THE DYNAMIC THEORY

A New View of Space-Time-Matter

by

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Dedication

I dedicate this work to my family; to my father and uncle who encouraged my thinking and individualism, to my mother for her steady love, to my brothers and sister for their confidence in my ability, to my children for growing up with 'Dad's theory', and to my wife Jeri for she bore the brunt of my mental absence.

PREFACE

Present books, such as "The Arrow of Time" by Roger Highfield and Peter Coveney and "The Big Bang Never Happened" by Eric Lerner, talk of a new revolution is science. The first points to work by Ilya Prigogine and others with regard to the flow of time and the dichotomy between the time flow in the universe and physical theories wherein time may flow forward and backward. The "Unended Quest" in " The Arrow of Time" is to find how a foundation of science might be laid that describes dynamic systems showing this one-way aspect in time. In "The Big Bang Never Happened" Lerner also points out the need to find physical theories which correspond to the directivity of nature's time. The main discussion though concerns explanations of cosmological phenomena in terms of plasmas and Maxwellian electromagnetic concepts.

I am in agreement with the authors of both these books with regard to the majority of their points. I disagree with Highfield and Coveney in that a foundation for physical theories restricted by a flow of time has been found and reported starting in 1976. My disagreement with Lerner is very limited, but may point out an important difference in our thinking. Let me quote from Lerner's introduction where he states; "Today we again hear renowned scientists, such as Stephen Hawking, claiming that a 'Theory of Everything' is within our grasp, that they have almost arrived at a single set of equations that will explain all the phenomena of nature --gravitation, electricity and magnetism, radioactivity, and nuclear energy --from the realm of the atoms to the realm of the galaxies and from the beginning of the universe to the end of time. And once again they are wrong. For quietly, without much fanfare, a new revolution is beginning which is likely to overthrow many of the dominant ideas of today's science, while incorporating what is valid into a new and wider synthesis." I believe Lerner is correct. But only in the sense that I do not believe it possible to know all of the phenomena of nature "from the beginning of the universe to the end of time." What I put forth in this book is my research which shows that one can start with a small, simple set of equations and derive the basis for the currently accepted branches of physics by imposing restrictive assumptions.

The search for a unifying field theory began in the early 1800's when scientists began searching for a way of unifying the electromagnetic and gravitation fields. When the proton-proton scattering results showed a deviation from Coulombic scattering, once again scientists began trying to find a way of unifying the fields, or forces, of nature. This was done immediately upon the heels of assuming that the deviation from Coulombic scattering must come, not from changes in Maxwellian electromagnetism, but from an independent strong nuclear force. It has always appeared to me that one should go back and address this assumption of independence before seeking a means of unification.

One doesn't need to read too much of the scientific literature from the 1930's to the present to see how much has been devoted to the notion of unifying the forces, and/or fields, of nature. Within this body of work lies the basis for Hawking's "Theory of Everything." I believe this work misses the point of unification.

For instance, if we wish to approach a unification, what should we unify? Should we unify the fields, or should we unify the various branches of physics? It seems rather difficult to believe that nature is divided into the different branches of physics, such as thermodynamics, Newtonian mechanics, relativistic mechanics, and quantum mechanics, just because we learned how to formulate the basis for each branch at different times in our scientific advancement. Further, given a variational principle and a metric we know how to derive field equations and force laws. Therefore, shouldn't we be seeking to unify the various branches of physics and deriving the necessary fields from that unification rather than trying to unify the fields and not reconciling the difference between the foundations of the different branches?

In my research I chose to seek a way of unifying the various branches of physics. This entailed seeking a simple set of physical laws from which one may derive the foundations of the different accepted branches of physics as subsets of this more general set of laws. What has emerged from this work is that there is a logical necessity for the branches of physics that comes from the imposition of different restrictive assumptions. The type of geometry need not be assumed as Newton and Einstein did, but is dictated by the fundamental laws. The laws produce, not one, but two variational principles from which we may derive the field equations and force laws.

What resulted from the attempt to unify the branches of physics produced not only the desired result, but, also that of unifying the fields and forces of nature also. The fundamental laws, which could be written on a T-shirt, produce field equations and force laws which accurately describe phenomena intended to be included in Hawking's "Theory of Everything." It does not, however, allow for the existence of a Big Bang or beginning or end of time. Furthermore, since the fundamental laws are based upon generalizations of classical thermodynamics, the equations of motion derived from them come complete with an Arrow of Time built in. I first reported this predicted flow of time in 1981.

If I were asked to explain why the research reported in this book has not gained any wider distribution than it currently enjoys, I would have to offer up our system of refereed journals as the most important reason. But hand-in-hand with this must go the notion that "everyone knows that one may derive classical thermodynamics from any number of different force laws by using statistical mechanics." This notion was refuted by Peter G. Bergmann in 1979, yet it persists today.

On the other hand, if one were to accept the potential of having equations of motion derived from generalizations of classical thermodynamics, then it is not difficult to imagine an Arrow of Time accompanying them. But this is small incentive to a referee. Neither is the ability to derive the field equations and the force laws for the different branches of physics much more incentive for the referee to give a thumbs-up for such a theory which 'everyone' knows is doomed before it gets started.

The many attempts to get portions, or all, of this research published in the refereed journals have produced many interesting comments. These comments are interesting from the point of view that they expose the human side of referees, not that they are based upon scientific evaluation. Let me offer three excerpts as examples: from the physics department of a name university, "While the equations you've derived are not wrong, we somehow like it better the old way," from a scientist at a government laboratory, "If you ask me to shoot you down, I can't. If you ask me to help you, I won't. I suggest that you learn to play the game and then someone may listen to you," and from a journal dedicated to speculation, "We no longer have the time to consider articles which look into the foundations of physics."

What I sought to do was to answer some personal questions about science using all of the rigor contained in the logic of mathematics. What I found was a methodology by which we may see how the various physical phenomena from the nuclear realm to the cosmos come from a single, simple set of three fundamental assumptions. Many current interpretations concerning fundamental aspects of several existing theories are shown to be wrong, misleading, or too restrictive. Notice that I said many current interpretations are wrong, not many current theories are wrong. What I found is that there is a much more general theory available in which the current theories are subsets or first, or second, order approximations. That doesn't mean these theories are wrong any more than the validity of the Special Theory of Relativity means that Newton's equations of motion are wrong. It only means that Newton's dynamics applies only to a limited range of velocities . If we then use Newton's equations of motion for velocities approaching the speed of light our interpretations will of necessity be wrong. However, we didn't know these interpretations were in error until Einstein put forth his more general theory. The same is found to be true of many interpretations based upon the current theories which the Dynamic Theory shows to be wrong when viewed in its more general light. Also, the reported research shows how the various branches of physics fit together into a unified picture of a nature built upon the dimensions of space, time, and mass.

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