**What is the scientific method, how has science evolved in the last decades? Video 2**

Welcome to the world of physics!

Today’s video is going to be about understanding the scientific method, and vocabulary of science and answering the question how has science as well as the scientific method evolved in the last few centuries?

The scientific method (4 steps) which consists of logic and reductionism, that is what we are taught in high school, and which characterized the development of science since the 17th century

Applies in different fields of science such as social sciences, probability and game theories

Critical to the development of scientific theories

* Observe a phenomenon: look.
* Formulate a hypothesis/testable explanation: ask a question.
* Make a prediction based on the hypothesis
* Test the hypothesis: perform an experiment.
* Analyze the data: confirm the hypothesis.
* Iterate use the results to make new predictions

Not used today because:

The scientific method is limited by the human scale. The experience/computational models we can make are limited in space, time and tools and method that are known = string theory and the infinitly small (the partical requires to much energy not yet produced in the large hadron collider), dark matter/energy by the lack and by the fact that we can only experiment in the present

Human subjectivity which can affect the results (string theory or the desperate search for graviton given the standard model of particle physics)=bias

The brain modelled as a continuum of expectations, prediction and sensory information.

Expectattions too high we might me biased by our own brain again sabine hossenfelder video what is wrong with particle physics

* Not used today: Accidental discoveries
* Theory (wiki def: is a rational type of abstract thinking about a phenomenon, or the results of such thinking.) comes from the Greek theorein which mean to look at. in modern science it is a way to describe or understand the nature. It must be made in a consistent way: written using math equations but should also be falsifable (if not or hard to verify : theoretical theory) with experimental apparatus and consilient meaning that multiple independent sources should have strong evidence in favor of that theory. They are the most reliable rigourus and comprehensive form of scientific knowledge in contrast of outside science where it can be unproven or speculative. Theories are based on formal logic and basic axioms or statements. Theories can also be viewed as a scientific model which is a logical or mathematical framework to represent reality

Different from hypothesis which are yet to be studied (part of the scientific method, lead to a potential theory testable conjectures) and scientific laws that are statements to describe and understand nature based on observation of our world (the laws of motion but the theory of relativity)

In science, the term "theory" refers to "a well-substantiated explanation of some aspect of the natural world, based on a body of facts that have been repeatedly confirmed through observation and experiment."

Theories can be improved or replaced by other theories which seems to give a better understanding of the world

Goal of theories is to describe and understand the world we live and make predictions about it in which is really useful when creating new technology (GPS using general relativity)

String theory not being a theory (advised the video by s hossenfelder

*Sources String theory for dummies, Wikipedia, Khan academy, sabine Hossenfelder, veritasium, brilliant and other college scientific journals*

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