat it, which will decrease intake and overall consumption. If there are to be any studies conducted on this topic in the future, they should consider the likes and dislikes of the participants so it will not become an issue. Furthermore, if the participants have consumed any food on the day that the study will be conducted, it may affect the results as they might eat less food in the study because they are not hungry. For this reason, it will be requested that they do not eat anything on the days that the study will be conducted.

Hence, an implication for future research is that researchers should consider the likes and dislikes that the participant may have in terms of taste and sensory characteristics so that the participant doesn't eat less. Also, they should make sure that the participant has not eaten a lot of food before the study is carried out that might result in less consumption.

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Tutor comment:

I was extremely impressed with the high level of work that E. produced throughout this course. Her final assignment demonstrated an in-depth understanding of the complex concepts studied, an outstanding level of engagement with course materials to develop a sophisticated argument, and a great maturity when discussing novel ideas. I am sure she has a very bright future ahead of her.

How have brands like Zara and Primark changed the fashion industry?

Year 10, Key Stage 4

Pupil: **O. Smeaton-Couzens**

School: **Chestnut Grove Academy, Wandsworth**

Supervised by: **N. Andreij Rieg**

Tutor University: **University of Surrey**

Course Title: **Reimagining our future**

Introduction

The fashion industry has recently undergone a significant change in the way clothing is manufactured and sold. Brands such as Zara and Primark are relatively new and have brought with them the concept of 'fast fashion', inexpensive clothing designs inspired by current trends, which are quickly replaced to fit people's ever-changing fashion preferences. This concept was first introduced in the beginning of 1990, when Zara opened its first store in New York; their garments took approximately 15 days to progress from the design stage to being sold in stores (1). The term 'fast fashion' was created to describe this rapid production of clothing becoming increasingly popular in newly emerging brands.

This essay will explore the changes fast fashion has had on the fashion industry through a social, environmental and economic perspective, outlining its problems and the possible solutions needed to ensure fast fashion positively changes the way the fashion industry progresses.

Societal impacts

The fashion industry has seen an increase in societal impacts since the introduction of fast fashion. Before the demand for cheap, on-trend apparel, most garments would either be custom made or produced at home. Even after the industrial revolution, most clothes were made in the country where they would be purchased (2). However, this changed when fast fashion was introduced; companies began to produce garments abroad where labour is cheaper, to prioritize income over the well-being of their workers. This can be seen through the unlivable wages that most garment workers receive; \$96 a month is the average pay, and it is said that 3.5 times this amount is needed to live a decent life with basic facilities (3). Fast fashion companies pay minimum wage to their workers to ensure maximum profit as their clothing is sold at such a low price.

Furthermore, some workers' lives are at risk due to unsafe working environments. In 2012, a fire broke out in a Tazreen

Fashion factory on the outskirts of Dhaka, Bangladesh, claiming the lives of 113 workers who were trapped in the burning building. The exits were blocked and many had no choice but to jump from the upper story windows (4). Unsafe working conditions could also be seen after the Rana Plaza garment factory collapse in 2013, killing over 1100 people and injuring approximately 2500 (5), the worst industrial accident ever to occur in the country. It was caused by the oversight of large cracks appearing in the building the night before; workers were told their wages would be cut if they refused to come into work because of the cracks and with their pay already being well below a living wage, they had no choice but to comply (6). Many garment factories in Bangladesh continue to be unsafe workplaces and the companies who own them are failing to protect their workers.

Another problem is the use of forced and child labour. Over 170 million children across the world are engaged in child labour, many of whom make garments in the textile industry (7). Fast fashion demands for cheap labour as the prices of clothes decrease and one of the easiest ways to find this is through the manipulation of children. A recent report by the Centre for Research on Multinational Corporations and the India Committee of the Netherlands revealed how 'recruiters' for textile factories convince parents in areas of poverty that they will provide well-paying jobs for their children and a large sum of money will be sent to them at the end of 3 years. In reality, children will work in terrible conditions and are paid next to nothing (8). Fast fashion requires low-skill work which can be done by children for low pay, ensuring the company does not lose profit.

This shows how much of a change the fashion industry has undergone since the introduction of brands such as Zara and Primark. As the price of clothing has decreased, the demand for cheap labour has increased. Therefore, most garment factories are located abroad where labour is cheaper. Before fast fashion, clothing was produced at a small scale, but now the fashion industry is so large, the treatment of workers is sometimes overlooked and their well-being is not always accounted for.

However, fast fashion has had some positive societal impacts on the fashion industry. Many jobs are provided to people in low income countries such as Bangladesh, especially women, who produce 85% of all apparel in the textiles industry (9). Although most workers are exploited and underpaid, the fashion industry provides many opportunities for women which in turn can reduce gender inequality and enable women in developing countries to become successful. Due to this, the birth rate in developing countries will decrease, preventing over population which could lead to famine and poverty; in Bangladesh, where many women work in textile factories, the birth rate fell from around 5 children per family to around 2.1 (10). This shows how promising jobs around fast fashion can be, not only for women but for the development of the economy.

Environmental impacts

Fast fashion has not only changed the fashion industry by affecting the lives and well-being of many people,

it has also had countless environmental impacts. It is said that the textiles industry is the most environmentally degrading industry, as it accounts for over 10% of global carbon emissions (11). The industry produces these emissions through the extraction of raw materials and the production of garments including their transportation from factory to store. Carbon dioxide adds to the greenhouse effect, where greenhouse gasses trap infrared rays into the earth's atmosphere, consequently melting glaciers and ice caps (12). Sea levels then rise, which can cause wetland flooding, destructive erosion, the loss of habitat of many species and dangerous and destructive hurricanes and typhoons (13). Excessive levels of carbon dioxide in the atmosphere can have irreversible effects on the environment, endangering all living things.

Furthermore, for companies to produce clothes at a low cost, the textiles used must also be cheap. Currently, we use synthetic, man-made fibres which are the cheapest because they are built from cheap raw materials such as oil and can be produced in large quantities (14). 60% of all clothes are made from synthetic materials. However, these materials have devastating environmental impacts, as they cannot decompose. In a single load of laundry, hundreds of thousands of plastic fibres enter the water. They are no bigger than 5 millimeters in length, which presents a threat to marine life. (15). Moreover, if synthetic garments are discarded and dumped on landfill, they will take up to 200 years to decompose. Consequently, many garments are burnt; one garbage truck (2625 tonnes) of clothes are burnt every second, releasing carbon dioxide and toxic plastic chemicals into the atmosphere (16).

It is not only man-made materials that have a negative impact on the environment; the production of natural fibres can also have a devastating global footprint. This can be seen through the vast amount of water required to make a cotton garment. 2,700 litres of water are needed to grow enough cotton for one t-shirt, the same amount of drinking water a person needs for 2 and a half years (17). This abundance of water is transported from lakes and rivers through irrigation systems to the cotton plantations. Central Asia's Aral Sea once held 68,000km² of water until Soviet engineers began building a large irrigation network consisting of canals, dams and reservoirs to irrigate cotton fields in the 1960s. In the early 2000s, most of the water had been drained from the lake and one tenth of the original water volume was left (18). This impacted the weather, wildlife, and people that depended on the lake for survival. Millions of fish died, meaning every fisherman in the area lost their source of income. Furthermore, people were hit with constant dust storms, where the remaining salt from the lake was blown away by strong gusts of wind (19).

Not only does the production of garments waste vast amounts of water, it also pollutes the remaining water in nearby lakes and streams. Up to 200 tonnes of water are used for every tonne of dyed fabric.



The chemicals that dye and bleach our clothes are responsible for around 17-20% of all industrial water pollution (20). In 2011, the Jian river in northern China turned deep red after dye was illegally dumped there. Residents reported health problems and questioned if nearby food is safe to eat, as the toxicity of the dye killed all aquatic life in the river (21). The laws in China preventing such acts have clearly not been enforced well, which can endanger the health of many living things.

This shows how much fast fashion has changed the fashion industry. Apparel was once produced by hand using local materials (2) but is now produced from synthetic materials that are sourced in an unsustainable way. This impacts the environment, whether it be changing weather patterns, destroying habitats, or draining lakes and rivers. Living things are also endangered by the toxicity of dyes used in the manufacturing process of garments and the poisoning of local rivers and streams. Most of this is irreversible, which is why it is so important to make changes in the way clothing is produced.

Economic impacts

The fashion industry has undergone drastic economic changes since the introduction of fast fashion. In 2018, the global clothing market was worth around \$278.2 billion and is estimated to grow to around \$325.8 billion in 2022 (22). It is an extremely profitable industry with an income that continues to increase. Fast fashion contributes billions of dollars to the fashion industry each year. Zara had \$19.7 billion in sales in 2014, whilst H&M had \$20.2 billion (23). This money is used to expand and build more factories and stores whilst also employing more workers. However, the success of these companies is a result of the low wages their workers receive and the cheap textiles they use. Fast fashion brands make around \$3 billion a month, but garment workers only make \$96. This wage gap enables fast fashion companies to succeed but prevents many low-income countries (LICs) from progressing, as the workers do not earn sufficient amounts to pay high taxes to go towards the economy. Furthermore, cheap labour allows companies to sell their products for low prices. Although this can benefit those who may not earn enough to buy expensive, high-end apparel, it still has many negative outcomes. In the early 20th century, 20% of an American's income was spent on clothes. By 2003, only 4% was spent, but more clothing

was bought (22). This influences consumerism, the promotion of products that encourages the acquisition of goods in ever-increasing amounts (24). The cheaper the products, the more appealing they are to customers, so more are purchased. However, this can result in people being wasteful with what they buy; total unused clothing has an estimated value of £30 billion, £140 million of that being sent to landfill annually (25). Not only does this have devastating environmental impacts, it is also a waste of consumer income, as people are deceived into buying apparel they do not need.

This shows how much fast fashion has changed the fashion industry. It has increased the worth of the global clothing market and enabled brands such as Zara to earn billions annually. However, factory workers in LICs are under-paid and earn a fraction of what the company does. Moreover, consumerism has been encouraged since fast fashion's introduction.

Nonetheless, fast fashion has had some positive economic impacts on the fashion industry surrounding the economy of LICs. When companies locate parts of their business abroad, it helps smaller countries to develop, as they can build factories, lay roads and install internet cables (26). This can help to close the development gap as it introduces infrastructure to the country and provides many job opportunities for locals.

Solutions

It seems as though fast fashion has had nothing but a negative impact, not only on the fashion industry, but on society, the environment and the economy. However, this does not mean that we should put an end to buying clothes; many people's livelihoods depend on fashion, whether they work on cotton plantations, in textile factories, in marketing or in stores. Instead of taking away their source of income, we should focus on changing the way clothing is manufactured and making it more sustainable. It is said that if we address the issues surrounding fast fashion, a £192 billion profit will be provided to the global economy (3).

One way this can be addressed is through the reduction of water used. Levi's, a well-known manufacturer of jeans, has started their 'Water<Less' line, where they reduce up to 96% of the water normally used in denim finishing. So far, they have saved and recycled more than 4.5 billion litres of water (27). This source may not be the most reliable, because Levi's are trying to promote their products favourably. However, it indicates that it may be possible to save water in garment manufacturing, by reusing water during production, or designing new finishes that require less water than before.

Furthermore, companies could pay their workers more than the minimum wage. \$96 a month is not a sufficient amount of money to buy food and water and pay necessary bills. It becomes a greater problem when workers need to provide for their families, as they have multiple mouths to feed. Zara could easily pay their workers higher wages and still earn billions of dollars in profit.

Finally, companies should stop over producing products. The founder of Reformation, Yael Aflalo, stated that her

fast fashion brand is sustainable because they only ever manufacture small quantities of new releases. "Most companies produce too much" she says. "They sell a certain percentage of it at full price and then put the rest on sale." (28) By avoiding this, her brand discourages consumerism, in turn reducing waste.

Conclusion

Overall, I believe brands such as Zara and Primark have changed the fashion industry for the worse. Although they provide a high income to the industry and encourage sales, the negatives outweigh the positives. Fast fashion has devastating impacts on the environment; the textiles industry is the most environmentally degrading industry as a consequence of its carbon emissions and water pollution. Furthermore, fast fashion brands overlook the well-being of their workers, creating societal problems surrounding the underpayment of workers, the safety of factories and the use of child labour. This is a drastic change to how fashion was previously manufactured, by hand on a small scale. Finally, the economy has been impacted by fast fashion. Consumerism is encouraged, causing people to be wasteful with their money and what they purchase. I believe that changes should be made to fast fashion to ensure workers are paid fairly, garments are produced sustainably and people are not wasteful. The fashion industry will still be profitable, but without having negative and irreversible impacts.

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Tutor comment:

I had a fantastic time teaching at Chestnut Grove Academy. The pupils were very enthusiastic and keen to learn about Sustainable Development and potential solutions to the challenges of the 21st century. O.'s writing style is outstanding, her essay is well-structured and draws on a multitude of relevant sources. It shows a level of understanding and critical thinking that is remarkable, and I'm sure that O. would be an invaluable presence to any undergraduate programme.

How can town planners solve the challenges to involve young people in urban planning through new technologies?

Year 12, Key Stage 5

Pupil: **M. Maan**
 School: **Windsor High School and Sixth Form, Halesowen**
 Supervised by: **S. Shtebunae**
 Tutor University: **Birmingham City University**
 Course Title: **Can you plan the future smart city?**

City planning focuses on the quality of life in cities, suburbs, towns and villages (1). It does this by taking into account a number of variables when town planning, such as: the environment, the economy, as well as cultural and transportation needs. It is also the role of city planners to understand how the use of current facilities will affect the city in the future, and whether said facilities are sustainable enough to continue to be in use.

Due to the ever increasing population of our current world, anticipating future and current use of space is more critical now than ever, posing a multitude of questions to the designers of today (2). According to 'The Knowledge Exchange Blog' (3) "It is estimated that nearly 70% of the world's population will live in urban areas by 2050. In the UK, this figure is expected to be closer to 90%." This shift in demographic leads to a higher percentage of children growing up in urban environments than ever before - resulting in a number of implications on the city planning system.

Resultantly, many urban planners have chosen to turn to the youth - in turn gaining an understanding of their insight and vision for the future of their local areas. Developing an understanding of young people's perspective encourages both effective interaction and long-term service planning (not to mention vital feedback that's crucial in creating communities fit for future generations). So if their input is so vital, why aren't as many young people involved in the process of city planning as we'd like? Well according to the 'Engaging Children and Young People in Community Planning: Community Planning Advice Note' article (Young Angus Citizens' Panel) (4), there's been multiple issues in the current attempts of involving young people in town planning (shown through trials that took place in Scottish education centres). For example, 'Notices in libraries, newspaper ads and press releases were less successful than the school-based approach' and 'lengthy surveys' were also found to be less favourable, as they were deemed 'complicated'.

Resultantly, longer surveys were dropped in favour of 'shorter versions taking up no more than two sides of A4'.

Another great example comes from the works of Tim Davies (7) as seen in his article where he states that young people "are often too busy with family and work commitments to take part in the business of localism". The statement made here by the author ignites a school of thought that is heavily on par with the research question of this article: how can we adapt digital tools to engage young people in the construction of their societies, rather than let them miss out as a result of their 'busy' lifestyles. So what does all of this show? Indeed, research articles such as 'Young Angus Citizens' Panel' do show that brief research has in fact been conducted on the complications of getting young people involved in city planning. However, it is the author's goal of this essay to expand beyond the question of limitations and assess how or if technology can be implemented to encourage the involvement of youth in town planning. Thus, in order to enlighten themselves on the focal point of this essay, the author has conducted primary research amongst a sample group of four young people aged 16-19.

The methodology chosen by the author was an open answer survey, to be conducted in a face to face manner. All responses and findings were recorded in a written format in order for future further analysis to take place. In order to accommodate the research question, the ages of the survey participants varied from ages 16 - 19 - thus targeting specifically young people. The questions carried out by the author were as follows: (5)

1. How familiar are you with digital tools?
2. Do you use the internet on a daily basis?
3. How far are you aware of the concept of a smart city?
4. What would you change about your local area?

The author then took the initial findings and processed the acquired data into a quantitative format by creating pie charts for each inquiry. This is seen as initially effective as it developed the original, qualitative data into numerical information that could be analysed and compared.

Upon conducting this survey, it is important to note that the sample group used by the author consisted of only four individuals - all of which were female. Which brings me onto the limitations of this proposed research method. Firstly, an open answer survey consists of responses that are 100% opinion. This poses an issue as it makes the processing of qualitative data into quantitative data extremely difficult, thus rendering any numerical data obtained subject to unreliability/inaccuracy. Secondly, the limited size of the sample group in which the author conducted the survey amongst, makes for a very small representation of the opinions of young people in their local area.

With regards to the results of the survey, the author has conducted this essay to discuss and evaluate the observations made from said questionnaire. An apparent consistency in the data obtained, was that not many of the young people were confident in their technological capabilities. This was shown as 100% of participants said

they used the internet daily, despite only 50% stating they were extremely familiar with digital tools. Another key finding was that only half of the sample group claimed to be aware of the concept of a smart city - whilst all of them agreed that their local towns had areas needing improvement/development.



However, despite having acquired clear comparable data through the survey, the development of turning the qualitative data into pie charts may have induced potential bias - the opinion element of the open answer survey may have been lost. One of the shortcomings of processing the data through statistical analysis is that it may skew the opinion of the participants in favour of a numerical value/percentage. For example, the answers to question 1 (how familiar are you with digital tools) was later categorized into three responses: extremely, partially and hardly. This may have disregarded the personal aspect that an open-answer survey brings. In regard to sporadic data, there could be a multitude of causes for these results. The author may consider the possibility of any inconsistencies in the questioning process of the survey. Upon further analysis, the tone and environment in which the questions were asked could have had a considerable impact on the nature of the responses. Thus, the outliers of the research could fall into one of two causal reasons: the volatility of how each question was asked, and simply the unpredictability of each interviewee response. For example, the responses to question four (what would you change about your local area?) varied greatly. These responses were therefore not only much more challenging to turn into statistics, but indicative of a wide range of improvements needed in the local area of these young people.

From the results obtained, a discussion of findings can be conducted. There was a broad view of opinions in the results for some of the questions asked (eg; Q's 3 & 4) showing that despite having a variety of ideas and understandings, young people do in fact want change and/or to contribute to the planning of their local cities. The variety in responses to Q4 in particular suggests that more research would need to be conducted, amongst a greater sample size, to gain a greater understanding of the patterns/highest developments in demand. For example, research amongst a wider sample group of 33,179 young people has been done by CQC to investigate 'the experiences of children, young people and their parents and carers attending hospital' (6). Some of the key findings in the feedback show that

children and young people would benefit from 'having enough things to do while in hospital'. (6)

From observing secondary data, it is evident that further investigating would have to be done for certain questions in the author's primary research. The aim of which would be to gain a more acute understanding of the quantities/proportions in the responses - it can be considered impractical on a multitude of levels to consider enforcing all areas of feedback. Resultantly, the most popular responses would be of greater importance to enforce than others - which is why it is key that a greater sample size be used, to get an insight on the most concurrent responses. In regards to implementing feedback, the questions of sustainability and functionality should be considered even amongst the most common responses. Concerning further discussion of the findings of the authors primary research, certain findings were particularly enlightening. For example, all interviewees agreed to using the internet on a daily basis, suggesting that implementing a wireless technology would definitely be most/more effective in engaging with the youth. In this article by Monica Anderson & Jingjing Jiang, (8) they conducted research to compare the numbers of US teens with access to a desktop/laptop or a smartphone. Evidently, whilst the margin is still slim, in every case more teens had access to smartphones than desktops.

This secondary research concurs with the findings from the data provided by the author - that a wireless technology is more effective in targeting young people. This then proposes the possibility of social media campaigns and other forms of digital advertising that are easily accessible to young people, enabling city planners to target them more effectively and efficiently. Yet, it is important to note that secondary data may not be significant enough to be certain, as each case is sensitive to a number of variables Eg; geographical location, timing and financial situations. Further primary research should be considered by the author - into what the most effective technologies in encouraging young people to participate in the planning of future smart cities are. Upon discussing the limitations of the author's data, there are a few beneficial observations that can be interpreted from the primary data obtained. For example, a digital technology that is simple/easy to use and access may be particularly effective. This is because, whilst 100% of participants claimed to use the internet on a daily basis (Q2), only 50% described their familiarity with digital tools as extremely familiar (Q1).

In conclusion, only a partial judgement can be made on the technologies which city planners can implement to effectively encourage the involvement of young people in urban planning. Whilst it is evident that some approaches would be more effective than others - such as wireless technologies and social media campaigns - there is not, to date, sufficient research nor evidence to support such specific technologies. Not only would research into the (constantly developing) technologies available need to be conducted, but primary data would need to be sourced locally at the site of choice - to understand the specific needs of that designated area. Overall, city planning revolves around designing

urban living spaces with society in mind, and with the youth being the faces of our future society, this research question has proven itself more relevant than ever. So, whilst investigating the question of this essay to an extent, the author has gauged the query to be only partially answerable as of yet. Nevertheless, they have explored the topic and the immediate inquires surrounding it, deeming the involvement of young people in city planning very much probable upon further research and statistical evaluation in the previously disclosed areas.

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Tutor comment:

M.'s commitment to furthering her knowledge in a topic which was new to her, was exceptional. Achieving a grade of 72 (a 1st), her essay was definitely at a standard suitable for an undergraduate course in urban planning. She researched academic literature beyond the one provided in the handbook, managed to assimilate it and to combine it with her primary data to produce a very insightful essay on the topic of including young people in decision making. Crucially, as any good social scientist, she was not afraid to admit that solutions are hard to come by, but identified further research questions.

What is the institution of Langar? To what extent can it be considered a 'free gift'?

Year 12, Key Stage 5

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 Course Title: **Langar: A free gift?**

Religion, for many believers, is a special aspect of life, with religious communities gathering regularly to

celebrate or worship a highly regarded human being, or a transcendent being, not of this world. Whilst different religions may have different beliefs, places of worship, and different Gods, most seem to have very similar ethical and moral values; after all, one of the key purposes of religion is to promote righteousness and holiness within individuals. All faiths have their own unique institutions that promote equality, togetherness, and selflessness. One religion with this is Sikhism, which is where the institution of Langar originates from. Langar is described as 'the community kitchen in a Gurdwara where a free meal is served to all the visitors' (Cole & Sambhi, 1995). Langar is seen as one of the traditions in the Sikh faith which helps to promote the core Sikh values, hence its introduction to the Sikh faith by Guru Nanak, around 1500CE (Singh, 2011). Guru Nanak, the founder of Sikhism was born in Punjab, 1469, and whilst his introduction of Langar into the Sikh faith was intended to avert discrimination of any sort from the religion, it has also appeared to have become a form of a gift to consumers of Langar. This leads on to the concept of the free gift, which can be defined as 'an item given without charge as an inducement'. There is a lot more detail and theory behind the free gift, discussed by many people, which will contribute to a conclusion being drawn on whether the institution of Langar can be considered as a free gift, or whether it is just to be seen a general gift given out, just like a birthday or Christmas gift.

Understanding whether Langar can be considered as a free gift will require going into more depth on the institution of langar as a whole. As mentioned before, Langar was introduced into the Sikh faith by Guru Nanak. It is believed that during the late 1400s, Guru Nanak was given twenty rupees from his father, for Nanak to go and trade, in order to help him build entrepreneurial skills. On the way to the market, Nanak came across holy men who were suffering from hunger. Nanak decided to buy food for the men with the money, believing that providing food was a very worthy investment. On returning home, Nanak was scolded by his father, but Nanak explained that by feeding the needy, he actually used the money to receive the highest return possible (Singh H., 2018). Guru Nanak felt that providing food for the needy was more important than making money, promoting one of the main Sikh ideals of selflessness. Since that event, Langar has been served in Gurdwaras all over the world, following the perception of Nanak that Langar helps to elevate faith. Langar can be served as long as there is someone to eat (Singh H., 2018); this can be up to eleven times a day, so visitors are satisfied with the fact that a visit to a Gurdwara also comes with the guarantee of a free meal - a fact that would relax the minds of needy individuals. This does not only mean Sikhs, as all visitors are welcome to the Gurdwara to participate in Langar as part of the Sangat, regardless of religion, caste (social status), gender, economic status, or ethnicity. Everyone is included, and to also ensure this, all food prepared is vegetarian, so dietary requirements are also accounted for. Regarding the preparation of Langar, nobody is forced to help make the food; volunteers take part everyday in preparing large masses of food for the Sangat, which takes up a lot of time, energy, and ingredients, also provided voluntarily. Sikhs are encouraged to give up ten percent of their earnings, just as in Christianity, as well as ten percent of their time, known as Seva (Avery) and Sikhs use Langar as an opportunity to

fulfil that ten percent of time, allowing them to follow the Sikh rules and values as closely as possible, but also giving the individual volunteers a sense of satisfaction. A modern day interpretation of Seva is 'dedication to others' (Markus & Friederike, 2013), which implies that contributing to the preparation of Langar can be seen as helping others by giving up your time for them, a key aspect of selflessness. When looking at the purpose of Langar within Sikhism, obviously, the main principle is to feed the Sangat that has gathered, bearing in mind that this does not only include Sikhs. Moreover, Sikhs believe that Langar is done to help promote equality, as everyone sits on the floor together and consumes the food, no matter who you are. This exemplifies that Sikhs consider everyone on Earth as equal and on the same level, and, with equality being one of their key values, it is paramount the Sikhs have elements of parity within their faith, and sitting on the floor during Langar, as well as during worship in the Darbar Sahib, are techniques that have been implemented. It is so extreme that even Mughal King Akbar, who wanted to speak with the third Guru, Amar Das Ji, had to sit on the floor in the Gurdwara, along with the ordinary people, and partake in Langar, before he was able to speak with the Guru (Nitti, 2019).



Another purpose of Langar is to bring togetherness amongst the Sangat. With a large congregation sitting together eating a meal, it allows for people to talk, get to know each other, and catch up with loved ones. This presents the welcoming aura that Langar is also intended to bring (Nitti, 2019); Langar creates a large, multi-cultural community. Yes, it can be widely agreed that Langar is about the generous provision of food, in order to help promote the key Sikh values, and to build a sense of community. However, is Langar just about upholding Sikh values? It seems as if there is something greater behind the whole concept; it seems as if there is a spirit driving the institution, making it as successful as it is today; it seems as if Langar is more than just the giving out of food – could it be a gift for the consumers, as well as for the preparers, installed into the Sikh faith by Guru Nanak. If so, has that gift been so oblivious, that Langar can be considered a free gift?

A gift can be seen as 'a thing given willingly to someone without payment'. Although there may be an expectation of reciprocity, a gift is generally given with no repayment required upfront. From this, we can instantly see Langar as

a form of a gift, as people are given food, and are not expected to provide anything in return. Gift giving can be easily tied in into the Sikh faith, with gifts promoting togetherness when exchanged, and selflessness is at the forefront of deciding to provide someone a gift in the first place. With Langar, 'the sharing of food can symbolise oneness' (Chrissydes & Moss, 1985:5), emphasising on how gifts bring people together. After all, Guru Granth Sahib did say 'The true path to God lies in the service of our fellow beings' (Singh I. , 2001). Sikhs would interpret from this that if they want to be close to God, they need to dedicate themselves to others, and gift giving can be seen as an example of this, with the given gift benefitting the receiver in one way or the other. Looking at the gift in more detail, Marcel Mauss, a French sociologist, saw gift giving as a method of exchange or reciprocity. Whilst he believed, like others, that gifts were willingly given and received, he also suggested that the cycle of gift giving came with the expectation of reciprocity. This comes under his three obligations for gift giving: The obligation to give; the obligation to receive; and the obligation to return the gift. Mauss believed that there was a spirit, 'the hau', involved in gift giving, which was responsible for the feeling in people that they are required to reciprocate with another gift (Mauss, 1925). However, it looks to be possible that there are gifts that can be considered a free gift. These are gifts where there is no reciprocity involved, and neither the recipient nor the giver should see the gift as a gift (Derrida, 1994). In some cases, a gift can be considered a free gift when reciprocation isn't possible, for instance, you are given a gift and nothing you have or can afford will match that gift (Venkatesan, 2011). It has been argued that Derrida's version of a free gift is impossible, as even if the receiver doesn't see an item as a gift, the giver will always feel some form of satisfaction, whether it is because they have given something out, or whether it is because they have been able to rid of something they no longer need. Besides this, there are some cases where gift giving in our eyes may not be seen as a gift for the receiver or giver, given the example of giving to charity. You are giving clothes away you don't need, and the charity sees the clothes as a donation. Obviously, you do not expect anything back from the charity, so this could be seen as a free gift. Langar is a charitable institution, so could that be seen as a free gift as well?

Langar has benefitted many people worldwide, and this benefit for the consumers in itself can be perceived as a gift. People are able to come into a Gurdwara regardless of who they are, and they are welcomed and granted a free meal. 'To invite someone to a meal indicates a high degree of intimacy' (Chrissydes & Moss, 1985:5), so in context, visitors to a Gurdwara being offered langar shows that those people are valued and are being offered a token of love and respect from the Gurdwara; a gift for the receiver. Especially for people who are suffering, maybe homeless or struggling to make ends meet, receiving Langar in the Gurdwara can really satisfy one and make their day, and will obviously look at food, something they unfortunately don't have enough of, as a blessing and a gift, which is probably how the hungry holy men felt when Guru Nanak bought food for them. (Singh H. , 2018). The time to come together and speak with welcoming people for the homeless can also be a gift to them. Furthermore, it is

not always about how the receiver of the gift feels, it's also important to consider how the giver feels. The volunteers who help prepare Langar will definitely have some satisfaction after seeing everyone enjoying the food created, and because they are contributing to giving up ten percent of their time, as Sikhism encourages. Generally, when given something free of charge that can benefit you in one way or the other, it can be seen as a gift, and this is the institution of Langar. However, as Marcel Mauss said, there is also an obligation to reciprocate a gift, but Langar does not come with the need to reciprocate, and the Hau spirit of gift giving (Mauss, 1925) doesn't seem to be present in making consumers of Langar feel in debt to the Gurdwara. So Langar could be considered a free gift. Going to the Gurdwara to partake in Langar could be just to quench hunger, and the consumer may have no idea within themselves that they have just been offered a gift. As Derrida said, neither the giver nor the receiver should see the good or service provided as a gift. (Derrida, 1994), and it is possible that the volunteers preparing Langar gain no emotional benefit from it; they may have just been asked to, or they are just following the law of Sikhism. Some visitors to the Gurdwara for Langar may just see it as a time of coming together, as 'The sharing of food can symbolise oneness.' (Chrissydes & Moss, 1985:5), and may not see it as a time for giving and receiving. In all these cases, there is an obvious benefit to all parties, but the element that defines the free gift is whether these parties actually notice these benefits. When looking at the arguments, they are quite similar, just for in the case of the free gift, where the benefits gained go unnoticed, which is where the argument of the free gift falters. Are consumers of Langar really not going to be thankful in any way for the food, or even just being accepted welcomingly into the Gurdwara? Are volunteers really not going to be thankful for seeing people enjoy the food and following in the footsteps of Nanak? These questions all make a free gift seem quite unrealistic. Sikhs would undoubtedly prefer Langar as just a gift as there is no point of having Langar if the volunteers aren't aware that they're giving up their time to serve people, and if visitors were not thankful and grateful for the food they've consumed. It's even possible that reciprocation is involved in Langar, with the volunteers maybe expecting thanks for preparing the food.

A free gift seems like unnoticeably doing the right thing and helping one out, but Guru Nanak knew what he was doing, and why, when he spent his father's money on food and supplies to help the poor. Giving that Nanak's father was really strict, he must've really been passionate about observing the Sikh values when giving out the food, negating the values of a free gift. Therefore, Langar is not really a free gift, and it shouldn't be one, as Sikhs should be aware when they are being selfless, promoting togetherness, and bringing equality.

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Tutor comment:

It was a pleasure teaching B. as part of The Brilliant Club. I am so proud of his first-class achievement - this is an essay that even an undergraduate can be proud of. The essay was impeccably written, structured and referenced. It is so inspiring to see pupils produce such outstanding work after spending such a short time with them. I can see B. achieving great things in the future - he would be an asset to his university of choice.

An analysis of representation in the media coverage of the Boko Haram crisis

Year 12, Key Stage 5

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Supervised by: **H. Ahmed**
Tutor University: **London School of Economics & Political Science**
Course Title: **International media, politics & power: Images of the global south**

Introduction:

Within the last decade, Nigeria has been heavily affected by a group of insurgents called the 'Boko Haram'. The Boko Haram, also previously known as Jamaat Ahl As-Sunnah Lid-Da'wah Wa'l-Jihad, are classed as a 'jihadist' terrorist organisation who are present in the north-eastern parts of Nigeria and other countries like Chad and Niger. The group was thought to have been founded in 2002 by Mohammed Yusuf who was killed during the 2009 uprising. Abubakar Shekau later succeeded Yusuf in leading the Boko Haram since 2009. The group is also largely associated with the Islamic State of Iraq and Levant and shares a common goal of establishing an extreme idea of Islam within Nigeria (1). Insurgents, who are driven by warped religious and cultural views, have committed acts of terror within the north-eastern parts of Nigeria, such as attacks on schools and institutions as well as targeting and kidnapping women and children. One of the events, which the insurgency is mostly known for, is the mass kidnapping of more than 250 schoolgirls in Chibok on the 14-15th April 2014. Over the next few months and years, many girls were released but most are still known to be in captivity. The latest updates of Boko Haram activity date to the 27th July 2019 where they were suspected to attack during a funeral, killing over 65 people (2).

Representation of Insurgents:

First news of the Boko Haram came in December 2003 where approximately 200 militants attacked many police stations across the state of Yobe. From the very beginning, it was clear that the militants had very extreme and radical religious views which are translated in countless terrorist acts and attacks (2). They have strong opinions based on Sharia (Islamic) Law from which they believe that it is forbidden to engage in western politics and education – especially for women. Boko Haram sees the West as corrupt and evil and something that needs to be eradicated and strongly opposes western views and ideologies. Similarly, Western

media portrayal of the Boko Haram is of violence and corruption and it makes clear of Boko Haram's warped and toxic ideologies from their misunderstanding of religion. Western media has made more news coverage of the Boko Haram insurgency in recent years, raising awareness in the crisis which is tearing apart northern Nigeria. Boko Haram itself, however, is divided with two 'leaders' fighting for dominance. Originally affiliated with ISIS, Shekau 'pledged allegiance to ISIS' (3) but tension between Shekau and ISIS led to the initiation of a new leader – Abu Musab al-Barnawi. Naturally, this led to divide within the group as the militants had differing loyalties. Regardless of the division within Boko Haram, the goal remains the same – purifying Islam in northern Nigeria (1).

Some articles on Boko Haram clearly outline Boko Haram's terrorist agenda. CNN article 'Boko Haram: A bloody insurgency, a growing challenge' presents Boko Haram as a clear obstacle which is becoming hard to overcome. A 'bloody insurgency' further connotes Boko Haram as dangerous and monstrous. The article further states that 'Boko Haram's radical savagery is escalating, along with the number of people killed by the terror group' which further creates awareness with a tone of urgency and it makes it clear that action needs to be taken to prevent any more acts of terror (4). Within this article published by CNN, we can see a clear identification of threat from the Boko Haram with the article taking care to highlight the facts rather than delivering fiction. This is very important as the media has a strong influence on our understanding of any situation and in the case of reporting something foreign it is hard to identify and differentiate facts from misconceptions. As with any events and situations occurring across the world, politics and government strongly influence the information that can be released to the public. Research on 'Domestic media coverage of Boko Haram insurgency in Nigeria' by Jude Nwakpoke Ogbodo suggests that the 'Governments hegemonic (political, social or economic dominance) narratives and strategic influence in the coverage of the insurgency' could also 'indicate a lack of nuance or texture in the coverage of various critical aspects of the insurgency ignored'. The research also identifies that the effects of such influences of the government on controlling the 'narrative' has led to foreign media portrayal of the Boko Haram as 'international terrorism'. Such labelling creates misconceptions in the idea that the Boko Haram are no different to other terrorist groups which although may be the true on the surface – it should be understood that their emergence and their activity to the present day are not linked to other terrorist groups and their agenda differs to that of other groups (5).

Media is not represented just by news articles but also by books and pictures/images which portray a meaning to its viewer. One such book on the Boko Haram insurgents: 'The Boko Haram Reader: From Nigerian Preachers to the Islamic State' by Abdulbasit Kassim offers a more in-depth insight into the minds of the insurgents through the texts and documents they read to the videos and audios they listen to. The book explores Boko Haram's manipulation and warped ideologies of Islamic theology against western ideologies legitimising their ideas and

views through their enmity towards the west (6). When analysing and comparing the article from CNN and the book 'The Boko Haram Reader' by Kassim, there are differences in the way information of the Boko Haram is presented. Overall representation of the Boko Haram remains similar – as a radical group of militants with objectives against the west, but the book provides a more comprehensive explanation into the minds of the insurgents which provides its readers with more information for a clearer understanding of the tension with the insurgency. By doing this the author has succeeded in providing a factual and extensive report whilst also keeping a rightfully biased opinion. The article, although condemning the actions of the Boko Haram, doesn't give enough clarification on the difference between the Boko Haram and other radical organisations, and therefore the readers fail to identify or interpret the crisis without dismissing it as like every other 'event of terrorism' occurring in the world. This reveals that different media sources can portray the insurgency in different ways and although similar representation of the Boko Haram (as toxic and radical) is shared between all forms of media, the understanding of the reader and the view the reader manifests (and the reader's perception of such events), with what information and content has been delivered to them, will always be different to varying degrees.

Representation of Women and the effects of the 'Bring Back Our Girls' Campaign:

Cultural and religious ideologies dominate the lives of both men and women. In such areas like the Global South, it is common for women to spend time tending to their homes whilst the men of the house go out to work. Thus, it is common to see many women not getting the education they need or entering the work force as working women. In recent times, this has changed as the world progresses to give everyone the equal right to both work and receive a complete education. By some, this is seen as the effects of western ideologies that are slowly influencing the Global South, and for radical organisations such as the Boko Haram, it is hard to accept these ideologies which go against their cultural beliefs and faith-based beliefs. The distinctions between the global north and global south can be greatly attributed to the economic development of a country. Unlike the USA (which is part of the global north as a superpower) Nigeria has only begun to improve economically, becoming one of the worlds newly emerging economies. It still faces poverty and decline in many areas which have an impact on the portrayal of development of Nigeria to the international media. Women within northern Nigeria are portrayed as victims who do not have a voice or agency. Whilst this may be true for many, it is important to note that this stereotype doesn't apply to all women of Nigeria and this should be made transparent. Guardian article: 'What would make a woman go back to Boko Haram? Despair' suggests that women are victims to hopelessness and desperation. The article further states that 'In north-eastern Nigeria, the militant group exploits a broken social system. There are lessons here for the rest of the world'. This statement clearly lacks empathy and it is as if the article is putting an example to what the world should not be. It is also clear that the lives of women are

heavily controlled by people with extremist ideologies, for example, in the article a woman was glad to leave the militants 'because she saw that their blind rejection of teaching in English was harming her children' (7).

Another example of media representation of women comes through a title of this book 'Wives, Weapons, Witnesses: Women and the War on Boko Haram' by Hilary Matfess, which similarly detaches empathy from the event or situation being reported. This is because the way language is used within this title only serves to attract attention using alliteration without separating the words from each other. By writing 'Wives, Weapons, Witnesses' together, the title essentially fails to separate these subjects from one another, thus leading to misinterpretation (8). An example of misinterpretation could be that the readers misunderstand that women are the victims and instead believes that these women also have a link to the Boko Haram which can lead to othering them as they may be a threat. Furthermore, many of the other articles present these women as subalterns who do not have their own voice such as the title of this article by the Guardian: 'We are Soldiers! We will save you: How Boko Haram tricked Dapchi schoolgirls.' This article is a clear example of where women are portrayed as helpless and victimised and the title also suggest that they are easily 'tricked' into believing people with radical ideologies. The truth is much more complicated as majority of the time women are forcefully taken, which the article fails to reference (9). Another article: 'Women suicide bomber kill 27 in north east Nigeria' create a more menacing tone where the women become antagonised. Such article denies many women a voice and creates discord between women affected by this crisis and society. There are many women who are in the front lines who are fighting against oppression and the insurgency. One such woman, Aisha Bakari, is known as the Boko Haram Huntress as she catches Boko Haram fighters and searches for missing girls. This is one such example of misrepresentation of all women as victims and as weak or helpless (10).

The 'Bring Back our Girls' campaign was launched shortly after the kidnappings of the Chibok schoolgirls. The aim of the campaign was to raise awareness to the kidnappings of these girls as there were no actions taken by the government or international committee to help find and rescue these girls. 'Bring Back our Girls' attracted lots of media attention with celebrities and other influential people also participating in helping spread the #BringBackOurGirls to help raise awareness. Although the campaign was created to support the rights of these girls and help bring them back, it is debatable whether the campaign was beneficial in fulfilling its goal, or whether it caused more harm than good. The 'Bring Back Our Girls' campaign intended to give underrepresented and affected women a voice and to stand up for their rights, however it also gave the opposition strength as it showed how much the victims meant, and therefore it gave the aggressors something to bargain with or leverage. This also put the victims lives at risk and for those who were returned, they could never resume their lives normally due to being held in captivity to avoid social disruption. Whilst 'Bring Back Our

Girls' went from a media trend to a social movement, it struggles to change the minds of the government and as it received recognition from many high profile individuals (such as Michelle Obama) it has still not succeeded in saving the victims of Boko Haram. And for those who were rescued, it has become harder for them to resume normal lives due to being in government custody.

Effects of Media and Politics on our understanding of the Boko Haram:

Without the international media, it would be more likely that such events would go unnoticed and unannounced. However, foreign media portrayal of the Boko Haram crisis will always differ from domestic media portrayals and this means that what the international audience perceives is not always right. Additionally, other factors that can affect our perception and our understanding of international events and crisis are factors such as development, politics and economy. The world is split into two economic categories, the global north, and the global south, and these categories ultimately influence the way we judge other countries and ethnic groups. The western audience may view such events as the result of corruption due to poverty and decline as what we understand in the west is that we are more economically and socially developed. Whilst we may be developed economically to an extent, because of politics in media we are made to believe that other areas in the world are severely corrupt, when corruption exists everywhere. Government intervention and the restraint of information affects the media and therefore affects the audiences understanding. Orientalism – which is the western domination and influence over an orient through representing it through western thoughts (and in some cases colonialist ideas), often change our understanding of certain cultures and backgrounds. An example of this is how we view the Global south as in decline and backwards (in terms of faith or culture). It is true that areas such as Nigeria still face poverty in the present day, but it is also a fact that Nigeria is one of the fastest growing economies in the world, and whilst some people may view the Boko Haram insurgency as a result of poverty and decline it should be noted that those are not the only reasons for the beginnings of this crisis.

Conclusion:

Overall, when analysing how the crisis is represented using both domestic and international media and the effects of the media on people domestically and internationally, we can understand that media portrayal of the Boko Haram is of radicalism and extremism. Different forms of media portray a similar representation, however the amount of information and the validity and reliability of factual data collected would differ. For example an article from Nigeria on the Boko Haram may be clearer on the effects of Boko Haram within Nigeria, but an international article cannot portray the same meaning and the international audience can only sympathise without understanding the crisis fully. Furthermore, initial stereotypes affect the audience's judgment and examples of stereotypes could be of religious discord (as can be created by many radical 'jihadist' organisations across the world) and this may affect ones judgment on the culture and religion of a vulnerable group of people

based on the actions of extremists like the Boko Haram. In the end, this also affects an individual's right to express themselves, such as the victims of Boko Haram, who to this day can never return back to their normal lives.

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Tutor comment:

I had a great experience teaching at UCL Academy, which also happened to be my first placement with The Brilliant Club. The staff were very friendly and helpful along every step. F.'s final assignment is an excellent and highly impressive piece of work. This is reflective of her participation throughout the course. She always participated with great enthusiasm and has clearly put in a lot of effort into her final assignment. She has produced a final assignment which by any standard, is highly sophisticated, critical, well written, well researched and captures the nuanced complexities of media representations.



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