



Intelligent Design and Evolution Awareness Center

An abridged PBS *Evolution* viewer's guide & summary

As found on the IDEA Center website at <http://www.ideacenter.org>

By Casey Luskin of the IDEA Center (casey@ideacenter.org) . This is only a rough and unreferenced document. We recommend you read "Getting the Facts Straight A Viewer's Guide to PBS's *Evolution*" by the Discovery Institute for a more complete review of the series. To download this guide for free or order the guide, visit the Discovery Institute website at "<http://www.reviewevolution.com/>".

Episode 1: "Darwin's Dangerous Idea".

If you plan on watching part one, "Darwin's Dangerous Idea", of PBS's *Evolution*, expect to see a fictional dramatization of Charles Darwin's voyage on the HMS Beagle where he allegedly discovered evolution. Much of the dramatization not only has a weak historical basis but in many cases flatly contradicts historical facts. See the Discovery Institute's Viewer's Guide for more information. Expect to hear false claims that the genetic code is universally the same in all organisms as well as unfounded claims that similarities in genetic codes provide real evidence for common ancestry. Don't expect any discussions of how common design could equally account for these. The "archetype blueprint in the mind of a Creator" hypothesis is ridiculed in the dramatizations of Darwin's life.

Viewers will also see an explanation of how the vertebrate eye could have evolved and why it couldn't have been designed. This weak scientific and wholly theological argument is also discussed in the Discovery Institute's Viewer's Guide. The fact is that vertebrate eye is not wired in a sub-optimal way at all. The fact that nerves extend outward over the eyes does nothing to inhibit vision unless one closes one eye and performs the blind-spot test, where a very small area of vision disappears out of the field of focus. If the optical nerve extended out the back of the eye, then there couldn't be the many blood vessels wired into the back of the eye which are necessary to provide the vertebrate eye with large amounts of nutrients to sustain its high level of acuity. If the blood vessels are then moved to the front of the retina this would also face the light-sensing cells forward blocking incoming light by the dense capillary bed. The fact is that the current eye design allows for maximum blood supply and minimal--trivial--vision loss. An eye evolution model by Zoologist Dan-Eric Nilsson is claimed to show how the eye could have evolved step-by-step, but even this model involves jumps. Watch closely as he performs the demonstration: he does not account for the origin of the light sensing cells in the first place and performs a vast jump as he places a fully-formed lens over the model.

Finally, dilemmas between Darwinism and religion are apparently wholly resolved with an interview with Dr. Kenneth Miller, who asserts that he is an orthodox Catholic and an orthodox evolutionist. As if because Dr. Miller's mere position as an evolutionist and a Catholic resolves these issues, this interview gives no real appreciation for practical difficulties encountered in religious and philosophical dilemmas between evolution and religion.

Episode 2: "Great Transformations".

The episode opens up with one probably the evolution contingency's favorite examples of an alleged transformation--from land mammals to the whale. Fossils of Pakicetus, Ambulocetus, Rhodocetus, Dorontid, and Basilosaurus are shown to account for this transition. Pakicetus is represented by a small portion of a skull, a far cry from a solid transitional fossil. Though Ambulocetus is represented in the documentary as a complete fossil of an aquatic mammal with legs, this is an interpretory stretch and embellishment upon the quite fragmented Ambulocetus skeleton which was actually found (see *A Whale of a Tale* by Don Batten). Rhodocetus is represented in the series by a mere skull. Though Basilosaurus is a complete whale-like fossil with hindlegs (Dorontid is very similar to Basilosaurus, but smaller) how important is it really for accounting for the transition? Many have suggested those "legs" aren't vestigial but played some role in copulation. Perhaps they even had a swimming function. So what have we been shown here? 2 skulls (one quite fragmentary), one fragmentary skeleton not necessarily transitional whatsoever, and a full aquatic whale type with small hind legs. From this data we have our number one example of an alleged evolutionary transition. Not too impressive.

It was also alleged that whales originally descended from carnivorous mammals, though even this theory has fallen out of favor with many because it is not supported by molecular data (see "New Views of the Origins of Mammals," by D. Normile *Science* 281:774-775). This has sent many paleontologists scrapping to find new evolutionary land-ancestors for whales, which aren't forthcoming. This relatively recent development isn't discussed in the series. Whale evolution is also one of the least likely transitions to occur out of all of them simply because of the slow evolutionary progress mandated by the whale's relatively long generation time and very wide geographic dispersal. Whales are one of the least likely candidates to undergo major evolutionary changes, yet they are ascribed one of the most rapid evolutionary origins from the fossil record (see Stephen Stanley, *The New Evolutionary Timetable*, pg 93-94).

Fish "experiment" with growing legs until they turned into tetrapods, although "there's no goal to evolution". A cartoon allows viewers to imagine the fin to leg transition, but it's nothing more than that--a cartoon. Some fossils are alleged, but details left out. *Acanthostega* is shown as an alleged transitional fossil--a fish with fingers. Yet *Acanthostega* also bears a striking resemblance to many modern day amphibious creatures, which are clearly *designed* for both an aquatic and land lifestyle. It is claimed that the aquatic *Acanthostega* developed limbs so it could have an advantage running out of the water to escape predators but there's a tradeoff: limbs are not as good for swimming as fins are. Why would a fishlike creature begin to develop legs which themselves inhibit their ability to swim away from predators? This fossil is shown "drilled" out of the rock, and fishlike it may be, but there are still no fossils documenting where the legs came from in the first place. Evolutionist Robert Carroll said that *Acanthostega* and *Ichthyostega*, "had short but massive limbs of the basic pattern of subsequent tetrapods" (Annual Review of Earth Planet Science, 1992). Given that *Acanthostega* had true limbs, it seems that the origin of the defining characteristics of tetrapods, the limbs, is still an unsolved mystery to evolutionists. Perhaps Fox should have produced this series.

The Cambrian Explosion is discussed and called "something of a mystery." These explanations behind these transformations are typically and oversimplified vague using words such as "tinkering" and "experimenting". The great evidence allowing for this is mutations causing fruit flies to do many strange things. This example serves to show that the vast majority of mutations are disadvantageous or deadly, but regardless, just how important is this analogy for evolution? Master control genes are shown to be similar throughout many organisms--but is this necessarily the product of common descent? Couldn't it equally be the result of common design. Furthermore, one researcher is quoted as saying that these genes allow organisms to "manipulate packets of information [and create new body plans]". But that's the key here: without those packets of information--the genes which code for the body parts--it would be impossible for the master developmental control genes to mix and match the parts. Legs can't be multiplied or divided if there isn't a package of genes to code for a leg in the first place. Once there is, perhaps the right mutations could cause a leg to grow out of an eye (which is shown done with the fruit fly). But the essence of organismal complexity lies in those "packets of information" which can be manipulated, and the explanation of the evolutionary origin of those packets still isn't forthcoming.

Finally, we're related to chimpanzees through a series of "chance coincidences". Humans are said with absolute assurance to be descended from chimpanzee-like ancestors because of morphological and molecular evidence. It is claimed that the DNA of humans and chimps are 98% similar. Why couldn't these similarities equally be said to be the result of common design because a designer designed them both with a similar body plan in mind? No discussion of this is provided. Humans and chimps may be 98% the same, but out of an entire 4 billion base pair (bp) genome, the 2% difference equates to 80 million bp's. If we assume a human-chimpanzee primate generation time of 15 years, and it has been 5 million years since humans and chimps diverged, this allows for 500,000 generations of change implying an average of 160 mutations per generation-- about 40 times the average mutation rate (10^{-9} bp / pt. mutation after DNA repair mechanisms). In other words, humans and chimps are far more different than allowed by their alleged evolutionary divergence time, which is a good argument against a pure evolutionary history. Not only that, but that 80 million bp difference could also amount to 1600 genes (1000 bp's/gene scattered in homologous DNA sequence) and make all the difference in the world between humans and chimps. Humans and chimps are not necessarily as similar as the commonly cited "98%" statistic seems to imply. This transition, said to be like all the others, is not given any support through evidence from transitional fossils. Perhaps that's because the missing links are still missing.

Episode 3: "Extinction!"

Extinction is termination of a species. Extinction is said to be a natural part of the evolutionary process, as species are always dying out and allegedly being recreated through evolution. At least 5 mass extinction events are said to have occurred in the history of life on Earth. These extinctions "level the playing field" and give opportunities for new groups to evolve. But how do these new groups evolve?--often the fossil record tells that the origin of these new groups takes place in an evolutionary instant. While extinction events can kill, they don't create. It is the origin of new species which should be called into question--not simply the death of old ones.

It is said that a "level playing field" allowed mammals to evolve from mammal-like reptiles after the Permian extinction, and to diversify after the meteorite which killed the dinosaurs opened up biological niches. The series doesn't go into detail that the Permian extinction isn't well understood because it involved the death of many different types of organisms--from deep sea to terrestrial. Survival of organisms seems almost random, and are often very similar to other organisms which die out. Though the extinction of many organisms at the end of the Permian is very real, the cause of this extinction event is still unclear to evolutionary biologists.

The origin of mammals is said to happen because a few groups of mammal-like reptiles almost randomly seem to have survived the Permian extinction. These are said to be fossil representative of an evolutionary transition, but what is the real meaning of these fossils? The alleged transition between mammals and reptiles consists of a few fossil types whose individual origins are unknown. Far from being a sufficient string of fossil forms, millions of years separate species allegedly related, and key morphological changes between mammals and reptiles aren't accounted for. After the

extinction which killed the dinosaurs, mammals are said to have diversified into their current forms. What isn't discussed is that this has been called by some paleontologists a "mammal explosion", and the extreme rapidity of this alleged evolutionary explosion could present a serious challenge to Darwin's theory, and plausible transitional forms are seldom forthcoming. How can so many mammals types appear so quickly and where are the transitional forms?

Apart from small mention of evolutionary transitions, it should be noted that much of what was stated in this episode isn't strongly controverted by many creationists. Extinction is an accepted fact and has a secondary role in the origin of species--it doesn't actually cause it. Darwin's theory does not stand on evidence for extinction. Furthermore, preserving biodiversity and protecting the environment is not an issue critically linked to origin of species. The episode emphasizes the importance of studying environmental issues, however the importance and reality of such issues does not lend validity to Darwin's theory.

Episode 4: "Evolutionary Arms Race."

Similar to episode 3, "Extinction!", this episode says little which skeptics of evolution would challenge. The episode stresses the reality of microbial resistance to antibiotics and the threat this presents to society. A multi-drug-resistant strain of Tuberculosis, which originated in Russian prisons, is part of a sad story of inmates who have lost hope for a cure and how evolutionary principles can be applied to these problems to help stop these diseases. But the viewer should not be confused: Evolutionary principles may help, in part, to check the advance of drug-resistant microbes, but that fact does not mean such principles can explain the origin of biological complexity. The application of evolutionary principles in this field does not imply any creative power of evolution in the real world.

Though none of this is mentioned, antibiotic resistance is a great example of microevolution, or change within species, and involves the origination of miniscule to no significant information in the genome. Antibiotics are chemicals which retard virus or bacterial growth by entering the microbes and interfering with the production components needed to for reproduction or destroying their cell walls. Antibiotic resistance typically involves a minor mutation which slightly changes the structure of antibiotic target such that the antibiotic is no longer effective against it. It does not involve major functional changes, but merely a slight change in structure or even loss of structure such the antibiotic's structural effect upon the target is inhibited. Once one out of countless bacteria finds a simple mutation and become resistant, it is quite a quick and simple process for many others to either get selected out or obtain the gene for resistance as replication and gene swapping are prevalent. However, the processes behind antibiotic resistance do not involve the creation of new real significant information, and cannot be extrapolated to provide evidence for macroevolutionary changes.

An example of human resistance to HIV is given as an example of disease resistance. This is also a good example of microevolution and a small informational change. In fact, a computer simulation in the episode shows that the gene for HIV resistances actually causes the loss of receptors which allow the virus to enter the immune-system cells, thus protecting them. This actually constitutes a loss of function, not a gain of function and again is not an example of a meaningful increase in complexity.

Finally, an innovative technique of weakening a cholera outbreak in South America is shown by targeting the mode of transmission of the disease. The series explains that the human cold is a common and weak virus because if it killed or seriously hurt people, it wouldn't be so readily transmitted. In other words, by forcing a virus to be transmitted by modes only possible in healthy people, virus strains will naturally become more common, but weaker, as deadly strains die out since they have no mode of further transmission once they kill their hosts. While it is useful and insightful to know that by attacking the modes by which a deadly disease is transmitted it can be weakened so that it won't kill future infected hosts, this observation, though based upon evolutionary principles, says nothing about the ultimate origin of the complexities of life on earth.

If anything, this episode highlights the value of studying evolution--as a practical way of understanding present-day minor biological changes in microorganisms and fighting terrible diseases. The episode tells us we should be working with evolution, but does working with it imply it is a theory which therefore accounts for our origins?

Episode 5: "Why Sex?"

Amidst cheesy 70's love music and shots of John Travolta in his disco suit, this episode tries to explain the origin and implications of sexual reproduction. The question is asked, why would a female start to have sexual reproduction? Cloning is efficient. Males can't bear offspring. The female would then only pass on 50% of genes. Time and energy are involved with courting a male. Why would this happen, and why does most life on earth comes about sexually, not asexually. Of course this question assumes that sexually reproducing organisms arose from asexually reproducing organisms. The fact that sexual reproduction does have its advantages in that it allows for greater genetic variation should come as no surprise--whether life was efficiently designed or whether it evolved.

A story is told about why chimps are violent and have short copulation periods and bonobos are peaceful and have long copulation periods. Plausible thought it may be, this too is nothing more than a story--and a story which appeals to our

human sexual nature at that. At least it is admitted that this is "little more than speculation", but the question is never asked if this sort of speculation qualifies as real science. Though this is speculation, somehow there growing scientific evidence that human sexual behavior is rooted in an evolutionary history. This evidence comes from a field often doubted and scorned by other scientists: evolutionary psychology (see the Discovery Institute's Viewer's Guide for some good quotes on problems with evolutionary psychology).

It is said that women prefer the smell of men whose immune system's complement their own and men prefer women whose faces bear the marks of having more estrogen. These traits actually indicate fertility or fitness for survival, which could provide a mechanism for why humans find them attractive. However, what about traits which confer no advantage for survival? Can all attributes of human intellect be explained through this sexual selection? Evolutionary psychologist Geoffrey Miller compares the origin of human humor, art, and music (and perhaps religion--musicians are shown playing religious Handel's Messiah) to the processes which select for the beautiful male peacock tail. Miller argues that sexual selection can explain the origins of our artistic and creative side because these impress the opposite sex. Impressive they often may be, but in order for attraction to these traits to become fixed in the opposite sex, these traits must somehow confer a real selective advantage for survival. But what sort of real advantage for survival comes from the ability to sing, to make music, to dance, to write poetry, to create art, or to worship God? For this matter, what real advantage is there to a peacock having a beautiful tail? In the end, isn't it possible that a Creator infused His own creativity into the world, and caused humans, and other organisms, to find this attractive in one another? Evolutionary psychology thinks that sexual selection can explain it all, but without giving a clear mechanism, it seems to explain nothing.

Perhaps we all would in some way enjoy brief interludes with sexually attractive people, but we also know these actions are not justified and hurt ourselves and those close to us. Did these value/attraction traits evolve or were they placed there by design? Though it is perhaps possible to see how these traits could have evolved, religion can account for ethics through a law of love from a loving God. Evolutionary psychologists believe the answer is that we do things which helped our ancestors pass on genes. Is one explanation really better than the other? We aren't told, but evolutionary psychologists are the only ones who speak in this episode.

Episode 6: "The Mind's Big Bang."

This episode asks the question, how did human technology, communication, intellect, and culture come about and make us human?. Of course it assumes the answer lies in evolution, even though the emergence of complex human intellectual activity appears very rapidly in archaeological record. Though stone tools (which are similar to those used by many peoples in modern history) are found far back in the archaeological record, there is not a slow progression showing evolution of modern human intellect. Are the mechanisms of evolution sufficient to account for this rapid increase in complexity? We aren't told. In fact, the series states that the brain has to be wired in precise ways to support intelligence, and it took many mutations over tens of thousands to hundred of thousands of years to sculpt the human mind. Even if these mutations are possible given any amount of time, this seems at odds with the archaeological record where signs of modern human intelligence appear rapidly, in this so-called "big bang" of the mind.

Series says humans split off from Chimps about 6 million years ago (Ma), left the trees 4 Ma, and 2 Ma began to leave Africa. "The Mind's Big Bang" where evidence of modern human art, technology, and language ability is said to have happened 50,000-60,000 years ago. Richard Dawkins says we don't know when language started but when it did start, it conveyed a strong advantage. In other words, he can see how language could confer an advantage, but how it could originate isn't understood so well. This advantage is said that it could have been to discuss things pertinent to survival--or maybe it could have been related to social skills--for gossip.

Children inside the ruins of an old European-looking church are shown doing ring-around-the-rosy at the point where they sing, "all fall down". This is just after memes are said to account for the origin of and passing on of ideas, such as religion (where various religious people are shown). Does this imply that the idea of memes can account for the origin and passing on of religion, thus effectively debunking religion as a real truth? The mind's big bang is said to be the birth of a new kind of change--evolution not of the body but of ideas. It is said that the future of humankind may rely upon "what we make of [the mind]", implying our future evolution will be decided by which ideas win out. There is no doubt the producers of *Evolution* have been influenced by this belief.

Episode 7: "What about God?"

The episode tries to show that one can believe in evolution and still be a Christian through interviews with various Christian who accept evolution. Eugenie Scott (Director of the NCSE; not a Christian) is quoted saying "People actually don't understand the issues, people are being told first that you have to choose between faith and science, you have to choose between especially Christianity and evolution." In fact, however, *Evolution* itself promotes a misunderstanding by portraying the issue as if one must choose not between evolution and Christianity, but between evolution and an anti-intellectual brand of young earth creationism.

Religious supporters of evolution are repeatedly portrayed as intellectuals and scholars seeking scientific knowledge and describe their religious friends and family who doubt evolution with an anti-intellectual tone, saying the doubts stem from fear, misunderstandings, and an unwillingness to seek truth. Religious supporters of evolution say they hold their positions because they want arguments that hold up in the world, and they don't want to be looked down upon as anti-intellectual.

Those who do not accept evolution are in every case young-earth creationists, and are often portrayed as anti-intellectual. The series opens with a prayer from a pastor, then shows money being taken at the door as people enter a church to hear young earth creationist speaker Ken Ham. People in church, including children, fervently sing their doubts of evolution: Although in some cases those with doubts are cast in a pseudo-intellectual light, their views are ultimately qualified as somehow anti-intellectual by the narrator or by a religious supporter of evolution. This seems an attempt to make Christians who doubt evolution to feel guilty about their views, as they are portrayed as damaging to public perception of Christianity and their own individual status as an intellectual in the world.

In the entire episode, there is no mention of doubters of evolution who are not protestant young-earth-creationists, even though the creationist community holds a sizeable percentage of people who do not hold to a young earth. Furthermore, no scientific evidences against evolutionary theory are given, except for a brief and vague statement of evidence Ken Ham gives for the Genesis flood. But in reality, doubters of evolution are represented by much more than the young-earth creationist viewpoint.

Old earth creationists see the Big bang as the creation event and accept an age of billions of years for the earth. They reject that evolution can account for life's complexity, and believe Genesis 1 tells of God supernaturally creating organisms, just not in 24 hour periods (this is through a different interpretation of the Hebrew word for day or period, "yom"). Proponents of intelligent design, who sometimes accept evidence for common ancestry, believe that biology bears the marks of being designed by an intelligence and that mutation-selection mechanism on its own is incapable of accounting for that complexity. This theory has a completely secular nature as it does not name the identity of the designer and draws from our understandings of intelligent action and information theory to infer where life has been designed. Even some agnostic intellectuals have found merit to the theory.

But from watching *Evolution*, one would never know that these alternative beliefs to evolution exist. While proponents of intelligent design at the Discovery Institute were invited to participate in the series, they declined because their position is scientific, and *Evolution's* producers would not permit them to share their scientific views on film. Casting scientific doubt of evolution as irrationally religious is the message of *Evolution*: they would have viewers believe that the only rational, intellectual, legitimate scientific position is to accept evolution. Not a single iota of scientific evidence against evolutionary theory is given in the entire 8 hour documentary. Then, the producers hope, religious doubters, looking foolish and apparently lacking any scientific basis, will stop doubting evolution.