

The Origin and Its Meaning
Theories and Proof

- Data obtained from experiment and observation become fact when sufficiently confirmed.

However, while confirmed data is fact, hypotheses, even ones that have been long-accepted, can still be opinion.

- The usual and accepted method for the proof of theories is not proof as such but, rather, reassurance -- that when applied to real situations the theory produces correct and consistent results.

That the prediction of a hypothesis is subsequently verified by experiment or observation is considered the *sine qua non* validation of a hypothesis.

- But, the pre-Copernican geocentric theory of astronomy with its "cycles" and "epi-cycles" produced correct and consistent results, and produced predictions that were subsequently verified, for millennia -- yet it was dead wrong.

Clearly, if one wishes to be confident in the correctness of a theory one cannot rely on that kind of verification.

- The only alternative is derivation:

- derivation as precise and as rigorous as mathematics and
- that yet simultaneously, when applied to the real world, yields consistent correct results.

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does for physics what Copernicus did for astronomy -- it supersedes the exhausted old theories with a new theory that is realistic, clear, simple and direct.

And,

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does for physics what Euclid did for geometry -- it supersedes mere empirical conclusions with derivation of all of physics.