Intelligent Design and Evolution Awareness Center

PBS Launches Controversial 7-Part Series, "*Evolution*"

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

Evolution Update and Introduction: If PBS Evolution is re-run, we hope to post the times. We hope that if you watch it, you will think critically about it, and we recommend that you review some of the information on this page, and read Discovery Institute's Free Downloadable Viewer's Guide (http://www.reviewevolution.com) (200 K, PDF Format), a comprehensive well-referenced easy-to-follow critique of the series.

Quick Quote

"When we replace the traditional idea of God the creator with the idea of the process of natural selection doing the creating, the creation is as wonderful as it ever was. All that great design work had to be done. It just wasn't done by an individual, it was done by this huge process, distributed over billions of years."

--Daniel Dennett [whose book Darwin's Dangerous Idea provides the title of the first episode] as quoted in PBS's Evolution. Does Dennett's statement, in a video intended for use in public schools, sound like a scientific or a religious claim that might violate the First Amendment rights of students?

If you are an educator and are considering showing PBS Evolution to students, we at the IDEA Center do NOT believe that teaching evolution necessarily violates First Amendment rights of students, however we believe that showing PBS Evolution in a public school, without allowing critical discussion similar to that provided in some of the companion resources mentioned here, could amount to a violation of the First Amendment rights of students in public schools. Out of concern and care for our nation's schools and educators, we respectfully request that you read on and carefully consider the manner in which PBS Evolution is presented to students. We recommend that you consider using these companion guides, and other resources available below, and also consider using some other excellent videos such as, Unlocking the Mystery of Life and Icons of Evolution Documentary.

This review contains 4 sections:

1. **About the Series (with a little editorializing)**
2. **Times and Dates of the Series**
3. **Other Critical Responses**
4. **IDEA's Recommendations and Response**

Part 1. About the Series (with a little editorializing).

On Monday, September 24th through Thursday, September 27th, 2001, PBS aired a seven-part, eight-hour television broadcast series, entitled, "Evolution". The series was reportedly re-broadcasted in May / June, 2002. September, 2001 viewer ratings were far lower than expected, which perhaps is not surprising given that our nation's eyes and ears were turned elsewhere in September, 2001. The seven parts are each one hour long, except for the first episode which is two hours. They are entitled:

1. "Darwin's Dangerous Idea"
2. "Great Transformations"
3. "Extinction!"
4. "The Evolutionary Arms Race"
5. "Why Sex?"
6. "The Mind's Big Bang"
7. "What About God?"

Evolution is presented by WGBH (Boston), produced by WGBH "Nova" Science Unit and Clear Blue Sky Productions (Paula S. Apsell, executive producer of "Nova" and director of WGBH Science Unit and Richard Hutton executive producer of Evolution).

Effectively produced and funded entirely by Microsoft co-founder Paul G. Allen's "Clear Blue Sky Productions", Evolution will be shown on the 349 publicly owned tax-supported PBS stations in the U.S. But the funding of this series is different from that of many others in that it received no money from the Corporation for Public Broadcasting.[1] Although no official cost of the series has been announced, ambiguous statements made by associates of the series have provoked

estimates in the range of "several"1 or up 10 to 25 million dollars,[6] fronted by Clear Blue Sky Productions, the film company furnished by Microsoft multi-millionaire Paul G. Allen.

Evolution's producers have therefore had ambitious goals for the program. According to its producers' website:
The goal of Evolution is to heighten public awareness about what evolution is and how it works, and to dispel common misunderstandings. The project seeks to illuminate why evolution is relevant, to improve its teaching, and to encourage a national dialogue on the issues currently surrounding this science.[2]
A major advertising campaign has been put on for the series with ads in 16 major newspapers and on cable channels such as Discovery and A & E.[1] An internal document sent to PBS affiliates describing the series states its goal is to, "co-opt local dialogue about teaching evolution in schools [i.e. encourage letters to the editor in local newspapers]" and to promote people "getting involved with local schoolboards."[3] Evolution therefore comes out alongside a variety of resources to be put into the hands of teachers:

- An extensive, interactive Web site
- A free 40-page Teacher's Guide
- Classroom videos
- An extensive Multimedia Web Library
- Teacher Methodology Videos-four videos on teaching methods
- An eight-session online course to help teachers understand 'evolutionary concepts and help them address obstacles to teaching evolution'
- Online student lessons, tied to national science standards
- A companion book, "Parasite Rex: Inside the Bizarre World of Nature's Most Dangerous Creatures," by science writer Carl Zimmer
- Monthly newsletters for teachers
- A national program of teacher-training workshops
- Permission to tape and use the programs in classrooms

Quick Quote

"It is easy to be offensive. It is easy to be dull. This series manages the much more difficult task of being both offensive and dull."

--John Mark Reynolds [Professor of Philosophy, Biola University] in "Come to Darwin"

Evolution therefore has an ultimate goal to provide tools for public education and to motivate people for political activism for social change. But what sort of educational message and what sort of political activism?

Proponents of and featured speakers in the PBS Evolution series include Eugenie Scott, Stephen J. Gould, Kenneth Miller, and Daniel Dennett, all of whom are outspoken public critics against creationism and intelligent design theory.

Eugenie Scott is the director of the anti-creationist political activist group, the National Center for Science Education. Stephen J. Gould is the author of various articles and books attempting to debunk creationist ideas. Kenneth Miller is a Catholic who wrote a book, "Finding Darwin's God" where he promotes theistic evolution and rejects design because he believes flawed designs exist in nature which if there is any intelligent design in nature then God must have explicitly created them flawed, and therefore God must have created everything through evolution. Daniel Dennett is a philosopher and author of "Darwin's Dangerous Idea" where he hopes that religious people (specifically, Baptists) who doubt evolution kept will one day be eradicated but kept in cultural zoos as a warning to the rest of society. Dennett's book also provides the title for the first episode.

However, one does not have to look at the cast of special guest-stars alone to see that the viewpoints expressed in Evolution are somewhat one-sided. When asked about intelligent design, the producer of the series Evolution, Richard Hutton, was quoted "We would have been very interested in supporting intelligent design if we had found scientific support for it."4 Producers invited the Discovery Institute, a pro-intelligent design group with a number of scientists who question evolutionary theory, to participate in the series, but they only would have allowed their participation as a religious voice, and could not speak as scientists. The Discovery Institute declined to participate because they would not have been allowed to discuss their scientific views.[5]

PBS is supported by tax dollars and therefore must not advocate any particular religious or metaphysical positions. This documentary, however, should prove to be an exception. On the side of PBS, one nice thing about documentaries is that they typically involve interviews with experts so the material shown can be unashamedly claimed to be the personal opinions of experts, and not meant to be necessarily taken as the position of a government supported television station's broadcasting. Of course the "experts" given airtime are at the discretion of the producer. However, it's interesting to note that the title of the first episode, "Darwin's Dangerous Idea" comes from the title of a book by philosopher Daniel Dennett. Dennett's statements in Evolution, therefore, might be expected to bear the essence of the message of the series:
"When we replace the traditional idea of God the creator with the idea of the process of natural selection doing the creating, the creation is as wonderful as it ever was. All that great design work had to be done. It just wasn't done by an individual, it was done by this huge process, distributed over billions of years."
The series is saying that an individual, God, didn't do the creating firsthand, but that if God did created, He used natural processes. This is nothing less than a theological religious position, and is not a legitimate position for broadcasting on a

government funded public television station, even if the series was fully produced by a private company. Regardless of legitimacy of the venue of this programming, one thing is clear: Evolution has a message, and its message is that people ought not to question evolution, whether on religious or scientific grounds.

The series as a whole seems aimed at religious people who have some form of doubt regarding evolution, as many of the dramatizations in the first episode portray the religious doubters as closed-minded and the "free-thinking" Darwinists as the rebels trying to bring light to science (this reinforces the "Inherit the Wind" stereotype).

In the final episode, "What about God?", religious doubters of evolution are typically young-earth creationists who are portrayed as anti-intellectual, but not a single clip of any scientific arguments against evolution is shown (see our analysis of the "What about God" episode for details). But then that would defeat the purpose of their message.

And their purpose seems nothing less than to sway opposition to evolution by silencing the dissenting scientific viewpoint and portraying doubters as anti-intellectual and unnecessarily struggling against a completely proven scientific fact. Then, they hope, religious doubters, looking foolish and apparently lacking any scientific basis, will stop doubting evolution. Without sounding like a conspiracy theorist, this series has much more the flavor of dogmatic propaganda than it tastes of open and free scientific and intellectual inquiry.

All this is in spite of the fact that hundreds of scientists have expressed intellectual doubt of Darwinism including 100 scientists on a list released by the Discovery Institute. A recent Zogby Poll even indicates that the public overwhelmingly agrees (81%) that scientific evidence both for or against Darwin's theory ought to be presented when public broadcasting discusses evolution. None of these seem to have had much influence upon the producers of Evolution.

Fortunately these dissenting scientific views haven't remained silent. We recommend you download the Discovery Institute's PBS Evolution Viewer's Guide, a 152 page comprehensive scientific, literary, cinematic, and philosophical analysis of the series.

We at IDEA hope you will watch the series, and that you will think critically about it. Whatever conclusions you make, please make sure they're your own.

Footnotes
1. PBS stations bracing for `Evolution' backlash (08/27/2001) by David Hatch
2. Clear Blue Sky Films' "Evolution" about the series website, "http://www.clearblueskyfilms.com/documentaries/evolution/
3. "Evolution Controversy: Use it or Lose it", a document prepared by Evolution Project/WGBH Boston and distributed to PBS Affiliates on June 15, 2001.
4. "WGBH girds for uproar from creationists" originally published in Current, June 11, 2001 by Geneva Collins.
5. PBS' Evolution generates a debate by Larry Witham
6. There is no religious bias in the PBS Evolution Project because Ken Miller says there isn’t. by Josh Gilder

Part 2. Times and Dates.

The San Diego local PBS station is KPBS San Diego, channel 11 (see http://www.kpbs.org/tv/_sked/tvsched.htm for the schedule). According to WGBH, the series will be rebroadcast in May / June 2002. Please stay tuned for the exact times!

Rebroadcasting schedule:

Tuesday, May 14: Darwin's Dangerous Idea

Tuesday, May 21: Great Transformations and Extinction!

Tuesday, May 28: The Evolutionary Arms Race and Why Sex?

Tuesday, June 4: The Mind's Big Bang and What About God?

Part 3. Critical Responses

This section contains 13 items:

1. The Discovery Institute has prepared a free 152 page downloadable Viewer's Guide in PDF format for the PBS Evolution series. The guide has an executive summary with a separate extensive critique for each of the seven parts of

the series. It is comprehensive and well referenced. The guide is 200 kilobytes in size. Click here to download the Viewer's Guide and here to see their critique website of the series (www.reviewevolution.com).

2. The Access Research Network's Response to the PBS Evolution Project, contains links, articles, and information. (http://www.arn.org/pbs_evolution0901.htm)

3. "100 Scientists, National Poll Challenge Darwinism"
(http://www.reviewevolution.com/press/pressRelease_100Scientists.php)

an article from the Discovery Institute detailing a recent Zogby Poll (PDF Format, 52 k) regarding public perception of public broadcasting and evolution and a list of scientists publicly challenging Darwinism.

4. "PBS's 'Evolution' Prompts a New Sort of Trial"
an editorial appearing in the Washington Post on July 27th, 2001 regarding a press conference for PBS Evolution.
(http://www.washingtonpost.com/ac2/wp-dyn?pagename=article&node=&contentId=A58490-2001Jul26)

5. "Come to Darwin"
a personal reflection by philosopher Dr. John Mark Reynolds of his experience at the PBS's breakfast Q & A on Evolution.
(http://www.freerepublic.com/forum/a3b621a671921.htm)

6. "7-part PBS series on evolution challenged by 100 scientists"
an article by Art Toalston detailing critical response to Evolution from, a Zogby Poll, the public, and scientists.
(http://ideacenter.newfangled.com/contentmgr/showdetails.php/id/858)

7. "Darwin's public defenders"
a philosophical critique by Stephen C. Meyer (Ph.D. history and philosophy of science, Cambridge University)
(http://www.arn.org/docs/pbsevolution/meyer092801.htm)

8. Fatuous Filmmaking
an article by biochemist Michael J. Behe appearing in World Net Daily, September 28, 2001.
(http://www.discovery.org/viewDB/index.php3?command=view&id=1056&program=CRSC)

9. PBS's 'Evolution' More of the Same
by journalist Mark Hartwig appearing in Family News magazine
(http://family.org/cforum/fnif/commentary/a0017777.cfm)

10. Evolution for the Masses
by molecular biologist Jonathan Wells, appearing in the Washintgon Times, on September 23, 2001
(http://www.arn.org/docs2/news/evolutionforthemasses92301.htm)

11. There is no religious bias in the PBS Evolution Project because Ken Miller says there isn't
a first-hand report on the PBS Press Conference for the Evolution Project, held July 26, 2001 at the Ritz-Carlton Huntington Hotel in Pasadena, California, by Josh Gilder
(http://www.arn.org/docs/pbsevolution/pbsgilder072601.htm)

12. PBS' Evolution generates a debate
by Larry Witham, The Washington Times, September 27, 2001
(http://www.arn.org/docs/pbsevolution/withamwp092701.htm)

13. Do You Bonobo? Meet our make-love-not-war primates.
by historian and philosopher Benjamin Wiker, in the National Review Online.
(http://www.nationalreview.com/weekend/television/television-wiker111001.shtml)

Part 4. Our Recommendations and Response.

A. Ten questions to ask your Students about the PBS Evolution series:

EYE EVOLUTION (Episode 1). Zoologist Dan-Eric Nilsson claims to have created a model to evolve the human eye in a step-by-step manner -- but what evolutionary jumps are shown during his demonstration of the eye-evolution model?
ORIGIN OF BODY PLANS (Episode 2). If special master control genes can be used to "manipulate" "packets of information" to evolve new body plans, exactly what are these "packets of information" and how did they originate?

MUTANT FRUIT FLIES (Episode 2). If induced mutations on fruit flies are deadly, weakening, or disadvantageous for survival (i.e. legs growing out of the head), what are the implications for the chances of advantageous mutations arising in the wild?
TRANSITION TO HUMANS (Episode 2). The evolutionary transition which led to humans is said to be the same as all the others. What fossils are shown documenting the alleged evolutionary transition from the chimp-like ape ancestor to humans?
EXTINCTION! (Episode 3). Conservationist Alan Rabinowitz claims that "evolution is going on all around us." What exactly is this evolution and what are its implications for the origin of new species?
THE EVOLUTIONARY ARMS RACE (Episode 4). Humans with the special gene to fight off HIV are said to have lost receptors on their immune-system cells. What degree of change is typically necessary to bring about anti-biotic resistance in microorganisms or disease-resistance in large animals?
WHY SEX? (Episode 5). People are said to find some features attractive (smell, facial features) because they are linked to actual fitness for survival. What aspects of human intellectual or artistic ability might there be which would confer no selective advantage for survival?
THE MIND'S BIG BANG (Episode 6). What is the primary difficulty presented by the archaeological record for the supposed hundreds of thousands of years that are given as necessary for the evolution of the precise wiring giving intelligence to the human brain?
CINEMATOGRAPHY AND TYPECASTING (Episode 7). In "What about God" (episode 7), what cinematic techniques, narrator diction, or excerpts from interviews are used to typecast opposition to evolution as anti-intellectual?
OPTIONS FOR RELIGIOUS PEOPLE (Episode 7). Besides an anti-intellectual form of young-earth creationism or full acceptance of evolutionary theory, what other scientific and religious options of belief about evolutionary theory, which are not portrayed in Evolution, are possible for a person?

B. Our Review and Summary:

Episode 1 Review: "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. The dramatization not only has a very 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. But of course the "archetype blueprint in the mind of a Creator" hypothesis is utterly ridiculed in the dramatizations of Darwin's life. Just to hammer in the point, a bizarre and almost irrelevant scene is included where Darwin's brother, a strong early supporter of evolutionary theory, is shown singing off key in church to a hymn, mocking religion, to the amusement of children.

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 critiqued in our Good Theology and Bad Design OR Bad Theology and Good Design? and is also discussed in the Discovery Institute's Viewer's Guide. 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 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. From an engineering perspective, it is great design!

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. Furthermore, this model is said to have been based off of a computer model, though this claim is false (this false claim was first perpetuated by Richard Dawkins).

The evidence for the power of natural selection and the creation of new species through evolution is said to be found in HIV antibiotic resistance. While HIV antibiotic resistance is a very real phenomenon, it has no real bearing on the ability of evolutionary processes to create new genetic information.

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 Review: "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. A number of fossils--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 (see Answers in Genesis' critique for a comparison of the actual Pakicetus skull found and the highly interpretive alleged reconstructed transitional form in the Journal of Geological Education). Though Ambulocetus is represented in the documentary as a complete fossil of an aquatic mammal with legs, as seen here (taken from A Whale of a Tale by Don Batten), this is an interpretory stretch and embellishment upon the quite fragmented Ambulocetus skeleton which was actually found. Rhodocetus is represented in the series by a mere skull. Though Basilosaurus is a complete whale-like fossil with hindlegs, how important is it really for accounting for the transition? This organism was fully aquatic like modern whales, but paleontologists do not even believe it was an ancestor to the whale. Many have suggested those "legs" aren't vestigial but played some role in copulation. Perhaps they even had a swimming function for the creature. So what have we been shown here? 2 skulls (one quite fragmentary), one fragmentary skeleton not necessarily transitional whatsoever, and a full aquatic whale 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 data in the fossil record (see Steven Stanley, The New Evolutionary Timetable, pg 93-94 for more info). These fossils and the whale evolutionary scenario are discussed and critiqued in the whale section of our fossil record page or see our Whale Fossil Record Quote Collection.

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 legs. This fossil is shown "drilled" out of the rock, and somewhat fishlike it may be, but Acanthostega also bears a striking resemblance to many living amphibians, which are designed for both an aquatic and land lifestyle, as is seen here (figure adapted from American Museum of Natural Hisory Website and The New Evolutionary Timetable by Steven Stanley (Basic Books, Inc. Publishers, 1981. Pg 93-94, 128.). Furthermore, there are still no fossils documenting how the defininig feature of tetrapods--legs--came from fins in the first place. One biologist said that Acanthostega and Icthyostega, "had short but massive limbs of the basic pattern of subsequent tetrapods." It is claimed that the aquatic Acanthostega developed limbs so it could have an advantage running out of the water to escape predators. However, 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? There simply is not a Darwinian scenario whereby it is advantageous for an aquatic creature to develop limbs for organisms with poor fins for swimming would quickly get selected out by predation over fully-finned fish were much better swimmers--long before true tetrapod limbs like Acanthostega had (see above quote) could develop on their own. 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. See our Amphibian Fossil Record Quote Collection for more information on what is and isn't known about the alleged Fish-->Amphibian transition.

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 how we see mutations causing fruit flies to do many strange things. But just how important is this analogy? 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 mutation could cause a leg to grow out of an eye (which is shown done with the fruitfly, although in practice even master-control-gene-mutations must be numerous and specific to get any meaningful changes). 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. See our Cambrian Explosion Quote Collection for details.

Finally, we're related to chimpanzees through a series of "chance coincidences". Humans are said with absolute assurance to be descended from chimpanzees, because of morphological and molecular evidence--it is claimed that the DNA of humans and chimps are 98% similar. Philosophically speaking, 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. With an 80 million bp difference between humans and chimps, 500,000 generations amounts an average of 160 mutations per generation--that's about 40 times the average mutation rate (109 bp per pt. mutation after DNA repair mechanisms). In other words, humans and chimps are far far more different than allowed by their alleged evolutionary divergence time, which is a good argument against a pure evolutionary history for the two. Not only that, but that 80,000,000 bp difference could also amount to 1600 genes (1000 bp's/gene scattered in homologous DNA sequence). 1600 genes can make all the difference in the world and could account for a very large number of major differences 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 Review: "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. A species is said to have a "birthdate" and the average species last 4 million years--over 95% of all species that have ever lived have died out.

At least 5 mass extinction events are said to have occurred in the history of life on Earth and 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 blink of the eye. While extinction events can kill, they don't create. It is the origin of new species which should called into question--not simply the death of old ones. This point is not mentioned.

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 about the fact that the Permian extinction isn't well understood because it involved the death of many different types of organisms--from deep sea to terrestrial. Organisms which survived almost seem to be random, and are often very similar to other large groups of organisms which did 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 unknown 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? As noted in our mammal fossil record quote collection, the alleged transition between mammals and reptiles consists of a few fossils 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. See also our diagram of the alleged reptile-mammal transition.

After the K-T 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 types of mammals 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 Review: "The 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.

The episode talks much about antibiotic resistance. However, how important is antibiotic resistance to supporting macroevolution? 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. As our The Meaning of Antibiotic Resistance Page says, antibiotics are chemicals which retard virus or bacterial proliferation by entering the microbes and interfering with the production components needed to for reproduction. This can include impairing protein manufacture or destroying cell walls. Antibiotic resistance typically involves a simple point mutation which slightly changes the structure of antibiotic target (the cell wall or ribosome (protein factory)) such that the antibiotic is no longer effective against it. It does not involve a change in function, but merely a slight change in structure or even loss of structure such that function is maintained and the antibiotic's structural effect upon the target is inhibited. Some resistance occurs if an enzyme the bacteria happens to has interferes with the antibiotic such that it cannot reach it's target. Cell walls which are not affected by antibiotic drugs are easily selectable under a Darwinian scenario. This is real evolution, and because organisms, replication mutations, and gene swapping are so prevalent in bacteria, once one out of countless bacteria becomes resistant, it is quite a quick and simple process for many others to either get selected out or obtain the gene for resistance. However, the processes behind antibiotic resistance do not involve the creation of new real significant information (More information on how bacteria become resistant can be found at, The Challenge of Antibiotic Resistance by Stuart Levy (Scientific American, March 1998)). Antibiotic resistance does not tell how new biochemical pathways originate, how complex organ systems develop, or how molecules turned into humans but rather they involve minor benign structural changes in various proteins of target systems and/or chance interaction of target organism enzymes with the antibiotic.

The example given of disease resistance is human resistance to HIV, which is found in some Caucasion people. 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 is not an impressive example of a meaningful increase in complexity.

Finally, an innovative technique for weakening a cholera outbreak in South America by targeting the mode of disease transmission is shown. 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 as they are allowed no mode transmission to further 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: it can provide a practical way of understanding present-day minor biological changes in microorganisms and help fighting terrible diseases, but does not serve well as a storytelling device for explaining the origin of the species.

Episode 5 Review: "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 should come as no surprise--whether life was efficiently designed or whether it evolved.

The advantage to sexual reproduction is shown through a scene of pond-guppies in Mexico. These fish reproduce both sexually and asexually, but the asexually reproducing fish are much more prone to "black spot disease". Sexually reproducing fish are not prone to it because sexual reproduction ensures that good genes for fighting off black spot disease get mixed around much more in the population. Lines of fish which just clone themselves, if they can't fight the disease, are hopelessly doomed. Through sexual reproduction, it is shown that the fish population is generally stronger against the disease. And so goes the story that sexual reproduction confers a great advantage over asexual reproduction and that's how it arose. But how did it arise in the first place? An animated story is told of microorganisms with gender their sharing genes. But do we see sexual reproduction on earth because a designer knew it would be necessary for survival, or because it evolved naturally. Unfortunately, this is a historical question of an event which can never be re-

witnessed by human eyes. Scientifically speaking, we are only left to speculate, but of course Evolution implies there is only one possible answer: 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 we are left with the impression that there is 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 are easily selected for because they have a bearing on survivability. Perhaps we all would in some way enjoy brief interludes with sexually attractive people, but we also know these actions are not justified as they hurt ourselves those close to us. Did our attractions to these traits evolve or were they placed there by design? Though it is perhaps easy to see how these attraction-traits may have evolved, is one explanation really better than another? While religion can account for our ethics through a law of love, evolutionary psychologists believe the proper answer is that we do whatever helped our ancestors pass on our genes. And evolutionary psychologists are the only ones who speak on the issue in this episode.

Peacock tales: But can all attributes of human intellect be explained through this sexual selection. An evolutionary psychologist Geoffrey Miller thinks they can be. By comparing the origin of human humor, art, and music to the processes which select for a beautiful peacock tail, Miller argues that sexual selection can explain our more artistic and creative side because these are supposedly able to 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 to find this attractive in one another? Perhaps even animals are made to select for this beauty as well. Evolutionary psychology thinks that sexual selection can explain it all, but without giving a clear mechanism, it seems to explain nothing.

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

This episode asks the question, how did human technology, communication, and culture come about and make us human?. How did the human mind arise? 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 to evidence 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 very much at odds with the archaeological record where signs of remains of modern human intelligence appear rapidly in the fossil record, 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. The future of humankind may rely upon "what we make of [the mind]" saying ideas will affect our future evolution more than anything else.

Episode 7 Review: "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." It is the opinion of this author that Scott is right to say it may be unfortunate that many people feel they must abandon their faith in Christianity if evolution is true. In fact, however, Evolution itself promotes a misunderstanding of the issue, by portraying the issue as if you have to choose not between evolution and Christianity, but between evolution and an anti-intellectual brand of young earth creationism. If a Christian chooses to doubt evolution, they are branded as an anti-intellectual who doesn't understand the issues.

Religious supporters of evolution are repeatedly portrayed as intellectuals and scholars seeking scientific knowledge. Religious supporters of evolution describe their religious friends and family who doubt evolution with an anti-intellectual tone, and say their 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 Christians. Those who do not accept evolution are in every case young-earth creationists, and are often portrayed as anti-intellectual. Although in some cases those with doubts are cast in a psuedo-intellectual light, their views are ultimately qualified as somehow anti-intellectual by the narrator or by the comment of a religious supporter of evolution. This almost seems an attempt to make Christians who doubt evolution to feel guilty about their views, as they are portrayed as damaging to both public perception of Christianity, and their own status as an intellectual in the world.

The series opens with a prayer from a pastor, then shows money being taken at the door as people enter a church to hear a creationist speaker. Then there is shown a bunch of people in church, including children, fervently singing:

I don't believe in evolution,
I know creation's true
I believe that God above created me and you
so praise His name for what He made,
give credit where it's due
I don't believe in evolution,
I know creation's true.

The narrator then portrays these religious doubters as anti-intellectual fundamentalists committed so to some sort of a Jihad against evolution:
"...many conservative Christians are more committed than ever to fighting the war against evolution. Today, they have come here [to the church]... for some basic training."
The series then shows Ken Ham, called by the narrator a "defender of the faith", telling people the Bible says that God created the Earth 6000 years ago in six 24 hour periods, so evolution must be wrong. So Christians who are at war with evolution who pay money to thick-bearded young earth creationists so they can learn about Bible interpretations after they sing their dissent of evolution in church. One Wheaton college anthropology student says he has scientific doubts, but he also says he believes in young earth creationism because "that's what I grew up with that's what I'm comfortable with". He's portrayed as a "a singer", "born in the Bible belt", who hasn't been able to "overcome the convictions he brought with him to Wheaton". He is repeatedly shown singing throughout the rest of the episode. Evolution repeatedly portrays doubters of evolution in this anti-intellectual manner.

In the entire episode, there is no mention of doubters of evolution who are not protestant young-earth-creationists (see our scene description table for details). In almost every case, these young earth creationists are presented as entirely anti-intellectual, although in some cases they are psueo-intellectual (intellectual, but qualified as somehow anti-intellectual also) n though the creationist community holds a sizeable percentage of people who do not hold to a young earth. Even many prominent voices in the creationist community are not protestants or not Christians--Michael Behe (Roman Catholic Christian), John Mark Reynolds (Eastern Orthodox Christian), and Lee Spetner (Jewish) are examples, but they are not depicted in the episode. 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.

Evolution implies that a Christian can accept evolution, and become intellectually sheik, or it can reject it and be doomed to promoting some kind of anti-intellectual young earth creationist religious dogma. There are no other choices, at least that's the message they want you to hear. Not a single iota of scientific evidence against evolutionary theory is given in the entire 8 hour documentary. Then, they hope, religious doubters, looking foolish and apparently lacking any scientific basis, will stop doubting evolution.

We recommend that you watch all of this and think critically about it. Look for metaphysical statements or the evidence provided to back up key scientific statements made. Finally, the Discovery Institute's Viewer's Guide is highly recommended as a comprehensive, well referenced, and clearly written critique of the entire series.