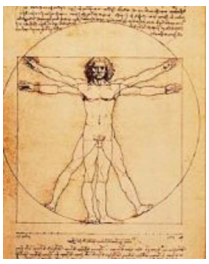
The Rational Scientific Method



Hypothesis, Theory, and Conclusion: A Rational Scientific Method of Inquiry

In science, a definition is a limitation or restriction on the use of a word. Scientific definitions are rational, non-contradictory, unambiguous terms that are consistently used and narrowly defined by the person who is making the hypothesis. We use adjectives to modify nouns (objects) and adverbs to qualify verbs (concepts).

Science in general and physics in particular are about the physical... those things which have physical presence: what is real, things that exist. To exist means to have shape and location, that is, an object with a location: something, somewhere. We visualize objects and we explain concepts. We do not explain objects - we point to them. We explain phenomena. Herein lies the problems with the un-scientific inquiry method of mainstream science.

The scientific method is based on hypothesis and theory. The conclusion is left to each individual. The hypothesis includes the statement of facts, the key terms, and the objects. The hypothesis describes the phenomena or illustrates the objects, defines the key terms, then makes assumptions. It is a statement of facts - not the facts themselves. Assumptions are neither true nor false. One does not define objects; one illustrates them. The theory explains the hypothesis. Everyone must decide for themselves. Each individual concludes that the theory is either possible or not possible.

Science is about explaining. Science in general and physics in particular are about physically present objects. Understanding the difference between objects and concepts allows one to make a rational conclusion about the key terms and the statement of facts at the hypothesis stage of the scientific method.

Proof is for math. Science never proves. Science is about physical reality. Math describes abstract dynamic concepts, whereas science illustrates static physical objects and explains phenomena.

A hypothesis stands on its own. It does not matter who agrees. The hypothesis should illustrate the objects, define the key terms, and present a statement of the facts, the assumptions. The theory would then explain the phenomena of the hypothesis. There is no correct or incorrect hypothesis - it is an assumption. It is either rational or not. If it is rational, we accept the assumption of the hypothesis. Predictions and observations are opinions and are extra-scientific.

Hypotheses are assumptions, and theories explain the hypotheses. We form a conclusion that the theory is either possible or not possible.

We describe objects in the hypothesis. We explain concepts in the theory. We never explain objects, we illustrate them or point to them. This is why in science it is crucial to understand the difference between objects and concepts, nouns and verbs, adjectives and adverbs, and hypotheses and theories.

We can say: I see a field of corn. The corn stalks wave in the wind. I have a dust particle in my eye. BUT...fields, waves, and point particles are concepts in math which do not exist in physical reality and should not be presented in the hypothesis.

"Insofar as mathematics is exact, it does not apply to reality; and insofar as mathematics applies to reality, it is not exact." -- Einstein

The mathematical physicist uses ambiguous or contradictory terms inconsistently. He or she confuses objects with concepts, nouns with verbs, adverbs with adjectives, and hypotheses with theories.

Reality does not depend on human perception or observation. It is because the human senses are limited and flawed that science must be as objective as possible. The scientific method is observer independent as much as possible. A rational key term never invokes an observer. Although our senses are limited, there is no limit to our intellect.

One must apply rationality, reasoning, and critical thought at the conceptual stage in the hypothesis.

Precision is precious. Defining key terms is critically important. Understanding the difference between concepts and objects is essential in dealing with science.

In science, one must be able to visualize the concrete object. Objects must be illustrated in the hypothesis. The objects are the actors, the key terms make clear the meaning of the script, and the statement of facts sets the initial scene for the theory. The dynamic concepts in the theory are describing the phenomena of the hypothesis. The hypothesis is a photo (static), the theory is a movie (dynamic).

Each person takes away their own conclusion as to whether or not the story was possible.

Most important are the key terms, and these words have meaning as defined by the theorist. In science, one can only use objects that can be illustrated in the hypothesis. If it cannot be illustrated or visualized, then it is not real and has no physical presence. What is not physical has no place in science.

Science, especially physics, is conceptual. Technology, which is mostly trial & error, is empirical.

Planes that fly, microwaves that heat, and GPS devices that measure your position work primarily through trial and error because of technology…not because the theories that they are supposedly founded upon are ‘correct’.

The problem lies in the confusion between objects and concepts. There is no good way to discuss General or Special Relativity, Quantum Mechanics, or String Theory until point, line, and plane can be defined and understood. Math attempts to describe dynamic concepts by moving numbers. Physics is about reality. What exists, physically present objects with location, are made up of matter. These are static and can be photographed or illustrated. But we must be able to define what ‘exist’ means.

Universe: matter (atoms) and space (nothing)

Concept: the relationship between two or more objects

Object: that which has shape

Space: that which does not have shape

Exist: matter + location

Location: the set of static distances to all other objects

Motion: object + 2 or more locations

Theoretical physics, Newtonian physics, ToR, and QM don't explain anything, they describe. These theories predict or describe, but do not explain. It is not interesting that Newton tells me an apple falls at 9.8 meters per ft per second per second. I want to know why. I can point at an apple and say, “Look it is falling fast.” So what? What is the physical medium that attracts objects to each other? That is the question for science. Math 'predicts' how fast something falls to the ground, but it says nothing about why it falls.

“Since the mathematicians have invaded the theory of relativity, I do not understand it myself anymore.”—Albert Einstein

Ptolemy ‘predicted' to a high degree of accuracy the position of the planets in the solar system, but he had the earth in the center. That does not help explain why the planets orbit in elliptical paths and don't fly out into space.

What about these 'predictions'? If I observe an apple fall a few times and measure the speed and distance traveled, I can 'predict' how fast an apple falls. What does that tell me? It does not tell me when an apple is going to fall. Now THAT would be a real prediction. Something that already happened, a consummated event, is described and should then be explained. Something that we have observed happen repeatedly can lead us to think that there is a high degree of probability that it will happen that way again. But that is not really a prediction - it's an educated guess.

Belief, truth, evidence, and proof are not part of the scientific method; it is observer-independent. Experiments and observation are extra-scientific. Science, especially theoretical physics, is conceptual. Technology, mostly trial & error, is empirical. Here’s the root of the problem with the currently taught scientific method: It all revolves around simple misunderstandings of basic physical reality brought on by the inability to determine the difference between an object and a concept, and the inability to precisely and consistently define terms upon which a theory depends.

At the root of the Relativity and Quantum Mechanics problem is Euclidean geometry. Because the point, the line, and the plane are not defined, or are defined ambiguously using abstract concepts instead of objects, they do not represent actual physical reality! A rather shaky basis on which to form the physical ‘laws’ of the universe.

Rational Scientific Method :

Hypothesis: defines our key terms and makes a statement of the facts, the assumptions. We assume in the hypothesis stage. If the assumptions are rational, then we can proceed to the theory.

The objects of the hypothesis are described or illustrated, a photograph-static.

Theory: explains the hypothesis; phenomena such as motion or process, a movie-dynamic.

Conclusion: possible or not possible? Everyone decides for themselves.

If the key terms of the hypothesis are ambiguous, circular, synonymous, or contradictory, then the theorist should throw out the hypothesis, or present precise, rational definitions of key terms upon which the hypothesis depends.

The theory is where we present a ‘movie’ or series of illustrations of the phenomena, or process, involved in explaining the hypothesis. Then, and only then, can we form our conclusion.

If we conclude the theory is irrational, and therefore not possible, we throw the theory out.

If we conclude that the theory is possible, then we publish a paper, or stand around the water cooler telling people about it, or simply move on to the next thing on our agenda. If we conclude that the theory is possible, but does not provide the complete explanation, we form another hypothesis based upon the theory and build upon it. The flat earth becomes the round earth, which becomes the oblate spheroid...

Once the theory is presented, science is done! The conclusion is left up to each individual.