

ASA extends thanks to Program Chair, David Wilcox, and Local Arrangements Chair, Gerald Hess, and to all those who have lent their support to this year's Annual Meeting.

**Registration & Information** in Eisenhower  
Campus Center Lobby:

|           |                              |
|-----------|------------------------------|
| Friday:   | 1:00-5:00 PM<br>7:00-9:00 PM |
| Saturday: | 8:00-9:30 AM<br>1:00-2:00 PM |
| Sunday:   | 1:00-2:00 PM                 |
| Monday:   | 9:00-11:00 AM                |
| Checkout: | 1:00-4:00 PM                 |

Information about the American Scientific Affiliation can be obtained at the literature table at the meeting, or by writing the National Office at

American Scientific Affiliation  
P.O. Box 668  
Ipswich, MA 01938



The 45th  
Annual Meeting  
of the

**American  
Scientific  
Affiliation**

August 3-6, 1990

Messiah College  
Grantham, Pennsylvania

1990 Theme:

Viewing The Natural World As Creation

45th Annual Meeting of the ASA  
 August 3-6, 1990  
 Messiah College  
 Grantham, Pennsylvania

**Viewing the Natural World  
 As Creation**

**Friday, August 3**

- 1-5:00 PM **Registration** (Eisenhower Campus Center Lobby)  
 5-6:00 PM **Dinner** (Nelson Dining Hall)  
 7-9:00 PM **OPENING SESSION** (Brubaker Auditorium South) Chairperson, Howard Van Till, Calvin College, President, ASA  
**Welcome:** President D. Ray Hostetter, Messiah College  
**Announcements:** Gerald Hess  
**Lecture:** "Viewing the Natural World as Creation: A View From the Nineteenth Century"—David Livingstone, Prof. of the History of Science, Queens University, Belfast, Ireland.  
 9:00 PM **Mixer** (Nelson Dining Room)

**Saturday, August 4**

- 7:00-8:00 AM **Breakfast** (Nelson Dining Room)  
 8:00-8:45 AM **Devotions** (Brubaker Aud. S.)  
 9:00 AM **PLENARY SESSION** (Brubaker S.)  
**Lecture:** "Viewing the Natural World As Creation: A View From the Early Church"—Duane Priebe, Prof. of Theology & Academic Dean, Wartburg Seminary, Dubuque, Iowa.  
 10:30 AM **Panel Discussion**  
 12:00-1:00 PM **Lunch** (Nelson Dining Room)  
 1:30-4:20 PM **PARALLEL SESSIONS I**  
**IA—Creation & Education** (Brubaker Aud. S.)  
**Chair:** Gerald Hess, Messiah College, Grantham, PA  
 1:30-1:50 PM **John Wiester**, Buellton, CA: "Is Evolution Evolving Into A Religion?"  
 1:50-2:10 PM **J. David Price**, Springville, CA: "The California Science Frame-

- work & Its Implications for Science Education."  
 2:10-2:30 PM **Daniel Wonderly**, Oakland, MD: "Why Was the Anti-Creationism Movement Able to Arise So Rapidly Following the Arkansas Creation Trial?"  
 2:30-2:50 PM **Roland Bagby**, Univ. of Tennessee, Knoxville, TN: "Does God Approve of Teaching Evolution?"  
 2:50-3:20 PM **Break**  
 3:20-3:40 PM **Sherman Kanagy**, Purdue Univ.-N. Central, Valparaiso, IN: "Is the Use of Science in Religious Apologetics Merely a Form of Scientism?"  
 3:40-4:00 PM **John W. Stahl**, Geneva College, Beaver Falls, PA: "The Bible's Use of Object Lessons From the Natural World."  
 4:00-4:20 PM **Eric Moore**, Upper Canada College, Don Mills, ONT: "Imagination in the Teaching of Science."  
 (concurrent) **IB—Design in the Physical Cosmos** (Church Fellowship Hall)  
**Chair:** Robert Herrmann, Gordon College, Wenham, MA  
 1:30-1:50 PM **George Murphy**, St. Mark Lutheran Church, Tallmadge, OH: "The Origin of Matter and Pattern in Modern Cosmology."  
 1:50-2:10 PM **Jerry Bergman**, Northwest Tech. College, Archbold, OH: "High Energy Physics at the Crossroads."  
 2:10-2:30 PM **Dillard W. Faries**, Wheaton College, Wheaton, IL: "Objectivity & Objective Reality in Darwin, Evolution, Modern Physics & an Understanding of God."  
 2:30-2:50 PM **Norman Shank**, Messiah College, Grantham, PA: "Implications of a Creative Cosmos: Modeling Causes."  
 2:50-3:20 PM **Break**  
 3:20-3:40 PM **Paul Adams**, Univ. of Michigan—Flint: "Chance Within Design."  
 3:40-4:00 PM **Adam Drozdek**, Duquesne Univ., Pittsburgh, PA: "Awe & Arrogance in Science."  
 4:00-4:20 PM **Gene Chase**, Messiah College, Grantham, PA: "Mathematics As Created: Four Thesis."  
 4:30-5:30 PM **Annual Business Meeting** (Brubaker Aud. South)  
**Chair:** Howard Van Till, President, ASA  
 6:30-8:30 PM **Banquet** (Brubaker Aud. North)

**Chair: Walter R. Hearn,**  
New College, Berkeley, CA  
**Speaker: Phillip Johnson,** Univ.  
of California, Berkeley

8:30 PM **Meeting:** Editorial Board,  
*Perspectives on Science & Christian Faith* (Eisenhower E4)

**Sunday, August 5**

6:30-7:30 AM **Breakfast** (Nelson Dining Room)

7:30-8:30 AM **Worship** (Brubaker Aud. S.)

8:30-11:30 AM **Visit to Gettysburg**

12:30-1:30 PM **Dinner** (Nelson Dining Room)

2:00-4:15 PM **SYMPOSIUM** (Brubaker Aud. S.)  
"Teaching Evolution in the  
Science Classroom: Education  
or Indoctrination?"

**Chair: David Wilcox,** Eastern  
College, St. Davids, PA  
**Phillip Johnson,** Prof. of Law, Univ.  
of California, Berkeley  
**Howard Van Till,** Prof. of  
Astronomy, Calvin College,  
Grand Rapids, MI

**PARALLEL SESSIONS II**

**IIA- What is Man?**  
(Brubaker Aud. S.)

**Chair: Stanley Lindquist,**  
California State Univ., Fresno

4:30-4:50 PM **Edwin Olson,** Whitworth College,  
Spokane, WA: "A Case for Dual-  
ism as the Correct Way to Under-  
stand Human Nature."

4:50-5:10 PM **Dick Fischer,** Arlington, VA:  
"Finding Adam's Historical Niche:  
Clues From Scripture."

5:10-5:30 PM **David Wilcox,** Eastern College,  
St. Davids, PA: "Adam, Where  
Are You? A Paradigm Shift in  
Paleoanthropology: Mitochon-  
drial DNA vs. The Establishment."

5:30-5:50 PM **David F. Siemens,** Los Angeles  
Pierce College: "The  
Uncreative Creator of the  
Creationists."

(concurrent) **IIB- Alternate Views of The  
Creation** (Brubaker Aud. N.)

**Chair: Elizabeth Zipf,** BIOSIS,  
Barrington, NJ

4:30-4:50 PM **Ted M. Beverly,** Toronto, ONT:  
"Viewing the Natural World As  
Creation: A View From Early  
Judaism (400BC-200AD)."

4:50-5:10 PM **Edwin Yamauchi,** Miami  
University, Oxford, OH: "Gnostic  
Views of Creation."

5:10-5:30 ? PM **Kurt Wood,** Rohn & Haas Co.,  
Spring House, PA: "The Scientific  
Exegesis of the Qur'an: A Case  
Study in Relating Science and  
Scripture."

5:30-5:50 ✓ PM **Edward B. Davis,** Messiah  
College, Grantham, PA: "A  
Whale of a Tale: Fundamentalist  
Fish Stories."

(concurrent) **IIC- Creation & the Philosophy  
of Science** (Eisenhower E4)

**Chair: Wilbur Bullock,** Univ. of  
New Hampshire, Durham, NH

4:30-4:50 ✓ PM **Kurt P. Wise,** Bryan College,  
Dayton, TN: "Lost Foundations:  
Scripture and the Assumptions of  
Science."

4:50-5:10 ✓ PM **Jeff Mullins,** ST Systems Corp. &  
Liberty Univ, Lynchburg, VA:  
"Creation Science: Science,  
Pseudoscience, or Disguised  
Religion?"

5:10-5:30 ? PM **Will Duke,** Southwestern College,  
Phoenix, AZ: "Elements of a  
Christian Philosophy of Science."

5:30-5:50 PM **W. Jim Neidhardt,** NJ Institute of  
Technology, Newark, NJ: "One  
Scientist's Reflections on the  
Contribution of Harold P.  
Nebelsick to the Science/  
Theology Dialogue."

6:00-7:00 PM **Supper** (Nelson Dining Room)

7:30-9:30 PM **DISCUSSION GROUPS** (locations  
to be announced)

1. **Edward B. Allen,** Systems En-  
gineer, Glenbeigh, Inc., Industrial  
& Engineering Ethics Commission:  
"OVERRULED: Ethics of the  
Challenger Disaster."

2. **Jerry Bergman,** Biology, North-  
west Tech. College, Archbold,  
OH: "Natural Selection & the  
Eugenics Movement."

3. **Kenneth J. Dormer,** Physiology,  
Univ. of OK School of Medicine:  
"Animal 'Rights' vs. Human  
Needs."

4. **Harold Hartzler,** Physics, Mankato  
State Univ., Retired: "The New  
Age Movement."

5. **Stanley Lindquist,** Psychology,  
Link Care Center, Calif. State  
Univ., Fresno, CA: "Application  
of Scientific Expertise to the  
Missionary Enterprise."

*scientific  
and biology  
theological  
creation has  
functional capacity  
in origin  
here*

*E4 below*

- |     |  |              |    |   |
|-----|--|--------------|----|---|
| 6.  | <b>Terry Morrison</b> , Director of Faculty Ministries, InterVarsity Christian Fellowship: "Ministry to Tertiary Education: Opportunities/Responsibilities of College Professors." | 11:20-11:40  | AM | "Computer Simulations of Evolution."<br><b>Wilbur Bullock</b> , Univ. of New Hampshire, Durham, NH: "The Origin of Species & the Cause of Disease."                       |
| 7.  | <b>Donald Munro</b> , Biology, Houghton College, Houghton, NY: "Concerns of the Bioethics Commission."   | 11:40-12:00  | PM | <b>Stanley Rice</b> , The King's College, Briarcliff Manor, NY: "Shared Themes in Biology & Christian Theology."  |
| 8.  | <b>George L. Murphy</b> , Philosophy, St. Mark Lutheran Church, Tallmadge, OH: "Creation Today & Tomorrow (and not just yesterday)."   | (concurrent) |    | <b>IIIB—Living in the Creation</b> (Brubaker Aud. N.)<br><b>Chair: Kenneth J. Dörner</b> , Univ. of OK School of Medicine, Oklahoma City, OK                              |
| 9.  | <b>John Studenroth</b> , Paleobotany, Hatfield, PA: "The Frequent Invoking of Convergent Evolution in Macroevolutionary Schemes"   | 8:50-9:10    | AM | <b>Stanley Lindquist</b> , California State Univ., Fresno, CA: "Counselling Techniques for Third World Cultures: Limitations of Psychological & Linguistic Applications." |
| 10. | <b>Jack Swearingen</b> , Scientific Advisor for Arms Control, Dept. of Defense, Washington, DC: "The Peace Dividend: Arms Control & the Christian."                                | 9:10-9:30    | AM | <b>Jack C. Swearingen</b> , Office of the Secretary of Defense, Washington, DC: "Arms Control & the Kingdom of God."  |
| 11. | <b>Edwin Yamauchi</b> , History Dept., Miami Univ., Oxford, OH: "Biblical Archaeology."  | 9:30-9:50    | AM | <b>William M. Jordan</b> , Louisiana Tech. Univ., Ruston, LA: "Teaching Ethics to Engineers."   |
|     |  | 9:50-10:10   | AM | <b>Tomuo Hoshiko</b> , Case-Western Reserve Univ. School of Medicine, Cleveland, OH: "Transgenic Animals: Medical Marvel or Slippery Slope?"                              |

## Monday, August 6

- |             |    |  |             |                           |
|-------------|----|--|-------------|---------------------------|
| 7:00-8:00   | AM | <b>Breakfast</b> (Nelson Dining Room)  |             |                           |
| 8:15-8:45   | AM | <b>Devotions</b> (Brubaker Aud. S.)  |             |                           |
| 8:50-12:00  | PM | <b>PARALLEL SESSIONS III</b><br><b>IIIA—Adequacy of the Evolutionary Vision</b> (Brubaker Aud. S.)<br><b>Chair: Norman Shank</b> , Messiah College, Grantham, PA | 10:10-10:40 | AM                        |
| 8:50-9:10   | AM | <b>Wayne Frair</b> , The King's College, Briarcliff Manor, NY: "Homology: Where Is It Going?"  | 10:40-11:00 | AM                        |
| 9:10-9:30   | AM | <b>Gordon Mills</b> , Univ. of Texas Medical Branch, Galveston, TX: "Protein Similarities & Ancestral Relationships."  | 11:00-11:20 | AM                        |
| 9:30-9:50   | AM | <b>Uko Zylstra</b> , Calvin College, Grand Rapids, MI: "Living Things as Hierarchically Organized Structures."   | 11:20-11:40 | AM                        |
| 9:50-10:10  | AM | <b>Peter Rüst</b> , Lanzenhäusern, Switzerland: "How Has Life & Its Diversity Been Produced?"  | 11:40-12:00 | PM                        |
| 10:10-10:40 | AM | <b>Break</b>   | 12:00-1:00  | PM                        |
| 10:40-11:00 | AM | <b>Charles Thaxton</b> , Julian Center, Julian, CA: "Intelligent Design."  | 1:30-4:30   | PM                        |
| 11:00-11:20 | AM | <b>Robert C. Newman</b> , Biblical Theol. Seminary, Hatfield, PA:  | 1:30-4:30   | PM                        |
|             |    |  |             | <b>Geology Field Trip</b> |

## CHANCE WITHIN DESIGN

Paul Adams  
University of Michigan  
Flint, MI

Chance is often placed in opposition to design. This perspective is a principal reason why evolution is a problem to many Christians. But such a view of chance is too limited. It recognizes neither the varieties of chance nor the useful role that chance can serve within a larger framework of design.

Actually, the recognition of chance occurrences within design is not foreign to Christians in other aspects of divine creation. The creation of the individual is built upon genetic chance, and the creation of history is built upon providential chance. When these are appreciated, the role of chance within cosmic creation becomes much less threatening.

*Scientific (Proximate) Chance*  
*having no assignable cause*  
*Determinate cause (dice)*  
*Indeterminate " (electrons)*

*Philosophic (Ultimate) Chance*  
*having no determining cause*

*Divine Providence - controlling influence in human history*

*How is purpose accomplished by God?*  
*In + through random events.*

- 1. Chance origin of individuals Pp. 139:19*  
*Scientists - genetics - random chance (proximate)*
- 2. Chance occurrences in history II Chron 18 drew bow @ random*
- 3. Seeming inefficiency in Providential Space + Time*  
*Why did God wait so long from promise to Adam + Eve?*  
*In the fullness of time.*

## DOES GOD APPROVE TEACHING EVOLUTION?

Roland M. Bagby  
University of Tennessee  
Knoxville, TN

This is a serious question for those of us who are Christians teaching biological sciences in a secular institution. Our secular peers usually expect Darwinian evolution to be taught as if it were a proven fact, but many of our Christian peers expect us to espouse a recent-creation point of view which precludes serious consideration of evolution. Which of these approaches is correct?

According to scientist and Christian author Alan Hayward (Hayward, Creation and Evolution, The Facts and the Fallacies, Triangle SPCK, London, 1985), neither approach is correct, and he gives overwhelming evidence to back up his conclusions. Instead, in his view, the scientific evidence points to a succession of life forms over millions of years, but the observed succession is inadequately explained by the proposed biological mechanisms, better explained by the activity of a Creator.

The Bible tells us that the universe reveals God as Creator (Psalm 19:1-2, Romans 1:18-20). The scientific method is designed to discover the truth about the material universe. Instead of condemning science itself when someone misuses science to "prove" a preconceived view (e.g., atheism), Hayward would make him/her accountable to the scientific method, because science, properly utilized, will reveal God's hand. Therefore, I believe that both the secular institution and God should approve of using Hayward's approach to teach evolution because he recognizes that encouraging good, objective science is consistent with acknowledging a Creator.

## HIGH ENERGY PHYSICS AT THE CROSSROAD

Dr. Jerry Bergman  
Northwest Tech. College  
Archbold, OH

The developments in the area of high energy physics have been rapid, especially in the past couple of years, as illustrated by the search for the top quark. A review of this field of research is covered, especially that completed in the past decade, in an effort to understand the energy-matter reality, and the basis for the world as we know it. This information is then related to the aspect hypothesis and the anthropic principle, specifically that the universe, and especially the earth's corner of it, seems to be made for human life and, indeed, if conditions were much different, human life or any life would not be able to exist. The structure of matter has been found to be far more complex than imagined just a few years ago. This increased complexity poses new challenges to naturalistic interpretations of the origins, existence and maintenance of the reality which we see around us. Various theories have been developed to account for the complexity found in the living world, such as natural selection, genetic drift and related. Within the physical world, these mechanisms are wholly inadequate. This has resulted in, in some circles, a revival of the Palley's watch hypothesis, and also a revival in attempts to deal with it, such as Dawkins, the blind watchmaker hypothesis. These are reviewed, as well as the author's hypothesis relative to the state of high energy physics.

VIEWING THE NATURAL WORLD AS CREATION:  
A VIEW FROM EARLY JUDAISM (400 B.C. - 200 AD)

Ted Beverley  
Toronto, Ontario

As the title indicates the paper will focus on what Judaism, after the close of the Old Testament until the time of the writing of the Mishnah, understood by the term 'creation' and how Genesis Ch. 1-3 was interpreted. Because of time etc. the following topics are suggested: 1. Examine one theme of creation from the Apocrypha book, Wisdom of Solomon, on God's creating everything by "measure, weight, and height". 2. Examine Philo's understanding of the creation of the universe and man. 3. Examine early rabbis understanding of creation as reflected in the Mishnah.

A brief background introduction to the two primary sources used in understanding creation will be given by the use of charts showing (a) the OT passages used and (b) the Greek philosophy used to interpret (a). Next will be charts briefly outlining the types of literature produced, their titles and dates written during the period under study. Then, through exposition and some charts, the views of Wisdom, Philo and the early rabbis on creation will be outlined. Some conclusions and suggestions for future research will round off the lecture.

Aside from the exciting prospect of dealing with Jewish views prior or contemporary to Christ the topics chosen will illustrate Wisdom and Philo's importance to the Church. Philo is regarded as the Father of Jewish and Christian philosophy and therefore influenced the Church Fathers. Wisdom was clearly known to Paul and may have influenced his theology. Understanding early Jewish thought may help us to understand how Jesus' understood Genesis. Also, an understanding of the early Jewish controversies over Genesis may help us put our Genesis debate into perspective.



GENESIS AND HUMAN ORIGINS:  
COMPARING SCIENCE AND SCRIPTURE

John A. Bloom  
Annenberg Research Institute  
Hatfield, PA

The purpose of this lecture is to provide to a non-specialized audience a general review of the recent advances in paleontology, anthropology, and biochemistry that impact on secular models of human origins. Various suggestions for integrating the new scientific data with the Biblical account will be reviewed.

THE ORIGIN OF SPECIES AND THE CAUSE OF DISEASE:  
A Tale of Two Theories

Wilbur L. Bullock  
University of New Hampshire  
Durham, NH

Christians who are committed to the Scriptures as the Word of God are rightfully concerned with human theories that claim to disprove the Bible and thereby to justify a watered down gospel or even atheism. While Christians have been involved for many years in critically evaluating "the Theory of Evolution", we have often accepted other naturalistic theories that likewise, when not carefully applied, push God out of our lives and out of our theorizings. One such theory is "the Germ Theory of Disease", an obvious explanation of such a large proportion of the diseases of plants and animals and humans that we all too often minimize or forget the role of our sovereign God.

The purpose of this paper is to examine the theological and the naturalistic/scientific explanations of disease and to remind ourselves and others of the inadequacies of human theories. We need to continually marvel at the greatness of our God and the awesome intricacies of His creation. We will summarize the theories involving the four humors (blood, phlegm, black bile, and yellow bile), miasms, and contagia. We will also survey the historical and the scientific developments that led to the acceptance of the Germ Theory in the late nineteenth century. Lastly we will comment on the theological implications - both past and present - of the Germ Theory in the light of Christian antagonism to "evolution" as a vehicle for defending the God of Scripture, the Creator and Sustainer of all things.

## MATHEMATICS AS CREATED: FOUR THESES

Gene B. Chase  
Messiah College  
Grantham, PA

The theme of the unreasonable effectiveness of Mathematics in the natural sciences has been described by various authors--Eugene Wigner, R. W. Hamming, and J. T. Schwartz just to name three. [Full citation of such articles is in footnote 2 of the enclosed article.]

I would like to argue for the reasonable effectiveness of Mathematics in the natural sciences because of the way in which Mathematics is able to formalize intuitions, including contradictory intuitions.

The following four theses sound harmless enough if an experimental science is substituted for Mathematics in each statement. They are more inflammatory when applied to Mathematics.

1. The meaning of Mathematics must be found outside of Mathematics.
2. Mathematics can be accurate but cannot be complete.
3. Mathematical intuitions are trainable.
4. Two theories within Mathematics can be contradictory and still both describe the world.

These theses taken together make of Mathematics not the description of a Kantian universe that exists independently of our knowing it. They make of Mathematics a precise metaphor of our knowing it.

I propose to illustrate my thesis with a collection of historical examples in which intuitions precede the formalization, an intuition which in each case contradicts the mathematics of time. In historical order, here are three such examples. Infinitesimals, although used by mathematicians from Archimedes to Newton, were distrusted during the Age of Analysis, and didn't get put on a firm foundation until this century by mathematical logicians. The Dirac delta function is not really a mathematical function; in fact it had no consistent representation mathematically until it was put on a firm foundation as a distribution. Computer programming language semantics was used informally by Christopher Strachey even though the mathematical objects he used were contradictory, until Dana Scott's topology put it on a firm foundation.

Because each of the examples that I have considered so far have something to say about our ability to deal with infinite objects, a conclusion about there being room for man's creativity because of Creation's infinity is in order.

WHALE OF A TALE: FUNDAMENTALIST FISH STORIES

Edward B. Davis  
Messiah College  
Grantham, PA

According to a persistent story often encountered in fundamentalist circles, an English sailor was swallowed by a whale in the late 19th century and lived to tell the tale. There are in fact at least two quite contradictory versions of the story, which is almost certainly a hoax initiated by the sailor himself. I will review these stories, together with the story of my own attempt to uncover the real story. The talk will be informal, and will conclude with a request for help in locating additional versions of the story.

James Bartley by 3 whs back to normal mind  
skin bleached white (continues)

in N.Y. Times

but not the Bill Emy. (article by Ambrose Wilson)

French, German, British whalers

all agree that 1. Bartley the sailor

2. 24-36 hrs <sup>in whale</sup> 3. in Feb 1891

4. "Star of the East" the vessel

Robert Adams, an archivist.

3 vessels that name + one maybe to  
Falklands Is. <sup>come to</sup> NY apr. '91. The entire  
crew on record, but no James Bartley. A  
letter from wife of captain - no truth to the  
story. ID Kellum, the captain.

another story a whale sharks off Britain 1891 + one is corrupted.  
500 LIKELY A WHALE OF A TALE. <sup>maybe the same</sup>

## AWE AND ARROGANCE IN SCIENCE

Adam Drozdek  
Duquesne University  
Pittsburgh, PA

In 1931 Godel proved his famous incompleteness theorem which seems to have given a deadly blow to mathematics by stating that no non-trivial formal system can capture all true statements that can be formulated in language of the first order logic. But did mathematicians afterwards abandon any efforts to extend existing theories or to detect new truths? No, but these theorems made mathematicians aware of the fact that there are certain limits that, by principle, cannot be crossed. Such a realization makes science more humble (or it at least should) showing the borders inherently associated with it. No one can now claim that the construction of a single theory is possible that can, so to say, explain the world.

Mathematics, the oldest and the most mature of all domains of scientific endeavor, is the most aware of it. It doesn't claim too much, but certainly doesn't impose its own view onto the whole of reality. But right after its emergence, at least on the European continent, it made exactly such an imposition making mathematics a world view: the Pythagoreans claimed that the number is the principle of life and mathematic principles are principles of being. However, it was not the end of reductionist approach in science and in the course of history; at least three types of reductionism can be distinguished: mechanicism, physicalism, and the most recent form we would like to call programmabilism. The paper would stress the last type of reductionism associated especially with artificial intelligence and cognitive science.

One of the conclusions of the paper is that reductionism in science can go very often hand-in-hand with arrogance and this is a sign of immaturity of a given branch of science. It can blind the researcher to many aspects of the universe. "The most beautiful experience we can have is the mysterious. It is the fundamental emotion which stands at the cradle of true art and true science. Whoever does not know it and can no longer wonder, no longer marvel, is as good as dead, and his eyes are dimmed." (Einstein).

AN ABSTRACT OF ELEMENTS OF A CHRISTIAN  
PHILOSOPHY OF SCIENCE

Will Duke  
Southwestern College  
Phoenix, AZ

Because of the lack of a philosophy of science from a Christian world view, the conflict between science and organized Christianity during the last two centuries has resulted in a divorce--an unnatural and unnecessary estrangement between God's revelation in His world and His revelation in His word. The two must be seen whole in order to avoid mental and spiritual compartmentalization or artificially opposing them. Both of these currently common approaches are inadequate. They contribute to the confusion in the creation/evolution issue and prevent us from being effective ministers of the gospel in a secular, scientific culture. We need a well-thought out, integrated philosophy of science that puts these two back together where they belong.

Science is defined and described in terms of its capabilities and limitations. A theological basis of science is discovered in Genesis 1:28-31 and its ramifications discussed.

A review is made of the history of the relationship of science and Christianity showing how the two have been unnaturally and unnecessarily brought into conflict by misunderstanding science, the Bible, or both.

An outline of elements which should be part of any effective philosophy of science from a Christian world view is offered. These essential elements include the following:(1) God is Creator of the universe, (2) nature is temporal, (3) the relationship between science and revelation, (4) man as God's steward of the Earth, and (5) the creation as a probationary order. These elements are discussed and applied and used to construct a foundation for a Christian philosophy of science.

PEAR: NEITHER FRUIT, NOR RELIGION, NOR NORMAL SCIENCE

Gerald W. Eichhoefer  
William Jewell College  
Liberty, MO

The Princeton Engineering Anomalies Research (PEAR) program has assembled an impressive and highly statistically significant database including hundreds of thousands of trials which purportedly shows that conscious volition can influence random events like the selection of sequences of random numbers or the operation of symmetrical mechanical cascades. The data even suggests that individual human agents have unique "signatures" which characterize their personal patterns of interaction with target devices. It is worthwhile to consider exactly what status PEAR should have in the intellectual community as it is scrutinized for possible broad acceptance. This paper considers its possible scientific and religious status.

T. S. Kuhn's notion of paradigm is a useful tool for accessing the scientific status of the project because Kuhn is particularly sensitive to the institutions and philosophical assumptions as well as the theories and research methodologies which constitute a research community. While an application of Kuhn's criteria reveals that PEAR cannot be classified as "normal science," the project is clearly on the scientific continuum rather than the religious. It can be classified either as "prescience" or as an incipient crisis in normal science. Significantly, the point of greatest anomaly is philosophical, i.e., implicit reductionistic or epiphenomenal assumptions about consciousness shared by many physical scientists. PEAR seems to imply an ontologically active status for consciousness, a position it shares with certain interpretations of quantum mechanics. Although PEAR is scientific rather than religious in nature, the project is religiously significant because of the religious implications of such an ontology of consciousness.

OBJECTIVITY AND OBJECTIVE REALITY IN DARWIN, EVOLUTION,  
MODERN PHYSICS, AND AN UNDERSTANDING OF GOD

Dillard W. Faries  
Wheaton College  
Wheaton, IL

Christians almost universally insist on objective reality and the objectivity of science. There is good reason to believe that the emphasis is often misplaced or overdone.

Darwin provides an interesting backdrop for a modern consideration of this concern. His scientific approach with a Baconian viewpoint overwhelmed religious, literary, and artistic considerations. His scientific result, the theory of evolution, ushered in a new era in which man becomes both the subject and object of inquiry. The conflicts and paradoxes inherent in all science become unavoidable in this case. Man's place in the universe, a theological question for centuries, becomes inextricably intertwined with science.

This concern about the interplay between the object and subject and a questioning of the objective reality of the world has become a major theme in modern physics. According to some, man provides a creative role in the very existence of small pieces or essential characteristics within the universe. Einstein, probably representing many of us in the Judeo-Christian tradition, fought hard for an objective reality and has apparently lost.

I would argue that my faith and my understanding of God will not let me cling to objectivity in science or to the objective reality of nature. Insistence on objective reality does not provide a sufficient epistemology or ontology. Both my faith and my understanding of modern physics are better served by an objective/subjective duality.



## FINDING ADAM'S HISTORICAL NICHE - CLUES FROM SCRIPTURE

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For those of us who take the beginning passages of Genesis as a literal, historical narrative, accounting for Adam in the paleontological scheme of things can be a troublesome task. If hominids or humanoids have a 4-5 million year presence on planet earth, then placing Adam in a plausible historical time frame could go a step towards resolving the creation vs. evolution conflict.

The books of Luke and Acts contain secular historical references included by the author to give future generations an accurate perspective on when the biblical events took place. It is my contention that Genesis 3 and 4 also contain historical ties that if properly interpreted place Adam not at the start of human history but further along its path.

References to "bread," "flocks," "city," "tents," "cattle," "bronze" and "iron," tend to preclude Adam from being contemporary with the "Flintstones." It rather appears that Adam was "injected" into the human race by a special creative act of God around 6,000 years ago instead of having been the progenitor which has been popularly, but in my estimation, inaccurately assumed.

## HOMOLOGY: WHERE IS IT GOING?

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Since the time of Charles Darwin it commonly has been held that homology deals with similarities of structures in diverse animals, these because of descent from common ancestry. The parts would be similar because they have developed from similar embryonic regions. However, the evidence now indicates that this concept seriously must be reevaluated because homologous structures appear to be specified by different genes in different ~~species~~ species. The historical development of thinking regarding homology will be presented along with examples of why thinking on the subject recently has changed. Analogy, or similarity of use without prerequisites regarding structure, will be contrasted with homology.

In comparative biochemical studies during recent years, many investigators have evaluated data with reference to homology. Some confusion has resulted because of different definitions employed by the investigators - some referring to sequence (usually nucleotides or amino acids) similarities and others to ancestry. The former probably is to be preferred. Current thinking about "homology" has implications regarding our understanding of creation and evolution.

## THE TELEOLOGY OF LIPIDOLOGY

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The central role that lipids play in the development of atherosclerosis is affirmed by epidemiologic studies and animal data. The excessive risk could potentially be modified by relatively small shifts in lipid values since non-atherosclerotic populations do not have lipids that differ radically from Western lipids. Lipid values in Western society have been made worse through diet, obesity, lack of exercise and stress.

The Scriptural basis for lifestyle modification is examined. Recent data for atherosclerotic regression is examined and projected lipid alternations necessary for regression in man are examined. The association between low lipids and stroke, cancer and accidental death will be reviewed and largely refuted. The role of drug therapy in primary and secondary prevention will be carefully examined.

Given the assumptions we are created beings desiring to live an abundant life and that atherosclerosis is the leading cause of death, do abnormal lipids mean that we are doing something wrong? Are lipids a part of the feedback system that God uses to evaluate our lifestyles? Because of genetic differences in lipid metabolism, absolute comparisons between individuals are not possible, however changes in a given individual's lipids with time can give an integrated look into one's lifestyle.

## TRANSGENIC ANIMALS: MEDICAL MARVEL OR SLIPPERY SLOPE?

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Ever since the discovery of the biochemical basis for inheritance of biological characteristics and the unravelling of the genetic code, the whole field of modern biology has been dominated by exciting new advances in molecular genetics. Much effort has been directed not only toward the isolation and production (cloning) of specific genes (e.g., cystic fibrosis) but also toward elucidation of mechanisms whereby genes are "expressed" or made manifest in a cell or organism. This search has led to the devising of methods to introduce foreign genetic material (viruses, DNA) into individual somatic and germ cells of both plants and animals. This has made possible genetic transformation of organisms with life cycles too long for classical breeding techniques. DNA was successfully microinjected into fertilized mouse eggs, which then went on to develop into "transgenic mice", mouse carrying in each cell, DNA of some foreign gene. In mice, the success rate is said to be about 1%, but may be improving. Gene expression occurs not only in somatic cells but also in the germ cells and then in succeeding generations. (For reference, see R. D. Palmiter and R. L. Brinster (1986), *Ann. Rev. Genet.* 20:465-499).

Today, something of a growth industry in biotechnology involves such techniques, not only to study mechanisms of development and genetic control but also to improve stocks of plants and animals and production of useful products. The downside is the temptation to "improve" the human stock. If the use of steroids, etc., by athletes is any indication, the prospects for abuse loom large. Without a sustained conviction that even the fertilized ovum is made in the image of God, it seems doubtful that modern science can resist the temptation to improve on "nature."

## TEACHING ETHICS TO ENGINEERS

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It is important for engineers to practice ethically, for their products frequently impact the lives of many others. Teaching ethics to engineering students is not an easy task, for many only see ethics as a set of rules that must be obeyed to avoid other unpleasant experiences. As a professor in a public university, there is the added difficulty of presenting Christian ethical perspectives in a legal and appropriate manner.

In December 1989 the author presented seminars on Engineering Ethics to two technical audiences in Tbilisi, Georgia, U.S.S.R. The seminars were based on the author's experience in teaching engineering ethics at Louisiana Tech University. The Georgian audiences included professional researchers, engineering faculty and students.

The author's perspective on teaching engineering ethics is the subject of this paper. It follows the general outline of the Georgian seminars. The Georgians' response to these seminars provides insight into the state of ethical thinking in the Soviet Union.

The seminars included three main topics. The first topic was the nature of engineering codes of ethics in the United States. The second topic was the author's approach to teaching engineering ethics. The third topic was the need for each person to develop a personal ethical system. A Christian perspective on personal ethics was presented. The absolute standards of the Bible were presented as the only ones firm enough to use as a basis for a personal ethical system.

IS THE USE OF SCIENCE IN RELIGIOUS APOLOGETIC  
MERELY A FORM OF SCIENTISM?

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Science often is used either to attack or to defend various forms of religious belief. Response to "creation science" by most scientific organizations as well as by many religious groups has been to argue, however, that the use even of "good" science to defend commitment to a religion is an abuse of science, going beyond science's realm of proper application--scientism.

Based on a discussion of various arguments on the sides of this debate, I argue that although there are abuses, scientific evidence can weigh in favor or weigh against particular religions. This result has important implications for both legal and ethical decisions on church-state separation as applied to the public school science classroom: If scientific evidence has no relevance to religious claims, then rational discussion of that evidence can neither give preference to nor be hostile to any particular religious position--even if it is evidence that a Global Flood occurred in historical times. On the other hand, if scientific evidence is relevant, then it can give rational preference to one religion.

COUNSELING IN THIRD WORLD CULTURES:  
LIMITATIONS OF PSYCHOLOGICAL AND LINGUISTIC APPLICATIONS

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The purpose of this paper is to challenge the commonly demonstrated ethnocentric assumptions of the right way to do things in a third world society. The usual approach is that westerners know how to do things and therefore if "those folks" would listen to what we are saying they could be helped to live better and more productive lives, materially, scientifically and spiritually.

There is a definite need for help in aiding people in the third world with the solution of problems, many of which have been introduced by the western intrusions. However, there are also limitations, as demonstrated by research. Many people in hospitals or in private counseling go to the traditional healer as well. Some national pastors likewise seek this kind of help from traditional healers.

In order to be of help, the assumption is made that there are disequilibriums in all societies; there are ways of identifying them; there are some means existing to reduce these personal problems; and that there is need of some additional help to meet those problems.

To be helpful, outsiders must learn from insiders how they heal their problems. Then the outsiders can suggest western methods to check if applicable and acceptable. Certain factors are supracultural. The Scriptures came from the third world, but have been taken over as if they were western. Attitudes of love, warmth, non-judgmental listening, etc. are included. Primary to adequacy for the adaptation of western procedures is the necessity of understanding that sharing has to be oriented horizontally, and not vertically.

## THEOLOGICAL REFLECTIONS ON A CONTINUOUS CREATION VIEW

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Much time, energy, and paper has been devoted to debate within the Christian community over how the Genesis creation accounts should be properly understood. One result of this debate has tragically been to divide and polarize the Church, and divert its attention from its God-given mission to live as God's image-bearers, exercising stewardship over His creation, and proclaiming His message of reconciliation to the world. There has similarly been a tendency to alienate the scientific community and ignore the implications of its growing understanding of the physical and biological world. What then can we learn about God's character and our creaturely responsibility from the scriptural account of the creation and from its preserved record on Earth? I have approached this question from the perspective of a "continuous creationist", assuming a long physical and biological history of the Earth in which mankind has made only a very recent appearance. Such a view exalts the majesty and power of God's creative activity. God is understood as intimately and actively involved in "natural, law-governed" processes, and nothing in creation is surrendered to a purely natural realm independent of God. This present sustaining activity of God is abundantly attested to in scripture, and is a source of inspiration for the worship of the Psalmists, and a primary basis for our confidence in the power of prayer. The progressive, historical nature of God's creative activity is consistent with His redemptive work in the world, and His sanctifying activity in us. God appears to generally accomplish His will as part of a process, rather than by fiat. In His incarnation, the Eternal One even subjected himself to the process of growth. The immense period of time during which life on Earth developed and prospered also reinforces the inherent value of all life, which was created for God's pleasure and declared to be good. We are humbled by the vastness of creation in time and space, and awed by the honor God has bestowed on us as His image-bearers. We are made from the same "dust of the Earth" as the rest of life, so we have at once a kinship with creation and kinship with God through His Spirit. The recognition of that unique position should make Christians the leading force for ecological stewardship in the world. We are bid to have dominion over creation, and the Biblical model for rule is sacrificial service. Another implication of an ancient Earth is that physical death and pain not only preceded the Fall, but were woven inextricably into the very fabric of creation. Death, in fact, is essential for continued life. That the God who became flesh and died for the life of His creatures should so design the world from its inception, seems to me the most perfect of cosmic metaphors.



## PROTEIN SIMILARITIES AND ANCESTRAL RELATIONSHIPS

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Amino acid sequence similarities in proteins have been used for many years in the evaluation of ancestral relationships. Of the different proteins that have been utilized, sequences in cytochrome c have been studied in the greatest number of species. Since the information for protein amino acid sequences resides in the sequence of nucleotide bases in DNA, the latter should confirm and extend the studies utilizing protein sequences. Recent technological advances have provided means of isolating and determining nucleotide sequences in structural genes and associated DNA segments. Sequence studies in DNA differ from those in proteins in that there are three nucleotides for every amino acid, and also in having one or more intervening sequences (introns) interspersed within the structural gene. In addition there are nucleotide sequences of variable length (exons) at both ends of the structural gene. Within these exons there are short nucleotide sequences that determine whether and how the gene is expressed. In addition, there are often multiple copies of the genes, many of which differ somewhat from the primarily expressed gene.

The author will examine DNA sequence studies that have been carried out with cytochrome c genes, and discuss their contribution and value to studies of ancestral relationships.

## IMAGINATION IN SCIENCE TEACHING

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Science students in High School are usually taught that Science progresses by the application of the "Scientific Method". Textbooks list the steps of the "method" and students are taught to follow these in order to solve specific problems.

It is quite clear however that scientific advances just do not come about in this way. Methods of challenging students to use their imagination in approaching a problem, or in analysing data are necessary if we are to be honest with our students and give them a proper understanding of the way in which real science is carried out.

A well known example of creative daydreaming is Kekule's proposal of the ring structure for benzene. A contemporary example is found in Kary Mullis's account of his invention of a method of copying DNA fragments.(1).

I will include examples of techniques that can be used to stimulate creative thinking; some from my own experience. Since we are made in the image of God and one of His attributes is creativity we too have an echo of that creativity. Do we nourish it? Surely the task of the science teacher, no less than the teacher of art or music, is to stimulate that creativity.

Perhaps the reason creative or imaginative thinking has been neglected is that it is not as easy to measure as factual recall or analytical thought. What are some ways this can be changed?

(1) Mullis, K.B., Scientific American, April 1990, 56-65.

CREATION SCIENCE: SCIENCE, PSEUDO-SCIENCE, OR DISGUISED RELIGION?

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There has been much debate in the literature about whether Creation Science is a true science or a religious view couched in scientific terminology. Most of the arguments against the scientific status of creation science tend to criticize the theories of origins advanced by the Creationists based on scientific evidence. But this is not a correct methodology. What is needed is criteria for what is science, and whether creation science meets the criteria. This is a second-order question about what science is, not a first-order question about whether the theory is a good one. The question of the scientific status of creation science depends upon the criteria and methodology of science, and this is determined by the philosophy of science rather than science itself. Thus I will discuss what science is (i.e., necessary and sufficient conditions for some mode of inquiry being science), what the epistemic virtues of scientific theories might be, and whether creation science meets the criteria for being science. I will examine objections as well as positive arguments for the scientific status of creation science. In this paper, I will not discuss whether creation science is good science or not. The above approach has been rare in Perspectives: The Journal of the ASA and in presentations at the annual meetings.

Criteria

Microevolution  
Falsifiability  
Predictions

Find the truth (Euler - *mens est non physical*)

## THE ORIGIN OF MATTER AND PATTERN IN MODERN COSMOLOGY

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Modern cosmology began in the second and third decades of this century with observational and theoretical work which indicated the expansion of the universe. This made it meaningful to speak scientifically of a beginning of the universe, and thus in a sense to bring the problem of cosmic origins within the realm of science.

How close can we get to the beginning? Study of synthesis of nuclei takes us back with some certainty to the first minutes of expansion. Various elementary particle theories try to get back to the first fractions of a second, but face some difficulties. Quantum gravity, for which a full theory is still lacking, might go all the way to the beginning (insofar as that idea would still be meaningful). All theories which try to explain the origin of matter encounter problems, but there is no scientific objection of principle to such attempts.

However, more must be explained than simply the origin of matter. What is the origin of the laws themselves? Why does the universe operate in accord with that pattern, and not another? Such questions go back at least to Plato. Today we must take into account the multiplicity of mathematical systems (first realized with the discovery of non-Euclidean geometries) and the implications of Godel's theorem.

Here we will survey some of the relevant developments in cosmology in the past few years, and will consider their implications in the light of the Christian doctrine of creation. Particularly important aspects of this doctrine will be the idea of *creatio ex nihilo*, the knowability of the universe "though God were not given", the contingent rationality of the universe, and connections with christology.

ONE SCIENTIST'S REFLECTIONS ON THE CONTRIBUTIONS OF  
HAROLD P. NEBELSICK (1925-1989) TO THEOLOGY-SCIENCE DIALOGUE

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This paper summarizes the distinctive contribution that Harold P. Nebelsick, Reformed theologian, made to the current dialogue between natural science and Judeo-Christian theology, emphasizing the following areas:

1. An interpretative framework for grounding, guiding and sustaining fruitful dialogue between theologians and scientists.
2. A perception of how theologians can be helped by dialogue with natural scientists.
3. Commonalities of the methodology and epistemology of natural science and Judeo-Christian theology.
4. The epistemological realism of perceptual complementarity as manifest in Judeo-Christian theology and natural science.
5. The basic character of theology/science dialogue as seen from an historical perspective: theology and natural science in mutual modification.
6. Reasons for a Barthian theologian's interest in theology/science dialogue.
7. A personal evaluation of Professor Nebelsick's life, work, and influence on the Christian community in its witness to a fragmented world.

COMPUTER SIMULATIONS OF EVOLUTION

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A discussion of some of the ways in which computer simulations can be applied to evolutionary theory, including mutation and natural selection, self-reproduction, terrain analogies, and the programs presented by Richard Dawkins in his book *The Blind Watchmaker* (1983)

THE CALIFORNIA SCIENCE FRAMEWORK  
AND ITS IMPLICATIONS FOR SCIENCE EDUCATION

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The three major points of the paper will be:

1. The philosophy underlying the development of the framework, with special attention to the policy statement adopted by the Board of Education in January 1989.
2. The need for a consistent definition and usage of the term "evolution". Little progress will be made in resolving some of the problems found in the Science Framework until it is decided how the term evolution is to be used.
3. Implications of the Science Framework for science education in California, and the U.S.

Several questions that will be covered in the paper:

Are Darwinism and evolution the same?

Is there a "science of evolution" that is distinguishable from the "philosophy of evolution"?

Will the Science Framework prohibit discussion of value questions in the science classroom?

## A CASE FOR DUALISM AS THE CORRECT WAY TO UNDERSTAND HUMAN NATURE

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Being a scientist is like participating in a sport; there are rules to the game. In science, the rules which constrain the participants include these three: (1) the ultimate epistemological arbiter is empiricism; (2) the field of play is the material world; and (3) acceptable explanations are limited to those which involve material entities that undergo mechanistic activity.

In light of these rules, scientists who wish to remain forever true to their game would oppose the concept that humans have a dual nature. In fact, the majority of scientists probably fall in that category, holding to monism rather than dualism. I wish to build a case for dualism as the proper way to understand human nature.

That dualism has sometimes been a smokescreen for ignorance I will not deny. But even when the smoke is dispersed, it is my belief that dualism is the best way to conceive of what it is to be human. My argument has three prongs--that our everyday living presupposes a distinction between our bodies and ourselves, that equating self and body is equating incommensurates, and finally that many biblical passages make no sense without a dualistic view of humans.

Ignorance prevents me from modeling the immaterial part of a human being. And even if I were to make such an attempt, I would probably have to lean on the very mechanistic analogies which tend to invalidate my dualistic conviction. So I remain a dualist who sees "only a dim image in a mirror." I am happy for the biological knowledge that elucidates the material "me" by the time-tested methods of science. At the same time, I am overwhelmed by the thought that my body is impregnated with a transcendent nature which has a better fate than the material.



## SHARED THEMES IN BIOLOGY AND CHRISTIAN THEOLOGY

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The subject matter and methods of investigation in biology (and science in general) are very different from those of theology. Yet when both subjects are approached with the purpose of discerning fundamental figurative themes, some basic similarities are found, which is not surprising since God is the creator of both biological and spiritual "life". I explore the following structural and functional patterns which are shared between biological systems and God's activity in the Christian's spiritual "life": 1)Both maintain a costly disequilibrium against their surrounding environments; 2)Both transform chaos into order; 3)Both result in the filling up of emptiness; 4)Both evolve towards the bodily integration of diverse components. Exploration of these patterns should help us to better discern how and why God has chosen to reveal Himself in part through the Creation, parallel to and simultaneous with His self-revelation in human history, in Christ, and in Christian experience.

## HOW HAS LIFE AND ITS DIVERSITY BEEN PRODUCED?

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Science does not deal with philosophical aspects, yet science does not preclude the possibility of influences that cannot be traced scientifically, either. The surprising result of an investigation respecting both of these facts is that evolution cannot be supported by science and cannot be refuted by theology. Evolution does not make sense apart from an intelligent Creator, but creation does not make sense apart from a developmental scientific framework.

Complementarity between scientific and theological views of nature is the basis for a healthy understanding of creation, and I propose that theological and scientific facts are in harmony if they are properly understood. Some traditional interpretations of biblical texts may have modified, but none of the Christian fundamentals - including the inerrancy of the original Bible manuscripts - is affected. Due to our limited knowledge in both the scientific and theological domains, problems remain, but no inconsistency has been demonstrated.

The origin of information is the crucial weak point of evolutionary biology. Information stored in genomes of organisms is used to specify functions. In principle, it may be produced randomly or by design. Natural selection tests its functional acceptability. There is a stringent condition for random generation of information to be plausible. For any given function, the fraction of functional sequences among the set of all random ones of the length required must be sufficiently large to allow the production of at least a marginal functionality within a reasonable time. There is virtually no evidence for this possibility.

The fact that we may not be able, even in principle, to trace the source of information scientifically does not imply that none exists. The Creator may be hiding his footsteps by design. Safeguarding the personal dignity and freedom of the human creature may be a plausible motif for doing so.

## THE UNCREATIVE CREATOR OF THE CREATIONISTS

David F. Siemens, Jr.  
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One group among those who believe that God is the Creator have claimed to be the only ones who may properly be called creationists. They insist that man especially has no hereditary connection with the rest of creation. Yet there is near identify between the DNA of man and chimpanzee, and similarity with other apes. Further, the neurotransmitters and their localization in the central nervous system are consistently similar among the vertebrates, not merely the animals. There are alternative possibilities, demonstrated in the restoration of function in young animals whose brains are injured. So why did God, on the Creationists view, not have the imagination to vary the pattern?

Reports in the literature (checking issues of Science) are more readily understood are rising from similar heredity than from fiat origin. The arguments in defense are inadequate, for there are improvements that human beings can suggest. Second, that the similarities are present to test faith presents the deity as so misleading as to be untrustworthy, not as true. Third, the claim that the truly orthodox must interpret scripture as teaching creation in six days is disproved by Augustine's interpretation.

- Criteria for good model
1. Results from considering all poss
  2. Expressed in terms of previous knowledge
  3. Consistent  $\bar{c}$  all obs.
  4. Considered only a poss.
  5. Could be falsified by some observation
  6. Involve only phys. universe
  7. ~~In~~ Involve no purpose - not pulled toward goal.
1. Creator has acted in past  
 2. Scripture gives exan  
 3. Creator omnipotent  
 4.  
 5. many objections on this point. Criteria for falsifying. C.S. Lewis Miracles
- Are 6+7 logically necessary or simply working criteria assumed by modern science.
- \*Working criterion to falsify

Scripture gives examples of intervention.

IMPLICATIONS OF A CREATED COSMOS

## 2. The Methodology of Science

### Modeling Causes

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The idea of "cause and effect" plays an important role in science. When an effect is observed, the scientist looks for a cause. If a cause can be observed, it explains how the effect comes about. However, there are situations when no observable cause can be found. In such cases one or more models are proposed involving something which is not directly observable, but which explains the observed effect. A good model must be consistent with the observed effect. It should also be falsifiable--otherwise it is considered mere speculation.

As science is currently practiced, there are two restrictions placed on models of nonobservable causes:

1. The cause must only involve things that are a part of the physical universe. That is, the universe is treated as a closed system.
2. The cause must precede the effect in time. That is, events in the universe are treated as having no purpose or final cause.

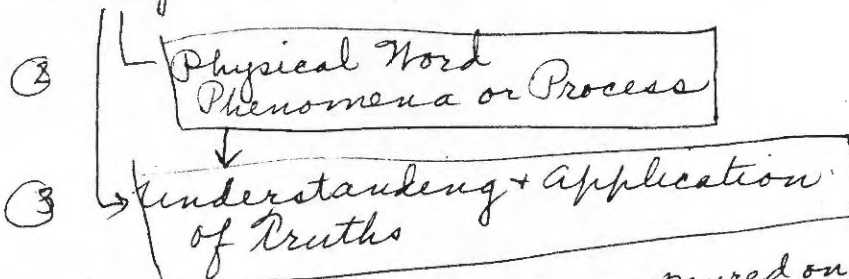
Since the universe has a transcendent, intelligent Creator, neither of these restrictions is a logical necessity. Of course, many nonobservable causes are completely physical and do precede their effects. However a transcendent, purposeful cause is possible, and a scientist should consider this as one option when proposing models to explain an observed effect. ~~The~~ transcendent 5 model can be falsified by demonstrating that the observed effect can be reproduced at will in a laboratory or can be simulated by a computer.

## THE BIBLE'S USE OF OBJECT LESSONS FROM THE NATURAL WORLD

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Biblical truths are sometimes presented using metaphors and object lessons from the natural world and ancient Middle-Eastern technology. Examples include sulfur, salt, water, soap, fire, corrosion, metal refining, rotting, dew, the rainbow, sunset colors, and vinegar. The average modern person is probably less familiar with these materials and processes than was the average Israelite. Bible passages which use such references are thus less full in their meaning and impact. A series of lessons have been developed, with particular focus for use with junior and senior high school students. Each lesson integrates an explanation of the spiritual truths in a Bible passage with an explanation of the natural phenomena or process, generally using an in-class experiment or "lecture demonstration." The rationale and methodology of this approach will be illustrated with several examples. This approach will be contrasted to extra-Biblical analogy and to the reverse-reading of today's scientific understanding into Biblical text.

① Scripture text



- ① Prov. 25:20    Heb Soda "nether"    Jer 2:22    like vinegar poured on soda, is one who sings to a troubled heart.  
Vinegar + Soda → gas + a salt  
acetic acid
- ② Matt. 16:1-4    Heaven + sky - same Greek word "ouranos"
- ③ Deut. 4:20    I Kings 8:51    Jer. 11:4    "The Lord brought you out of the Iron-smelting furnace."  
Thermite  
 $Fe_2O_3 + 2Al \rightarrow 2Fe + Al_2O_3$   
Heb. 4:    Slaves of sin to God's people.

## THE GLORY OF GOD AS REVEALED IN THE MICROSCOPE

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The glory of God is revealed in all facets of His creation. Here we focus on His glory as revealed in the seed of higher plants (i.e. angiosperms), the single cell (eukaryotic organelles), the ribosome, and the virus. I. By comparing a seed to a special robot designed by NASA engineers with the task of preparing a planet for colonization by humans, it becomes evident that no committee of scientists and engineers on the face of the earth could begin to duplicate what God has done. II. Several hundred years ago scientists believed that the individual cells of higher organisms contained a homogeneous jelly which they simply called "protoplasm". With the electron microscope and other modern research tools, our perception of the world within the single cell has been greatly expanded: it is almost like a large city with an internal transportation system, power plants, factories for making needed materials, packaging plants, and a city hall filled with thousands of records and documents III. Although a single ribosome is only one millionth of an inch in its widest dimension (indeed a single cell may contain half a million ribosomes), it is exceedingly complex in its construction and the job it performs in the cell is very sophisticated. IV. Viruses seemed so simple, relatively speaking, until the startling discovery of overlapping genes in the bacteriophage OX174 by Dr. F. Sanger in 1977. Is this another "act of God"?

## ARMS CONTROL AND THE KINGDOM OF GOD

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Arms control has a long history, even being mentioned in I Samuel with respect to relations between Israel and the Philistines. Since the dawn of the nuclear age, mankind has sought with increasing vigor means to eliminate or proscribe the use of nuclear weapons in particular, and implements of war in general. Until recently, however, most of those efforts seemed to be swept aside by some threatening event, and/or the continuation of the arms race. Beginning in 1988 a number of amazing events have occurred which give rise to renewed hope for an era of peace. The U.S. and USSR executed a treaty (the Intermediate Range Nuclear Forces Treaty) in which each side agreed to remove and destroy an entire class of weapons from their nuclear arsenals. A popular uprising for democracy took place in the Peoples Republic of China, subsequently crushed by the government. The Berlin wall has been opened; the USSR has begun withdrawing conventional forces from eastern Europe; Soviet Foreign Minister Shevardnadze admitted that the Krasnoyarsk Radar Site was indeed in violation of the ABM Treaty; and Warsaw Pact countries are undergoing such major democratization that the existence of the pact as a military alliance is doubtful.

Do these momentous events signify a trend? If so, is the trend consistent with biblical prophecies of a millenium of peace under eventual rule by King Jesus? What is a proper synthesis of biblical teachings about peacemaking and disarmament? Should Christians look to the Bible for a mandate to work for world peace by means of arms control? In this talk the author shares some insights into the arms control process that he gained during his assignment in the Pentagon as Scientific Advisor for Arms Control, and provides a status report on his search for a scriptural mandate.

IS EVOLUTION EVOLVING INTO A RELIGION?:  
AN ANALYSIS OF CALIFORNIA'S NEW SCIENCE FRAMEWORK

John L. Wiester  
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Recent trends are leading evolution in a non-scientific direction. At one level evolution has become a generic term, a synonym for gradual change (the evolution of a great beer or of a medical condition). At another level, evolution has begun masquerading as an all-encompassing explanatory principle or quasi-belief system promoted by New Age "secular religions", in the form of "evolutionary naturalism" (or "evolutionism").

The new California Science Framework contains excellent statements of what science is and how it should be taught. Unfortunately, the Framework treats evolution as exempt from these stated principles of science, causing this author to conclude that the "enlightened state" is leading the trend toward teaching evolution as a belief system rather than as science. Documentation of this view consists of the following points:

1) Although the word evolution is used over 220 times, neither evolution nor theory of evolution is defined or used with consistency of meaning. Meanings vary from "change" to "Darwinism", to the "history of natural things", to a vaguely defined "overarching concept or major theme".

2) Evolution is said to be both predictable and non-predictable.

3) Evolution is said to be comparable in factual status to gravity and electricity, with no dissimilarities mentioned.

4) Fossil histories should not be presented in a disconnected series; they can only be shown united by evolutionary relationships.

5) No unanswered questions or unsolved problems are presented, in spite of frequent requests for their inclusion.



ADAM, WHERE ARE YOU?  
A Paradigm Shift in Paleoanthropology:  
Mitochondrial DNA vs. The Establishment

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The "established" view of the origins of anatomically modern humans has been sharply attacked by the proponents of a new paradigm which may be closer to the biblical position. Challenges are based on new dating techniques for fossils and artifacts, new evaluations of the cultural and anatomical significance of "archaic" Homo sapiens, and the use of molecular (mtDNA) geneologies. The "establishment" responds in force.

I. The View from (Dr. Milford) Wolpoff's Head.

"Look, everybody knows that all humans alive today have a common origin. And everybody agrees that in some fundamental way that origin was in Africa. No doubt about this .... All the arguments boil down to when was that common origin? Was it when humans and chimpanzees diverged, about 8 MYA? When people left Africa a million or so years ago as Homo Erectus? Or was it when modern Homo sapiens appeared?... "I'm one of many who conclude that modern humans originated in areas all over the world--after Homo erectus had populated the world... Everywhere you get bigger brains, smaller teeth, all the peculiarities of modern people. How does this happen if there's not an exchange of genes all through human evolution?"

II. Attacking the Paradigm

The challenge being made is based on multiple coordinated lines of investigation: (1) Morphology - a different adaptive complex, not just bigger brains. (2) New methods of dating - ESR, TL, A.a. racem., C14 enhancement. - AMH finds dated 90-100,000 BC. (3) Cultural transition - gradual change or sudden replacement? Europe sharp, Africa early. (4) mtDNA (and other) geneology roots - late date & out of Africa.

III. Analysis of mtDNA Geneologies

mtDNA is a maternal line, fast, introspective clock. Clock analysis builds a geneology of theoretical ancestors, & involves rate calibration and geneological trimming. Human tree is unexpectedly short and shows asymmetrical branching, which indicates (compared to chimps) a recent bottleneck and population dispersion. Cann et al concluded we have a common African root about 200,000 BC. Plateau in data (three studies) suggests common root at about 90,000 BC. Out of Africa? Oldest roots are Kung! Plateau at root suggests early site immigration, not source.

IV. Difficulties for Integration

Common root still very old. Meaning of archaic forms (Homo erectus?) is difficult (Degenerate? Source? Parallel?) What of an African Eden?

LOST FOUNDATIONS: SCRIPTURE AND THE ASSUMPTIONS OF SCIENCE

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To do his science, the average scientist makes a number of assumptions about the nature of the physical world and himself. He assumes, for example, in the existence of an ordered physical universe which can be reliably discerned and understood by man. He also assumes that natural laws, such as cause-and-effect, not only exist, but are constant in space and time, and are ultimately simple and unifiable. The only justification most scientists have for believing these assumptions is pragmatism. The assumptions of science can be relied upon because science is successful.

The doctrine of creation provides the believer a justification for each of the assumptions of science. God created the physical universe in order that man could see the very attributes of God. Therefore the physical universe must exist with an order reliably discernable and understandable by man. Since there is a single Creator, the law of cause and effect must exist, natural laws and processes must operate over all space and time to give all men the same picture of God, and all natural laws must be ultimately unifiable. When a scientist rejects the Scripture, he rejects the very philosophical foundations of his science.

Modern science was born into a culture heavily influenced by Christianity, fathered by men who believed in the truth of Scripture. Because its assumptions are both historically and philosophically based in Scripture, science has enjoyed much success. Ironically, the success of science, which should have reinforced faith in the Scripture, has been used instead to challenge the veracity of Scripture.

Can justify on basis of a creator (creation) The attributes of God are recognizable in the creation. always of reject a creator then reject the basis for these. See over its success to the doctrine of a creator.

Assumptions

1. There is an observer independent physical world.
2. The physical world is ordered (higher order in our minds)
3. The order is finite + simple enough to be comprehended by the human mind
4. Determinism - all causes have effects + vice versa. FIRST IMPORTANCE.
5. Laws of universe are continuous in space + time
6. Laws of universe can be characterized from relatively short exposures in space + time
7. Observable patterns hold keys to unobservable
8. Man's senses, memory, etc are reliable
9. " mind is adequate to explain world
10. " language (including math) is adequate to explain physical world.
11. " - language (including math) is adequate to explain physical world.

simplest way to explain

WHY WAS THE ANTI-CREATIONISM MOVEMENT ABLE TO ARISE  
SO RAPIDLY FOLLOWING THE ARKANSAS CREATION TRIALS?

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During the 1970's, many public educators in the U.S. were seriously attempting to listen to the suggestions of creationist groups. This attentiveness was largely due to the frequent objection of parents that too much dogmatic teaching of evolution was being done in the schools. During the early years most of the educators were unaware that the creationism movement's representatives usually assumed the right to ignore all the vast amounts of scientific data which indicate that the earth is very old. During the Arkansas Creation Trial of 1980-1981 this and other violations of scientific principles by leaders of the creationist movement became openly known and widely publicized. As a result, large numbers of American scientists and educators were shocked to discover that many people throughout the U. S. and Canada were actually accepting and enthusiastically teaching the unscientific hypothesis that the earth and universe are only a few thousand years old. At this point many scientists and science teachers throughout our nation began to organize an active defense of the scientific method of research, and also of evolutionary theory. They soon decided that their strongest weapon in this defense would be the use of the newly-publicized fact that "creation science" regularly ignores all evidence which shows that the earth and universe are old. Much documentation is available in science and education publications of the early 1980's to demonstrate that the most effective method used for alerting the public to the inconsistencies of creation activists was the publicizing of open rejections of well-established scientific data by the creationist leaders. Because young-earth creationists usually cite the Bible as their authority for doing this, many publications of the anti-creationism movement frequently disparage the Bible as a misleading book which encourages opposition to true scientific research--which it does not.

THE SCIENTIFIC EXEGESIS OF THE QUR'AN -  
A CASE STUDY IN RELATING SCIENCE AND SCRIPTURE

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The "scientific exegesis" approach to the Qur'an, which is currently very popular in the Muslim world, has enough similarities to certain Christian approaches to the Bible that it can afford Christians insight into their own situation. In this paper the themes and theses of Qur'anic scientific exegesis will be detailed, noting the apologetic motivations behind them. The problems with the approach, both on an exegetical and a philosophical level, will then be presented, and the implications for Bible-science questions discussed.

## GNOSTIC VIEWS OF CREATION

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Gnosticism was the most important heresy which threatened the Early Church. One of the most important differences between Gnostics and the orthodox were their divergent views over Creation.

The orthodox Christian view followed the Jewish tradition of Yahweh as the creator of a good creation (Genesis 1). God's "eternal power and divine nature" are manifest in His creation (Romans 1:20). According to 1 Timothy 4:4 "For everything God created is good, and nothing is to be rejected."

Gnostics, on the other hand, were inspired by the dualism of Platonic philosophy, which assumed that the spiritual was good but the material was evil. This resulted in the conclusion that the good God was transcendent and had no direct responsibility for creation.

Marcion, for example, opposed the God of the New Testament to the inferior God of the Old Testament. Other Gnostic systems caricatured the Old Testament God as the foolish demiurge Yaldabaoth, or attributed creation to the fallen Sophia ("Wisdom"). New light has been shed on Gnostic beliefs by the Nag Hammadi Coptic Codices discovered in Egypt in 1945.

The Gnostic teachings on creation were denounced by the Church Fathers, for example, by Tertullian (Adversus Marcionem) in a brilliant passage extolling the skill of the divine Creator.

## LIVING THINGS AS HIERARCHICALLY ORGANIZED STRUCTURES

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In the words of H. H. Pattee, "hierarchical controls the essential and distinguishing characteristic of life". Although most biologists affirm the concept of living things as hierarchically organized structures, there is widespread differences of interpretation in the meaning of hierarchy and of how the concept of hierarchy applies to living things. These differences lead to great confusion in our understanding of the nature of living things. One such basic difference involves the distinction between the concept of control hierarchy and classification hierarchy. It is suggested that control hierarchies are distinguished from classification hierarchies in that they involve authority relationships between levels. Such authority relations appear to be lacking in classification hierarchies.

The analysis of the levels of hierarchies and their relationships also brings up the part-whole issue. The elements of a subordinate level are considered to be "parts" of the higher level which contains the "whole" to which the parts belong. Our understanding of hierarchies will to a large extent be influenced by our understanding of what constitutes a part-whole relationship. Authority relationships between levels would imply that the whole has a determining influence on the parts that make up the whole even to the extent that the parts have no independent, meaningful existence apart from the whole. The concept of an authority relationship in a part-whole relationship introduces the question of the independence or sovereignty of the components of the subordinate levels in a hierarchically organized living thing. This problem is discussed along with an analysis of the rather novel theory of enkapsis proposed by H. Dooyeweerd in which he distinguishes part-whole relationships from enkaptic relationships.

A more precise analysis and definition of part-whole relationships will serve to give a clearer understanding of theories of hierarchy. This will hopefully assist in reducing much of the confusion and ambiguities in the use of the concept of hierarchy in biology.