

*PART I*

*INTRODUCTION*

## SECTION 1

### *Overall Thesis and Objective*

The overall thesis of this work is to demonstrate as a law, naturally and inevitably resulting from the universe as it is, that all persons should treat each other as they themselves would wish to be treated.

This mode of social behavior is not a new concept, but, old as it is, it has been and is more frequently violated than adhered to. Throughout most of the history of human civilization a small portion of the population has lived a life of relative material abundance, luxury and power at the expense of the majority. It is important to understand that the affluence of these few comes only at the expense of deprivation of the many. There is nowhere else for the wealthy, the rulers (the terms are, in effect, causally synonymous), to obtain their abundance except by taking some of what would otherwise go to the benefit of the rest of the population.

Thus those at the material apex of the human economic pyramid are exploiters, deriving their enjoyment of "the good life" by the exploitation of the mass of the people. This has been the case throughout recorded history and is largely the case today. The small number of rich-powerful enjoy their status by exploitation of the Latin American peasants, the African blacks, the Asians, the people of the Middle East, the farmers and manufacturing and service industry employees in both the developed and developing countries -- the world's workers and peasants.

While the appropriation by the wealthy powerful of part of the social economic product to their personal luxury is significant, even greater is their appropriation of it to create and operate the controlling and repressive structures erected to maintain their power: armed forces, massive government and police, and equally massive social-commercial-financial overhead.

Not only do the exploited suffer the loss of the material values taken by the exploiters; but, far worse, the lives themselves of the exploited are destroyed or maimed by the wars, semi-slavery, starvation and malnutrition, disease, lack of education and terror imposed on them by the exploiters as part of the exploitation and to maintain those privileged few in power.

The reasons, evolution and historical trends of this problem have been thoroughly examined in a variety of studies in their historical, social, political and economic aspects. The new thesis now being taken up is a different aspect. This "Golden Rule", treat all others as you would have them treat you, which is clearly in contradiction to the "law of the jungle" that gives us exploiters and exploitation, has not been taken seriously by human society for two reasons.

First

As a rule or law of human individual or social behavior it has always been presented, conceived of and viewed as a heroic or saintly ideal, one to which all persons may be urged to aspire and which a very few may achieve, but which is, in general, considered to be beyond realization in practical human affairs.

Second

The means to make implementation of this rule practical have been missing in human history until recently; that is, until recently the evolution of human society in its economic, technological, philosophical, and social development and experience had not progressed sufficiently.

But, those reasons have become invalid and the development of humane human civilization has become not only possible and practical but imperative if we are not to destroy ourselves. The beginnings of social revolution in the 1700's were, in fact, the beginning of that ultimate revolution in human society, a process that is going on now and, most probably will take yet some time to complete.

It is not an extreme that is being discussed, nor a confusing or complicated issue. Rather we are dealing with well known concepts that are generally familiar to and accepted in principle by all people, whether practiced by them or not:

- fairness
- justice
- equity
- honesty
- empathy
- love
- a behavior of sharing and cooperation where each gives and receives in a balanced fashion all factors considered and with reasonable human judgment and good will.

But why is it here claimed that this is an immutable law of nature, not a saintly or heroic ideal? Why is it contended that human society is going to be this way ultimately so that we should "get on with it" and construct and enjoy it now rather than continue delaying in the ordeal of "the jungle"? The development in the following sections is as follows.

Part II

The universe is examined stripped bare, back to its very beginning. The origin of the universe -- how it came to be -- is derived, and the process is shown to be completely natural. All forms of the hypothesis of God are eliminated and with them all non-material rationalizations of, guidelines to, or reasons for modes of human behavior. The universe is shown to be purely and simply natural and material; and, therefore, any conclusions about humans in relation to other humans, human society, and the universe in general can only be drawn from that natural and material universe from which they derive and in which they exist.

Part III

The developed concept of the origin of the universe from Part II being a radical departure from any previous hypothesis and, consequently, difficult to accept, the complete mechanics of the physical universe are derived:

- derived from the nature of the origin of the universe,

- developed through complete correlation with 20th century physics,
- demonstrating that the physical reality of our present universe is only explainable based upon the origin of the universe as presented in Part II,

and thus validating the presented origin.

#### Part IV

In spite of the validation produced by Part III, it could be contended by some that humanity is left unexplained, and the old non-material hypotheses (the various God hypotheses) could be resurrected. Consequently, the mechanism of intelligence, that (seemingly) unique thing, is set forth showing that intelligence is merely the natural functioning of "brain-like" structures and can in fact be realized artificially in a suitable mechanism. A general design for "artificial intelligence" is developed.

#### Part V

The implications for individual and social behavior that result from this purely material universe are deduced with the thesis as already stated being the result.

Paraphrasing Marx, the objective is not to describe the world but to change it. It is intended that this work help the process of change that is going on, a process in which the era of exploitation is ending and the new era of true humane civilization is being born, by contribution theoretically and practically to the process in a number of ways.

A purely material, not metaphysical, foundation for all reality is provided. This foundation for society, history and political economy is complete, without unanswered questions, from the Beginning forward.

The completeness of the material system of the universe presented should contribute to the final demise of the various idealist, metaphysical, religious, etc. ways of thinking which have adversely affected so much of human society and history.

The nature of the difference between the exploiting minority and those who, having been the exploited, will build the new world of brotherhood is laid out in a fashion especially to lay bare the hypocrisy of the exploiters (who profess humane principles even while twisting them to their own ends).

And, this is all done embedded in a scientific development to cause consternation to the exploiters. They who have so developed and used science and technology to the ends of ever more terrible war, more terrible poverty and abasement, destruction of the environment and of peoples; they, who have prostituted science and technology to the destruction of culture and the proliferation of lies and disinformation; they, who cannibal-like use the tools provided by science and technology to

consume the lives of millions of people for their own greed's satisfaction; they will now be confronted with:

- "their" science turned against them, showing them for what they are, and
- that done with a mass of new science and related technology that they will want, that they must have, but that is embedded in their own condemnation and destruction.

In the process solutions to several major unsolved problems of 20th Century science are developed:

- The unity of matter and field.
- The wave / particle nature of matter and radiation.
- The atomic nuclear structure and forces.
- The detailed nature of mass, charge, field and force.
- The underlying basis of quantum mechanics and a major correction to its conceptualization.
- The mechanism of relativistic mechanics and a small correction to its conceptualization.
- The mechanism of gravity and its integration into general physics.
- The underlying nature of space and time and the interaction of matter and space.
- "Grand Unification" of all these -- all forces, fields, space and time -- in one simple reality.

The new science of Universal Physics, the development of which the above are a result, with its more correct and therefore more useful description of material reality should provide a substantial basis for new research and technology, especially the new understanding of gravitation and its incorporation into overall physics. The science of intelligent systems is applicable both to artificial intelligence and to a better understanding of ourselves.

The thesis, then, is to change the world, to change human society, to create true civilization, a humane and rational civilization based upon understanding of the material reality that is the world, the universe.

The French mathematician and physicist J. L. Lagrange said of Isaac Newton that Newton was the most fortunate man who ever lived "... for there cannot be more than once a system of the world to establish." But that once was not then but now, and we can be the most fortunate who ever lived, having "a system of the world to establish".

## SECTION 2

### *Prefatory Remarks*

The reader is urged to progress through this work in the order in which it is set out. There can be a temptation to skip over parts to be returned to later or to skip ahead out of curiosity. The temptation should be resisted as the entire work is an ordered presentation with an integrated development and logic related to that order.

In the interest of addressing as broad a readership as possible it has been attempted to set this presentation at a level accessible to most reasonably educated persons. It is hoped that a secondary education to age more or less eighteen with a "smattering" of algebra, trigonometry and science is sufficient to enable a reader to follow the reasoning throughout. To help out further "Detail Notes" are provided occasionally to clarify or elaborate where such may be needed. At the same time, detailed treatment of matters familiar to specialists has been minimized, the purpose being not to review current science or the current knowledge in any field, but to deal with the new developments presented.

The overall work is, nevertheless, a complete and systematic derivation and proof with nothing omitted that is material to that derivation and proof.

It is intended, then, that the presentation move not too slowly for the expert nor too rapidly for the novice. Likewise it is intended that the novice be able to follow the reasoning, even if unable to judge or criticize it, while at the same time the proofs and derivations are correctly rigorous for the expert.

The material presented is entirely original. Obviously the development depends on the prior work of many persons in numerous fields of endeavor. So always is human progress. Two "kernels" of insights helped major developments to get started, however. These are identified where they occur.

Finally, the entire work in its new material and innovations is the product of "associative thinking". The style of the presentation is related to this in some places. The first element, or underlying basis of associative thinking is non-verbal thinking. Information must generate not mere words in the reader's mind but ideas, images and concepts. The presentation is directed in places more toward forcing the appearance of non-verbal concepts and simultaneous multiple concepts than mere verbal clarity. This is intentional: it is the effort to force with words the creating of a mental non-verbal concept. It is only non-verbally that multiple concepts and their interactions and interrelations can fully be comprehended, which is associative thinking.

## SECTION 3

### *On Testing and Proving a Hypothesis*

Before proceeding further with the main line of the discussion it is necessary to clear up some matters of logic and procedure. Our subject is controversial, after all. It is controversial because on the one hand those who accept the god hypothesis and the culture and world-view companion to it do not take lightly criticism of, or disagreement with, their views, let alone outright contradiction of them; and on the other hand the various extant physical theories of the origin of the universe are not yet proven nor even subject to final proof at present for lack of data, although they may be ardently defended on occasion. Likewise, the principle theories of 20th Century physics may tend to be as ardently defended as the religious dogma just cited.

Since these theories are to be criticized and, more, it is proposed to propound a new, better and superseding theory, it is appropriate to first set forth the rules covering such a discussion.

Various hypotheses are subject to different kinds and qualities of proof. Some can be rigorously and definitively proven for all cases for all time by sheer logic. In this category fall, for example, most mathematical proofs. The theorem in Euclidean geometry that the sum of the angles of a plane triangle equals a straight line ( $180^\circ$ ) is provable and proven for all time by a process of pure logic with no reference to examples or evidence.

The second kind of hypothesis is one that may be partially logically derivable from acceptable postulates and proven theorems of the first kind, but, in any case, the derivation is not definitive in proving the hypothesis; it only leads to presenting it. Rather, the proof for this type of hypothesis is that whenever tested it is verified and these tests are reproducible and give consistent verificatory results each time. In this category fall most of the physical laws of the universe. For example: that in every-day life force and the resulting acceleration are directly proportional with the constant of proportionality being that characteristic of matter which we call mass.

The third kind of hypothesis is similar to the second, but goes beyond it in that it is more complex. The result is that, while reproducible experiments can give consistent verificatory results, the experiments do not encompass the entire hypothesis but only some sub-element of it. Until such tests can be established for all aspects of the hypothesis or for it in an overall sense, there is always the possibility that the hypothesis will fail some new, future, presently unperformable test.

## THE ORIGIN AND ITS MEANING

Such is the case with the theory of relativity, propounded by Einstein, in all of its aspects. Every test performed with regard to this theory has verified the aspect tested and the verification is reproducible. But all aspects have not yet been tested and are not yet testable. Nevertheless, the results to date are such as to enable one to have a high degree of confidence that the theory is overall valid.

The final kind of hypothesis is one that is not subject, by its nature, to the foregoing kinds of proof. It is not rigorously and definitively derivable from acceptable postulates and proven theorems. Furthermore, while some aspects of it may be subject to experimental verification, all of it is not so subject for one reason or another. Usually the reason is the impossibility of going back in time to a past event to observe what happened. Such hypotheses are proven, to the extent one is willing to accept or act on such proof, by bits and pieces of evidence coupled with logic.

The most common example of such a hypothesis and proof in the 20th Century industrial societies is the judicial trial or its variation, the amazing analysis and deduction by the super detective in mystery stories. Properly done, such proofs really leave no doubt as to the validity of the hypothesis, "he did it", although there is no rigorous, definitive proof nor even a witness to the actual event, and certainly no experiment, reproducible or otherwise, in which the circumstances are re-created to "see if he does it again".

Now, unfortunately, the initial subject with which we will deal, the origin of the universe, is of just this latter kind. By its nature it is subject neither to logical derivation in a completely convincing fashion (although, as will be seen, it is much more nearly so rigorously and definitively derivable than one would have thought) nor to reproducible experiments (it is hardly practical to go around setting up the conditions for universes to start up to see if they do). Nor is it subject to direct evidence of witnesses. To prove any theory of the origin of the universe one can only fall back on:

- physical laws and observable facts as we know them,
- logic applied properly to all aspects of the problem,
- internal consistency within the hypothesis and the proof (a sub-element of good logic),
- external consistency with our present reality
- and plausibility.

The balance of this work, that aside from the origin of the universe, involves hypotheses of the second and third kinds described above.

With these tools and understandings the discussion can proceed.