



Intelligent Design?

Is our species the work of an intelligent designer, placing us in an optimal environment? Despite logical flaws, the scientific evidence and legal setbacks intelligent design (ID) is showing surprising staying power. We will first briefly look at what ID is, and then explore 3 main arguments against it.

1 What is Intelligent Design (ID)?

1a. A form of the Teleological Argument

- On the one hand, ID is the latest version of the teleological argument
- The teleological argument goes back to Ancient Greece and was initially applied to the Greek gods [1] [2]
- It was introduced into Christian theology by Thomas Aquinas in the 13th century
 - In his Summa Theologica he presented 5 Ways to prove his god's existence
 - The 5th Way was the teleological argument (the Greek word "telos" meaning "end" or "purpose")
 - The crux of the argument is that as we look at the order in nature fulfilling its purpose without having any intelligence we can only conclude this is due to an intelligent designer (which naturally had to be the Christian god in his mind). He used the analogy of an arrow unwittingly flying to its target, guided by an archer
- This same teleological argument was also made by Islamic scholars, like Al-Ghazali (1058-1111) and Averroes (1126-1198) for Allah as the great designer and as consistent with the Quran [3]
- William Paley (1743-1805) popularised the teleological argument and the famous watchmaker analogy with his hugely influential "Natural Theology" published in 1802 [4]
 - He argued that if you come across a watch in nature you will not conclude that it is a natural object like a stone. Its complexity and specific purpose clearly shows there is an intelligent designer responsible for it
 - He then used an inductive analogy argument that the same applies to nature. This analogy is still very popular with proponents of ID
 - The watchmaker analogy also goes back to Ancient Greece, but Paley applied it to the Christian god, popularised it and gave the teleological argument both a new focus (complexity) and a new lease on life
 - Ironically enough, Charles Darwin studied Paley's "Natural Theology" and was a strong supporter of it when he embarked on the Voyage of the Beagle in 1831 (see this CSF Historic Moments article for more information: [The Voyage of the Beagle - The CSF](#))



[Image credit: dreamworks]

- Christian apologetics added another claim to the teleological argument over the last 2 centuries: that the Universe is finetuned for humans, which also points to an Intelligent Designer
 - Typical examples they use are
 - That the earth is just the right distance from the sun to provide optimal temperatures for human beings (often accompanied by the claim that we would all fry if the earth was just a little closer to the sun, or conversely that we would all freeze if it was a little further away)
 - The optimal oxygen levels in our atmosphere
 - The tides and sea level not overrunning the planet
 - For this reason the teleological argument is also known as the Argument from Design or the Argument from Finetuning
- There is another completely different Cosmological finetuning argument, which is about the constants in the laws of Physics and the probabilities of the development of life. This is a different topic for another day

1b. The Latest Version of Creationism

- On the other hand, ID is far more than just the abstract teleological argument, it is also a coordinated religious, social and even political movement in the US. It is the latest version of creationism, despite the fact that proponents and apologetics are going out of their way to deny/hide this. This section will provide a brief historical overview, including the most relevant legal cases. This article will focus more on ID as a religious and political movement in the US, than on the abstract teleological argument, although that will inevitably address the flaws of the teleological argument too
- Notes on terminology:
 - We can broadly define **creationism** as the rejection of evolution due to the belief in a supernatural creator deity [5]
 - All 3 Abrahamic religions (Christianity, Judaism and Islam) include proponents of creationism

- However, all Christians are not creationists. Many accept evolution, and that their god “created” the cosmos by means of evolution (**theistic evolution**), while creationists typically take the creation myth in Genesis in a literal sense
- There are numerous examples of creationism in other religions (other than the 3 Abrahamic religions), as most religions have some form of creation myth
 - Like Hinduism with Brahma as the creator god [6]
 - And Tezcatlipoca, the main creator god of the Aztecs [7]
- There are many different varieties of Biblical creationism, but it can be broadly divided into two:
 - **Old Earth Creationism** (OEC). This forms the middle ground between YEC and theistic evolution. It accepts the scientific consensus on the age of the world as several billion years old, and it typically accepts more of the scientific consensus in other disciplines like geology, physics and chemistry. However, it still does not accept “macro-evolution” (the forming of new species), which distinguishes it from theistic evolution [8]
 - **Young Earth Creationism** (YEC). It proposes that the cosmos was created in 6 literal days by the Biblical god. The age of the earth is calculated by the number of the genealogies mentioned in Genesis 5 and 11, according to which its age is estimated somewhere between 4,000 and 10,000 years. YEC is at odds with the scientific consensus in many different scientific fields [9]

2 ID as the Third Phase of Creationism in the US

2a Phase 1: Creationism

- Scientific progress (especially in geology) during the first part of the 19th century in Europe led to the scientific consensus completely rejecting YEC by 1830
- After Darwin published his “On the Origin of Species” in England in 1859 creationism became a highly controversial topic, but within 15 years nearly all biologists abandoned “natural theology” in support of Darwin
- In the 20th century we see the rise of Christian fundamentalism and a strong anti-evolution sentiment in the US. During the 1920s 4 US states (Arkansas, Mississippi, Oklahoma, and Tennessee) passed laws which outlawed the teaching of evolution at school, as part of a campaign by Christian fundamentalists to “drive Darwinism from our schools”. Some useful sources to get a historical overview: [5] [10] [11] [12]
- The famous **Scopes Trial** took place in 1925 when a high school teacher, John Scopes, was found guilty of teaching evolution in Dayton, Tennessee [13]. The verdict was reversed on a technicality, so the case was never appealed. It nevertheless had the impact of evolution being removed from biology curriculums
- The next major development was **the Epperson vs Arkansas trial**, in which another biology teacher (Susan Epperson) took her state to court for violating the Establishment Clause [14]. This case went all the way to the Supreme Court which ruled in 1968 that it was unconstitutional to ban the teaching of evolution in schools. Since 1968 the teaching of evolution has been legal everywhere in the US

2b Phase 2: “Scientific” Creationism

- In the 1960s YEC made a comeback, and they rebranded creationism as “creation science” to improve their prospects in legal battles. Both of these were spearheaded by Henry Morris from the Institute of Creation Research in San Diego
 - Morris (a qualified hydraulic engineer!) published “The Genesis Flood” in 1961, which was influential in the resurgence of YEC in the US [15]
 - He was instrumental in rebranding creationism to “scientific creationism” with the publication of “Scientific Creationism” in 1974. This established him as the “father of scientific creationism” despite very strong criticism from the scientific community

- He published two versions of this book, one with Biblical references and another one without these references so it could be used in schools without being seen as religiously motivated (an approach which creationists continue to follow to this day)
- In 1981 Arkansas passed another bill in this regard (their “equal time” bill) requiring teachers to spend equal time teaching evolution and “creation science”. This led to another court case, **McLean v. Arkansas Board of Education** [16]. In January 1982 Judge William Overton ruled that the equal time bill was unconstitutional by violating the Establishment Clause in 3 different ways. He concluded that “creation science” was religion and not science and he stated that “No group, no matter how large or small, may use the organs of government, of which the public schools are the most conspicuous and influential, to foist its religious beliefs on others”.
- Arkansas did not appeal Judge Overton’s verdict, but when a similar ruling was made in **Edwards v Aguillard** about a similar law in Louisiana it went all the way to the Supreme Court [17]. In 1987 the Supreme Court ruled that teaching “creation science” in public schools was unconstitutional

2c Phase 3: Intelligent Design

- And this is when and why Intelligent Design appeared on the scene. Undeterred by the long series of legal setbacks, they pushed ahead with a new legal strategy and rebranded themselves yet again
 - First they failed to ban the teaching of evolution, as creationists
 - Then they failed to force equal time in the science classroom for evolution and their “scientific creationism”
 - Their third attempt was to bring their religion into the science classroom under the guise of “Intelligent Design”, and they learned from their previous legal setbacks
- A single organisation is responsible for the Intelligent Design movement: a conservative think tank, the Discovery Institute in Seattle and more specifically one of their divisions known as the Center for Science and Culture (CSC). According to the Discovery Institute the mission of the CSC is to “replace materialistic explanations with the theistic understanding that nature and human beings are created by God” [12] [18]
- The main proponents of ID are:
 - Phillip Johnson, who was a retired law professor and co-founder of the CSC. He was a co-author of “Of Pandas and People”, a primary text book for ID. Johnson passed away in 2019 [19]
 - Michael Behe, a professor of biochemistry at Lehigh University. He is the author of “Darwin’s Black Box” (1996), which became a highly influential ID publication. Behe was a senior fellow of the CSC [20]
 - William Dembski, who has a PD in mathematics, another one in Philosophy and Masters of Divinity. Dembski published “Intelligent Design: the Bridge between Science & Theology” (1999) and was a senior fellow of the CSC [21]



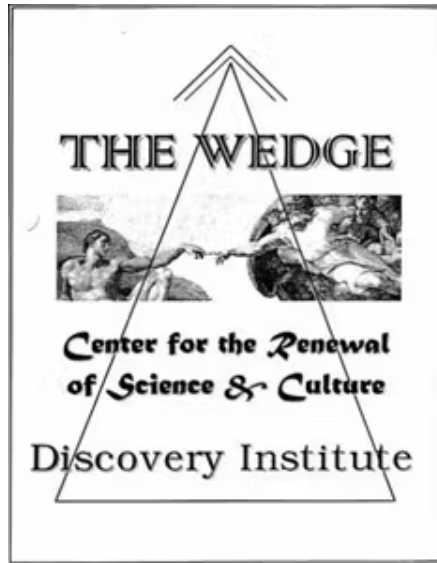
William Dembski [Image credit: Wikimedia Commons]

- Jonathan Wells has a PhD in religious studies and a doctorate in molecular biology. He used to be the Director of the Center for Theology and Science at the Southern Baptist Theological Seminary. He published "Icons of Evolution: Science or Myth?" in 2000. He is a member of Reverend Sun Myung Moon's Unification Church and a senior fellow of the CSC [22]
- The Wedge Strategy [11] [23] [24]. In the late 1990s, Phillip Johnson developed "The Wedge Strategy" to promote ID and defeat Darwinism
 - In a speech at the "Reclaiming America for Christ Conference" in 1999 Johnson said the following about The Wedge: "... you realize that the Darwinian theory of evolution contradicts not just the Book of Genesis, but every word in the Bible from beginning to end. It contradicts the idea that we are here because a creator brought about our existence for a purpose..... The first thing you understand is that the Darwinian theory isn't true. It's falsified by all of the evidence and the logic is terrible. When you realize that the next question that occurs to you is, well, where might you get the truth? **When I preach from the Bible, as I often do at churches and on Sundays, I don't start with Genesis. I start with John 1:1. In the beginning was the word.** In the beginning were intelligence, purpose, and wisdom. The Bible had that right. And the materialist scientists are deluding themselves." This is the core of ID

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- From a 2013 copy of The Wedge Strategy:

- Its Two Governing Goals (which are almost verbatim the same as that of the CSC):
 - “To defeat scientific materialism and its destructive moral, cultural and political legacies”
 - “To replace materialistic explanations with the theistic understanding that nature and human beings are created by God”
- It covers comprehensive and systematic projects and activities
- It also includes both 5-year and 20-year goals (which started running in 1999). Two of the 20-year goals:
 - “To see intelligent design theory as the dominant perspective in science”
 - “To see design theory permeate our religion, cultural, moral and political life”
- It is noteworthy that in their governing goals and 20-year goals they include and emphasize politics



[Image credit: Wikimedia Commons]

[“To see design theory permeate our religion, cultural, moral and political life”](#) - One of the 20-year goals contained in [The Wedge strategy](#)

- Barbara Forrest, a Philosophy Professor in Hammond, Louisiana, is a vocal critic of ID and quite concerned about their zeal, as well as their systematic and well-funded campaigns:
 - She published a book on them in 2004 “Creationism’s Trojan Horse: The Wedge of Intelligent Design”. This book gives a good overview of the ID movement. I use the 2007 edition of this book for this article [11]
 - She was used as an expert witness by the plaintiffs in the 2005 Kitzmiller v. Dover Area School District trial (see below)
 - From p11 of the 2007 edition [11]:
 - “They have enough financial backing and self-righteous zeal to outlast what little effectively organized opposition to them presently exists, especially in the higher education community”
 - “... based on our demonstration in chapter 9 of **the religious foundation of the intelligent design movement and the importance of this foundation to the Wedge’s goal of “renewing” American culture, we also believe that its ultimate goal is to create a theocratic state”**
- I don’t know if a theocratic state is definitely/officially the end goal of ID, but what I do know is that:
 - Christianity’s history is a clear warning that they are dangerous with unfettered political power. See the following article for more information: [Christianity starts its 1,500 years of Persecution - The CSF](#)
 - The ID movement has a systematic, long-term strategy with the explicit goal to destroy Darwinism and with explicit political goals

- 60 Years of legal setbacks did not deter them
- Creationists in the US (including ID) had no qualms to:
 - Use whatever power they had (like on school boards) to fight/silence real science, while promoting their religion's creation myth as science
 - Use the courts to either ban the teaching of evolution or mandate the teaching of creationism in science classes
 - Threaten conservative Christian judges who ruled against them
 - Commit perjury for their cause
- Well-informed academics who follow them and their agenda closely are quite concerned
- The main ID proponents continue to use the same old creationist arguments promoted by Henry Morris, they were all actively involved in the Wedge Strategy and are all explicitly on record as creationists. An example:
 - Jonathan Wells: **"Father's words, my studies, and my prayers convinced me that I should devote my life to destroying Darwinism**, just as many of my fellow Unificationists had already devoted their lives to destroying Marxism. When Father chose me (along with about a dozen other seminary graduates) to enter a Ph.D. program in 1978, **I welcomed the opportunity to prepare myself for battle.... God created the cosmos with a plan in mind**. This affirmation is among the most basic in all of Christianity (and other theistic religions as well, including Unificationism). And that plan included human beings as the final outcome of the creative process: we are created in the image of God." [25]
 - Note: "Father" in this context refers to Reverend Moon of the Unification Church

"Father's words, my studies, and my prayers convinced me that I should devote my life to destroying Darwinism... I welcomed the opportunity to prepare myself for battle.... God created the cosmos with a plan in mind" - Jonathan Wells

- However, a few things are different with the rebranding to ID
 - What they're silent about:
 - In their books purported to be scientific (or intended as ID text books in schools), they make no mention of the Bible or its god. They learned from all their legal losses
 - They also make no mention of the age of the earth, in order to appease Old Earth Creationists and Young Earth Creationists
 - They introduced a new concept "irreducible complexity" (Michael Behe in 1996 with "Darwin's Black Box")
 - The broader context of their rejection of evolution, which receives strong and repeated emphasis:
 - They accuse proponents of evolution of metaphysical naturalism, and therefore promoting atheism
 - As many scientists and philosophers pointed out, the practice of science is based on methodological naturalism, but not metaphysical naturalism
 - There are some scientists and teachers of evolution who do not subscribe to metaphysical naturalism (see the Kitzmiller Trial below)
 - They also see evolution as a threat to Christian morality and even the survival of the West. They do not have much factual or historical support for these views (see Section 5b below)
 - Overall, they are better qualified than previous generations of creationists. They're no longer primarily theologians from Bible schools and lawyers, but they still consist of only a small number of scientists. And they have been more effective in promoting ID, despite all the glaring flaws in their "science"
- **Kitzmiller et al v. Dover Area School District**, another legal watershed [26] [26b] [27]
 - In October 2004, the school board of the Dover district (in York County, Pennsylvania) changed their biology curriculum to include "Of Pandas and People" (co-authored by Philip Johnson) as a scientific text book. A number of board members were YECs who made several explicit religious claims during board meetings

- Eleven parents of students in Dover (Tammy Kitzmiller as lead plaintiff with 10 other plaintiffs) sued the school district. Several of these plaintiffs were Christians and some even taught vacation Bible School, but opposed bringing religion into the science classroom
- The first witness for the plaintiffs were Kenneth Miller, a biology professor and author from Brown University. He was a Christian and a strong opponent of ID. His testimony clearly demonstrated the difference between methodological and metaphysical naturalism, and included the following:
 - That ID was not a testable theory
 - That ID was not falsifiable
 - That ID was not generally accepted by the scientific community
 - That many claims by ID authors about evolution were invalid and “falsely undermines the scientific status of evolutionary theory”
- Michael Behe was the 1st witness for the defence
 - He claimed to use a different definition of science than the generally accepted one. Under cross-examination (and under oath) he acknowledged that astrology could be classified as science under his definition
 - He also acknowledged that “There are no peer reviewed articles by anyone advocating intelligent design supported by pertinent experiments”
- On 20 December 2005 presiding Judge John E. Jones III found for the plaintiffs with a well-reasoned 139-page ruling. Key components of his ruling include [26c]:
 - That the court is not holding or expressing a view whether ID is true or not
 - But that it finds that ID is not science and fails on 3 levels:
 - “ID violates the centuries-old ground rules of science by invoking and permitting supernatural causation”
 - “The argument of irreducible complexity, central to ID, employs the same flawed and illogical contrived dualism that doomed creation science in the 1980s”
 - “ID’s negative attacks on evolution have been refuted by the scientific community... It is additionally important to note that ID has failed to gain acceptance in the scientific community, it has not generated peer-reviewed publications, nor has it been the subject of testing and research”
 - That the evidence established that ID was a religious view and a re-labelling of creationism
 - “... we find that the secular purposes claimed by the Board amount to a pretext for the Board’s real purpose, which was to promote religion in the public school science classroom, in violation of the Establishment Clause”
 - He pointed out the irony that the testimony by the Board members “was marked by selective memories and outright lies under oath”



Judge John E. Jones III [Image credit: Wikimedia Commons]

“... we find that the secular purposes claimed by the Board amount to a pretext for the Board’s real purpose, which was to promote religion in the public school science classroom, in violation of the Establishment Clause” - Judge John E. Jones III in his 139-page ruling in the *Kitzmiller et al v. Dover Area School District* case

- A few other relevant facts about this trial and its aftermath:
 - Judge Jones was appointed to the bench by Pres George W Bush in 2002
 - Jones is a Republican, a Christian and a church-goer
 - Jones recommended to the US Attorney’s Office to investigate the school Board members for perjury during the trial
 - Despite being conservative Christians, Jones and his family received numerous serious threats after the trial, which warranted full-time US Marshall protection for them
 - The entire Dover school Board was replaced in an election a month before the verdict was delivered. The new Board removed ID from the curriculum and did not appeal the verdict
 - The University of Lehigh, where Michael Behe taught, issued an undated public statement after the trial that “it is our collective position that intelligent design has no basis in science”
 - The proponents of ID continued undeterred by their legal losses and all the scientific refutations

3 Dumb Design

Before we look at the logical flaws of ID (and the teleological argument) or the scientific evidence, let’s start by first bringing rational scrutiny to their foundational claim that we’re faced with ID as far as humans are concerned and that the Universe is also finetuned for the existence of our intelligently designed species.

3a Human “design” flaws

- **Although the blind process of evolution led to some impressive, effective and complex outcomes, it by no means led to an optimal “design” of homo sapiens or any other species**

- There are a large number of human characteristics pointing to a sub-optimal, and even downright dumb, “design”
 - A few useful general sources on this topic: [28] [29] [30] [31]
 - The human body utilizes a multi-purpose canal for breathing and swallowing food, which was historically highly problematic. Food, water and air flow through the pharynx until it splits into the trachea (the windpipe) and the oesophagus
 - The epiglottis (the valve keeping food out of your lungs) often does not function effectively or timely leading to choking and was responsible for numerous unnecessary deaths over the centuries
 - Dolphins and whales are better “designed” with 2 separate canals
 - The dual-purpose canal for giving birth and sex, while this canal is on the one hand restricted by the size of the pelvis (which can’t be too wide when walking upright) and on the other hand needs to pass the enlarged human head
 - The birth canal would have been more effective in the abdomen, unrestricted by the pelvis, like surgeons emulate with caesarean surgery
 - This is evidenced by all the stillborn children and maternal deaths before medical science, as well as the risks still posed to this day by natural childbirth
 - Evolution solved this problem by humans giving birth in a more premature stage than in other other related species like gorillas and chimpanzees [30]. However, this came with a whole new set of survival risks and challenges, especially before the advent of civilization and science



[Image credit: dreamworks]

- Our genome contains numerous examples of existing non-functional DNA, which would indicate pretty sloppy design by an intelligent divine designer, but which makes a lot of sense in view of evolution. Examples:
 - Lanugo. About 5 months after conception human foetuses grow a coat of hair, which is not required in utero. They shed it before birth and this lanugo is clearly an evolutionary remnant serving no purpose today
 - We carry the genes for synthesising Vitamin C from simpler chemicals, but lost the ability to synthesise it presumably because fruit-eating primates no longer needed this capability
 - The human appendix, the remnant of an intestinal pouch to ferment the the hard-to-digest plant diets of our ancestors. Now it serves no purpose, while causing many unnecessary deaths
 - Big nasal cavities. The 4 sets of human nasal cavities used to provide an enhanced sense of smell in the wild, but it currently serves no meaningful purpose, apart from moistening and heating the air we breath.

They have poor drainage, due to small drainage channels and the main drain spout for the two main cavities is positioned at the top of the cavity and has to work against gravity. These cavities are completely dispensable, while being a major source of infections [29] [29b]

- We see non-functional DNA with many other species, from the vestigial wings of the flightless kiwi bird, to anteaters which develop tooth buds as embryos but are never fully develop, and cave animals with rudimentary eyes which cannot see
- The most fundamental “design” flaw in the human eye is the blind spot it has. The optic nerve fibres enter the human retina from the front, causing a small blind spot, which you’re normally unaware of as the brain compensates for this by filling in visual information [30] [32]
 - This would have been a very poor “design” decision, and not a mistake a human designer would make today
 - An octopus is an example of an animal with a superior eye without this “design” flaw, with optic nerve fibres exiting from the back of the retina
- Suboptimal lung “design”. Humans breathe in and out through the same passage, resulting in a residue of used air staying in parts of the lungs
 - Birds, for example, have more efficiently constructed lungs with long tubes running straight through their bodies
- Human teeth, especially wisdom teeth, are poorly “designed”
 - Periodontists point out how gum bacteria continue to increase with age, that these bacteria are chronic and that there is a bi-directional and dangerous feedback loop between gum bacteria and major health conditions like the metabolic syndrome
 - It led to so many unnecessary deaths before medical/dental science. For example, according to the historical Bills of Mortality, “teeth” were indicated as the 6th leading cause of death as late as 17th century England [33]
 - The proliferation of dental technology, like dental implants, is a good example of science and technology improving on human dental “design”



[Image credit: dreamworks]

- The challenges and daily effort to constantly find enough and suitable food to survive
 - Just observe a large number of humans together at a big sporting event to be struck by this constant need for food, drinks, and relieving ourselves
 - Reptiles are better “designed” without a constant need for food

- There are more than 4,000 genetic diseases currently known
- Certain organs are very susceptible to cancer (breasts, prostate, colon)
- The spine having to function as an upright column (instead of a hanging arch), after homo sapiens evolved bipedalism, which creates numerous postural problems
- The suboptimal and error-prone blood supply around the back of muscles like the hamstring and biceps, with professors of Anatomy suggesting simple improvements
- Common and severe birth defects
- The terrible effects of aging
- It's also quite odd that the intelligent designer continued to reinvent the wheel, by designing the same function in different ways in different species, with the human "design" (the supposed "crown of creation" which was created in his "image") inferior in so many ways
 - The eyes of an octopus without the blind spot of the human eye
 - The superior lungs of birds
 - Whales and dolphins with two separate canals for breathing and consuming food
 - Reptiles without a constant need for food
 - Humans who can only see a small part of the spectrum of electromagnetic radiation, which is anthropocentrically defined as "visible light" [34]
 - Humans who can just hear a small part of the audio spectrum (from 20Hz to 20KHz). Bats, for example, can detect frequencies up to 200KHz [35]
 - Dogs with a much superior sense of smell
 - Birds of prey with vastly superior eyesight
 - The general superiority of many animals in terms of stamina and physical strength, which was a big disadvantage for humans when we still struggled to survive in the middle of the food chain
- Conclusion:
 - The human body by no means serves as an example of optimal "design", when looked at critically. It is not only suboptimal in terms of specific functionality but also inferior to the "design" of many animals
 - A design team of world-class engineers and surgeons can without a doubt come up with a much improved human "design", without magical powers
 - And when one starts with a blank slate (including the opportunity/ability to change the laws of physics) and divine powers, a vastly better design can easily be imagined
 - As David Hume put it in the 18th century, as design effort it can probably only be described as the 1st poor effort of an infant deity.

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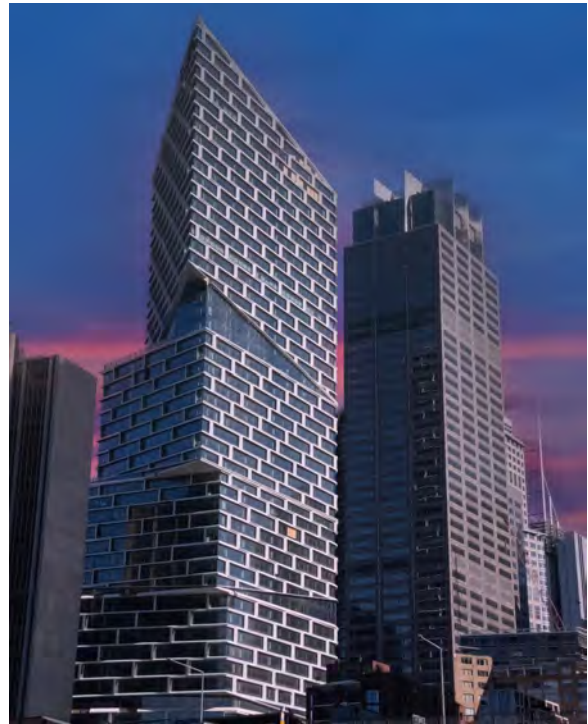
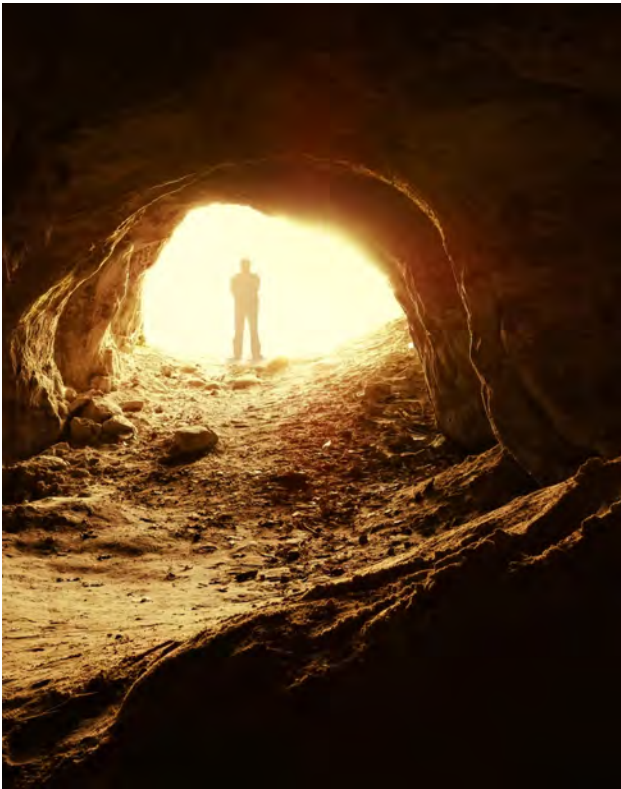
3b Our planet:

- Let's look beyond the human body towards its environment. Is planet earth really an optimal environment for homo sapiens?
- Large parts of the planet is simply uninhabitable:
 - Too hot, too cold, too dry, lacking food and water, with life-threatening diseases
 - Our main light source causes cancer
 - Our main water source is not drinkable



[Image credit: dreamworks]

- Even the natural fresh water supply is largely dangerous due to pathogens and disease
- Then we also encounter earthquakes, volcanoes, tsunamis, floods and other natural disasters
- We experienced historical mass extinctions, with 95%+ of all life on the planet already extinct
- I think it is an important perspective that this is actually much worse than it seems now that we're on top of the food chain and urbanised, with science and technology resolving most of our survival issues (clothing, shelter and protection, electricity for heating and cooling, providing food, medical care, etc)
 - We're part of the food chain, and used to be in the middle as Harari pointed out in Sapiens [35b]. Avoiding the animals higher on the food chain than us in order not to be eaten used to be a constant survival struggle
 - Life, the struggle for survival and the hostility of our environment look very different in two hypothetical scenarios:
 - Living in a cave before we mastered the skill of making fire, returning empty-handed after an unsuccessful mammoth hunt to a dark and cold cave and after losing two hunters of the clan in an encounter with a few sabre-tooth tigers on the way
 - Compared to now, when we sit in our air-conditioned urban apartment behind a security gate on level 23 relying on safe drinking water from a tap without thinking twice about that, with a course of antibiotics from the 24X7 chemist on the bedside table, bingeing on Netflix while waiting for Uber Eats to deliver dinner



[Image credit: dreamworks]

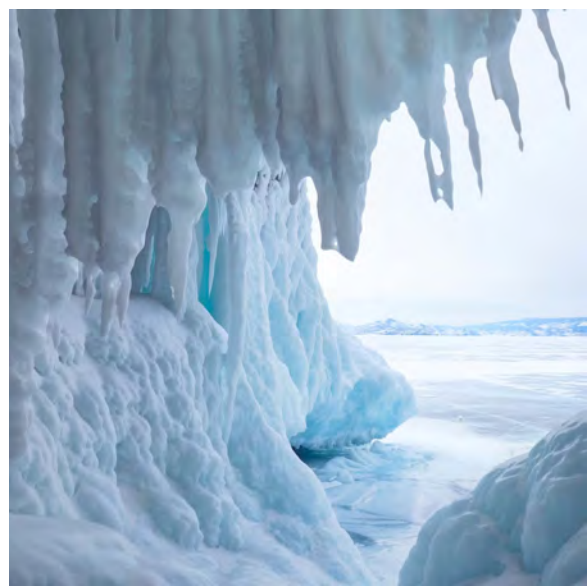
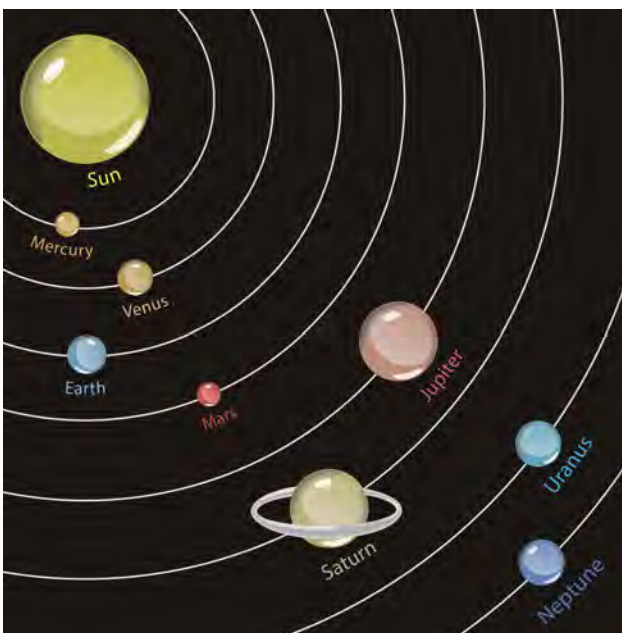
- I would argue that just the fact of a food chain is a major “design” flaw in itself. Animals have to eat each other to survive? Why design a food chain in this manner?
- A small, but still highly pertinent, example: The Loiasis parasite which bores through the eye to sustain itself and causes blindness. 29 Million people are estimated to be at risk of this parasite in Central and West Africa [36]
- Planet Earth and its food chain provided a hostile environment and major survival challenges to homo sapiens. It is worth pointing out that there was nothing inevitable about our survival as a species or eventually reaching the top of the food chain.

Planet Earth and its food chain provided a hostile environment and major survival challenges to homo sapiens. It is worth pointing out that there was nothing inevitable about our survival as a species or eventually reaching the top of the food chain

3c The universe:

- As we continue to zoom out, the environment becomes even more hostile and impersonal. Humans can't survive outside the earth's atmosphere for a few seconds
- As for the notion that the earth is just the “right” distance from the sun for human survival, and that if that distance was marginally different we would either freeze or fry [37]:
 - As pointed out above, parts of the planet are currently too hot or too cold for human survival
 - We survive by moving to parts of the planet where the temperature is more conducive to our survival and comfort, and then we use man-made technology to regulate the temperature in these areas
 - Some historical perspective is relevant too. The temperature of our planet vastly changed over time. It experienced at least 5 ice ages, and we're now in a warm interglacial period which started only about 11,000 years ago. Although our species survived 2 ice ages, these ice ages killed many individuals and species [38]
 - More importantly, regarding our “perfect” distance from the sun:

- Perihelion is the point in the elliptical orbit of the earth where it is closest to the sun. This is roughly 91.4 million miles
- Aphelion is the point in the elliptical orbit of the earth where it is farthest from the sun. This is roughly 94.5 million miles
- So the earth's distance from the sun varies by about 3.1 million miles during any given year
- The northern hemisphere experience winter when the southern hemisphere experience summer, so this varying distance from the sun is not even the reason for our seasons
 - With perihelion in January, when the earth is closest to the sun, the northern hemisphere has winter
 - The seasons are actually determined by the axial tilt of the earth
- So not only does our distance from the sun varies by millions of miles during the year, it does not have that significant an impact on the temperature
- And if earth was much farther away from the sun, life may not have evolved or very different life forms may have evolved.

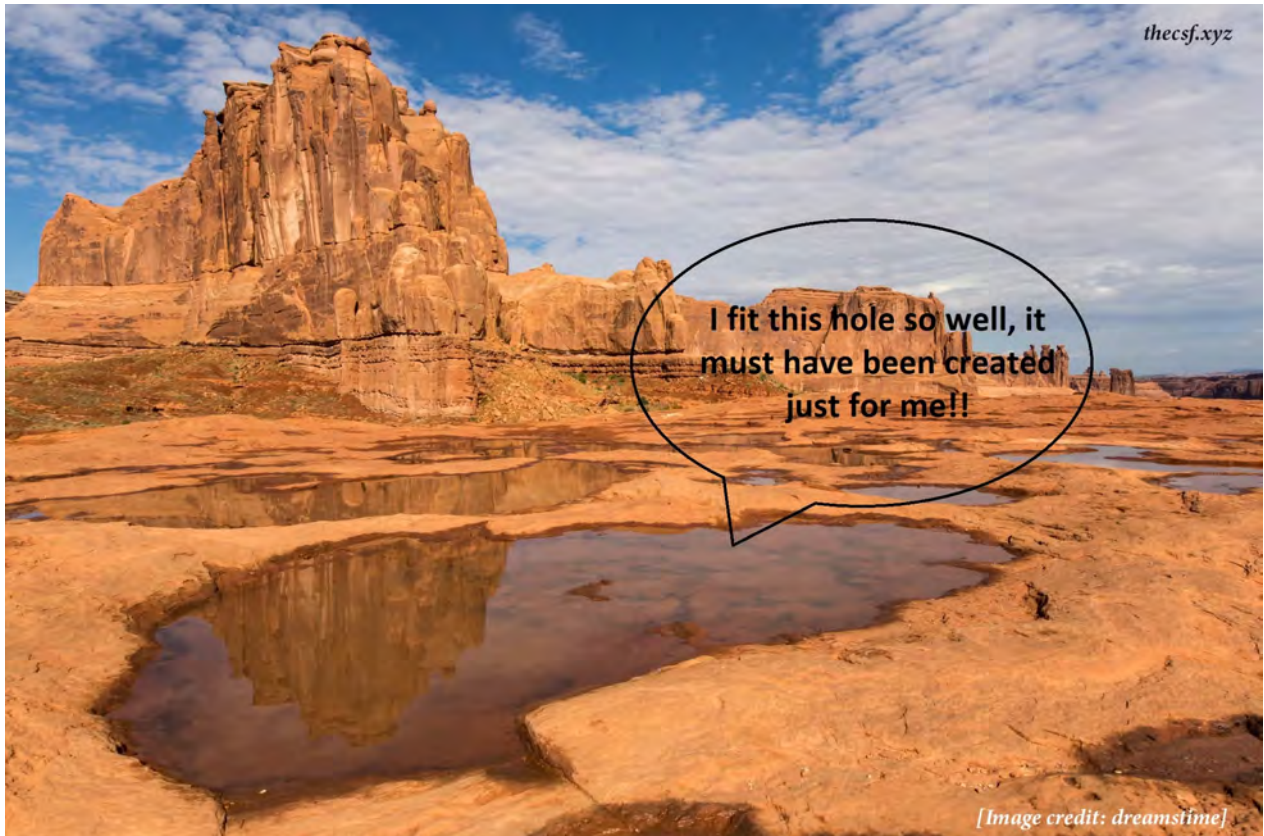


[Image credit: dreamworks]

- The Milky Way, our local galaxy, is on a collision course with the Andromeda galaxy in about 4 billion years [39] [40]
- The sun of our solar system will burn out in another 7 - 8 billion years [41]
- The size of the known universe is increasingly vast as we continue to explore it. To argue that it was designed for our species, seems breathtakingly ignorant and arrogant [39]
 - A minuscule % of the known universe of billions of galaxies are inhabited by our species (or any known life for that matter)
 - Less than 3% of a gas cloud lead to star formation
 - It took 3.5 billion years for multi-cellular life to evolve on earth
 - Both in terms of space and time, it would have been a staggering inefficient and inept design effort if the Universe was designed and finetuned for human live

3d Reverse logic of ID thinking

- Historical perspective is required to get away from the reverse logic used by supporters of ID:
 - Galaxies collide, stars collide and merge, planets collide and are devoured by black holes, etc
 - For example, the Antennae Galaxies have been colliding for the last 600 million years [56]
 - In our solar system [57]:
 - The sun accumulated material for 50 million years to fully form
 - There is some evidence that the earth experienced a collision with another sizable planet
 - Mercury possibly had a collision too
 - The bottom line is, that after chaos, collisions and expansion we have galaxies and solar systems in specific configurations, with the planetary orbits in our tiny solar system not on any collision paths (for now)
 - As pointed out above the Milky Way is on a collision path with the Andromeda galaxy in another 4 billion years, and then things will change again
- Regarding life:
 - Life evolved in where conditions were conducive for its development
 - For this reason, earth is the only known planet harbouring life according to NASA [57b]
 - Multi-cellular life took around 3.5 billion years to develop on earth
 - And once it developed, it continued to adapt to its environment through natural selection. So yes, after billions of years of evolution the 5% of organisms which survived are fairly well adapted to their environment, but they still find themselves in a mostly hostile environment
- So when followers of ID look at human life on this planet at this particular point in time when we're on the top of the food chain and dominating the entire planet, and conclude with all the benefit of hindsight that we were optimally designed in a perfect environment for our survival by a creator
 - This is reverse logic, showing no historical perspective
 - It is a very anthropocentric perspective
 - It is also informed by a very anthropocentric faith, which does not critically assesses its own assumptions or objectively look at evidence
 - It ignores the inherent hostility of the environment, which we more or less control well enough by now, but which was neither easy nor inevitable at all
 - We're also dealing with **the survivorship bias** [57c]. There are no Denisovans or Neanderthals left to make this claim, and if homo sapiens did not survive we obviously wouldn't have been able to make it either. Just like we won't be able to make this claim any longer if we should go extinct in the next century or 2



4 Scientific Evidence

- This section does not endeavour to provide a systematic overview of evolution or neo-Darwinism. It simply deals with the scientific evidence most relevant to the claims of ID, which will cover 4 main areas
- Useful sources: [12] [42] [43] [44] [45]
- A general observation is that since 1859 a mountain of new supporting evidence for evolution emerged within the fossil record and the human genome, without any evidence against it, prompting the geneticist Theodosius Dobzhansky to write in 1973 "Nothing in biology makes sense except in the light of evolution" [45b]

4a Transitional Fossils

- Darwin's theories of "descent with modification" through "natural selection" leading to "speciation" was groundbreaking, logically sound and fairly well-substantiated with evidence
- Based on these theories one would expect transitional fossils showing both the characteristics of the ancestral group and the derived descendant group
- The fact that Darwin could not initially offer any evidence of such transitional fossils initially posed a challenge to his theory, which he explicitly acknowledged in "On the Origin of Species" ("the most obvious and serious objection that can be urged against the theory") [42]
- Creationists and proponents of ID love this quote and continue to claim that the lack of transitional fossils is proof that Darwinism is scientifically unsound
- The problem for them is that it is no longer 1859 and large volumes of transitional fossils have been discovered, the first one was the first *Archaeopteryx* discovered in Germany in 1861 (just 2 years later!) and which is sometimes regarded as the "smoking gun" fossil. It contains both the characteristics of non-avian dinosaurs and birds [43]
- We do not only have large volumes of transitional fossils showing evolutionary changes in sequence, but more importantly transitional forms connecting major groups of organisms, like dinosaurs with birds (see above), fish

with terrapods, reptiles with mammals, land mammals with whales, etc. [42]

We do not only have large volumes of transitional fossils showing evolutionary changes in sequence, but more importantly transitional forms connecting major groups of organisms, like dinosaurs with birds, fish with terrapods, reptiles with mammals, land mammals with whales...

- “Take one example: the link between early reptiles and later mammals, the so-called mammal-like reptiles. Three hundred fifty million years ago, the world was full of reptiles, but there were no mammals. By 250 million years ago, mammals had appeared on the scene. (Fossil reptiles are easily distinguished from fossil mammals by a complex of skeletal traits including features of the teeth and skull.) Around 275 million years ago, forms appear that are intermediate in skeletal traits between reptiles and mammals, in some cases so intermediate that the animals cannot be unambiguously classified as either reptiles or mammals. These mammal-like reptiles, which become less reptilian and more mammalian with time, are the no-longer-missing links between the two forms, important not only because they have the traits of both forms, but also because they occur at exactly the right time.” [42]



[Image credit: dreamworks]

- Darwin was both correct in predicting transitional fossils and surmising that the initial lack of evidence in some cases was due to a very incomplete fossil record. He was fully vindicated
- The fact that proponents of ID still continue to use the transitional fossil argument and continue to push for more evidence in this regard:
 - Is quite embarrassing for their scientific credentials
 - Seems to indicate that it is not about scientific evidence at all, but that they are quite opportunistic and selective in how they deal with real scientific evidence

4b Direct proof of natural selection at work

- One of the other original challenges, specifically to Darwin's theory of natural selection, was that there was no direct evidence for it either. Darwin initially relied on logic and an analogy to artificial selection
- Scientific progress also overcame this obstacle with biologists now having plenty direct evidence through the fossil record or direct observations of genomes to prove natural selection
- Some examples [46]:
 - Bacterial resistance to antibiotics
 - Insect resistance to insecticides
 - HIV resistance to antiviral drugs
 - The adaptation of plants to toxic minerals in the soil
 - Mice and fish becoming more camouflaged for protection against predators

4c Irreducible Complexity



[Image credit: dreamworks]

- The most high profile concept introduced by ID is that of “irreducible complexity” (by Michael Behe in his 1996 book “Darwin's Black Box” and which is an expansion on Paley's complexity in his “Natural Theology” of 1802) [12]
- “By irreducibly complex I mean a single system composed of several well-matched, interacting parts that contribute to the basic function, wherein the removal of any one of the parts causes the system to effectively cease functioning” [47]. Examples he uses are the human eye, the blood clotting system, the bacterial flagellum, etc
- He also argues that such “irreducible complexity” cannot be accounted for by evolution, but only by an intelligent designer [47]



Jerry Coyne [Image credit: Wikimedia Commons]

“This is nonsense. As we have seen in the case of the eye, biological systems are not useful only at the end of a long evolutionary process, but during every step of that process” - Jerry Coyne

- Jerry Coyne, Evolutionary Biologist and Emeritus Professor of Ecology and Evolution at the University of Chicago is quite brutal in his response to Behe’s claims “This is nonsense. As we have seen in the case of the eye, biological systems are not useful only at the end of a long evolutionary process, but during every step of that process” [48]
 - He also criticised Behe for his “failure to deal honestly with the evidence for evolution” [49]
 - “There is no doubt that many biochemical systems are dauntingly complex... Yet such biochemical systems (like blood-clotting pathways) evolved in the same way that the eye evolved, **by adding parts successively and adaptively to simpler, functioning systems**” [48]
- Another scathing, but quite representative, review by Neil Blackstone was published in *The Quarterly Review of Biology*: “Behe...has indulged in some very poor scholarship. He has oversimplified evolutionary theory, made implausible assumptions, committed errors in logic, ignored the relevant literature, and neglected the proper methodology” [49]
- Today evolutionary biologists have a clear and detail understanding of how complex structures like the eye evolved step by step. Richard Lenski and 3 colleagues published a paper in 2003 doing a precise demonstration of the exact mechanism producing such complex features [50]

Today evolutionary biologists have a clear and detail understanding of how complex structures like the eye evolved step by step

4d Biogeography

- One of Darwin's many astute observations was the peculiar distribution of plants and animals based on geography, and more specifically the situation on oceanic islands (which have never been connected to continents) versus continents and continental islands (which used to be connected to continents) [42]
- He visited oceanic islands, like the Galapagos and Hawaii, as part of the Voyage of the Beagle and concluded the following about them:
 - They have unbalanced fauna and flora, with many familiar groups lacking (no native mammals, reptiles and amphibians in Hawaii), while other were overrepresented (like finches on Galapagos)
 - The animals on these islands were quite similar to the ones on the nearby mainland, but they also displayed differences and different but related species (like the different species of finches on Galapagos and the different species of fruit flies in Hawaii)
 - The fossil record on these islands resembles the living animals
 - The kind of plants and animals found on these oceanic islands are those that could easily get there despite the lack of contact. For example: birds and insects that could fly there or could be carried by the wind, the seeds of plants that could be transported by sea currents, the wind or in the stomachs of birds, but not mammals or reptiles
 - This led him to the conclusion that these islands were successfully colonized from the nearby mainland and subsequently evolved further, even into new species. These observations are very well explained by his theories and were also strongly confirmed since 1859
- On the other hand, it always posed a challenge for creationists as there never was any logical explanation why an intelligent designer populated oceanic islands in such an odd and unbalanced way (and why he created so many completely different species of fruit flies for example, just for specific islands)
- So biogeography is one of those topics that ID tends to avoid or rationalize by simply stating that we cannot understand the mind and the motives of the designer.



The Galapagos Islands [Image credit: dreamworks]

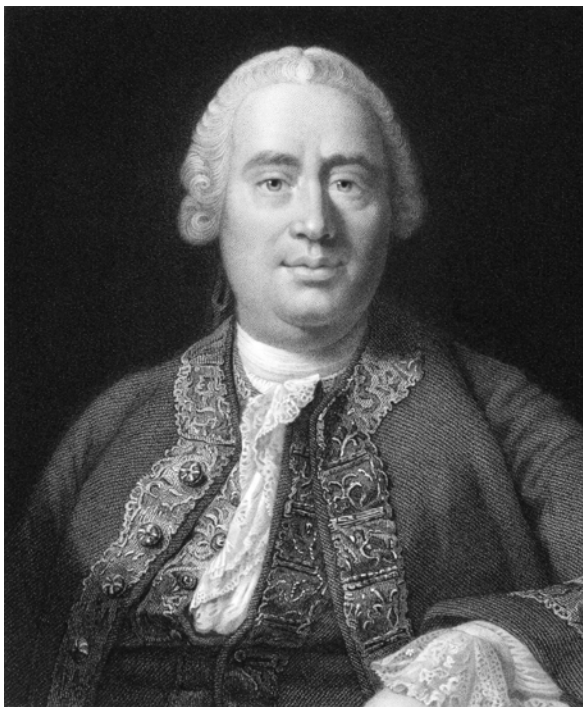
4e As we look at the scientific evidence we can draw a number of valid conclusions about ID

- ID is not a scientific theory, as it cannot be tested or falsified

- It poses supernatural causation without any evidence or ways to test it
- When large amounts of hard scientific evidence does not suit their views they opportunistically ignore that, like transitional fossils and how complexity in organisms evolve
- When empirical observations do not fit in with their theology (like in the case of biogeography) it is dismissed as that we cannot understand the designer. In this way absolutely any observation can be claimed to be compatible with ID
- ID has no research program and does not publish peer-reviewed scientific papers
- They have virtually no support in the scientific community and received scathing reviews from leading scientists, including scientists who are Christians
- ID is largely focused on criticising the scientific status of the the Theory of Evolution, instead of proposing a plausible alternative and providing any evidence for their proposed alternative
- Their criticism has been debunked as false claims, a misrepresentation of the existing literature, ignoring large-scale evidence which does not suit them (like transitional fossils), misunderstanding evolution and the scientific method, opportunism and not following any rigorous method.

5 Logical Flaws

5a David Hume



David Hume [Image credit: Wikimedia Commons]

- A discussion of the teleological argument and ID cannot be complete without referencing the Enlightenment Philosopher, David Hume (1711-1776), as he convincingly debunked the teleological argument with his “Dialogues concerning Natural Religion”, published posthumously in 1779 due to its controversial nature at the time [51] [52] [53] [54]
 - It was published well before Darwin and 23 years before Paley’s “Natural Theology”. Paley did not address Hume’s pro-active debunking of his arguments
 - In this book Hume uses the character Cleanthes to articulate the teleological argument (including Paley’s main arguments two decades later), while Philo takes the sceptical position
- Philo points out the flaws in the inductive analogical arguments that Cleanthes makes (by Cleanthes likening the universe to a man-made machine, like a watch):

- An analogical argument can at best be probabilistic, with the likelihood of the conclusion dependent on the similarities between the two objects. There are indeed some similarities between the universe and a man-made machine (like a certain level of complexity)
- However, Philo points out **how weak and problematic this analogy is due to many more dissimilarities than similarities:**
 - Despite some similarities between the universe and a watch, there are many dissimilarities, like the fact that the natural world is organic, while a watch is not
 - **That complexity requires design is only an assumption**
 - We have experience of thousands of watches who all had a designer and none without a designer. When it comes to the universe we have a datapoint of 1 and have no experience whether universes are designed
 - We're likely to commit the anthropocentric fallacy when drawing analogies like this
 - The analogy is weak, with no valid conclusions flowing from it, especially not about cause
- But even if this analogy was strong, it still does not support the teleological argument
 - When arguing about complexity requiring a designer, a watchmaker is obviously much more complex than a watch. If a watch is so complex it requires a watchmaker, who is the designer of the watchmaker? This leads to a "Reductio ad Absurdum" and the only way out of this is the fallacy of Special Pleading
 - Another issue is that it will not validly lead to a conclusion of an omnipotent and invisible divine designer:
 - All designers of machines are human. There is nothing in this weak analogy pointing to an invisible divine designer
 - There is much pain and suffering around us, much of it due to "design". There is nothing in this weak analogy pointing to a benevolent designer
 - All complex designs are the result of teams of specialists (and this is much more true 350 years later). So even if we could validly conclude the designer of the universe is divine, it is more likely to be a team of deities
 - The flaws in the design points more to a flawed designer than an omnipotent one, and he mentions in jest that if it is construed as the work of a divine designer, it could only be the 1st effort of an infant deity
 - If the universe is highly complex a divine designer is by no means the only explanation or the logical conclusion even if a scientific explanation is not known yet. 83 Years after Hume's death, Darwin published his "On the Origin of Species" in which he postulated a much better explanation when he described evolution through the mechanism of natural selection.

When arguing about complexity requiring a designer, a watchmaker is obviously much more complex than a watch. If a watch is so complex it requires a watchmaker, who is the designer of the watchmaker?



[Image credit: dreamworks]

5b Morality and ID

Getting back to ID's rather wild and dramatic claims about morality, for example that evolution is a threat to your moral compass or to the future of the West which was built on a Judeo-Christian foundation. If you labour under some of these same misapprehensions as the proponents of ID do, please have a look at the following two in-depth CSF articles:

- [The CSF Morality Series, Part 2: Does Christianity have an Objective Morality? - The CSF](#)
- [The CSF Morality Series, Part 4: The Supposed "Judeo-Christian" Foundation of Western Civilization - The CSF](#)

5c Other fallacies

ID also offers an interesting case study of a few other fallacies in action

- **Argumentum ad ignorantiam (an argument from ignorance)**
 - The proponents of ID seem to work on the assumption that if they can disprove evolution, then ID must be true. That is where they focus all their efforts, rather unsuccessfully. They make no effort to offer positive scientific evidence for an intelligent designer and even less that their god is this designer. They simply claim to disprove evolution on very dubious grounds
 - In the end they can neither disprove evolution, nor that ID is a plausible alternative
 - And even if they were successful in disproving evolution that would still not be a valid argument in favour of their intelligent designer
- **The god of the gaps**
 - Christianity has a long history of using the "god of the gaps" approach. Initially their god was used as the explanation for everything we did not understand, which was almost everything. As science continues to

make progress and finds increasingly more sophisticated explanations for more aspects of reality, their god was reduced to explaining the ever shrinking gaps in our knowledge

- Likewise, these gaps were also used as prove of their god's existence. In other words, it is a specific case of the argument from ignorance
- This approach is still quite common among Christian apologetics and ordinary Christians alike
- The creationists at the start of the 20th century followed the gods of the gaps approach without any hesitation when it came to some gaps in Darwin's new theory
- The proponents of ID followed in this tradition, but this approach is becoming even more problematic than it was (see below)

- **The blindness of preconceived opinion**

- ID goes one enormous step further, than just using the "god of the gaps". In 1859 there were still some gaps in the scientific evidence for evolution, like the absence of transitional fossils or an incomplete understanding how natural selection could lead to quite complex organisms like the eye, or complex pathways like that of blood-clotting
- These gaps were convincingly filled with sound evidence, especially over the last few decades
- So what we're seeing with ID is what Darwin called the blindness of preconceived opinion. They find evolution through natural selection religiously unacceptable and offensive. So they simply refuse to accept evidence which does not suit their religious views
- In this way ID also demonstrates quite clearly that it is impossible to be a scientist if one cannot follow the evidence where it leads.
- Jerry Coyne made this comment "One can in fact make a good case that some of the fly species differ more from each other than humans differ from chimps. Why, then, do IDers assert that chimps and humans (whose ancestor lived only 5 million years ago) must have resulted from separate acts of creation by the intelligent designer, while admitting that fruit flies evolved from a common ancestor that lived 20 million years ago? The answer is that humans must at all costs not be lumped in with other species, so as to protect the biblical status of humans as uniquely created in God's image." [55]

5d Which god?



Brahma, Vishnu and Shiva [Image credit: dreamworks]

Even if there really was an intelligently designed species with a finetuned planet/universe optimal for its survival (which is not the case at all, as shown above):

- What is the evidence that this “designer” is a divine being and not an abstract force, a highly advanced alien engineer from a different galaxy or something completely unknown to us?
- And even if it is a god, which god is this designer? The Greek gods, Allah, Brahma, an unknown deity we know nothing about?
- What is the evidence to equate the personal and barbaric god we encounter in the Bible, who knows nothing about the complexity of the universe or the planet? When the proponents of ID write pseudoscientific text books they completely avoid this question, and when they preach on Sundays they don't attempt to provide any evidence, they just accept it on faith
- How do they account for all the design flaws and the suboptimal design by their omnipotent designer?
- ID simply does not (and cannot) provide any evidence that their Biblical god is this supposed designer. It is an unsubstantiated faith-based claim

[What is the evidence to equate the personal and barbaric god we encounter in the Bible, who knows nothing about the complexity of the universe or the planet? When the proponents of ID write pseudoscientific text books they completely avoid this question, and when they preach on Sundays they don't attempt to provide any evidence, they just accept it on faith](#)

6 Concluding Perspective

6a A strong inverse correlation between education level and support for ID

- Scientists
 - In a 2014 survey by Pew Research they found that 98% of scientists connected to the American Association for the Advancement of Science (AAAS) accepted that humans evolved [58]
- A 2017 Gallup Poll found that there is a clear inverse correlation between education level and support for ID [59]. The % of people believing that God created humans in their current form within the last 10,000 years, split by education level:
 - Post graduates: 21%
 - College graduates: 24%
 - Some college education: 42%
 - High School diploma or less: 48%

6b The US public seems largely unaware of the strong support for evolution among scientists, as well as the strong evidence for it

Although we saw above that the rejection of evolution among scientists are almost non-existent, the US public seems unaware of that [60]

- A 2004 Gallup poll found that only 35% of the US public think there is sound evidence for evolution
- In this same poll 30% indicated that they don't know enough about the issue
- A 2004 Newsweek poll found that just 45% of the US public thinks evolution is widely accepted by the scientific community and well supported by evidence
- Pew Research found in 2005 that only 54% of the US public think the majority of scientists support evolution
- So it seems that the US public is largely unaware of the strong scientific support and evidence for evolution, that they are unfamiliar with scientific developments and not scientifically literate enough to judge bogus claims about scientific findings. This is probably an indication of two things:
 - That a largely scientifically illiterate public provides fertile ground for faith-based pseudoscience
 - That the concerted effort of ID according to their Wedge Strategy is paying off and influencing people to think there is a scientific controversy
- Philosopher Robert Pennock puts it this way "A significant point is that a lack of scientific support for the ID movement's "theory" has not stood in the way of considerable cultural success in promoting ID" [12]

"A significant point is that a lack of scientific support for the ID movement's "theory" has not stood in the way of considerable cultural success in promoting ID" - Robert Pennock

6c Five Parting Thoughts

- **Conclusion 1:** Homo sapiens has a flawed "design" and had to overcome significant survival challenges in a hostile environment
 - The human body is suboptimal and can be much improved by a scientific design
 - It is inferior to animals in so many ways, which was a big disadvantage when we had to compete for survival in the middle of the food chain in a hostile environment
 - Despite these flaws and the hostile environment we reached the top of the food chain over time
 - The ID perspective is using all the benefit of hindsight, reverse logic and a very anthropocentric and faith-based approach
- **Conclusion 2:** The US courts found consistently over the last 60+ years that creationism and its latest offshoot (ID) are not science at all, but an effort to promote their religion as science

- ID is not a scientific theory, it does not follow the scientific method, it has no research program and no peer-reviewed articles
- **Conclusion 3:** The Scientific evidence does not support ID at all, despite all their claims
 - The most significant new scientific evidence supporting Darwin are the large number of transitional fossils which have been discovered, direct proof of natural selection, a clear understanding of how complexity in organisms evolve step-by-step, and biogeography
 - Virtually all scientists accept evolution
- **Conclusion 4:** There are several logical flaws in the arguments of ID
 - The abstract teleological argument has been thoroughly debunked, since Hume in the 18th century
 - Even if we were intelligently designed, who or which god is this supposed designer? There is no link between an abstract/theoretical designer and the barbaric god we encounter in the Bible, who knows virtually nothing about the complexities of the universe
- **Conclusion 5:** Despite all these flaws it would be a mistake to underestimate the threat of ID
 - Some academics following ID closely are quite concerned about them, and even think that a theocratic state is their ultimate goal
 - They have a systematic, long-term and well-funded program with explicit religious, cultural and political goals
 - All proponents of ID are on record as Christians and creationists with strong religious agendas
 - They explicitly use war terminology, like “battle”, “destroying Darwinism” etc. We’re by no means dealing with objective, dispassionate scientists
 - They showed themselves to be quite willing to
 - Use whatever political power they have (like on school boards), the courts etc. They unsuccessfully tried to ban the teaching of evolution and forced the teaching of their creation myth as science
 - Threaten conservative Christian judges ruling against them, commit perjury etc
 - We observe this against the backdrop of Christianity’s long track record of ruthlessly wielding political power, and it is reminiscent of their efforts to ban scientists early findings about heliocentrism, on Biblical grounds
 - The US Courts, including the US Supreme Court, played a vital role thus far in keeping religion out of science in the US. With the Supreme Court stacked with more conservative justices, and the fanaticism the Christian Right displays to increase this and to promote creationism, it is a legitimate question what the future holds in this regard. It may very well play a pivotal role, either way
 - The success ID had with their audience, despite the lack of scientific merit of their claims, the relative scientific illiteracy of this audience and the inverse correlation between education level and support for ID are additional warning signs
 - We see this cultural success of ID going hand-in-hand with the rise of other irrational forces (flat-earthers, absurd conspiracy theories, and a celebration of ignorance), while we know only too well that civilizations can collapse despite their progress and achievements
 - So it is especially ironic that ID portrays their agenda as a noble effort to preserve Western Civilization. Quite the opposite. A political mandate to teach the creation myth of a specific religion as science will be a big step back towards the Middle Ages.

It is especially ironic that ID portrays their agenda as a noble effort to preserve Western Civilization. Quite the opposite. A political mandate to teach the creation myth of a specific religion as science will be a big step back towards the Middle Ages



The US Supreme Court Building [Image credit: dreamworks]

Author: JJ Brits

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