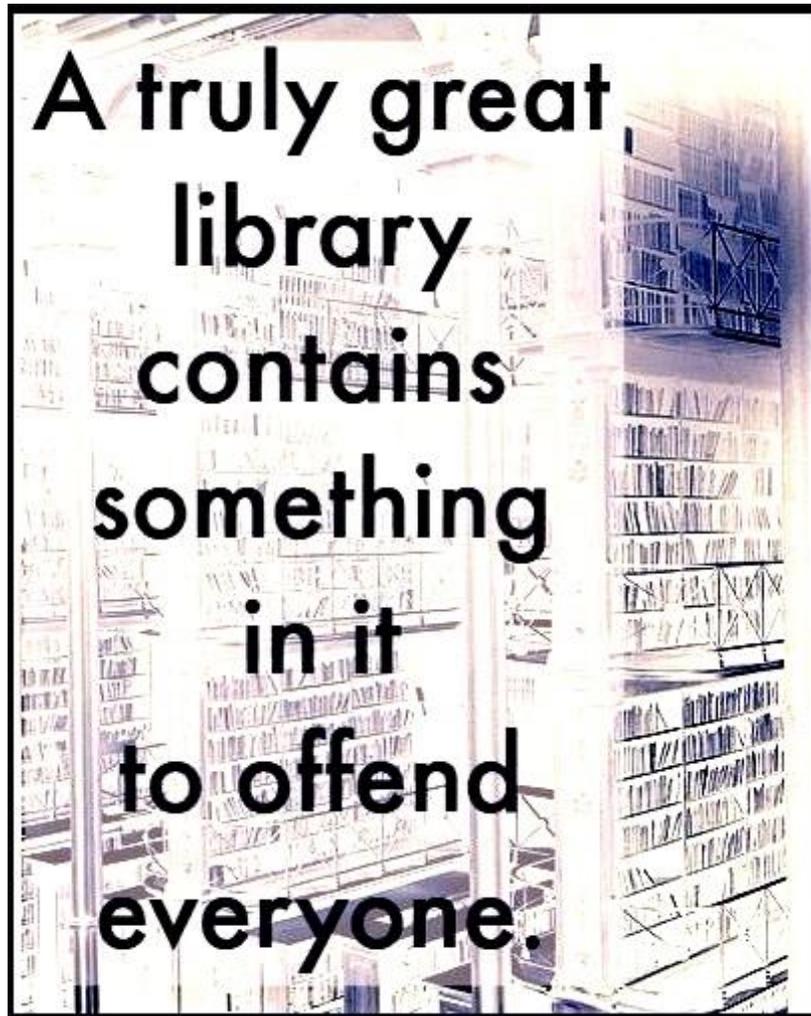


WEBSITE-4



IN PURSUIT OF KNOWLEDGE

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1.1 Website-4 Home Page

The goal of website-4 is to add further complementary discussions to the overall scope of [Mysearch website](#), which has been divided into a series of sub-webs for two primary reasons. First, they represented a logical containment of interests that were being pursued at an earlier point in time and, second, each sub-web allows the number of pages to be better managed. In the case of [website-1](#), the focus of interest was categorized in terms of the idea of [‘worldviews’](#), [‘evolution’](#) and [‘science’](#), which grew to be over 600 pages, such that [website-2](#) and [website-3](#) were created to allow an expansion of interests into different areas. In this context, website-2 mirrored some aspects of the sections in website-1 in terms of [‘perspective’](#), [‘developments’](#) and [‘technology’](#), while website-3 expanded on a specific aspect of the discussion of [‘speculative science’](#) focused on [‘wave models’](#).



So, what additional topics might be pursued?

Basically, all of the Mysearch discussions start out as a learning process, i.e. my own. In the case of website-1, the initial focus was [Artificial Intelligence \(AI\)](#), but primarily from a technical perspective. However, the scope quickly started to raise ethical issues and wider [evolutionary implications](#) that required a better understanding of a broad range of issues, which ultimately led to the discussion entitled [Brave New Worlds](#) in website-2. Of course, even at a superficial level, the broad range of topics and issues discussed in website-1 had to be undertaken in a stepwise process, which over time helped create a framework to which more detail could be added. Later, website-2 and website-3 allowed the focus to shift to slightly different topics, which could be linked to earlier discussions, such that the overall scope was expanded. However, before pursuing the potential scope of website-4, there might be some benefit in quickly outlining the overarching principles that have guided all the discussions. First, there is no claim that any of the discussions carry any *‘weight of authority’*, rather they seek to pursue a *‘duty of inquiry’* as outlined in William Clifford’s essay [‘The Ethics of Belief’](#), while also reflecting on the wisdom encapsulated in many of the quotes referenced throughout the entire website. The first is attributed to Carl Jung:

As far as we can discern, the sole purpose of human existence is to kindle a light in the darkness of mere being.

[Carl Jung](#) (1875–1961) was both a psychiatrist and psychoanalyst, who essentially founded the field of analytical psychology based on psychiatry, anthropology, archaeology, literature, philosophy and theology. However, in 1957, at the age of 84, he started on a series of discussions, which resulted in a manuscript entitled [‘Memories, Dreams, Reflections’](#) that he worked on until his death in 1961. The quote above is taken from this work and it is possibly worth considering in the wider context of the following passage.

“Our age has shifted all emphasis to the here and now, and thus brought about a demonization of man and his world. The phenomenon of dictators and all the misery they have wrought springs from the fact that man has been robbed of transcendence by the short-sightedness of the super-intellectuals. Like them, he has fallen a victim to unconsciousness. But man’s task is the exact opposite: to become conscious of the contents that press upward from the unconscious. Neither should he persist in his unconsciousness, nor remain identical with the unconscious elements of his being, thus evading his destiny, which is to create more and more consciousness. As far as we can discern, the sole purpose of human existence is to kindle a light in the darkness of mere being.”

While the passage does provide further context to the one-line quote, its description is possibly too abstract for many, such that we might focus on the purpose of life suggested in the last sentence. Clearly, life exists in the form of millions of shapes and sizes, most of which is driven by survival where purpose is essentially defined by environmental cause and effect. However, it appears that evolution has presented [humanity](#) with a unique opportunity to define its own purpose, although this

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opportunity is never realized by many, possibly for no fault of their own beyond the makeup of their [DNA](#). This said, purpose is also affected by the '[human condition](#)', which Jung was possibly making abstract reference, although it possibly needs to be considered in terms of many other facets of humanity, i.e. biological and cultural. In this respect, the following quote by William K. Clifford possibly better encapsulates the scope of the problem in terms of what we, as individuals and collectively, believe to be true.

"The danger to society is not merely that it should believe wrong things, though that is great enough; but that it should become credulous, and lose the habit of testing things and inquiring into them, for then it must sink back into savagery. It may matter little to me, in my cloud-castle of sweet illusions and darling lies; but it matters much to Man that I have made my neighbours ready to deceive. The credulous man is father to the liar and the cheat."

However, it is not necessarily irrational to '[believe in wrong things](#)' as perfect knowledge alludes us all. The irrationality of belief only becomes problematic when we assume our beliefs are underpinned by certainty, such that they cannot be questioned. In this respect, the following quote by Voltaire is possibly the most succinct summation of this problem.

"Doubt is not a pleasant condition, but certainty is absurd."

Even so, it would appear that many in today's world are certain in their beliefs, irrespective of whether they are founded on [theology](#), [philosophy](#) or [science](#). For while we might be able to quantify a '[degree of certainty](#)', probability would suggest that almost any belief may be proved false in some aspect of its details, such that all worldviews are transitory assumptions when viewed from the [perspective of history](#). Likewise, the idea of the human condition can also be distorted by the assumption that evolution is a one-way process of continuous improvement, where the original [Darwinian concept](#) of '[survival of the fittest](#)' simply evolves towards '[survival of the best](#)'. However, the following quote by Charles Darwin might suggest a problem with this idea and while, in today's world, his words may appear [politically incorrect](#), they may nevertheless highlight a real danger to humanity.

"With savages, the weak in body or mind are soon eliminated and those that survive commonly exhibit a vigorous state of health. We civilized men, on the other hand, do our utmost to check the process of elimination; we build asylums for the imbecile, the maimed, and the sick; we institute poor-laws; and our medical men exert their utmost skill to save the life of every one to the last moment. There is reason to believe that vaccination has preserved thousands, who from a weak constitution would formerly have succumbed to smallpox. Thus, the weak members of civilized societies propagate their kind. No one who has attended to the breeding of domestic animals will doubt that this must be highly injurious to the race of man. It is surprising how soon a want of care, or care wrongly directed, leads to the degeneration of a domestic race; but excepting in the case of man himself, hardly any one is so ignorant as to allow his worst animals to breed."

While many may have reservations about where this line of thought might be heading, we still possibly need to consider whether there is an underlying truth in the evolutionary process suggested, which operates outside any notion of present-day political correctness – see [Freedom of Speech](#) for more details surrounding the discussion of this type of issue, which in-turn was part of the '[Political Addendum](#)' discussion. However, the primary purpose of this outline has simply been to illustrate the potential breadth of topics that any '[pursuit of knowledge](#)' might consider, which invariably requires a complementary depth of knowledge. So, in this context, the goal of website-4 might be the pursuit of both better in-depth understanding of specific topics in the fields of both philosophy and science, such that a wider breadth of knowledge might be taken into consideration. We might start by simply trying to outline the scope of some different philosophies of interest.

Note: While many may disagree, this website will consider all religious beliefs as a form of philosophical conjecture in the sense that they are ideas, which while possibly appearing logical, have no obvious tangible proof. As this aspect of philosophy will not be addressed – see [Personal Perspective](#) for more details. There is also an aspect of philosophy that

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extends into science in the sense that the nature of knowledge can be question, both in scope and certainty. Of course, even in the reduced scope implied, there are still many aspects of philosophy to be considered.

While the idea of [‘theology’](#) as a [‘philosophy’](#) will not be discussed, [‘metaphysical’](#) ideas are a common topic of discussion, although this website prefers to start with a distinction between [‘ontology’](#) and [‘epistemology’](#). As a very simplistic definition, ontology will be defined as *‘what is real and is known to exist in the world’*, such that it might exclude discussions about *‘unicorns and deities’* for which no physical evidence exists. In contrast, the initial definition of epistemology might be described as simply *‘what we know and how we know it’*. While it may appear that these two definitions might overlap, a distinction might be drawn in terms of mathematics, which is knowledge might be used to described the physical world, but is not itself part of the physical world. We might also consider two other aspects of philosophy defined in terms of [‘logic’](#) and [‘ethics’](#). The word *‘logic’* originally implied *‘what is spoken’*, but is now generally associated with some form of *‘logical reasoning’*, although the scope of what is *‘logical’* may still be debated. While the idea of *‘ethics’* is often assumed to encompass the discussion of [‘morality’](#), there may be an important distinction that requires further consideration.

Note: It might be suggested that ethics can be described in terms of a set of general guidelines, which might be adopted, not only by individuals but by a society at large. In contrast, idea of morality appears to be more associated with an individual’s sense of right and wrong. For example, while killing is morally wrong to an individual, it is often considered ethical by the state in times of war.

Of course, it is not the purpose of this initial discussion to pursue the debate about the scope of philosophy, such that we might now attempt to outline the potential scope of science under consideration in website-4. The Mysearch website has already attempted to discuss the topic of science in many ways, e.g. [Scientific Perspective](#), [Foundation Science](#), [Accepted Science](#) and [Speculative Science](#), although most were orientated towards [Theoretical Science](#) rather than what might be inferred by [Applied Science](#). From a philosophical perspective, theoretical science might be described as being more epistemological in scope, due to its mathematical abstractions, while applied science is possibly more ontological in nature as its applications generally have to operate in the real world.

*Note: It might be worth clarifying a number of descriptive definitions surrounding the scope of science beyond the basic classification of theoretical and applied science. We might also introduce the idea of [natural science](#) as being orientated towards the description, prediction and understanding of natural phenomena, where its methodology requires empirical evidence from observation and experimentation. In this context, we might cite subjects, such as biology, chemistry and physics, which in combination might then be used as the foundations of other [Earth sciences](#). However, for simplicity, we might accept the general description of *‘applied science’* to encompass the application of existing scientific knowledge to practical applications.*

Given the inference above, it might be assumed that [mathematics](#) is not an applied science, as it is often used to create an abstract model of reality. However, this abstraction does not, and has not, precluded its use in all manner of real-world applications. However, it might be said that mathematics is better described as a tool, which is philosophically neutral in its application. However, given that there has already been an attempt to cover some of the basic mathematical concepts – see [Mathematical Perspective](#), any additional discussions will try to focus on supplementary topics.

So, what about other applied sciences?

Many of the discussions throughout the entire Mysearch website centre around the issue of [evolution](#), especially [human evolution](#) in the context of [past, present and future](#). While each of the links shown possibly represents the development of various ideas, i.e. a learning curve, the discussion [‘Brave New Worlds’](#) was an attempt to consolidate these different perspectives into one overarching framework, which extended the discussion to include [social](#), [economic](#) and [political](#) factors. However, it was also argued that the scope of [technology development](#) was accelerating the rate of human evolution, such that the idea of Darwinian [natural selection](#) had to be revised. While the issue of [cognition](#) has been previously discussed, it was

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initially considered in terms of [Artificial Intelligence \(AI\)](#), such that a more direct comparison with the complexity of human intelligence might be overdue, which possibly requires a better understanding of [Human Physiology](#) and [Neuro-Physiology](#).

So, how might we better assess science fact versus science fiction?

In part, we might start with the difference between a goal and a wish, where the former can define a series of steps leading towards a future goal, while a wish cannot. In this context, science future may be a realistic goal, although not necessarily guaranteed, while science fiction falls into the category of a wish. Of course, what constitutes a realistic scientific goal also requires a better understanding of the current state of applied science and not just its theoretical extrapolation. Therefore, the goal of website-4 is simply to continue the learning process into any number of topics that might help separate a goal from a wish.

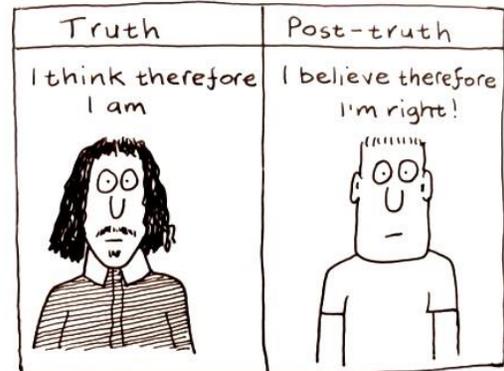
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1.1.1 The Nature of Essays

On the home page of [website-4](#), some initial ideas were outlined regarding the potential development of this section of the [Mysearch](#) website. While this scope might still be considered in terms of a 'pursuit of knowledge' that initially starts with the accepted 'weight of authority', it still requires a personal 'duty of inquiry', if it is to be meaningful to any individual beyond rote acceptance. However, previous sections of the Mysearch website required this duty of inquiry to investigate relatively large topics, which could not easily be summarised. Therefore, in contrast, this section of the website will attempt to pursue discussions of various topics more in the form of a short essay, which might then allow a wider range of ideas to be considered and linked to earlier sections of the website. By way of an introduction to this approach, the home page made reference to a quote by Carl Jung.

As far as we can discern, the sole purpose of human existence is to kindle a light in the darkness of mere being.

However, Jung believed that life has a spiritual purpose, which this website does not necessarily accept, although from the [personal perspective](#) of an [agnostic](#), it cannot necessarily be refuted, although it can still be questioned. However, while the quote might be interpreted in different ways, it seems to capture what might be described as a 'hopeful truth' about the purpose of human existence. Of course, the history of humanity's search for the [truth](#) has proved to be both elusive and subject to many different [worldviews](#), i.e. philosophical, theological and scientific.



Note: It might be argued that worldviews represent the sum total of human knowledge. However, there is a fundamental problem with this assumption in that many of these worldviews hold truths, which are contradicted by other worldviews. So, while each worldview might be deserving of a certain amount of respect in terms of its historical weight of authority, its perceived truths have to still be open to critical questioning, if we are truly to kindle a light in the darkness of mere being.

Given the note above, the following quote by Voltaire has been used many times as a reminder about the inherent problem of assuming certainty in any given worldview.

Doubt is not a pleasant condition, but certainty is absurd.

For it might be argued on the basis of historical evidence that all worldviews, whether philosophical, theological or scientific in scope, have been proven wrong to some smaller or greater degree. In this context, there is no absolute truth readily available to humanity. If so, then we might be better served by reflecting on the following quote taken from William Clifford's essay '[The Ethics of Belief](#)'.

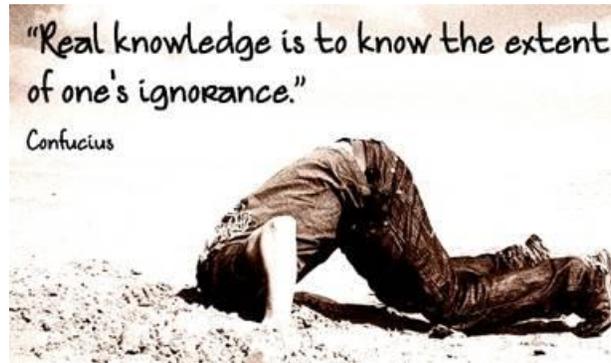
It is wrong always, everywhere, and for anyone, to believe anything on insufficient evidence.

While accepting the inference in Clifford's quote, we might recognise that many worldviews rest on a weight of authority that is grounded in historically held truths, often long before any form of scientific methodology could be used to scrutinise its assumptions or beliefs. Therefore, at this point, it is possibly necessary to highlight that many people may have either an [emotional or psychological](#) need to believe that life has a spiritual purpose, which may then support their idea of an [afterlife](#). While many may question whether there is 'insufficient evidence' to support such beliefs, others do not necessarily have the automatic right to destroy these beliefs without assessing the consequences to the individuals in question. However, by the same token, such beliefs cannot simply remain unchallenged, such that the [probability of the existence of any deity](#) has to be open to critical questioning in an appropriate forum.

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So, what might we infer from the quotes above?

This website has used many quotes, which it believes helps capture an essence of truthful knowledge, which might otherwise allude a thousand words. In this context, it is believed that the ones used in this introduction are powerful examples of lessons learnt in the past, which the authors wanted to pass to future generations. However, whether these generations will listen to such 'pearls of wisdom' is another matter.



While being forwarded as a subjective opinion, not certainty, the pursuit of truthful knowledge appears to be important for the future of humanity. However, such a statement possibly requires some initial consideration of humanity, both in terms of its genetic nature and the nurture now provided by society. If we accept that humanity was first the product of genetic evolution driven by natural selection, but subsequently modified by a long succession of man-made developments, it leads to a key question.

What is now the driving force behind man-made evolution?

However, this will be the subject of the first essay in this section.

1.1.1.1 *Nature & Nurture Debate*

As a basic introduction of the ‘*nature versus nurture*’ debate, the issue of evolution is often polarised in terms of two factors, i.e. internal genetics versus external environment. While we might accept that this debate can be applied to other biological lifeforms on planet Earth, the main focus of the debate is invariably orientated towards human life, as depicted right, without really giving too much thought about the direction this debate might go in the future. However, we will first attempt to extend this introduction by making some basic distinction between ‘*nature*’ and ‘*nurture*’, where the former is essentially biological in scope and subject to genetic adaptation, while the latter might be linked to any form of environmental effect. Generally, we might accept that nature and nurture can operate on very different timescales, which then leads to an initial question of interest.



Will the future be determined by nature or nurture?

In order to even start addressing the question above, we possibly need to be a little more specific about the scope of nature and nurture plus clarify the underlying assumption that humanity will play a key role in determining this future. In this context, it might be highlighted that the opening page of [website-4](#) suggested that past evolutionary processes have presented humanity with an opportunity to define the purpose, and future, of its own existence. However, it also suggested that this opportunity may never be realized by many, possibly for no fault of their own, due to the makeup of their DNA. This statement is based on the assumption that life is subject to a unique blueprint, encoded into DNA, which determines the scope of both the physiology and psychology of all species on planet Earth, including humanity. The empirical evidence in support of the role of DNA has previously been outlined in the [Biological Model](#) discussion, such that this detail will not be repeated. However, while there is empirical evidence that the evolution of any species has been based on mechanisms outlined in the [‘Inheritance Model’](#) discussion, it is also highlighted that the [Genetic Model](#) of inheritance is also subject to random mutations plus many additional mechanisms, such as [‘genetic recombination’](#) and [‘genetic dominance’](#), which lead to changes in the [genotype](#) and [phenotype](#) of a species.

Note: At this point, it might be highlighted that the central premise of Darwinian natural selection is that all life has adapted to environmental change, which it is assumed takes place over many generations. However, today, it is recognised that environmental change in the form of social developments may take place within a single generation.

In addition, a developing [‘Epigenetic Model’](#) suggests that phenotype changes may take place via a mechanism that does not involve direct alteration to the overall DNA sequence. Within this model, genes can be switched on or off as a result of environmental factors, possibly internal and external, such that it might blur the previous distinction between ‘*nature*’ and ‘*nurture*’. Of course, if humanity continues to develop the ability to change both the nature of its genetic blueprint and its external environment, then the question about nature and nurture may not be the central issue of concern as both will increasingly become man-made.

But do the various assumptions about man-made evolution need to be challenged?

While humanity might rightly assume itself to be the pinnacle of intelligent sentient life on planet Earth, this does not necessarily guarantee that man-made evolution will be a success. For even a brief review of [human history](#) might suggest that a multitude of other factors will play a role in future developments – see [Brave New Worlds](#) for further details. Therefore, we might still need to consider the idea of the ‘*human condition*’ being the result of both nature and nurture - see [The Elephant in the Room](#) for a possibly wider perspective.

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Note: The 'human condition' is undoubtedly a multitude of complex factors built into our DNA and then compounded by ever-changing developments in our surrounding environment, i.e. modern society. However, we might possibly attempt to characterise the net effect of all these factors in just four words: "Not in my backyard". While grossly simplistic, we might recognise that people have a tendency to only agree to change as long as it does not adversely affect them.

Let us continue by initially assuming that genetic evolution provides the explanation of the spread of physical and mental abilities of '[homo sapiens](#)' in the world today, which possibly dates back some 250,000 years. Of course, we might also recognise that the human condition has been affected by nurture factors, which might initially be introduced in terms of [Maslow's Hierarchy of Needs](#), although this hierarchy needs further consideration in terms of the growing complexity of modern society. Within this evolutionary timeline, [Darwin's theory of natural selection](#) was forwarded long before the development of present-day genetics, although it was generally accepted as a potential mechanism by which characteristic traits of a species might be passed on to subsequent generations. In this historic context, the term '*natural selection*' might be seen in contrast to some form of '*artificial selection*', which for the purposes of this discussion will be described as '*man-made*'. However, it has to be recognised that this very brief and overly simplistic summary of the evolution of '*homo sapiens*', undoubtedly omits many important facts, such as the apparent 10% reduction of the human brain over the last 20,000 years.

Note: There is still much controversy about the cause and effects of the apparent reduction in brain size. One idea simply relates brain size to body mass, another forwards the idea of diet as a key factor. However, there is also the possibility that the larger brain size of earlier hominids was a reflection of the broader range of survival skills initially needed in prehistory long before Maslow's needs could be adequately provided by extended social groups. Given this controversy, it might be premature to equate brain size with the general concept of IQ.

Despite highlighting a note of caution in the last sentence above, we might still consider the potential interaction between nature and nurture, especially over the last few hundred years, where humanity has become increasingly dependent on the protection offered by modern society. In this context, we might return to a quote by Darwin, even though it may now appear [politically incorrect](#) in today's world, for it highlights a potential consequence of social evolution on human genetics.

"With savages, the weak in body or mind are soon eliminated and those that survive commonly exhibit a vigorous state of health. We civilized men, on the other hand, do our utmost to check the process of elimination; we build asylums for the imbecile, the maimed, and the sick; we institute poor-laws; and our medical men exert their utmost skill to save the life of every one to the last moment. Thus, the weak members of civilized societies propagate their kind. No one who has attended to the breeding of domestic animals will doubt that this must be highly injurious to the race of man.

As previously highlighted, the genetic nature of evolution was not understood by Darwin, when he published the '*Origin of Species by Means of Natural Selection*' in 1859 or '*The Descent of Man*' in 1871. However, the results of selective breeding of domestic animals had been empirically understood for centuries, such that the quote cannot simply be ignored just because modern sensibilities do not like the inference. Therefore, the next question has to be considered.

Is humanity immune to selective breeding?

Note: First, by way of immediate clarification, this discussion is not a veiled disguise to introduce any ideas that might be associated with the dark side of [eugenics](#), where selection is predicated on race or ethnicity. However, the question above has to be legitimate, if we accept the empirical results of selective breeding, whether by design or accident.

Having hopefully clarified the purpose of the discussion to follow, the focus will now return to some potential causes and effects associated with both genetic and social evolution. At this point, it will now be argued that humanity has operated outside the normal definition of natural selection for possibly tens of thousands of years and, as such, has submitted itself to a form of selective breeding that, in part, is alluded to in Darwin's quote above. However, in opposition, there is a school of opinion that claims there has been no significant genetic change to the human genome in the last 50,000 years, such that the

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astounding development of successive human civilisations over the last 10,000 years must have been built on the same basic physical and mental abilities of our ancestors. If so, the perceived evolution of humanity throughout recorded history must be attributed to developments within the external environment, i.e. nurture not nature. Of course, today, there are many obvious racial and ethnic differences in physical appearance that would seem to contradict the certainty of this position. Although there is still considerable ambiguity surrounding the correlation of brain size to IQ. This latter issue may also be considered a taboo subject, for while people seem to accept the reality of a statistical distribution of physical abilities in sports by both race and ethnicity, there appears to be extreme reluctance to consider a similar statistical distribution when correlated to IQ.

Note: Charles Murray's book entitled ['The Bell Curve'](#) was published in 1994, although its findings and conclusions are still the subject of much controversy, possibly more political than scientific – see discussion ['Social Background'](#) for more details. While this issue will not be revisited at this point, it will be stated for clarification that statistical distribution deals with the probability within a population as a whole and does not make any inference about any individual within this population.

Again, having taken a detour to hopefully provide some reassurance to those adherents of political correctness, we might return to the issue of human evolution up to the present-day. While somewhat speculative in scope, the following evolutionary changes are supported by varying degrees of empirical evidence. At the genetic level, these evolutionary changes include known physical and biological adaptations, e.g. skin colour, disease resistance and lactose intolerance, but also suggest personality and cognitive adaptations, although these are often more difficult to quantify. There also appears to have been a trend towards reduced physical strength and aggression in some populations, which while probably counter-productive to survival in hunter-gatherer groups proved to be less of an issue in earlier agricultural communities and possibly actively *'nurtured'* in some modern societies. If we accept this type of general trend in physical attributes, it seems unreasonable to assume that the general notion of intelligence, especially as it pertains to abstract concepts such as mathematics, would not have been subject to some evolutionary change over the last 10,000 years. If so, we might speculate that evolutionary change, both physical and mental, have continued based on selective adaptations to changes in the external environment, i.e. increasingly sophisticated social groups. Of course, history tells us that the developments of ever more sophisticated civilisations was not uniform and varied enormously by geography.

Note: Today, the genome of various people around the world can be catalogued in terms of racial and ethnicity traits, which may then be traced as genetic markers linked to earlier human migrations into different regions and geographies. While this type of evidence is still subject to much research, it does not seem unreasonable to correlate the activation or suppression of certain genes to earlier migrations and cultural differences. Simply by way of an example, it is estimated that nearly 65% of the global population show symptoms of lactose intolerance, although this intolerance is subject to much geographic variants. Northern Europeans show less than 10% intolerance, while 95% of Asians and Africans exhibit this intolerance. Genetics has traced this mutation back 10,000 years to Northern Europe with the suggestion that the mutation was possibly linked to the domestication of dairy animals in Europe some 12,000 years ago. These earlier populations potentially relied on various dairy products as an essential source of food, such that the natural ability to tolerate lactose in infancy extended into adulthood. As the domestication of dairy animals did not occur until much later in Asia and Africa, the indigenous population in these regions did not develop the same degree of lactose intolerance.

While some of the ideas being presented are somewhat anecdotal, it does appear that the internal genetic nature of humanity has continually adapted in response to changes in the external environment over thousands of years. However, whether such adaptations can really explain the exponential increase in technological developments over just the last 200 years may appear questionable, such that other explanations may be necessary. One possible explanation for the increasing rate of development, which can be traced back to the earliest civilisations, is an ability to better share and distribute information that initially provided the foundation on which all human knowledge *'evolved'*. Ten thousand years ago, information sharing was initially restricted to the spoken word and therefore confined to very localised regions. However, the development of the written word was clearly a step change in this ability, although the means of distributing the information to a wider population was still limited. Again, we might recognise another step change in ability with the invention of the printing press, which not only

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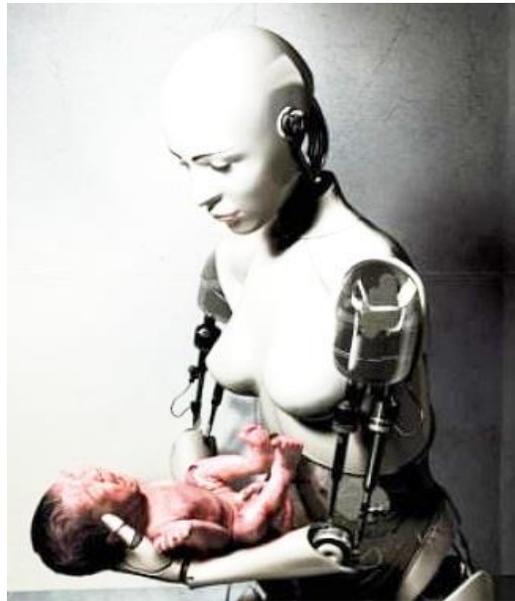
allowed the information to be replicated in volume, but also distributed across a much wider geography. Today, we might easily see the extrapolation of these earlier developments into the [information age](#), which is now supported by computer processing, global communication networks and a multitude of graphic and application interfaces.

But what of the future?

While any prediction about future developments has to be considered in terms of probability, not certainty, it might be accepted that an era of accelerating [AI-Robotic Developments](#) is no longer science fiction. If so, such development will impose a profound environment change on humanity, where many may not have time to adapt – see [AI Perspective](#) for more details.

Note: Again, at this point, we might question whether the line between nature and nurture will become increasingly blurred as the scope of the environment, as defined by modernity, becomes dominated by accelerating technological change. While we started out with the assumption that natural selection might have been partially superseded by man-made selection, we might now have to consider whether the future might ultimately be determined by an entirely different form of selection.

To underline the potential implication of the last sentence above, the image right is being used to highlight what many might see as a disturbing prospect of a purely technology-led evolution, should it come to challenge humanity's dominant role in the future of life on planet Earth. However, before addressing this concern, the image right was originally used as part of an evolutionary model called [Hybrid AI](#), where incremental developments take place over a [timeline](#) of some 200-300 years. This timeframe was based on what was felt to be a more practical assessment of the acceptance of technology developments, when considered within the wider scope of society as a whole, i.e. political, economic and social – see [Catalysts of Change](#) for more details. In addition, it was hoped that this timeframe might provide more time for certain sections within each future generation to adapt to the changes being suggested, although this might be more reflective of wishful thinking than any deep conviction.



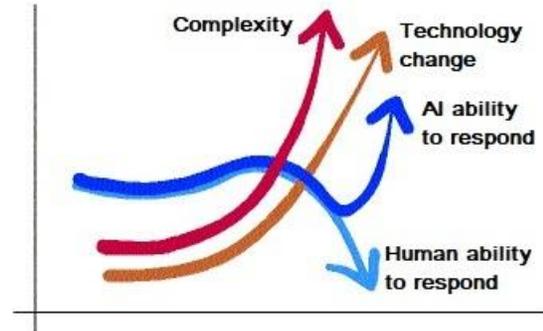
Note: By way of another aspect of the how and why society changes - see discussion entitled [The Nature of Consensus](#)'. This discussion suggests that accumulating change in society is not really planned, invariably has unintended consequences and is never decided by anything that truly represents a democratic majority.

In part, the general inference of these earlier discussions is that the Darwinian idea of '[survival of the fittest](#)' does not simply disappear in some utopian future, if winners and losers remain a consequence of any process of change. In retrospect, we recognise the process of natural selection also created evolutionary winners and losers that applied to all lifeforms. However, probability suggests that a future, which remains subject to the human condition, will still continue to produce its own form of winners and losers brought about by technology developments of all kinds. Of course, probability also suggests that this on-going process of man-made evolution will undoubtedly trigger corresponding changes in the political, economic and social infrastructures that now underpin most modern societies.

But are there other possible implications associated with the image above?

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As outlined in this discussion, the line between nature and nurture may become increasingly blurred, if the scope of man-made manipulation of the genetic code continues to develop. Of course, society might place restrictions on such developments, but probability suggests that this will only slow and not stop future developments in this field. Likewise, as outlined in the discussion '[Technology Catalysts](#)', developments in genetics is but one of many potential technology developments that will undoubtedly change human society and possibly affect all species on planet Earth. However, the implication in the image possibly suggests something more profound than just the manipulation of the human genome, which has been previously discussed in terms of both '[AI and Robotic Developments](#)'. While the timeline of these developments might be debated, the general trend that many are predicting might be characterised in the diagram right. Here we see the suggestion that complexity will increase exponentially, primarily driven by technology change, while human ability remains constrained by genetic evolution. If so, humanity may have little choice but to surrender control of many of its critical infrastructure to autonomous AI systems. Of course, should such developments continue, the combination of [AI-Robotic Automation](#) would have the potential to replace humans in many areas of employment and, in so doing, become an [Economic Catalyst](#) of change. So, while this is only a prediction, not certainty, it is difficult to see how the current trajectory of human society can avoid this future without some form of regression, the consequences of which would then threaten the lives of billions, who are almost totally dependent on the complexity of the modern world.



So, does humanity have a long-term future?

While this might appear to be an extremely depressing question to table towards the end of this discussion, it too has to be put into evolutionary context. Any review of the earlier evolution of life on planet Earth shows the transitory nature of all species when subject to environmental change to which they cannot adapt. While humanity might assume itself to be an exception, which is questionable, it is not necessarily without some foundation, if characterised in the form of a more specific question.

Will humanity exist in ten, hundred, thousand or even a million years?

There are two aspects of this question that need to be considered, first, the length of time involved and, second, what do we infer by the word '*humanity*'. Clearly, as the timeframe extends ever further into the future, our ability to foresee all possible change, both genetic and environmental, possibly reduces ever closer to zero. However, it is in the nature and nurture of the human condition to consider the issue of change as a somewhat academic issue, provided it does not affect us personally, which we might initially perceive in terms of our own life time and then extend to that of our grandchildren, if already born. While each generation possibly has its own perception of humanity, both in terms of its genetic nature and nurturing environment, it is clear that this perception not only changes with time, but also in the details of its reality. In this context, we each come to some understanding of our own humanity, which is a subjective product of '*time and place*' into which we are born. However, what this discussion has attempted to highlight is that natural and man-made selection have come to operate on very different timescales and that humanity, whether by design or accident, appears to be destined to initially follow a path of man-made evolution, which will continue to create both winners and losers. Of course, in the longer term there is the suggestion that even man-made evolution might be superseded, but this is possibly the subject of another essay.