Unidentified Science 11 - Here's my Theory

In this field, you hear various"theories" discussed a lot, and frankly, it is one of my pet peeves how the word "theory" is tossed around so casually. When people say "my theory," what they mean is "my best guess," or even "my wild speculation". There is nothing inherently wrong with guessing and speculation - we all do it all the time, and it can be useful, if for no other reason than to expose our biases in the absence of facts. For example, when I speculate what someone is like based upon their appearance or their public persona, and it turns out I am wildly wrong when I learn more about them, then I know my biases or stereotypes were invalid and need to be re-examined.

For scientific work - even outside the paradigms of Normal Science - a theory means something altogether different. Most of what in ufology is presented as a theory isn't one in the scientific sense. So, I want to use this opportunity to set straight what I mean by a theory, and hopefully you will then see why we haven't got one.

So, let's lay out some of the characteristics of a theory that make it a unique species of human artifact. I'll try and give some examples along the way.

1 - Theories begin with established fact, and must explain the known facts in a consistent way.

> Generally, when a theory first starts to form, the body of established facts may be relatively small, as it was when Darwin first put forth his theory of evolution. Darwin knew nothing of modern genetics, only a little bit about paleontology, but the facts he started with were fairly solid even then. As the body of facts grows, the theory keeps up if it can. Especially good theories - like Newton's laws of motion - can even stick around and be useful long after new theories with more explanatory power appear.
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> Facts are very difficult things to come by, and can take generations to fully form.

2 - Theories have scope and boundaries - ranges of phenomena they can meaningfully answer questions about . In general, good theories cover a pretty wide range of things. For example, Newton's theory of gravitation published in 1687 tells us a lot about solar systems and satellites, and is still in use, but it tells us nothing about black holes. A given theory can't be expected to answer *any* possible question. Within its scope.,a theory does a good - though not necessarily perfect - job of explaining the data it addresses.

3 - Theories don't just explain, but they also *predict*, even if those predictions are statistical in nature.

A theory doesn't just tie together established facts, but its predictions show us where to look for new facts. If, for example, we are going to invest billions of dollars in a new space telescope, we need an established body of theory to guide us in designing it - we'd be lost otherwise. If, as seems likely, that new telescope turns up surprising data, then there is theoretical work that needs to be done. Trust me, the astrophysics community will not complain about that.

Theoretical predictions can be surprising, and even mind-blowing. Black holes, for example,were predicted several decades before they were observed. They are very strange things, and yet we now know that they pervade the universe.

4 - Because theories must produce unambiguous predictions, they are necessarily *logically self consistent*. Two competent people, both well versed in the theory should get the same answer when applying it.

5 - Theories *evolve* as new evidence comes to light, or old paradoxes are examined in more depth. Sometimes new evidence or a solution to a paradox simply breaks the old theory irrevocably. For example, scientists used to believe in the ether, which served as a medium to propagate electromagnetic waves. New theories came along that didn't require the ether, and new experiments showed that it didn't exist. More often new evidence means that the theory needs to be augmented, adjusted, or extended as part of a *puzzle solving* process. Also, many older theories stick around, with newer versions handling the more difficult cases. We still routinely use Maxwell's 19th century theory of electromagnetism, even though more sophisticated theories are now established.