

**Demarcation:
Positions**

PHL 311
Spring 2006

Must scientific propositions be true?

- One might claim that a proposition is scientific if and only if it is true.
- Break into parts
 - If a claim is scientific, then it is true
 - If a claim is true, then it is scientific.

**If a claim is scientific,
then it is true**

- Seems to be too strong.
- Whether or not some scientific claims are true, it seems many are not
 - Some are simply false
 - Some have not been tested
 - Some are assumptions

**If a claim is true,
then it is scientific.**

- Seems too weak
- Many claims that are true might not be considered science
 - Mathematical claims
 - Claims about personal history
 - Claims about norms or values

**Must scientific propositions be
verifiable?**

- If scientific claims need not be true to be scientific, might it then be the case that they must be verifiable?
 - Verifiable means that the claim could be shown to be true.
- A claim is scientific if and only if it is verifiable.
 - Again break into parts

**If a claim is verifiable, then it is
scientific**

- Too broad if specifications are not made on what counts as verification
 - Circular forms: If an X were detected, then we would know there are Xs
 - Mathematical claims
 - Testimony: I fell hungry
 - Interpretation: If we use theory T, then we can interpret this observation as verifying T

If a claim is scientific, then it is verifiable

- Too narrow if science is based on observation and some form of inductive inference is used
 - General statements are underdetermined by evidence
 - Some statements may be assumptions or boundary conditions
 - Idealizations

Must scientific propositions be falsifiable?

- If scientific claims need not be true and need not be verifiable to be scientific, might it then be the case that they must be falsifiable?
 - Falsifiable means that the claim could be shown to be false.
- A claim is scientific if and only if it is falsifiable.
 - Again break into parts

If a claim is falsifiable, then it is scientific

- Need specifications for what counts as being falsified
- Provides a notions of testing and boundary conditions
- Might create problems if
 - Pseudoscientific claims can be falsified
 - Only thought experiments can be done at the time

If a claim is scientific, then it is falsifiable

- Comes closer to a criterion since the conditions for falsification would be specified prior to testing and boundary conditions could be established.
- There are problems if
 - Falsifications are trivial
 - Hypotheses can be added to avoid the force of the falsification

Combinations

- Perhaps some combination of the notions of verification and falsification may provide a demarcation criterion.
 - Consistency
 - Priority
 - Sequence

Context

- Is the context of the application of the criterion relevant?
 - Social
 - Legal
 - Historical
 - Educational
 - Cultural
