

# 2

## Methods Models and Pseudoscientific Theories

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This chapter is about what scientists do. You may not think you do science yourself, but everyone does science. Checking the weather by looking outside or baking a cake is a form of doing science. The methods used to investigate and research the natural world and the models resulting from the experiments and observations are immensely important. To conduct scientific research properly requires following a Scientific Method, identifying and building on Natural Laws and Correct Principles, and recording the outcomes and evaluating the results. We developed the Universal Model in part because of knowledge contained in this chapter. As you read, we think you will come to appreciate the importance of this information.

The primary thrust of this chapter is to identify a *universal* scientific method and to introduce Scientific Models. We will demonstrate that there is no universally accepted method of conducting science in the modern world and we discuss why it happened and why it is important. Identifying a Universal Scientific Method (USM) proved essential in the development of the UM, and continues to reinforce the discovery process. We begin by examining the difference between theory and natural law.

### 2.1 The Line Between Theory and Natural Law

#### Theory and Natural Law Defined

Before we discuss the Scientific Method, there are two important terms often used in relation to science that we must understand and define correctly, or we run afoul of the **Definition Principle** from chapter one; if we don't say what we mean, we don't mean what we say.

Over the last several decades, modern science has seemingly



attempted to 'redefine' the words 'theory' and 'law' by making them appear evermore synonymous. Notice in the following quote from the book, *Truth in Science*, how these two words appear together:

“...the line that separates the laws and theories of science from the factual evidence is not sharp.”<sup>Bib 18 p101</sup>

There is a tendency in modern science to associate *theories* and *laws* as if they are equivalent, or at least nearly so. Why try to lump these two very different words and meanings together? When we examine the History of Science in chapter three, we learn there have been no significant natural laws added over the past 100 years (see figure 3.2.1 History of Science Table). However, during that same time, there was an abundance of new 'theories,' some of which science touts as *fact* today. Perhaps because 'theory' has been associated with 'law' long enough we presume they are the same.

In *Webster's Universal College Dictionary*,<sup>Bib 7 p815</sup> there are several definitions for the word **theory**. Among the more common are:

1. A proposed explanation whose status is still conjectural
2. A guess or conjecture
3. Contemplation or speculation

The dictionary also includes the following definition for 'theory' when used in a scientific sense:

4. A coherent group of general propositions used as principles of explanation for a class of phenomena: *Darwin's theory of evolution.*