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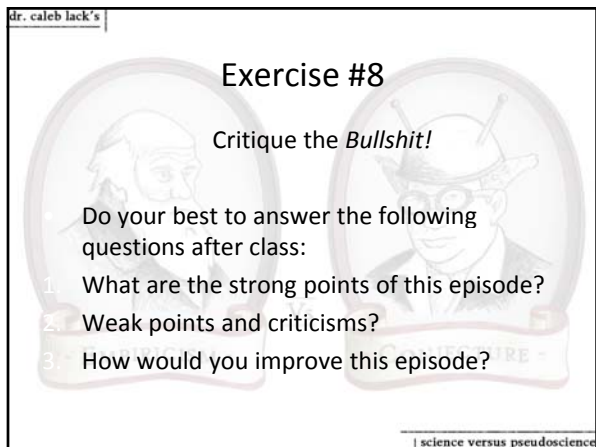
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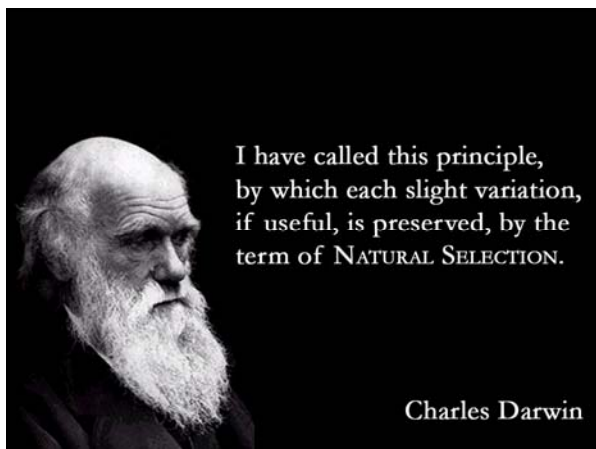
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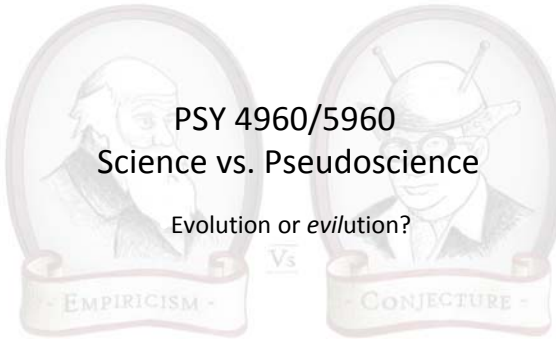
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dr. caleb lack's



PSY 4960/5960  
Science vs. Pseudoscience  
Evolution or *eviltion*?

science versus pseudoscience

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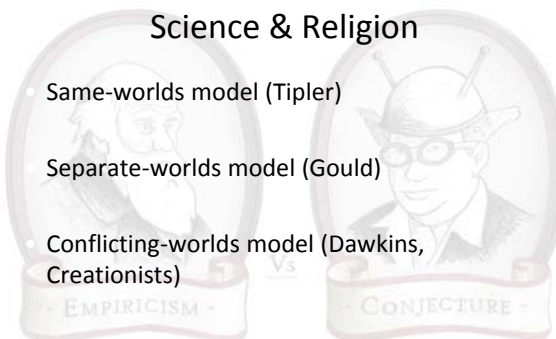
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Science & Religion

- Same-worlds model (Tipler)
- Separate-worlds model (Gould)
- Conflicting-worlds model (Dawkins, Creationists)

science versus pseudoscience

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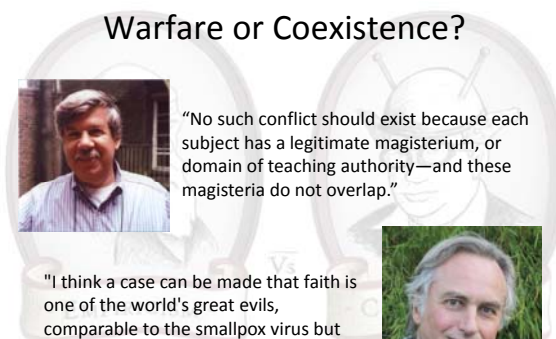
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Warfare or Coexistence?



"No such conflict should exist because each subject has a legitimate magisterium, or domain of teaching authority—and these magisteria do not overlap."



"I think a case can be made that faith is one of the world's great evils, comparable to the smallpox virus but harder to eradicate."

science versus pseudoscience

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### Warfare or Coexistence?

- “This monkey mythology of Darwin is the cause of permissiveness, promiscuity, pills, prophylactics, perversions, pregnancies, abortions, pornography, pollution, poisoning, and the proliferation of crimes of all types.”

Vs

Judge Braswell Dean  
Georgia Court of Appeals

EMPIRICISM Vs CONJECTURE

science versus pseudoscience

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### But...

- Use or misuse of a theory does not negate the validity of the theory itself
- Scientific theories are neutral, their use may not be
- These problems all existed long before evolutionary theory and Darwin
- Science should not matter to those who have strong faith, the two are different areas

Shermer (2002)

science versus pseudoscience

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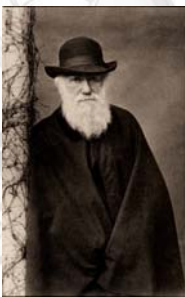
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### Warfare or Coexistence?

- “Science has nothing to do with Christ, except insofar as the habit of scientific research makes a man cautious in admitting evidence.”



Charles Darwin

EMPIRICISM Vs CONJECTURE

science versus pseudoscience

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### Warfare or Coexistence?



"Freedom of thought is best promoted by the gradual illumination of men's minds, which follow from the advance of science. It has, therefore, been always my object to avoid writing on religion, & I have confined myself to science."

science versus pseudoscience

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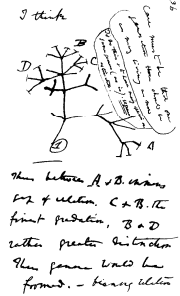
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### Tenets of Darwin's Theory

- Evolution
- Descent with modification
- Gradualism
- Multiplication of speciation
- Natural selection



I think  
then believe A & B. various  
sort of selection. C & D. the  
first production, B & D  
rather greater distinction  
than former would be  
formed. - Henry Aldrich

science versus pseudoscience

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### What is Evolution?

- Evolution is technically a change in the frequencies of genes found in a natural population
- Consequence of these changes is gradual descent with modification
- Evolution is *not* a theory of how life began
- Evolution is *not* a theory of how the universe began

Pigliucci (2002)

science versus pseudoscience

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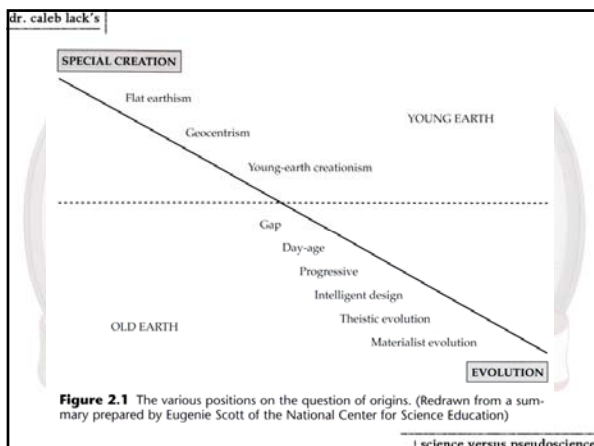
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### Evolutionary Fights

- Rate of change  
Punctuated equilibrium vs. gradualism
- Mechanism of change  
Exclusivity of natural selection vs. change at level of genes, groups, and populations
- No debate on **if** evolution occurs, but instead on **how** it occurs

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### “Arguments” and Answers

- “Intelligent design / creation-science is scientific and should be taught in science courses.”
- Science is not dogmatic
- Calling something a science does not make it so
- Science is subject to disproof and is falsifiable

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### "Arguments" and Answers

- "Science deals with the here-and-now and can't answer historical questions."
- What about geology, archaeology, paleontology, cosmology, and more?
- *Historical* and *empirical* sciences are still both sciences and can track causality

EMPIRICISM - CONJECTURE -

science versus pseudoscience

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### "Arguments" and Answers

- "We have a right to be heard and students should learn both sides of the argument."

It's not an argument

Should we also teach Native American, or Samoan, or Hindu creation stories in biology?

- Assumptions of creationism discount **all sciences**, not just evolution

EMPIRICISM - CONJECTURE -

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### "Arguments" and Answers

TEACH BOTH THEORIES... LET THE KIDS DECIDE.

CHEMISTRY ALCHEMY

MAGIC PHRENOLOGY

PHYSICS ASTROLOGY

ASTRONOMY

EMPIRICISM - CONJECTURE -

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### "Arguments" and Answers



—So MUCH FOR TODAY'S BIOLOGY LESSON ON "INTELLIGENT DESIGN,"  
TURNING NOW TO THE SUBJECT OF "INTELLIGENT GEOGRAPHY..."

science versus pseudoscience

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### "Arguments" and Answers

- "Evolution by natural selection is tautological."
- Natural selection makes testable and falsifiable predictions
- Fossils are not dated with rocks which are dated with fossils – fossils are dated based on geological strata which is *nonrandom*

EMPIRICISM CONJECTURE

science versus pseudoscience

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### "Arguments" and Answers

- "It's either evolution or creationism. If evolution is false, then creationism is true."
- False dilemma, anyone?
- Other alternatives are available
- There is, however, a very real dichotomy between natural causation and supernatural design

EMPIRICISM CONJECTURE

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### "Arguments" and Answers

- "Creationism is science too!"
- Creationism rejects *a priori* the possibility of naturalistic explanations of the world
- Science rejects supernatural intervention for methodological reasons – if God can do whatever He wants when He pleases, what kind of research would we be able to do?

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### "Arguments" and Answers

- What ID proponents call "design" is instead the result of an organism's adaptation to a particular ecological niche
- Science is a method used to uncover and provisionally explain observations about the world, as well make predictions for the future.

Pigliucci (2002)

science versus pseudoscience

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### "Arguments" and Answers

- "Evolution is the root cause of all of America's problems!"
- *Reductio ad absurdum* fallacy

EMPIRICISM vs CONJECTURE

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## Reductio Ad Absurdum!

- Evolution implies there is no God, therefore
- Belief in evolution leads to atheism, therefore
- Without a belief in God there can be no morality or meaning, therefore
- Without morality and meaning there is no basis for a civil society, therefore
- Without a civil society we will be reduced to living like brute animals.

| science versus pseudoscience

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## Reductio Ad Absurdum!

- If this is true, then the printing press is responsible for World War II

One cannot accuse science of solving problems outside its domain (e.g., moral concerns) – this is akin to blaming sports for not telling us the meaning of life!

| science versus pseudoscience

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**PHILOSOPHICAL**

**EVOLUTION**

**UNBELIEF**

"A GOOD TREE CANNOT BRING FORTH FAULTY FRUIT; CAN A FIG TREE BRING FORTH GOOD FRUIT?" MATTHEW 11:18

NO GOD  
SIN  
MORAL RELATIVITY  
MORAL AGNOSTICISM  
MORAL SKEPTICISM  
MORAL nihilism  
MORAL nihilism  
MORAL nihilism  
MORAL nihilism

Figure 5.1 The "tree of unbelief," representing how creationists see the connections among atheism, evolution, and a series of real or alleged malaises of modern society. (Courtesy of the Skeptic Society)

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### "Arguments" and Answers

- "Evolutionary science is just another religion."

Religion involves the supernatural in some degree, requires faith, and is non-testable

- Science deals with physical world, focuses on empirical knowledge, and makes testable claims

science versus pseudoscience

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### "Arguments" and Answers

- "If evolutionists can't even agree on the theory, then it is wrong."

But wait, don't people debate the meaning of passages in the Bible and other holy books?

- Scientific debate is part of its self-correcting nature and is normal

science versus pseudoscience

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### "Arguments" and Answers

- "The cause of X must be X-like...therefore our intelligence requires an intelligent designer."

Manure is a fertilizer, but plants that grow in it are not manure-like

- What about all the unintelligent design out there?

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Male nipples  
 Remnant of a male uterus  
 Thirteenth rib in 8% of the population  
 Coccyx (tailbone)  
 Wisdom teeth  
 Appendix (used to digest cellulose)  
 Body hair  
 Goose bumps  
 Extrinsic ear muscles  
 Third eyelid (corner of our eye as a tiny fold of flesh)

Vs

science versus pseudoscience

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THORACIC CERVICAL  
 LOWER BACK WITHOUT MUSCLES/POSTURE  
 UPPER BACK  
 THORACIC SPINE  
 LOWER BACK WITH MUSCLES  
 LOWER LIMBS WITH MUSCLES  
 LOWER LIMBS WITHOUT MUSCLES

Figure 2.2 A conceptual representation of how human beings should look if they were better adapted to their environment, and in particular if they were to cope better with advanced age. (From S. J. Ohlshansky, B. A. Carnes, and R. N. Butler, "If Humans Were Built to Last," Scientific American 284(3) (2001): 50-53)

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## "Arguments" and Answers

- "Something cannot come from nothing. Where did the energy for the Big Bang come from? The first life on Earth?"
- Evolution does not answer the "ultimate" questions posed above
- Instead, it gives a mechanism for how things change over time
- This, however, does not mean that creationism "wins by default" – this is an argument from ignorance

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### "Arguments" and Answers

- "What about population growth curves? Using today's estimates, there would have only been two people in 4300 BCE...around the time of Adam and Eve."
- Assumes steady rate of increase, which has only happened since mid 1800s
- Would mean only 600 people were alive in 2600 BCE, which contradicts all known facts

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### "Arguments" and Answers

- "Natural selection only accounts for micro-, not macro-evolution."

Mutants are not monsters

Most genetic changes are at a micro-level, but over time and with separation from other populations, speciation can occur very easily (e.g., allopatric speciation)

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### "Arguments" and Answers

- "Where are the transitional fossils?"



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## "Arguments" and Answers

- "Evolution violates the Second Law of Thermodynamics, which says that things move towards entropy over time."
- This would be true if the Earth was a closed system, but it's not:



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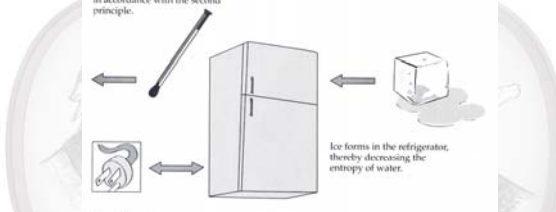
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During use, the refrigerator loses heat because it is not a perfectly efficient machine, in accordance with the second principle.

Ice forms in the refrigerator, thereby decreasing the entropy of water.

The refrigerator uses energy to cool down its content, thereby increasing the entropy of the universe, in accordance with the second principle.

**Figure 6.1** A schematic explanation of why a refrigerator, a system that dramatically decreases entropy, does not violate the second principle of thermodynamics. Note that the fact that humans designed the refrigerator does not invalidate its use as an example in favor of evolution. If we were able to construct something that *did* violate the second principle, we would have a powerful argument against evolution by natural means.

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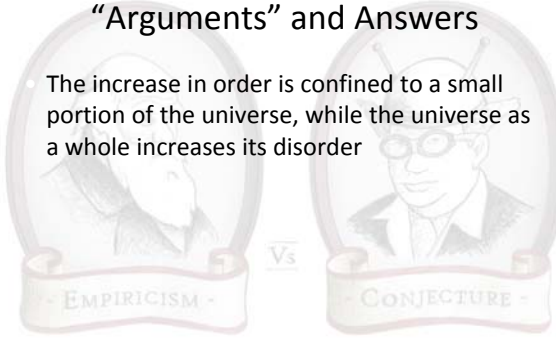
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## "Arguments" and Answers

- The increase in order is confined to a small portion of the universe, while the universe as a whole increases its disorder



EMPIRICISM

Vs

CONJECTURE

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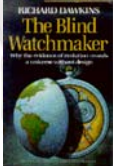
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### "Arguments" and Answers

- "Something as complex as the human eye could not have evolved by random chance. And what good would only part of an eye be?"
- Very true, because natural selection is not random chance
- [The evolution of the eye](#)



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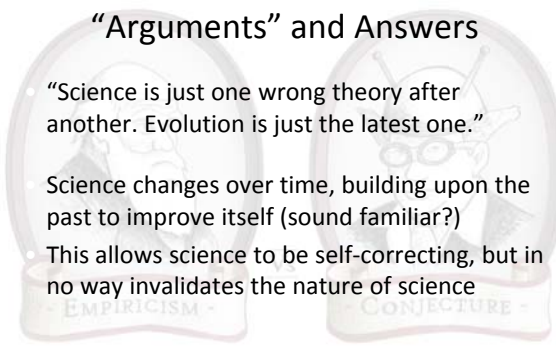
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### "Arguments" and Answers

- "Science is just one wrong theory after another. Evolution is just the latest one."

Science changes over time, building upon the past to improve itself (sound familiar?)

- This allows science to be self-correcting, but in no way invalidates the nature of science



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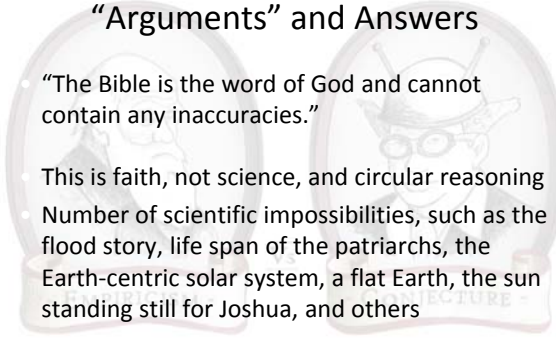
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### "Arguments" and Answers

- "The Bible is the word of God and cannot contain any inaccuracies."

This is faith, not science, and circular reasoning

- Number of scientific impossibilities, such as the flood story, life span of the patriarchs, the Earth-centric solar system, a flat Earth, the sun standing still for Joshua, and others



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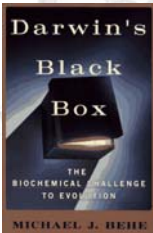
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## A Final Word From Our Sponsor

- "I quite agree that my argument against evolution does not add up to a logical proof."
- Dr. Michael Behe
- Senior Fellow
- Discovery Institute



EMPIRICISM

LECTURE

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## My Thoughts? Glad You Asked!

- One should teach both evolution and creation-science in school
- Evolution in science class, creation-science in philosophy or sociology or religion courses

If this non-science is taught as science, what stops the other pseudosciences from being included?

EMPIRICISM

LECTURE

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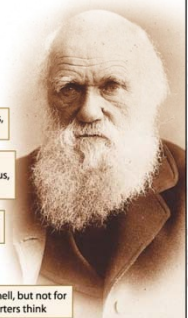
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## Intelligent Design Trial

A debate has arisen over a Pennsylvania school board's decision to teach both intelligent design and evolution in the classroom. Here are some highlights from the trial:

- ▶ Defense asks that scientific facts be stricken from record
- ▶ Beautiful painting of God creating universe with anvil and hammer admitted as evidence
- ▶ Defense appeals to jury's reason, fairness, and fear of eternal damnation
- ▶ Final deliberations interrupted twice by mailmen, first bearing kids' letters to Jesus, then bearing kids' letters to Darwin
- ▶ Monkey called as witness fails to identify anyone in courtroom as his descendant
- ▶ Darwin found guilty on all charges
- ▶ It is proven that this country is going to hell, but not for the reasons the intelligent-design supporters think



The Onion

science versus pseudoscience

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IF WE ARE GOING TO TEACH  
**CREATION SCIENCE** AS AN  
ALTERNATIVE TO *EVOLUTION*,  
THEN WE SHOULD ALSO  
TEACH THE **STORK THEORY**  
AS AN ALTERNATIVE TO  
*BIOLOGICAL REPRODUCTION*.

JUDITH HAYES

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