



SAPIENTIA

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THE WINCHESTER COLLEGE ACADEMIC JOURNAL

Front Matter

Dear Reader,

In publishing the second issue of Sapiientia, we would like to express gratitude for your continued support. As we take over the journal, we continue the mission of Sapiientia to provide a medium for students to share academic findings that go beyond the curriculum, to delve into the realm of scholarship, and to distribute their thoughts without restriction. With another edition compiled of works of outstanding calibre, we hope that Sapiientia continues to strengthen Winchester College's status as a centre of academic excellence and prowess.

We aim to maintain academic diversity, as reflected in the college's philosophy for a broad, well-rounded education. Although an emphasis on STEM subjects is appreciated in our contemporary world, we are keen to keep the spotlight on the "human" in the age of Artificial Intelligence. Recognising the dangers Artificial Intelligence poses to the "human" - eroding creativity and critical and original thinking, we rejected last edition's use of Artificial Intelligence in image generation to maintain the indubitably unique ideas and voices of the journal's contributors.

This second issue is a continuation of a project that we hope will inspire the next generation of Wykehamists. The present issue contains a range of articles from the pressing socio-economic issues faced by the UK to the history of music. Many articles were also put forward for submission in other ventures, with some receiving recognitions, most notably from the John Locke Institute Global Essay Competition. We hope you find great pleasure reading this issue, and that it satisfies the intellectual curiosity we have hoped to cultivate through meticulous selection.

Finally, we give thanks to the following:

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Music: The Sound Against the Odds

Frank Yu (F)

*Shortlisted in the John Locke Institute Global Essay
Competition*

At multiple points across world history, people stood up against social ills: prejudice, hate, and violence. However, at some of these points, music was present and shared. And at those points where it made an impact, it allowed men and women to refuse these social ills and stand up for the right side of world history. Music has a profound influence over history. It can challenge norms, inspire social movements, and shape collective identities.

Plato in *The Republic*, states:

“of all these influences the greatest is the education given by music, which finds a way into the innermost soul and imparts to it the sense of beauty and of deformity.”

This reverence for music is likewise present in the East. Confucius held similar views, stating in *The Way of the Superior Man* that:

“the superior man will not listen to lascivious or seductive airs (...)”

This hypothesis emphasizes the influence of certain music expressions over human actions. Plato averred that sound affects people’s minds and understandings more than any other medium. With reference to history, this theory helps see the power of music through its cultural influence. Marian Anderson and the Jazz genre during the Civil Rights movement as well as Shostakovich’s Seventh



Symphony during the Nazi invasion of the Soviet Union exemplifies that music impacts culture and society significantly.

She Needed Permission to Perform

Marian Anderson, born in Philadelphia on February 27, 1897, was a highly esteemed cultural icon who symbolized equality and justice. She journeyed from a choir member in her local church to eventually becoming a great influence on not just American history but also the broader global cultural landscape. Anderson persevered despite facing systematic racism and being denied entrance to musical conservatories. By the 1920s and 30s, she had emerged as a leading figure in classical music. At the time, critics were greatly impressed by her commanding stage presence and ability to peerlessly interpret classical music and become a great exponent of spirituality. The extensive range of emotions her performances show would later catalyse cultural sympathy, inspiring to see in her, a Black female artist, the same dignity, elegance, and talent that white people at the time thought only to expect from each other.

Anderson became inspirational for a new generation of activists throughout America and worldwide as they campaigned for civil rights. She also challenged the stereotypes of the time and opened the door for many aspiring artists of all races. The juxtaposition of such talent against the dominant social preconceptions of those who shared the colour of her skin made this more potent at jolting the collective consciousness. She mastered roles in opera – one of the few Black people, let alone Black women, to ever have done so. Her iconic role in the civil rights movement through a tumultuous period in history shows the impact of music in transcending the common barriers to form a connected sense of humanity between people.



A performance at the Marian Anderson Hall in Philadelphia. Credit: Daughters of the American Revolution (DAR.org)

The crucial event in Anderson's performing history was in 1939 when she was denied permission to perform at Constitution Hall in Washington, D.C., by the DAR (Daughters of the American Revolution) due to her race. Controversy due to this event erupted nationwide and even led to First Lady, Eleanor Roosevelt, to quit membership of the DAR. A crowd of more than 75,000 people gathered at the Lincoln Memorial on Easter Sunday, where Anderson's voice was a symbol against racism in a prominent show of resilience. The significance of this performance was far beyond its initial impact. Listeners from not just America, but from across the globe resonated with her performance. With it, Anderson's triumph became a symbol against racial discrimination and a testament to music as causing social change.

Anderson would only add to her achievements. For example, in 1955 she became the first Black woman who performed with the Metropolitan Opera. Her tours abroad would serve as creative diplomacy between countries, highlighting her achievement outside the United States. She traveled across Europe, Asia, and South America, where her concerts became a way to promote American values of freedom and democracy. A notable example is when countries such as the Philippines, Japan, and South Korea were given performances when she toured Asia in 1957 during the heightened Cold War tensions. People of many distinct backgrounds could resonate with her performances, exemplifying the universal appeal of music as a way for countries to seek cooperation with one another.

Desegregation, A Musical Note

Jazz Music was conceived in the crucible of Black communities in the United States during the early 20th century. It was a style which went beyond established musical practices and had an effect on established social norms. It was not just a blend of its African elements (like syncopation and improvisation) and European music forms. It was more than a sum of its parts, growing to be a prominent vessel for expressing cultural and societal changes. Returning to Confucius and his opinions on music, he emphasized his beliefs about its influence when he said:

“produce a kind of pleasure which human nature cannot do without,”

This suggests that music, in some form, instead of being leisure for all people eventually becomes a need. Jazz penetrated that fabric by becoming an anthem for the communities it made its home in. Next, in *The Republic*, Plato discusses music's role in shaping the moral character of individuals and societies through its many modes. He says:

“As we banished strains of lamentation, so we may now banish the mixed Lydian harmonies, which are the harmonies of lamentation; and as our citizens are to be temperate, we may also banish convivial harmonies, such as the Ionian and pure Lydian. Two remain—the Dorian and Phrygian, the first for war, the second for peace; the one expressive of courage, the other of obedience or instruction or religious feeling.”

Plato here speaks of how some music expressions displace others. This suggests that music can remark on a time of tribulation. And, when people come into times of triumph, new music

replaces the old and changes how people feel about themselves and their societies. Jazz musicians' experiences during the Civil Rights Movement can be viewed as a practical example of the transformative power of music as Plato would have it. Jazz was rebellious and non-conformist; characterized by its use of improvisation as a form of playing that disregarded established rules unlike classical compositions which followed strict patterns without any room for variation or freedom of expression. On many occasions, jazz musicians had their liberty compromised when they played because this was synonymous with lack of restrictions on any social movement including the struggles for self-determination. This spontaneity can be especially seen in the era of the Jim Crow laws and systematic racism, where jazz was prominent in promoting racial integration, challenging the widespread racial segregation. This was a music people had hoped was displacing the old and ushering in the new.

People of all backgrounds and racial profiles frequently gathered in jazz clubs not because of their race but because of their shared love of music. Jazz was synonymous with the social injustices of the Civil War period. Famous civil rights jazz musicians such as John Coltrane, Louis Armstrong, Max Roach, and Charles Mingus were not only some of the defining artists of the generation but also advocated for social justice on their platforms.

Racialised social norms were not the only injustices that jazz took a position against. The genre also served as cultural resistance against authoritarianism and oppression. For instance, Jazz was synonymous with artistic and intellectual innovation among Blacks during the Harlem Renaissance of the 1920s and 30s. Despite living in a society that was frequently marginalized from their achievements, jazz musicians demonstrated their autonomy and desire for recognition through, once again, the heavy improvisational nature of jazz music, allowing musicians to voice dissent at oppression through their compositions, which were often free in form. Songs such as Billie Holiday's *Strange Fruit* protested the lynching of Blacks, as well as Charles Mingus's *Fables of Faubus* a direct objection to the unfair actions of segregationist Orval Faubus, fully demonstrate the role of jazz in advocating for social change.

From Adversity: Shostakovich's Seventh

Sometimes, society meets an opponent that is worse than internal division. This was true for the residents of Leningrad as they faced their Nazi invaders. It was during such grim adversity that Dimitri Shostakovich's Seventh Symphony – the Leningrad Symphony – holds a special place in history for its profound impact on World War II. The symphony has strong motifs for human resilience against tyranny, which righteously mirrored the Siege of Leningrad in 1941 (the point at which it was composed). Despite the city suffering under relentless bombardment and the cutting-off of aid and supplies, Shostakovich finished what many consider to be his most ambitious work. This would immediately gain acclaim during its premiere on the 9th of August 1942. The performance itself was monumental. The world saw the hungry and weakened Leningrad Radio Orchestra assemble to broadcast a performance that reached far beyond the city's besieged walls.



The famous premiere of Shostakovich's 7th Symphony in blockaded Leningrad. Credit: Russia Mir Foundation

The Leningrad Symphony, apart from its musical value, became a potent propaganda weapon. The significance of this symbolic act lies behind the fact that it was employed as an instrument for raising the spirits in the Soviet war against Nazi invasion. In the course of this work, listeners were moved by its many themes such as struggle, heroism and victory. Shostakovich's symphony countered Nazi propaganda that sought to portray the Soviets as weak and vulnerable, in line with Plato's notion of music as a mirror of societal virtues. The symphony was not only crucial in the survival of the Soviet Union but also demonstrated the transformative power of music as a force against tyranny and a unifying symbol in times of crisis.

Changes in History Heard in Changes in Music

Music is more than the artful combination of sounds. It is a medium that transcends the divisions that harm society. This transcendence is best demonstrated by Marian Anderson's bravery in opposing racial discrimination, mainly through her historic performance at the Lincoln Memorial. Her vocal ability was a technical marvel and a powerful representation of social justice and resiliency that touched people worldwide. Music also transcends divisions between painful past and hopeful present. We see this in jazz as an example of how 'pure' music gave way to combinations of African and European elements – just like how society embraced integration after segregation. Jazz was utilized by legends like Louis Armstrong and John Coltrane as a creative outlet as well as a tool to challenge racial segregation and promote equality. These instances underscore that while music can be appreciated for its aesthetic qualities, its impact and significance stem from the social, political, and cultural narratives it embodies.

To conclude, Shostakovich's Symphony, which was written during the Nazi blockade of Leningrad in 1941-44, is a proof of the ability of music to offer hope and act as a unifying force even in the most difficult situations. During the war, the symphony, which was played, not only increased the confidence of the starving Russian men but also made a revolt against the Nazi

regime, illustrating Plato's idea that music reflects national morals. By going through these cases it is clear that music helps in difficult state of affairs to be handled, it brings about cooperation among people from different cultures and races, it motivates them as a group working towards change regardless of their race, ideals or nationality.

Saturnian Metre: The Death of an Identity

Edwin Humphreys (X)

Washington D.C., with its white senate house, towering obelisks and temple-like memorial, is a monument to an ideal resting in the cradle of the Classics. In its eagle, we see the face of S.P.Q.R.; in its arches, the shadow of Rome. As with Habsburg Vienna, Haussmann's Paris, Medici Florence, Hitler's Nuremberg, echoes of the Empire reflect an aspiration to be the next great power, the inheritor of a legacy that lies at the heart of the Western psyche. But once Rome, too, was one of these powers, and its Rome was Greece.

Just as with the construction of Washington D.C. in the wake of American independence, this foundation of aspiration is placed beneath the creation of an identity. By the reign of Augustus, Rome had just endured the tumult of civil war, cloven into the Greek-speaking East and the Latin West. It has witnessed the establishment of a neo-monarchy and is expanding into an ever-international empire; it is at a crossroads. Not only does Augustus turn this city of brick into one of marble, but he lays down a foundational literature to consolidate this image of new Rome. The Aeneid, Virgil's great epic, expresses the divine mandate of Rome through tracing Rome's most ancient foundational myths. And yet, this leads eastward to modern Turkey, where the city of Ilium, or Troy, lay besieged. He even writes the Aeneid in Homer's metre: dactylic hexameter. It would be like someone who had a beloved car many years ago with a unique, blaring engine going to a modern garage 50 years later and finding a car with that exact same roar underneath it that brings back wistful memories of the last one. But the roots of this Hellenic identity



had long grasped the fundamental form and structure of poetry: metre. The basic parameter of the art form, we see it evolve across the transition from stylistically Etruscan metre looking North to Celtic Tuscany and the Po River Basin, to the staples of Greek lyricism and epic. And there is one towering non-Hellenic metre which evaporates into the tidal wave of eastern metrical exports: Saturnian. This paper describes its death: a monument to a trans-Italic art form that perished with the development of Hellenic identity.

Naevius was a leading Roman dramatist and epic poet of the 3rd century B.C. who fought in the Punic Wars. A highly patriotic soldier, he was exiled to Tunisia after his release from prison, where he died in 201 B.C. Here is his epitaph, his own composition, lamenting not only his death, but the death of classical style:

Immortalis mortalis | si foret fas flere,
Flerent divae Camenae | Naevium poetam.
Itaque postquam est orci | traditus thesauro
Obliti sunt romai | loquier lingua latina.
If it were ever right that immortals weep for mortals,
Then the holy Camenae would have wept for Naevius the poet;
And so after he was passed on the trove of Orcus,
At Rome they forgot how to talk in the Latin tongue.¹

Brian Krostenko says that ‘the form of the epigram...is also in and of itself a tribute, in a later age, to an older style of poetry – meant to lament its decline by showing its fine expressive power.’² It seems to have shadows of this golden age of Italic poetry, articulating the death of Italic poetry along with Naevius himself. But it can be no coincidence that it opens with the diverging imageries of immortality and mortality. Perhaps in subscribing to the poetic pantheon of ‘Roman Rome’, he felt he could enshrine himself in some sense of immortality. The first word that jumps out is *immortalis* – the adjective immortal. In ‘At Rome they forgot how to talk in the Latin tongue’ we do not simply witness a lament of a lost form, but a form that places him in a position of Latin greatness.

However, he was an advocate of the Athenian style of satire that makes the stage a political and personal space, utilising simple Greek metres in his dramatic works. In the article *Naevius and the Metelli* (the latter being the powerful family, producing a consul, which he put under dramatic attack and were responsible for his arrest), Harold Mattingly says that ‘the Saturnian gradually gave way to civilised verse...Rome turned to copying Greek tragedy and comedy’³. An old Roman family, he cites them as replying to his taunt “*fato metelli romae fiunt consules*” with the threatening Saturnian “*Dabunt malum Metelli Naevio poetae*”⁴. It is as if this is a status symbol, like Shakespeare writing his higher register characters in verse. But they do not use the elegant, vogue Greek verses, but rather an archaic Roman metre, as if to articulate ‘We are a family of old power, and we are in old Rome’. However, Mattingly does state that ‘for a Saturnian, the line is surprisingly smooth or easy to scan’, he suggests that it was written by someone illiterate who could not compose ‘an authentically rough line’⁵. This may suggest that it is becoming, even when utilised by so illustrious an old family, an increasingly streamlined metre, lest it lose touch with modern Rome.

Yet perhaps Naevius' greatest work was his 'Bellum Punicum', an epic about the Punic Wars written entirely in Saturnian metre. One unbroken narrative, it was later divided into seven books by C. Octavius Lampadio⁶ — a Roman scholar and possible freedman⁷. It begins where all great epic literature begins: Troy. Telling the tale of a certain Trojan prince named Aeneas, the foundation of Rome and possibly that of Carthage as well, the first two books are an explicit exploration of foundational Roman identity. In the article Naevius and Vergil, George Luck states that 'H. D. Jocelyn has shown...that Macrobius, and others who claim to know something about Vergil's sources, depend on lists and compilations that were made by various authors, sometimes to accuse Virgil of plagiarism. Hence the phrase, "This whole passage is taken from Naevius"⁸. The fact that Vergil wrote the Aeneid looking back to the Saturnian retelling may show how his narrative, as a foundation of identity, sees itself as the inheritor of this literary legacy. It explores what a literature of identity means, pointing at the Saturnian and saying 'those are our ancestors' – a fundamental part of the Roman psyche, e.g. Mos Maiorum. It is perhaps a work that questions (and answers) 'who are we?', or rather 'who would we like to consider ourselves?' And by expressing this with echoes of a Saturnian there is a sense of resurrection: the Saturnian is dead, and little understood, at this stage. By echoing this Saturnian work, he buys into the legacy of a different time – Saturnian was a non-Hellenic metre used in the pre-Roman states of Italy, such as the Faliscans, but perhaps more deeply implanted in Roman memory is the context of the Bellum Punicum; a work just as topical, and militaristically nationalistic, as the Aeneid. Written by a soldier in the Punic wars, perhaps Virgil pens Augustinian Rome as the inheritors of this legacy.

Like Prospero's speech in The Tempest being taken from the mouth of Medea in the 7th book of Ovid's Metamorphoses, it utilises classical literature and manifests it into something present, making people hear what it means to them echo and question how it touches modern society. The Aeneid became the Wagner of B.C. Rome.

But the Bellum Punicum buying into the Saturnian metre also highlights how Naevius may have wished to employ it for similar reasons. He clearly divorces this from his Hellenic (in style and in content) oeuvre to compose a tale of Roman foundation.



The Mosaic of Virgil, found on the site of the ancient Hadrumetum is currently preserved in Bardo National Museum, Tunis. Credit: Wikipedia

Amborum uxores
noctu Troiad exhibant capitibus opertis,
flentes ambae, abeuntes lacrimis cum multis.⁹

The wives of the two
Left Troy at night with covered heads,
Both weeping, departing with many tears.

A quantitative scanning:

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-----, **-----.

This shows no clear sign of quantitative metre. In the *Oxford Book of Latin Verse*, H.W. Garrod describes how scholarship is divided over whether Saturnian was quantitative, or accentual. Originally considered the former, he states that later research has designated it 'purely accentual'¹⁰ and that, when the book was written, the view was seen 'to hold the field'¹¹. The 1911 Encyclopaedia Britannica states that 'The scansion is generally of the following type:

⏑-⏑-⏑-⏑|⏑-⏑-⏑'¹²

If accentual, this would make the arrival of Greek metres a seismic shift from accentual to quantitative. To understand this shift we must look at how modern poetry shifted back to accentual. Dana Gioia, 'English accentual poetry grew out of the oral tradition of pre-Christian Teutonic tribes, and the metrical practice was strikingly homogeneous from Germany and Scandinavia to Iceland and Britain'¹³. Evidently, accentual poetry is deeply rooted in Celtic culture. It is more tied to speech, rooted in natural pronunciation, instead of prioritising musical rhythm. But if we have so vague an understanding of what it is, perhaps we are forcing our understanding of poetry onto it. It could be poetry, not through form, but through content. This is probably a bit of a stretch, but it outlines the way in which Saturnian is somewhat pushed into a metrical straitjacket. It is evident that it is far more free than later Roman poetry, and certainly it does not coincide with how we would outline a metre. Perhaps this can point us towards why it yielded to the uniform Hellenic styles. This would illustrate a reshaping of what poetry is. An uncertain art form, it has always been groping for what it is. We have seen it in every poetic age: 20th century free verse, modern spoken word, millennia ago when poetry was first written down. Here, we see Rome questioning what poetry is, redefining itself along with it. A movement towards quantitative verse would mean that poetry was evolving into a more musical practice, built on rhythm more than direct expression of the verse.

Macaulay says that 'there cannot be a more perfect Saturnian line than one which is sung in every English nursery—

The queen was in her parlour eating bread and honey'.

Place beside this English line the Latin line which has come to be regarded as the typical Saturnian—

dabunt malum Metelli Naeuio poetae.

If we accent these five words as Naevius and the Metelli would in ordinary speech have accented them, we shall have to place our accents thus: —

dábunt málum Metélli Naéuio poétae;

since by what is known as the Law of the Penultimate the accent in Latin always falls on the penultimate syllable save in those words of three (or more) syllables which have a short penultimate and take the accent consequently on the ante-penultimate syllable. But those who accommodate the Latin saturnian to the rhythm of 'The queen was in her parlour ...' have to postulate an anomalous accentuation:—dabúnt malúm Metélli | Naéuio poétae.¹⁴

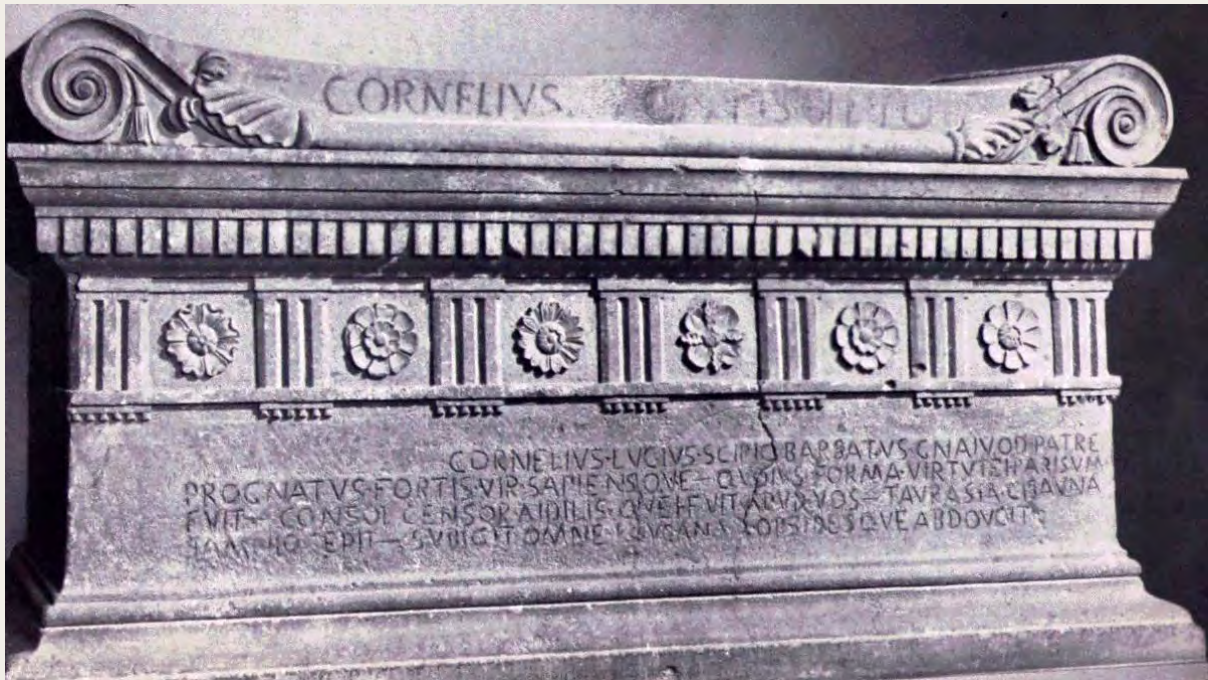


Double herm with the portrait of the Roman poets Virgil and Ennius. Credit: Wikipedia

A critical pioneer of the Greek renaissance was Ennius, whose *Annales* begin with a dream version of Homer telling him that he is his reincarnation after a brief spell as a peacock. Here, he clearly establishes an identity of aspiration, but it is not of aspiring to be the next great classical Latinate author. He frames Homer as the great classical poet, expressly buying into a fundamentally Hellenic poetic pantheon¹⁵. However, in the article

'*Ennius' Dream of Homer*', Peter Aicher argues that 'the greatest surprise for the reader will of course have been the new metre, hexameter in place of Saturnians'. Choosing the epic genre, it is possible that this was what he saw as the zenith of his oeuvre. Perhaps, then, he sees Homer as a figure unique in his trans-cultural legacy and is the person in whose footsteps he wishes to walk because of it. Literally articulating what may be something of an allegorical *samsara*, he illustrates Homer's undying and cross-border spirit. Moreover, this dream of a literal renaissance (rebirth) is highly reflective of the ideals we see in Renaissance literature. The revolution in reading other classical texts, such as attempting connecting Epicureanism with the Stoic religion Christianity, that found its roots in Medici Florence shows a new cultural identity being found by exploring the 'definitive greats' – but, pivotally, these greats are found in an external culture: it becomes an identity of aspiring.

Moreover, Aicher highlights a sense that the elaborate Saturnian can somewhat stunt the flow of writing, and for a piece so ambitious he says that ‘the success of Ennius’ epic style had to rest primarily on the merits of that style itself (on the virtues of hexameter over saturnians for sustained and flowing narrative, for instance, or on the advantage of linguistic “deviations” and formulaic phrases for composing in metre, or on the epic atmosphere created by Homeric tags)¹⁶. Moreover, describing the stylistic presence of Homer as ‘in some instances, radical’ to Ennius’ audience, he illustrates how part of the break away from Saturnian was trying something new, still within the parameters of the classical classics.



The tomb of Lucius Cornelius Scipio Barbatus, erected around 150 BC, contains an Old Latin inscription in Saturnian meter. Credit: Wikipedia

H. W. Garrod says that ‘Ennius said that he had three hearts, for he spoke three tongues—the Greek, the Oscan, and the Latin. And Roman poetry has, as it were, three hearts. All through the Republican era we may distinguish in it three elements. There is the Greek, or aesthetic, element: all that gives to it form or technique. There is the primitive Italian element to which it owes what it has of fire, sensibility, romance. And finally, there is Rome itself, sombre, puissant, and both in language and ideals conquering by mass. The effort of Roman poetry is to adjust these three elements¹⁷. The Saturnian metre would certainly have captured the Italic aspect, but not the ‘aesthetic’ side whose consolidation would have produced a clearer identity of poetry. For written poetry, the Greek forms would have given the literary movement a clearly defined shape. The other Italic excerpts of Saturnian are often on pots, for instance the Faliscan ‘foiēd vīnom (pi)pafō. crā(s) carēfō’¹⁸ meaning ‘today I will drink wine. Tomorrow I shall go without’¹⁹. Hellenic metrical clarity also fulfilled one of the critical roles of metre. We can see how the sheer variety of Saturnian metre means it is not imbued with a specific identity when it is used (though, being preserved only in epic it will have had connotations of archaism to classical Romans). Whereas the selection of a lyric metre or an epic, an elegiac couplet, or dactylic hexameter will have been the very skeleton of a work’s identity. However, if we see Greek metre as a foundation upon which

these two other elements (celtic Italic and Roman) were built, or the Roman quality as a confluence of the other two, we overlook how deeply the prestige of Greek literature had burrowed into the Roman literary psyche. Livius Andronicus' translation of the Odyssey into Saturnian metre the same century as the *Bellum Punicum* exemplifies the appeal of this Greek age of heroes that also seeped into Naevius. Rome at this time was clearly drawn specifically to the Trojan War. Unfortunately, very little of his Odyssey survives; the content was evidently linguistically transient but not metrically so. Perhaps, to later Romans, there would have been a dissonance here between the Saturnian and the Homeric age. The interest in old Rome was particularly rekindled by Vergil, who did so by tying it back to Greece: The Romanticisation of old Rome is placed upon a Hellenic romanticisation. There is a recognition that anything in the epic genre is going to be compared to Homer. To quote William S. Anderson, 'it is arguable that Vergil presented himself as *Alter Homerus* only to make more evident the striking differences in his Augustan epic'.²⁰

In fact, in the age of Vergil, we can witness the rejection of these old Italic states. In *Satires* 1.5, Horace exemplifies this envisionment of Greek verse as more intelligent and high status. He describes the ancestors of one Messius as 'glorious Oscan stock'²¹. According to Keith MacLennan, the adjective Oscan 'seems to have been synonymous with 'stupid'...so that 'glorious Oscan stock' is an oxymoron.'²² This reflects condescending perception of other Italic people as ignorant, distinguishing Rome as the mandated power.

However, Livius' choice of the Odyssey and Naevius' endorsement of the Aeneid myth may also reflect not only a sense that people were already drinking from Greek springs but trying to unite the two threads of Greek literature over an Italic metrical base. Ennius only goes a step further and severs the bridge. Aeneas is also a character forced out of Ionia by his enemies the 'Greeks'. It is an interesting coincidence that both great Saturnian works are about someone lost, wandering from Troy, looking for home. One finds it by marrying a local, another returns to find imposter suitors trying to usurp him and claim his throne. Even Ennius' *Annales* are about Homer finding his next human voice. Especially in the Ionic world, where it was what defined a community of states as 'Greek', language was – as it remains – a staple of identity and a place to explore it. As with literature such as the Brothers Grimm's fairytales in young Germany, myths and fables lay under a fragile constitution of identity of unifying bodies. As the mythical worlds merged, metre was soon to follow. In its literature, as its state expanded, Rome was groping for an identity. SPQR saw its relationship with the Greek world as many later nations saw themselves in relation to ancient Rome, the inheritor of its cultural legacy. Having come to dominate its Italic neighbours and vanquish its enemy Carthage, it wanted to establish itself as a new power – a power in touch with a legacy that echoed down the centuries. The Italic, Celtic identity was dead, and the Saturnian died with it.



Artificial Intelligence: A blessing or a curse? A Socio-Economic Analysis

Matthew Wong (F)

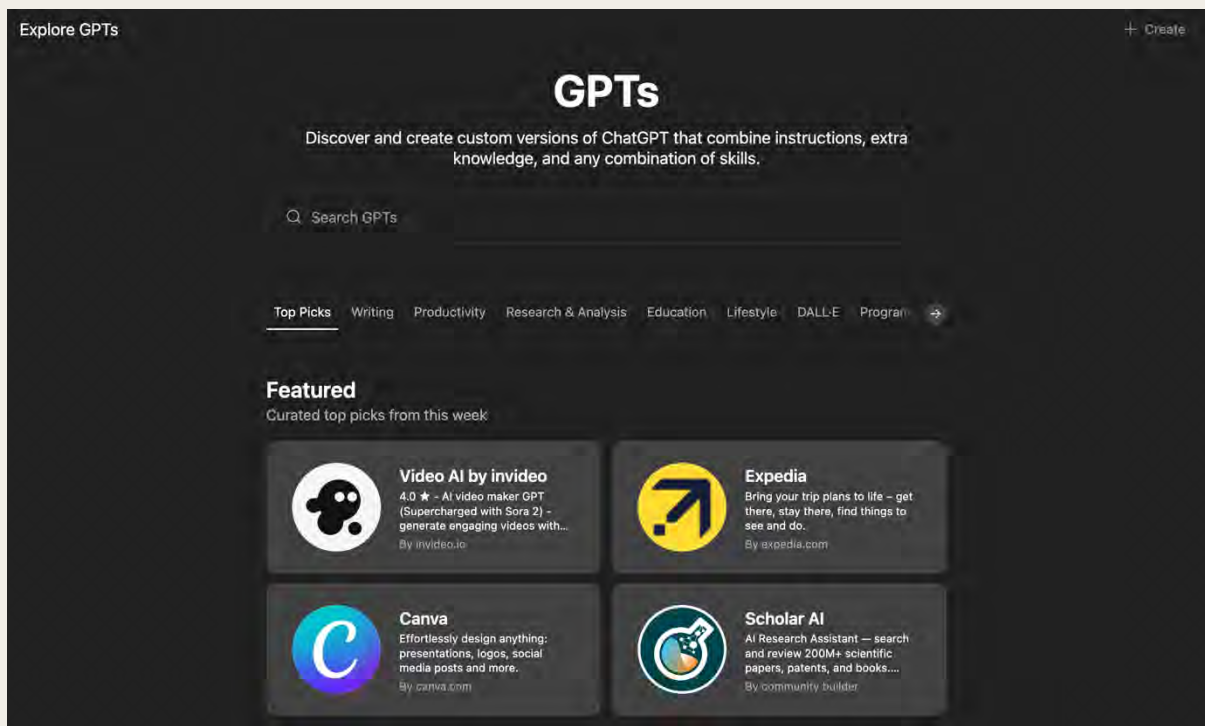
*Finalist award in the Northeastern University London
Essay Competition*

In a world where artificial intelligence (AI) is “on a sprint, [having] its computational power doubling every six months”,¹ there is a race for businesses and policymakers to embrace the latest technology whilst curbing its most rampant threats. Defined by the IBM as “technology that enables computers and machines to simulate human learning, comprehension, problem solving, decision making, creativity and autonomy”,² AI is omnipresent in society, and many businesses now look to incorporate AI technologies to enhance efficiency, automate processes and gain an edge in competitive markets. From customer chat bots to medical diagnosis, the opportunities appear endless. However, AI’s rapid adoption comes with significant socio-economic challenges. Notably, job losses linked directly to AI³ are expected to have severe repercussions. Workers, particularly those from lower socio-economic backgrounds, will face greater hurdles to move up the social ladder through employment opportunities. This can prove detrimental to improving inequality in developed and developing nations, posing immediate challenges to policy makers. However, there is potential that through careful policy making and scheme creation, AI can better cement its positive impacts in society.

AI seeks to revolutionize the workplace in two ways. The first involves enhancing productivity, automating routine tasks, benefiting capital-intensive sectors such as manufacturing. This

includes robots, automated machinery and AI-driven systems to maximize efficiency, reduce errors and increase output. Additionally, automation will partially remove the need for a large labour force in the short run. Therefore, firms can increase supply by lowering production costs, meaning goods and services can be sold at lower prices and therefore greater quantities. The second involves businesses complementing their existing workforce with AI, using applications and services to streamline tasks, allowing finished goods and services to be of higher quality. According to the McKinsey Global Institute, 70% of companies would adopt at least one type of AI technology by 2030. The paper writes that ‘AI could potentially deliver [an] additional economic output of around \$13 trillion by 2030, boosting global GDP by about 1.2 percent a year.’⁴ The benefits pass over to consumers: with better goods and services, they can derive greater utility, increasing consumption and aggregate demand.

Countries spearheading the AI race will benefit the most, due to their thriving tertiary and service sectors. Specifically, China and North America will benefit the greatest, enhancing GDP by 26.1% (China) and 14.5% (North America) in 2030, according to a study PricewaterhouseCoopers (PwC).⁵ Direct effects involve the increased revenue and employment in AI development firms, which can create new forms of economic activity through further employment. As per PwC’s analysis, “the healthcare sector could see an increase of nearly 1 million jobs [globally] due to AI advancements.”⁶ Indirectly, AI can empower small teams, allowing them to achieve greater success, contributing to economic growth.⁷



ChatGPT possesses many built in widgets, designed to enhance productivity.

AI poses a significant threat to jobs with structured or repetitive tasks. Such jobs typically have low barriers to entry, such as customer service, assembly line jobs and retail checkouts.⁸ These roles, often held by low skilled workers, are particularly vulnerable to automation, as AI systems and robotics can perform repetitive tasks more efficiently and reliably. Thus, the most immediate

impact would be the rise in unemployed, low skilled workers. Most low skilled jobs are held by those without college degrees, migrant workers or those from economically disadvantaged backgrounds, exacerbating the difficulty of transferring into new employment. Those who can find work transfer burdens onto employers: the US Small Business Administration (SBA) states that training costs for new employees can exceed 40% of their initial salary.⁹ Some may pursue higher education, but to be of benefit to the AI-driven economy, degrees must align with future industry needs, given the rapid advancement of technological change. Without a clear path to upskilling or transitioning into new industries, workers may choose to exit the workforce or rely on long term social welfare benefits. As a result, the government may be forced to increase welfare spending to avoid social unrest, further increasing the budget deficit and placing a strain on fiscal resources.¹⁰



A cram school in China. Credit: Sixth Tone

Furthermore, job polarization presents itself as a real possibility with the AI's rise in the workforce. According to a report by the European Parliament, "High skilled, well-paid jobs requiring "non-routine cognitive skills will be higher in demand."¹¹ This can create excessive competition for a limited number of posts and may exacerbate the harmful effects of

toxic study cultures in countries such as South Korea and China, where students sacrifice their wellbeing for a miniscule chance of a high paying job. This not only creates social pressure for individuals but sharpens the divide between classes: only those with access to elite education and resources are likely to succeed. The growing divide between the highly educated and those left behind will only deepen existing societal fractures.¹²



East Asia grapples with record breaking levels of youth unemployment. Credit: Nikkei Asia

Whilst mass unemployment caused by AI is unlikely, a perpetual poverty loop may form. As regions with poorer access to technologies are left behind, especially rural regions of developing economies, nations may experience a ‘dual economy’¹³, where high income households thrive in sectors driven by technological innovation, whilst the other is stuck in economic stagnation. The ‘Paradox of Plenty’ is a growing concern – society, in total GDP, may be wealthier, but for most individuals and communities, such wealth may not be realized, as it is concentrated only in several sectors.¹⁴ The implications of a dual economy are undesirable: inequality restricts economic growth and wastes people’s talents, as those living in poverty are unable to start businesses and drive innovation. In more extreme cases, high levels of inequality can increase crime rates and social unrest.¹⁵

Finally, AI may be used by firms to collect excessive amount of information on consumers, creating opportunities for exploiting consumer’s biases. This manifests itself in two ways, the first being to maximize consumer surplus via price discrimination. New marketing strategies “place a premium on user attention, which has led companies to deploy AI and machine



Palantir Technologies, an American company specialises in software powering AI-driven decisions in government and commercial enterprise. Credit: Shutterstock Images

learning techniques to prolong user engagement”,¹⁶ at the detriment of societal well-being. Information abuse by AI algorithms can also result in the creation of misinformation, which spreads rapidly on social media in the digital age. This increase in misinformation has detrimental social consequences, undermining trust in government agencies, healthcare programs and politics.¹⁷ One study by University of Canberra’s News and Media Research Centre states that “concern about misinformation skyrocketed to 75 per cent, up 11 percentage points since 2022.”¹⁸ Misinformed consumers may fail to make rational decisions due to heightened information asymmetry and bounded rationality, leading to suboptimal outcomes such as underutilization or misallocation of resources.

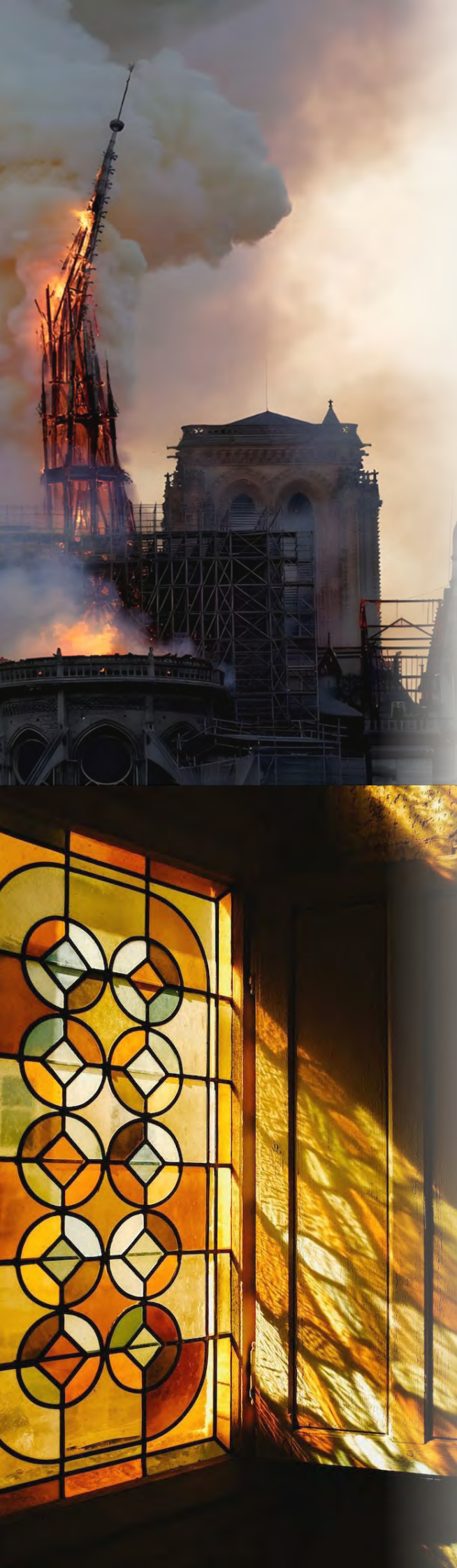
Many governments have made steps to regulate AI, and some countries have enjoyed success such as Estonia and Singapore.¹⁹ Policies and treaties adopted by countries include the Framework Convention on Artificial Intelligence and Human Rights, Democracy and the Rule of Law which was signed by 9 countries and the European Union.²⁰ However, there are several glaring issues with AI’s implementation. Whilst developed countries such as the UK have established frameworks such as the National AI strategy²¹, which includes actions such as publishing a Defense AI Strategy through the Ministry of Defense, developing countries fall behind due to more pressing issues at hand such as food security and diseases. This exacerbates current global inequality trends. Domestically, there is a large scope for ambition for countries like the UK. Governments must balance the uptake of AI technologies with regulatory frameworks

as to not stifle economic growth. Ideas such as classifying algorithms into risk tiers and banning the use of applications deemed too dangerous is an approach currently being favoured by the European Union²² However, the subjective nature of this approach is a separate matter. Other more concrete measures include holding AI developers legally liable for harms caused by their algorithms and requiring tech companies to “safety-test” AI software. Whilst this addresses some of the pressing issues regarding harmful use of misinformation, it fails to address many other concerns mentioned in this essay. Some less mainstream proposals include the taxation of robots, an argument championed by Bill Gates.²³ He argues that firms that employed robots to replace workers should pay taxes to prevent new technologies from diminishing the public money that keeps society running forward. This proposal could extend to all forms of automation, guided or done by AI to fully compensate for the lost jobs. The new tax revenues could subsequently be used to fund unemployment benefits, providing workers who experienced job losses directly linked to AI a social safety net.



The skyline of Hangzhou, one of the main cities spearheading the AI race in China. Credit: Wikipedia

In conclusion, AI has significant potential to boost economic growth and create new employment opportunities, but it also brings severe risks to the economy through job polarization, the replacement of low skilled work and spread of misinformation. As it stands, AI presents itself as a curse, due to lax regulations and slow implementation of policies. Unless this changes, AI is unlikely to be a tool that empowers society for greater good.



“Religion causes more problems than it solves”

Freddie Laarman (C)

Received commendation from the Headmaster

Religion has fuelled wars, silenced scientists, and divided nations. But it has also inspired cathedrals, comforted the dying, and built the moral codes we live by.

Definition and Clarification of the Debate

Religion occupies a complicated position in human history. It has pushed men to perform acts of greatness, justice and love, but it has also been used to justify violence, injustice and conquests. Richard Dawkins, Christopher Hitchens, and the New Atheists movement claim that religion does more harm than good, yet they often rely on definitions that prevent a meaningful evaluation of the argument.

In this essay, the term “problems” will be assessed through two of the most significant areas of tension between religion and humans: violence, as religion has often been related with wars and persecution, and science, where over the past few centuries it has opposed scientific progress. These issues are often used as evidence to show that religion holds humanity back. However, such a view overlooks the many ways religion has developed societies, shaped cultural identities and unified communities across centuries. Although religion has been involved in conflict and resistance to new knowledge, its long-term contributions to morality, social cohesion, and culture suggest it solves more problems than it creates.

Moreover, religion is a system of beliefs and morals by which men try to connect with a higher power or powers and higher principles, generally distinguished from science. Classic examples of religions could be Christianity, Islam (monotheistic religions, along with Judaism) or religions that are polytheistic such as Hinduism and other East Asian and African religions. However, this essay will primarily focus on Christianity as an example when discussing religion. This is because Western society, where Christianity has played a dominant role in shaping cultural values, institutions, and historical developments, is more familiar than other religions and societies. But religion can have broader meanings, like political systems that are built upon belief in a system, such as fascism, Marxism or communism, and Nazism. Totalitarian systems are generally built and conducted in a way that could be seen as religious. Other examples could be environmentalism as humans have grown from theology to ecotheology, with a belief system, moral values, and rituals about nature.



Soviet poster with the slogan 'Raise the banner of Marx, Engels, Lenin and Stalin!' in 1936. Credit: Wikipedia

Religion answers the human heart's aspiration and desire to higher value and existence beyond the natural aspect of life. It also pushes humans to achieve what they think is best for their beliefs, with some providing health habits not only physical but mental, such as prayer and meditation. It provides comfort, guidance, and moral beliefs. This gives a basis for community and connection to traditions. All of this tends to create happiness, fearlessness, and overall better-lived lives for the person believing in his own religion.

Religion as a Source of Moral and Social Order

Archaeological proofs abound: very early on, humans created communities around spiritual beliefs, often centred around a higher power. In these communities, men often have a common belief and set of moral rules allowing them to live in harmony and achieve greatness. This led to cooperation and development within a shared moral framework, which in turn shaped regional institutions and values.

The Western world was strongly influenced by the spread of Christianity, with the figure of Jesus Christ shaping our whole Western world of values and social institutions. Hospitals, for example, have grown out of the Christian ideal of charity and especially towards the sick, but also universities, schools and legal systems. Even the prison system finds its origins in the ideals of Christian monasticism. Historian Tom Holland, in *Dominion*, details how Christian moral concepts laid the foundation for Western institutions such as hospitals, charities, and universities. Today, many hospitals were originally Christian in nature, the buildings were kept by monks to take care of the sick (e.g., St. Vincent and Red Cross).

Religion and the Status of Women

The social classes of our modern era were heavily influenced by Christianity. Through most of history, men were either slaves or freemen, essentially meaning you were rich or poor. It was Christianity, that strongly believed everyone was made in the image of God, therefore opening the way to the idea of universal human rights and the equal dignity of all humans.

The Western world view of women was based entirely on Jesus' teachings. Back in the 1st century, women were the property of their husbands. But Jesus is shown in the Gospels as befriending many women and even including them in his ministry, thus elevating the status of women in the Ancient World.



A detail from a Terracotta lekythos, showing two women spinning wool into yarn and two women working at an upright loom, c.550–530 BC. Credit: The Metropolitan Museum of Art.

Moreover, Christianity offered women a sense of spiritual equality that was rare in the ancient world as seen in Roman and Greek societies. By teaching that all people are made in the image of God, it affirmed the dignity and worth of women. Over the centuries, Christianity provided women with spaces for education, service, and spiritual growth through convents and religious communities. While social equality was slow to follow, the idea that women had moral and

spiritual agency helped lay the groundwork for future advancements in their roles and rights. These ethics, pushed by the Catholic Church, have allowed women to be respected and dignified over time, compared to other societies where women's role was very sporadic and minor.

However, although the status of women under Christianity improved, there were still great legal inequalities between men and women. Therefore, for many centuries women had very little political freedom in Western countries, with women only being allowed to vote around the 20th century. But some women did stand out and manage to exert power and influence over their societies during a time where their agency was limited such as Elizabeth I or Joan of Arc. However, these cases were rare, due to the wide view that women should be subservient to men.

Furthermore, women often had very basic or even no education as they were considered morally weaker and in need of male guidance. This ties in with the story of Eve in Genesis as it further fuelled this belief. As a result, although the Western societies restrained women's roles and agency, they greatly improved their status and position in these societies as they became more valued than in other societies.

Religion and Slavery

Christianity's relationship with slavery was historically complex, it both justified slavery and laid the ethical groundwork for its abolition. Slavery, however, was very prominent in some Western societies, such as the US and Britain. The relationship between Christianity and slavery from antiquity to the 18th century is complex and evolved gradually.



A mosaic depicting Roman slaves from the 2nd century AD in Tunisia. Credit: Wikipedia

As in every society until recently, slavery was deeply embedded in Greco-Roman society, and early Christians did not seek to abolish it immediately.

Instead, New Testament texts encouraged slaves to obey their masters while also urging masters to treat their slaves justly. However, Christianity proposed a new

radical idea for the time: the spiritual equality of all people before God, as seen in Galatians 3:28^[1]. This spiritual ideal did not immediately change societal practices, but it introduced a moral foundation for future reforms.

During the medieval period, the Catholic Church did not condemn slavery, but it did encourage more humane treatment and often saw baptism as a step towards better status. Theological thinkers, like St. Augustine, saw slavery as a result of original sin, but emphasized charity and justice for the slaves. In the modern era, the rise of the transatlantic slave trade saw some Christians use scriptures of the Bible to justify slavery, though often their excuses were based on very questionable interpretations. Popes of the 16th century called for a humane treatment of Native Americans, and missionaries worked to prevent their enslavement. Later, Christian voices such as the Quakers and some Catholic thinkers began to oppose slavery openly, arguing it was contradictory with the Christian ethic of human dignity and love for one's neighbour. Christians like Wilberforce were at the forefront of early abolitionism of slavery; Christian theology gradually provided essential moral arguments that helped fuel the movement. This shows that, although Christianity once accepted the institution of slavery, it also resented it through moral rejection. Historian David Brion Davis shows how Christian theology was both used to justify slavery and ultimately crucial to its abolition, particularly through evangelical reform movements. Thus, religion did not simply cause problems, but it offered the ethical framework for their resolution.

Religion as a Driver of Art and Culture

Culturally, Christianity gave history the most significant artwork and artists. For example, the Renaissance was an explosion of Christian-influenced art. Leonardo da Vinci's *Last Supper*, Michelangelo's *Sistine Chapel of St. Peter*: almost all these artists are universally acclaimed for the greatness and influence of their work, which was itself influenced by Christianity. Christian art touches the soul and reaches into people who need hope. It is powerful, and because of its magnificent quality throughout history, it is some of the world's most regarded artwork the world has ever seen.



Leonardo da Vinci's Last Supper. Credit: Wikipedia

Art, however, was not the only form that Christianity shaped religiously. Christianity gave history its most excellent poets and musicians. Sebastian Bach, Mozart and Beethoven were all Christian musicians that shaped the sound of history.



The scoring of Handel's Messiah. Credit: Wikipedia

History's most famous pieces were mostly Christian songs: *Silent Night*, *Amazing Grace*, *Ave Maria*, Mozart's *Requiem*, and Handel's *Messiah*. The sound of Christianity has echoed throughout history and is one of the most beautiful and energetic tones the Earth has ever heard. Kenneth Clark observes that Christian themes provided the symbolic language for much of Western Europe's artistic flowering.

Overall, Christianity, but also all the other major religions, has influenced our world in a very positive way: creating strong and just social and moral laws, and rich and enlightened cultures.

Religion and Violence

On the other hand, religion can push humans to violence. Humans have always been blinded by belief, radicalised those beliefs, and died for them. Therefore, humans have often used religion as a pretext or reason to wage war in the name of their religion, the European wars, the Islamic conquest, the Crusades or the Conquista.

The Crusades are the best example of violence expressed by the Christians. After the capture of Jerusalem by the Muslims in the 11th century, the Byzantine Empire requested aid from the Catholic Church, this allowed Pope Urban II to call for a military expedition to the Holy Land, called a Crusade. From there nine Crusades



Destruction in Gaza from the Israel-Palestine conflict. Credit: NPR

happened, with only one being considered successful. While framed as acts of spiritual duty, these campaigns involved significant violence, including massacres, forced conversions, and widespread suffering for Muslims, Jews and Christians with every religion suffering. With those Crusades also came the sacking of Constantinople in April 1204, which significantly weakened the Byzantine Empire. The Church also promised spiritual rewards, such as forgiveness of sins, to those who joined the cause, further blurring the line between faith and warfare.

However, while the Crusades were heavily linked to the Church, it is important to recognize that their violent nature was not reflective of Christianity's true message. At its core, Christianity teaches peace, compassion, and the dignity of every person. The Crusades were an opportunity for men to seize more power and land for themselves, pushing them to use spiritual messages for the sake of power, money, and land. Some leaders manipulated the faith to justify conquest and violence during the Crusades.



A gruesome depiction of the St. Bartholomew's Day Massacre painted by a Huguenot. Credit: Colorado Pressbooks Network

The Crusades were not only an answer to the Islamic violence in the Holy Land, but mainly an excuse for leaders to extend their rules and influence throughout Europe, and also to distract the aristocratic fighting class of the medieval ages.

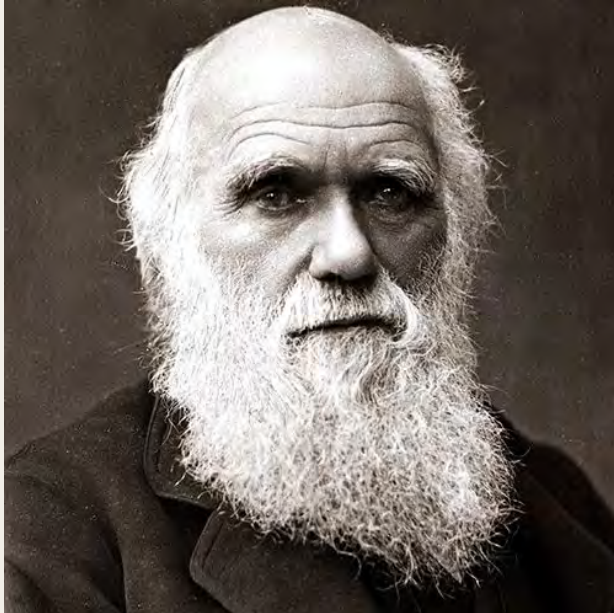
These wars and violence caused by religion were most often started with oppressive purposes: legal and economic. Religious conflicts have always had a greater reason than religion, such as money, influence, and politics. Religions do not often initiate violence, but their message is often misinterpreted by humans and used as a pretext for violence.

Religion and Science

Although monasteries in the early Middle Age were hothouses of natural sciences and technology, since the 17th century, the Catholic Church has had a complicated relationship with science. The rise of science brought to the world more concrete evidence of our questions about our origins and the universe.

This, therefore, questioned and contradicted the beliefs of Christianity, creating a better explanation to this world, and anchoring people's beliefs from God to science.

The perfect example of this is Galileo. Revolving heliocentrism, the model discovered one century before by Copernicus, the trials of Galileo culminated in 1633. They lead to his conviction for heresy. He was sentenced to prison but then allowed to continue his research in house arrest.



Charles Darwin. Credit: Biography

This is the most famous conflict between science and the Catholic Church. The Church, scared by these ideas which were denying a part of its teachings, tried to suppress it. But that only grew over time with Charles Darwin coming in in the 19th century. Darwin created a theory which essentially led to Darwinism. Darwinism is the theory of the evolutionary mechanism, popularized by Charles Darwin as an explanation of organic change. At the time, this was considered outrageous as it contradicted parts of what the book of Genesis stood for, that we humans are descendants of chimps and not the image of God.

Darwin's theory of evolution, while initially rejected by many Christians, was later supported through overwhelming scientific evidence, directly challenging literal interpretations of Genesis.

As scientific knowledge has increased, Christianity has lost significant numbers of faithful. Christianity has always tried the best possible to come up with an explanation for these facts or dismissed them, leading to a constant fight between the two of them.

However, the two can co-exist. Multiple famous scientists (that have discovered laws of the universe) against the teachings of Christianity were indeed Christian during their whole life. For example, Mendel, who discovered the principle of genetics by manipulating and cultivating green beans; Georges Lemaître, who came up with the theory of the Big Bang which contested the Catholic Church's teachings; and Nicolaus Copernicus, who invented the theory that we're in a solar system and that the Earth orbits around the Sun, were all Catholic priests. These are examples that both science and religion can co-exist.

Secular Ideologies as 'Political Religions'

My final point will focus on secular religions. The last centuries have been filled with horrible crimes: the Holocaust, the Soviet Famine of the 1930's, the Armenian Genocide of 1915, Stalin's Purge and Mao's Great Leap Forward.

At first sight, these horrible crimes were committed by political systems, not by a formally religious institution: fascism, communism, and Nazism. But these political movements can be argued to have had religious behaviours and aspects. Political philosopher Eric Voegelin argued that ideologies like Nazism and communism mimicked religion, offering salvation myths and demanding absolute loyalty.

Like many religions, the Nazis follow a book, "*Mein Kampf*" written by Hitler. In this book can be found theological ideals and beliefs such as the superiority of the Aryans and extermination of the Jews. The Nazis followed a sort of idol as a political figure: Hitler was the Nazi equivalent of a messiah. He was their supreme leader (Führer). And finally, the Nazis had rituals and ceremonies in the form of rallies in Nuremberg and Munich.

For the communists, it was the "*Little Red Book*" by Mao and the *Communist Manifesto* and "*Das Kapital*" both written by Karl Marx. The communists also followed a supreme leader and idol. In Russia: Lenin, Marx, and Stalin; and in China: Mao. The communist equivalent of religious rituals is the pilgrimage to Lenin's grave, which is very symbolic.

Although these political systems claimed to be anti-religious or non-religious, their ideologies and actions are very similar to normal religions, having an idol or spiritual leader, a book on which the basis of their beliefs is founded, and ceremonies and rituals to express their ideals. To conclude, the human mind is fundamentally religious and has an aspiration for a higher power or a stronger force than their own self. The violence caused by secular religions are also due to irrational behaviours within the human heart, as the human heart and mind is prone to its natural primal aspects, which is mainly violence, primates as an example of it.

Conclusion

Therefore, although religions cause problems in the form of violence, inequality and contradictions with science, they ultimately solve more as they provide moral frameworks, inspire social cohesion of communities, and offer individuals a sense of purpose and dignity. In contrast, secular ideologies like communism, Nazism, and fascism, often described as "political religions", led to far greater violence and oppression, lacking the moral foundation found in faith traditions. While religion has been misused, its true message has helped guide humanity towards meaning, unity, and moral advancement.

Let me conclude with the quote that inspired this essay, attributed to G.K. Chesterton:
"When men choose not to believe in God, they do not thereafter believe in nothing, they then become capable of believing in anything."



What do the Ancient Egyptian Amulets show about the culture of Ancient Egypt and the concept of divine protection?

Enoch Wang (I)

Received recognition from the Girton College Humanities Essay Competition



Upon seeing the amulet, it is important to consider as viewers not only what the object is, but also the deeper meaning behind such an artefact. Having survived until the modern day, it presents us with a snapshot of ancient society, namely the everyday happenings of the Ancient Egyptians. These amulets (or protective charms) were used to protect (in this case) both the living and the dead from evils and disasters that were regularly encountered. Therefore, it is no surprise that such histories and cultures have been discovered and analysed through such objects.



Bes's amulet can be argued to show us more about Ancient Egyptian culture and the concept of divine protection. Bes's amulet is a depiction of a specific god of the Egyptian Pantheon, suggesting that there is a specific type of divine protection that the bearer desired. Since Bes is especially attributed to the protection of children and women (who were perhaps seen as the more vulnerable members of Egyptian society), this suggests the wearer was either a woman or a child. This is evidenced by a limestone stela from Memphis upon which the Bes- image appears compounded with Ptah-Pataikoi and is



shown standing on a pair of crocodiles holding a snake and a sword. He is identified by a Greek inscription as “The great Lord of women’s wombs, protector, guardian, healer, feeder, and awakener”. This is further exemplified by the fact that women had tattoos of Bes, because in 2019 human remains were found from one tomb, which included a left hip bone of a middle-aged woman. On the preserved skin, there is a depiction of Bes and a bowl, imagery related to ritual purification during the weeks after childbirth. He is also depicted in royal birth scenes. From the New Kingdom onwards, Bes became increasingly depicted in the company of the pregnant Taweret (who was a goddess of birth and fertility) in images celebrating such birth and fertility. The Egyptians believed that he stood guard during childbirth, ready to strike any malevolent forces that sought to harm both mother and child.



An Isis Amulet. Credit: The Metropolitan Museum of Modern Art

The amulet was believed to be effective because of the use of the material. Red Jasper in Ancient Egypt was thought to represent fertility and childbirth, meaning that this was especially applicable to Bes, due to the reasons highlighted earlier. This is evidenced by Chapter 156 of *The Book of the Dead*, which explicitly required such an amulet to enhance the spell, because of the red colouring of the amulet: “You have your blood, Isis; you have your power.” It was linked to fertility, as it was named the fertilising blood of Mother Isis. Given that we know this about a typical red amulet, it makes the element of protection much more interesting, because this amulet may not only be a call to Bes for protection, but a call to

Isis, since the Book of the Dead does not explicitly say what “kind” of a red amulet is necessary, and so with the evidence that we have currently available, one can only therefore conclude that this amulet may have also been placed in tombs for protection. It is from this that one can draw a conclusion that this amulet may also tell us a lot about funerary rites, since Bes’s protection was desired in ‘Duat’, where the dead journeyed to reach the afterlife. This can be evidenced by the fact that some apotropaic Bes-like figures occurring in the vignettes of spells belonging to the corpus of the Book of the Dead, especially on papyrus, play the function of demonic guardians

of the netherworld. Therefore, not only can we see Bes's amulet function as a protective charm for childbirth and association with fertility, but also, we can see that through his association with childbirth and fertility, there is a further hinting of the aspect of protection, as through the perhaps association with Isis as well, there is an "added layer" of protection for the dead.



A Bes Amulet. Credit: The Museum of Metropolitan Art

rampage that laid Egypt to waste and almost destroyed all of humanity. The same myth was also described in the prognosis texts of the Calendar of Lucky and Unlucky Days of Papyrus Cairo 86637.

Again, one can also see how the material used for the amulet really highlights this. Although Red Jasper was seen as symbolizing fertility, it was also associated with the colour of blood, violence, energy, and power, much like our modern interpretations of the colour red. Since Bes was believed to be a 'demon' who warded off evil influences at childbirth (hence his red-coloured amulet), he was considered a violent guardian in Egyptian mythology: he was often seen with knives and killing evils portrayed through snakes and demons. Hence, this showcases his destructive power, energy, and violence. He was also known for warding off evil spirits with his music (typically with drums or other percussion instruments, thought to be most effective at driving away evil spirits as Bes is also depicted on other amulets to be carrying a percussion instrument such as a tambourine). Thus, this makes Red Jasper a hugely appropriate material to use for this amulet. Therefore, Bes's amulet is able to hint to the perceiver about the impact of such an object on everyday lives of the Ancient Egyptian people; one can see his great ferocity in

Upon inspecting the amulet, we can see that Bes is portrayed with lion ears and a mane, shown here by the use of cross-hatching on the back of the amulet. This feature further demonstrates his ferocity and association with war and violence, as in Ancient Egyptian culture, lions were well regarded as the fiercest warrior in the wild and a symbol of both danger and protection. Proof of this fact can be seen through the fact that the warrior goddess Sekhmet and warrior god Maahes were all depicted as maned lions, particularly Sekhmet, whose bloodlust in a myth was not quenched at the end of a battle against insubordinate humans who refused to obey the gods. This led to her going on a bloody

the amulet through both the animal depicted and also the use of the material used to make the amulet.



A Cat Amulet. Credit: The Metropolitan Museum of Art

By contrast, the cat amulet depicts no specific god, meaning that there is an ambiguity to which god the cat statue is appealing to. This suggests that it could allude to multiple different gods, namely Sekhmet, Bastet, and the less well-known gods and goddesses; Mafdet, Maaheh, and Tefnut. All these gods depict different aspects of Egyptian life (Maaheh and Sekhmet as mentioned before, Tefnut the goddess of moisture and rainfall, Mafdet the goddess of justice, punishment and protection, Bastet, goddess of home, childbirth and fertility). Thus, because this cat amulet appealed to many different gods and goddesses, it willed them to protect the owners of the amulet through every aspect of life. These wide-ranging themes associated with felines emphasise the monumental role cats played in Ancient Egypt; a role so divine that this motif was repeated immensely across its three-thousand-year period.

Here however, there seems to be more evidence to suggest the aspect of guardianship, which seems to almost achieve a similar role to the Bes amulet. This is due to the rigid and tall position of the cat portrayed, which probably really underlined the custodian aspect of this amulet (portrayed like this because of how cats were snake killers and scorpions, which were known to be poisonous in Ancient Egypt, thus symbolising evil). This can be especially seen in Chapter 7

from the *Book of the Dead*, where Ra takes on a cat form to cut the chaos serpent into pieces, thereby protecting humanity from darkness, hinting further that the cat amulet here was particularly effective as an amulet for the dead.

It can therefore also be argued that cat amulets such as these were placed in tombs, as well as being used in everyday lives of Ancient Egyptians. This is hinted at by the use of the material Faience. Faience, commonly known as 'Tjehnet', meaning brilliant or dazzling, produces a shiny, radiant effect after being baked. This green hue produced of the faience symbolizes fertility, death and afterlife. We can infer this because in Ancient Egyptian portrayal and mythology, the dead are often portrayed with green skin. This can be seen most notably in the depiction of Osiris, who is the king of the underworld, after being turned into the first mummy by Anubis and Isis, after his death at the hands of Set (in an ancient Egyptian myth). This is especially relevant to the cat amulet, since cats were not only seen as guardians (thus making sense for a cat to guard a tomb), but also, because of their ability to navigate the dark and unknown, were believed to help the deceased find their way to the afterlife.



A Wedjat Eye Amulet, representing the healed eye of the god Horus. Credit: The Metropolitan Museum of Art

Both amulets thus hint at how popular they were at their time, since more than 1,000 Bes amulets have been found, and more than 10,000 cat amulets have been found to this day. Compared to other amulets and objects, Bes was so significant as a protector of women and children that we can often see him depicted as protecting and shielding the infant god Horus from the evil god Set, further suggesting both his popularity and the effectiveness of his protection. Since Horus was considered the successor to become the ruler of Egypt, it really stresses the extent of his protection, hinting further that it is due to his protection that Egypt really flourished. Furthermore, the fact that the amulets are nameless nature (meaning that the names of the creators of such amulets are not present) of the amulets suggests that there were multiple these amulets were so popular during their time, that possibly many craftsmen of such amulets were prevalent, and quite cheap and affordable, allowing many of the common people to have such amulets, thus allowing us to draw from this that these types of amulets were hugely popular. This further suggests how important the gods and goddesses were in Ancient Egyptian culture, since it can be argued that this was not only a religion, but a central part of Ancient Egyptian economy.

Therefore, one perhaps reaches the conclusion that Bes's amulet tells us more generally about Ancient Egyptian culture (through its role in both life and in the afterlife). Despite this, as much as we can analyse such cultural treasures, in a museum context, one can argue that amulets such as these are perhaps 'depowered' in a sense. But, maybe one can see a relation with modern life, since looking back, these magical, mystical objects were a method of overcoming everyday struggles and pains. The possession of Bes amulets can parallel our modern habit of

decorating our living spaces with meaningful objects that provide comfort and inspiration. Just as Ancient Egyptians integrated Bes into their daily lives, we too, surround ourselves with symbols and items that reflect our values and aspirations.

Perhaps we are not dissimilar from the Ancient Egyptians than we thought we were.

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Biocatalysis

Holly Wang (I)

Runner-up in the McDowall Essay Prize

Enzymes are essential cogs that run the machinery of cellular metabolism, enabling a rich variety of organic reactions to occur with surprising speed and accuracy under the mild conditions inside the cells. Biocatalysis explores how these micromolecular machines — refined through eons of natural evolution — can be harnessed to catalyse chemical synthesis. In this essay, we will discuss methods to improve natural enzymes, the design of biocatalytic reaction systems and show the advantages of biocatalysis over traditional reaction methods.

Through the constant moulding of evolutionary pressure across billions of years, organisms have developed remarkable proteins capable of catalysing a multitude of organic reactions. Biocatalysis seeks to use these proteins (known as enzymes) as the reaction vessel for chemical synthesis.

Many organic reactions react very slowly at r.t.p. There are 2 ways of increasing reaction rate: decreasing **the activation energy** (E_a) or increasing the temperature (T).

Mathematically, this is shown by the Arrhenius equation showing the rate of a reaction, $k = Ae^{-E_a/RT}$. Enzymes increase the rate by decreasing E_a . They bind to the reactant (substrate), forming an enzyme-substrate complex (E.S) that fixes the substrate in place. This traps the substrate in an environment which enables the stabilisation of the **transition state (TS)**, lowering the point of maximum energy in the reaction.

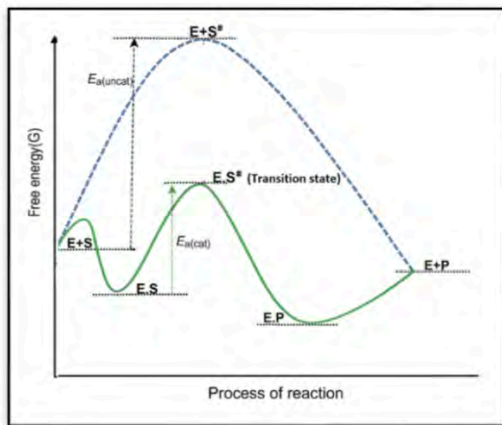


Figure 1 Energy profile of a reaction.

Green line indicates the profile of an enzyme-catalysed pathway. $E+S \rightarrow E.S$ indicates the binding of the substrate by the enzyme. Following the transition state ($E.S^\ddagger$), the substrate converts to product (P).

Blue line indicates an uncatylysed pathway: $E+S^\ddagger$ shows the substrate unbound to the enzyme.

One can see the E_a for the green profile is significantly lower, and using the Arrhenius equation, which suggests an exponential increase in the reaction rate.

Enzymes are highly specific: they only bind to their intended substrate molecule (and hence, enable the reaction to proceed only for that substrate). Furthermore, the specific positioning of the substrate in the bound $E.S$ complex means collisions occur in one orientation, and only for the wanted reaction which involves the substrate. This is in contrast traditional reactions in solution, where the lack of a fixed substrate means the collisions are a lot more random – in both orientation and the molecules involved. This is the reason why enzyme-catalysed reactions achieve superior **selectivity** and purity of the product compared to traditional synthesis routes.

Transition State: the positioning of the reactants at the point of highest energy during a reaction. [see Fig. 1]

Activation Energy: the energy barrier reactants need to overcome to convert to product. $E_a = E(\text{T.S}) - E(\text{reactants})$ [see Fig. 1]

Selectivity: in a chemical reaction, many different molecules can form. Selectivity refers to the ability of a reaction to only form the intended product.

The main challenge for biocatalytic methods is the instability of enzymes under higher temperature. Under these extreme conditions, the enzymes' shapes distort (denatures) and the shifted structures no longer stabilise the TS, meaning the rate of reaction drops rapidly as temperature increases past 100°C .

We can see, using the Arrhenius equation, that increasing T also increases the rate of reaction exponentially, so other reaction methods, unbound by restrictions on temperature, can be heated to extreme T and achieve reaction rates much higher than enzyme-dependent reactions – this is the main disadvantage of biocatalysis.

Below, we will explore how to improve the natural enzymes to overcome this weakness and discuss the design of biocatalytic reaction systems for practical use. Finally, we will give an example of the incorporation of biocatalysis in a chemical synthesis to highlight its advantages over traditional reaction methods and discuss its potential future applications.

Protein Evolution:

In nature, organisms evolve over time through two major steps: the altering of the genetic code through mutations leads to a set of organisms with different characteristics. This set of organisms is put under natural selection so that only organisms with the desired characteristic are 'filtered' through and survive.

Once a suitable enzyme is identified for the synthesis in question, we seek to optimise it for the specific reaction. Although there are many properties of the enzyme that can be evolved (Fig. 2), most of the properties ultimately lead to an improvement on the rate of catalytic action for the intended reactant.

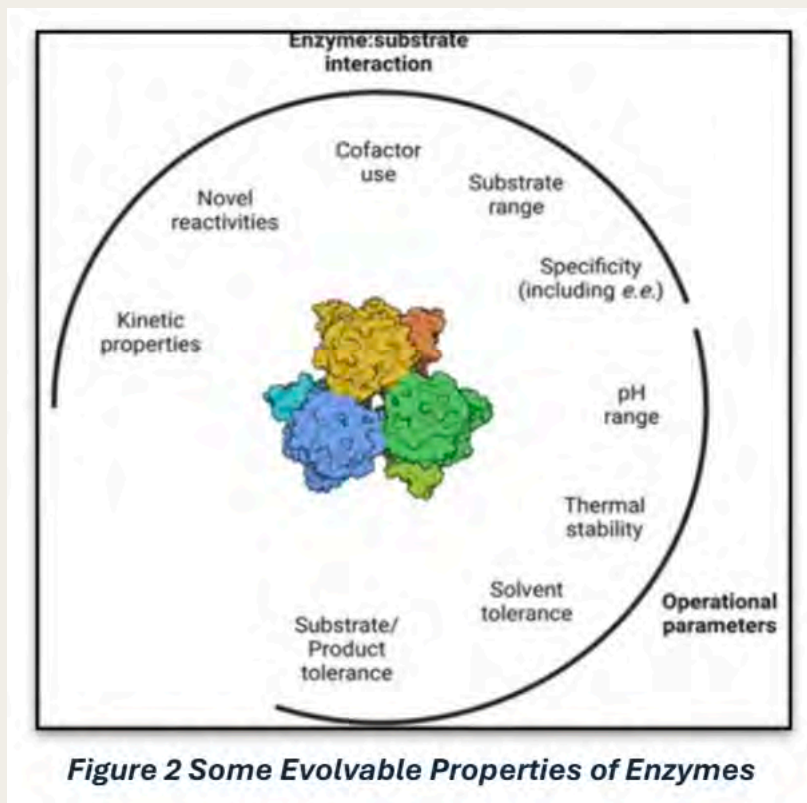


Figure 2 Some Evolvable Properties of Enzymes

Credit: American Chemical Society

a typical enzyme chain – yields 10^{13} distinct proteins.

Therefore, a choice must be made in the creation of a gene **library**: unbiased, but incomplete diversification of the entire genetic sequence (random mutagenesis) gives better chance of accessing new functional enzymes. Alternatively, the targeted, but complete, randomisation of a few codons, which correspond to key residues in the enzyme (focused mutagenesis), is likely to have the biggest impact on enzyme activity. Afterwards, recombination of such a library may be useful to access beneficial combinations of mutations.

Random mutagenesis can be achieved **in vivo** with the use of chemical / physical agents (e.g.: UV light). They randomly damage DNA and interfere with the organism's DNA repair system, thus resulting in errors during DNA repair.

A process that simulates natural evolution is used in the lab: directed evolution (DE). It consists of two steps corresponding to natural evolution: diversification of the enzyme's genetic code followed by 'filtration' of the mutated proteins based on their phenotype.

Gene Diversification:

It is impossible to cover all possible amino acid combinations for a typical protein: the complete randomisation of a mere **10-residue** chain – much smaller than that of

Residue: The single repeating unit of a polymer chain (eg: amino acid residue in proteins)

Library: Diverse populations of a DNA sequence

In vivo processes take place in a living organism. **In vitro** ones are outside a living organism (ie. in a lab: on a petri dish / test tube)

The relatively low mutation rates of in vivo methods compared to the in vitro strategy of error-prone PCR (epPCR) has led to a strong preference for the latter. Through the manipulation of the reaction conditions (e.g.: increased Mg²⁺ concentration), the PCR polymerase can increase its error rate. The mutation rate can be further multiplied by simply running multiple rounds of epPCR. Followed by a filter for proper protein expression, this gives a useful starting library for downstream testing and filtering.

Focused mutagenesis strategies require, foremost, the identification of key residues (directly involved in substrate binding / TS stabilisation). Fortunately, many proteins are structurally characterised to such detail to implicate specific residues which are most significant in the reaction.

After determination of the residues to mutate, one approach would be to access all possible amino-acid combinations at these residues (site saturation mutagenesis). At each residue, a mixture of all nucleotide combinations at the corresponding codon is incorporated into the original gene library through the use of restriction

Phylogenetic analysis: the study of evolutionary relationships between biological entities.

Used here for the analysis of the genotypes for a class of similar proteins, which, due to natural selection, has rich variation in function. Identification of patterns in genotype mutation that link to beneficial phenotypic change helps suggest good amino-acid substitutions.

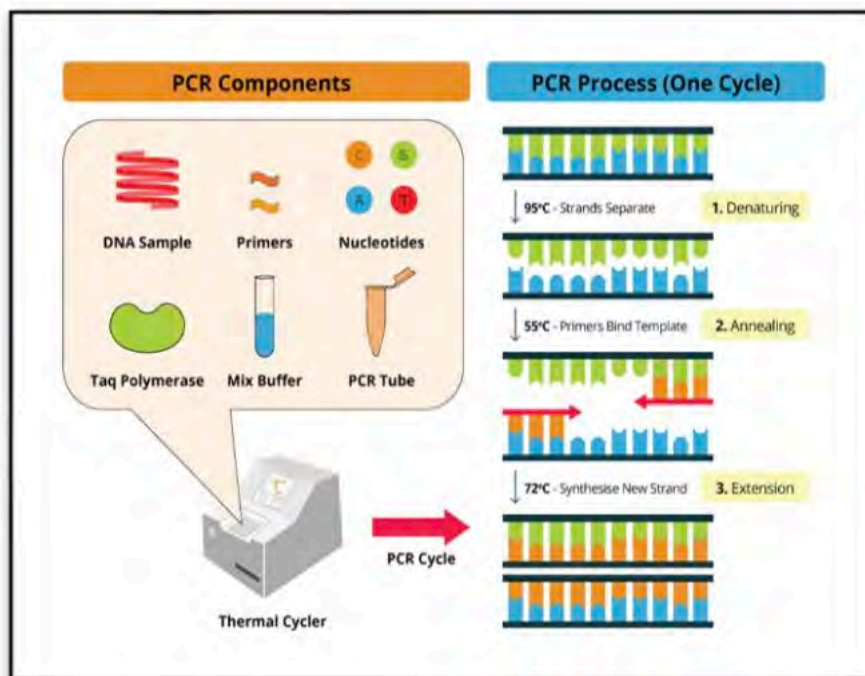


Figure 3 The PCR process, which clones a DNA sequence. epPCR aims to introduce error during the cloning.

enzymes & ligases. The simultaneous mutagenesis of multiple residues is useful to identify beneficial synergistic mutation combinations, where the group of mutations show an effect greater than the sum of the individuals.

However, as the number of targeted residues increase, the quantity of distinct nucleotide combinations quickly spirals out of control.

Furthermore, the majority of mutations are likely unbeneficial to the desired activity. Thus,

another approach is to introduce specific amino-acid substitutions (through the corresponding nucleotide substitution). These possibly beneficial substitutions are informed by **phylogenetic analysis** or computational predictions.

Filtering of Gene Library:

After gene diversification, the resulting library needs to be 'filtered' to obtain subpopulations that contain the desired phenotype characteristics. In this step, the genotype-phenotype link is essential.

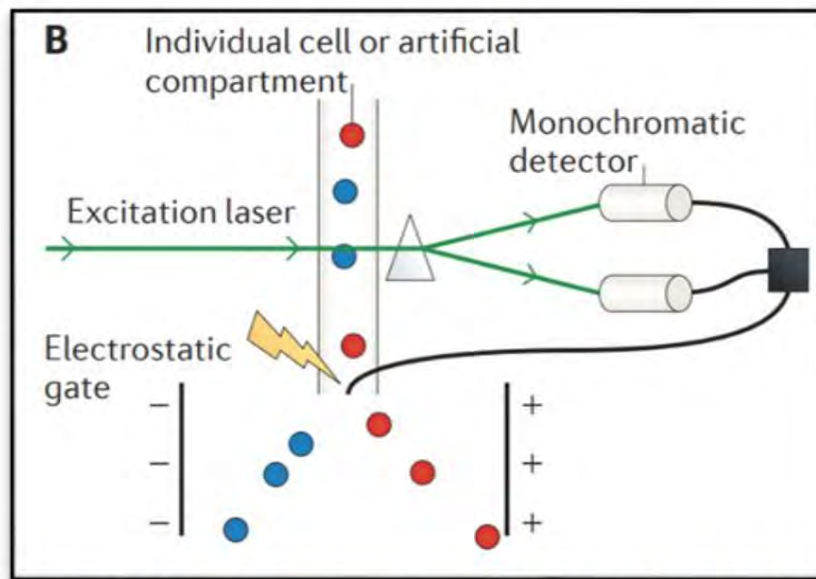


Figure 4 Flow cytometry: separation of cells based on fluorescence.

One approach is to examine every individual phenotype followed by manual 'filtration' of the library based on the resulting data (screening). Here, the separation of the diverse gene library is needed. This can be done through the isolation of each gene variant into its individual colony, where the protein is expressed in a unicellular organism (e.g.: E. Coli). The compatibility of this

strategy with many assaying techniques means enzymatic activity (substrate consumption / product formation) can be easily measured. However, due to the resource & time intensive nature of spatial isolation, this strategy has a low throughput (~10⁴ proteins / screening round). This restriction on the capacity means small, well designed, focused mutagenesis libraries pair best with this strategy.

Alternatively, screens with higher throughput, which rely on the rapid assessment of visible features, can be used. As most enzyme activities aren't directly associated with an observable phenotype, the linkage of the activity to expression of a fluorescent reporter, or the use of a substrate analogue which exhibit optical features upon conversion, is needed.

Flow cytometry bypasses the need for colonies to spatially separate the library, and instead examines the entire population on the level of individual cells. This strategy provides significant throughput (up to 10⁸ library members / 24h), although, again, a strategy to link fluorescence and the desired enzyme activity is needed, often in the form of a fluorescent tag on the substrate.

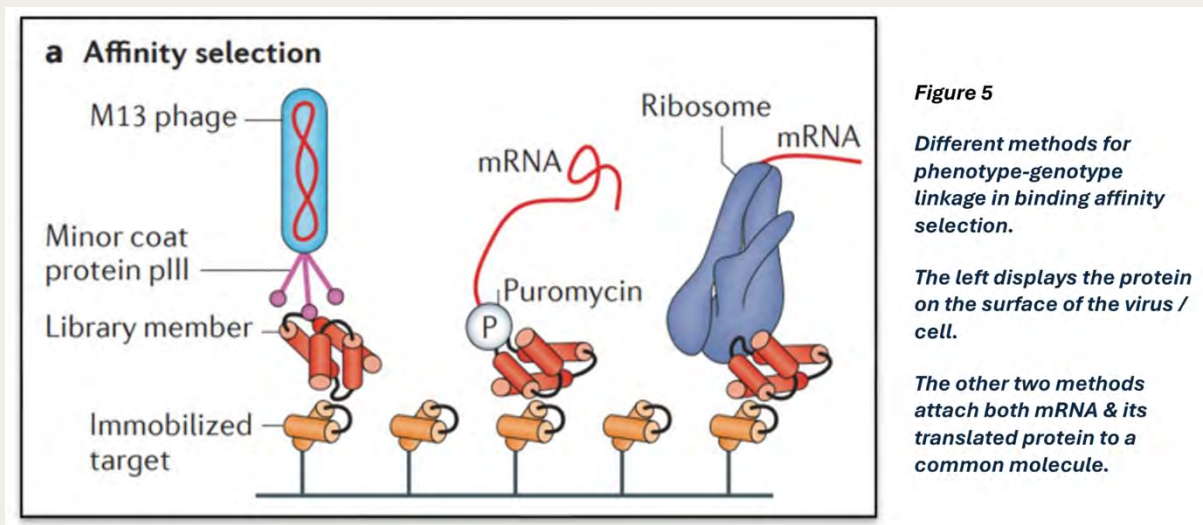
Another approach is the automatic 'filtration' of the genotype library by conditioning the survival / presence of the gene to the activity of the product it encodes (selection). This bypasses the need in screening to inspect individuals, but rather 'filter' the entire population simultaneously. Although the design of a selection process is a considerable challenge, it offers throughput and

efficiency unparalleled by any screening method. However, the loss of rich screening data often necessitates a secondary screen of the post-selection library members in order to optimise the next round of evolution.

One selection approach tests for the ability of library members to bind to the substrate, which is immobilised on a solid surface. The ones that fail to bind can't cling to the solid, and, alongside its DNA, is washed away and 'filtered' out of the library. The proteins need to be physically attached to its encoding DNA to preserve the genotype-phenotype link, and there are several ways to achieve this (Fig. 5).

Although binding selections are conceptually simple, its omission of other enzymatic activity components – catalytic efficiency & product release – from the selection parameters means it has limited use for enzyme evolution. Another approach is to link the enzymatic activity to organismal survival / replication.

One nice example is the evolution of xylose isomerase enzymes. Their consumption of xylose is a rate-limiting step in xylose conversion ethanol biofuels. Growth in media containing xylose as the sole energy source allowed amplification of the genes that coded for xylose isomerases which exhibited higher activity rates, as the energy converted from xylose correlates to number of DNA replications of the gene.



Above, we have described the basic logic behind directed evolution, and the different approaches to gene diversification and 'filtration' of the gene library. However, there are other emerging methods for protein optimisation.

A traditional evolution process would require multiple cycles of these two steps, marking it as labour intensive and time consuming. To overcome this, there has been rapid development of continuous evolution methods, which aim to perform all steps of the evolution cycle continuously without intervention.

While evolution-based methods seek to optimise existing enzymes, computational design enables exploration of novel protein functions that weren't accessed during evolution. Although initial designs remain suboptimal and needs evolution to improve its efficiency, it speaks volumes to the rising computation power that Tawfik et al. designed a novel protein able to catalyse the Kemp elimination, a function unknown to natural enzymes.

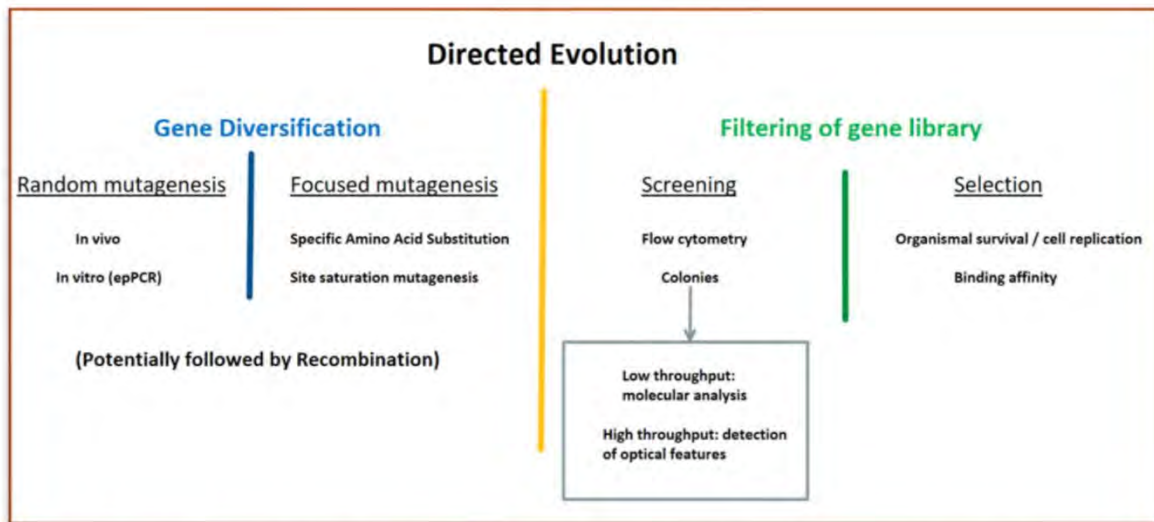


Figure 6 Breakdown of the different components of Directed Evolution

System Design:

After enzyme optimisation, its integration into a reaction system that maximises the biocatalyst's performance also require careful design. System design involves a multitude of aspects, each with its own options and trade-offs, but here we will focus on one example:

Traditional batch reaction systems introduce reactants all at the beginning, allowing them to convert gradually into product over time. A key limitation of this approach is that, as the reaction progresses, substrate concentration decreases, and the reaction rate inevitably slows [Fig. 7].

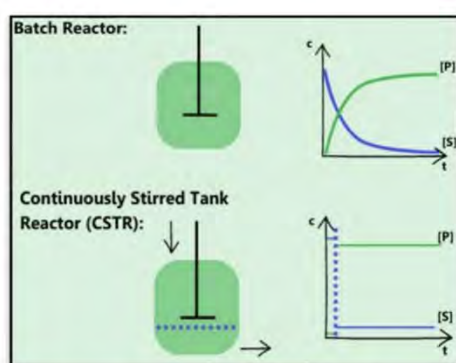


Figure 7 Concentration of substrate [S] & product [P] over time for different reactors.

CSTR is one example of a flow reactor (arrows show movement of material), where substrate concentration maintains constant. This leads to better control of the reaction conditions.

In contrast, flow reaction systems have become more popular in industrial applications. By continuously supplying fresh reactants and removing products, flow reactors maintain reaction rates more effectively and generally achieve higher space-time yields than batch systems. However, the continuous outflow of material also requires enzyme immobilisation to prevent the biocatalyst washing out of the reactor. This can be done either through chemical attachment or physical entrapment on a solid support.

In general, flow reactors often exhibit better space-time yields than batch reactors, albeit at the expense of higher infrastructure and operational costs.

Enzyme cascade: a series of sequential enzyme-catalysed reactions where the product of one reaction acts as the reactant for the next.

This allows complex, multi-step synthesis to be at once in tandem, drastically increasing efficiency.

Application:

The recent synthesis of the HIV-treatment drug Islatravir is a successful application of enzyme-led synthesis and highlights the potential advantages of a biocatalytic approach over traditional methods in fine chemicals productions.

Drug molecules are often structurally complex, and islatravir is no exception, with synthetic routes from natural materials requiring 12-18 steps. Due to the inefficient, resource-intensive nature of traditional routes, Huffman et al. attempted islatravir production using a one-step multi-enzyme cascade.

The group first designed the synthetic route, which was based on an existing cell metabolic pathway framework. This identified which classes of enzymes were needed. This was followed by screening on natural libraries for desired properties (acceptance of unnatural substrate analogues / high activity / high product selectivity) in order to identify specific enzymes that most suited the synthesis. These became the starting points for protein evolution.

For one enzyme, focused mutagenesis was used to target the active site. This was followed by a screen for enzyme activity and the recombination of beneficial mutations, which led to >70-fold rate improvement over the wild-type enzyme. A similar process was used to evolve enzymes for each step of the synthetic route, leading to the improvement of multiple targeted properties, such as increased tolerance for high substrate concentration and improved enzyme stability.

However, despite the efforts of protein evolution, a reversible part of the synthesis restricted the total yield to <50%. It was only through better design of the reaction system, where the by-product was removed upon formation, which stopped the reversible reaction. This led to full substrate conversion to product even at high substrate concentrations.

Through the efforts above, the group was able to synthesis islatravir from ethynyl glycerol (a derivative from the cheap, natural compound glycerol) in one step. This synthesis demonstrated the extraordinary power of biocatalysis to significantly boost reaction efficiency while reducing cost & wastage. It paves the way for more sustainable chemical synthesis.



Figure 8 The one pot synthesis from ethynyl glycerol (left) to islatravir (right).

Note the extraordinary complexity added in one step, achieved using an enzyme-cascade. This highlights the potential of biocatalysis in fine-molecule synthesis to replace traditional, multi-step synthesis.

An interesting thought is the use of biocatalysis in carbon capture – the conversion of CO₂ into useful organic compounds. A biocatalytic approach, using natural photosynthetic pathways, would require little or no energy input (uses light) and no additional reactants (except water) §

Furthermore, the key CO₂ fixing enzyme rubisco is notoriously slow relative to other enzymes, meaning drastic improvement of its activity, and thus rate of carbon capture, is potentially possible through protein evolution. Indeed, Cai et al. have already given proof of concept by evolving a rubisco mutant that exhibited 45% increased catalytic efficiency towards CO₂.

If a successful biocatalytic carbon-capture system is indeed developed, it would resolve the fundamental flaws of existing carbon-capture technologies: its energy intensive nature, the need for a constant input of resources, slow & incomplete conversion of CO₂. Could biocatalysis be part of the solution for reducing the impact of climate change?



What Are The Drivers of Wealth Inequality in the UK and How Can They Be Addressed?

Wilson Tang (X)

Submitted to Discover Economics' Young Economist of the Year 2025

When discussing wealth inequality, we must also consider income inequality since with higher incomes, people can purchase more financial assets, hence increasing their wealth. Therefore, I will discuss a few of the key drivers of both types of inequality including globalisation; social and geographical mobility; and the failure of the UK government to efficiently reallocate resources. I will then consider viable solutions including the roles of protectionism, investment and regulation in the UK setting.

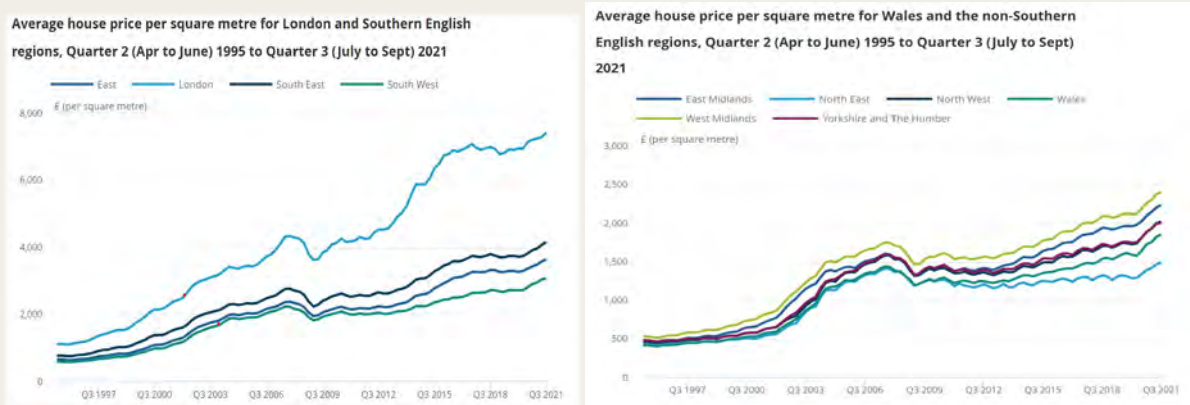
Globalisation – the increasing interconnectedness through trade, investment and technology- has accelerated the wage gap increase between the highest and lowest income earners. Due to increased global competition on the costs of production (for example from Asian countries like China, Vietnam or Bangladesh), domestic factories in the UK have been put out of business and the middle and working-class endured the brunt of this change through the decrease in real wages. Furthermore, as more efficient technology is beginning to be utilised, these multinational corporations are favouring capital over labour, thereby decreasing the number of available jobs, hence contributing to the hollowing out of the middle class and a greater disparity between the two income extremities. Finally, globalisation has made

it possible for firms to shift profits to avoid higher rates of taxes. One example of this was when from 2004-14, Apple paid close to 0% corporation tax.¹ Since there are many Apple branches in the UK, this amounts to a vast figure of lost potential taxes which could have been used to redistribute wealth through public services. To minimise the effect of globalisation on inequality, the UK could foster the approach that the US has done so aggressively: protectionism. Placing tariffs on imports, coupled with domestic investment, could stimulate the production of goods and services within the UK, thus creating jobs and reducing the rate of unemployment. Refined and crude oils are 3rd and 4th in value respectively on the list of the most commonly imported goods.² Therefore, if the UK government were to continue to invest large amounts of GDP on renewable energy sources, they could not only create new jobs, thus creating full and productive unemployment, but also improve the balance of payments - a key macroeconomic objective.



Apple Distribution International in Cork, Ireland. Credit: The Irish Times

Social and geographical mobility – or rather the lack thereof – has been a major contributor to wealth inequality over the past few decades in the UK. Fee-paying schools in the UK tend to have higher quality teachers due to greater competition in the labour market for higher wages. Consequently, high income families can afford to provide their children with a better quality of education and more opportunities, hence enabling them to access higher paying jobs. This cycle secures the high incomes of high-income families whilst lower income families become stuck at the bottom of the social wealth hierarchy. Geographical immobility is extremely prevalent in the UK and creates significant underemployment. The North-South divide contributes significantly to wealth inequality by stark differences in life expectancy, employment rates, income levels and housing.³ The South-East benefits from higher-paying jobs and greater investment by the government into infrastructure. Even if someone from the North was able to secure a higher-paying job in the south, they would face the second challenge of finding affordable housing (see Figure 1) or means to get to there.⁴



Steps have already been taken to resolve the void between North and South through the Conservative Party’s “Levelling up” scheme which directed £4.8 billion to the most deprived areas of the UK (mostly located in the North) or HS2 which aimed to deliver hugely enhanced rail capacity between the North and the South. Although the “levelling up” scheme and the construction of HS2 was largely unsuccessful, I believe that the government was heading in the right direction, as by first resolving this gap, the country can begin to address the root causes of wealth inequality. By investing in infrastructure, education, and job opportunities, the government can stimulate local economies, attract private investment, and create better-paying jobs. This, in turn, empowers individuals to build wealth and access opportunities previously concentrated in the South.



HS2, a grand project envisioned to close the north-south divide, remains heavily over budget despite major downscaling with the second phase connecting Birmingham to Manchester and Leeds being cancelled. Source: HS2 official website.

Finally, the most crucial factor – in my opinion - that has determined the level of wealth inequality in the UK over the past century is the failure of the government and its taxation system. Taxes exist for the purpose of maximising social welfare, redistribution, and economic stabilisation. Stiglitz argues in *The Price of Inequality*, that income and wealth inequalities have resulted primarily from the failure of redistributive mechanisms, and I am inclined to agree with this. In theory, the UK government should strive to make all taxes progressive to create the most “equal”

system. In practice, however, the Laffer Curve illustrates that beyond a certain point, increasing tax rates can reduce overall tax revenue due to increased avoidance. Capital Gains Tax (CGT), for example, is currently capped at 24%—significantly lower than the top rate of income tax, which stands at 45%. Since wealthier individuals tend to hold a larger portion of their wealth in assets subject to CGT rather than income tax, this allows them to minimise their tax burden.

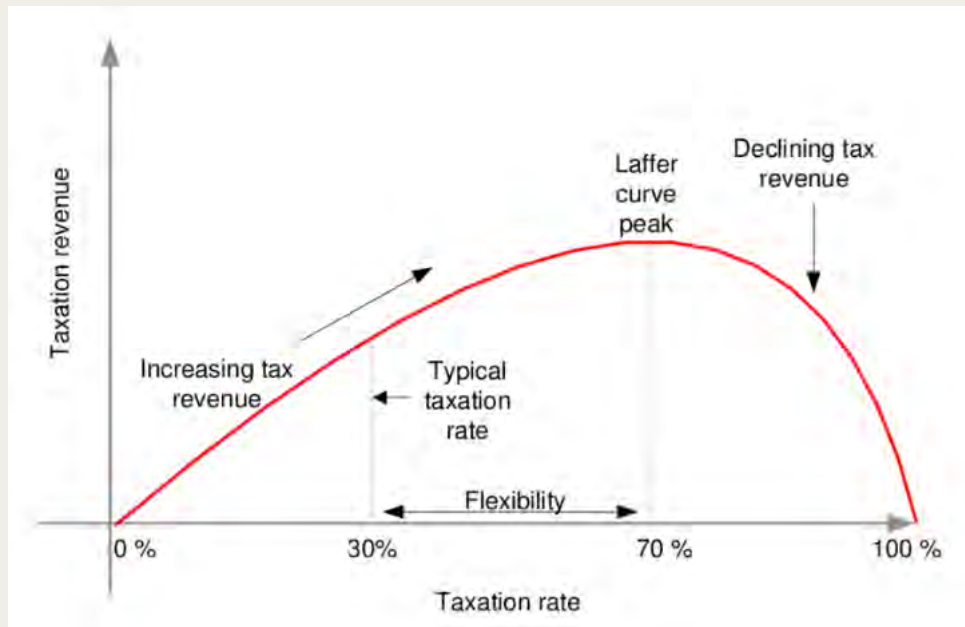


Figure 1: The Laffer Curve showing how taxation revenue changes with the taxation rate

To combat both issues, the government needs to implement stricter regulation and policing perhaps through international collaboration - for example through the automatic exchange of banking information⁶.

In conclusion, globalisation, limited social and geographical mobility, and the structure of the UK tax system have all provided the conditions for income and wealth inequality to grow. Globalisation has increased competition and widened wage gaps, while a lack of mobility prevents many people from accessing better opportunities. At the same time, aspects of the tax system often benefit wealth holders more than workers. Yet these inequalities are not fixed. Through measures such as protecting key industries, investing in education and regional development, and introducing fairer regulation, the UK government can play a significant role in narrowing these divides. Although progress would take time, such policies could, in the long run, create a fairer economy and a more balanced society.

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**“To know what you know and
what you do not know, that is true knowledge.”**

— Socrates

