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Is "Evolution" a "Theory" or "Fact," or Is This Just a Trivial Game of Semantics? (Part 1)

Many members of the general public who are skeptics of Darwinian evolution are intelligent people with a decent understanding of some of the scientific weaknesses with neo-Darwinian evolution. In fact, a recent [article in *The Scientist*](#) suggests that, "public discontent with classical evolution as an inclusive theory stems partly from an intuitive appreciation of its limits." (Eric Smith, "Before Darwin," *The Scientist*, June 2008:32-38.) But in this highly nuanced debate, such Darwin-skeptics must avoid semantic land mines if they are to accurately, clearly, and effectively communicate their views. I have often seen that some people who oppose neo-Darwinian evolution are fond of calling evolution "only a theory" or "just a theory, but not a fact." After using such a phrase, they are immediately scolded by Darwinists, who tell them that "a theory" is a "well-substantiated scientific explanation of some aspect of the natural world" and that evolution should be considered "both fact and theory." Ken Miller just wrote a book titled, "Only a theory," basically opposing people who use such an argument. Similarly, an [opinion article](#) recently condescended:

One of the greatest misconceptions about evolution is embedded in the misuse of the word 'theory' in its application to science. The common antecedents that result in this misuse of the word are manifested in either genuine ignorance, or disguised ignorance. People are either genuinely mistaken of the word's intent, or they are well aware of the word's scientific definition, but still use the nonscientific definition in an effort to spawn doubt. ... Evolution, because it's a theory, is a higher form of knowledge than a fact.

Similarly, the NCSE's Glenn Branch recently co-wrote [an article](#) taking the condescending approach: it labeled those who use the "evolution is 'just a theory' line as being "pejorative" and favorably cited a Darwinist who scolded, "To claim that evolution is 'just a theory' is to reveal both a profound ignorance of modern biological knowledge and a deep misunderstanding of the basic nature of science."

Upon receiving such a scolding, the Darwin-skeptic who said that evolution is "just a theory, but not a fact" may feel quite bad. She innocently had no intent to violate any rules of semantics or misuse any terms; she merely wanted to communicate her skepticism of neo-Darwinism. In this tangled web of ambiguously defined terms, the Darwin-skeptic is then confronted by a number of confusing questions of rhetoric and semantics:

- 1. **Are Darwinists correct to define "theory" as "a well-substantiated scientific explanation of some aspect of the natural world" or "a comprehensive explanation of some aspect of nature that is supported by a vast body of evidence"?**
- 2. **Under such a strong definition of "theory," does evolution qualify as a "theory"?**
- 3. **Is it correct to call evolution a "fact"?**
- 4. **Is it best for Darwin skeptics to call evolution "just a theory, not a fact"?**
- 5. **All I wanted to say is that I'm a scientific skeptic of neo-Darwinism. How can I convey such skepticism without stepping on a semantic land mine and getting scolded by Darwinists?"**

These are all good questions. In a series of five posts, I will attempt to answer all five questions, exploring the argument that evolution is "just a theory, not a fact" and providing criticism of people on both sides of this debate, as well as some friendly communications advice for Darwin-skeptics. And *from the outset, I should state that I have always opposed using the*

"evolution is just a theory, not a fact" line to communicate one's skepticism regarding neo-Darwinian evolution.

Question 1: Are Darwinists correct to define "theory" as "a well-substantiated scientific explanation of some aspect of the natural world" or "a comprehensive explanation of some aspect of nature that is supported by a vast body of evidence"?

According to the 1998 edition of the U.S. National Academy of Sciences' (NAS) *Science and Creationism: A View from the National Academy of Sciences*, a theory is "a well-substantiated explanation of some aspect of the natural world that can incorporate facts, laws, and tested hypotheses." In 2008, the NAS released a new edition, *Science, Evolution, and Creationism*, stating that a theory is "a comprehensive explanation of some aspect of nature that is supported by a vast body of evidence." Darwinists routinely invoke these and other similar definitions of "theory" when scolding Darwin-skeptics for calling evolution "just a theory, not a fact." Are Darwinists correct to define "theory" in this fashion? The answer to this question is both yes and no.

"Theory" can have multiple definitions. When I look up "theory" in my 1996 edition of Webster's Encyclopedic Unabridged Dictionary of the English Language (WEUDEL), the word "theory" has 7 or 8 different entries:

1. a coherent group of general propositions used as principles of explanation for a class of phenomena: Einstein's theory of relativity.
2. a proposed explanation whose status is still conjectural, in contrast to well-established propositions that are regarded as reporting matters of actual fact.
3. Math. a body of principles, theorems, or the like, belonging to one subject: number theory.
4. the branch of a science or art that deals with its principles or methods, as distinguished from its practice: music theory.
5. a particular conception or view of something to be done or of the method of doing it; a system of rules or principles.
6. contemplation or speculation.
7. guess or conjecture.

According to entry #2, "theory" can mean "a proposed explanation whose status is still conjectural, in contrast to well-established propositions that are regarded as reporting matters of actual fact." Similarly, entries #6 and #7 define "theory" as "contemplation or speculation" or "guess or conjecture." We'll say these comprise the *soft* definition of theory and represent the definitions that the average person has in mind when they say, "evolution is just a theory, not fact."

The upshot of the *soft* definition of theory is that Darwinists who imply that the term "theory" can never mean that "conjecture or guess" are in fact wrong, because "theory" can in fact mean conjecture or guess. On the other hand, if you're a Darwin-skeptic who thinks that "theory" necessarily means "conjecture" or a "guess" and can never mean a verified scientific explanation, then you are wrong: After listing these entries, my 1996 edition of WEUDEL elaborates on proper usage of the word "theory" within the scientific community:

1. THEORY, HYPOTHESIS are used in non-technical contexts to mean untested idea or opinion. The THEORY in technical use is a more or less verified or established explanation accounting for known facts or phenomena: the theory of relativity. A hypothesis is a conjecture put forth as a possible explanation of phenomena or relations, which serve as a basis of argument or experimentation to reach the truth: This idea is only a hypothesis.

Within technical scientific discussions, the term "theory" typically is understood to mean "a more or less verified or established explanation." We'll call this the *hard* definition of theory. But is this hard definition of theory the only way that scientists use the word "theory"?

When a Darwin-skeptic says "evolution is a theory, not a fact," Darwinists often pounce and assert that the colloquial or "pejorative" (Glenn Branch's label) usage of "theory" can mean "conjecture" or "guess," but *scientists never* use the word "theory" to mean conjecture or guess. For example, Branch favorably quotes Ken Miller's 2007 edition of the textbook *Biology*, implying that there is a united front and complete conformity within the scientific community regarding proper usage of the word "theory": "In science, the word theory applies to a well-tested explanation that unifies a broad range of observations." Such Darwinist claims of unanimity within the scientific community are also questionable.

While scientists do typically imply the "hard" definition when using the word "theory," they don't always use it in that sense. If scientists always meant the "hard" definition of "theory," then scientists would virtually never use the phrase "new theory" because an idea does not attain the status of a theory until it becomes well-established and verified, withstanding many tests until it is no longer "a proposed explanation whose status is still conjectural." Yet a quick search of PubMed for the phrase "new theory" reveals

dozens and dozens of hits from the technical scientific literature where scientists offered "a proposed explanation whose status is still conjectural" but called that explanation a theory.

Three recent examples of such usage of "new theory," where theory represented an unverified idea, will suffice.

In the April, 2008 issue of the journal *Medical Hypotheses*, editor-in-chief Bruce G. Charlton uses the phrase "new theory" multiple times. The meaning implied by the term "theory" in this case was *a proposed explanation whose status is still conjectural, in contrast to well-established propositions that are regarded as reporting matters of actual fact*. As Charlton observes:

An old joke about the response to revolutionary new scientific theories states that there are three phases on the road to acceptance: 1. The theory is not true; 2. The theory is true, but it is unimportant; 3. The theory is true, and it is important – but we knew it all along. ... Theory for scientists is like water for fish: the invisible medium in which they swim.

(Bruce G. Charlton, "[False, trivial, obvious: Why new and revolutionary theories are typically disrespected](#)," *Medical Hypotheses* Vol. 71:1–3 (2008).)

Charlton goes on to say, "When a new theory is revolutionary, then it is perceived as an observation which is incompatible with the old theory. From this perspective either the new theory must be rejected, or else the old theory abandoned." Clearly Charlton uses the word "theory" as if it can, in some circumstances, mean a new idea that has not yet undergone widespread testing and verification, and may not have experienced widespread acceptance.

As a second example, a recent sociology paper from *Archives of Suicide Research* states, "Although the study has offered some support for the new theory, future research with more rigorous quantitative data needs to be conducted to further test the theory on a more comprehensive level." (J. Zhang, D. Lester, "[Psychological Tensions Found in Suicide Notes: A Test for the Strain Theory of Suicide](#)," *Archives of Suicide Research*, Vol. 12(1):67-73 (2008).) Clearly this study uses the word "theory" to describe a new idea that has not yet been fully verified nor accepted.

Finally, even within the context of evolutionary biology, theory can mean a new idea that does not yet have widespread verification or universal acceptance. A recent article in *Current Biology* entitled "[Social Evolution: The Decline and Fall of Genetic Kin Recognition](#)," by Andy Gardner and Stuart A. West of the Institute of Evolutionary Biology, University of Edinburgh, contains a subheading which asserts, "New theory confirms that genetic kin recognition is inherently unstable, explaining its rarity." Yet the article goes on to describe a vigorous scientific debate between evolutionary biologists about whether kin selection is a genetically viable explanation to account for the evolutionary origin of altruism and cooperation. According to the article, a new study concludes that "there is relatively poor empirical support for this mechanism in nature" because "[a] new theoretical study of genetic kin recognition ... reveals that, left to its own evolutionary devices, this mechanism will drive itself to ruin." But other leaders in that field disagree, implying that this theory is not "a well-substantiated scientific explanation of some aspect of the natural world" or "a comprehensive explanation of some aspect of nature that is supported by a vast body of evidence."

There are many other examples from the technical literature where theory is used in a similar sense, and it does not mean "a more or less verified or established explanation." It should be clear that scientists sometimes DO use the term "theory" to refer to a new idea that has not yet undergone extensive testing and is simply "a proposed explanation whose status is still conjectural."

Conclusion

In closing, we must return to the question, *Are Darwinists correct to define "theory" as "a well-substantiated scientific explanation of some aspect of the natural world" or "a comprehensive explanation of some aspect of nature that is supported by a vast body of evidence"?* The answer is yes, but they are not entitled to claim that such a hard definition is the exclusively acceptable usage of theory both for scientists and non-scientists. Darwinists are wrong to imply that scientists always necessarily use the hard definition of theory, because even scientists occasionally use theory as if it means new idea, or a "a proposed explanation whose status is still conjectural."

The problem underlying debates over the proper usage of theory is that the term can have multiple definitions, even among scientists, ranging from "a proposed explanation whose status is still conjectural, in contrast to well-established propositions" to "a more or less verified or established explanation." **But the upshot is this: Because the term "theory" can mean "a more or less verified or established explanation," it is inappropriate for a Darwin skeptic who is trying to communicate doubts about Darwin to use the "evolution is a theory, not a fact" line, because it ignores the truth that in many venues, theory does indeed mean, as WEUDEL explains, "a more or less verified or established explanation."**

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