

“Science is a philosophy of discovery. Intelligent design is a philosophy of ignorance.”

-- Neil deGrasse Tyson, Director of the Hayden Planetarium, Astronomer, Science Advocate; from his book, “Death by Black Hole”

“‘Intelligent Design,’ the relabeled, repackaged form of American creationism, has always had a problem. It just can’t seem to produce any evidence.”

-- Ken Miller, Professor of Biology and Royce Family Professor for Teaching Excellence at Brown University

An Introduction to Natural Selection, Creationism and Intelligent Design

Supplementary Material for CFB3333/PHY3333/KNW2333
Professors John Cotton, Randy Scalise, and Stephen Sekula

Humans do NOT come from Earth – and sunburn, bad backs and pain during labour prove it, expert claims

- A U.S. ecologist says conditions such as bad backs and sunburn suggest humans did not evolve alongside other life on Earth
- In a new book, Dr Ellis Silver says aliens put humans on our planet as recently as tens of thousands of years ago
- He suggests the Earth might be a prison planet, since humans seem to be a naturally violent species and are here until we learn to behave ourselves

By SARAH GRIFFITHS

PUBLISHED: 12:48 EST, 14 November 2013 | **UPDATED:** 12:50 EST, 14 November 2013

[f](#) Share [t](#) Tweet [g+](#) +1 [s](#) Share | **1,134** shares

[c](#) **1,268** View comments

A U.S. ecologist has claimed that humans are not from Earth but were put on the planet by aliens tens of thousands of years ago.

Dr Ellis Silver points to a number of physiological features to make his case for why humans did not evolve alongside other life on Earth, in his new book.

They range from humans suffering from bad backs - which he suggests is because we evolved in a world with lower gravity – to getting too easily sunburned and having difficulty giving birth.

Dr Ellis says that while the planet meets humans' needs for the most part, it does not perhaps serve the species' interests as well as



Site Web

[f](#) Like MailOnline

[t](#) Follow @MailOnline

Today's headlines

Most Read

- ▶ **Built in jewellery boxes and aviation-grade clocks: How Rolls Royce owners have tried to make their exclusive cars even more unique**
- ▶ Humans do NOT come from Earth – and sunburn, bad backs and pain during labour prove it, expert claims
- ▶ **The devastating rate of deforestation: Shocking maps reveal how our planet has lost nearly a MILLION sq miles of trees in just 12 years**
- ▶ Quantum physics proves that there IS an afterlife, claims scientist
- ▶ **Mystery of how the wandering albatross travels 10,000 miles in a single journey WITHOUT flapping its wings is solved**
- ▶ 'Comet of the century' set to light up the night sky as it skirts just 600,000 miles from the sun - if it avoids being vapourised by 2,700-degree heat
- ▶ **Revealed: How surgeons will reconstruct road accident victim's face using 3D printing**
- ▶ New personal safety app allows smartphone users to tell friends and family when they are in danger
- ▶ **Red-faced scientists insist they didn't kill the world's oldest creature (Ming the 507-year-old clam) JUST to find out its age**
- ▶ Google block on child porn: At last! Internet giant axes links to vile sex-abuse websites in stunning victory for Mail campaign
- ▶ **Mystery of the kettle whistle solved at last: Speed steam is funnelled through spout creates the sound**

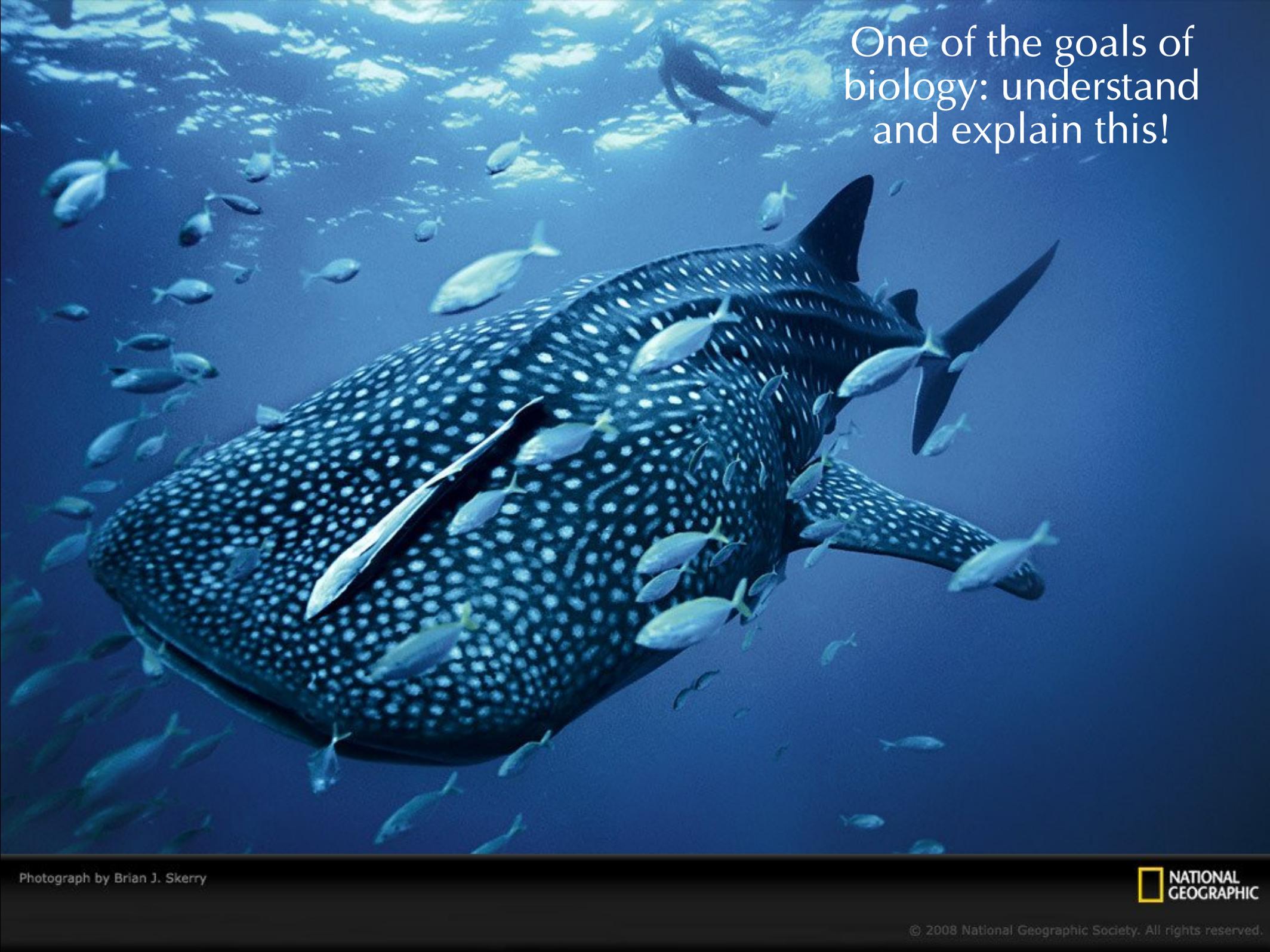
Preparation

- This lecture is a brief, brief, brief preparation for:
 - “Intelligent Design is not Science”, a guest lecture by Professor John Wise of the SMU Department of Biology
 - A discussion led by SMU Anthropology Professor Ron Wetherington about Texas public school Science Textbook adoption (to be decided by a vote on FRIDAY!)
 - A discussion led by SMU Religious Studies Professor Mark Chancey on the Bible Classes in Texas Public Schools and how they relate to the Creationism/ID issue in Texas.

Critical Questions to Keep in Mind

- What is the hypothesis? Is it testable?
- What predictions are made by the hypothesis?
- What tests are proposed to assess the prediction?
Can the hypothesis be falsified?

One of the goals of
biology: understand
and explain this!



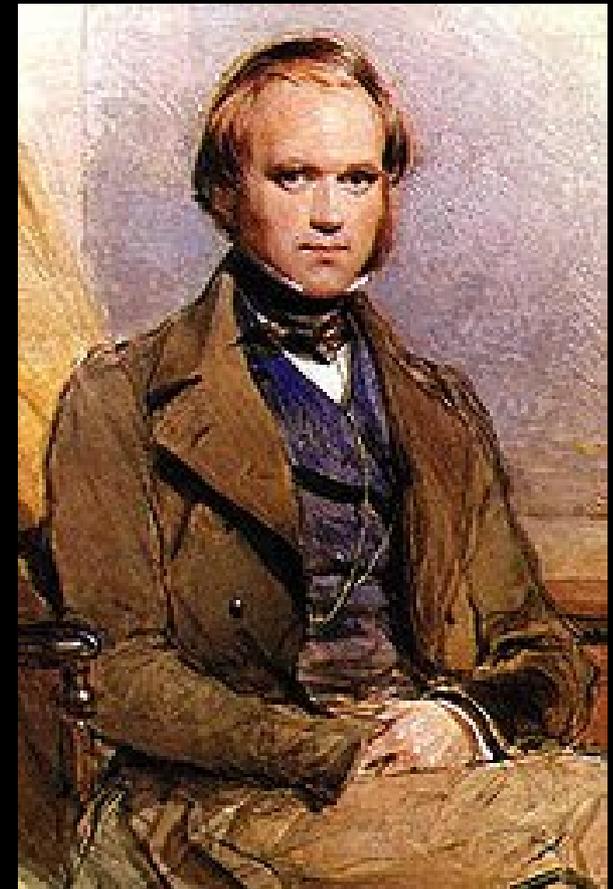
Photograph by Brian J. Skerry

 NATIONAL
GEOGRAPHIC

© 2008 National Geographic Society. All rights reserved.

Natural Selection: A Scientific Theory to Explain Evolution

- That species change over time was not new information – but what was the mechanism by which this occurred?
- The Theory of Natural Selection: first codified by Charles Darwin, geologist and biologist, in 1858 in his publication “On the Origin of Species”
 - The diversity of life is not an accident
 - It’s due to pressure from the environment on a population of organisms – the organisms can either adapt or go extinct
 - Adaptation might be conferred by a pre-existing ability, or arise due to mutation in the organism that confers an advantage over its peers. This is speciation. This principle is called “Descent with Modification.”
 - Mutation is the only random part of Natural Selection – the actual selection is intentional (e.g. due to predator activity, or changes in climate)



Is Natural Selection Falsifiable?

- You bet!
 - the Earth might be too young for Natural Selection to work
 - if we find a fish fossil in a geological layer that dates back to a time before fish appeared, Natural Selection is wrong.
 - a new species might spontaneously appear with no relationship to any other species (like a Sterrance!). If that happened, Natural Selection is wrong.



“If your theory’s right, all these species would get together and form a new species, then where is the cat-dog or the rat-cat, whatever it be. They don’t come together. Cats go with cats, and dogs go with dogs.”

– Ken Mercer, R-San Antonio, on the “Boiling Point” radio show

<http://tfninsider.org/2011/10/28/mercero-still-attacking-science-and-teachers/>

[Speaker’s Note: Ironically, a “rat-cat” or a “cat-dog,” if it existed in nature, would actually be evidence *against* evolution since they have incompatible reproductive systems. So this points to a true and fundamental misunderstanding of the world.]

Does Natural Selection make Testable Predictions?

- You bet! Here are some old ones:
 - The Earth must be quite old, or species would not have had time to develop
 - given the diversity of life on Earth and the time needed to exert evolutionary pressure on a species, the age was estimated at millions of years or older.
 - **CONFIRMED:** radiological dating of rocks on Earth and the moon place the age of the Earth at (4.54 +/- 0.05) billion years.

Does Natural Selection make Testable Predictions?

- You bet! Here are some old ones:
 - There must be a biological mechanism for passing along traits – even dormant ones not expressed in parents or predecessors – but it was unknown at the time Darwin published
 - **CONFIRMED:** Gregor Mendel discovered the principles of heredity (mid 1800s) and thus genetics, and nearly 100 years later DNA was identified as the source of heredity

Does Natural Selection make Testable Predictions?

- You bet! Here are some old ones:
 - Mass extinctions may be possible when a species, or whole classes of species, cannot adapt or do not have time to adapt.
 - **CONFIRMED: many examples, including the dinosaurs**

Does Natural Selection make Testable Predictions?

- You bet! Here are some old ones:
 - Very different species may have simply branched long ago in the environment, but should share common inheritance information (e.g. genes)
 - **CONFIRMED:**
 - Humans and chimpanzees have 99% of their DNA in common and shared a common ancestor 5 million years ago;
 - Whales and hippopotamuses shared a common ancestor at least 50 million years ago.

“Nothing in biology makes sense except in the light of evolution [sic].”

– title of a 1973 essay by biologist and Russian Orthodox Christian Theodosius Dobzhansky

(why “sic”? I would say “Natural Selection”, not “evolution”)

CREATIONISM

First Problem:
which creation story is “correct”?

See <http://www.physics.smu.edu/devel/pseudo/Creation/>
for a HUGE list of creation stories from cultures
from across both time and the geographic world

What is meant in the U.S. by “Creationism?”

- Mostly derived from the Abrahamic religions (Christianity, Islam, Judaism)
- There are different kinds: see the next page...
- Some basic tenets of US Christian-based creationism:
 - all species were created all at once by God; their diversity was the choice of God.
 - the Earth is only about 6000 years old, as determined by James Ussher (1654), the Bishop of Armagh, who added up the ages of people relative to dates in the Old Testament and New Testament (this is a special branch of creationism called “Young Earth Creationism”). Ussher declared that the Earth was created by God on Sunday, October 23, 4004 BC.
 - humans were “specially created” by God and are not related to other species; or, they may be related to other species but are unique in that they have a “soul” and are created in the image of God.

Old Earth Creationism	Geology	Biology
Theistic Evolution: Evolution by natural processes is the tool God used	YES	YES
Evolutionary Creationism: Adam and Eve were the first spiritually aware humans	YES	YES
Progressive Creationism: Humans were a special creation event	YES	YES
Day-Age Creationism: Six days of creation were six geological epochs	YES	SOME
Gap Creationism: 4.5 billion year gap between Genesis 1:1 and 1:2	YES	SOME
Young Earth Creationism	Geology	Biology
Omphalism: Earth was created with the appearance of age and of evolution	YES	YES
Young Earth Fundamentalism: Invented versions of all natural sciences to explain Earth's age as 6,000 years	NO	NO

The (Abridged) U.S. Legal History of Creationism in Schools

- 1925: The State of Tennessee v. John Thomas Scopes
 - first legal test of teaching evolution in U.S. public schools
 - Scopes found guilty of violating The Butler Act of Tennessee, which made the teaching of Evolution illegal in state-funded schools.
- 1968: Epperson v. Arkansas
 - U.S. Supreme Court decision overturns Arkansas law that prohibited the teaching of Evolution in state-funded schools
 - court rules that the First Amendment of the U.S. Constitution prohibits a state from tailoring education to suit the desires of a specific religious sect or dogma
- 1987: Edwards v. Aguillard
 - U.S. Supreme Court finds that a Louisiana law requiring that “creation science” be taught alongside Evolution violates the separation clause of the First Amendment of the U.S. Constitution, since the LA law advances a specific religious viewpoint.

INTELLIGENT DESIGN

Intelligent Design Creationism

- Creationism, but tries to hide the word “God”
- Some basic tenets:
 - some or all species, or parts of some or all species, were “designed” by an intelligent designer
 - evidence of this design is detectable by the principle of “irreducible complexity” - a biological structure so complex that it could not have happened by selection pressure on a biological organism (popular examples: the eye, the bacterium flagellum, the immune system, . . .). This complexity allegedly can be mathematically defined and experimentally measured.
 - principle originally expressed by William Paley, a philosopher (late 1700s), in the form of “the watchmaker” argument
 - recently renamed by Michael Behe (Professor of Biochemistry at Lehigh University and Fellow at the Discovery Institute)

The Origins of Intelligent Design Creationism

- The movement has as its foundations a paper known as “The Wedge Document,” which originated from The Discovery Institute (a Seattle-based think tank), aka “The Center for the Renewal of Science and Culture,” and states:

“The proposition that human beings are created in the image of God is one of the bedrock principles on which Western civilization was built . . . The cultural consequences of the rise of [the] triumph of materialism were devastating. Materialists denied the existence of objective moral standards . . . The Discovery Institute’s Center for the Renewal of Science and Culture seeks nothing less than the overthrow of materialism and its cultural legacies.” – “The Wedge,” The Discovery Institute, 1999

How Will They Achieve This?

- By driving a wedge between science and society
 - Phase 1: conduct efforts at scientific discourse and publication to get their ideas into the science literature
 - this has largely failed, and you'll see why in John Wise's lecture on Friday
 - Phase 2: Publicity and Opinion-making
 - ongoing phase. Get laws changed in your favor, sway public opinion against science, etc.
 - Phase 3: Cultural Renewal and Confrontation
 - completely change the culture through their efforts
 - change science, change teaching, and then go after the social sciences and humanities

How has “Phase 1” gone?

- Initiated in 1999
 - In fall 2012 I entered “intelligent design” on smu.edu/cul as a search term (with quotes)
 - I limited the search to scholarly publications in journals, excluding newspaper articles and theses. I restricted the topics to “biology”, “science”, and “intelligent design”.
 - **I got 11 results.**
 - Only one is actually a scientific paper – the rest are social studies/commentary on the issue. The scientific paper is a scientific CRITICISM of ID and shows how it can be ruled out with data
 - Testing fundamental evolutionary hypotheses. *Journal of theoretical biology*, ISSN 0022-5193, 08/2003, Volume 223, Issue 3, pp. 377 - 385

Discovery Institute's own "Publications" List

- <http://www.discovery.org/a/2640>
- Lists about 70 papers that they report as "Scientific Publications Supportive of Intelligent Design Published in Peer-Reviewed Scientific Journals, Conference Proceedings, or Academic Anthologies"
 - only about a dozen of these appear in journals of any note, history, or reputation in the scientific community
 - Most are in journals that the ID movement created.
 - They lump conference proceedings in with journals – not the same thing.
 - There is also no original data-based experimental research to be found in any of these papers – just intellectual reassessment of other people's work.

Is “Intelligent Design” a Science?

Casey Luskin, a lawyer at the Seattle-based Discovery Institute, argues “yes” in a long blog post. Before we assess a big piece of evidence he uses to support his claim, let’s define a few terms.

- **Intelligent Design:** some organisms and structures are so complicated the only plausible explanation is that an intelligent agent (name withheld) is the cause.
- **Intelligent Design** has its own jargon – terms like “Complex Specified Information (CSI)” and “Irreducible Complexity;” these are just ways of rephrasing the idea that “structures or organisms are too complex to have arisen naturally”



Casey Luskin
Staff Member at the
Discovery Institute’s
Center for Science
and Culture.

He is a lawyer, with
a B.S. and M.S. in
Earth Science.

Observation: Intelligent agents solve complex problems by acting with an end goal in mind, producing high levels of [complex specified information (CSI)]. In our experience, systems with large amounts of specified complexity such as codes and languages invariably originate from an intelligent source. Likewise, in our experience, intelligence is the only known cause of irreducibly complex machines.

Hypothesis (Prediction): Natural structures will be found that contain many parts arranged in intricate patterns (including irreducible complexity) that perform a specific function indicating high levels of CSI.

Experiment: Experimental investigations of DNA indicate that it is full of a CSI-rich, language-based code. Biologists have performed mutational sensitivity tests on proteins and determined that their amino acid sequences are highly specified. Additionally, genetic knockout experiments and other studies have shown that some molecular machines, like the flagellum, are irreducibly complex.

Conclusion: The high levels of CSI including irreducible complexity in biochemical systems are best explained by the action of an intelligent agent.

Valid Scientific Criticisms

Circular Reasoning

In the “observation,” Luskin employs circular reasoning (intelligence means complexity, and complexity means intelligence). Circular reasoning is the basis of pseudoscience.

Credentials^(*)

Luskin is a practicing lawyer, not a practicing scientist. He holds no research credentials (an M.S. is achieved primarily by coursework) in biology (e.g. a Ph.D.)

Begging the Question (Complexity)

Luskin assumes the premise – that there is a detectable complexity that indicates design. This has never been proven, and efforts to make it mathematical have failed utterly.

Blogging, not Publishing

Luskin has printed his argument in a blog. Anybody can blog. A true scientist submits their work to a high-impact, peer-reviewed journal; if it's well done, it is published.

Relying on Somebody Else's Work

Luskin has done none of his own research, as implied in his text. This means he is using another's work, which doesn't guarantee an understanding of that work.

Experience, not Evidence

Luskin relies on experience (a limited set of personal observations) but not on evidence (a reliable body of data gathered by independent agencies.)

Valid Scientific Criticisms

More Begging the Question (Presumption)

Luskin presumes that the actions of all intelligences are describable by the known outcomes of human intelligence. This is poor reasoning at best, and hubris at worst. We have no idea what another intelligence might do to the natural world to leave its fingerprint.

Avoiding Identifying Rival Causes (Post Hoc, Ergo Propter Hoc Fallacy)

Luskin implies that the only cause of complexity is intelligence. But this is demonstrably false (see next slide). Failure to consider rival causes is pseudoscience. It's the act of committing the "after this, therefore because of this" fallacy.

(Hey! Isn't criticizing the fact that Luskin is not a Ph.D. an "Ad Hominem" attack? No. Attacking the person's credibility on the topic under discussion is perfectly valid. Someone who holds no research credentials in biology raises serious red flags about their ability to understand the subject enough to criticize it. It's not definitive, but it's a serious warning sign. If I had pointed out his hair style, that would be "Ad Hominem."*

Complexity
without an
intelligent
designer



Snowflakes appear to be designed – yet their geometry is the result of basic physics and chemistry. No designer required.

Consider that complexity has more than one cause, and think about “rival causes” for complexity in nature.

Scientists do this all the time; pseudoscientists fail to consider rival causes.

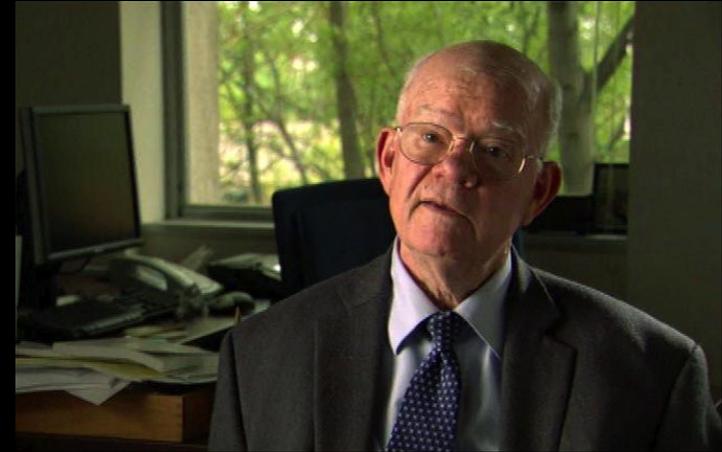
Faces of the ID/Creationism Movement



Michael Behe, Professor of Biochemistry at Lehigh University and Fellow at The Discovery Institute



Stephen C. Meyer, Ph.D. in philosophy, Director of the Discovery Institute's Center for the Renewal of Science and Culture and Senior Fellow at the Discovery Institute.



Philip Johnson, retired Berkley Law Professor, "Father of Intelligent Design Movement," co-founder of the Discovery Institute, credited as a founder of the Wedge Strategy.



William Dembski, B.A. in Psychology, M.S. in Statistics, Mathematics, and Philosophy, Ph.Ds. in Mathematics and Philosophy, and M.Div. in Theology. Senior Fellow at the Discovery Institute.

First Legal Test of ID/C

- 2005: *Kitzmiller v. Dover Area School District*
 - 11 parents sued the Dover, Pennsylvania school district for requiring ID/C be taught along side Evolution
 - Pennsylvania Supreme Court found that:
 - ID is a form a creationism (which is why it's labeled ID/C these days) and thus is in violation of previous U.S. Supreme Court rulings. The teaching of ID in a state-funded school is thus a violation of the First Amendment of the U.S. Constitution.
 - Note: Judge John E. Jones III, who oversaw the trial, was appointed in 2002 by President George W. Bush and was a conservative.

Current Intelligent Design Legal Efforts

- “Academic Freedom Laws” for grade schools
 - multiple states have tried to pass them (Alabama, Maryland, New Mexico, Florida, Michigan, South Carolina, Iowa, Indiana, Tennessee, New Hampshire, Oklahoma). Only Louisiana succeeded.
 - they are based on language crafted by the Discovery Institute
 - why is this a bad thing?
 - trying to solve a problem that doesn’t exist – public grade school teachers are already free to teach within the constraints on the approved curriculum
 - opens the door to teaching pseudoscience as science
 - They claim to allow teachers to introduce “alternatives” to Natural Selection. However, there are no competing scientific theories with the Theory of Natural Selection. If there were, it would be in standard biology textbooks. This is a purely disingenuous way of allowing teachers to teach their religious views in science class.
 - Indiana is the latest state whose legislature is trying to introduce such a bill. More will likely follow.

In their own words

- Don't take my word for it – listen to founders and proponents of the ID movement state that what they do is not science:

"Intelligent design is just the Logos theology of John's Gospel restated in the idiom of information theory."

--William Dembski, Signs of intelligence: A primer on the discernment of intelligent design. Touchstone 12(4) (Jul/Aug 1999): 76-84.

In their own words

- Don't take my word for it – listen to founders and proponents of the ID movement state that what they do is not science:

"the conceptual soundness of a scientific theory cannot be maintained apart from Christ"

--William Dembski, Intelligent Design: The Bridge between Science and Theology, 1998, p. 209

In their own words

- Don't take my word for it – listen to founders and proponents of the ID movement state that what they do is not science:

"As a Christian man, yes, I do believe it is God as the divine power and as the intelligent designer of evolution."

--William Dembski, Darwin's Unpaid Debt, Baylor University 22 October 2008

In their own words

- Don't take my word for it – listen to founders and proponents of the ID movement state that what they do is not science:

"Our strategy has been to change the subject a bit so that we can get the issue of intelligent design, which really means the reality of God, before the academic world and into the schools."

--Phillip Johnson, American Family Radio, 10 January 2003.

In their own words

- Don't take my word for it – listen to founders and proponents of the ID movement state that what they do is not science:

"there are no peer reviewed articles by anyone advocating for intelligent design supported by pertinent experiments or calculations which provide detailed rigorous accounts of how intelligent design of any biological system occurred."

--Michael Behe, 2005

In their own words

- Don't take my word for it – listen to founders and proponents of the ID movement state that what they do is not science:

"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."

--Jonathan Wells, Darwinism: Why I Went for a Second Ph.D.

(Incidentally, the person whom Wells calls "Father" is Sun Myung Moon, founder of the Unification Church which is also known as the "Moonies", and the ultraconservative Washington Times.)

In their own words

- Don't take my word for it – listen to founders and proponents of the ID movement state that what they do is not science:

"Many states have brought in Intelligent Design but they have called it science. A design needs a designer which is god. It's religion, not science."

--William Nowers, one of the founders of Creation and Evolution Studies Ministry and author of the book, Creation-Evolution and a Nation in Distress, being surprisingly honest about the goals of "intelligent design"/creationism proponents. His ministry is making an effort to put religion in science classes in Virginia.

In their own words

- Don't take my word for it – listen to founders and proponents of the ID movement state that what they do is not science:

Eric Rothschild: But you are clear, under your definition, the definition that sweeps in intelligent design, astrology is also a scientific theory, correct?

Michael Behe: Yes, that's correct.

--Kitzmiller v. Dover Area School District, Trial transcript: Day 11 (October 18, 2005), PM Session, Part 1

In their own words

- Texas State Board of Education science textbook reviewer, Karen Beatard (faculty at Texas A&M, nutritionist)
 - *“I understand the National Academy of Science’s strong support of the theory of evolution. At the same time, this is a theory. As an educator, parent and grandparent, I feel very firmly that “creation science” based on Biblical principles should be incorporated into every [sic] Biology book that is considered for adoption. Students should have the opportunity [sic] to use their critical thinking skills to weigh the evidence between evolution and “creation science.”*

-- *from the textbook reviewer comments in 2013*

“Many religious groups - Christian and other - do not regard evolutionary theory as a threat. For many people of faith, science and religion go hand in hand. When scholars criticize [Intelligent Design (ID)], they are not attacking religion. They are only asking ID proponents to be transparent in their agenda, accurate about their representations of scholarship, and willing to play by the same rules of peer review and quality control that legitimate scholars and scientists around the world follow every day.”

- Prof. Mark Chancey, SMU Daily Campus, Oct. 4, 2010. At the time, Dr. Chancey was chair of SMU’s Religious Studies department.

Notes

- Think:
 - think about the arguments of ID/Creationism as you listen to the next few lectures – why might ID/C be or not be a science? Keep the principles of the scientific method in mind:
 - a useful hypothesis explains things that an established one cannot, and makes predictions that differentiate it from the existing theory.
 - what are the predictions, and are they testable?
 - what are the tests? Are they feasible and repeatable by independent experimentalists?
 - Ask questions:
 - take advantage of the opportunity to ask questions you might have about what you have heard or what is discussed in lecture.