

A woman with dark hair is holding a large, open, light-colored folding fan in front of her face, partially obscuring it. She is looking directly at the camera. The background is dark with a large, bright, glowing moon or sun in the upper center. A red, textured, and somewhat abstract shape is visible on the left side of the image.

HERESY

P R O J E C T

LANCING COLLEGE 2023–24

The Lancing Lower Sixth Heresy Project 2023–24

Preface

‘Predominant opinions are generally the opinions of the generation that is vanishing’.
(Benjamin Disraeli)

‘The fool hath said in his heart: There is no God’.
(Psalm 14)

During the Advent Term 2023 the Lower Sixth rose impressively to the challenge of the Heresy Project, delighting in unpicking overripe intellectual orthodoxies in extended essays of 1,500 to 2,000 words. They produced an exceptional range of work, as quirky, knowing and punchily intelligent as ever. I sense they would not share Ronald Firbank’s despair that ‘the world is so dreadfully managed, one hardly knows to whom to complain’. There was some truly outstanding writing: caustic, nuanced and tautly well researched, arguing for an extraordinary diversity of heretical causes with flair, wit and judgement. Lancing’s long tradition of forceful, urbane and deeply learned independence of thought remains gloriously undimmed. TikTok’s algorithmic enchantments were unravelled, Malthus re-evaluated and the possibility of a perfect circle dismissed!

The following collection contains the final shortlist of the best heretical essays. It also includes the winning heretical entries. It was nearly impossible to make a decision on the final shortlist, and this year about twenty more essays could have made Lancing’s heretical pantheon. After much debate, a grand jury in the Common Room of Dr Kerney, Dr Herbert, Mr Harman and Mrs Mole finally agreed on the winners from the shortlist; and it was agreed that three entrants should be jointly awarded top prize. These three essays were notable for the impressive rigour of their research, the rich texture of their arguments and the gleeful delight they showed in attacking their heretical targets: just the high level intellectual qualities looked for by the very best universities.

Lancing’s winning heretical trinity this year comprises:

Isabelle Klosowski for her essay:

‘Some people are born criminals. How far do you agree?’

Eamon Rustom for his essay:

‘Science or slaughter? An argument for animal testing in the biomedical industry’.

Fin Sutcliffe for his essay:

‘Elite athletes are born not made’.

Dr Damian Kerney
Head of History and Sixth Form Enrichment

The Shortlisted Heretics

Lancing's winning heretical trinity:

6	Isabelle Klosowski (Saints)	'Some people are born criminals. How far do you agree?'
10	Eamon Rustom (Head's)	'Science or slaughter? An argument for animal testing in the biomedical industry'.
16	Fin Sutcliffe (Head's)	'Elite athletes are born not made'.

The heretical runners-up:

22	Rayna Chen (Manor)	'The perfect circle does not exist'.
26	Paddy Joyce (Saints)	'To what extent can it be said that a carnivore diet is more beneficial than the plant-based diet of veganism?'
30	Nerea Kries-Margaroli (Sankey's)	'Celebrities have more influence in society than political leaders. How far do you agree?'
34	Charlie Stewart (Head's)	'TikTok is the most downloaded app ever. It should be banned'.
38	Max Willis (Saints)	'Climate change is not destroying the world, but overpopulation is'.
42	James Windaus (Head's)	'Does nationalism work in a globalised world, or is it an outdated concept?'
46	Ria Yadav (Manor)	'Free choice in marriage is overrated'.



1: The Winning Trinity of Heretics

‘Because I was a pedant. I tried to ignore you, as pedants always do try to ignore any fact they cannot fit into their pet system’.

(Max Beerbohm)



‘Almost all crime is due to the repressed desire for aesthetic expression’.
(Evelyn Waugh OL)

14th Century Gorleston Psalter
(British Library, MS. 49622, f. 106v)

Some people are born criminals. How far do you agree?

Isabelle Klosowski



Isabelle is studying English Literature, French, Spanish and Psychology at A Level. She hopes to read English Literature at university, possibly with Languages or Psychology. She is especially interested in the interaction between psychological theory and literary analysis.

Are some people born criminals? Is the tendency to criminal behaviour inherited or taught? Nature or nurture? In the history of psychology and criminology, it is one of the most debated and controversial of questions. Some people even believe that, if certain biological factors contribute to criminal tendencies, the population should be screened for them to reduce crime rates. This in itself, however, raises significant moral questions.

Traditionally psychologists have emphasised either genetic or environmental influences. However, recently, many have begun to argue that nature and nurture are not in opposition. Instead, they interact to form a person's unique characteristics. Nature implies our traits are inborn and we inherit certain characteristics from our ancestors, whereas nurture suggests we are the product of our environment, including our upbringing and life experiences. Before the twentieth century, the main belief was that children's personality traits were shaped entirely through imitation of their parents. However, recently, scientists have discovered that genetics influence us more than previously thought¹.

Caspi et al. have shown how certain gene variants influence the susceptibility of a maltreated child to becoming a violent adult. According to their study, among maltreated children, those who carry a particular allele of the MAOA gene show a susceptibility to violence and anti-social behaviour in contrast to those with other alleles. MAOA is a gene that encodes for the enzyme monoamine oxidase A, which is responsible for the degradation of certain neurotransmitters in the human body (for example norepinephrine, epinephrine, serotonin and dopamine)². Low levels of MAOA have been linked to aggression in animals and humans, and those with very low levels often find it difficult to restrain themselves from inflicting pain on others (either physical or psychological). By contrast, those with normal or high levels are usually less likely to commit violent crimes³. Even so, for those who have not experienced maltreatment, the gene seems to have little effect - an environmental trigger is needed. As such, on the surface it seems that maltreatment is the main factor contributing towards displays of violent behaviour later on in life. However, Caspi et al. also suggest that without the particular allele of the MAOA gene, maltreated children are unlikely later to exhibit antisocial or aggressive behaviour. Indeed, there are several examples of criminals and serial killers who recall having had loving, 'normal' childhoods, meaning there must be another - genetic - link to criminal behaviour. A famous example is the serial killer Ted Bundy, who sexually assaulted and killed many young women. According to Bundy in his final interview, on the night before his execution, he 'grew up in a wonderful home with two dedicated and loving parents ... there was no physical abuse or fighting in the home ... it was a fine solid Christian home'. He did not want people to blame his upbringing for his violent nature⁴. This is an example of someone who did not experience abuse or maltreatment at home, yet still went on to commit unspeakable crimes, suggesting a genetic role in criminality.

¹E. Turkheimer, 'Three Laws of Behaviour Genetics and What They Mean' *Current Directions in Psychological Science* vol. 9, 5 (2000), pp. 160-164.

²A. Caspi, J. McClay, T.E. Moffitt, J. Mill, J. Martin, I.W. Craig, A. Taylor & R. Poulton, 'Role of Genotype in the Cycle of Violence' *Maltreated Children Science* vol. 297, 5582 (2002), p. 851.

³R. McDermott, D. Tingley, J. Cowden, G. Frazzetto & D.D.P. Johnson, 'Monoamine Oxidase A Gene (MAOA) Predicts Behavioural Aggression following Provocation' *PNAS Proceedings of the National Academy of Sciences of the United States of America* vol. 106, 7 (2009), pp. 2118-2123; & N. Weder, B.Z. Yang, H. Douglas-Palumberi, J. Massey, J.H. Krystal, J. Gelernter & J. Kaufman, 'MAOA Genotype, Maltreatment, and Aggressive Behaviour: The Changing Impact of Genotype at Varying Levels of Trauma' *Biological Psychiatry* vol. 65, 5 (2008).

⁴T. Bundy, 'Last Interview' (1/1/1989), available at <https://www.youtube.com/watch?v=sCUQLPOjvxs>.

Additionally, recent studies have shown how serious criminals often have differences in brain structure and function⁵. They also have differences in hormone and neurotransmitter levels to 'normal' people⁶. Current research has found certain characteristics can be linked to antisocial and criminal behaviour, including deficient frontal brain functioning, hormonal deficits and a smaller volume in the amygdala, the part of the brain used for processing emotions⁷. According to some studies, certain neurobiological risk factors can also help predict a person's risk of antisocial behaviour later in life. For example, these include having a low resting heart rate, high testosterone levels, a reduced heart rate response to stressful situations and low activity levels in the anterior cingulate cortex, the area of the brain linked to emotional responses to pain⁸. However, all of these are only risk factors for criminality and do not mean a person is destined for a life of violence or crime.

Moreover, it has been discovered that genes can indirectly influence someone's environment through gene-environment interaction (G-E I) and gene-environment covariance (G-E C). This theory is often referred to as the 'nature of nurture'⁹. For instance, children seek out environments which suit their innate tendencies. So, some criminals may have inborn traits which cause them to seek out dangerous situations or to become friends with people who enjoy risk-taking, leading to lapses in judgement and reckless mistakes, including criminal behaviour. Although on the surface spending time with the 'wrong' group of people might seem an environmental factor, instead a person's innate characteristics might be the true underlying risk factor for criminality. G-E I and G-E C also mean 'different individuals pay different attention to or respond differently to the same objective experience'¹⁰. As such, criminals may have innate tendencies which cause them to react differently to certain situations. For example, in reaction to a spouse's affair, most people would be upset, but would not act violently towards their significant other or commit a crime of passion. Similarly, traumatic experiences do not always encourage a person to criminality. Many people experience terrible things but don't ever act violently or commit crimes. This suggests certain inborn traits have an impact on how a person reacts to trauma, influencing whether or not they turn to crime.

Nevertheless, many argue criminals are made, not born, with a person's environment and upbringing having a greater effect than genetics. Childhood experiences, peer influence, socioeconomic status, levels of education and the community a person grows up in can all contribute to the development of criminal tendencies. Some of these factors can even disrupt the development of certain brain regions, including the anterior cingulate cortex and prefrontal cortex, involved in inhibition and self-regulation. Indeed, if a child grows up in impoverished conditions, these brain areas can be negatively impacted, leading to structural changes which can hinder a person's ability to contain violent impulses¹¹. People are born with genetic predispositions, but certain social influences can switch genes on and off: 'genes are programmed not only to produce social behaviour but to respond to it as well'¹².

Moreover, exposure to violence, especially at a young age can increase the likelihood of a person engaging in criminal activities. Many psychologists, studying the effects of maltreatment and abuse during childhood, believe these traumatic experiences increase the risk of children going on to become aggressive and abusive and even to commit violent crimes. Many studies have been done into this area of the nature-nurture debate. For example, Caspi et al. argue 'boys who experience abuse - and more generally, those exposed to erratic, coercive, and punitive parenting - are at risk of developing conduct disorder, antisocial personality symptoms and of becoming violent criminals'. Their research included children who had been abused or exposed to neglectful, intimidating and coercive parents. In their study, they found 'maltreatment increases the risk of later criminality by about 50%', although they did not suggest this meant all maltreated children would become criminals. In fact, most 'do not become delinquents or adult criminals'. This may suggest there is a biological/hereditary factor that comes into play for a person to become a criminal. However, there is no doubt that 'maltreatment is a universal risk factor for

⁵ A.L. Glenn, A. Raine & R.A. Schug, 'The Neural Correlates of Moral Decision-Making in Psychopathy' *Molecular Psychiatry* vol. 14, 1 (2009), pp. 5-6; & Y. Yang & A. Raine, 'Prefrontal Structural and Functional Brain Imaging Findings in Antisocial, Violent, and Psychopathic Individuals: A Meta-Analysis' *Psychiatry Research* vol. 174, 2 (2009), pp. 81-88.

⁶ D.E. Glenn, J.S. Feldman, E.J. Ivie, T. Shechner, E. Leibenluft, D.S. Pine, M.A.K. Peters & K.J. Michalska, 'Social Relevance Modulates Multivariate Neural Representations of Threat Generalization in Children and Adults' *Developmental Psychobiology* vol. 63, 7 (2011).

⁷ A. Raine, *The Anatomy of Violence: The Biological Roots of Crime* (London, 2013).

⁸ D.E. Glenn, J.S. Feldman, E.J. Ivie, T. Shechner, E. Leibenluft, D.S. Pine, M.A.K. Peters & K.J. Michalska, 'Social Relevance Modulates Multivariate Neural Representations of Threat Generalization in Children and Adults'.

⁹ E. Turkheimer, 'Three Laws of Behaviour Genetics and What They Mean', pp. 160-164.

¹⁰ T.J. Bouchard, D.T. Lykken, M. McGue & N.L. Segal, 'Sources of Human Psychological Differences: The Minnesota Study of Twins Reared Apart' *Science* vol. 250, 4978 (1990), pp. 223-228.

¹¹ F. Focquaert, 'Neurobiology and Crime: A Neuro-ethical Perspective' *Journal of Criminal Justice* vol. 65, 101533 (2019).

¹² M. Ridley, *Genome: The Autobiography of a Species in 23 Chapters* (New York, 1999).

antisocial behaviour' and criminality¹³. Around 50% of serial killers experienced childhood psychological abuse, 36% experienced physical abuse, 26% experienced sexual abuse and 18% experienced neglect¹⁴. Thus, although most maltreated children don't become criminals, most serial killers experienced some form of childhood abuse, showing maltreatment can have detrimental impacts later on in life and can contribute to the making of a criminal.

Furthermore, Bandura's Bobo Doll experiments in the 1960s investigated whether social behaviours, for instance aggression, can be acquired through imitation. In one of his experiments, 24 young children watched an adult confederate (an 'actor' in the study) behave aggressively towards, and attack, a doll; 24 children watched an adult play with the toy in a subdued, calm manner; whilst a further control group of 24 were not exposed to any adults playing with the doll. Bandura found the 'children who observed the aggressive model made far more imitative aggressive responses than those who were in the non-aggressive control groups'. This suggests children learn social behaviour, particularly aggressive behaviour, through observation and imitation, which may suggest upbringing and childhood experiences have an impact on the making of a criminal¹⁵.

In conclusion, I believe some people are 'born criminals'. Yet, this does not mean they will become criminals. I would argue a person can be at risk of developing criminal tendencies because of certain genetic predispositions, but for criminal traits to show, there needs to be an appropriate environmental trigger (for example, a traumatic experience). I think that genetics and experience are not in opposition. They build upon and reinforce one another. As Ridley puts it, 'genes cannot work in a vacuum; they need environmental stimulation to develop'¹⁶. For example, a person may be born with certain neurological defects, gene and hormone deficits or innate traits that make them more likely to become a criminal. However, that person often needs to go through a 'trigger experience' for such criminal tendencies to be brought to light. In my opinion, the formation of a criminal is a complex labyrinth of interactions between both nature and nurture. One cannot simply be born a criminal, but not everyone can become one either.

¹³ A. Caspi, J. McClay, T.E. Moffitt, J. Mill, J. Martin, I.W. Craig, A. Taylor & R. Poulton, 'Role of Genotype in the Cycle of Violence', p. 851.

¹⁴ H. Mitchell & M.G. Aamodt, 'The Incidence of Child Abuse in Serial Killers' *Journal of Police and Criminal Psychology* vol. 20, 1 42 (2005).

¹⁵ S. McLeod, 'Bobo Doll Experiment' (2014), available at <https://www.simplypsychology.org/bobo-doll.html>.

¹⁶ M. Ridley, *Genome: The Autobiography of a Species in 23 Chapters*.

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Science or slaughter? An argument for animal testing in the biomedical industry.

Eamon Rustom



Eamon is studying Biology, Chemistry and Maths at A Level. He is looking to read Medicine at university, learning all he can about the biological miracle of the human form; and he hopes to become a doctor, to serve and give back to his community.

Animal testing, disdained by a vocal few yet relied upon by the silent many, has a history stained red with animal martyrdom. To further humanity's necessary march towards medical modernization, animal testing has been practised and refined since 500BC. Almost every medical advance can be traced back to it¹⁷. Medications we take for granted all originate from animal testing, with animals used in biomedical trials to evaluate treatments and drugs¹⁸. This involves a tightrope act: a delicate balance between progress and the ethical quandaries raised by testing. Researchers pursuing life-saving knowledge, only attainable through animal testing, tread a precipice between science and slaughter; and, in their attempts to alleviate suffering, they face opposition not just from testing's fiercest detractors but its hypocritical beneficiaries too¹⁹. I write in response to demands for an end to testing, looking to defend the practice and its scientists, to whose work I owe my life.

Before drinking deep from the Pierian Spring, let us first observe the average advocate for a ban on animal testing. They decry the practice as murder, so displaying meaty levels of hypocrisy. In September 2021, YouGov revealed that, whilst 65% of people condemned animal testing, only 7% were willing to swap a steak for a salad. Public sentiment towards animal welfare clearly takes a carnivorous turn when desire outweighs ideals²⁰. Indeed, the UK saw 2.76 million biomedical procedures performed on animals in 2022: a mere drop of blood compared to the 7.73 billion animals butchered in the same year by the UK meat industry²¹. For every biomedical procedure undertaken 2,800 animals were killed for meat. Yet, despite this, 97% of people declared their support for the meat industry, in comparison to just 34% support for animal testing. Isn't it sickeningly hypocritical to prioritise the personal pleasure of consuming flesh over lifesaving biomedical research, whilst allowing billions of animals to suffer through meat industry practices²²?

Animal testing, though decried as sadism, is peerless in attaining life-saving results. In science, progress is blood-stained and, although testing does not provide a perfect solution, it brings us closest to the answers²³.

¹⁷ 'History of Animal Testing' *Britannica ProCon.org* (5/9/2023), available at <https://animal-testing.procon.org/history-of-animal-testing/>; & 'Benefits of Animal Testing: How Ethical Testing Aids Research' *Biobide* (27/10/2023), available at <https://blog.biobide.com/benefits-of-animal-testing-how-ethical-testing-aids-research>.

¹⁸ 'International Guiding Principles for Biomedical Research Involving Animals' *National Institutes of Health* (December, 2012); 'Animal Testing and Research Achievements' *The Foundation for Biomedical Research* (29/10/2023), available at <https://fbresearch.org/medical-advances/animal-research-achievements>; H. Hobson, 'What Difference Does Animal Research Make' *Understanding Animal Research* (28/3/2013); & H. Hobson, 'Animal Research Statistics for Great Britain, 2021' *Understanding Animal Research* (30/6/2022).

¹⁹ D.Q. Beversdorf, R.P. Roos, W.A. Hauser, V.A. Lennon & M.F. Mehler, 'Animal Extremists' Threats to Neurologic Research Continue: Neuroreality II' *Neurology* 85, 8 (25/8/2015), pp. 730-34.

²⁰ 'Poll: Two Thirds of Brits Want to See Animal Tests Phased Out and a Deadline Set' *Cruelty Free International.org.uk* (4/10/2021), available at <https://crueltyfreeinternational.org/about-animal-testing/what-animal-testing>; & 'Dietary Choices of Brits (e.g. Vegetarian, Flexitarian, Meat-eater etc.)?' *YouGov.co.uk* (July, 2023).

²¹ '2022 National Statistics on the Use of Animals in Science Released' *The Royal Society of Biology* (13/7/2023), available at <https://www.rsb.org.uk/news/2022-national-statistics-on-the-use-of-animal-in-science-released>; & Vegetarians' International Voice for Animals, 'The Number of Animals Killed (UK)' *Viva!* (2/10/2023), available at <https://viva.org.uk/animals/number-animals-killed/>.

²² 'Factory Farming: Misery for Animals' *People for the Ethical Treatment of Animals (PETA)* (30/10/2023), available at <https://www.peta.org/issues/animals-used-for-food/factory-farming/>.

²³ 'Public Health Service Policy on Humane Care and Use of Laboratory Animals' *National Institutes of Health* (2015); C. Bannerman, 'Letter from a Queen's Researcher: Animal Testing Is Unfairly Judged' *The Queen's Journal* (15/3/2019); 'Benefits of Animal Testing: How Ethical Testing Aids Research'; & 'History of Animal Testing'.

Historically, animal testing has been the driving force behind eradicating smallpox and rinderpest; it has been the standard behind which the struggles against tuberculosis, congenital heart defects and Alzheimer's have been mustered, as well as the push for effective organ transplantation; it has been the catalyst for groundbreaking cancer treatments, HIV vaccines and work towards the pharmaceutical zenith of an ageing cure²⁴. For animals themselves, it has proved essential for treating rabies, parvovirus and anthrax²⁵. Its discoveries have been fundamental to 190 out of the 227 Nobel Prizes awarded in medicine or physiology. Animal testing was also key to the 2023 Nobel Prize winning research by Karikó and Weissman, which enabled a working COVID-19 vaccine²⁶.

During the pandemic, biomedical procedures on animals increased by 20% with the testing of COVID-19 mRNA vaccines²⁷. Mice were integral to testing, sharing more than 98% of their DNA with humans²⁸. Genetically modified rodents were vaccinated to ensure vaccines worked effectively and did not worsen the disease; and, growing problems of animal supply illustrated how indispensable they were²⁹. Pfizer and Moderna vaccines prevented 19.8 million deaths between 2020-21: an exceptional prevention of human suffering at the cost of only 37,800 procedures. For every animal test undertaken 524 people lived who would otherwise have died³⁰. To critics I ask, should we value the lives of 37.8 thousand rodents over 19.8 million humans in our quest for a more ethical science³²?

In fact, in drug development the World Medical Association's Declaration of Helsinki legally requires animal testing before human trials can take place. Testing suggests which drugs should be trialed on humans and at what dose, taking into account their effects on animals³¹. This proven method for assessing drug safety and efficacy has produced almost every pharmaceutical drug available today, providing in vivo data unobtainable by any other means³².

Yet, for testing's critics the FDA Modernization Act 2.0 in the US has now proved the practice superfluous, overturning the requirement that pharmaceuticals should be tested on animals. As they argue, there are in fact such differences in physiology, genetics and pharmacokinetics between species that animal models are inadequate³³. Of drugs which pass animal trials 96% fail in humans, and in disorder studies diseases progress differently³⁴. Animal tests are thus inadequate for yielding insights into diseases or treatments³⁵. For instance, 85 HIV vaccines failed in humans but succeeded in animals, as did the stroke drug NXY-059. The infamous

²⁴ 'Benefits of Animal Testing: How Ethical Testing Aids Research'; 'Animal Research' *The Foundation for Biomedical Research* (29/10/2023), available at <https://fbresearch.org/animal-research>; 'Animal Testing and Research Achievements'; & H. Hobson, 'Animal Research Statistics for Great Britain, 2018' *Understanding Animal Research* (18/7/2019), available at <https://www.understandinganimalresearch.org.uk/news/animal-research-numbers-in-2018>.

²⁵ 'Should Animals Be Used for Scientific or Commercial Testing?' *Britannica ProCon.org* (5/10/2023), available at <https://animal-testing.procon.org/>.

²⁶ 'Nobel Prizes' *The Foundation for Biomedical Research* (29/10/2023), available at <https://fbresearch.org/medical-advances/nobel-prizes>.

²⁷ H. Hobson, 'Animal Research Statistics for Great Britain, 2021'; & Home Office, 'Annual Statistics of Scientific Procedures on Living Animals, Great Britain, 2021' *Gov.uk* (17/11/2022), available at <https://www.gov.uk/government/statistics/statistics-of-scientific-procedures-on-living-animals-great-britain-2021/annual-statistics-of-scientific-procedures-on-living-animals-great-britain-2021>.

²⁸ 'Why Animal Research?' *med.stanford.edu* (25/10/2023), available at <https://med.stanford.edu/animalresearch/why-animal-research.html>; & C. Bannerman, 'Letter from a Queen's Researcher: Animal Testing Is Unfairly Judged'.

²⁹ 'Should Animals Be Used for Scientific or Commercial Testing?'.

³⁰ 'The Important Role of Animal Research in mRNA COVID-19 Vaccine Development' *The National Institute of Allergy and Infectious Diseases Now* (18/8/2021), available at <https://www.niaid.nih.gov/news-events/role-animal-research-mrna-covid-19-vaccine-development>; O. Watson, G. Barnsley, J. Toor, A. Hogan, P. Winskill & A. Ghani, 'Global Impact of the First Year of COVID-19 Vaccination: A Mathematical Modelling Study' *The Lancet* 22, 9 (2022); & Home Office, 'Annual Statistics of Scientific Procedures on Living Animals, Great Britain, 2021'.

³¹ 'Experimenting on Animals' *BBC.co.uk* (25/10/2023), available at https://www.bbc.co.uk/ethics/animals/using/experiments_1.shtml#h1; & 'Should Animals Be Used for Scientific or Commercial Testing?'.

³² 'Government Principles for the Utilization and Care of Vertebrate Animals Used in Testing, Research, and Training' *National Institutes of Health* (20/5/1985), available at <https://olaw.nih.gov/policies-laws/gov-principles.htm>; & 'Animals Behind Top Drugs' *The Foundation for Biomedical Research* (29/10/2023), available at <https://fbresearch.org/medical-advances/top-drugs>.

³³ A. Akhtar, 'The Flaws and Human Harms of Animal Experimentation' *Cambridge Quarterly of Healthcare Ethics* 4 (24/10/2015), pp. 407-19; & E.Y. Adashi, D.P. O'Mahony & I.G. Cohen, 'The FDA Modernization Act 2.0: Drug Testing in Animals Is Rendered Optional' *The American Journal of Medicine* 136, 9 (September, 2023), pp. 853-854.

³⁴ E.Y. Adashi, D.P. O'Mahony & I.G. Cohen, 'The FDA Modernization Act 2.0: Drug Testing in Animals Is Rendered Optional', pp. 853-854; & 'Flawed and Outdated Animal Models' *The National Anti-Vivisection Society* (28/10/2023), available at <https://navs.org/key-issues/flawed-and-outdated-animal-models/>.

³⁵ 'Flawed and Outdated Animal Models'.

leukaemia drug TGN1412, used in the 'Elephant Man' trial, also proved safe in macaques but caused organ failure in humans; and test results for Alzheimer's treatments in humans and animals have shown little correlation³⁶.

However, even though 96% of drugs tested on animals fail in humans, this does not make animal testing unnecessary. Such preliminary testing enables the identification and discarding of harmful substances, meaning human drug trials proceed only with pharmaceuticals proven safe in animals, which share with humans near-identical biochemical pathways. It provides invaluable evidence for side effects, revealing how a drug interacts with the body. Indeed, despite the 96% failure rate of preliminary animal testing, it is essential to drug development. Without it 99.99% of tests, if conducted, would fail. In fact, the failure would be 100%, if there was not the miraculous and minute chance of a perfectly safe and effective drug being discovered without prior testing on whole organisms. Blind trials would subject people to unidentified medications at random dosages. Consequently, without animal testing, accidents like the 'Elephant Man' trial or Thalidomide would become the norm. Human trials would transform science into a potential death sentence³⁷.

Yet, critics also claim continued animal testing might lead scientists to overlook lifesaving drugs, given differences in toxicities between animals and humans. For example, Tamoxifen, a drug treating breast cancer, might have been 'withdrawn from the pipeline' because it induced liver tumours in rats³⁸. However, this is not the case. The use of human cell alternatives, alongside a gradual dose escalation in human volunteers, would have revealed the drug's safety. Such an approach, even with stringent testing, can still be relied upon to ensure the discovery of effective and safe drugs, in a way impossible without animal testing.

Advocates for an end to animal testing also argue animals endure confinement, pain, distress and mutilation, their rights violated through inhumane experimentation³⁹. Yet, such arguments contradict the reality of testing. Barbarism is not only reprehensible but counterproductive. Pain and stress interfere with immune responses; and so inadequate care yields unreliable research. As such, researchers must conduct tests on animals humanely⁴⁰. Contrary to the claims of critics, 95% of animals used in testing are also rodents, not monkeys, puppies or kittens⁴¹. Felines, canines and primates, protected by Section 5C of the 1986 Animal (Scientific Procedures) Act, are just 0.2% of the subjects used in UK tests⁴².

The narrative that animal testing is always inhumane is also false, as the modern practice of replacement, reduction, and refinement requires researchers first to assess non-animal alternatives and then only to use the minimum number of animals needed⁴³. Modern testing is also ethically justifiable, only occurring when no alternative exists; and there has been a 39% reduction in testing from 2010 to 2020, and a further 10% reduction between 2021 and 2022⁴⁴. Animal testing is also categorized into five severity levels, allowing the assessment of harm during tests⁴⁵. In 2021, 81% of procedures were mild, including blood sampling, or were sub-threshold

³⁶ G. Matthews & C. Baker, 'Ten Years after the 'Elephant Man' Drug Trial' *Leigh Day* (14/4/2016), available at <https://www.leighday.co.uk/news/blog/2016-blogs/ten-years-after-the-elephant-man-drug-trial/>; A. Akhtar, 'The Flaws and Human Harms of Animal Experimentation', pp. 407-19; E.Y. Adashi, D.P. O'Mahony & I.G. Cohen, 'The FDA Modernization Act 2.0: Drug Testing in Animals Is Rendered Optional', pp. 853-854; & 'Should Animals Be Used for Scientific or Commercial Testing?'.

³⁷ C. Bannerman, 'Letter from a Queen's Researcher: Animal Testing Is Unfairly Judged'; & 'Should Animals Be Used for Scientific or Commercial Testing?'.

³⁸ E.Y. Adashi, D.P. O'Mahony & I.G. Cohen, 'The FDA Modernization Act 2.0: Drug Testing in Animals Is Rendered Optional', pp. 853-854.

³⁹ 'What Is Animal Testing?' *Cruelty Free International.org.uk* (24/10/2023), available at <https://crueltyfreeinternational.org/about-animal-testing/what-animal-testing>; E.Y. Adashi, D.P. O'Mahony & I.G. Cohen, 'The FDA Modernization Act 2.0: Drug Testing in Animals Is Rendered Optional', pp. 853-854; & 'Ethical Problems with Animal Use' *The National Anti-Vivisection Society* (28/10/2023), available at <https://navs.org/key-issues/ethical-problems-with-animal-use/>.

⁴⁰ 'International Guiding Principles for Biomedical Research Involving Animals' *National Institutes of Health* (December, 2012); & 'Animal Testing and Research Achievements'.

⁴¹ 'Why Animal Research?'.

⁴² H. Hobson, 'Animal Research Statistics for Great Britain, 2021'.

⁴³ 'International Guiding Principles for Biomedical Research Involving Animals'; & G. Sturge, 'Animal Experiment Statistics' *UK Parliament* (26/7/2023), available at <https://commonslibrary.parliament.uk/research-briefings/sn02720/>.

⁴⁴ Office of Science and Technology Policy, 'U.S. Government Principles for the Utilization and Care of Vertebrate Animals Used in Testing, Research, and Training' *National Institutes of Health* (10/5/1985), available at <https://olaw.nih.gov/policies-laws/gov-principles.htm>; A. Mood, 'Worse Things Happen at Sea: The Welfare of Wild Caught Fish' *Fishcount.org.uk*. (2010), available at <http://www.fishcount.org.uk/published/standard/fishcountfullrptSR.pdf>; K. Taylor & L.R. Alvarez, 'An Estimate of the Number of Animals Used for Scientific Purposes Worldwide in 2015' *Alternatives to Laboratory Animals* 47, 5-6 (Nov-Dec, 2019), pp. 196-213; 'Experimenting on Animals'; & C. Bannerman, 'Letter from a Queen's Researcher: Animal Testing Is Unfairly Judged'.

⁴⁵ G. Sturge, 'Animal Experiment Statistics'.

(non-suffering), highlighting efforts to minimize animal mistreatment. Furthermore, 40% comprised the birthing of genetically modified animals. Overall, in 2022 only in 4% of procedures did animals fail to recover⁴⁶.

Animals are treated humanely, because under the Public Health Service Policy on Humane Care they must have appropriate painkillers, anaesthetics, paralytics and, if necessary, euthanasia. This shows a dedication to conducting animal testing with care and a focus on animal welfare⁴⁷. Minimising animal discomfort is crucial; and, for anything beyond mild procedures, veterinary professionals qualified in health, welfare and handling must administer painkillers⁴⁸. Crucially, if animals do suffer, they are euthanised to minimise distress in humane species-specific ways. For instance, in the US this occurs in line with the American Veterinary Medical Association Guidelines for the Euthanasia of Animals⁴⁹.

Nevertheless, critics claim there is little oversight of animal testing, arguing it is rife with animal exploitation. Notably, they point to the fact that in the US only 5% of animals have legal protection, since the Animal Welfare Act does not apply to rodents, fish or birds: the vast majority of animals used in testing⁵⁰. However, these supposedly unprotected American animals are covered by the US Public Health Service through Institutional Animal Care and Use Committees (IACUCs) and the Guide for the Care and Use of Laboratory Animals⁵¹. IACUCs have the authority to review, approve and suspend animal procedures, and this institutional oversight ensures ethical and humane treatment of research animals⁵². Standards enforced include the housing quality for research animals, regulating enclosure size, temperature, access to food and water and ventilation; and they insist on regular inspections by veterinarians⁵³. IACUCs must include members without affiliation to research organisations and a doctor of veterinary medicine, suggesting a measured approach involving expertise from specialists to ensure accountable animal testing. Councils emphasise oversight and transparency in animal testing, guaranteeing the practice of ethical science⁵⁴.

In the US applicants for animal testing grants to the Association for Assessment and Accreditation of Laboratory Animal Care International must also prove they comply with established legislation and demands for transparency regarding the precise purpose of testing. They must commit to adhere to guidelines, understanding that violations will lead to a testing licence's suspension, so demonstrating their dedication to upholding rigorous animal research standards⁵⁵. The UK is even stricter, requiring that all researchers demonstrate competence and undergo an ethical review before conducting tests⁵⁶. Thus, animal testing in the UK and US is so regulated that cruelty should not be possible, if regulations are followed⁵⁷.

⁴⁶ H. Hobson, 'Animal Research Statistics for Great Britain, 2021'; '2022 National Statistics on the Use of Animals in Science Released' *The Royal Society of Biology* (13/7/2023), available at <https://www.rsb.org.uk/news/2022-national-statistics-on-the-use-of-animal-in-science-released>; & G. Sturge, 'Animal Experiment Statistics'.

⁴⁷ 'Public Health Service Policy on Humane Care and Use of Laboratory Animals'; & 'International Guiding Principles for Biomedical Research Involving Animals'.

⁴⁸ 'U.S. Government Principles for the Utilization and Care of Vertebrate Animals Used in Testing, Research, and Training'; 'Guide for the Care and Use of Laboratory Animals Eighth Edition' *National Institutes of Health* (2011), available at <https://olaw.nih.gov/sites/default/files/Guide-for-the-Care-and-Use-of-Laboratory-Animals.pdf>; & 'International Guiding Principles for Biomedical Research Involving Animals'.

⁴⁹ 'U.S. Government Principles for the Utilization and Care of Vertebrate Animals Used in Testing, Research, and Training'; 'AVMA Guidelines for the Euthanasia of Animals: 2020 Edition' *National Institutes of Health* (15/1/2020), available at <https://www.avma.org/sites/default/files/2020-02/Guidelines-on-Euthanasia-2020.pdf>; & 'International Guiding Principles for Biomedical Research Involving Animals'.

⁵⁰ 'Should Animals Be Used for Scientific or Commercial Testing?'.

⁵¹ 'Public Health Service Policy on Humane Care and Use of Laboratory Animals'; & 'Animal Testing and Research Is Highly Regulated' *The Foundation for Biomedical Research* (29/10/2023), available at <https://fbresearch.org/animal-care/animal-testing-regulations>.

⁵² 'Public Health Service Policy on Humane Care and Use of Laboratory Animals'; G. Sturge, 'Animal Experiment Statistics'; & 'Animal Testing and Research Is Highly Regulated'.

⁵³ G. Sturge, 'Animal Experiment Statistics'; 'Should Animals Be Used for Scientific or Commercial Testing?'; & 'Animal Testing and Research Is Highly Regulated'.

⁵⁴ 'Animal Testing and Research Is Highly Regulated'.

⁵⁵ 'U.S. Government Principles for the Utilization and Care of Vertebrate Animals Used in Testing, Research, and Training'; 'Public Health Service Policy on Humane Care and Use of Laboratory Animals'; '2022 National Statistics on the Use of Animals in Science Released'; & 'Animal Testing and Research Is Highly Regulated'.

⁵⁶ H. Hobson, 'Animal Research Statistics for Great Britain, 2021'; '2022 National Statistics on the Use of Animals in Science Released'; & C. Bannerman, 'Letter from a Queen's Researcher: Animal Testing Is Unfairly Judged'; & '2022 National Statistics on the Use of Animals in Science Released'.

⁵⁷ 'Animal Testing and Research Is Highly Regulated'.

In the light of recent technological developments, we must also discuss the emerging potential of cutting-edge animal alternatives to testing⁵⁸. Organoids are 3D structures grown from human cells mimicking simplified organs. In 2023, Dr Phan from the University of Sydney successfully created human lung organoids with the potential to replace animals in biomedical testing. Organoids, either healthy or with chronic obstructive pulmonary disease, can replicate the environmental conditions of a human lung so well that they have been adopted by the US Food and Drug Administration to try to accelerate drug development⁵⁹. However, although seemingly promising, these and other organoids are flawed in ways which prevent their adoption ending animal testing.

Despite the organoids mimicking simplified lungs, they still cannot provide a substitute for the complex interconnected functions of a living organism's pulmonary system and, thus, are inherently inferior to an animal during testing. For organoids, until they can perfectly mimic a whole organism, live animals must serve as subjects in helping test new drugs, because organoids cannot detect side effects in other body parts, from infertility to congenital anomalies and organ damage⁶⁰. As such, the only use of organoids should be in niche experiments, in which the complex interconnected biological pathways in living test animals are not needed.

For biomedical testing, animals are needed to study the interactions of drugs and treatments with various organs. For instance, in neurological studies, animals must be used. Computers, organoids and organs-on-chips just cannot model the brain, given its incredibly complex systems of interactions⁶¹. Furthermore, treatments for diseases like hypertension or blindness cannot be tested using non-animal alternatives. Therefore, a ban on testing would cause humans to suffer, with no hope of cures being developed⁶². Thus, until researchers have models superior to animals, they need to continue using them to ensure human safety⁶³.

Above all, organoid testing's inherent flaws exclude it from the mainstream. Organoids are incredibly complex both to grow and maintain, each having specialized protocols. They are resource intensive and time consuming to keep alive, and so, when compared to lab animals, are inferior test subjects. Maintaining their genetic stability is also challenging, given the frequent mutations which occur during growth; and, this can lead to unreliable data, poisoned by structural malformations, necessitating costly test repetitions during research. There is also a lack of standardisation between organoids, limited reproducibility and no comparative accuracy between laboratories. In this light, organoid results are unreliable compared to those from animal subjects whose genome is precisely known⁶⁴.

Thus, it is clear that animal testing is science not slaughter. It is needed to prevent human suffering from disease; and there is rigorous care given to animals, whose welfare is the priority of qualified professionals. There are also strict legislative safeguards in place to monitor for scientific misconduct; whilst current alternatives to testing have serious shortcomings. As for those still appalled on moral grounds, I ask you this. Can we, as a society, in good conscience, abandon a practice that has saved countless billions of lives, delivered cures for diseases once thought heavenly scourges and advanced biomedical science to empyrean heights? No, no, we cannot.

⁵⁸ 'Growing Need for Humane Alternatives' *The National Anti-Vivisection Society* (28/10/2023), available at <https://navs.org/key-issues/growing-need-for-humane-alternatives/>.

⁵⁹ P. Ritchie, 'Scientists Build Human Lungs in a Dish to Test Medicines' *The University of Sydney* (12/4/2023), available at <https://www.sydney.edu.au/news-opinion/news/2023/04/12/scientists-build-human-lungs-in-dish-to-test-medicines.html>.

⁶⁰ 'Why Animal Research?'.

⁶¹ Vetscience, 'The Future of Animal Testing in Five Propositions. Animal Testing: A Gold Standard?' *Universiteit Utrecht* (28/6/2021), available at <https://www.uu.nl/en/background/animal-testing-a-gold-standard>.

⁶² Vetscience, 'The Future of Animal Testing in Five Propositions. Animal Testing: A Gold Standard?'; 'Benefits of Animal Testing: How Ethical Testing Aids Research'; & M.G. Andrews & A.R. Kriegstein, 'Challenges of Organoid Research' *Annual Review of Neuroscience* (8/7/2022), pp. 23-39.

⁶³ C. Bannerman, 'Letter from a Queen's Researcher: Animal Testing Is Unfairly Judged'; & 'Benefits of Animal Testing: How Ethical Testing Aids Research'.

⁶⁴ M.G. Andrews & A.R. Kriegstein, 'Challenges of Organoid Research', pp. 23-39.

Elite athletes are born not made.

Fin Sutcliffe



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Our genetic makeup undoubtedly plays a significant role in the attributes we possess. We inherit our genes from our parents, with DNA carrying the instructions for the development and functioning of our bodies. These instructions influence a wide range of traits, including physical attributes, especially our physical strength and susceptibility to certain diseases. Elite athletes are some of the most impressive human beings in the world, showing extreme feats of strength, endurance and agility. They all dedicate significant amounts of their lives to training and improving themselves to gain an edge on their competitors. However, how much of their capability in their given sport is down to their genetic makeup alone?

Eliud Kipchoge, Michael Phelps and Usain Bolt are some of the greatest athletes of all time and have proved themselves to be machines in terms of training and the work they put in behind the scenes. However, their success can largely be put down to their genetic makeup and natural ability.

Northeast Africa has dominated long-distance running events for as long as they have existed. Only six of the fastest 100 male marathon times have come from outside Africa and just ten from anywhere but Kenya and Ethiopia, the two giants of the sport. Is this down to the hugely advanced training Kenya and Ethiopia put their athletes through? No. The ethos of these African countries is, simply, run. More developed countries, including the United Kingdom, America and Australia, have far more advanced and revolutionary methods of training, grounded in hours of scientific research. So why do these Northeast African countries dominate the sport? The answer lies in genetics.

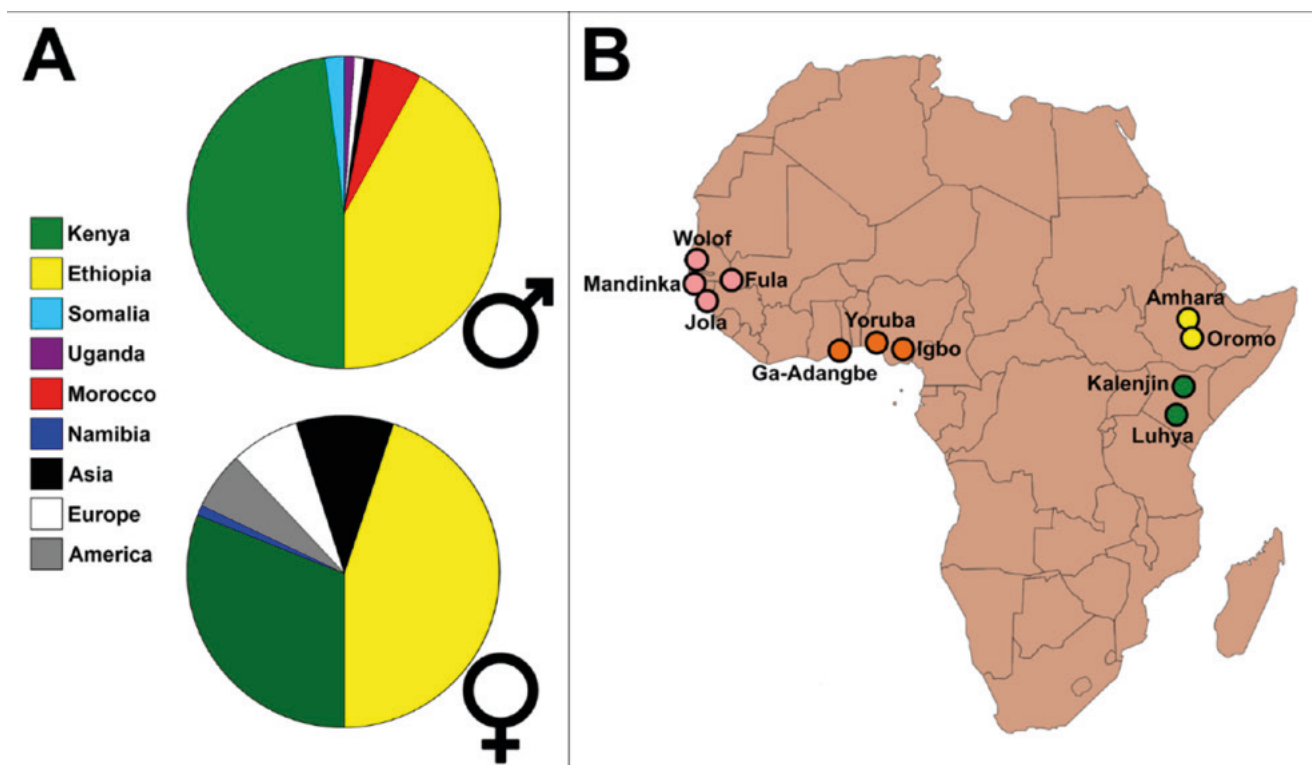


Figure 1: The birthplace of the fastest 100 marathon runners (male and female).

In endurance running, there is a huge over-representation of the Kalenjin and Oromo people, who originate from Kenya and Ethiopia respectively. The world record holders for both the men and women's marathons come from these groups. Indeed, Tucker et al. have shown the Kalenjin and Oromo have a significantly greater proportion of the genes which contribute to high performance in endurance running. For instance, the Kalenjin have more 'TRAM2-AS1, WWOX, ARHGEF1, GATAD1, AMOTL1, GSTO1, and MRAP2' in comparison to other regions of Africa, whilst the Oromo have a higher proportion of 'LTBP1, COL5A2, MIR6797, ADAMTS9-AS2, EXOC4, EXOC5, EXOC6B, and LIPE-AS1'. These genes affect biological traits such as glucose metabolism, blood pressure and oxygen processing, contributing to improved performance in distance running. WWOX, for instance, affects lung function and the ability to process oxygen; and enriched gene sets for lung function in the Kalenjin and Oromo allow for the most efficient oxygen absorption and energy output possible. This is but one way in which the Kenyan and Ethiopian populations tend to be built for distance running. Even the smaller East African stature provides benefits, allowing for greater economy in running. The hypothetical capabilities the Kalenjin and Oromo possess, as the peoples most suited to running when trained from a young age, are far greater than anywhere else in the world. They are born to run.

This is not to say East Africans do not have to work just as hard as the rest of the world to achieve greatness. In fact, they are some of the most dedicated athletes and train for years to reach elite status. It is just that, given the science of their genes, their rigorous training programmes will result in them running much faster than the rest of the world, who have worked just as hard. No matter how hard British athletes, for instance, train for a marathon, they will never remotely achieve the times of top East African runners. This is not a flippant assumption, but a fact. Therefore, elite marathon runners are born, not made.

This is just one example, from one area of one sport. However, in addition, there are countless further examples of elite athletes whose particular genetic makeup enables them to dominate a sport.

Michael Phelps is arguably the greatest male swimmer of all time. His wingspan is more than three inches longer than his height. This physical abnormality allows him an extraordinary amount of power per stroke; far more than his competitors. Indeed, it has been argued Phelps has the 'perfect body for swimming', including twice the average human lung capacity⁶⁵. The attributes which give him such incredible qualities are again predominantly down to genetic makeup, although Phelps has maintained one of the most intense training schedules of any athlete. All elite swimmers are not like Phelps. For instance, Tomoru Honda is five feet eight inches tall and won silver at the Tokyo Olympics, but Phelps is still eight inches taller. He is a phenomenon, a genetic marvel and born to swim. He is the elite of the elite. Every elite athlete trains hard, eats well and sleeps well, and Phelps has done nothing exceptional. The only edge he has is genetic.

Coming back to running, in the shorter format of the sport Usain Bolt is the 100 and 200 metres world record holder. Jamaican-born and raised Bolt was a machine on the track. He stands at six feet five inches tall and was in peak physical shape when competing. Yet, why was Bolt so fast? His fast twitch muscle fibres, training and maintenance of a good diet, as well as his access to excellent sport psychology, were crucial. Yet, as Professor Steve Harridge of King's College London argues, 'to be a great sprinter you need leg muscles that are dominated by fast-twitch muscle fibres because they shorten the muscle quickly and generate power'. Above all, 'scientists have ... found that there are certain natural variants of a gene called ACTN3 that can boost the performance of fast-twitch muscle fibres. Again, whether you have the "sprint gene" or not depends on whether you have inherited it'⁶⁶. Bolt had the sprint gene. Without it, however hard the training, sprint potential is always limited. Bolt, alongside many others, who possess increased fast-twitch muscle fibre content, will always have the potential to run faster as a sprinter.

⁶⁵ C. de Bellefond, 'Why Michael Phelps Has the Perfect Body for Swimming' *Biography.com* (14/5/2020).

⁶⁶ S. Connor, 'The Science of Sprinting' *The Independent* (4/8/2012).

Finally, the female gymnasts Simone Biles, Rebeca Andrade and Sunisa Lee underline how elite athletes are born, not made. They are all under five feet tall and their small stature is a key factor in their success, allowing them to perform gymnastic manoeuvres with more facility than women over six feet tall. Yet, again height is largely based on genetics, influenced to a small degree by diet and exercise. It is virtually impossible for a woman with tall parents to become a professional gymnast, as there is an 80% chance of her being tall. Through no skill or hard work of her own, or dedication to rigorous training schemes, the woman with smaller parents is far more likely to become a professional gymnast. Elite women gymnasts are born with the huge genetic advantage of genes that result in them being smaller.

However, the argument that elite athletes are born and not made should not be applied too broadly. For instance, to say professional footballers are born and not made would be far-fetched. The argument applies to more 'simple' sports. Running and swimming only require you to move your body forward with minimal decision making. Running in its simplest form is putting one foot in front of the other. The race winner is whoever can do that the fastest, and it is in these types of sport that genetics has a significant impact on performance. In more skill based sports, requiring decision making, such as football, cricket and rugby, there is a wider variety of people playing, suggesting genetics play less of a factor in determining elite athlete status. Football is one of the most diverse sports in terms of the physical stature of players. Peter Crouch, for instance, stands at six feet seven inches and played for some of the best teams in the world, whilst Lionel Messi at five feet seven inches is arguably one of the best footballers to have ever played. These two people could not differ more genetically, yet through hard work and sheer determination have excelled as professional footballers. This is a perfect example of athletes being made and not born.

In conclusion, when considering whether or not elite athletes are born and not made it depends on the sport. There is unambiguous evidence that in marathon running Kenyan and Ethiopian people have a genetic advantage over the rest of the world. Elite marathon runners are born and not made. However, when it comes to more skill based sports, it is apparent that hard work, dedication and training have more of an impact. If a sport is mechanical, I believe genetics are key. The more the sport leans towards decision making, the less genetic makeup holds sway. This does not mean that genetics do not play a part in skill based sports. Genetics still are a major contributory factor. Our genetic makeup is unbelievably complex, and it plays a determining role in the physical and mental state of our bodies as we develop into adults.

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2: The Heretical Runners-Up

'A man can't be always defending the truth; there must be a time to feed on it'.
(C.S. Lewis)



(Bibliothèque nationale de France, Latin MS. 16744, f. 81r)

The perfect circle does not exist.

Rayna Chen



Rayna is studying A Levels in Maths, Chemistry and Biology, and she is thinking of taking either Chemistry or Biochemistry at university. Through the Heresy Project she enjoyed exploring beyond the syllabus, linking mathematical concepts with controversial philosophical topics.

‘The circle is the first, the simplest and most perfect form’.
(Proclus)

Human beings understood the concept of the circle long before calculating the mathematical constant pi. The circular shape seems ubiquitous, both in nature and in manmade objects. Earth, the planet we call home, along with many other planets and moons in the solar system, appear spherical from self-gravity. The classic tear-shaped raindrops we all draw should also be spherical given their true appearance. The symmetrical properties of a circle have been fundamental to manmade objects, from large vehicles, including ships and airplanes, to everyday items such as radios, telephones and clocks. Beyond the physical utility of circles, the circle also carries a cross-cultural symbolic meaning, and because of its symmetry has been considered the perfect shape. In ancient Greece, circles were seen as representations of the ‘divine’ and ‘natural balance’, and in Christianity they symbolise the sleeping eye of God (Genesis 1:2). Therefore, in addition to their physical uses, circular structures have been constructed to serve more abstract purposes, including the Tholos of Delphi in Greece and the Temple of Heaven in Beijing, built in a conical structure. Circular designs have also been used extensively as decorative elements in buildings, particularly in those with a religious significance, including as arches, domes and round beams.

From the time we start learning basic geometry, we are taught the definition of a circle: ‘a circle has infinite points and each of them is equidistant from a fixed centre point’. We probably draw hundreds of circles in our lives, whether in maths with a compass or on canvas using acrylic. Yet, despite our familiarity with this geometric shape, a critical question arises. Do perfect circles exist and, if they do, are any of the objects mentioned so far truly circles, or do they simply appear so? Stars, planets and moons rotate on their axes and, as they rotate, are pulled in width by centrifugal forces which make them deviate from the shape of a perfect sphere. Raindrops, forming a near-spherical structure through the surface tension of water (caused by weak hydrogen bonds between the water molecules), gradually lose their rounded shape and flatten as they descend through the atmosphere. Thus, from subatomic particles to intricately constructed structures, nothing in the physical world conforms to the ideal of a perfect circle.

Are we able to draw a perfect circle then? My answer is no. Even if you use the finest compass in the world, what you draw will still only approximate to a perfect circle. To explain why, simply try to draw a point. A point has no dimension, meaning no width, no height and no length; it has no inherent properties, meaning no colour, no mass nor shape. How can you draw a point with a dimensionless existence in a tangible world? Even if you draw it down to an atomic scale, it still has width. Therefore, any mathematical idealised object does not exist in this world, and that includes the ideal point, line, curve and circle. The ‘perfect circle’ is unfortunately an idealised geometric concept which solely exists in the realm of abstract geometry.

Indeed, the persistent belief in the perfect circle draws comparisons with Plato’s allegory of the cave. Some prisoners have been kept in a dark cave for their entire lives. The fire behind them projects shadows of objects onto the wall facing them, and they mistake the shadows for reality. One prisoner is then freed into the real world and, realising the shadows are an illusion, returns to the cave to rescue the other prisoners. But many resist being rescued, fearing harm, never having witnessed the true world with their own eyes. So, when humans realise they can never draw a perfect circle, they tend to fall into three distinct categories.

The first believe they are drawing a genuine, perfect circle, seeing anything deviating from their creation as false. They reflect the trapped prisoners, perceiving shadows on the cave wall as the only reality; so self-assured that they impose their idea on others as an unquestioned truth.

A second group are like the prisoners before liberation. It does not matter to them whether a perfect circle exists: given the limits to their view they believe there are no absolute standards or ideals. They have no need to question the reality of the shadows, no reason to restrict themselves with a definite rule and no reason to question whether the circles they draw are perfect or not. Indeed, their perspective extends more broadly from circles to ethics and aesthetics. With an absence of fixed rules, in ignorance of the outside world, they embrace a form of relativism.

Finally, others respond differently. After being freed into reality, they let go of the pursuit of a perfect circle after earnestly attempting to draw one. Acknowledging their limitations, they come to realise that relentlessly striving after perfection is often impractical, leading them to approach problems more pragmatically and realistically.

Humans discovered the circle; and the circle exists in our world as a formal concept rather than a practical expression. Many things in our world exist in the same way. Justice, for instance, is like the idealised 'circle'. No one can obtain absolute justice, just as no one can draw a perfect circle. The pursuit of justice seems a never-ending endeavour, much like the pursuit of the mathematical constant pi, an irrational number. Pi, the ratio of the circumference to its diameter, is usually approximated to 3.14, but its decimal expansion goes on endlessly without repeating. Similarly, the search for justice is elusive. The concept of justice is complex and to establish a globally harmonised system of justice is a an unending challenge.

The circles we draw can never achieve perfect roundness, but no one would wish to erase the concept of the circle on the grounds of its imperfection. The concept of a 'perfect' point and a 'perfect' line serve as the fundamentals of maths, and the concept of a circle provides a useful and meaningful representation of a geometric shape. Similarly, the concept of 'justice' is the fundamental principle holding our society together, and attempts to reach absolute justice and approximate perfection remain the central endeavour of humanity.

The metaphoric significance of our inability to draw the perfect circle extends to the imperfections inherent in our world. From celestial bodies deviating from a perfect sphere to raindrops losing their roundness, the pursuit of an idealised geometric form remains elusive in our tangible world. Yet, despite the limitations and imperfections inherent in our attempts to draw a perfect circle or achieve absolute justice, the pursuit is meaningful of itself. The quest for the perfect circle, or in other words, the pursuit of absolute justice acts as a catalyst promoting mankind's development and progress from ancient times to the present. This journey continues, and humanity still has a long road ahead in its pursuit of perfection, whether of the idealised geometric shape or justice.

Perhaps, as Stephen Hawking has concluded, 'one of the basic rules of the universe is that nothing is perfect, perfection simply doesn't exist. Without imperfection, neither you nor I would exist'. Humanity, with its imperfect circle, will continue pushing its boundaries, always challenging and always progressing.

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To what extent can it be said that a carnivore diet is more beneficial than the plant-based diet of veganism?

Paddy Joyce



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We live in a world in which people are now actively starting to change their lifestyles and habits to become healthier and help the environment in positive ways. There has, for instance, been a notable rise in vegan diets across the West. Diet can make a huge difference both to health and climate change. Diets high in saturated fats and sugars can lead to health problems, including obesity and diabetes type 2. Diets which are resource intensive and require overseas sourcing also have larger carbon footprints. However, is a vegan diet the best way forward for the world, or should we ignore it as woke hypocrisy and revert to a caveman diet?

What do each of these dietary plans require? Veganism is much better known and has been more widely adopted. It involves a diet of products not made from, or with the help of, animals. Its recent popularity has been prompted by social and ecological concerns, principally over animal cruelty and the impact of animal products on the environment. In stark contrast, the carnivore diet involves eating only animal meat and products, although more lenient versions allow some low starch vegetables. Its adoption is far less widespread and its main advocates are Shawn Baker, the athlete and orthopaedic surgeon, and Jordan Peterson, the famous psychologist⁶⁷. They argue that, as human kind primarily ate meat when first evolving, to get the best benefits from our diet we should eat like our ancestors. They also insist modern diets are to blame for large rates of chronic disease⁶⁸.

The carnivore diet is high in protein and fat as well as iron and sodium. Diets high in protein and low in carbohydrates have been shown to help weight loss. The large amounts of protein make you feel fuller, meaning you are less likely to feel hungry after a meal. This reduces the intake of calories, putting you in a calorie deficit. Protein can also increase your metabolic rate, helping you burn more calories. This diet, it is also claimed, can cure a range of conditions including arthritis, depression and autoimmune problems, although no reputable long term experiments exist as proof. One explanation as to why people on this diet might feel better is that it radically restricts what is being eaten and so might inadvertently help cut out unknown intolerances. The symptoms from such allergies can range from feeling sluggish to chronic inflammation⁶⁹.

⁶⁷ B. St. Pierre, 'The Carnivore Diet: Can It Really Transform Your Health?' *PrecisionNutrition* (3/11/2023).

⁶⁸ 'All You Need To Know about the Carnivore (All-Meat) Diet' *healthline* (29/5/2024); & B. St. Pierre, 'The Carnivore Diet: Can It Really Transform Your Health?'.

⁶⁹ B. St. Pierre, 'The Carnivore Diet: Can It Really Transform Your Health?'.

Shawn Baker tells us he felt ‘such an improvement in performance and strength’ after adopting the diet, and he insists people have had ‘their allergies go away, their arthritis go away and their gastrointestinal issues go away’. He also argues that, before the development of agriculture, people mainly lived on meat diets and so were stronger and had thicker bones. For Baker it is not meat which causes health problems in normal diets but modern processed foods which we have not evolved to consume regularly⁷⁰. Another benefit of the carnivore diet is that it can aid, and be safer for, people with diabetes. It eliminates high sugar foods, meaning blood sugar is spiked less frequently, with fewer refined carbohydrates consumed⁷¹.

However there are some downsides to this diet. For instance, the risk of heart attack can be increased, since animal foods can be high in saturated fats and cholesterol. The large sodium intake from animal meat has also been linked to high blood pressure and kidney disease. This diet also lacks certain necessary minerals and nutrients obtained from plants, such as vitamin C. It also does not provide the fibre which improves gut health, which is only found in plant foods⁷².

In turn, a vegan diet can either be good or bad for the health, depending on an individual’s approach. For example, if you actively assure a balanced intake you can be healthy. Even so, for optimal health, you should still take supplements of essential vitamins and minerals to avoid deficiencies⁷³. Yet, even when compared to a balanced western diet, a vegan diet might well be richer in certain nutrients good for the health, including fibre, antioxidants and potassium, for instance found in whole grains, nuts and seeds. A vegan diet can also lower blood sugar and help kidney function. For instance, studies have shown people with diabetes on a vegan diet have been able to reduce dosages of blood sugar-lowering medication⁷⁴. A vegan diet has even be linked to slightly reduced chances of developing cancer, because it includes more legumes, fruits and vegetables. There have also been various studies showing vegan diets are more effective at reducing LDL cholesterol (often dubbed ‘bad’ cholesterol) and overall cholesterol levels.

However, there are also many drawbacks to a vegan diet. For it to have health benefits, you must plan your diet carefully to make sure you have the proper intake of necessary nutrients⁷⁵. Indeed, although vegans can get iron from plants, the body absorbs it far more effectively from meat, leading to dangers of anaemia if not supplemented⁷⁶.

The carnivore diet can also have a negative environmental impact, given raising livestock is labour and resource intensive. For instance, it takes a hundred times more water to produce a pound of meat than a pound of wheat. Beef is especially bad for climate change as cows consume crops, producing methane, so speeding up climate change by increasing the greenhouse effect. In fact, the world’s cattle population consumes a calorific value equal to the needs of 8.7 billion people⁷⁷. So, thinking sustainably, a decrease in the demand for meat would mean this food would be available for human consumption, reducing pressure on agricultural needs. Indeed, the UN says meat and dairy account for 11.2% of all manmade greenhouse gas emissions⁷⁸.

⁷⁰ S. Baker, ‘Benefits of the Carnivore Diet’ *carnivore diet* (3/11/2023).

⁷¹ ‘All You Need To Know about the Carnivore (All-Meat) Diet’.

⁷² ‘All You Need To Know about the Carnivore (All-Meat) Diet’.

⁷³ ‘Will Being Vegan Make You Healthier?’ *Birmingham City School of Health Sciences* (3/11/2023).

⁷⁴ ‘Science-Based Health Benefits of Eating Vegan’ *healthline* (30/3/2022).

⁷⁵ ‘Will Being Vegan Make You Healthier?’.

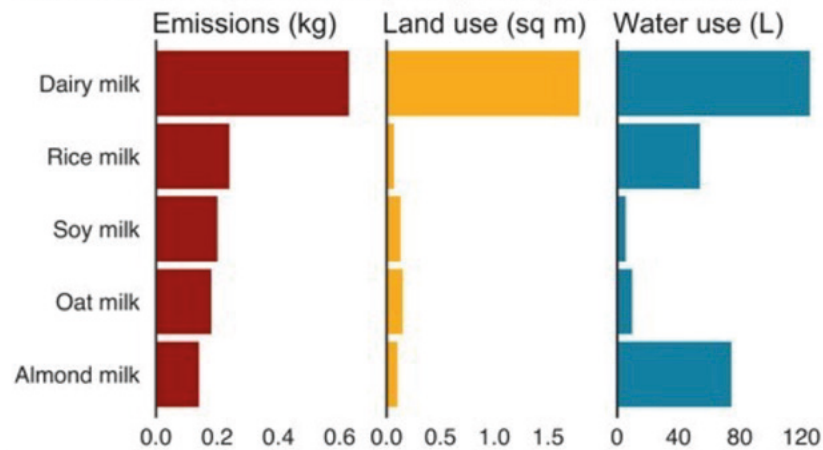
⁷⁶ ‘Science-Based Health Benefits of Eating Vegan’.

⁷⁷ ‘How Does Eating Meat Harm the Environment?’ *Peta* (4/11/2023).

⁷⁸ P. Allen, ‘Is a Vegan Diet Better for the Environment?’ *goodFood* (25/8/2023).

Which milk should I choose?

Environmental impact of one glass (200ml) of different milks



Source: Poore & Nemecek (2018), Science. Additional calculations, J. Poore

BBC

Figure 1.

As seen in Figure 1, vegan alternatives to milk are also better for the environment, although they are still not very sustainable. They are also less nutritional than dairy milk, meaning other foods are needed to make up for the deficit⁷⁹. There are also other significant environmental issues with a vegan diet. For instance, with serious water scarcity across the globe, growing avocados is water intense, using, it is claimed, between 227 litres per avocado and 824 litres per kilogram. Similarly, although soy beans are packed with vitamins and can be used to make many vegan foods, they are also one of the world's leading agricultural drivers of deforestation, only second to beef. Palm oil too, according to Rainforest Rescue, causes an area of rainforest the size of 300 football pitches to be lost in Indonesia every hour⁸⁰. The vegan diet, even more than normal western diets, also demands plant goods to be imported when not in season, adding further to emissions⁸¹.

The long term health effects of an all-meat diet have not yet been fully researched. However, like other popular diets, including the keto diet, it cuts out all carbohydrates; and we can assume it similarly helps to promote weight loss. A vegan diet can be healthy if managed well, although you have to ensure you plan your meals carefully and take supplements. So, overall I believe that if you do not take the most extreme carnivorous approach, instead allowing yourself vegetables and the odd carbohydrate, the carnivore diet can be healthy. However, a well-planned vegan diet has been researched in more detail, and so with supplements I believe is better for the health.

As for environmental effects, the carnivore diet does have a larger detrimental impact, using more water, land and resources and producing more greenhouse gases. Nevertheless, the vegan diet is still not very good for the environment, as to avoid all animal products at all costs means going to greater lengths to produce food.

Overall, both diets have disadvantages. However, the vegan diet is more beneficial than a purely carnivore one. Even so, there are diets still more beneficial than a vegan diet, which misses out on certain necessary nutrients and can affect the environment negatively. One possible diet might include the use of insects, which are much more environmentally friendly than animal meat, in combination with plant based foods, to fulfil both health and ecological requirements. However, this might not be to everyone's taste!

⁷⁹ P. Allen, 'Is a Vegan Diet Better for the Environment?'

⁸⁰ P. Allen, 'Is a Vegan Diet Better for the Environment?'

⁸¹ R. Gray, 'Why the Vegan Diet Is Not Always Green' (13/2/2020).

Celebrities have more influence in society than political leaders. How far do you agree?

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In a society built on foundations of technology, freedom of thought and independence, a well-supported authoritative political figure is hard to find. Indeed, with so many political parties and groups, a wide range of beliefs and opinions is encouraged, with an array of political leaders fighting to run the country. Whilst there have been many successful prime ministers and governments, steering the UK through many a potential disaster, recent instability in Downing Street has provoked a loss of faith in political leaders, pushing people towards alternative sources of influence. These increasingly include celebrities, given their sheer popularity and social impact. Some celebrities use their dominant social media presence to involve themselves in politics; others use it to support charities and non-profit organisations, expressing moral principles in tune with much of public sentiment, so further strengthening their influence. Indeed, this can be seen globally, and aging constitutional systems and candidates need to adapt to meet the changing requirements our evolving societies demand of their leaders.

It is not uncommon to see celebrities donate money to, or volunteer to help, charitable organisations. Some celebrities even set up non-profit organisations to help their local area or to tackle wider issues. Hispanic celebrities are particularly known for their work in the undeveloped, conflict-stricken countries of South America. For instance, in 1997 the singer Shakira from Barranquilla, Colombia, set up her own Fundación Pies Descalzos to improve the education and social development of children in Colombia. Since the 2017 demobilisation of the FARC (the Revolutionary Armed Forces of Colombia) over 30 rebel groups have formed, as well as the guerilla National Liberation Army (ELN) and Gulf Clan⁸². This has left political and social instability; and, against this background, Shakira's work has helped over 152,000 children and 887,000 families⁸³. Similarly, the Puerto Rican rapper and singer Benito Antonio Martinez Ocasio, 'Bad Bunny', in 2018 used his cultural fame to set up his Good Bunny Foundation. His recent album became the most-streamed album in a single day in 2023 on Spotify, and his foundation works to support young people in Puerto Rico develop their own musical, artistic and athletic talents⁸⁴. As Shakira and Bad Bunny have sought to help children in their native countries, so other celebrities have called on personal experience to spread a wider understanding of contemporary social challenges. For example, Demi Lovato released her song *Sober* in 2018, following a relapse into cocaine use. She took a near fatal overdose of drugs laced with fentanyl⁸⁵. She sang about the vulnerability of being a victim of substance abuse, and the importance of opening up about it: 'I wanna be a role model, but I'm only human'. These celebrities have used their fame to influence society, so increasing their popularity.

Social media's growing influence also means those with political ambitions can increasingly appeal to younger generations and share ideas with people of all ages and backgrounds. With new platforms constantly under development, the opportunity to reach a wider audience is forever growing. Research has shown that, as of

⁸² T. Hassan, 'World Report 2023: Rights Trends in Colombia' *Human Rights Watch* (2023).

⁸³ 'About Us' *Fundación Pies Descalzos* (30/10/2023).

⁸⁴ M. Dalugdug, 'Bad Bunny Breaks Spotify Record for Most-Streamed Album in a Single Day in 2023 So Far' *Music Business Worldwide* (30/10/2023), available at <https://www.musicbusinessworldwide.com/bad-bunny-breaks-spotify-record-for-most-streamed-album-in-a-single-day-in-2023-so-far/#:~:text=The%20early%20success%20of%20Bad,in%20a%20row%20on%20Spotify>.

⁸⁵ Editorial Staff, 'Demi Lovato Talks about Her Cocaine Addiction' *American Addiction Centers* (2022), available at <https://americanaddictioncenters.org/blog/demi-lovato-cocaine-addiction>.

September 2021, TikTok had over one billion monthly active users, Instagram over 1.4 billion and Facebook around 2.9 billion⁸⁶. As celebrities have taken advantage of these platforms, politicians are now starting to do so too, but with much less success. For instance, on Instagram in late October 2023 Leonardo DiCaprio had 61.8 million followers, Kylie Jenner 398 million, Barack Obama 36.6 million and Rishi Sunak a mere 2.8 million. Some stars have also created documentaries and TV series to influence public opinion. For instance, Oprah Winfrey's controversial interview with Harry and Meghan, the Duke and Duchess of Sussex, in 2021 provoked UK discussion about constitutional reform, dominating public discourse. Released on CBS, the show claimed to reveal the dark side of the Royal Family, whilst at the same time proving hugely valuable to the network. According to *The Wall Street Journal*, CBS paid 'a license fee of between \$7 million and \$9 million' for broadcasting rights⁸⁷. Indeed, an Instagram post by American singer-songwriter Taylor Swift on 8 October 2018 shows the influence social media now has. Her post received 2.2 million likes, with the caption explaining her political views: 'I cannot support Marsha Blackburn. Her voting record in Congress appeals and terrifies me ... I will be voting for Phil Bredesen for Senate and Jim Cooper for House Representative'⁸⁸.

Moreover, Taylor Swift is not the only celebrity to dip her toe into the world of politics. Arnold Schwarzenegger took up a career as a politician. After taking on the remainder of Gray Davis's term as governor of California from 2003 to 2007, Schwarzenegger ran for his second term as governor from 2006 to 2011. Significantly, during this time, Schwarzenegger opposed the building of the US-Mexico border fence, comparing it both to the Berlin Wall and Nazi Germany, gaining him the support of many Republicans⁸⁹. Like Taylor Swift, Oprah Winfrey has also made bold claims about politicians. In May 2007 Oprah appeared on *Larry King Live* endorsing Barack Obama as senator and potential president. Then, in late November 2007, the Obama campaign announced Winfrey would lead Democrat rallies in the states of Iowa, New Hampshire and South Carolina. Following Obama's success in the presidential election of 2008, two economists from the University of Maryland studied the effect of her endorsement on voting for Obama. Tim Moore and Craig Garthwaite estimated the star's backing resulted in over one million votes for Obama, potentially deciding the election⁹⁰. Although not taking, or supporting, a particular political position, the footballer Marcus Rashford also managed to influence the UK government during the COVID-19 pandemic into giving free school meals to children of low-income families. Working with The Food Foundation, Rashford made a lasting impact on the lives of these children, pushing the UK government to provide £400 million in funding, helping over 1.7 million children who would otherwise have gone hungry⁹¹.

Indeed, with celebrities becoming more vocal in their political beliefs, many have joined protests against government policy. They have publicly positioned themselves with significant sections of society against government, creating a split in power and influence. For instance, in June 2018, the People's Vote protest in the United Kingdom saw one million people take to the streets⁹². The protest was triggered by the state of Brexit negotiations with the EU, many people calling for a second referendum. Similarly, May 2023 saw public protests against King Charles III's Coronation, fuelled by unhappiness at the high public expenditure involved during a cost of living crisis. In the United States, pop singer Alicia Keys also joined protesters in 2018 against Trump's immigration policies, which had seen 2,000 immigrant children separated from their parents on the US-Mexico border. *BBC News* showed her talking to protesters, saying 'our humanity is at stake'⁹³. The death of George Floyd on 25 May 2020 in Minneapolis also provoked widespread global protests. In May 2020 over one million people protested against police brutality in the United States, with protests lasting for 15 months. George Floyd and Breonna Taylor had been unarmed victims of police force, targeted simply because of their skin colour. Countless celebrities joined the protests, some donating money to charities supporting the movement, others taking to the streets themselves and others publicly demanding an end to police brutality, seeking constitutional change and the punishment of the officers concerned.

⁸⁶ M. Woodward, 'TikTok User Statistics 2023: Everything You Need To Know' *SearchLogistics* (30/10/2023), available at <https://www.searchlogistics.com/learn/statistics/tiktok-user-statistics/>.

⁸⁷ 'Meghan Markle and Prince Harry Interview with Oprah Fetches At Least \$7 Million from CBS' *The Wall Street Journal* (5/3.2021).

⁸⁸ T. Swift, 'I'm Writing This Post about the Upcoming Midterm Elections' *Instagram* (30/10/2023).

⁸⁹ 'Governorship of Arnold Schwarzenegger' *Wikipedia* (30/10/2023), available at https://en.wikipedia.org/wiki/Governorship_of_Arnold_Schwarzenegger.

⁹⁰ 'Oprah Winfrey's Endorsement of Barack Obama' *Wikipedia*, (30/10/2023) available at https://en.wikipedia.org/wiki/Oprah_Winfrey%27s_endorsement_of_Barack_Obama.

⁹¹ 'Our Free School Meals Campaign Crowned "Best of the Decade"' *Food Foundation* (2022), available at <https://foodfoundation.org.uk/news/our-free-school-meals-campaign-crowned-best-decade>.

⁹² 'Global Protest Tracker' *Carnegie Endowment for International Peace* (30/10/2023).

⁹³ 'Alicia Keys Joins Thousands Protesting Trump's Migration Policies' *BBC* (30/6/2018), available at <https://www.bbc.co.uk/news/av/world-us-canada-44670213>.

However, despite celebrity influence over government policy exercised through social media, charity and protest, ultimately decision making comes down to the party in charge, the influence of which depends on its leading politicians' popularity. After becoming the shortest serving prime minister in the history of the United Kingdom, an Opinium poll gave Liz Truss a -47 net popularity rating: a lower rating even than Boris Johnson at the height of the 'Partygate' scandal⁹⁴. Politicians today also face further serious challenges, potentially detrimental to their public reputations, from the Israel-Gaza conflict to the cost-of-living crisis, the Ukraine-Russia war and climate change. However, whilst memes widely mocked Truss, not all modern political careers end with such unpopularity. In fact, Barack Obama, the 44th president of the United States, began a revolutionary new era in the acceptance and empowerment of people of colour. As the first African-American president, he won the Nobel Peace Prize in 2009, for his 'extraordinary efforts to strengthen international diplomacy and cooperation between peoples'⁹⁵.

To conclude, whilst celebrities may have more power and influence over people's opinions, politicians have the overall power to make the decisions which shape their countries' futures. Despite unfair stereotypes surrounding the downsides of fame and money, celebrities play a key role in helping those in need, using their success to benefit others in a world in which financial status can heavily affect opportunities. Effective use of social media can help gain the support of millions, reaching younger generations growing up surrounded by new technologies, and even turning people against politicians. Whilst some celebrities protest against governments and constitutions, the pairing of a leading celebrity and political figure, such as Winfrey and Obama, can prove highly influential in securing the popularity and success of a political leader. A still evolving combination of social awareness and political integrity seems to be the key to true influence. In this light, perhaps we should be asking ourselves who truly has power over the public and who should be leading the country? Is it time for constitutional reform?

⁹⁴ 'Liz Truss Approval Ratings Reach New Lows after Tory Conference' *The Guardian* (8/10/2022).

⁹⁵ '2009 Nobel Peace Prize' *Wikipedia* (30/10/2023), available at https://en.wikipedia.org/wiki/2009_Nobel_Peace_Prize#:~:text=The%202009%20Nobel%20Peace%20Prize,diplomacy%20and%20cooperation%20between%20peoples%22.

TikTok is the most downloaded app ever. It should be banned.

Charlie Stewart



Charlie is studying History, Geography and Music at A Level and intends to focus on either Music Technology or Music Production at university. He would like to become a music producer.

TikTok, the most downloaded app ever, needs no introduction. With 3.5 billion downloads after only seven years it has changed the face of the world. From music to culture to Generation Z, TikTok has had a radical impact. Surely this fun place to make and watch videos with friends cannot have any ominous undertones or life-changing health impacts. However, it does; and this is not just to spread some mad conspiracy theory. These are the hard facts which billions of people across the globe are seeking to avoid. So, before you embark on your next scrolling spree, think twice ...

TikTok has one of the most advanced algorithms in the world, with billions of dollars invested in keeping you scrolling. The reason why TikTok is so addictive is because it releases dopamine, the feel good hormone associated with reward. Dopamine can be released by anything from eating chocolate, to exercising and smoking. To put it simply, TikTok harnesses this chemical, causing a dopamine hit every time a TikTok is viewed and liked. It is like fireworks going off in the brain. Dopamine levels decrease after leaving the app and so, craving a rush, the average TikTok user opens the app nine times a day. Without a dopamine hit they feel sadder, more lazy and less motivated. This is one of the reasons why Gen Z is the most depressed of all generations, with a net happiness score of 59% compared to 76% for Gen X and Millennials.

TikTok's addictive nature leads to detrimental effects. On average, people spend 95 minutes a day on TikTok alone. If we do the maths, this is 34,675 minutes or 578 hours a year: 24 days of mindless scrolling. Does it make you feel good to spend nearly a month of your year on TikTok? This is time impossible to get back. Imagine how much good you could do yourself and society if you spent that time on something worthwhile, instead of on undermining your mental health. Time is a paramount resource and to have lots of it is invaluable. People are always complaining about not having enough time to do things. Is this why?

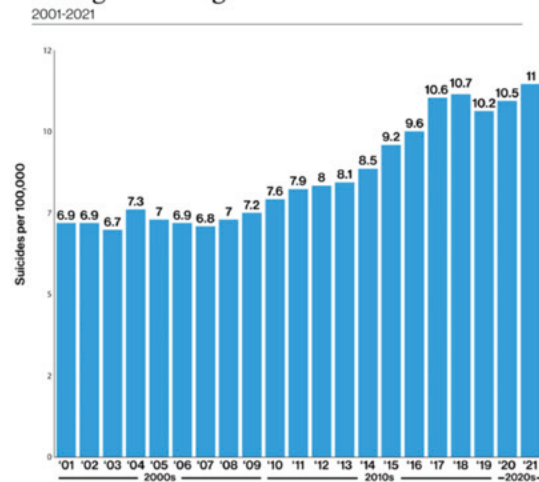
This addiction can also result in severe sleep deprivation, with people using the app late at night and unable to put it down. On average Gen Z sleeps for 7.5 hours per night, below the recommended eight to ten hours, and this is partly down to TikTok. Sleep is vital for health, brain performance and mood and we all know how it feels to get a terrible night's sleep. TikTok may cause this generation to struggle in the future, suffering the grave health implications of sleep deprivation at an early age, impacting mental repair and growth.



Figure 1.

TikTok is without doubt also a waste of time. Some people say they learn things on TikTok, but we all know this to be untrue and just a blatant coping mechanism to justify ludicrous amounts of time spent on the app. TikTok throws your time away, its content so short as to be hard to remember. Try to remember the last ten TikToks you watched. Tough? I believe to achieve fulfilment in life, you must be purposeful in everything you do, feeling you are contributing something to the world, whether through your profession, actions or intentions. We should find the things we are interested in, meet new people, pursue our dreams and learn more about ourselves, especially at a young age. Many young people around the world feel a sense of deep emptiness and, by wasting their days scrolling, feel their lives have no meaning or purpose. This issue is most prominent amongst girls, and a recent study has shown nearly four out of ten girls report signs of depression from social media use⁹⁶. Of these depressed girls, 69% used TikTok on a regular basis. Shockingly, in the USA the suicide rate has also increased by 60% among young adults and is continuing to increase. Does it sit well with you that children as old as 14, barely yet having had a glimpse of what life's wonderful rollercoaster has to offer, are ending it all because they are depressed through TikTok use?

Suicide Rate Among US Youth and Young Adults aged 10-24



Young Adults Still Are the Most Likely to Use Social Media

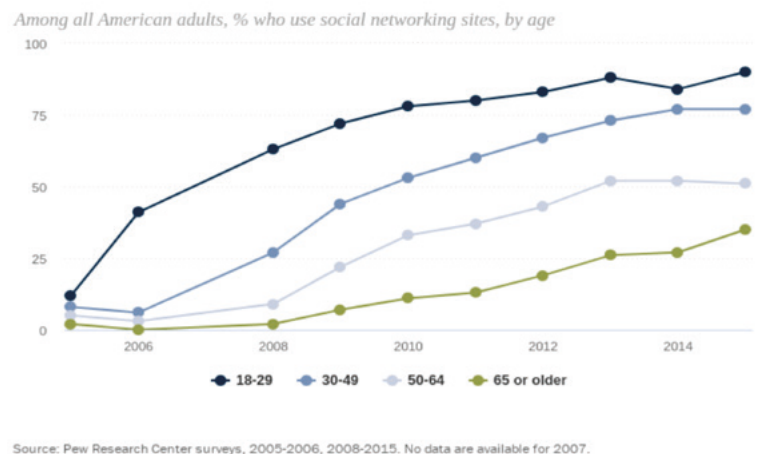


Figure 2: A clear correlation between US social media use and suicide rates amongst young people.

It is not just TikTok as a platform which is bad for you, but also its content. Some is funny and its creative humour is often refreshing and inventive. Sadly, not all is like this and the app gives widespread exposure to softcore pornography. It does not take long to find twerking videos, girls dancing in revealing clothing and things one just cannot detail. Why is this an issue? Well, in particular, it gives teenage girls the wrong impression about the way to secure popularity. When they see Addison Rae twerking and getting millions of likes, they think this is how to get views. This sexualisation of young girls negatively impacts their mental health and self-image. Seeing 'sexy' TikTokers makes them feel bad about themselves, with roughly one in three girls saying they feel bad about their body at least once a week when using TikTok. This is the nasty negative feedback loop of addiction to TikTok: watching increasing levels of poisonous content feeds your brain's lustful desires.

One of the most important things in life is staying present. Having a clear mind is essential for meaningful conversations, pushing past the superficial barriers of small talk. When you are mentally present, you can understand and learn things more easily. You can listen to, and learn from other people in greater detail, one of the most important skills in life. However, as TikTok constantly feeds you high volumes of short-form entertainment, you simply cannot focus as well. It trains your brain to prefer shorter bursts of stimulation, making tasks that require sustained attention, like reading or homework, challenging. Gen Z is reading on average eight books a year, fewer than any other generation, and reading for only seven minutes a day. With fewer people reading, fewer are learning, which is incredibly damaging to people's health and overall intelligence.

⁹⁶ A. Lenhart, 'Social Media Has Upsides and Downsides for Youth Mental Health' *commonsensemedia.org* (1/11/2023).

Now, imagine a world where everyone is the same: everyone dresses the same, speaks in the same way and laughs at the same things. Dull, grey and monotonous are all words to describe such a dystopia. This is slowly but surely what TikTok is doing to our generation. With all its 'trends' and influences on fashion, music taste and humour, cultural homogenisation is now a real deal. When you use the app, you are subconsciously becoming more like all the other 1.1 billion active users. When impressionable young minds see particular haircuts or trainers achieving millions of likes and comments, they copy them as a means to social validation and status. I understand and have been fooled by the same psychological trick. However, it is so harmful. As Dr Dre once said, 'express yourself'. Everyone should have their own unique thoughts and feelings, and give voice to them without concern for social acceptance. Everyone wants to be successful in life, financially, in their career and love life, and we all gravitate to individuals who are true to themselves. They are interesting to be around, offering unique perspectives on life. Do you think you can be successful by being exactly the same as everyone else? I understand teenagers want to fit in and not feel left out. However, without TikTok's constant bombardment of what's cool and what's not people would be happier in themselves, not for ever seeking the praise of others.

To conclude, despite TikTok's popularity, it is bad news for your mental health, undermining your ability to enjoy the wonderful gift of life. If TikTok were banned, it would undoubtedly be beneficial for society. By escaping the claws of TikTok's enchanting algorithm, people would start to become more themselves, following their own paths. They would be able to hold conversations with the people who mean most to them and would have a far greater sense of participation in what life should be about: having purpose ...

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Climate change is not destroying the world, but overpopulation is.

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Climate change has become increasingly evident in recent decades, with the consequences of a warming planet becoming ever more conspicuous. However, while climate change has become a global issue, it is not the primary factor destroying the world. It is overpopulation. Malthus argued human populations tend to grow faster than agricultural output, resulting in famines or crises⁹⁷. This has come to pass, debunking Elon Musk's view that 'if people don't have more children, civilization is going to crumble, mark my words'. Indeed, whilst climate change has undoubtedly accelerated in recent decades, it is essential to recognize this is not just the product of human influence: earth's climate has been subject to natural fluctuations across geological time scales.

One of the most significant ways in which overpopulation affects the world is through its environmental impact. The exponential increase in the global human population has led to growing resource consumption, pollution and habitat destruction. For instance, a report from the United Nations Department of Economic and Social Affairs affirms 'the world's population is expected to reach 9.7 billion by 2050, leading to increased demand for food, water, and energy, which will further strain the planet's ecosystems'⁹⁸. Overpopulation has led to overconsumption, depleting the world's resources at an alarming rate. As a study by the Global Footprint Network reveals, human demand for the planet's resources exceeded the Earth's capacity to regenerate by 74% in 2017, posing a threat to the planet's ability to sustain life⁹⁹.

Climate change, while important, is just one of the many environmental challenges driven by overpopulation. The excessive production of greenhouse gases, driven by increased energy consumption and deforestation, is a major contributor to climate change. For Professor Robert Engelman, a senior fellow at the Worldwatch Institute, this is a matter of the 'global population's choices about consumption'¹⁰⁰. Overpopulation fuels consumption patterns, which exacerbate climate change. So, if we are going to allow the world's population to increase exponentially, we must change our consumption patterns. However, we are unwilling to do so.

Overpopulation exacerbates resource scarcity, as the growing demand for finite resources places immense pressure on the planet. As the World Resources Institute reports, 'rising populations are increasing the demand for critical resources, such as freshwater, arable land, and minerals'¹⁰¹. This competition for resources leads to conflict and economic instability, compromising the quality of life for many.

Water scarcity is a significant concern associated with overpopulation. A study published in *Nature Communications* argues population growth and rising water consumption have led to water stress in many regions, including parts of the United States, China and India¹⁰². Water scarcity not only affects agriculture and drinking water supplies but also has a direct impact on the environment, leading to the deterioration of ecosystems and wildlife habitats.

⁹⁷ T. Malthus, *An Essay on the Principle of Population* (London, 1798).

⁹⁸ UN DESA, 'Global Issues: Population' *United Nations* (2023), available at <https://www.un.org/en/global-issues/population>.

⁹⁹ '2018 National Footprint Accounts' *Global Footprint Network* (2018), available at <https://www.footprintnetwork.org/2018-nfa-report/>.

¹⁰⁰ See L.R. Brown, 'The Population Bomb Revisited' *Worldwatch Institute* (2019), available at <https://www.worldwatch.org/population-bomb-revisited>.

¹⁰¹ World Resources Institute, *Resource Watch* (2023), available at <https://resourcewatch.org/>.

¹⁰² T.I.E. Veldkamp et al., 'The Changing Landscape of Water Scarcity' *Nature Communications*, 11, 1 (2023).

Furthermore, overpopulation contributes to deforestation: a major driver of biodiversity loss and climate change. Forests act as carbon sinks, absorbing carbon dioxide from the atmosphere. However, overpopulation leads to increased demand for land. According to the World Wildlife Fund, the world has lost 43 million acres of forest a year since 2014¹⁰³. This depletion of forests is primarily driven by overpopulation and its associated demands for agriculture, infrastructure and housing.

The economic consequences of overpopulation are profound and multifaceted. An expanding population places enormous pressure on economies and often leads to an unequal distribution of resources, increased poverty and unemployment. A report from the World Bank notes 'overpopulation can strain economies, exacerbate poverty, and hinder sustainable development'¹⁰⁴.

High population growth rates often result in a disproportionate number of young individuals entering the workforce¹⁰⁵. While this can be advantageous for economic growth, if properly managed, it can lead to unemployment and economic disparities when there are insufficient job opportunities. This can result in social unrest and instability, as evidenced by recent events around the world, including the Arab Spring.

Additionally, overpopulation is closely linked to income inequality. A study published in the *Journal of Economic Literature* found that rapid population growth can exacerbate income inequality, particularly in developing countries¹⁰⁶. It can lead to social challenges, including increased competition for resources, strains on infrastructure and a greater likelihood of conflict. The World Economic Forum reports overpopulation often leads to strained social systems, overwhelmed healthcare systems and increased tensions over resources and employment¹⁰⁷.

One of the key issues arising from overpopulation is inadequate access to education and healthcare. A report from the United Nations Population Fund states 'high population growth rates can strain education and healthcare systems, making it difficult for governments to provide quality services to all citizens'¹⁰⁸. This lack of access to education and healthcare perpetuates the cycle of poverty, limiting individual opportunities for personal and economic growth.

Overpopulation drives urbanization, leading to overcrowded cities and inadequate infrastructure. A study in the journal *Population and Development Review* found that rapid population growth often outpaces urban planning, resulting in slums, inadequate sanitation and increased pollution. This not only affects quality of life but also has adverse environmental consequences.

Overpopulation is often intertwined with conflict and migration, as competition for resources and opportunities can lead to instability and displacement. Recent academic studies have explored this connection. A report by the Institute for Economics & Peace states 'countries with high population growth rates are more likely to experience political instability and conflict'¹⁰⁹.

The strain caused by overpopulation can exacerbate existing social, ethnic and religious tensions. Competition for limited resources can lead to disputes, both within and between nations. In some cases, these conflicts escalate into violence, resulting in displacement and refugee crises. A report by the United Nations High Commissioner for Refugees highlights the role of overpopulation in migration, stating 'rising populations and resource scarcity are significant drivers of forced displacement and migration'¹¹⁰.

¹⁰³ 'Deforestation' *World Wildlife Fund* (2021), available at <https://www.worldwildlife.org/threats/deforestation>.

¹⁰⁴ 'Population Growth Outpaces Economic Growth' *World Bank* (2020), available at <https://www.worldbank.org/en/news/feature/2020/03/30/population-growth-outpaces-economic-growth>.

¹⁰⁵ 'The Future of Jobs Report 2018' *World Economic Forum* (2019), available at <https://www.weforum.org/reports/the-future-of-jobs-report-2018>.

¹⁰⁶ N. Birdsall et al., 'Population Growth, Inequality, and Poverty' *Journal of Economic Literature* 39, 4 (2001), pp. 1339-1382.

¹⁰⁷ 'The Future of Jobs Report 2018' *World Economic Forum*.

¹⁰⁸ 'The State of World Population 2018' *UNFPA* (2018), available at https://www.unfpa.org/sites/default/files/pub-pdf/EN-SWOP14-Report_FINAL-web.pdf.

¹⁰⁹ 'Global Peace Index 2022' *Institute for Economics & Peace* (2022), available at <http://visionofhumanity.org/reports>.

¹¹⁰ 'Forced Displacement in 2020' *UNHCR* (2021), available at <https://www.unhcr.org/en-us/figures-at-a-glance.html>.

Moreover, the impact of overpopulation is not limited to one region; it has global repercussions. The migrant crisis in Europe, for example, was influenced by the combination of conflict, overpopulation and environmental stress in the Middle East and Africa¹¹¹. Huge numbers of young males are leaving Sub-Saharan Africa and making the treacherous journey across the Sahara Desert and the Mediterranean to Italy. Others are leaving Afghanistan and Syria, crossing into Europe through the Balkans. Overpopulation exacerbates the root causes of displacement, making it a global concern.

Recent academic research has emphasized the importance of acknowledging natural climate variability. A study published in *Nature* in 2020, led by the climate scientist Jane Smith, explored the long term climatic records found in ice cores from Antarctica¹¹². The research indicates that the Earth experienced periods of significant temperature fluctuation long before the Industrial Revolution. Smith's team concluded that natural factors, including volcanic eruptions and variations in solar radiation, have played substantial roles in shaping the planet's climate over millennia.

Furthermore, *The National Geographic* in 2019 highlighted the Little Ice Age, a period of cooling between the fourteenth and nineteenth centuries¹¹³. It illustrates variations in climate have been part of the Earth's history. As historians recognise, this event killed off once viable Viking settlements in Greenland.

While natural climate variability is an undeniable aspect of the Earth's history, recent academic studies stress human activities are now a dominant factor in driving climate change. The Intergovernmental Panel on Climate Change published its *Sixth Assessment Report* in 2021, confirming it is 'unequivocal' that human activities, primarily the emission of greenhouse gases, are causing global warming¹¹⁴. The report highlights the rate of warming is unprecedented in at least the last 2,000 years.

News articles have mirrored the concerns raised by the IPCC. A 2022 article in *The New York Times* reported on record-breaking heatwaves, melting ice caps and extreme weather events worldwide¹¹⁵. Such events are increasingly attributed to human activities, particularly the burning of fossil fuels.

Recent academic research also emphasises the complex interplay between natural and anthropogenic factors in shaping the climate. A study in *Science* in 2022, led by Maria Rodriguez, examined the interactions between volcanic eruptions and human induced greenhouse gas emissions¹¹⁶. Rodriguez's research demonstrated that while volcanic eruptions can temporarily cool the planet, the long term trend of global warming driven by human activities remains the dominant force. The BBC reported in 2021 that volcanic eruptions, like the one in Mount Pinatubo in 1991, can lead to short term cooling but do not negate the overall warming trend attributed to human influence¹¹⁷.

In conclusion, while climate change is indeed a critical global issue, it is essential to recognize that it is a consequence of broader challenges, the most important of which is overpopulation. Overpopulation is the underlying factor that drives environmental degradation, resource scarcity, economic consequences and social challenges. Addressing overpopulation is an urgent problem that threatens the survival of mankind, it requires a multifaceted approach that includes education, healthcare, family planning and sustainable resource management. It is essential to understand that managing population growth is not about restricting individual freedoms but about promoting a more sustainable and equitable future for all. The renowned economist Amartya Sen aptly argued that the first and most important step in reining in overpopulation is to address social and economic disparities. By doing so, we can alleviate many of the world's most pressing issues and work towards a more balanced and prosperous world for future generations.

¹¹¹ 'Europe's Migrant Crisis' *The New York Times* (15/9/2023), available at <https://www.nytimes.com/2023/09/15/world/europe/europe-migrant-crisis.html>.

¹¹² J. Smith, 'Ice Core Records Showing Earth's Temperature Fluctuations' *Nature Journal* (2020), available at <https://www.nature.com/articles/s41586-020-2905-9>.

¹¹³ 'The Little Ice Age' *National Geographic* (2019), available at <https://www.nationalgeographic.com/science/article/little-ice-age>.

¹¹⁴ 'Intergovernmental Panel on Climate Change Sixth Assessment Report' *IPCC* (2021), available at <https://www.ipcc.ch/report/ar6/wg1/>.

¹¹⁵ 'Record-Breaking Heatwaves and Extreme Weather Events' *The New York Times* (2022), available at <https://www.nytimes.com/>.

¹¹⁶ M. Rodriguez et al., 'Interactions between Volcanic Eruptions and Global Warming' *Science Journal* (2022), available at <https://www.science.org/content/article/interactions-volcanic-eruptions-and-global-warming>.

¹¹⁷ 'Impact of Volcanic Eruptions on Global Temperatures' *BBC* (2021), available at <https://www.bbc.com/news/science-environment-57305790>.

Does nationalism work in a globalised world, or is it an outdated concept?

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The ideology of nationalism is today widespread, focusing on the importance of, and loyalty to, the nation state. Nationalism argues for the unity of one people under one nation, with a shared culture, language and history. The world is, or should be, split up into different autonomous nations. Nationalism generally values the nation over the individual and excludes those not of the same nation. Despite nationalism valuing and glorifying a nation's history, nationalism and the concept of the 'nation' are modern ideas, originating in the early nineteenth century. However, with nationalism so focused on the autonomy and independence of nation states, it conflicts with the modern reality of globalisation, with nations and businesses trading and exerting influence on an international scale. As such, can nationalism today co-exist with globalisation?

Origins of Nationalism

Before the nineteenth century ideas of nationalism didn't exist. For much of history countries were ruled by monarchs, and kingdoms did not tend to have one unified identity or unifying supreme power. For example, twelfth-century France had many duchies, including Normandy, Aquitaine, Brittany and Toulouse. None were unified, although all were supposedly ruled by one king. Indeed, even in the late eighteenth century, French identity was still divided, with only half the country speaking French. Many people associated their identity with their village or city, not their nation. Arguably, then the first concepts of nationalism were created during the French Revolution, although during this period nationalism tended to be limited in influence to urban intellectuals. However, by the mid nineteenth century nationalism became more popular as the Napoleonic Wars helped spread the ideology across Europe.

The Enlightenment, industrialisation and an increase in literacy helped many question the need for the old institutions of monarchy and church. Monarchy was criticised by French revolutionaries as the autocratic *ancien régime*. Industrialisation was also key to developing national sentiment, railways allowing improved communication over long distances, as urbanisation brought people together in cities. In Germany Napoleon also helped the rise of nationalism, after the French occupied parts of Germany through the Rhine Confederation. This united the German people against a common enemy, fostering a growing hatred of the French and birthing the idea of German romanticism. Germans from different regions realised they had a culture and language in common, encouraging a sense of unity and the idea of *volk*, national spirit. After Napoleon's defeat in 1815 the German Confederation was founded, when 39 different German states decided they would be more powerful united, removing significant trade and tariff barriers. As such, national unity was defined against others; and, as German anger towards the French helped create German romantic nationalism, so the Russians defined themselves as a nation against Western Europe. Growing nationalism in the nineteenth century also encouraged wars for independence and unification. Those that saw themselves under the control of a foreign imperial power, for instance the Greeks under the Ottomans, wanted national autonomy. However, those who shared a common identity, such as the Italians, wanted to unify as one nation. Nationalism also saw the end to several monarchies, including the French, encouraging a belief that a nation should be governed by the nation, its people.

What is Nationalism?

Nationalism insists nations exist and should have autonomy: independence and a right to self-government. A nation isn't a real thing, but instead an imagined political group containing people of the same culture and language, ideally within the same borders. It is something a collective agree upon and believe in. For nationalism sovereignty is key and all peoples have a right to govern their homeland, their nation state. Nationalism allows millions to share a common identity and a sense of community, without knowing each other. In history this has encouraged people to fight for each other and their nation, with nationality the dominant part of their identity.

Problems of Nationalism

Nationalism can be a force for good and cooperation. However, at its most basic level it separates people into different nations, fostering ideas of national superiority. This can lead to a discriminating mentality, and even nationalists with good intentions split people into groups, rather than seeing them as individuals. Nationalism in extreme forms can also be used to justify violence, as seen in the ethnic nationalist anti-semitism of Nazi Germany. It can also be used to justify invasions, from the Nazi invasion of the Sudetenland in Czechoslovakia, to subsume its strongly German population, to the ongoing Russian invasion of Ukraine.

Indeed, different forms of nationalism can either solve or exacerbate these issues. For instance, expansionist nationalism encourages warfare and the unification of peoples, as seen in the unification of Germany in the 1860s. However, civic nationalism argues you do not have to have a shared ancestry to belong to a nation, just shared values and traditions. This is more inclusive, but still propagates the belief that one's own country is best. Romantic nationalism believes a nation should return to a fictional, better and more glorious past. It often appeals to emotion rather than logic, and by promoting one country's importance over another encourages xenophobia. As a result, nationalism strongly rejects immigration. Whilst immigration can be problematic, this shows nationalism's inflexibility, denying immigration's benefits in promoting economic growth and providing skilled workers. Indeed, as nationalism is more of a political philosophy it can work against economically beneficial policies. For instance, the UK leaving the EU had more to do with a nationalistic veneration of sovereignty than economic benefits. The problem with nationalism is that it creates divisions, both between nations and against minorities within countries. For instance, in Saudi Arabia citizenship is only given to those who are Muslim.

Nationalism in a globalised world

Nationalism is one of the most dominant ideologies in the modern world and, when problems arise, politicians often revert to it. They create a narrative that their country used to be better and promise national regeneration, as seen in Trump's presidential election pledge to 'make America great again'. However, the modern world is highly globalised, with international trading, corporations and economic policies, from tariffs to trade treaties. In this context, a nationalist country might focus on protectionism, taxing imports through tariffs and promoting local goods and services. Indeed, protectionism can have its advantages, increasing a country's trade balance with less money leaking from the economy through imports, more growth opportunities and possibly more jobs. However, fewer imports mean decreased competition, increasing prices, and fewer goods and services for consumers, with increasing economic isolation. A protectionist country might also face heavy taxes on their own exports, making international trade difficult. Different countries specialise in different areas; and, if a country were to isolate themselves from international trade, they would have to try and do everything themselves, which would be inefficient and sometimes impossible. The West is also very culturally diverse. In England and Wales only 81.7% of the population identify as white, with only 74% of the white ethnic group identifying as English, Welsh, Scottish, Northern Irish or British. A vast proportion of the population, according to many forms of nationalism, should not belong in the UK. Yet, it is unethical to treat minorities differently and impractical to ignore these people just because they do not coincide with a traditional understanding of the nation. There have also been more global issues than ever in the twenty-first century, from the COVID-19 pandemic to climate change, requiring international cooperation. Nationalism cannot cope with them, focusing only on helping those of the same nationality. The accelerating pace of technology only makes nationalism more obsolete as a solution. For example, one country alone cannot ban genetic modification or drone warfare, but for a solution decisions need to be made on an international level. Unfortunately, nationalism promotes the opposite, prioritising sovereignty and self-determination.

Conclusion

In conclusion, nationalism has its benefits, fostering cooperation and unity within a nation. However, it also focuses on autonomy, which can hinder a country in a globalised world, discouraging international trading and decision making. Thus, globalism can be seen as a threat to a country's sovereignty and decisions based on nationalistic ideals can damage a country's best interests. As nationalism divides the world into different nations it can also encourage discrimination, and it can be used to justify violence and war. As such, although nationalism is on the rise, with people turning to the past for aid, it contradicts the reality of globalisation and is loaded with potentially negative impacts. It might already be outdated.

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Free choice in marriage is overrated.

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According to the *Britannica Dictionary* marriage is ‘a legally and socially sanctioned union, usually between a man and a woman, that is regulated by laws, rules, customs, beliefs, and attitudes that prescribes the rights and duties of the partners and accords status to their offspring (if any)’. The origin of the word marriage comes from the thirteenth-century Middle English, though the convention began before then. Marriage has a different purpose in every religion and culture, and this has understandably changed in the long course of its existence. However, free choice in marriage, as today, was not always the case. The early motivation for marriage was to serve as an alliance between two families, usually for financial reasons and rarely for love. This alliance advantaged both families, whether it be to improve relations, appease subjects or continue a dynasty. More recently marriage has become a declaration of love between two individuals, and an official announcement to a community of togetherness. Underlying this seemingly sweet gesture, however, there remain economic, sexual and social intentions. Marriage regulates libidinal desire, consolidates property and provides a stable home for children. This in turn increases feelings of wellbeing and fulfilment as well as levels of productivity. However, free choice in marriage is still unavailable to large proportions of the world’s population. This is regarded by the West as a disadvantage. However, I would argue free choice in marriage is overrated, that the pendulum of individual decision making has swung too far. Society should return to the realms of arranged marriage, because this seemingly outdated custom would serve the modern world better than free choice.

It is firstly important to outline the difference between forced and arranged marriage. Whilst neither offers free choice, forced marriages are nonconsensual and illegal. According to the UK government they are ‘a form of domestic abuse and a serious abuse of human rights’. An arranged marriage does not mean no choice - it simply allows people to find partners within the security of a family setting.

One of the biggest reasons for marriage is personal happiness and satisfaction. For example, data from a British behavioural study reveals marriage improves long term happiness. Within it people desire mutual affection and intimacy. In the context of arranged marriages, there is a level of understanding that companionship and compatibility come before sexual or physical attraction. Furthermore, the scope for psychological trauma caused by non-committed sexual relationships is reduced. Most importantly, in an arranged marriage, people’s values are matched instead of appearances.

To expand on this point, a Gallup survey discovered that more than 50% of Americans believe in love at first sight. However, an experiment involving several dating events, including online dating and laboratory work, showed ‘feelings of love at first sight were not only common amongst participants but largely predictable based on physical attraction’. Often love at first sight is purely physical and has no relationship to long term compatibility. Therefore, initial attraction can easily be mistaken as an indication of someone’s suitability for marriage. In fact, the idea of ‘brotherly love’ was first introduced by Plato, who argued that a lack of sexual passion and romance made for the most successful of relationships. For Plato sex makes us do irrational things and after the act one may feel remorse. To Plato, fraternal relationships were the essence of life. Passionate love, however, he viewed with contempt. Indeed, a study in 2005 found ‘romantic love was a motivation or goal-orientated state that leads to emotions or sensations like euphoria or anxiety’. As a matter of fact, people used to call this ‘lovesickness’, seeing it as a disease. If being in love was thought to be an illness in ancient times, why do we idolise it so much now?

Moreover, with free choice, couples often have the expectation that because they are in love, they won't have to do anything to maintain a fulfilling marriage. However, love is something to be worked at and can develop over time. When unions are arranged, there is a general mindset of commitment to the institution of matrimony and an understanding that to make a relationship work you have to compromise. It can be said that the leading reason for separation is a lack of commitment, causing 75% of divorces. Therefore, someone with a lack of free choice is more likely to weather the storms of marriage.

In addition, providing a stable home for children is another reason why people feel influenced to marry. The ideal would be a set up in which there is no conflict over how the children are raised. Simple differences in opinion over religion, education, diet and discipline can complicate not only marriage but the wellbeing of children. In an arranged marriage, the union is not just between two individuals: it is between two families. Since partners are chosen with the help of family, children are more likely to be accepted by the community. They also aren't brought up with conflicting values. According to the US Department of Education, 'children who grow up in families with their biological parents in a low conflict marriage are better off in several ways than children who grow up in single, step, or cohabiting parent households'. Children raised without two biological, married parents have a higher probability of becoming teenage parents, attaining lower academic results, and encountering mental and physical health problems. Since this has been scientifically proven, arranged marriages which have a lower divorce rate yet again prove the more advantageous option.

The final reason why people get married is for companionship and security. Nothing gives one the sense of belonging, or emotional and financial stability like a healthy marriage. To elaborate on the feeling of belonging, arranged marriage ensures that people do not lose touch with their roots. Being understood culturally can make someone feel effortlessly happier in a relationship. For example, if someone is particularly excited about a religious festival or ethnic celebration, with all its subtleties of food and music, their partner will understand. Furthermore, a study published in the *Journal of Experimental Social Psychology*, researched by Caitlin Hudac revealed that 'bias against interracial couples is associated with disgust that in turn leads interracial couples to be dehumanized'. Evidently, couples with differences may be forced to endure discrimination daily, and this can be avoided with the simple solution of an arranged marriage.

An arranged marriage makes economic and social sense, especially in today's world. Less time and stress are wasted looking for a partner, which allows a person more time to focus on their aspirations and career. Once their family helps find this person, compatibility of interests and values can be assured which allows for a strong and enduring relationship. Marriage involves a considerable devotion of time and energy. It also encompasses giving up personal freedom and autonomy. In an arranged marriage, there is a much greater chance that because of the discipline involved, people are more committed to giving up that liberty. This is further emphasised by the statistics. In the United States, whilst the divorce rate for marriages centred around free choice drifts between 40 and 50%, the divorce rate for arranged marriages is 4%.

However, a lack of free choice also has its disadvantages. It is true that arranged marriages can be harmful and disingenuous. For example, the use of the dowry and coercion make marriage seem not unlike a business proposition. Concealing health problems, such as impotence, can lead to intense feelings of inadequacy, shame and betrayal and cause problems for the future. Equally, superstitions around horoscopes, and placing too much importance on how a person looks, can feed into the toxic, transactional dangers of arranged marriages. It can also be said that the low divorce rates in marriages devoid of free choice are due to societal pressures and the taboos of divorce. People may feel trapped by these unspoken laws that continue to oppress them in their communities. However, when you tie yourself down to one person you are blind to the abundance of other options. This may sound selfish, but if or when it comes to having children, it is crucial that your partner is compatible with you.

From a biological standpoint, the marriage of two physically different people can lead to healthier offspring through genetic variation. Using the Habsburg dynasty as a case study, inbreeding and incest mean that over generations the gene pool is drained dry. This leads to all kinds of diseases. In various societies the rule is that a partner is selected from their own social group, especially in class and caste-based societies. Some say this is no longer an issue, but a shocking 10% of all marriages in the world are estimated to be between cousins. Whilst some say it encourages monogamy, this is not entirely true. For example, in certain Islamic societies polygamy is promoted, with husbands being allowed up to four wives.

To conclude, is finding a partner an individual decision or should it be contributed to by well-meaning relatives and wider family? If you are looking for fleeting moments of happiness or physical attraction, then marriages born from love would be more suitable. However, your best chance of having a long term stable relationship, within which you can bring up a family and which is the focus of a community set-up, is in an introduced marriage. Values are matched and therefore the chances of conflict are reduced. There is more acceptance of spouse and children by families, who are more engaged in the selection process, which provides the married couple with support and a wider community in which children are loved. Marriages born from love might also be considered a pyrrhic victory, because your married career might end up being less fulfilling. Whilst with free choice one might find an incredibly romantic love story to share with the next generation, this is rare. A good partnership is built on communication and trust, and sometimes commitment to staying together which is enforced externally can sustain a marriage when free choice might have ended it. As Friedrich Nietzsche once said 'it is not a lack of love, but a lack of friendship that makes unhappy marriages'.

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The unknown side of the moon
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