

Chapter 2

The Dynamic Structure of Space: Relating the Relational-Matrix Model to Space-Time and Physical Reality

Section 1 Introduction

Einstein's efforts to uncover a unified field theory were rooted in his belief that the structure of space-time is the key to understanding the characteristics of the electromagnetic and gravitational forces.*

Almost 100 years ago, Albert Einstein, in his special and general theories of relativity, developed mathematical formulas which told us that matter and energy are equivalent, that space and time are inseparable, that no material object can travel faster than the speed of light, and that the rate of passage of time for a body in motion is relative to that body's rate of travel through space. In this way, Einstein was able to mathematically demonstrate that these apparently separate aspects of physical reality were all connected.

Einstein understood that all physical phenomena are connected through the spatial structure, existing as extensions of that underlying structure. However, because he was unable to develop a visual model of the spatial structure, he was never able to demonstrate *how* all these things are connected through that structure.

In this chapter, we'll demonstrate that *space-time functions as a dynamic relational structure*. The relational-matrix model, as a visualizable representation of the spatial structure, will be used to explain, among other things, why the physical relationships that Einstein mathematically described exist. Using the relational-matrix model to explain the observed behavior of physical reality, we'll establish a conceptual basis for understanding how what we experience as physical reality emerges, extends, and evolves from the spatial structure. By the end of this chapter, we'll also have established a conceptual basis for understanding why nothing can truly be separated from anything else—i.e., why nothing can be said to exist independent of all other things.

* Jefferson Hane Weaver, ed., *The World of Physics* (New York: Simon & Schuster, 1987), vol. 3, p. 120.