

PART II

ON THE ORIGIN OF THE UNIVERSE

SECTION 4

The Problem of Origin

It would seem that every person wants to know "where he came from". This is manifested in different ways at different stages of the individual's life and, also, collectively in various ways in various cultures. The child asks, "Where did I come from, Mommy?" The adult is interested in who his forebears were, where they lived, what kind of place they came from, when, how, and so forth.

On the scale of cultures or societies, rather than individuals, the same is seen. Primitive societies develop legends or sagas of their origins. These usually become intertwined with the religion of the culture, and in developed societies it is usually the religion which answers the "Where did I come from?" question on the large scale.

This desire to know, almost a need to know, seems to derive from two drives: to maintain beyond childhood the security of childhood and to know where one fits into the world and, therefore, how one should behave and what one should expect. For the young child the world is normally a simple, efficient, safe system of home, parents, reliability and predictability. For the child there is no major problem except, perhaps the danger of losing its secure environment. Consequently, how he got there is important because, if there was a time when he was not in the family, it could perhaps happen again. To some extent it would seem that the adult interest in origins and a society's need for a religion of origin are expressions of the same seeking of assurance that things as they are will remain so, that the security one has will not be lost.

But, in addition, whether one is speaking of a person or a culture, "where it came from" is a guide to how it is now -- how the environment operates, how the person or culture should behave to be compatible (and, therefore, to survive), what is expected of the person or culture and what he or it can expect.

Now, an answer to this great question is always given. No parent and no culture "shrugs its shoulders" and says, "I don't know." The imperative for an answer is too great, and so an answer which is suitable to the circumstances is always given. The need is so strong that usually any more or less reasonable sounding answer is accepted -- even eagerly grasped. This last is perhaps an exaggeration, but the point is that there is little inclination to challenge the validity of the answer given because the need for an answer is so strong and because the answer is usually given by an authority figure -- parent, teacher, religious leader.

And the need is not for the truth, the correct answer in the sense of conforming with the real events, but only for a satisfying answer that quells the upsurging anxiety of the question. Consequently, the answers given, whether by cosmologists, philosophers, religions, or whatever, have been incomplete, or implausible, or logically inconsistent, or otherwise defective as it has turned out, this not so much due to an intent to deceive as a lack of information.

It would be desirable to have as the answer not only one that is satisfying with regard to the needs demanding an answer but that is also the final, true and correct answer. It may be that one cannot have both satisfaction and truth in this case, but, if so, it is still better to have the truth and reality than to bury one's head in the sand, ostrich-like, with an emotionally satisfying non-real solution. The latter is not only unadult and escapist; it is also more likely to lead to catastrophe.

The culture which we would loosely call Western Civilization offers two answers to the question. One is that of religion, which answer is basically that everything was created by [a] God and that [the] God is uncreated, that is, he "always" existed and neither has nor requires an origin. (To speak of time with regard to God, as for example "always" or "before", is incorrect since in the terminology of theology God exists outside of time, which he created. The correct theological terminology for this answer is that God is the cause of his own existence.) This answer, in its full development is particularly suited to the purposes of answering the great question. It provides, in effect, a parent for all adults so that childhood security is recovered and maintained. It ends questions about where everything came from. And, it emphatically provides an explanation of the environment in which we function, a guide to how to behave in it, and a description of what to expect, all of which appeal to human fears, insecurities and desires.

The second answer offered by western civilization is that of the scientists, ultimately the cosmologists. This answer is not in contradiction to the god hypothesis, rather it is supplementary in providing "historical" and mechanical detail. Archaeologists and paleontologists trace the evolution and development of the planet and man from their distant beginnings. Astronomers and physicists explain the nature and development of the physical universe. Ultimately the origin of the universe is traced back to a singular beginning based on the fact that the observable universe is expanding.

This theory, the Big Bang theory, contends that the universe as we know it started with an incredibly dense core of "basic" matter which exploded and which explosion we still observe today as its result, the expanding universe. During the early stages of this process the various elements of matter as we know them were formed by fusion of sub-atomic particles in the intensely hot gas cloud resulting from the explosion. As the cloud expanded some parts "condensed" (by gravitational attraction) into more dense regions which ultimately became our galaxies, stars and planets.

The big bang has two alternative scenarios depending on the amount of mass actually in the universe. In the higher mass case the gravitational attraction within the universe is great enough that the various components are being sufficiently slowed in their explosive expansion that eventually expansion will cease and contraction begin. Ultimately, then all of the matter in the universe is to collapse into a dense central core. At that point the tremendous energy of the

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collapsed universe is to result in a new big bang. Thus in this scenario we have a repeating cycle of explosion - expansion - contraction - collapse - explosion ... forever.

The other big bang alternative is that the Big Bang was the only one and that, the mass in the universe being insufficient to eventually reverse the expansion, the universe will continue expanding for ever.

(An alternative cosmological theory proposed when the expansion of the universe was discovered, but now largely discredited, is the Steady State theory in which there was no big bang at all. Instead, the theory proposed that matter was continually being created in the universe at a rate to balance the expansion and the associated apparent disappearance of matter at the observable limits of the universe.)

Resolution of the big bang alternatives awaits more data, which is needed to determine if the mass within the universe is of a quantity to support the cyclical or one-time case. For the present purpose that determination is not important. What is important is what the theory overlooks or fails to treat: where did the big bang come from ?

SECTION 5

The Hypothesis (1) - The Origin of Diversity

The origin of the universe involves a major dilemma. But unlike many dilemmas, this one has to have a rational solution because the universe exists. Therefore, the problem is to find a rational solution to the problem.

The dilemma is as follows. The universe has tremendous diversity and variety. It has Shakespeare, Michaelangelo and Beethoven. It has fathers, mothers, children, people. It has all the variety of life and form on our planet and throughout the universe. Where did all the diversity come from ?

Either:

- It was all contained in the original source of the universe and Beethoven, children, trees, and so on are merely facets of the original totality, or
- While not all complete in the original source of the universe it was there potentially (basically meaning that the origin was capable of evolving diverse forms) and we now witness and are some developments of that potential, or
- It came from nothing and, in general, things at least an intangible such as form, can arise from mere nothing without cause.

Until the present hypothesis responses to this great question have been:

That of religion.

Religion answers with the first alternative -- it was all contained, complete, in the original source totality, God. The problem with this is, "Where did God come from?" Religion answers "He always existed" or more correctly in theological terms, "He requires no external cause; he is the cause of his own existence". But this merely begs the question. It does not explain how the difference between god existing or not existing is resolved in favor of existing. It constructs the answer so as to avoid addressing the problem. It is not an answer, merely a closing of inquiry.

The answer of religion flies in the face of logic, ignores what physical evidence we do have (general conservation and the impossibility of something-from-nothing) and in reality accepts the third above alternative -- diversity arose (in the form of god without cause, or self-caused) from mere nothing -- avoiding

acknowledging this by saying that god did not arise at all, rather that he "is".

That of Science.

Science simply does not address the problem. It postulates an original dense core of matter and energy without dealing with anything prior to that moment or the cause of that moment.

This is not unreasonable since science does not claim to have all answers and in fact states that its purview is limited to that which can be observed and measured (and direct deductions from the observations and measurements).

That of Philosophy.

Various philosophers give various solutions to the problem, those supporting religion taking the solution of religion but few or none directly advocating the alternative of diversity from nothing.

Then which of the alternatives is correct? The decision can only be based upon whatever evidence is available from the experience of life and observation of the universe coupled with logic, consistency and plausibility. It first can be said that all of this rules out things arising arbitrarily from nothing unaccounted for.

- Experience and observation demonstrate the general validity of the concept of conservation -- conservation of mass, conservation of energy, conservation of electric charge, "the whole is equal to the sum of the parts". All of experience and logic rule out arbitrary generation.
- The diversity of the universe cannot have arisen in contradiction to this general principle.

The third alternative is thus ruled out. But, the first alternative, that chosen by religion has already been rejected. It is rejected because no valid response can be given to the next question: "If all diversity was extant in the original source totality, how did it come to be there?"

Therefore, we are left with only the alternative of an origin of the universe in which all of the universe's diversity while not present complete in the original source of the universe was there potentially. The original source was capable of evolving diverse forms. It is essential to be careful; the argument is treading a narrow path. On one side is the *Scylla* of the rejected third alternative that diversity arose in violation of conservation. On the other side is the *Charybdis* of the first alternative that diversity was already present in the origin with its absurdity that how that came to be so is not addressed. The present contention is that diversity was in the origin in potential.

This immediately raises the questions:

- How can diversity arise from potential?
- What potential -- what is (was) it?

- Where did the potential come from ?

Now the development of the hypothesis is in a position to get somewhere, for diversity does now exist and these questions can be answered.

There are well known and demonstrable physical principles which show how diversity arises given the existence of matter and energy. Furthermore, it can be shown that diversity must arise in such a situation, that it is unavoidable. Therefore matter and energy, themselves and alone, are the potential which is spoken of.

(Matter and energy are really two forms or aspects of the same thing -- at least they appear to be interchangeable according to the development by Einstein and our experience with nuclear weapons, nuclear power plants, etc. The reference to them here will be as matter and energy even though the reality may be that they are different forms of one thing or have a common underlying basis.)

The origin of diversity is undiversified "prime" matter and energy, as it really is or was, which we may or may not know. Whatever it is, it is the fundamental building block (or, perhaps, family of blocks) from which all matter as we know it is formed. The particles of matter combine and discombine and the product particles continue the process. Most combinations that we know contain less energy than their components because they lost energy in combining. Therefore they need to get energy back to discombine. For that reason they are relatively stable combinations, and their stability is why they are present to us.

We can think of the "prime" matter as a "cloud" of protons and electrons. The discussion will be in those terms even though there could be a lower level to be identified as more "prime". It does not matter to the argument because the general behavior, below, and its effects are the same.

These particles, by virtue of existing as matter with energy, are in motion. Collisions occur. Some collisions result in combining of the particles. Some of the consequent combinations are stable and unlikely to discombine. That is the first step of diversification. Now the process continues except that an additional type particle, the double particle just formed at the first step, is involved and available to participate in combinations. Thus more varied combinations can occur. Further new types are produced and diversity expands ever increasingly more rapidly as more types participate in making new combinations, making further new participant types.

The characteristics of this process are:

- It occurs unavoidably if matter and energy are present. (General kinetic theory).
- It is the simplest case, the fundamental form of changes in quantity yielding changes in quality, type, kind). (Periodic Table of the Elements).
- The rate of diversification and the potential variety increase rapidly as each new variation occurs. (Mathematics of combinations.)

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Here we have a process that generates the elements, the molecules, the substances, the chemistry, geology, biology of the universe as we know it. The mechanisms and details vary as we investigate how the variety of earth formations (geological evolution) or animal and plant life (biological evolution) or societies (social/cultural evolution) or human behavior (history) occur. But we know that these evolutions do occur. We know that they are built up on underlying evolutions at progressively simpler levels. We know that they involve existing types interacting with each other unavoidably, where changes in combinations and quantities produce new types, which new types increase the options available for further new types. All of these have been and are amply investigated and described by the various 20th century sciences.

In summary, then, with regard to the first great dilemma, the origin of diversity, it is the inevitable result if "prime" matter and energy exist: diversity from potential. No master plan containing it all in final form is needed; only the beginning is needed and the rest will follow. The specific details of the result are a matter of chance.

In criticism of this hypothesis it could be contended that it is really just a case of something from nothing, that the variety of form deriving from the potential contained in the original "prime" matter and energy is merely a code phrase for violating conservation. The contention really would not matter. The variety of form can and does come about in the manner described. One can either say that form (being intangible - neither matter nor energy) is not subject to conservation, or that it is subject but the process described does not violate conservation, or that form is subject to conservation and the process is a violation. It makes no difference to the process of diversification because it operates as described regardless of what is said about it. However, it is here contended that conservation is not violated and, therefore, that form is apparently too intangible to be subject to conservation. (Ideas, for example, are not subject to conservation, obviously.)

But, there is a remaining problem. Where did the potential itself, the prime matter and energy, come from ?

SECTION 6

The Hypothesis (2) - The Origin of Matter and Energy

Now the development of the hypothesis is back to another great dilemma - but, fortunately, the final one. From where came the prime matter and energy, which as it turns out, are the material, the motive force and the form (in potential) of the entire universe ? As was said in the prior section, unlike many dilemmas this one must have a rational solution because the universe exists. Therefore the problem is to find the rational solution.

Rather than cite the alternatives and work progressively through them as before, let us face up to the problem more directly.

- We require an explanation of where prime matter and energy came from, one that goes back to the very beginning with:

- no further steps to come,
- no unexplained assumptions,
- no avoiding of any issues or questions;

the entire story complete and conclusive.

- The explanation must not violate the evidence, the natural laws and data of science known to us.

The problem is solvable in the same two stages.

First

The only possible origin of the universe, the only origin that need not itself be further explained, justified or rationalized, is *nothing*. Absolute nothing. If we go all of the way back, to before anything, to when there was nothing, then that is the beginning. It is the only "thing" that does not have to account for its origin or its "existence" and, therefore, the only thing available as origin for everything else. (Here "nothing" is referred to as a "thing", and its "existence" is referred to only because language requires a way to refer to what is being discussed.) (See explanation of the original "nothing" in Section 7.)

Second

The only way for prime matter and energy to originate from that primal nothing at the start of the universe and to do so in a manner that does not violate the accepted and well justified principle of conservation is for there simultaneously to have come into existence a compensating amount, or amounts, of a kind, or kinds, of what for temporary convenience will be called anti prime matter and energy, so that conservation is maintained. (This is not the anti-matter of 20th century physics; it is merely a notation for a balancing negative of the prime matter and energy.)

It is not proposed here that there is an anti-universe that balances off our universe. Nor is it contended that there are two equal off-setting "halves" to the original nothing. For the moment there is offered no idea as to what the original prime matter and energy, and the balancing anti prime matter and energy, were or were like, nor any idea as to what the present result of this origin's duality may be other than that the origination of our universe, the origin of prime matter and energy, could not have happened without the simultaneous origin of the compensating anti prime matter and energy. Immediately after the origin everything still netted out to nothing.

In asking the great question of where everything came from one does not really mean "where" in the sense of a place; rather, one means "What happened; how did it happen; why did it happen?" Consequently, it is now necessary to address the problem of how and why prime matter and energy came into existence from absolute nothing as described. It turns out that, just as the existence of prime matter and energy leads unavoidably to the development of diversity, so, likewise, startling as it may seem, absolute nothing, the "existence" of which is unavoidable at the beginning, inevitably must give rise to something. Some change, "sometime", must happen to absolute nothing.

To understand why this is so it is necessary to review a second law, which, like the principle of conservation, appears to be a fundamental general law, a law of our universe, a law of any universe and a law even of absolute nothing. That principle is the impossibility of infinity. It is taken to be a fundamental general law of everything because, as is the case with conservation, it is demonstrated throughout the universe, no exceptions are known, and it is at least plausible and logically reasonable and appears to be logically essential.

Infinite means without limit, interruption, boundary, restriction or whatever. That infinity is impossible means that no characteristic, parameter, nature, capability, thing or whatever can be infinite. Infinity as a theoretical concept can be conceived of and dealt with, especially in mathematics, but it is impossible in any physical reality. Even in mathematics infinity cannot be dealt with except in its inverse, the concept of becoming smaller without limit, which becomes (approaches) zero.

One should not confuse the concept of infinite with that of total, whole or complete. Things, characteristics and so forth can be all of what they are that it is possible to be but still be finite. This concept is importantly true with regard to the concept zero or nothing. Zero and nothing are not in any way infinite. They are merely completely what they are: the absence of any numerical value and the absence of anything, respectively.

The entire universe exhibits everywhere that everything has limits. There is no physical reality that exhibits any form of infinity. Two of the more surprising failures to be able to achieve an infinity, the very failures of which evidence the generality of the law, are that neither speed nor the size of the physical universe can be infinite. It has been found that the speed of light is an upper limit on speed and that the mass within the universe "curves" the universe in upon itself so that it is, so to speak, a limited volume. This is strong evidence for the impossibility of infinity, for if these cannot be infinite what can ?

The problem with infinity is that it involves logical absurdities. Just as failure of conservation involves absurdities of something from nothing unaccounted for, so infinity involves absurdities of contradictions, for example the "irresistible force meets the immovable object" conundrum. All of physical reality is intertwined through the physical laws according to which it behaves. Permitting an infinity requires behavior outside those laws or contradictions within them. If something can be infinite then it can exist in and of itself, without cause or maintenance, which makes no logical sense.

It is now possible to present two causes for the origin of prime matter and energy, causes for them to arise from absolute nothing, causes for that arising being inevitable. These two causes can be viewed as two different points of view of one cause, the impossibility of infinity. Their statement is as follows.

First

The original Absolute Nothing was finite, but, were it to "exist" "forever", that would constitute an infinity, which is impossible. Even nothing cannot have infinite duration; the "zerness" of nothing does not avoid the "infiniteness" of forever. Therefore there had to be an interruption of the original nothing's duration, which interruption turned out to be the origin of prime matter and energy as already presented.

Second

In an infinite duration the opportunity or possibility of a change, even a change in absolute nothing, is certain (mathematical probability of 1.0). Put another way, in an uninterrupted infinite duration of absolute nothing, even an infinitesimally small (approaching zero) probability of some change operates on so much (infinite) opportunity that the probabilistic expectation of an interruption of some kind is certain. Such was the origin of prime matter and energy.

In a sense, the first of these statements is explanation of why it happened and the second is of how, namely a chance event. We need not be disturbed by our universe's existence being a rare and random chance occurrence. After all, it turned out all right, the universe does exist, and it was inevitable.

There is no intent, at the moment, to demonstrate that the origin had to result in the universe that we know. The point is that some change in the primal absolute nothing had to take place to interrupt the otherwise infinite duration that would have occurred. To our good fortune, the result turned out to be the prime matter and energy that gave rise to our universe. (It will be shown later in the development that the origin of prime matter and energy was the simplest, the

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least amount of interruption that could occur, and therefore the one that did occur.) (It will also be shown later in the development that both the prime matter and energy and its negative or counter-balancing, conservation-maintaining opposite are part of our one universe.)

Numerous questions arise at this point. One family of questions relates to how this origin occurred and developed in the detailed sense -- what the prime matter and energy was and how it developed into today's universe. Another is speculation with regard to other universes -- speculation based on the anti prime matter and energy or on other interruptions of the primal nothing. Further there is the question of intelligence and the soul, for the former exists and the latter is a matter of importance to many people. Finally is the implications of it all for the individual and for society. All of these will be dealt with shortly (except that of other universes, which is only subject to speculation, not reasoning and data) but it is first necessary to clarify some matters with regard to the two causes just presented.

The problem here is time. What is meant when the original absolute nothing is spoken of as "existing" and when concern is expressed over it doing that "forever" ? How does time or duration relate to before our universe started ? It is these matters which must now be taken up.

SECTION 7

Time, Space and Nothing

The concepts of time and space must be correctly understood to deal properly with any matter relating to them, and especially a matter as comprehensive as the universe and its origin. Misconceptions are not infrequent, and they result in distortions or confusions of reasoning. For example, the question "Is there time if there is no clock (no observer *cum* measuring device)?" is like the question "Is there sound if a tree falls in the forest and no one is there to hear it?"

Each of these questions is, not a problem of philosophy, but simply a problem of definition. When the tree falls the environment is certainly disturbed in a fashion causing vibrations or waves to radiate from the source. Some of these consist of pressure variations in the air, travel outward at a speed characteristic of air at that average pressure, and are of frequencies in the range to which the human and most animal ears are sensitive. If that is the definition of sound, then there is sound. If sound is defined as a perception effect in the brain resulting from such waves acting on a normally functioning ear, then there is no sound. The word "sound" does not change the facts. Rather the word "sound" must be defined and then used in accordance with its definition.

The concept "space" is a potentiality. It is the potentiality for anything that by its nature can exhibit or experience the characteristic "volume" to so exhibit or experience it. This includes, of course, exhibiting or experiencing change in volume or in its location, which is displacement. The way that matter, energy or anything else behaves relative to space depends on the nature of the matter, energy or whatever and on its environment: other matter, energy or whatever else of a nature such that interaction occurs. But no interactions occur with space, for space is merely a concept, the potentiality for volume.

The potentiality for volume is literally everywhere, but it has no existence as does matter or energy because it is only a concept. Thus the potentiality for volume being everywhere involves no conflict with the impossibility of infinity. Infinite volume or infinite displacement (or infinite rate of displacement, etc.) would involve a conflict, an absurdity, but not mere infinite potentiality - to be here, or there, of this volume or that, or whatever.

The concept "time" is the potentiality for duration. It is the potentiality for anything that can exhibit or experience the characteristic "duration" to so exhibit or experience it. However, unlike the case with space, anything and everything can exhibit or experience duration: even an idea: even nothing.

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The potentiality for duration extends infinitely into the past and infinitely into the future, just as the potentiality for volume extends infinitely in all directions. But, just as with space, time is only a concept and involves no conflict with the impossibility of infinity. Infinite duration would involve a conflict, an absurdity, but not the mere potentiality, to be of this duration or that, then or now, or whatever.

It is the infinite duration of the absolute primal nothing that would have occurred if our universe had not originated that necessitated and made inevitable that very origin.

But, then, how is the original "absolute nothing" to be explained; just what was it ? It was, first of all, the absence of anything and everything to be found in the universe that followed it: matter, energy and all of their forms and ramifications. Secondly it was simple, whole, unitary, continuous, and of no volume. Its existence consisted of the duration without change of the unexercised potentiality of space.

* * *

[The concepts of space and time presented here do not conflict in any way with general relativity as is discussed in Part III.

[It might be quibbled: Why three dimensional space and one dimensional time when spaces and times of various other dimensions are theoretically conceivable ? The response is, of course, that regardless of theoretical possibilities our universe is of three dimensional space and one dimensional time. It is the only reality that we can deal with; it is the only case we know of that actually occurred.

[But, why did our case occur ? It would not seem to be a simple question. Perhaps three dimensional space and one dimensional time are fundamental in some sense that we have not been able to fathom up to the present time. Perhaps it was the simplest viable form. This issue is further addressed in Section 16.]

SECTION 8

Comparison of Theories

Now, with regard to the problem of the origin of the universe, it appears that there are only two theories available, that of religion and that just presented. The theories of science simply do not deal with the origin; they only deal with development from a starting point of an existing, if young, universe. The two theories can be summarized and compared as follows. (The new theory just presented is designated "Origin".)

The beginning:

Religion: An omni-infinite god without cause (self- or un-caused).

Origin: Absolute nothing.

The start of our universe:

Religion: Created by god (called or fashioned into existence).

Origin: A necessary, inevitable, random, chance change of the primal nothing into the original prime matter and energy of our universe and some counter-balancing, conservation-maintaining thing or things.

Why it started:

Religion: A decision of god (and accepted as such without reason or explanation).

Origin: The inevitable consequence of the primal nothing's duration.

Explanation of diversity:

Religion: Development and evolution in accordance with natural laws, which were created or established by god. There is in religion the implication that the action of god is continuously needed in order to maintain

the universe in existence and to keep its natural laws operating.

Origin: Developmental evolution from the original prime matter and energy according to its inherent characteristics. (What we call the "natural laws of physics" are the "inherent characteristics" of matter and energy.)

Explanation of the particular point at which diversity has arrived:

Religion: The plan and design of god.

Origin: Out of the myriad possibilities that which happened to occur.

Explanation of human intelligence and personality:

Religion: Each person is a separate specific creation by god. (God infuses a soul, made by him into the body at its conception.)

Origin: A natural development of the operation of natural laws. (per Part IV of this work)

With regard to the first three points it is probably likely, and with regard to the first point it is almost assuredly the case that the reasonably possible alternatives for theories are covered. The beginning would really seem to have to be either that contended by religion or by origin, and the what, why and how of the start of the universe would seem to be the only ones that reasonably follow the given beginning in each alternative.

With regard to the rules or procedure for proving a hypothesis, or, in the present case, determining which, that of religion or origin, is correct, the hypothesis of origin has been based on logic and deduction in accordance with physical reality throughout. That of religion does not purport to be deduced, nor to be based on reasoning from our known reality. It does purport to be logical and plausible.

But, primarily, the religion hypothesis relies and depends on belief. The religion hypothesis asks to be accepted, and can be accepted, only by a decision to believe in it. In some cases the religion is centered around "faith", another word for belief. In other cases the demand for belief is indirect -- one is asked to believe in the statements or testimony of other persons, usually ones who lived in the past and are not subject to questions, cross examination or investigation. Their testimony is either the verbal passing on from person to person of contended original eye witness reports or the reduction of this to written form in books to which a special authority is attributed.

This is quite weak support for any hypothesis, but especially for such a major, really fundamental one. With no polemic attitude nor derision intended, it must nevertheless be observed that belief, as the basis for acceptance of the religion hypothesis is not materially different from belief as the basis for acceptance of common childhood myths such as Santa Claus or the Tooth Fairy.

The only strong support that can be attributed to the religion hypothesis in this regard is its massive acceptance on the basis of belief both throughout the history of humankind and at most times in that history throughout a large part of the human populace (in a variety of religions, of course.)

But the reasons for the massive acceptance are clear, are generally well known and have generally been set forth extensively in other written works. They do not include that the hypothesis of religion is correct. The reasons for the pervasive acceptance of the religion hypothesis can be summarized as follows.

- Man in the past, a being able to think, able to deal with the concepts of the future and the past, and able to relate concepts in his mind, was confronted with the insecurity of his existence and the vagaries of his environment. Having little understanding of the underlying causes or laws of nature, he developed early religion as a means of relieving the anxiety stress of his situation, as an attempt to influence events in his favor. The primitive religions evolved under those influences and those of the reasons below. As man developed his religion became more sophisticated and to some extent it adapted to his developing knowledge of science (an adaptation which still lags, today).
- As discussed in presenting The Problem at the beginning of this section, man has a strong urge to have an explanation of the origin of himself and his environment. This is directly related to his insecurities and the urge for survival. Religion's hypothesis of origin has been the best that man could do to satisfy that need. Religion as developed is oriented directly toward treating man's insecurities.
- Early in its history religion became, for its leaders, a means to personal power, position and consequent improved conditions of living. Thus a positive feedback situation existed (and still exists) in which religion benefits its leaders and the leaders maintain and strengthen religion in their own interest, for their own benefit. This is not to say that religion is all hypocrisy. There have been many saintly persons and many more who sincerely aspired to saintly behavior. This is also not to contend that religion had no benefits for its laity and its society. This does, however, establish a strong motivation for the perpetuation of religion and for its development and adaptation to developments in society.
- In addition, the civil leaders found (and still find) religion to be of use in maintaining and strengthening their positions, and they therefore contributed and contribute to maintenance of religious belief in cooperation with religion's leaders. Religion as an institution supports and benefits its leaders and the rulers of society, who both, therefore, support and maintain religion.

With regard to logic and plausibility the case for the hypothesis of religion is as poor, for religion's hypothesis is not even internally consistent, let alone logically related to reality, and it cannot pass the classic test of plausibility.

Central to the religion hypothesis is its contention that the hypothesis came to man in a communication or communications from god. Actually, this is essential. Given the general tenets of religion, an omni-infinite creator god, how else could his creature, man, know of him and his act of creation unless god told man ? Now, inherent in this is that the message from god is correct. God misleading man intentionally is to no point, is inconsistent with religion's contentions and point of view, and is inconsistent with the contended nature of god. Likewise, it would be a contradiction for god to be unintentionally in error, for he is supposed to be not only omni-infinite (certainly all-knowing) but, also, the ultimate and sole authority on the subject of the universe since it is said to be his creation.

Yet, in fact, the message from god contains an abundance of errors. This is not a question merely of earlier man misunderstanding or mistranslating the message nor one of understanding the message but adapting it to the common people. Rather, the errors are what one would expect of a people developing a religion on their own, unaware of the possibilities of science and physical laws, let alone the details, a people used only to the magical or miraculous point of view.

The minds that wrote the Judaic Old Testament, the New Testament of Christianity, the Moslem Koran, the various commentaries on them such as, for example, those of Augustine of Hippo, and so forth, are not minds unable to receive a correct message from god. Their reports of the contents of god's message of creation would not be distortions of an accurate message from god; they would be accurate in their fundamental points, at least. In addition, after all, religion contends that the sacred writings were inspired by god, were written under his guidance, and fundamentally are completely accurate and authentic. Religion could not contend otherwise or else its whole rationale would be undermined.

Nevertheless, the message is far too much in error with regard to the creation, the history of the universe and of our planet, the nature and conformation of the universe, evolution, and so forth. Thus we have an internal inconsistency of exactly the kind that would be expected of a hypothesis developed in the absence of enough information, a hypothesis developed by men one or more millennia ago.

In addition to so being internally inconsistent, the hypothesis of religion also founders in relating logically to external reality. Here it founders on the problem of cause. The theologian, Thomas Aquinas, dealt extensively with this, as did Aristotle and the Arab philosophers. They analyzed the cause of anything into components: material (the substance of the thing), formal (its form), efficient (the causative action effecting) and final (the purpose). The analysis fails partly because of facts and principles of which Thomas and the philosophers were not aware and partly in the concept "self- caused" or "uncaused".

The form of the result does not have to be complete in the cause. It need merely be potentially present, which means that natural behavior operating normally yields the result. Thus merely changing the amount of heat that is present yields the form differences of ice, water and steam. The various forms are potential in all H₂O, but the form of ice is not overtly complete in water, and so forth.

With regard to efficient cause, the contention necessary to the hypothesis of religion that god is uncaused or self-caused, the very statement begs the question and is no answer at all. How was god caused (how did / does he cause himself)? Consider the alternatives. In the beginning there was either god or nothing. Nothing as the beginning can be accounted for; it needs no explanation, no cause, no justification. It is, in fact, what one would expect.

Then what makes the difference that god is the beginning instead? God himself? The contention simply will not hold together. He must be in order to be his cause; therefore if he is not he cannot be. To have the positive cause aspect of the reasoning one must accept the negative preventive aspect.

The classic test of plausibility is a principle, known as Occam's Razor, that among alternative hypotheses or explanations the simplest one is most likely the correct one. But the hypothesis of god is quite complex, involving a complete god, infinite in all attributes, making decisions, creating, communicating messages to man, presumably doing the same throughout the universe, and so forth. On the other hand, the theory of origin presented here is as simple as could be hoped for to account for the entire universe.

But, the requirements of formal cause, that which is the cause of the characteristics and nature of the caused thing, creates a problem that would appear to mean that a primal absolute nothing could not be the un-caused first cause, a problem that appears to be insuperable:

Nothing would appear to have no form at all and to thus be completely incapable of being the formal cause of all else.

However, just the opposite is the actual case. Nothing is the only thing capable of being the formal cause of an unlimited variety of forms, natures and characteristics.

Nothing can be divided into anything and an equal-except-opposite un-anything.

Its perfect "nothingness" makes it more perfectly able to divide into an infinite variety of forms and their opposites than would any other thing.

Nothing contains within itself every possible, every conceivable form.

It does so without getting involved in the problem of infinity, a concept incapable of meaning in reality.

The Aristotelian (and religious) self-caused first efficient cause, opted for so as to avoid an infinite train of non-self-caused causes, requires that that first cause, as formal cause, contain and be an infinity of forms, natures, and characteristics, each of those realized to infinite degree.

The actual first (efficient and formal) cause, nothing, involves no infinities at all yet it exceeds the performance of the cause proposed by Aristotle and religion:

It is able to exist, unlike that of Aristotle and religion

and

It does not require infinity, which is not really possible
(not even for a God).

Thus in all respects the hypothesis of religion fails and we are left only with the origin of the universe as presented, derived by logic from the known facts, consistent with all scientific knowledge, reasonable and simple.

The origin of all, the First Cause, the (if you will) Creator God, is the primal nothing, that which seems natural as the alternative to any existence, that which seems natural as what was the state "prior to" (in the absence of) the beginning of the universe.

As will be seen in the following Part III, from the correct origin as presented so far the entire present universe and all of its physical laws can be derived.

* * *

[Depending only upon the choice of starting point, of starting assumptions, essentially anything can be proven by logic and deduction. The starting state and assumptions are crucial and correct results are only obtained from the correct starting point and assumptions for the particular issue. Yet, frequently some assumptions are implicit and the developer of the reasoning is not aware of them.

[Descartes, for example, started with distrusting all data supplied by his senses and trusting only his awareness of himself and what he knew independently of sensory data. However, although experience had told him that the senses can be mistaken so that he determined that they must be distrusted, he failed to acknowledge that memory is also frequently mistaken. He implicitly chose not to distrust memory. As a result he developed incorrect results. (In his case, if he had been thorough in his assumptions he would have developed no results at all.)

[Origin begins from the only unchallengeable starting point: *nothing*, absolute nothing. It uses only one assumption: that mutually exclusive states cannot both be simultaneously valid. The contradictions that would otherwise result are the reason that infinity is impossible in material reality.]