

Design of the Gaps

At this very moment, external stimuli in the form of photons are entering the cornea of your eye where the image of this page is being refracted, inverted, adjusted for intensity and resolution, and converted into nerve impulse by photoreceptors in the retina. Billions of these nerve impulses are streaming along the optic nerve to the visual areas of the brain where the information is being processed and made into a three dimensional image [7]. Simultaneously, your eyes are moving synchronously in small jerky movements along the page while maintaining fine resolution through saccadic masking and spatial updating [8]. This continuous and intricate feedback loop enables your brain to perceive and interpret the world around you almost instantaneously. One may reasonably query: “How in the world did this complex and delicately balanced process evolve?”[1] Proponents of intelligent design would deduce *apparent* design on the grounds of *irreducible complexity*; an unproven and controversial concept that undermines the explanatory powers of evolution. Consequently, intelligent design has proven to be an unscientific proposition and a formidable obstacle in the effort to espouse scientific ignorance.

The foundation of modern science has its roots in ancient Sumerian observations of celestial bodies around 3500 BC [6]. Subsequent scholars from Aristotle to Galileo formed hypotheses and put forth theories to explain natural phenomenon. As scientific knowledge grew, previous believed propositions such as the four humor and spontaneous generation were dispelled. Moreover, each new paradigm shift enriched the quality of scientific understanding and redefined the boundaries between science and pseudoscientific disciplines. The essential elements of modern science can be summarized as: a purely empirical and systematic study of

the structure and behavior of the natural world through experimentation and observation without invoking or permitting supernatural causation [4].

Intelligent design, on the other hand, is the proposition that: "certain features of the universe and of living things are best explained by an intelligent cause, not an undirected process such as natural selection." [1]. Intelligent design, in parallel to pseudosciences like astrology and alchemy, fails to fulfill the criteria of what is considered science due to the fact that the hypothesis of *irreducible complexity* and a designer cannot be tested [5]. Additionally, the fact that "we cannot know something has not been designed" as stated by Michael Behe, destroys the scientific merit of this view point. Even though intelligent design contains scientific elements, as did pseudosciences of the past, it extrapolates scientific data to reach a biased and unsupported conclusion. Analogous to the god of the gaps fallacy shared by creationist, intelligent design employs design of the gaps; a flawed teleological argument that is antithetical to scientific endeavors and progress.

In the Age of Information, a majority of Americans are surprisingly ignorant of the evidence that substantiates the veracity of evolution. In 2008, Gallup, America's best known polling organization, surveyed American national opinion on the topic of evolution. The result showed that more than forty percent of American's deny that humans evolved from other animals and believe God created life as we see it today within the last 10,000 years [2]. This position blatantly disregards the overwhelming wealth of fossil and geological evidence that confirms evolution and it's time scale. The proposition of intelligent design wrongly attenuates the explanatory power of not only evolution but science as a whole; it exacerbates misunderstanding

and the denial of scientific actuality by stating untestable claims as fact and posing as a scientific authority.

One of the many attributes that solidify the scientific validity of evolution is that it is falsifiable [4]. If just one fossil were every found in the wrong geological sedimentary layer, evolution would be disproved. To this day, not a single anachronistic fossils has ever been found [3]. Additionally, as stated by Charles Darwin, "If it could be demonstrated that any complex organ existed, which could not possibly have been formed by numerous, successive, slight modifications, my theory would absolutely break down." Intelligent design supporters have built their argument around the idea of *irreducibly complex* systems, such as the flagellum and eye, which have been discredited and shown not to be irreducible after all [2].

The human eye is an incredibly intricate organ; its gradual transformation, driven by random mutations and natural selection, is both impressive and within the grasp of evolution. Despite the fact that soft tissue structures rarely fossilize, the myriad of different light sensing devices that can be witnessed in the animal kingdom today enable scientist to trace the various eye intermediates that have transpired in the development of the eye [8]. The first light sensing device began as a sheet of photoreceptive proteins that allowed an organism to see light and dark; an advantageous adaptation for the organism to evade predators and establish a circadian rhythm. The gradual indentation of the eye into a socket with a pinhole, as seen in the mollusk nautilus, added the ability to see direction. Later exaptation, co-option, and step-by-step adaptation over time gave rise to the sophisticated human eye we have today. This process has been observed in the formation of the eye during embryonic development and is supported by DNA comparison with other organisms with visual systems [3].

Intelligent design advocates mistakenly believe that *irreducibly complex* organs like the eye are useless without all its components. Although it is true that its function would be compromised, half an eye is better than no eye at all. The acquisition of even a single light sensing photoreceptor is advantageous and increases the organisms survivability [2]. Ultimately, the evidence for reducible biological complex system has made the notion of a designer an extraneous proposition that is easily extricated by Occam's Razor.

In essence, we are the legacy of evolution; every emotion, nerve impulse, and act of cognition has its origin in the primordial soup in which our ancestor were created. Our DNA tells the story of their transformation from unicellular organisms into sentient beings. The mark of our species will be characterized by the transcension from pseudoscientific thought to empiricism. Science will be our vehicle to this reality and intelligent design is another obstacle that will soon be in the rearview mirror of human progress.

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