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Critical Thinking

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Dinosaurs - Paragraph Questions

Gould claims that science is a “fruitful mode of inquiry,” not a list of “conclusions”. This quote is talking about the progression of scientific theories and how theories are not about fixed conclusions but a pursuit to understand the world. One way he talks about this is how certain theories start off trying to show how a thing may be but there is little to go off and prove that theory. For example, the theory that increasing heat in the environment led to dinosaurs not being able to reproduce. This theory did not have much to go off of and couldn’t be disproven, thus the theory died off. A good theory allows scientists to view the world in multiple perspectives. For example the meteor theory on how the dinos died, brought in lots of perspectives such as looking for possible craters and how plants could have survived it. Lastly a good theory stands the test of time and survives constant pursuits to try to prove and disprove it. For example the meteor theory has been standing for 40 years.

Hypotheses can never be 100% sure that they are true. First off hypotheses are simply a proposed explanation with not much insight and are often created as the starting point for a further investigation. So hypothesis can be very flappsy and has a high chance of being proven wrong. Hypotheses are also subject to incomplete information as they may no of thought of all the possible perspectives, as well as having potentially a lot of human error and biases associated with the hypotheses. Lastly, hypotheses are subject to advances in science as a new breakthrough in science could destroy the hypothesis altogether.

Whether a hypothesis is testable depends on if the hypothesis is observable and if it could be reasoned out. Simply state if there is no observable evidence to a problem, then it is simply impossible to prove. For example the theory on how dinosaurs died because of an overdose has almost no observable evidence as there are no living dino stomachs in existence. Even if a hypothesis could be observed, if it can't be reasoned out then it can't be tested. For example if a dinosaur's stomach is found, however if the reason why dinosaurs can't be figured out then the hypothesis can't be proven.

Hypothesis is suspect if one cannot mount arguments against it because it would not be able to gain credibility. Hypotheses need to endure a process of acknowledging a problem in it and refuting the problem. With every trial the hypothesis becomes more complete and more accepted. If there is no rebuttal, the full hypothesis would not be found. For example a judge in a case cannot conclude it without having to hear all of the evidence both for and against, or else they may make a bad decision. Not having any way to disprove it won't allow scientists to advance the knowledge needed to fully prove the hypothesis.

Scientific theories should be interesting and fun. Having fun and exciting theories brings in more scientists to study it. For example the Alvarez hypothesis is very exciting and has brought forth hundreds of studies with it, however the testicular hypothesis has seen almost no work on it simply because it is boring. In addition to being more popular scientists get to have more fun and the stressful job becomes more of a playground and would have more drive to study it. Having fun theories gives in more creativity researchers for the Alvarez hypothesis get to go explore the world trying to find evidence of an asteroid which is a lot better than being stuck in a lab with a boring hypothesis.