Unit 01 Science, Nonscience, and Pseudoscience
SCIE 2320 Scioli

Assumptions underlying science

Science is not a belief system like, e.g., religion; however, science does make some simple, verifiable assumptions.

The three fundamental assumptions underlying scientific reasoning:

1. The unknown is knowable.

2. There is order in the natural (physical) world.

3. The collective human intellect - our senses, our judgment, our ability to reason and to manipulate - is capable of discerning this order.

We rely on three further verifiable assumptions:

1. The Principle of Common Perception:

The natural world can be understood through our five senses, i.e., sight, hearing, touch, taste, olfaction (smell), and their technological extensions. All humans perceive natural world in the same manner.

2. The Principle of Natural Causality

Events happen in the natural world for a natural reason. These events, in turn, cause still other events. Science cannot deal with laws of nature that change on a whim. There are neither daemons nor deities in the natural world to provide false clues or to deliberately distort the events we witness.

3. The Principle of Uniformity

Natural laws and fundamental forces do not vary with time and distance. Those at work today were at work in the past and will be at work in the future no matter where in the universe we look.

In addition, we rely on Occam's (Ockham's) Razor or the Principle of Parsimony to guide us.

This principle tells us that, among two or more alternative models / explanations, the simplest one that accounts for all of the observed facts is the preferred one.