ANTH 3340 POPULAR ARCHEOLOGY: EXPLORING MYTHS &MYSTERIES
Spring 2013 Dr. Carmichael

COURSE SYLLABUS

Overview

Does Bigfoot roam the mountains of Oregon, and do his cousins hang out in the Sacramento Mountains of southern New Mexico? Are they shape-shifters, or do they use wormholes to travel the time-space continuum? Are extraterrestrial aliens like the ones who crashed in Roswell, New Mexico silvers or greens? Is there really an exotic blood-sucking animal called *chupacabra* killing livestock in the southern U.S. and northern Mexico, or is it just a hairless raccoon? Should we believe Senator James Inhofe when he says that global climate change is a hoax? Is cell phone use harmful to your health? Do the Power Balance bracelets worn by Drew Brees and Kobe Bryant provide any real scientific advantage to athletes? Are modern humans related to ancient prehistoric peoples, or were we created in modern form? Is there reliable evidence to support the claims that psychics can reveal details about the past or make valid predictions about the future? Was planet earth really visited by ancient astronauts, and did they teach Egyptians how to build the pyramids? ***How can we know the answers to such questions?*** In fact, how can we know the truth about any claim? We are bombarded by information and claims all the time, and it is vitally important, now more than ever, that we be able to distinguish valid information and warranted conclusions from those that are not. How can we do this, especially when the claims involve events that occurred in the prehistoric past, were not witnessed by humans, or were not documented in written records?

This course is designed to introduce students to a variety of critical thinking skills and to encourage them to practice those skills in the context of evaluating popular claims, especially extraordinary claims about topics relevant to anthropology and archeology. It is intended for students who are attracted to the interesting topics identified with anthropology in the popular media, but the level of instruction assumes no prior experience in anthropology. Students will learn about the methods used to interpret the physical traces of behavior, and how to distinguish scientific arguments from pseudoscience and non-science. Lectures, readings and class exercises will examine a variety of non-scientific explanations for past and present events, such as UFOs and ancient astronauts, Bigfoot, pyramid power, Atlantis, creationism and intelligent design, the Book of Mormon, dowsing, climate change denial, and psychic archeology.

Learning Objectives

> *The great enemy of truth is very often not the lie – deliberate, contrived, and dishonest – but the myth, persistent, persuasive, and unrealistic. Belief in myths allows the comfort of opinion without the discomfort of thought. (John F. Kennedy, 1962)*
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> *Thinking is skilled work. It is not true that we are naturally endowed with the ability to think clearly and logically—without learning how, or without practicing. People with untrained minds should no more expect to think clearly and logically than people who have never learned and never practiced can expect to find themselves good carpenters, golfers, bridge players, or pianists. (Alfred Mander, Logic for the Millions, 1947)*

In a recent national survey of university professors, 96% of the respondents identified critical thinking skills as the single most important thing that students should learn during their undergraduate education. The survey results are pretty remarkable, especially when one knows that professors disagree about many things, and that getting them all on the same page can often be as challenging as "herding cats." Yet, professors are largely agreed that it is more important for students to learn ***how to think,*** rather than focusing on the details of ***what to think.*** Why…? Well, facts as we know them today will be revised as future research yields new discoveries; new analytical techniques will be developed in the future; new technologies will lead to new jobs and areas of research that haven't been developed yet. To a large extent, we are preparing students to

address questions that haven't yet been asked, fill job openings that don't yet exist, and generate policy solutions for problems that haven't yet been defined. How can students hope to do this if they spend all their time memorizing the details of things as we presently know them? Well, they can't. However, by using critical thinking skills, by building a "Baloney Detection Kit," students will be able to examine and evaluate any data, claims and arguments they may encounter in the future.

Unfortunately, many students, even those who believe they already understand and use critical thinking skills, often do not. In a recent online version of my introductory anthropology class, I asked students to discuss their ideas about critical thinking. The results were surprising. Many students *thought* they and their fellow undergraduates are using critical thinking all the time, but many didn't know what critical thinking really means. Some thought it is simply thinking, apparently as opposed to not thinking at all. Others said it was thinking about a topic rather than taking notes. Other students believe critical thinking is having an open mind or thinking outside the box. In other words, many students conceive of critical thinking as a sort of post-modern openness to various ideas. Very few mentioned anything about data evaluation, logic, reasoning, decision-making or problem-solving. Yet these are, in fact, all components of critical thinking. At the most basic level, critical thinking is a set of logical principles that allows one to evaluate claims and make warranted decisions about whether or not to accept them. Critical thinking is all about decision-making; about rejecting false claims and incorrect explanations.

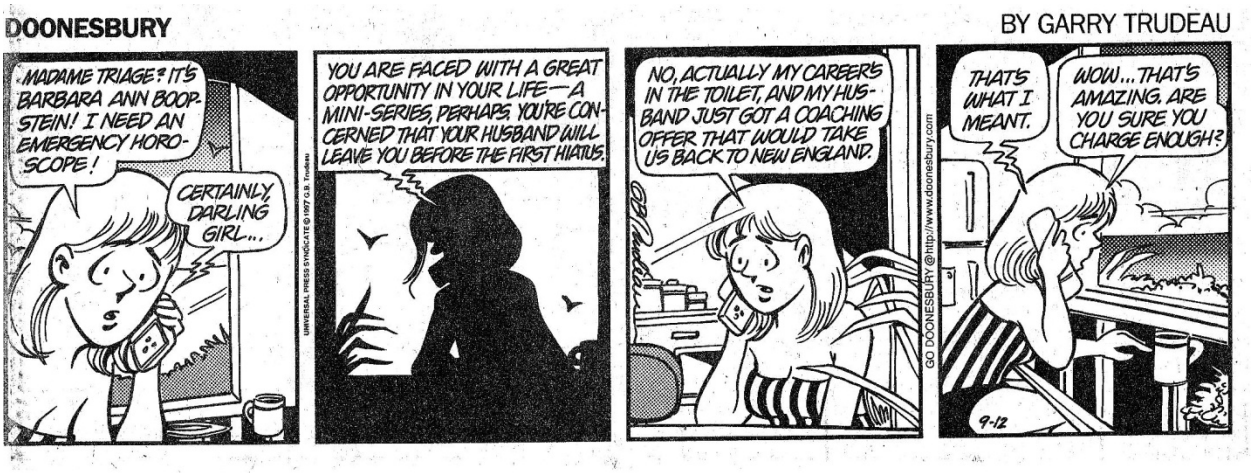
We live in the most technologically advanced society ever to have existed on planet Earth, but we also suffer from a remarkably high degree of scientific illiteracy. The National Science Foundation's report, *Science and Engineering Indicators 2002,* summarizes recent polling data about Americans' knowledge of, and attitudes about science and technology. Although Americans express a high level of interest in science and technology, only 15 percent feel they are well informed about such topics. Their concerns are well founded. Depending on which poll results are consulted, the data indicate that between 70 and 94 percent of Americans do not understand the scientific process; that is, they don't understand epistemology, how scientists know things. Less than half of American adults know the earth moves around the sun and takes a year to do so. Only about half the survey respondents know that antibiotics do not kill viruses. Less than half know that electrons are smaller than atoms; only 22 percent know what molecules are. Less than half know that the earliest humans did not live at the same time as dinosaurs. Only slightly more than half of the men surveyed know that it is the father's gene that determines

the sex of their children. These are not esoteric bits of trivia; they are basic facts about the nature of the world around us. They are knowable and yet unknown to large segments of our population.

It has been suggested that pseudoscience is embraced in proportion to the extent that actual science is misunderstood or misrepresented. Pseudoscience involves claims presented so they appear to be scientific even though they lack supporting evidence, do not follow the scientific method, or are otherwise implausible. Belief in various pseudoscientific claims is widespread and growing. Twenty-five percent of Americans and 55 percent of teenagers believe in astrology. Forty-nine percent of Americans believe in extrasensory perception (ESP), 25 percent believe in ghosts, 46 percent believe in psychic or spiritual healing, and 45 percent believe the earth has been visited by extraterrestrial beings in the prehistoric past. About 47 percent of Americans believe God created humans in their present form in the last 10,000 years, and two-thirds of those surveyed favor teaching this view (creationism) in public school science classes. Nearly half of those surveyed believe in the lost continent of Atlantis. As reported in the Feder textbook required for this class, belief in these and other pseudoscientific claims have increased in recent decades.

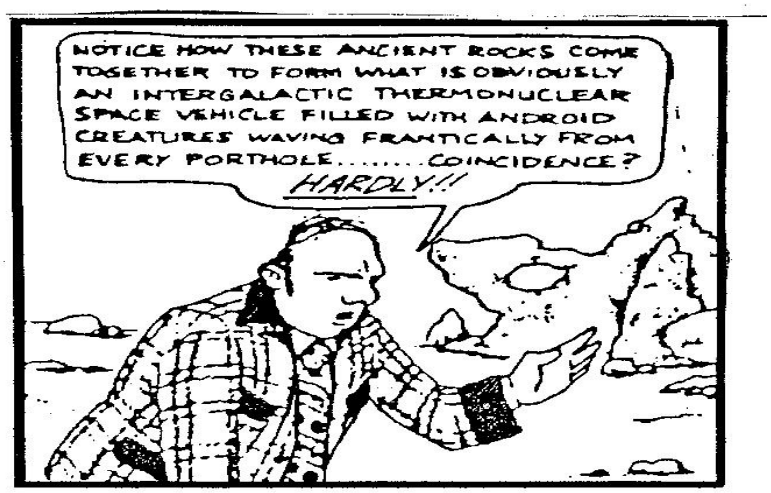
> *We live in a society exquisitely dependent on science and technology, in which hardly anyone knows anything about science and technology. This is a clear prescription for disaster. (Carl Sagan, 1993)*

We elect our politicians from amongst our midst, so it should come as no surprise that most of our leaders share our lack of understanding of science. Sagan estimated that out of 535 members of Congress, rarely during the 20th century have even one percent had any significant background in science (1996, *The Demon-Haunted World: Science as a Candle in the Dark*). It has been revealed that Ronald and Nancy Reagan relied on an astrologer for help in making decisions on private and government matters while they occupied the White House. Thomas Jefferson may have been the last scientifically literate President, although cases could be made for Theodore Roosevelt and Jimmy Carter.



Over the years, when I have polled my classes, I usually find about one student out of every 100 who can actually build an automobile engine from scratch. For the rest of us, taking our vehicle to the mechanic for repairs is an act of trust, one with which we are often uncomfortable. Most of us would be skeptical if the mechanic said, "your car had a big problem, but I fixed it; trust me! Pay me $1000 and you can have your car back." We would want a better explanation of what the problem was, and how the mechanic identified the problem. We would also expect to see some evidence that the necessary repairs were actually done, such as the worn parts. Shouldn't we be at least as skeptical of our leaders' views and intentions regarding issues such as global climate change, food safety, radioactive waste disposal, airport security procedures, the effectiveness of drugs and medical treatments, mechanisms proposed to restore economic stability, or the justifications for starting a war? Why should we believe Oklahoma Senator Inhofe (who studied economics, not environmental science) when he says global warming is a hoax? Or Rush Limbaugh when he says there would be no rise in sea level even if the polar ice caps melted, because it's like the ice cubes melting in a glass of water? Why are so many people satisfied with the emotional appeal of such statements rather than demanding even the level of evidence they expect from their auto mechanic? How can citizens help decide government policy if they don't understand the science underlying the issues?

This course is a response to the scientific illiteracy that presently afflicts our society. I will attempt to stimulate students to think about thinking. I hope students will ask, "How do we know what we think we know?" Course materials have been chosen to demonstrate how we gather archeological evidence for change, how the evidence is analyzed, and how our interpretations of the data are evaluated. Students will be introduced to the basics of the scientific method, and the principles of logic used in critical thinking. Students will develop their own "baloney detection kit," and will use it to examine a variety of extraordinary claims drawn from the popular literature on archeology and anthropology. Discussions will focus on topics and issues involving views that are prominent in the popular media, but which run counter to generally accepted archeological interpretations. We will compare the substance and structure of scientific and non-scientific explanations for prehistoric events. Students will be expected to learn how to evaluate alternative interpretations and identify appropriate and inappropriate uses of scientific data and reasoning.



Grading and class procedures

Grading is based on an in-class midterm exam and final, a short paper, and a series of quizzes. The midterm and final exam will each contribute 30 percent of your final grade; the paper and your combined quiz score will contribute 20 percent each. The quizzes will be a combination of take-home problems and unannounced in-class quizzes; these assignments will usually involve reading and evaluation of supplementary materials provided as handouts, or on reserve at the library or department office. I do not take attendance, but you will be expected to be in class, as the quizzes occur at irregular intervals. Make-up assignments are not allowed without a medical excuse or other University excused absence. If you must miss class, it is your responsibility to see me or a fellow student to find out about the material covered during your absence.

Over the past few semesters, students' use of cell phones, PDAs, MP3 devices, PCs, and other electronic media has become increasingly disruptive in class. Therefore the use of these sorts of devices will not be allowed. Critical thinking, following complicated class presentations, and taking notes are among the academic skills that students are expected to learn and demonstrate in this course. Recent experience has shown that texting, visiting Facebook, and other such activities are distracting to neighboring students and disruptive to the instructional environment in the classroom. Devices must be turned off (not merely silenced) during class. Students who take calls, engage in texting or access the Internet during class may be asked to forfeit the device and/or be dismissed from class for the day. The instructor reserves the right to drop students for repeated violations of this class policy. Please respect your fellow students' right to focus on class presentations, and everyone's educational experience will be enhanced.

"Did you ever have days when you wished you were a creationist?"

If you have a disability and need classroom accommodations, please contact the Center for Accommodations and Support Services (CASS) at 747-5148, or by email at cass@utep.edu, or visit their office in the UTEP Union East, Rm. 106. CASS staff members are the only individuals who may validate need and authorize accommodations for students with disabilities. For more information, please visit the CASS website at www.sa.utep.edu/cass.

Academic Dishonesty

Unless otherwise indicated in writing, the assignments you turn in for this course are to be your own work. Any student who commits an act of academic dishonesty is subject to discipline. Academic dishonesty includes such actions as cheating, plagiarism, collusion, the submission for credit of someone else's work, and taking an exam for another person. Cases of suspected academic dishonesty will be referred to the Dean of Students for investigation. Disciplinary actions can include a failing grade, suspension or expulsion from the University. If you have any doubts about what is acceptable on papers or take-home assignments, see me. You may also consult the UTEP Handbook of Operating Procedures, Student Affairs, Sections 1.2.2, 1.6.2 and 1.6.3 for definitions and details. Please refrain from such activities; it is easier and a lot more fun to simply do the work as assigned. Enjoy the course!

Required Textbooks:

Kenneth Feder (2011) *Frauds, Myths, and Mysteries: Science and Pseudoscience in Archaeology.* McGraw Hill, 7th edition.

Theodore Schick & Lewis Vaughn (2011) *How to Think About Weird Things: Critical Thinking for a New Age.* McGraw Hill, 6th edition.

Michael Shermer & Pat Linse (2001) *The Baloney Detection Kit.* Skeptic Society.

Recommended:

National Academy of Science (2008) *Science, Evolution, and Creationism.* National Academies Press. Free online version at www.nap.edu/catalog.php?record_id=11876

COURSE OUTLINE

The Nature of Scientific Reasoning

Jan. 23-25 Introduction to course, questionnaire. The state of science knowledge in the United States. (Feder Quick Start Guide, and Ch. 1; S&V Ch.1, 5; Sagan 1990)

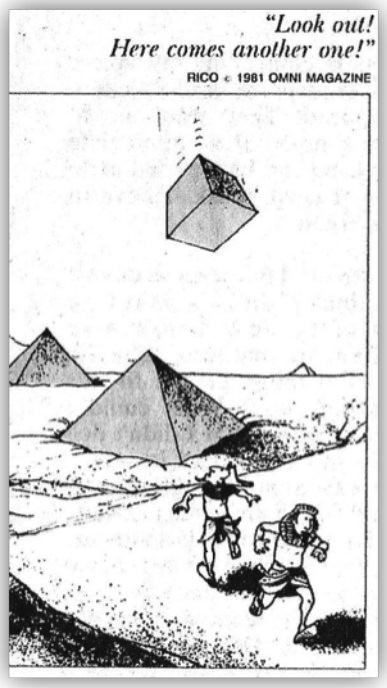
Jan 28-Feb 1 Science and pseudoscience: understanding the key elements and differences. (Feder Ch. 2, S&V Ch. 2, S&L pp.2-8, 15)

Feb 4-11 Epistemology: how scientists know things. Logical arguments, criteria of adequacy and baloney detection. (S&V Ch. 6, 7; Asimov 1989; Rothman 1989; S&L)

Feb. 13-18 Archeology and the study of past cultures. Recovering and interpreting material cultural evidence; Uniformitarianism and inference from indirect evidence. Understanding reactive vs. non-reactive measures of behavior. (Video: Other People's Garbage)

Feb. 20-25 Anthropological concepts: cultural relativism vs. ethnocentrism. Archeological dating; the use and misuse of analogy. Introduction to types of analogies.

Myths and Mysteries



Feb. 27-Mar 6 Scientific creationism; is it scientific? The nature of creationist arguments. Fallacies of logic illustrated by the *Kitzmiller v Dover* case. (Video: In The Beginning) (Feder, Ch. 12; NAS, Ch. 1-4; Arthur 1996; Laferriere 1989)

Mar. 8 **Midterm Exam**

Mar. 11-15 Pseudo-archeology and peopling of the New World. Did the Vikings discover America? What about the Lost Tribes of Israel or Celts? Video: Voyages of the Vikings (Feder Ch. 5, 6)

Mar. 18-22 Spring Break; no classes

Mar. 25-27 Lost race of Mound builders? Video: Myths and the Mound builders. (Feder, Ch. 7)

Mar. 29 Cesar Chavez Day/Service Day. No classes

Apr. 1-5 Seeing what we believe. Pareidolia and other perceptual problems. Natural resemblances and the archeology of Mars. (S&V Ch. 5; Feder 240-245)

Apr. 8-12 Rock art, religious texts, faulty logic and ethnocentrism; how Erik Von Daniken established the standards for an entire genre of popular writing. Is there any evidence for ancient astronauts? Video: Chariots of the Gods?: The Mysteries Continue.
(Feder, Ch. 9; S&V Ch. 5; Bainbridge 1978)

Apr. 15-19 Pyramids, pyramid power, and ancient Egypt; Who built the pyramids, and why?
(Feder Ch. 9) Video: This Old Pyramid.

Apr. 22-29 The lost continent of Atlantis. Where was it, and where did it go? Students consider several arguments that attempt to reconcile the story of Atlantis with modern scientific and geographical knowledge. The more general question: why is this particular belief so persistent? Video: Lost City of the Aegean. (Feder, Ch. 8)

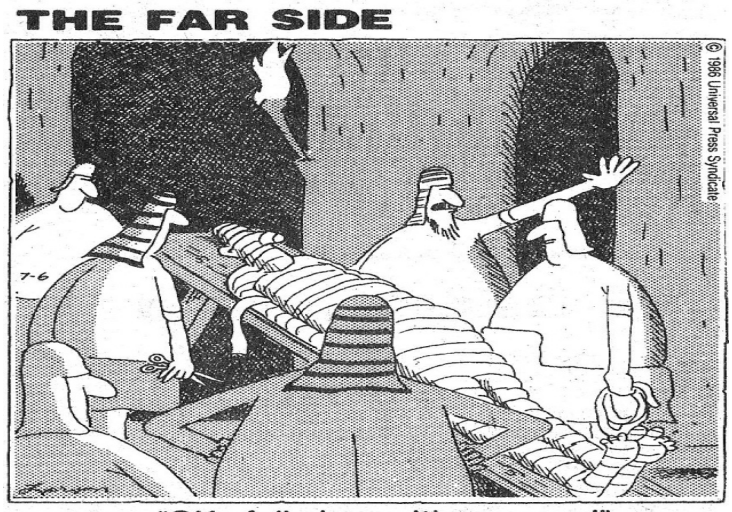
May 1-8 Psychic archeology. What arguments are used to support the claim that dowsing, remote viewing and other forms of ESP work? Video: Scientific American Frontiers: Beyond Science (Feder Ch. 11; McKusick 1982)

May 10 Dead Day. PAPERS DUE

May 17 FINAL EXAM (10 AM)

Returning from vacation, Roy and Barbara find their house, their neighborhood, their friends—in fact, all of Atlantis is just plain gone.

Science is more than a body of knowledge; it is a way of thinking. I have a foreboding of an America in my children's or grandchildren's time -- when the United States is a service and information economy; when nearly all the key manufacturing industries have slipped away to other countries; when awesome technological powers are in the hands of a very few, and no one representing the public interest can even grasp the issues; when the people have lost the ability to set their own agendas or knowledgeably question those in authority; when, clutching our crystals and nervously consulting our horoscopes, our critical faculties in decline, unable to distinguish between what feels good and what's true, we slide, almost without noticing, back into superstition and darkness. (Carl Sagan, The Demon-Haunted World,1996)



"OK, folks! . . . It's a wrap!"