



Sample Essays

History	2
English	5
Philosophy	9
Politics/Social sciences	14
Life Sciences	17
Physical Sciences	19
Mathematics / Computing	23

History

Who was to blame for the Becket dispute?

The dispute between Thomas Becket and Henry II is one that many historians have different views on. While growing up, Thomas Becket lived a normal life due to the fact that his parents weren't really influential and had no royal or high status. He went to university in Paris and then came back to England and got a job as a banker during his job as a banker he then became Henry's chancellor (a person in charge of the money). This gave Becket a high status and lots of wealth. During the dispute tension built between the two as many people and different factors added to the already building dispute. Many people got involved such as Pope Alexander III, King Louis VII of France and Gilbert Foliot. The main cause of the start of the dispute started when Henry picked Becket to be Archbishop of Canterbury (in 1162). The tension between the two started to rise when in 1163 Becket 'clashed with Henry at Woodstock over the king's proposal that the sheriff's aid, a traditional surcharge to the general land tax (geld), should be diverted from the sheriffs to the royal treasury'¹. This caused tension between the two because 'as chancellor, he would probably have supported' this annoyed Henry as it made him question why would Becket have a change in mind when he would have agreed while he was chancellor. In 1164, Henry gave bishops rules 'Consitution of Clarendon' this angered the bishops because they are supposed to listen to the pope and not Henry (who was the King of England and had no power in church). Becket then 'on the 2 November, crossed the channel in a small boat, landing that afternoon near Dunkirk in the county of Flanders. Becket's first aim was to seek the protection of the King of France'². The King of France (Louis VII) was Henry's biggest rival due to him marrying Louis' ex-wife Eleanor and he also didn't like Louis because of him being one of the most powerful men in Europe making Henry feel threatened. Becket going to him for help angered Henry because he betrayed his friendship by going to speak to his rival. During Becket seek for help in France Henry exiled or murdered Becket's family that lived in England. In 1170 Henry wanted to crown his son Henry III king and in doing Henry picks Archbishop of York to crown his son. This makes Becket angry because the Archbishop of York being his rival. Due to his anger, Becket ex-communicates bishops involved in the coronation of Henry the young king. To try and end the dispute Henry and Becket had many peace meetings and Becket agrees to give all his land and money back to Henry but after this agreement, Henry III refuses to see Becket. This all leads up to Becket's murder. On the day of the murder, Henry II was speaking to 4 knights and sent them to arrest Becket but he refused to go with the knights causing them to kill him 'leapt upon him suddenly and wounded this lamb who was sacrificed to god on the head, cutting off the top of the crown with the sacred unction of the chrism had dedicated to god; and by the same blow he wounded the arm of him who tells this'³. The aftermath of the murder of Becket had many different reactions; Henry II was devastated and he 'For three whole days he remained shut up in his chamber, and would neither take food nor admit anyone to comfort him'⁴. Pope Alexander III was furious he 'broke off talks with English envoys, declined for a week to broach the subject with his advisers, and refused even to speak with an Englishman'⁵. King Louis VIII of France wrote to the pope's man who commits violence against his mother [ie. Holy Church] revolts against humanity'⁶ and he believed Henry should be punished as he believed Henry planned Becket to be assassinated. The murder of Becket was brutal and very bloody. It also is an event that historians have different points of views on

¹ Catherine Healy 'Thomas Becket: Saint or Sinner?', P.20

² Catherine Healy 'Thomas Becket: Saint or Sinner?', P.21

³ Edward Grims Account of Thomas Becket's Murder in Sections from the Sources of History ed. C. Coby (New York 1899) pp.56-57

⁴ Letter from Arnulf of Lisieux TO Pope Alexander III in Letters of Arnulf of Lisieux ed. F. Barlow (London 1939) pp.122.123

⁵ W.L. Warren, Henry II (London 1973) p.519-520, 112-114

⁶ W.L. Warren, Henry II (London 1973) p.519-520, 112-114

and believe different things that happened. This caused the debate of who was to blame for the Dispute between Thomas Becket and King Henry II.

Many historians believe that Thomas Becket is the man to blame for the dispute. One historian Wilfred Lewis Warren believes that 'He[Thomas] was fundamentally a proud, self-centered man'⁷. He believes that 'the destruction of the church's liberty, if not the church itself, was simply Becket's attempt at self-justification after the breach between them'⁸ meaning that he believes that Becket used the destruction of church liberty against Henry blaming it on him when it was actually Becket's actions that caused this to happen. Which then gave Becket an egotistical image and that he only cares about his pride. Another historian Michael Staunton believes the dispute was caused when 'Thomas' establishment as archbishop led to a crisis of unprecedented severity between the crown and the Church of England.'⁹ Staunton believes that the main reason the two had a dispute is because of the connection between the church and the crown: 'Church which had been emerging for a century, but it was driven by the robust personalities of Henry and Thomas Becket.' Henry wanted power over church so he believed that by putting Becket as archbishop he would gain power through him but as Becket's role as archbishop continued he stopped listening to Henry and became attached to the church. This angered Henry making their personalities clash.

Furthermore, Gilbert Foliot (a contemporary source) believes Becket was also to blame for the dispute. During the dispute, the two sent many letters to each other. In these letters that Foliot sent to Becket, he states that 'you single me out for reproof from the whole college of your brothers'¹⁰ this tells us that Becket singled Foliot out from all of the other bishops making him angry. He also states that Becket did this to 'pile shame and disgrace upon me individually, even though it is unjustified' this angered Foliot due to there being no reason for Becket to single him out and go against him. Foliot clearly disliked Becket which can cause the reliability of his sources to be considered unreliable or his opinion on the dispute to be one-sided or biased. The letters could be used to an extent as it is a contemporary source that made while Becket was still alive. The letters are Foliot's opinion on the situation and everyone has their own opinion which means he could change things that happened in between them. Gilbert Foliot's letters can be questioned due to his disliking of Becket. The letters can have some sort of reliability but it depends on how you use and what you're writing about.

On the other hand, some historians believe that Henry was to blame for the dispute. Anne Duggan believes that 'Thomas of London was much more than the shallow and flashy cleric described by some critics'¹¹. This infers that she believes that Thomas was more than the critics described him and that he wasn't an ignorant, self-centred archbishop that many people believe and that the blame shouldn't be put all in him. She also believes the dispute would have proceeded differently if another man was archbishop but it would not have been any better or easier from the view of the English Church. Another contemporary source, Roger of Howden believes Henry also blamed for the dispute. Roger of Howden describes Henry as a tyrant 'For whenever tyrant occupied the kingdom'. He infers that Henry is a tyrant and should not be leading England. He also dislikes Henry as he says 'he drew priests and clerks to secular judgement as if they were no different from the common people'. He doesn't like the fact that Henry treats priests as if they were common people which they are not because they are part of the church making them noble and higher class citizens.

Some historians believe that the church is the reason for the dispute. David Knowles believes that the dispute was caused due to the 'widening rifts in the aims of the two men'¹² this then caused the two

⁷ W.L. Warren, Henry II (London 1973) p.451

⁸ W.L. Warren, Henry II (London 1973) p.448

⁹ Michael Staunton, The lives of Thomas Becket trans. M. Staunton (Manchester 2001)

¹⁰ The Correspondence of Thomas Becket Archbishop of Canterbury 1162-1170 vol. Trans A. Duggan (Oxford 2000) pp.498-537

¹¹ A. Duggan, Thomas Becket (London 2004) p.264

¹² D. Knowles, The Episcopal Colleagues of Archbishop Thomas Becket (Cambridge 1951) p.55

to feel a tension between them as Becket began to stop listening to Henry. While the friendship of the two weakens, it made the king feel humiliated; Knowles quotes that 'the wounded pride of the king turning from affection to bitterness'¹³ which then caused to the king to feel hatred because he believed that Thomas would still stay close friends and listen to what he says while he changes from being his chancellor to archbishop but didn't happen. He also thought that Becket would help him get power over the church but that didn't help as well. This then caused the archbishop to lose all trust and loyalty to the king 'losing all but his deepest affection and loyalty at what to him seemed the self-will and duplicity'¹⁴. It also seemed like the two was having a 'great contest'. Knowles also states 'That the issue was the broader and more essential one of the overall control of the church by secular authority.'¹⁵ meaning that the main issue between the two was control over the church during that period of time.

In conclusion, I believe that Henry was the person to blame for the dispute. I believe that if Henry did not pick Becket to be the Archbishop of Canterbury the problems between the two would have not aroused. The main source of their problems and tension was caused between the church making the church seem like the cause of the dispute. In addition, Henry wanted to have some sort of control over the church; this, of course, goes against church rules as bishops are only allowed to listen to the pope and he also wanted the sheriff's aid money. This is what caused the start of the dispute because Becket did not agree to things Henry wanted as archbishop but would have agreed on a chancellor. Making the main source of the problem Becket being archbishop which would have never happened if Henry did not pick him to be it.

¹³ D.Knowles,The Episcopal Colleagues of Archbishop Thomas Becket(Cambridge 1951)p.55

¹⁴ D.Knowles,The Episcopal Colleagues of Archbishop Thomas Becket(Cambridge 1951)p.55

¹⁵ D.Knowles,The Episcopal Colleagues of Archbishop Thomas Becket(Cambridge 1951)p.55

English

Should Music Lyrics be Classed as Poetry?

On the 13th October 2016, Bob Dylan won the Nobel Prize for Literature. This sparked a debate that has divided esteemed literary figures, authors, poets, critics and the general public alike: should music lyrics be classed as poetry? One argument says if a song sounds and looks like a poem, then surely it should be classed as one? Howard Sounes, author of 'Down the highway: The Life of Bob Dylan', wrote 'regardless of whether it's right to call them poetry, his songs are highly poetic and highly literary - intricate and subtle and clever and funny and profound and sad: everything you can want writing to be. There's no one who deserves the Nobel Prize more.' Others say a song is a separate artform to a poem, and so should not be classed as poetry. Oxford English Dictionary defines poetry as 'literary work in which the expression of feelings and ideas is given intensity by the use of distinctive style and rhythm'. [1] Given this definition, should it not follow that music lyrics should be classed as poetry? For music lyrics are an 'expression of feelings' and hold a 'distinctive style and rhythm'. However, this is not what the general understanding of poetry is. Poetry is not read with music to accompany, and is often perceived as being more 'high culture' and better quality.

In my opinion, if we were to judge music lyrics by our current perception of poetry, then they couldn't be classed as poetry. However, we should change and broaden our current perception of poetry to include music lyrics, as music lyrics hold the same fundamental values that a poem does. If we embraced music lyrics as poetry, we would not be 'dumbing down' our understanding of literature, just appreciating a different type of poetry. Poetry should be classed as an expression of conveyed emotion or story through versed words, and shouldn't have so many 'rules' as to what poetry can and cannot do. At the very least, music lyrics should be classed as literature, just as Dylan's work has been, since he has been given the Nobel Prize for literature.

The lyrics I will be analysing are 'Lucy in the Sky with Diamonds' ('Lucy') by the Beatles and 'Bohemian Rhapsody' by Queen. These songs show the relationship between music lyrics and poetry. 'Lucy' uses language and imagery to convey meaning and 'Bohemian Rhapsody' is an example of a song which needs music to be understood. I will use these songs to illustrate my point that music lyrics currently cannot be classed as poetry, but should be, and for that to happen, our perception of what poetry means needs to change.

'Lucy' is a song by the Beatles, which could be interpreted as being about LSD hallucinations, like many other poems. 'Everyone smiles as you drift past the flowers, That grow so incredibly high.' is a line about a hallucination as flowers can never grow so tall that they are taller than you. The word 'drift' suggests the girl having the hallucinations is just drifting through life. This is reflective of a child's life; everything is simple, child-like and sunny. Everyone smiles down at her and sees what is happening. She cannot see the damage the drugs are doing to her because she's always trapped in her dream-like state. Additionally, the flowers growing 'so incredibly high' is a reference to drugs, and the high state she is in. The fact they are high up, and so hard to reach, could represent how much she is sacrificing in her own life just to reach those flowers- perhaps her friends and family. Finally, the song title's capitalised words spells out LSD- yet more evidence the song is about hallucinations.

'Lucy' manipulates language using imagery and metaphors (just like poetry) to give the listener an almost tangible image of what the girl sees. 'Lucy' connects two images the listener is familiar with and puts them together in an original, surprising way to create images that seem imaginary and fantastical. The listener can clearly imagine and almost see this larger-than-life world through the girl's eyes. [2]

The skies are described as 'marmalade' which conveys the exuberant orange colour of the sky. The listener is familiar with both marmalade and skies, and understands the image. Similarly, the girl is described as having 'kaleidoscope eyes' - the listener can imagine swirling kaleidoscope colours in the girl's eyes. Finally, 'cellophane flowers' are said to be growing and 'towering over [her] head'. Cellophane flowers do not exist, cannot grow and couldn't grow tall enough to tower over you. This is a link to the hallucinations the girl is having and the fake world she is in- and yet the listener can clearly imagine this world. Another point is the flowers are made of cellophane; a thin, flimsy, transparent material. There is juxtaposition here as the flowers seem bright and colourful- yet transparent at the same time. This implies the world she is in is from her imagination as nothing is how it should be. Also, cellophane is flimsy and fragile, showing how fake and fragile her dream-world is.

Language has been used here to create a vivid image in the listener's head. The same can be said for poet Billy Collins in his poem 'Going for a walk as the drugs kicked in'. He describes an 'Otter [which is] looking out his window'. Here two normal images (otters and windows) have been brought together to create a ludicrous image, showing anything can happen in Collins' drug- induced world. Later, he describes a 'fruit tree [which starts] to sing'. Here, again, are two images the reader is familiar with (fruit trees and singing) brought together to create a fantastical image. Like 'Lucy', this poem manipulates language to convey meaning, and shows why music lyrics should be classed as poetry.

The lyrics to 'Lucy' can stand by themselves. However, the music in 'Lucy' adds an element which is lost when the lyrics and music are separated. The rhythm in the verses are in a $\frac{3}{4}$ meter (like a waltz) which gives a lilting ('da-da-da') pattern to the words in the verses. This sounds as if the syllables in each lines are in threes, with the first syllable being stressed. For example- 'FOL-low her | DOWN to a | BRIDGE by a | FOUNT-ain where' . This pattern is called a dactyl in poetry showing how poetic techniques are often used in music lyrics. [2] This dactylic nature creates a drifting feeling- much like the girl in the boat. Or it could mimic the repetitive nature of her life due her addiction to drugs. With this slow beat, the listener feels relaxed and the imagery is allowed to sink in. The chorus has a much faster, up to speed feel and is written in $\frac{4}{4}$ meter. This could reflect the rest of the world looking at this girl (Lucy) and seeing her from their perspective; seeing her as 'Lucy in the Sky with Diamonds'.

The current perception of poetry does not allow lyrics with music to be classed as poetry. However, 'Bohemian Rhapsody' is a prime example of a song where the lyrics and the music work together to create a poem. The song can be understood as a simple lyric on a page, but all the emotion of the performance is lost. Oxford English Dictionary's definition of poetry suggests 'Bohemian Rhapsody' should be classed as a poem. The music in Bohemian Rhapsody adds a 'distinctive style and rhythm' due to the operatic nature of the performance and music. Specifically, in the song there is a section which sounds like an argument:

'(Let me go) Will not let you go

(Let me go) Will not let you go

(Let me go) Ah, no, no, no, no, no, no, no'

These lyrics read on a page do not hold the same weight as when performed. When performed, the drama of the argumentative section is showcased, and it sounds like a difficult struggle between two parties due to the changes in pitch. 'Let me go' is sung higher, and the bell effect is used, making the person singing it sound more desperate. In contrast, the 'Will not let you go' is sung at a much lower pitch and conveys to the listener the people singing this line have more power and control as they sound much more powerful, deep and commanding. Also, when performed, each of the 'no's are emphasised with a variation in pitch, going high, then low, then higher, and building

up to a climatic high pitched note. A cymbal crash emphasises each of the 'no's; showing the conviction of the party singing the 'no's and how much they do not want the other person to go. When read, this inference is lost as it is up to the reader how to interpret the words. For example, the reader could read the 'no's as reluctant and as if the person is going to give in, whereas, with the musical and operatic accompaniment, it is evident that the party is getting more and more determined as they go on. This essential difference is lost when the music lyric is stripped of its music and performance.

So with the current perception of poetry, 'Bohemian Rhapsody' cannot be classed as poetry because it isn't as good quality without music accompaniment. Simon Armitage said 'take the music away and what you're left with is often an awkward piece of creative writing full of lumpy syllables, cheesy rhymes, exhausted cliches and mixed metaphors.' [3] However, Bohemian Rhapsody should still be classed as poetry as it is an expression of emotions or a story to the listener. It does have a 'distinctive style and rhythm', and tells a story, just like poetry. The only difference is it relies on music to be fully understood. In my opinion, it would be a shame for 'Bohemian Rhapsody' to not be considered poetry, or at least literature, as it is still a literary work and the writers, Queen, considered the same things poets consider when writing - if not more as they were writing music as well.

Music lyrics should be classed as poetry because they are incredibly similar. The main, obvious difference between them is music lyrics are performed, often to music, whereas poetry is generally read. But can't something similar be said of poetry? Some poems are written with the intention to be performed; performance poetry. For example, Shakespeare is an acclaimed poet, and his work is perceived to be poetry. However, his poetry was made to be performed on the big stage, and to cause a reaction to people and tell a story. The cast were the only people who were intended to read it - as part of their scripts. So, it stands to reason Shakespeare wrote performance poetry. A famous work of Shakespeare's was the witches spell from Macbeth. When performed, this poem almost resembles a music lyric; the poem has a refrain ('Double, double toil and trouble; fire burn and cauldron bubble') and is often chanted or even drummed out. It also uses variations in pitch and dynamics to make it more dramatic; exactly how a music lyric would. So if a poem can become a music lyric, it makes sense that music lyrics can become poems.

The debate as to whether music lyrics should be classed as poetry is far from clear cut, with the two forms having key differences. Perhaps, we shouldn't try to force music lyrics into the traditional view of poetry as there are too many key differences to do so. However, we should broaden our perception on what we believe poetry to mean; then music lyrics should fall under the category 'poetry'. Poetry should be about a message, an idea or an emotion that is being carried to the reader or listener through the medium of words set out to a distinctive rhythm and form written in a verse-like fashion. Poetry and music lyrics hold many similar elements such as holding a 'distinctive style and rhythm', conveying emotion and a story through manipulation of language. As 'Bohemian Rhapsody' shows, some music lyrics rely on musical accompaniment to be fully understood whereas others, possess a lyrical style that is more similar to the traditional understanding of what poetry means. Either way, Bohemian Rhapsody is expressing an emotion and a story through versed words, and so should be classed as poetry. For the same reason, 'Lucy' should also be classed as a poem. If we embraced and appreciated music lyrics as poetry, we would not be 'dumbing down' our sense of literature, and making it more 'low culture', we would merely be expanding and opening our minds to a different type of poetry: a type of poetry which deserves recognition and, arguably, is an underappreciated area of literature.

References:

[1] <https://en.oxforddictionaries.com/definition/poetry>

[2] Lucy in the Sky with Diamonds Songwriting <https://www.shmoop.com/lucy-in-the-sky/songwriting.html>

[3] Can song lyrics ever be poetry?

<https://www.bbc.co.uk/news/magazine-37637797>

Philosophy

Justifying punishment: Retribution, Consequentialism or a compromise?

Abstract

This question ultimately considers whether certain punishment theories are morally justified and which theories are most effective in achieving their purpose regarding crime. Personally, I believe that consequentialist punishments provide the most benefits overall, and its concept morally justifies punishment through its ability to improve and develop society. However, I believe that the choice of punishment should be applied and determined according to the specific crime committed. Throughout this essay, both main theories of morality (deontology and utilitarianism) will be considered and the punishment concepts they link to. Both retribution and consequentialist punishments have different aims and achieve different results for victims, offenders and society as a whole; after taking into consideration all of the impacts the punishments cause, I will explore whether any of the punishments included are morally acceptable and which theory, overall, is the most effective in justifying sanctions.

Introduction

There are two main types of normative moral theories (teleological and deontological) which are used as a method to assess and decide why actions are right or wrong. These concepts provide explanations for completing a certain action and can provide reasoning for why a certain type of behaviour can be considered morally correct/incorrect. Both theories help to justify actions and, in this case, may justify punishment depending on the crime being committed. By justifying punishment, we can consider which methods of punishment are more effective and which are morally acceptable for society.

One of these types of normative moral theories is known as teleological, whereby moral judgements are concerned with the impact an act has or can result in. The consequences of certain behaviour are here used to determine the rightness/wrongness of an act; this teleological concept considers the overall outcome achieved in different situations or the amount of happiness it causes. An example of a teleological theory would be consequentialist or utilitarianism. John Stuart Mill, who advocated and supported this principle, stated that 'Utility or the Greatest Happiness Principle, holds that actions are right in proportion as they tend to promote happiness, wrong as they tend to promote the reverse of happiness' (Utilitarianism 1863, chapter 2). This consequentialist theory can be associated with moral hedonism – the concept whereby acts are only morally justified if they result in pleasure, rather than pain. For example, an act where one person is murdered can automatically be considered better than an act where four people are killed due to the first act having less drastic consequences – neither act may be considered morally correct, however, a consequentialist would believe that the action with the least amount of negative consequences would be more acceptable.

In addition, there are many theories justifying punishment, however, there are four main concepts which are related to utilitarianism and its consequence-based judgements. Deterrence, the idea that society may reduce its crime rates as a result of being scared/ warned, is one theory which considers the effect of crime on society. This links to consequentialism as it is a method to prevent people from committing a crime by informing society about the sanctions/punishments their actions could result in. This theory aims to encourage people to avoid committing offences before they make immoral choices. Another theory, which benefits society, is incapacitation and societal protection which links to utilitarianism due to its focus on protecting the community from a harmful offender. For example, prison sentences protect the rest of society and they reduce or eliminate the possibility of a criminal re-offending. Furthermore, consequentialism can also be linked to rehabilitation and restoration.

Although these forms of punishment justification do not specifically focus on society, they consider the support a criminal needs in order to reduce the chance of them committing a crime again. This essentially reduces crime rates and also helps individuals receive the personal help they require to alter and improve their behaviour or attitude.

Another type of normative moral theory is known as deontology which is based on a concept opposing consequentialism/utilitarianism. Deontology focuses on pure reason (moral rationalism) and motive behind committing a crime/act, rather than the consequences of an act. Immanuel Kant, a philosopher, created a theory whereby actions can only be considered correct if they conform to rules, particularly the categorical imperative, no matter what the consequences or situation is. The categorical imperative is an example of a deontological theory of normative morality as it states that society should 'act only according to that maxim by which you can also will that it would become a universal law' (Groundwork of the Metaphysics of Morals). Kant here suggests that morality is based on our rational judgement – if an act is considered correct, we should wish for it to become a law for everyone in society to follow. Deontology here promotes the idea that we should not act in any way which we would consider wrong for someone else to do in similar circumstances; our behaviour should reflect and represent our moral rules and standards, rather than our beliefs about whether the consequences of an act are positive/negative.

Deontology links to one main aim of justifying punishment which is known as retribution. Retributive justice is the theory that justice can only be achieved by offenders 'paying the price' for their acts. The aim here is for wrongdoers to experience suffering which is exactly equal to how they treated their victim; retribution here balances any advantages offenders gain after committing a crime. This form of punishment is considered deontological as it refers to the individual who has committed an immoral act, rather than thinking about the consequences for society and an overall solution to the problem of crime. Retribution offers a more personal form of justice for those affected by the crime, such as the victim and their family.

Both consequentialism and deontology have different aims and reasons for justifying punishment. While retribution aims to provide direct justice for a victim, consequentialist methods, such as societal incapacitation, benefit society by protecting them and by aiming to reduce crime overall – as discussed previously; this is achieved as a result of rehabilitation and restoration methods for criminals. One common controversial argument, which arises as a result of these two opposing theories, is the question of whether teleological or deontological concepts are more effective in achieving the aims of punishment and which form is more morally justified.

Discussion

In order to understand whether punishment is justified, we must consider whether it is morally acceptable for society. We must also consider which form of punishment is more effective in achieving its aims. For example, one main aim of punishment is to achieve justice and many people adopt the view that justice can only be achieved by retribution as it provides direct justice for a victim/those who were initially affected by a crime.

Whilst this deontological theory of punishment provides a direct and personal form of justice, it does not consider the overall benefit for society. Retribution focuses on an 'eye for an eye' principle (Lex Talionis) where people 'get what they deserve'. Here, retribution aims to unbalance any advantages gained by an offender and offers victims a sense of equality as they are not the only ones who have experienced pain and/or suffering. Immanuel Kant supports this principle of equality; when this principle is followed, 'the pointer of the scale of justice is made to incline no more to one side than the other' (104). In order to balance the scales, after a crime has been committed, it is considered necessary to inflict sanctions on an offender depending on what they 'deserve'. Many people would

here question what specifically an offender deserves. Some people follow the 'eye for an eye' law mentioned above and would believe that criminals should receive exactly the same treatment which the victim received. JS Mill (1868/2001) argued that society's view on justice is determined by the idea of 'just deserts' and that it is natural to want to hurt those who hurt others. This is because we hold instincts of self defence and sympathy. Mill states that 'the general feeling of satisfaction evinced bears witness how natural is the sentiment to which this repayment in kind is acceptable.' For example, let's take a scenario including a man who, in self defence, killed another individual to save his own child. In this case, the man is now to be given consequences for his actions; many problems arise from this situation. Retribution, in this case, would mean that the man is killed for his actions regardless of the situation. Here, we could question whether this punishment has any moral and useful benefits.

After punishing this particular individual by death, is justice actually achieved? The members of the victim's family and the victim's friends may feel a sense of equality and fairness as the offender was punished, but this is only temporary. Therefore, is retribution here used as a form of revenge for the close relatives of the victim? Apart from this temporary malicious satisfaction, nothing else beneficial is caused which ultimately means crime rates have not been reduced and punishment has only been used for the direct benefit of a few people. In my opinion, this makes this form of punishment worthless and immoral as it does not reflect good standards of morality. For example, forgiveness, an act promoted globally by many faiths and religions, is completely avoided during this method of punishment. Moreover, a sense of hypocrisy can arise from these acts as the government willingly place sanctions upon offenders when they ask of their citizens to act morally and with kindness. Consequently, retribution not only promotes immorality, but it also contradicts the idea of achieving justice instead of only satisfaction. Personally, the main idea of punishment is to reduce crime rates as it is essentially used as a way to prevent others from committing crime. Retribution does not achieve this and, overall, is not effective.

On the other hand, there are many consequentialist punishments which will ensure and aim to achieve lower crime rates. For example, deterrence is a result of punishment which prevents others from committing a crime and from criminals re-offending. This causes crime rates to decrease after society is warned about the potential punishments they will receive if they complete immoral acts. The philosopher Paul Ree (1875) advocated this particular argument and believed that punishments were used not as retribution for misbehaviour but to prevent its return in the future. Without deterrence, society would be lead into a state of anarchy in which 'each person would snatch out as much property of others as could be acquired by forced, without concern for their happiness or indeed life' (pp110). Therefore, deterrence allows society to maintain a sense of peace, safety and justice. Also, crime rates would not be reduced if people were not aware of the sanctions they would face, after committing a crime, because they would believe they are justified in their actions.

Another way in which crime is reduced by consequentialism is incapacitation and societal protection. This form of punishment refers to a criminal being separated from society in order to protect the community as it eliminates the chance that a criminal can harm others. An example of this would be prison sentences where many are sentenced to living in isolation, away from society. Many people, such as Stanton E., believe that prisons can be considered as 'schools for crime' or 'breeding grounds of crime'. He stated that 'the central idea is that incarcerating offenders makes them worse because they learn new "tricks of the trade"'. This is due to the fact that the criminals will be amongst other offenders causing them to become 'even more corrupt or violent'. (Psychology Today) However, I disagree due to the rehabilitation and restoration support services available currently within prisons.

Rehabilitation and restoration focuses on the aim of teaching offenders how to make the distinction between right and wrong. By altering their original perspective, criminals change and become better

people as they have been detached from their original motives. Therefore, societal protection is still achieved while criminals themselves change and then set an example to the rest of society which can be effective as a result of their own experiences. We see the advantages of consequentialist punishment through its ability to improve not only society, but also the morality of the offender. These punishments successfully reduce crime and also protect society which morally justifies its purpose.

In comparison to retribution, consequentialist punishment is more morally justified as it allows sanctions to only be given for the benefit of the majority rather than the minority. This is seen as retribution only provides a sense of temporary satisfaction to a certain few who seek revenge or equality, whereas, consequentialist methods provide larger benefits overall. Moreover, consequentialist punishments are here given with good intentions and for the greater good; I believe retribution does not live up to these standards and does not have effective or moral results. Temporary satisfaction, which lies within retribution, does not reflect moral standards and promotes the opposite of how we should act/ behave towards others.

Some may argue that instead of focussing purely on utilitarianism or retribution, we should combine both to reach a conclusion of how we can morally justify punishment using both concepts. In my opinion, motive is a very important aspect of crime as it ultimately causes an individual to commit an illegal act. The mental state and background of the offender, particularly their current situation in life, is also very necessary to consider as it has a huge effect on one's actions. Therefore, I believe people should be punished according to their motive and reasoning behind their actions. This compromise would allow people to understand the truth and reality of crime and would be a much more fair interpretation of the reason why someone would choose to complete such actions. However, this compromise could be biased as it is based purely on judgement. In this case, there are no particular rules to conform to in order to come to a conclusion about the punishment criminals may receive. This could essentially be unfair on certain individuals as the amount of sympathy they are given, when deciding their punishment, alters according to the judge and their personal beliefs or morals.

Conclusion

In conclusion, I believe consequentialist methods of punishment have aims which achieve greater results and provide an overall improvement to society. They support criminals and allow them to have the chance to change and alter their views in order to become better people. Essentially, this reduces crime which benefits society and protects the community from further re-offences and harmful crime. In addition to this, consequentialism is morally justified in its punishments as its aims are for the greater good; this supports society and the government as it promotes values such as forgiveness, peace and justice. In contrast to this, retribution focuses purely on victims receiving direct justice through the form of temporary satisfaction and equality. However, it does not achieve anything beneficial further than this initial sense of fairness as crime is not reduced and only a sense of hypocrisy is developed. I believe it is the job of the government and society to be role models to future generations and emphasize the hypocrisy within retributive justice; we should be promoting punishment only for respect, peace, safety and crime reduction. Therefore, it does not promote moral standards as the government do not allow for peace, forgiveness or change to occur. I also believe the compromise of focusing on one's motive, background and mental state is not as effective compared to consequentialist punishment as it does not conform to rules, making it unfair or unequal on certain individuals. Whereas, consequentialist punishments result in, and achieve justice, through fair aims and methods. A Utilitarian would promote these forms of punishment due to the results and pure motive behind them as they are essentially completed for the greater good.

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Politics/Social sciences

"Given the current political and social context in the UK, do you think it is a good time to stand up for human rights? Do you think human rights still matter today?"

Human rights are there to ensure that chaos does not ruin the strong and stable foundation that society relies on. Human rights keep us safe and, most of the time, alive. We depend on them for our lives to have structure and be fair. Many rights are being challenged with Brexit leaving us teetering on the edge of possible chaos. If no deal is made, we will not get a transition period, in which we can agree new trading with countries, such as India, in order to maintain a steady supply of food etcetera. If there is no Brexit deal, then rights such as the right to nourishment (under the right to adequate living standards) will be challenged. Most of our food comes from EU countries.

Firstly, article one is the second most important right; that would be the right to equality. Equality means that all races, nationalities and religions are respected. If we did not treat each other equally, everyone would always be arguing over beliefs and individual views of the world around us and we would always be fighting. Men and women as it is do not always get perfectly equal wages, and often we can do those jobs just as well or better. This is one of the problems with article one as has not been fully resolved yet. Another is how LGBTQ people are treated differently to others who are not part of the abbreviation. Up to 43% of LGBTQ employees say that they've experienced discrimination in the workplace because of their sexual preferences, even though one quarter of them haven't made their sexual preferences known. Finally, some people are being murdered for their beliefs or their race; a lot are young adults, about sixteen or seventeen years old. The world would be extremely racist, sexist and generally cruel. This right matters and should be fought for because otherwise there would be mass discrimination, which would ruin the UK's relationship with other countries and thus ruin trade, travel and we would no longer be as diverse.

This brings me onto article two the right to have freedom from discrimination. Discrimination is treating someone differently, usually worse, than others because they are different. Brexit has caused racism to become more frequent, which leaves innocents at danger of being attacked or even murdered. Xenophobia is the fear of anything classed as foreign or strange in the person's own opinion and this fear is clawing its way into the minds of many around the UK. Tensions are very high, especially surrounding Muslims and others who have come from the Middle-East, even if they are born in Europe or any other places that are considered "safe", which is a small number due to the swiftly rising tensions; with both Brexit and terrorist attacks going on. There were 47,571 cases of hate crime in between 2013 and 2014, 37,484 of these were recorded as race related and 2,273 as religion related. In history people of different races have always been treated as lesser than us; until today's generation, who care for them and do not understand all the racist terminology used only about one hundred years ago. Some of these words and phrases may still be used by grandparents and some older adults and the younger generation fortunately do not understand, this does however mean that the younger generation cannot tell them to stop saying those particular words. We should still stand up for our rights, especially Articles one and two, as they are incredibly important in maintaining the balance of a safe, stable society. These rights truly matter as they maintain the balance of society.

Linked with this is article eighteen, the freedom of religion and belief. This right allows us to believe what we want if it so pleases us, it also allows people from different countries to come and not have to change what they believe to suit us. This allows us to have a very diverse country, one of the most diverse in the world. This diversity creates a lot of problems, especially with Brexit around the corner, as xenophobes and people who are generally racist target the vulnerable. This right was originally made to help all people live in peace and harmony. These three rights; the right to equality,

freedom from discrimination and the freedom to choose which religions and beliefs we endorse ourselves in; are all very important and their bounds and restrictions are truly being tested in the recent troubles. They are still worth fighting for and maintaining, for the good of the present and future. They are connected and similar, but also different, like the people that made them. The way these rights are policed and monitored is hopefully the only issue we will have as the coming days pass. This right should be protected because of its role in keeping the different people in society happy and because of its role in keeping schools diverse, this means that, from a young age, children understand more. It matters that young children's minds' are taught to understand difference as good from a young age.

Another important right is article nineteen, the freedom of opinion and information. This means people can feel free to voice their beliefs, their thoughts and the press can share stories on people with power, even if they are controversial or supposed to be secrets. People who are religious or have certain beliefs can share stories and information about their religion but can not force their traditions on others. This right means that people can say basically whatever they want, but they will most likely face consequences if they say something very offensive. They will not be arrested but they can still get punished by another person, like a slap across the face or reprimanded with words. We have the right to protest and march against certain occurrences if we feel the need to, when we strongly disagree. Across the past few years there have been several and there will be more as we live the EU. There have been gay rights marches and racial marches, in the future we may see marches for the right to an easy way out, mostly known as euthanasia. The press can publish stories, sometimes without permission, even if the stories are indiscreet, inappropriate or are disgustingly horrid. These rights should be protected and fought for because they are important for our mental health and it keeps us informed in several ways; how others feel about us and what is going on in the world around us. However, this right allows people to say the rudest things to foreigners, at the moment it mostly seems to be Muslims as they are collectively being blamed as part of terrorism.

Something less related would be article twenty-four, the right to rest and leisure (relaxation). With everything we are being put through in the wake of Brexit, we cannot relax and have a break. We have all heard that word so many times it echoes around in our brains. Mental illness is primarily caused by stress, especially anxiety and depression, which makes people unstable and possibly violent. This right matters because if people are well rested and relaxed, they work more efficiently and can concentrate on what matters, not stressing over Brexit.

Article thirteen, the right to free movement may be greatly impacted by Brexit. It just depends on where it goes in the next three months. UK people living elsewhere in Europe would be allowed to stay there and would be allowed in and out of our country. EU people living in this country would also be allowed to stay and move out of the country. The rules will be much stricter regarding moving after Brexit happens. Security will be much tighter, the guards at customs will be given more power to pull anyone to the side for a search if they look a little off. To go anywhere in the EU after Brexit, would require a visa. Also, the right to asylum in other countries from prosecution, article fourteen, may suffer under these new rules. As the rules get tighter, it may be that the person trying to go to another country is stopped, checked and their visa is cancelled because they are a criminal. These rights are well enforced but are being challenged in recent events. Also, part of the original promise in Brexit was that foreigners would no longer be allowed into this country, unless they were considered worthwhile. These rights matter because we should be allowed to travel where we want, Brexit is just making things a little difficult.

The most important right is article three, the right to life, liberty and personal security. Everyday some horrid, cruel person considers killing and they do it for fun or because they think it is right. With the stress caused by Brexit and the terror attacks that have been going on, the number of murders is

undoubtedly rising, almost undoubtedly caused by racism. Hate crime is on a swift rise. Liberty is the state of being free from oppression or intimidation. It allows us to act as we please, to an extent of course. Some people are having this right taken away from them as criminal gangs roam in areas that are particularly vulnerable. These people are having both their right to liberty and their right to personal security taken away from them, as people who think themselves to be stronger bear down on them. This right is so important, everyone deserves to live and to be free to do what they want with their life. This right is really worth fighting for as it is so important, if we did not deserve to live, we would not be developing the world to suit us and all our equally deserving future generations. This right matters because people should not be ruled over by a gang of fools who think they are big and powerful, when they really are not in the slightest.

Finally, article five, the right to be free from torture and free from degrading treatment. This right is being tested by Brexit as we all are stressing over it and just want it to be over. They now have extended the wait a further three months, this is torturing us, on a metaphorical level of course, but mental and emotional torture is just as bad as physical torture. As for degrading treatment, also known as inhuman treatment, there has been an increase in the mistreatment of foreigners. An increase to the point it is literally happening all over the country and can be seen openly in public places. This right is important because no one deserves to be tortured or mistreated. Treat everyone how you wish to be treated and we all will be happy. This right matters in terms of how people are psychologically tortured today, which is extremely vile and is equally as bad, if not worse, than physical torture. In physical torture, there is a possibility of a quick and easy death.

To conclude, I believe that despite all that is going on in society at the moment, human rights are still worth fighting for and should be treated with utmost respect. There should be no bending of the rules, only following them to the letter. Those people who are cruel, xenophobes and murderers, should learn to live with different races and respect the differences, or else they are dealt with appropriately. Our rights still matter, nothing should get in the way or challenge them as they are set in stone and cannot be erased. Brexit is not something that should be able to destabilise the foundation we have built, with rights and rules, for society. For as long as this nation remains, so shall the rights and they can only be built upon. I also believe that once we leave the EU, we may be able to introduce euthanasia as a right, those who do not wish to suffer as they slowly die should have an easy way out, it is a lot less painful.

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Life Sciences

Why don't some drugs make good medicines?

Part A

Distaval formerly known as thalidomide has been withdrawn from the drug market due to it causing birth defects. These defects are having shorter arms or legs and possibly not having any arms or legs at all. When a pregnant woman takes Distaval for her morning sickness it affects the baby growing inside of her which therefore causes this malfunction.⁴

Thalidomide is known to treat anxiety, insomnia, leprosy and certain cancers so it was proved to be a good drug by the Chemie Grünenthal² (the developers) and many other institutes. But it got claimed that the drug was ideal for pregnant women going through morning sickness and this claim wasn't even tested to make sure it was safe. Although the mother would be fine taking thalidomide during her pregnancy, her child would shock her and the doctors around her.¹

It causes the most damage to the child during the first few months of pregnancy³ where even the smallest amount of taking this drug could affect the rest of the child's life. This is because in the 1950s, scientists believed that a baby would be protected from harmful substances and drugs as the placenta was there around it and not let anything enter it. But they were wrong, and this resulted in many other tests being conducted to find that it couldn't protect the baby from these things.³

The children affected by thalidomide are now living their lives as normally as possible, but some find everyday tasks challenging.¹

Scientists are also finding alternatives to thalidomide because many people depend on it whether it's to relieve pain, get rid of symptoms or to help with their sleeping. The closest alternative to the sleeping element would be the sleeping pill zopiclone but it has other problems and isn't too like thalidomide.

Part B

X- phthalimidoglutarimide (thalidomide) was released in 1950 and was said to be harmless drug due to it having good test results at the trials that were given. It could be overdosed on and have no effects. It was used for insomnia then later for anxiety, leprosy⁸, myeloma, certain cancers and morning sickness.⁴ It was widely prescribed for minor things. It blocks inflammatory mediators in the body to help heal symptoms from other diseases such as ulcers. Thalidomide also proved to be antiangiogenic (stopping tumours growing and blocking the blood supply from them).³

Pregnant women who took thalidomide took it to get rid of their morning sickness symptoms and it worked. No one ever thought that anything bad would happen as everything was going so well. As soon as the baby was born, doctors could see huge differences in them and to a healthy child. The femora and radil (top part of your arm and top part of leg) bones of the child wouldn't grow or in worse cases wouldn't even be there. Doctors around the world were seeing similar effects in over 40 countries¹ on new born babies but couldn't work out what happened. Only half of the thalidomide children survived after the first month.¹ That was until William McBride in April 1967, an Australian doctor, saw the patterns and worked out that it was the thalidomide that caused these defects in babies.^{1,4} Until then, scientists believed that the placenta protected the baby from drugs or substances, but they later found that whatever the mother consumed the baby would have to receive as well and must suffer the effects of it.³

Thalidomide causes damage to the embryo mostly during the first few months of pregnancy and this is when, on average, morning sickness is at its worst. This is when the placenta is at its most sensitive which means that even with the smallest doses of thalidomide the baby could still be affected. Some of the effects were found to be the same as some existing conditions such as facial dysplasia, Duane syndrome (difficulty to move their eyes towards the nose and towards the ears) and autism.²

Thalidomide was trialled by the German company Chemie Grünenthal in 1953² but during the trials, they didn't do tests in animals first before claiming it to be healthy for pregnant women, so they hadn't done the tests properly.¹ After it had been discovered that it had such effects, scientists soon tested the drug on rats to look for further effects.

There were other side effects too that weren't just for pregnant women. The effects were constipation, neuropathy (tingling in fingers and toes), shooting pains and in some cases could have a reduced effect and the doses that people would normally take would have to be reduced or not taken altogether.¹

After it got withdrawn, there were still several conditions that thalidomide could reduce or eradicate symptoms of so it was still used but if a woman would need to take it for whatever reason, she would have to take at least two forms of contraception and sign a 'contract' in agreement to do this.^{1,3}

Due to thalidomide being withdrawn, valgrine, asmaval and tesival also got withdrawn.³ Research got conducted, though, and it was found that if you took out an oxygen atom and replaced it with nitrogen and placed it very accurately, the drug got a higher activity.¹ This new drug was more effective than what it was before and showed to not cause any birth defects. In the tests conducted, it also showed to not give the side effects of thalidomide. It took ten years to find this analogue of thalidomide and has proved effective so far.¹

Overall, we have learnt to test drugs in most possible scenarios in order to release a drug that's safe and to teach people not to share medicines because something that works for you might not work for them.

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Physical Sciences

Case Study: I am a mother to a 4-year-old child. My child has been having recurring pain in their abdomen. We went to the doctors and our GP has referred my child for an MRI scan at a nearby hospital.

I do not know much about MRI, and I am concerned about my child having this scan. How does MRI work and is it safe? Are there any other options? What will show up on this scan? Should I be worried?

Based on your knowledge from this course and your own wider research write a formal essay evaluating the use of MRI in current medical practise referring to the case above.

When deciding if you want your child to have an MRI (Magnetic Resonance Imaging) there are many factors you need to take into consideration. During this essay the points displayed would help you decide whether an MRI is what your child needs. It will also show the positives and negatives of your child having an MRI also clearly showing you the possible risks you may face during the treatment.

An MRI scanner uses powerful magnets to produce images allowing doctors to see your organs and brain aiding them with the diagnosis of any issues. MRI allows the doctors to look at any problems and identify the correct treatment to correct them. Following the procedure, the doctors review the image looking out especially for any necrosis (dead flesh that can not be saved) and how far it has spread. There are two types of tumours; benign and malignant. A benign tumour is not cancerous, grows slowly and does not spread throughout the body. On the other hand, malignant tumours are cancerous, can grow and spread very quickly. In this scenario, time is of the essence as the tumour could prove to be fatal.

An MRI works based on the many billions of atoms in your body (7×10^{27}). These atoms spin randomly (Brownian motion) within your body. The doctors apply a large external magnetic field (b_0) which causes the hydrogen atoms to either point towards the foot or the head of the person that is in the MRI scanner. Approximately half of the atoms point to the head and the other half point to the feet although a small number will point in the opposite direction. To correct this, the doctor applies a radio frequency pulse which will force the unequal atoms to turn 180 degrees making them face the same way as its neighbours. The radio frequency pulse is then turned off causing the atoms to flip back to their original state. This movement creates an energy which is captured by a computer to which a mathematical formula (a Fourier Transform) is applied which converts the signal to an image .

Sometimes, to make the images obtained clearer, your child may be given a contrast agent (gadolinium). This is administered via an injection resulting in clearer images to help prevent any misdiagnosis and accurately identify any necrosis. However, there are many potential side effects from gadolinium. The most common of these are; nausea, vomiting, headaches, rashes and itching. These are not serious and can appear from the following day and may take as long as 6 months to appear, although the likelihood of these side effects occurring is less than 2% . However, if your child has an impaired kidney function they can get a potentially fatal disease known as Nephrogenic Systemic Fibrosis. This causes tight swelling to your body and sometimes even the organs which stops them from working properly. Prior to the MRI your child's kidney function will be tested to ensure they will not be affected.

Another type of MRI scan you could have is called DWI (Diffusion Weighted Imaging) which looks at how water flows around the body, looking to see if anything is restricting the water from flowing freely. This type of scan does not use contrast agents. An ADC (Apparent Diffusion Coefficient) map can be made, allowing you a more accurate image of how the water flows. On an ADC map, freely moving water appears bright on the image and a restricted water flow appears dark. Freely moving water has a high ADC value and more restricted water has a low ADC value. If there is any sort of necrotic tissue (dead cells), water would be freely flowing due to the fact there is no tissue to slow it down. When there is a large amount of necrosis the water would move slowly due to the tumour getting in the way of it. You can use ADC to determine if a tumour is benign or malignant because the two different tumours both have different ADC values. Even though the different tumours have different ADC values you can not be 100% sure which type of tumour the patient has. This is because there are lots of different tumours all over the body making it harder to be exact.

If your child is not very confident or is scared to have an MRI, we would still recommend that they have an MRI. Although it will be uncomfortable during the scan the results could possibly be life saving and therefore worth the discomfort. In some hospitals, if the child is willing, the doctors would turn the whole scan into a game, so they don't have to sedate them. For example, they could pretend the MRI machine is a spaceship and that if the child looks after it by staying very still inside they will get a treat at the end. Sometimes they may ask them to balance a coffee bean on their stomach to see if they can prevent it from falling off. These techniques would only work if the child wants to play the games. This is better than sedating the child as sedation has its own risks. This will be explained later on in the study.

A problem with scanning a young child is the time that the scan takes. One scan can take as long as 40 minutes to complete, which is a problem as during an MRI you must lie very still. If you do move during a scan you will cause a phenomenon called ghosting. Ghosting is the term used to describe the lines on the images caused by motion artefacts which can cause a false diagnosis as the picture is no longer very clear.

If your child suffers from claustrophobia, alternatives to an MRI can be considered. The scanner, whilst more than large enough to accommodate a child can feel much smaller, as the bore (the space where the patient lies) has an internal diameter of around 55-60 centimetres which can prevent the scanning of larger patients.

A problem with sedation is you must not have any food or drink in the space of 8 hours before the scan. The sedation medication can cause the throat, oesophagus and stomach to relax. This means any undigested food in the stomach can travel back up into the windpipe and lungs. If this was to happen, it can cause a serious lung infection resulting in hospitalisation. There are also many common side effects to sedation which are very similar to those of the contrast agent (nausea, vomiting and headaches) also allergic reactions and dizziness. The more serious of the side effects are; slowed breathing, decreased blood pressure or an abnormal heart rate and rhythm. However, these are rare and the likelihood of suffering with these can be reduced if a detailed medical history is provided. Death and permanent injuries are even more rare and can be reduced with the same precautions.

Throughout the scan the MRI machine will make very loud noises. These are not pleasant to hear so your child will be given noise cancelling headphones, either playing music or sometimes watching a film to reduce the loud noises from the scanner, as prolonged exposure to loud noise can damage your ears. Additionally, if the child is scared of the loud noises, it is likely to cause them to move around.

If your child has any metal on them that can not be taken off, then they can not have an MRI scan and a different type of scan will have to be used. The MRI scanner is incredibly sensitive to metal as it uses very powerful magnets. This means that any jewellery must be removed and any metal inside of you from previous operations must be declared as this may mean an MRI scan is not suitable, so one of the alternatives must be used. If metal is taken into the scanning room, it is likely to cause an accident and may result in the scanner having to be turned off. This is no simple matter and can take over a week to turn back on as the magnets take a long time to charge and become ready for use. This would mean that any scheduled scans during this time would need to be delayed, affecting a large number of patients. In 2018 there was an accident involving Rajesh Maru (32 years old) who was visiting a relative at Nair Hospital in Mumbai, India. He was reassured by a doctor that a certain MRI scanner was inactive, allowing him to walk past holding an oxygen tank. This caused him to get pulled into the scanner as it had not been turned off properly. The accident killed him, and his family was given 500,000 rupees as compensation, and the two doctors involved were arrested.

Before the scan the doctor will ask a number of questions to find out if it is safe for your child to have an MRI or not. For an adult they would ask for your occupation, as for example builders might have small shards of metal in their eyes without realising, which would get torn out during the scan. They would also test to see how big you were compared to the scanner to determine if you would fit inside. If you can not fit inside your hospital's scanner they could send you to another hospital where they have larger scanners available. On rare occasions, if the person is too large or too heavy for the typical MRI scanner they can use the animal scanner for you at your nearby zoo.

If for whatever reason you can not or do not want to have an MRI there are still other options for you, CT (Computed Tomography) and Ultrasound. Both can be used if you have metal implants or you are claustrophobic. A CT scanner looks very similar as it has the circular bore around it but, is much bigger so accommodates larger patients. CT also does not take very long (around 5-10 minutes) which is good for a child as they do not have to lie still for a long period of time. However, CT does have its downsides, it uses radiation, which reduces the number you can have during your lifetime to prevent radiation poisoning. Additionally, the resulting pictures you get from a CT are not nearly as clear as an MRI would be. Ultrasound is another option that is usually used on pregnant women to check the health of their unborn child. This method is completely safe and risk free. An ultrasound uses sound waves which travel through your body sending pictures to a computer. This type of scan is completely safe and has no known side effects, but the images are also not as clear as an MRI scan.

To conclude, you should allow your young child to have an MRI despite the dangers that have been described. The results that you get from the MRI are so clear and will give the doctors a very accurate display on your child's abdomen helping them decide on the best and most suitable treatment for your child. Your child does not have to be given the Gadolinium if you are concerned about all the side effects, but it would make a much clearer image to aid the doctors whilst diagnosing your child. Your child also does not have to be sedated if they stay completely still during the scan. Kings hospital have the method where they transform the MRI room into a spaceship and allow the child to "ride their spaceship". They can make the scanner room into the spaceship in 15 minutes.

Whilst diagnosing a patient of any age it is important to obtain as much information as you possibly can. At this present time, the MRI offers the safest and most informative

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Mathematics / Computing

Does Facebook Control The World?

Part A- Problem Set

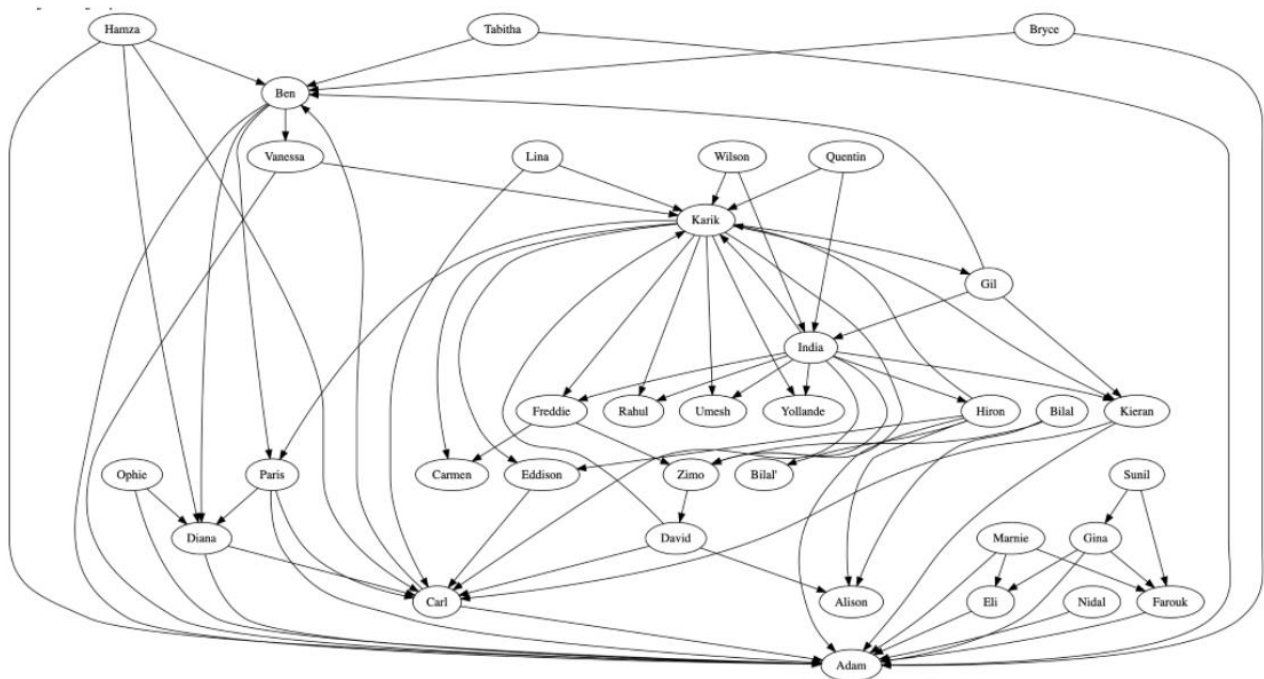
Question 1: Who do you think is more senior in this organization – Adam or Alison? Why?

Answer: Adam is more senior in this organization, I think this because more people have emailed Adam meaning that there are more people under Adam than there are under Alison.

Question 2: If you model this dataset as a network, what would the nodes represent and what would the links represent? What information have you chosen to disregard?

Answer: The nodes would represent the employees of Zachary co. and the links would have direction, showing who emailed who. I would disregard the time of the emails as they aren't significant in this graph.

Question 3: Draw this network.



Question 4: For every node, calculate degree and clustering.

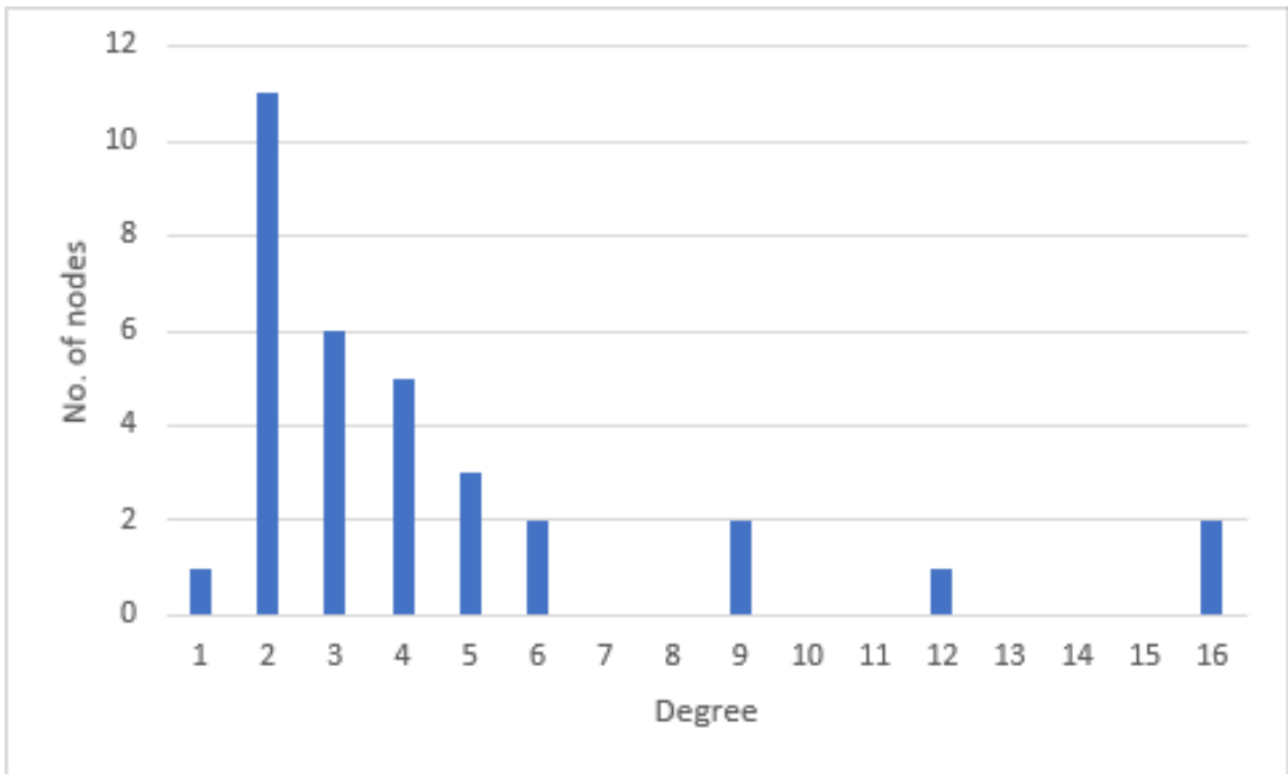
Answer: (**Please note** this is an excerpt of the students' full table)

Node	Degree	Clustering
Adam	16	0.15
Eli	3	0.67
Farouk	4	0.67
Marnie	3	0.67

Question 5: Calculate the average degree and average clustering. Would you describe this as a tree like network? Is this a connected network?

Answer: Average degree= 4.55. Average clustering= 0.51. This network is unlike a tree network because there is a high clustering average. This is a connected network.

Question 6: Plot the degree distribution of this network.



Question 7: Explain what is meant by 'shortest path'. If you were the senior manager in this company, would you prefer a larger or smaller value for the average shortest path in this network?

Answer: The shortest path of a network is the least number of steps it takes to get from node A to node B. If I was the manager in this company, I would want the average shortest path to be a smaller value so that it is easier and quicker for everyone to communicate with each other and pass important messages.

Question 8: Write a pseudocode to show how you would program preferential attachment into a computer.

Answer:

Input

Step 1: Seed network with 5 nodes

Step 2: Set up

Lottery= empty set

For x= 1, 2, 3, 4, 5


```
{  
Calculate degree node x. Insert x into lottery that number of  
times.  
}
```

Step 3: Loop

For i= 6...1000

```
{  
Step 3a: Draw node i  
Step 3b: Pick a number from lottery j  
Step 3c: Draw link i to j  
Step 3d: Add i and j to lottery  
}
```

Output Network

Question 9: The senior manager in the company has said he wants to do a Monte Carlo simulation of preferential attachment. What does this mean, and why might he want to do it?

Answer: Monte Carlo simulation is a method which depends on repeated random sampling to reach a result. Running the pseudocode multiple number of times will get you a result closest to reality.

Part B

What are network sciences? Network science is the study of various types of networks and their properties. Networks are made up of nodes and links; links are the relationships that connect the nodes. Links can have direction or weights depending on what type of relationships they are representing. We can study behavior and patterns by studying networks and we can also predict future behavior by evaluating the data collected from previous networks.

There are 3 main types of network growth models (topology): indiscriminate attachment, preferential attachment and vertex copying. Indiscriminate attachment is when a node is added to a network and it forms links to other nodes randomly. Preferential attachment is when a new node forms link in a biased manner, meaning it'll form links with nodes that have a high degree. This model is called the 'rich get richer' model. The last model, vertex copying, is when a new node picks a random node and copies all its links. Facebook is a vast network where the nodes represent the users and links represent the 'friends' status. All the nodes are represented the same and the links are undirected. This system works on the preferential attachment and vertex attachment models. Users tend to be biased when 'friending' people on this social networking site. For example, a new user will send friend requests to the friends of their friends and family. After that, they will most likely send friend requests to the most popular people (nodes with the highest degree).

This means that Facebook has hubs; hubs are ultra-high degree nodes in networks. Hubs can be an advantage or a disadvantage depending on the situation. If these hubs get infected with a

malicious software, they will spread fast due to the ultra-high degree of the hubs. However, if there is an important message that people need to be made aware of, the hubs can spread them quickly and efficiently. For example, on Facebook, when a popular user shares something, it will spread quicker than an average user because of its ultra-high degree.

With hubs, the average path length tends to be shorter. Paths are the steps it takes to get from one node to another node. The shortest path is the number of steps along the network between two nodes. This measures how far apart two nodes are and tells us how easy it is to pass a message along in the network. In Facebook terms, the shortest path is the number of steps to pass a message between two nodes. Since two nodes must be friends to message each other if the two nodes are friends the shortest path is 1 but if they aren't friends and have a mutual friend, the shortest path is 2.

Another important feature in networks is the clustering. Clustering is the chance of a node's friends being friends with each other. The highest clustering coefficient is 1 (that is all your friends are friends with each other), and the lowest is 0 (none of your friends are friends with each other). Analysis of Facebook shows that the clustering coefficient decreases with degree. The clustering coefficient drops rapidly for users with close to 5000 friends, indicating that these users are likely friending users more indiscriminately.

Studies have found that Facebook is nearly fully connected, has short average path lengths, and high clustering. Many other networks like this have been observed, and found to have the same qualities, have been named "smallworld networks". Facebook is a very popular networking site, with over 8 million users, it has been an essential part of daily life for many people around the world. Just like any other network it has its advantages and disadvantages. Some advantages being: easier to keep in touch with family and friends, helps you make new friends and express yourself. The disadvantages: cyber-bullying, distraction from real world people and problems, insecurity and encourages stalker behavior.

There is also the threat of Facebook manipulating people's thoughts through the content they see. Facebook "published details of a vast experiment in which it manipulated information posted on 689,000 users' home pages and found it could make people feel more positive or negative through a process of "emotional contagion"." In this experiment, Facebook filtered the users' feeds so that half the users would see more "positive emotional content" and the other half would see more "negative emotional content". This caused the users that had exposure to more positive content to be in a better mood and the users that had seen more negative content to be in a bad mood. The study's conclusion was that "emotions expressed by friends, via online social network, influence our own moods, constituting, to our knowledge, the first experimental evidence for massive-scale emotional contagion via social networks."