Reminders

• raw video footage due today
• Friday, December 4, 5pm
  – Final video due
  – Final paper due
• Next Monday: December 7
  – Watch videos, final evaluations
  – Bring your cameras and tripods back
  – No final grade until I receive hardware

• Online ICES now available.
  – You stop getting reminder emails once you’ve done the survey.
This course so far...

1. What is science?
2. Critical thinking
   Takeaway: Science provides a framework by which we can evaluate information and work towards rational, logical and accurate conclusions.
3. Examples/applications:
   - Alternative medicine
   - Climate change
   - Statistics
   - UFOs

I’m trying to talk about a way of thinking, not what to think.
Questions

Discuss the following with your neighbor:

1. Does science make assumptions?
   - If yes, what assumptions does science make?

2. Is religion necessarily at odds with science? Why or why not?
Science assumptions

- **Causality**
  - Things happen for a reason that is natural and explainable.

- **Observation**
  - Evidence from the natural world can be used to learn about those causes.

- **Consistency**
  - Given the same circumstances, we’ll see the same outcome.

- **Logic**
  - The rules of logic are valid.
Creationism, Evolution and Intelligent Design
Thanks to Eugenie Scott
National Center for Science Education
“Those afraid of the universe as it really is, those who pretend to nonexistent knowledge and envision a Cosmos centered on human beings will prefer the fleeting comforts of superstition.”
Creationism, evolution and ID

- Creationism (or “young Earth creationism”) follows the biblical description literally. Proponents believe that Earth is less than 10,000 years old.
  - Creationist argue that the fossil record, physics, chemistry and astronomical data is incorrect or misunderstood.

- Intelligent design says that species appeared spontaneously throughout history and that complexity in species was guided by a designer.
  - ID proponents argue that the fossil record is correct.
  - There are many variations of ID.

- Evolution states that species evolve, through mutation and natural selection.
“Human beings, as we know them today, developed from earlier species of animals.” [2008]

- Percentages answering TRUE:
  - 45% of Americans
  - 64% of South Koreans
  - 69% of Chinese
  - 70% of Europeans
  - 78% of Japanese
“The universe began with a big explosion”

- Percentages answering TRUE:
  33% of Americans in 2008

- In 1988, 54% of Americans answered TRUE to this question.
- In 1990, 32% answered TRUE.
- Why did the number change?

source
What is Evolution?

• Darwin hypothesized that species change over time.
  – Changes are random.
  – Environment “selects” beneficial changes, discards unhelpful changes.
  – Known as natural selection.

• Darwin DID NOT
  – Offer a mechanism for how the information is passed from generation to generation.
  – Offer a mechanism for random changes.
  – Offer a mechanism for how life began.
Science is testable

- Predictions of evolution:
  - There must be some mechanism that allows information to passed along.
  - There should be transitional fossils
Criticisms

- Gaps in evolution
- It’s just a theory
- Violation of freedom of speech
- Equation of Darwinism with atheism
- Why not teach the controversy?
Biblical Creationism
Creation Museum

virtual tour
EXPLORE OUR EXHIBITS IN HIGH RESOLUTION

CREATION MUSEUM
Prepare to believe.
Go Ahead, Touch This Dinosaur Fossil

This is a dinosaur leg bone found in Teton County, Montana.

Holograms were holographic dinosaurs.

That means they were plant eaters.

Can you tell how old this fossil is?

Fossils don’t come in a box. How old they are depends on what you’re trying to tell. Use your starting point and ask yourself how old the dinosaur is.

CLUE #1

Coal was there from the beginning. The earth was made in 6 days in the Bible. When and how? He made everything.

CLUE #2

The Bible says God created everything in 6 days. He created people and land animals on Day 6. Dinosaurs are land animals, so they were created on Day 6.

CLUE #3

Adam was the first man. He was created on Day 6. By adding up the ages of Adam, his sons, their sons, and so on, we can find that the earth is about 6,000 years old.

So, could this dinosaur fossil be millions of years old?

No! The earth is just thousands of years old, so the fossils cannot be millions of years old.

A closed eye god puts things on land billions of years ago.

Can you think of an event in the Bible where tides and seas of water flooded the whole earth?

Noah’s Flood, when God judged the world.
THE FLOOD REARRANGES THE EARTH

CONTINENTS MOVED RAPIDLY DURING THE FLOOD

BEFORE THE FLOOD

Rodinia

Rodinia breaks up

EARLY IN THE FLOOD

Pangaea forms under water

LATE IN THE FLOOD

Pangaea breaks up under water

TODAY

The Flood Begins

…the same day all the fountains of the great deep were broken up, and the windows of heaven were opened.
(Genesis 7:11)
CREATION SCIENTISTS TODAY

Today, thousands of creation scientists can be found in every discipline of science, and their numbers are rising rapidly. Here are just a few of the many PhD creation scientists doing research that supports God’s Word.

Steven A. Austin received his PhD in geology from Pennsylvania State University. His specialty is the sedimentary processes that form rock strata, fossils, and fossil fuels. Dr. Austin is well known for his research at Mount St. Helens documenting catastrophic geologic processes. He has also led 15 research expeditions to the Grand Canyon, and written numerous research papers.

Jason Lisle holds a PhD in astrophysics from the University of Colorado at Boulder and is a popular speaker for Answers in Genesis-USA. Dr. Lisle uses his knowledge of the heavens and his biblical perspective to proclaim the handiwork of God in lectures and books, including What Does the Bible Say About Astronomy? and Taking Back Astronomy.

David Menton holds his PhD in cell biology from Brown University and is a well-respected author and teacher. He is ‘Professor Emeritus’ of the prestigious Washington University School of Medicine in St. Louis. Dr. Menton has many published works and is one of the most popular speakers for Answers in Genesis-USA.

Georgia Purdom earned her doctorate from Ohio State University in molecular genetics and spent six years as a professor of biology at Mt. Vernon Nazarene University. Dr. Purdom is also a member of the American Society for Microbiology and the American Society for Cell Biology.

Andrew Snelling holds a PhD in geology from the University of Sydney and has worked as a consultant research geologist to organizations in both Australia and America. Author of numerous scientific articles, and editor of several volumes of research papers, Dr. Snelling is now the head of the Research Division of Answers in Genesis-USA.

Larry Vardiman earned his PhD from Colorado State University in atmospheric science. He has conducted research in the field of cloud physics and climate change for 35 years with the U.S. Air Force, the U.S. Bureau of Reclamation, and the Institute for Creation Research. He has authored over 30 scientific articles in various journals and conference proceedings.

Kurt Wise is the professor of science and theology at Southern Theological Seminary. He earned his PhD in geology from Harvard University and has published numerous articles on biblical geology. He has also written the book Faith, Form, and Time.
GOD’S WORD

PRESENT

GLOBAL FLOOD

CREATION

~6,000 years ago

“God said, ‘Let the earth bring forth... after its kind’”
(Genesis 1:11–24)

CREATION ORCHARD
• John Scopes

• Scopes taught evolution in a Tennessee classroom in violation of state law.

• He lost in court.

• Inherit the Wind is a good movie, but not an accurate portrayal of the court case.
  – It was Clarence Darrow and William Jennings Bryan

This 1925 photograph shows John T. Scopes in the year of his famous Monkey Trial. Only twenty-four when he agreed to stand trial, Scopes (1900–1970) found his life changed forever. In his 1967 autobiography, Center of the Storm, he wrote, “A man's fate, shaped by heredity and environment and an occasional accident, is often stranger than anything the imagination may produce.”
Because the primary purpose of the Creationism Act is to advance a particular religious belief, the Act endorses religion in violation of the First Amendment.
In the meantime, school boards and teachers should be strongly encouraged at least to stress the scientific evidences and arguments against evolution in their classes (not just arguments against some proposed evolutionary mechanism, but against evolution per se), even if they don't wish to recognize these as evidences and arguments for creation....

ICR Impacts 170, 8/87
Enter Intelligent Design

- In 1987, US Supreme Court said biblical creationism cannot be taught in public schools
  - Violation of church-state separation

- A new idea arose after the 1987 case.

- Intelligent Design argues that advanced life is too complex to have evolved through random mutation and natural selection.
Replacement of "creationism" with "intelligent design"

![Graph showing the replacement of "creationism" with "intelligent design" over time. The graph plots word count against publication dates, with a clear trend showing the decline of "creationism" and the rise of "intelligent design".]
Intelligent Design

- Irreducible complexity. Life is too complex to have evolved without guidance.

- ID does not dispute scientific understanding of the age of the Earth or Universe.

- Some ideas of evolution are ok. Species evolve, but addition of complexity requires designer.
  - In many cases, new species “appeared”

- ID proponents argue designer does not have to be God.

- ID opponents claim this is warmed over creationism.
Kitzmiller vs. Dover

• Dover, PA school board mandates that ID must be taught in school.
  – They argue that children are better educated if we “teach the controversy”
  – They also argue that evolution is “just a theory”
  – Interestingly, the Dover school board did not understand ID and were actually proponents of Young Earth Creationism.

• Lawsuit filed claiming this violates separation of Church and State.
  – Judge is George W. Bush appointee
Teaching about ‘ga’ violates church-state

By Anna Badkhen
Chronicle Staff Writer

Highlighting the growing national debate over the role of religion in public life, 11 Pennsylvania parents Tuesday filed a federal lawsuit challenging a local school district’s order to teach “intelligent design” to public high school students.

The requirement, they say, violates the religious liberty of parents, students and faculty and the constitutional separation of church and state.

On Oct. 18, the Dover Area School District Board voted 6-3 to make biology students at Dover Area High School “aware of gaps in the theory of evolution and include in ninth grade curriculum the theory of ‘intelligent design’”.

Area schools walk a fine line over religion

By Diana Fishlock
The Patriot-News

Religion still has a place in public schools, a fact in evidence during the holidays, but districts face a delicate balance in teaching it without promoting it or alienating students.

This time of year, midstate schools take different approaches. While some of the more religiously diverse communities revel in Christmas, Hanukkah and Kwanzaa, others avoid religious holidays altogether. Religion can’t be avoided when studying American history and culture, some area school officials say.

Derry Twp. teachers talk about traditions, including Christmas, Hanukkah and Kwanzaa, said Troy Porter, a school district spokesman.

FROM THE RULING:

“The citizens of the Dover area were poorly served by the members of the Board who voted for the [intelligent design] policy. It is ironic that several of these individuals, who so staunchly and proudly touted their religious convictions in public, would time and again lie to cover their tracks and disguise the real purpose behind the ID Policy.”

Historic ruling orders Dover to rescind policy

By Bill Sulon
Of The Patriot-News

In a sweeping and potentially landmark ruling, a federal judge Tuesday said that the Dover Area School District’s policy on intelligent design is unconstitutional and that the concept of intelligent design is unscientific and religious.

And in an unusually scathing rebuke, he called several former school board members who supported the policy liars.

U.S. Middle District Judge John E. Jones III, who presided over a six-week trial in Harrisburg, ruled that the intelligent design policy promotes religion and violates the U.S. and Pennsylvania constitutions. The First Amendment’s Establishment Clause bars government from
What’s next

• Biblical creationism can’t be taught

• Intelligent design can’t be taught.
  – Also ruled as not being science.

• Intellectual freedom.
  – Laws passed in Louisiana and Tennessee.
Louisiana “Science Education Act”

"...including, but not limited to, evolution, the origins of life, global warming, and human cloning..."

"...to create and foster an environment within public elementary and secondary schools that promotes critical thinking..."

"...shall not be construed to promote any religious doctrine, promote discrimination for or against a particular set of religious beliefs, or promote discrimination for or against religion or nonreligion..."

Tennessee HB368/SB893

"...including, but not limited to, biological evolution, the chemical origins of life, global warming, and human cloning..."

"...to create and foster an environment within public elementary and secondary schools that encourages students to explore scientific questions, learn about scientific evidence, develop critical thinking skills..."

"...helping students understand, analyze, critique, and review in an objective manner..."

"...shall not be construed to promote any religious or non-religious doctrine, promote discrimination for or against a particular set of beliefs or non-beliefs, or promote discrimination for or against religion or non-religion..."
Design?
Theory vs. Fact

• “Well, evolution is a theory. It is also a fact. And facts and theories are different things, not rungs in a hierarchy of increasing certainty. Facts are the world's data. Theories are structures of ideas that explain and interpret facts. Facts do not go away when scientists debate rival theories to explain them. Einstein's theory of gravitation replaced Newton's, but apples did not suspend themselves in mid-air, pending the outcome. And humans evolved from apelike ancestors whether they did so by Darwin's proposed mechanism or by some other, yet to be discovered.”

– Stephen Jay Gould
Standard Model

• Standard Model explains quarks, leptons, nuclei with spectacular precision.

• Example: muon g-2
  – Measured: $0.0011659208 \pm 0.00000000006$
  – Predicted: $0.0011659195 \pm 0.00000000007$

• The Standard Model makes precise predictions and has withstood 30 years of rigorous testing, yet we know it is incomplete.
  – It breaks down in certain situations.

• What do we do?
  – Do we invoke supernatural explanations?
Scientific Method

1. Observation and description of a phenomenon or group of phenomena.

2. Formulation of an hypothesis to explain the phenomena. In physics, the hypothesis often takes the form of a causal mechanism or a mathematical relation.

3. Use of the hypothesis to predict the existence of other phenomena, or to predict quantitatively the results of new observations.

4. Performance of experimental tests of the predictions by several independent experimenters and properly performed experiments.
• If it can’t be tested, it’s not science.
• If it doesn’t make predictions, it’s not science.
What about the origin of life?

- This is an important and interesting question.
- But it’s not a question about evolution.
- Current answer:
  - We don’t know.

- Responses?
  - Intervention from a creator?
  - Unknown is not unknowable?
Questions

Discuss the following with your neighbor:

1. Does science make assumptions?
   - If yes, what assumptions does science make?

2. Is religion necessarily at odds with science? Why or why not?
• **Claim:** 21 December 2012 will mark the end of the Mayan “long count” calendar
  - Predict end of the world

• **Scenarios**
  - Alignment
  - Geomagnetic reversal
  - Solar storms
  - Planet X/Nibiru

• **12% of people (international) believe the world will end in December**
  - Ipsos/Reuters poll

• **Conspiracy?**
  - NASA and the government are suppressing information about this event.

Thanks to David Morrison (NASA) for much of this information.
Galactic alignment

• What is “aligning” with what?

• Claims:
  – Planet alignment will cause a pole shift
  – Our solar system will align with the center of the galaxy

• Facts:
  – Magnetic field generated inside Earth. Other planets don’t affect it.
  – We have alignments all the time. No special alignments this December. How could the center of the galaxy matter to us?
The Milky Way Galaxy

100,000 light years

You are here (approximately)
Claimed Nibiru Photo actually V838 Mon

May 2002

September 2002
Nibiru over Australia

Nibiru on YouTube
Proof that Nibiru Does Not Exist

• Nibiru is claimed to be a planet larger than the Earth, or maybe a brown dwarf star, that will hit Earth on December 21, 2012. It is claimed to have an orbital period of 3600 yrs.

• If it will be here in two months, it would be the brightest object in the sky after the Sun and Moon, visible even in the daytime. Anyone could see it, and more than 100,000 astronomers would have been tracking it for years.

• Even if it were somehow hiding, the gravitation of such a massive planet would be changing the orbits of Mars and Earth.

• The stability of orbits of inner planets proves not only that Nibiru does not exist today, but that no massive objects have penetrated the inner solar system for millions of years.
Comet Elenin C2010/X1

- Discovered 12/10 by Russian amateur astronomer Leonin Elenin
- Faint long-period comet, perhaps on first pass near the Sun
- Perihelion in mid-Sep 2011, closest to Earth Oct 16
- Faded and began to break up in late Aug, never reappeared
Claims about Comet Elenin (2011)

Leonid Elenin (Russian astronomer) is not a real person
Name is a code for ELE = Extinction Level Event,
    NIN = Nibiru is Near
NASA is imposing news blackout, suppressing photos
NASA & JPL intentionally publish false orbital data
Caused 2010 Chile Earthquake & 2011 Japan Earthquake
Is not a comet but a massive brown dwarf
Orbit is changing to collide with Earth in mid-October, 2011
Accompanied by several UFOs who are controlling its orbit
Will block out Sun for 3 days on Sep 26-27-28, 2011
Is really Nibiru in disguise
Is really a precursor for Nibiru
2012 Doomsday

- No science supports the claims.
- No conspiracy.
- We’ll be here in January.

Concern is not whether Earth will be here. Concern is about people who believe Armageddon is around the corner.

To date: All doomsday claims have one thing in common. They’ve all been wrong.
9/11 Conspiracy

- Different groups make different claims about who was involved.
  - Scholars for 9/11 Truth
  - Architects and Engineers for 9/11 Truth
  - Scholars for 9/11 Truth & Justice
  - 9/11 Truth

- Main claims
  - Towers fell too fast
  - WTC Tower 7 fell and it wasn’t hit by a plane
  - Nano-thermite and explosives were used.
Truther Claims: Buildings Fall Too Fast

- The speed that the building is falling is \(~\)free-fall rate

- The building fell straight down (unexpected based on prior knowledge of the game jenga)
Debunked: Buildings Fall Too Fast

- Columns far outpace the collapse of the building; deceptive videos stop the timer of the fall at 10:09 when only the perimeter column hits the ground and not the building itself.
- The debris cloud falls faster than the building: proves the buildings fell well below free fall speed.
- Paper written by Dr. Frank Greening (http://www.911myths.com/WTCREPORT.pdf) takes the transfer of momentum into account. "Like a billiard ball being hit by another on a pool table, each floor transferred its momentum to the next as represented below. The more weight, the less resistance each floor gave."

- Fall times are well within the possibility for normal collapse.
- The collapse wasn't at free fall as conspiracy theorists suggest.

http://www.debunking911.com/freefall.htm
Moon Landing

Examples:
1. Waving flag
2. Shadows
3. Lack of impact crater
4. No stars in Earth picture
Images from NASA Lunar Reconnaissance Orbiter (Sept 2011)

Apollo 17 Landing Site
LROC NAC M168000580LR
Low Periapse orbit
Beware of bias

- When faced with new information, ask yourself this?
  - Is my conclusion based upon my prior beliefs?
- The answer is almost certainly “yes”
- You can’t overcome bias, but you can recognize it.
  - Stay open to alternate views.
  - Assess credibility of sources.
- Stay skeptical.