Words Characterizing Science

The scientific method refers to a body of techniques for investigating phenomena and acquiring new knowledge of the natural world without assuming the existence or nonexistence of anything supernatural. Philosophy calls this approach methodological naturalism. For a theory to qualify as scientific it must be:

1. Consistent (internally and externally)
2. Parsimonious (sparing in proposed entities or explanations, Occam’s Razor)
3. Useful (describes, explains and predicts observable phenomena)
4. Testable & falsifiable (faith-based pseudo science fails here especially)
5. Observable (based upon multiple observations)
6. Correctable & dynamic (changes are made as new data are discovered)
7. Progressive (achieves all that previous theories have and more)
8. Provisional or tentative (admits that it might not be correct rather than asserting certainty)

To be considered truly scientific, an approach must meet most, and ideally all, of the above criteria. If an approach meets only a couple of these criteria or none at all, then it cannot be treated as scientific in any meaningful sense of the word.

Often considered essential are items 3 and 4 in the list above. A scientific theory can be used to make predictions and is falsifiable. Those principles imply a theory can be tested against its predictions. In addition a theory can be modified in the face of new observations as happened with the model of the atom that changed considerably over time. In addition a theory may be discarded altogether as with steady state model of the universe that could not be modified.