Archaeology

History, definitions, concepts, & principles

Archaeology

- The study of objects created by humans in the past.
- Or, the study of cultural materials used & made by humans in the past.
- We study *objects, not behavior*!

Science

- A sense-making system that relies on consideration of multiple alternatives (framed under existing knowledge [e.g., theory]) as a process of disconfirmation.

- Scientists do not arrive at **truth**; they arrive at *best current answers* (BCA).

Common Sense

- The sense-making system that we inherit from our culture that relies on a process of confirmation.
- Tends to be egocentric & ethnocentric.
- Does not cover multiple alternatives, but looks for evidence to confirm beliefs.

Examples

- Science: like a homicide investigation.
  - Suspects are innocent until proven guilty.
  - Detectives disconfirm alternative suspects.
- Common sense: breaking up with significant other. We look for evidence to confirm our belief as to why they dumped us.
  - Not very many alternatives are considered
  - This is a search for the truth.

So…

- We need a system that helps us break free from common sense.
- 2 rules
  - Hypotheses must be testable
  - Must be couched in previous knowledge (like a scientific theory).

This semester's questions…

- Is archaeology scientific or not?
- Or, can archaeology be scientific?

A short history of American archaeology

The three little pigs

Some definitions

- *Artifact* = anything that owes any of its attributes to human activity, usually a discrete object.
- *Feature* = a non-portable artifact that must be studied where it was found.
- *Stratum* = a layer of sediment & materials that were deposited roughly contemporaneously.
- *Strata* = (layers) the plural of stratum.
- *Paradigm* = a body of concepts & methods that dominate fields of study for a time (3 in archaeology). Here we will call them "piggies."

I. The Piglet: *Culture History*

- 1910s – roughly 1955.
- The purpose of culture history was (and still is) to develop *cultural chronologies* for regions.

- Still the back bone of archaeology—**time, space & form.**

CH: three principles

- CH relied heavily on three principles that are fundamental to all of archaeology.

- The **principle of superposition** (PoS)=

  "if sediments are undisturbed, the *last deposited* layer of dirt will occur at the top, and the *first deposited* layer will occur at the bottom of a deposit."

  This statement is often mistaken for: "stuff on the bottom is oldest & stuff on the top is youngest." WRONG!

Why such careful wording for the PoS?

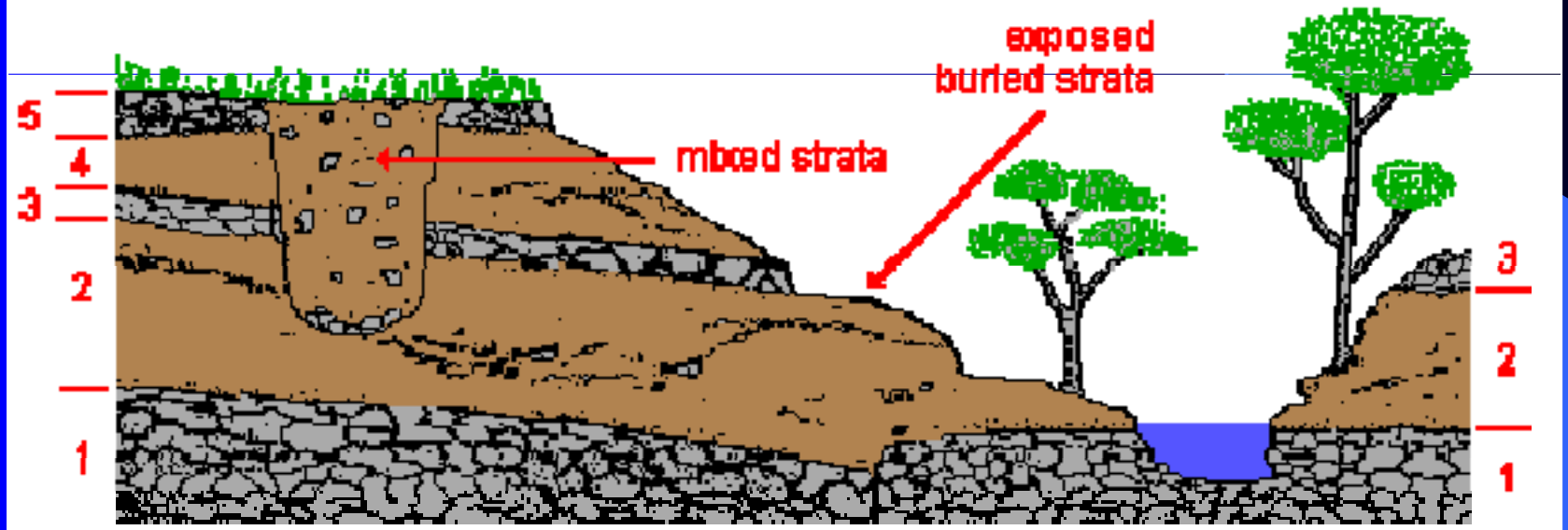


Photo from:http://anthro.palomar.edu/time/images/stratification_2.gif

The principle of strata identified by fossils (artifacts).

- Each *stratum* (layer) has its own characteristic set of fossils (artifacts).
- Allows archaeologists to correlate *strata* (layers) that are from different places.
- If several strata have the same kind of pottery at many different sites, then those portions of the site are the same age.
- Allows the archaeologist to create *index fossils* or types that are *time markers*.

Stratigraphy seen in Mound B, Scull Shoals, Greene County, GA, 1985.

Photo from: radar.ngcsu.edu/~jtwynn/archaeology-1.htm

"Architecture," by Kristin A. Kuckelman

Figure 3. West walls of Structure 1201, Yellow Jacket Pueblo.

Pottery types at Pecos Pueblo, New Mexico

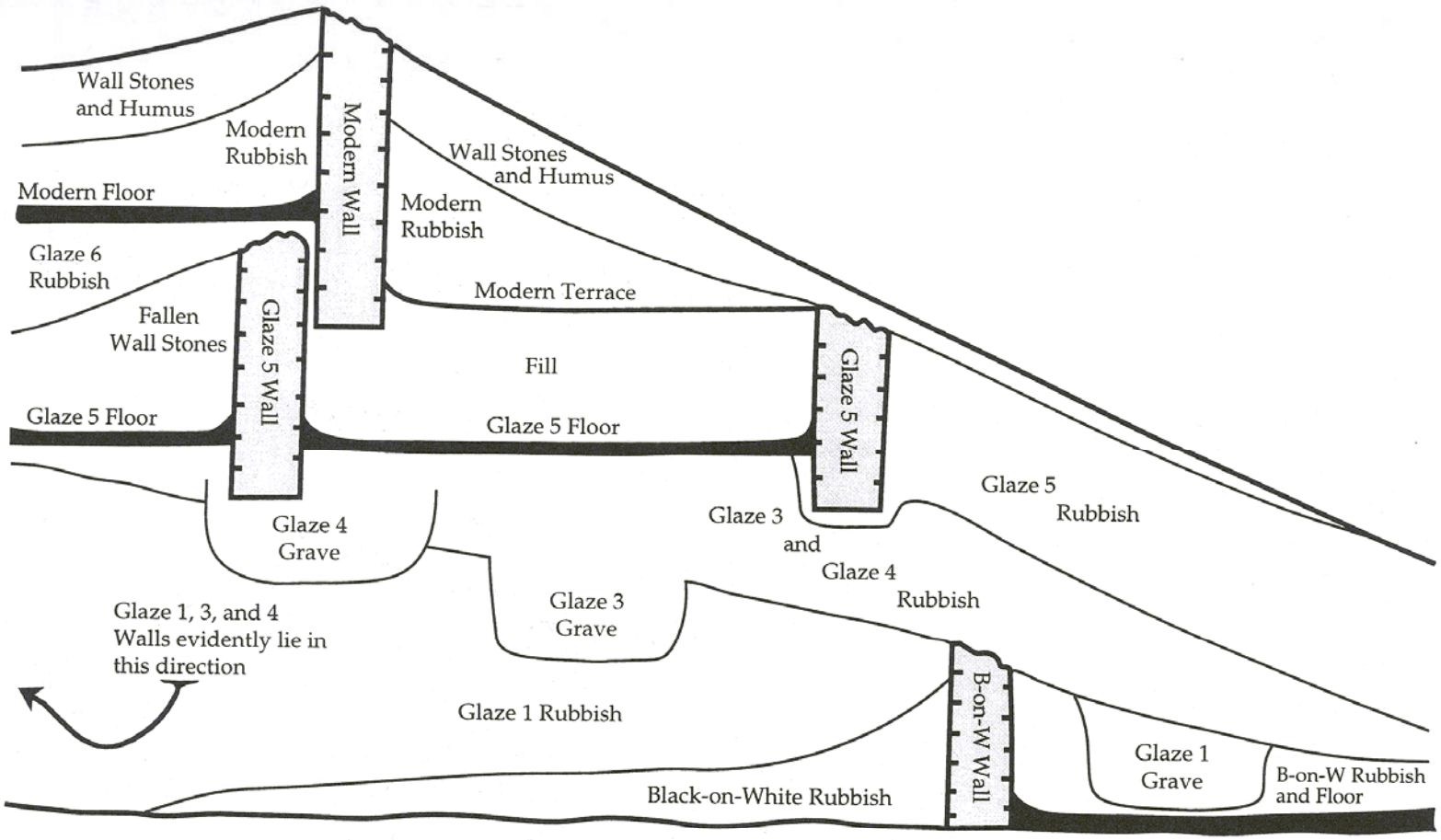


Figure 3.5. A. V. Kidder's summary diagram of the stratigraphic relations of pottery types at Pecos Pueblo (after Kidder 1924).

Figure from: Lyman et al. 1997.

Principle of Association

- “Things (artifacts) found near each other spatially (whether in the same stratum or from the same excavated house) are inferred to have been used and deposited at roughly the same time.”

- This is an assumption that must be tested.

Prehistoric feature (house structure w/ post-molds from Kentucky.

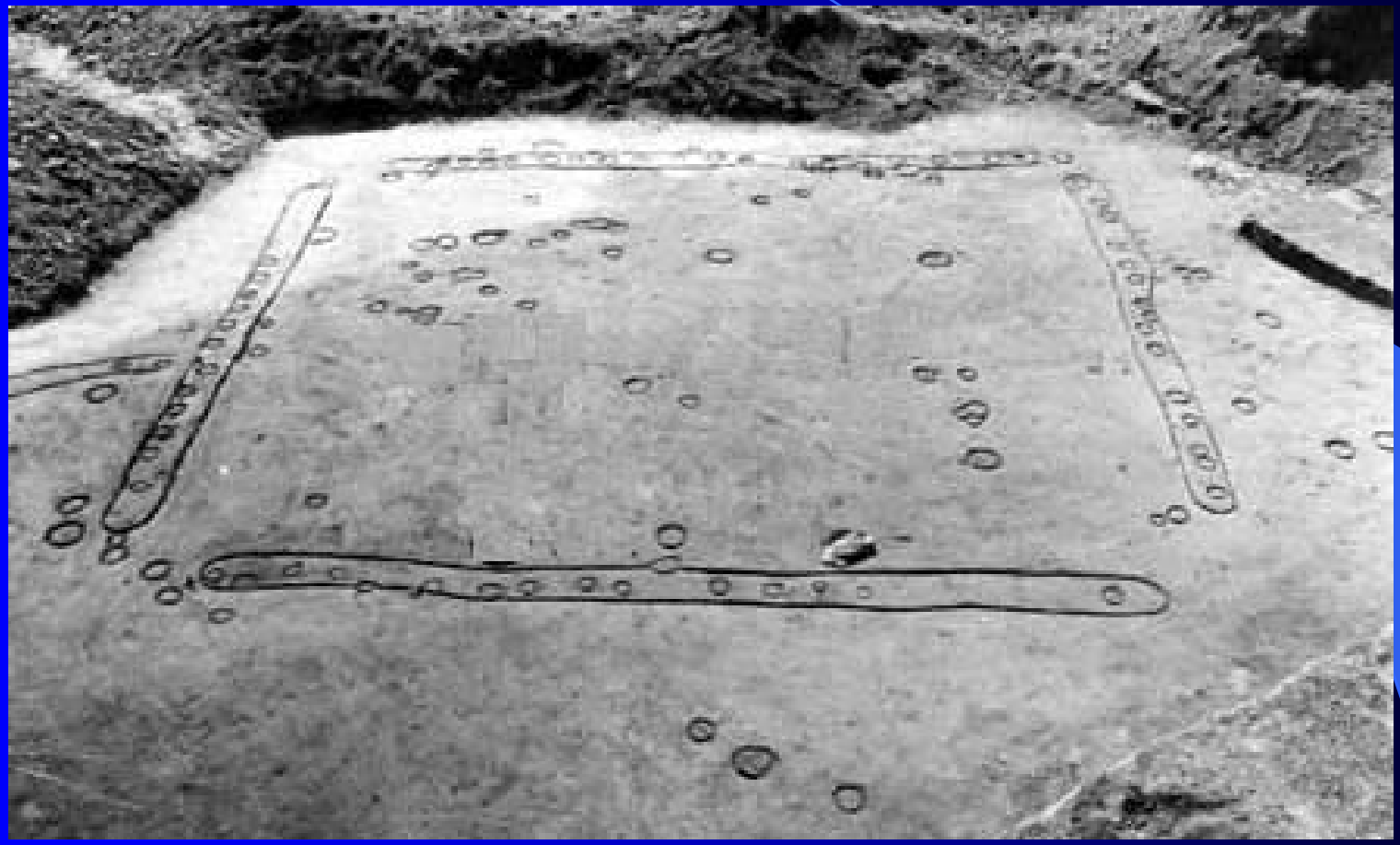
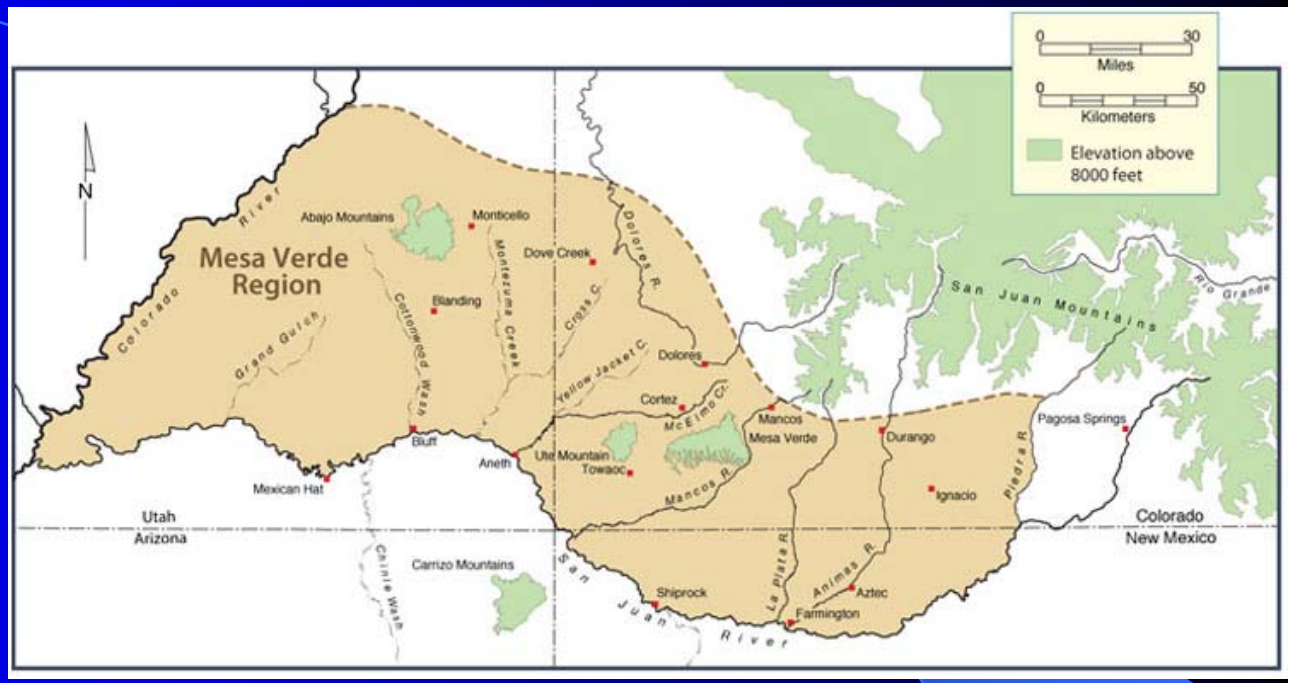


Photo from: http://www.kyheritage.org/prehistory_files/house1.jpg

Summary of CH

- Culture historians sought to establish time, space, & form relationships.
- Their work was very descriptive.
- Answered: *how does culture change over time in particular areas*?
- However, CH is the backbone of archaeology & its methods are important in the second little pig.

Temporal types



AD 950 to 1150

AD 1225 to 1300

II. The adolescent pig: *Culture Reconstruction*

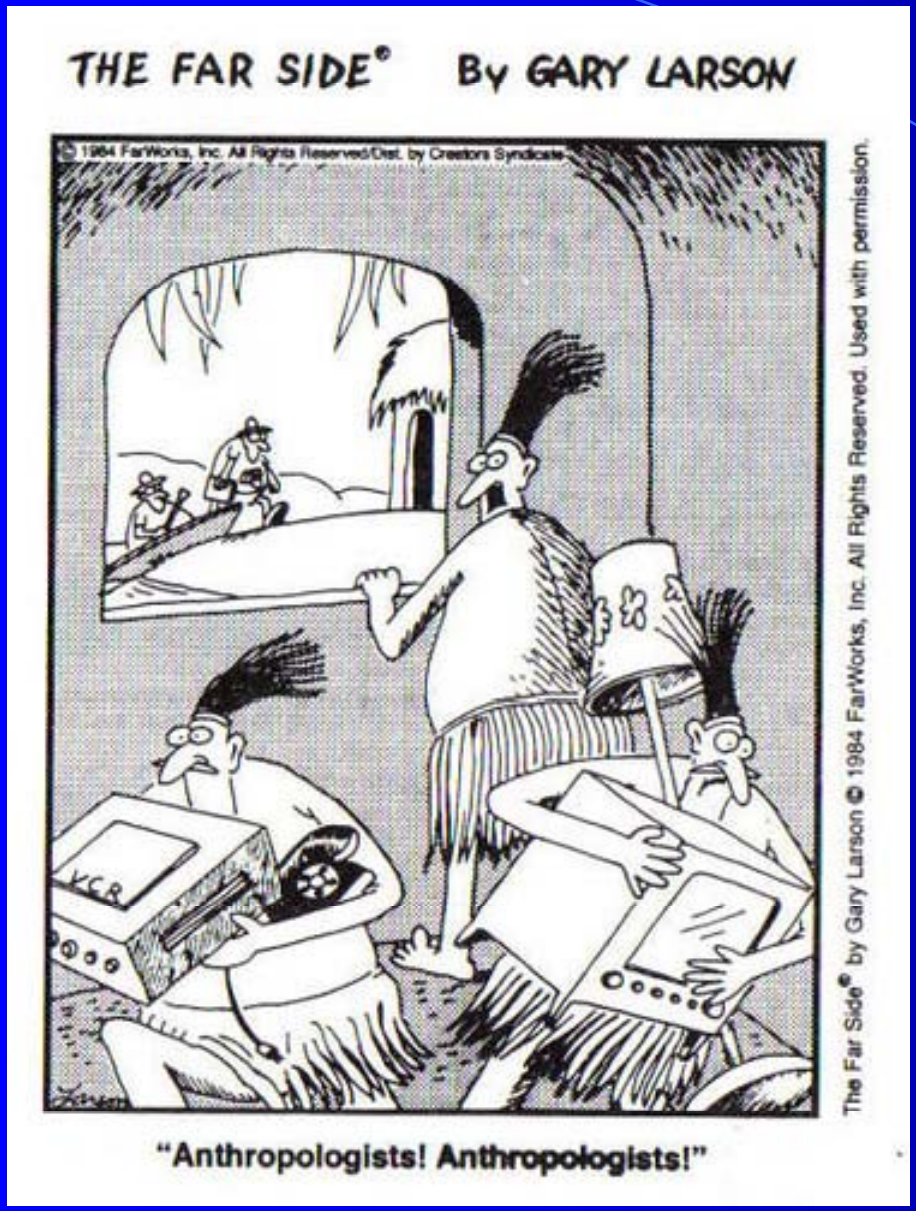
- 1950 – present.
- Anthropologists became dissatisfied with CH because it <u>was thought to be</u> *too descriptive & non-anthropological*.
- They challenged archaeology to learn more about *past behaviors & past cultures*.

CR, continued.

- 1940s through 1970s, archaeology was in its heyday!
- Cultural anthropologists of the world were able to study cultures in great detail.
  - These studies are called “ethnographies.”

Ethnography

- A detailed study of a *living* culture.
- Relies on participant observation.
- So, anthropologists expected anthropological studies to be detailed ethnographies, & archaeology is a subfield of anthropology (1 of 4).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"Anthropologists! Anthropologists!"

How can Piggie II succeed at CR?

- Goals of CR
  - To reconstruct past behaviors from the archaeological record in order to study prehistoric cultures
    - Study how they worked & changed through time.
  - To produce research like ethnographies, detailed studies of past cultures (hence the need for reconstruction).
  - This would serve the ultimate goal, to make archaeology more anthropological.

How did CR work?

- The "A" word
  - (potentially the dirtiest word in archaeology).

- **Analogy**
- Ethnographic analogy = study living cultures to learn how artifacts are used.
  - *If similar artifacts are found at sites, the same behaviors occurred in the past as in the modern cultures that were studied.*

- <u>Can you see any problems with this process?</u>

Three examples of analogy

- Novels
- Long/thin objects
- Smudge pits

- The flaws in the approach
  - Screw driver problem
  - Negation of change
  - Do we need archaeology?

Photo from: www.museum.state.il.us/. ../ptscty24clr2.jpg

Summary of CR

- Main goal was to make archaeology less descriptive & more anthropological.
- Tried to do so via ethnographic analogy.
- Was heavily criticized for being very unscientific by 1960.
- Yet, many archaeologists still practice CR even if they won't admit it.

III. The full-grown, poorly behaved pig: *Processual Archaeology*

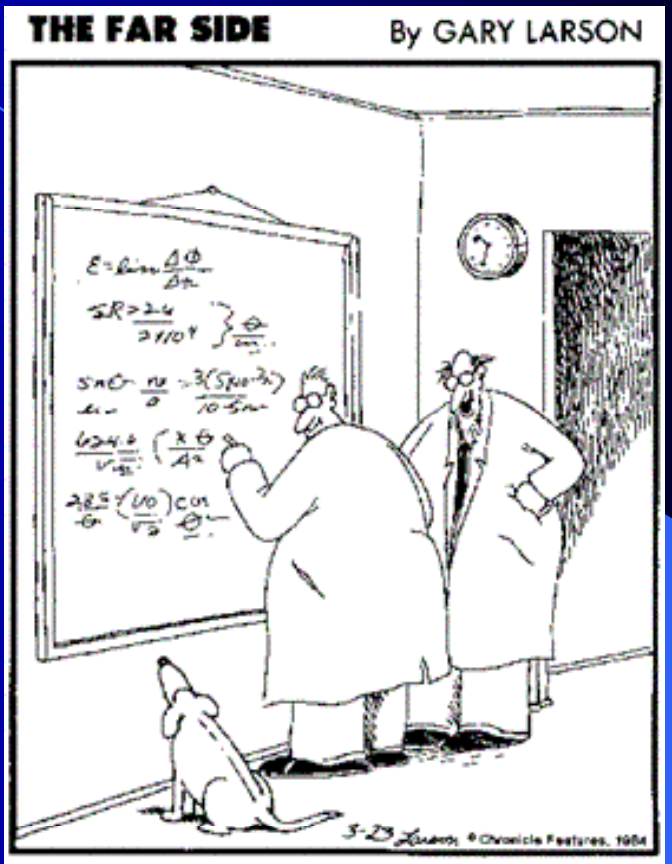
- Developed mainly under Lewis Binford in the 1960s & 1970s.
- Sought to make analogies more scientific.
- Did this via the scientific method & systems theory.

The hypothetico-deductive approach

(the scientific method)

1) Explicitly state a research problem
2) State a series of possible solutions called multiple working hypotheses.
3) Derive test implications that allow attempts to disconfirm hypotheses
4) Collect relevant data
5) Analyze data
6) Disconfirm hypotheses

Knowing how it could change the lives of canines everywhere, the dog scientists struggled diligently to understand the Doorknob Principle.



"Ohhhhhhh . . . Look at that, Schuster . . . Dogs are so cute when they try to comprehend quantum mechanics."

Sounds good, right?

- What are the rules of science discussed during week 1?
- These were violated because ethnographic analogy was stilled used to infer prehistoric behavior.
- Does not matter how the problem is stated, the screw driver problem still exists.

So, where are we now?

- Archaeology waffles between being a science & being pseudo-science.
- It is not a tragedy if archaeology is pseudo-science.
- What is problematic is the belief that we are practicing science at times that we are not.

Post-processualism

- Maintains that science is impossible because no researcher is completely objective.
- Must become deeply subjective.
- There are behaviors, beliefs, customs, symbols inherent in artifacts
  - We just need to “read” them from the archaeological record.

The three little piggies

- PPA is troubling because we do not need "archaeology" to do it
  - anyone's subjective experience will do.
- We really still practice CH & CR.
- PA was not much of an improvement on CR.
- The problem really: *what questions can we actually ask of the archaeological record?*