the general science journal

A CONTRADICTION IS NOT A PARADOX!

Correcting Albert Einstein's Special Theory Of Relativity

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1.0 Introduction

A contradiction is not a paradox, it is a statement in logic that negates the truth of an assertion. It proves that an assertion is fallacious. This is the point of view presented in this paper, which examines the philosophy and method of Einstein's special theory of relativity. The point emphasized in the title is only one of the many errors in philosophy and method that will be discussed.

This paper will analyze the main errors at the heart of the special theory of relativity. But the main theme is that fundamentally the theory is inherently a contradiction of sound method, principles of scientific thought, and mathematical logic. The main success of the theory is in turning a theory of contradictions into a theory of paradoxes through the unproved assertion that although the theory is contrary to common sense it is nonetheless true. The author sees it differently. Not as a great advance in human knowledge but a contradiction of human reason, logic, and disciplined thought.

2.0 Background

The oxymoronic nature of relativity is certainly nothing new. This character of the theory arose almost as soon as the theory received publication. It is a mystery of science history that deserves further study. How could a theory which contradicts common sense, that produces a flood of books and papers, which are critical of its conclusions and which demonstrate numerous contradictions to established physics, become scientific gospel?

Since its debut in 1905, Einstein's special theory of relativity has been dogged by controversial paradoxes, which have never been satisfactorily resolved. The spectacular contradiction at the very heart of the theory did not escape notice. Its fundamental conclusions, not only contradicted common sense traditional physics, but the fundamental assumptions upon which the theory itself was founded. The theory claims that space contracts and time dilates based on the assumption that this is what happens to clocks and measuring rods in motion even though it is clear that nothing has happened in the moving frame of reference that could have caused this astounding

fact. Starting with the assumption that clocks and rods in two different reference frames are identical, the theory concludes that they are different. This is a contradiction. But, contrary to logic, the theory is not declared false and invalid, it is embraced by the physics community and the contradictions are declared to be paradoxes. Contrary to common sense, but necessarily true.

The dictionary defines a paradox as an apparent contradiction. Hence, a paradox is a contradiction to an accepted truth, which has been proved to be true despite the contradiction. Hence, an important aspect of a paradox is the proof that the contradiction is fallacious and that the seeming paradox is really true. Clearly the burden of proof ought to be placed on the proof that the contradiction is actually wrong, but this is not how it works with respect to relativity. In relativity, the burden of proof lies with the contradiction. The theory is deemed true despite the many contradictions that beset it. This turns the problem of the contradictions of relativity upside down.

The most famous contradiction is the Twins Paradox, but the are others just as serious, and just as controversial. The response of the scientific community has been to defend Einstein's conclusions and the theory upon which they are based. Critics have been portrayed as wrongheaded and recalcitrant. The criticisms have not been accepted as correct and the resistance to their views has not abated during the almost 100 years since the introduction of the theory.

It is usually said that the main difficulty in relativity is not understanding it but believing it. Studying the Special Theory Of Relativity is like going to the movies or a magic show. The student is expected to suspend his disbelief regarding the assertions he encounters in the textbooks. Students who successfully do this are accepted into the fold as responsible physicists, but those who are unable to accomplish this are faced with insurmountable difficulties.

One source of student difficulty is that the usual understanding of a contradiction as a fatal flaw in an argument is turned on its head in relativity. The paradoxes are labeled as "apparent", which means they are not really paradoxes at all, and embraced as evidence of the correctness of the theory and a demonstration of the need for the student to clarify his thinking. This approach to the paradoxes neutralizes them as flaws by embracing them as examples of incorrect thinking. Such paradoxes are presented not as flaws, but as examples of why relativity requires that the student revise his ideas and prejudices, which result from misconceptions about the nature of our world. Paradoxes then become examples of why relativity is correct and not wrong, and suggest why the students thinking must change to embrace the new ideas. Given this environment, it is not surprising that proponents of paradoxes as "fatal flaws" will not find acceptance of their views.

An example of this view appears in a paper By I.J. Good which he begins by stating that, "I think all physicists agree that the special theory of relativity conflicts with untrained common sense. It is "absurd but true' (or seemingly at least approximately true in an instrumental sense), which is

why it is usually regarded as a great scientific revolution and a large advance in our understanding of the geometry of nature."

The traditional view of paradoxes as revealing the deeper truth of relativity has not been universally accepted. Two groups continue to view them as indications that flaws exist in the accepted theory. The first group sees the paradoxes as fatal flaws in the reasoning and mathematical correctness of the theory. This group points to paradoxes as fatal flaws. The second group accepts the theory as correct but sees the paradoxes as indicating minor flaws in the methods of the theory. Neither of these views has been successful in resolving the paradoxes.

Historically the paradoxes have two different sources. One set arises from inconsistencies in the theory, while the other set arises from the efforts of critical and skeptical opponents of the theory to demonstrate flaws. We can trace the origin of the paradoxes of relativity to a controversy initiated by publication of a paper by Paul Ehrenfest. This described a controversial paradox called Ehrenfest's paradox. The controversy amounted to a question regarding the reality of the FitzGerald-Lorentz contraction. In 1911, there was a famous exchange in which Einstein responded to a publication by V. Varicak. Varicak published a short article in which he asserted that, "In the present case the center of the controversy was the question: Is the Lorentz contraction a genuine or only an apparent phenomenon? In relativity, the Lorentz contraction comes about purely as a perspective effect, because for an observer at rest the points of a moving body appear as simultaneous when in fact they are not simultaneous in the system in which the body is at rest. Einstein objects to the statement that 'therefore the Lorentz contraction is not a physically objective phenomenon'." Historians agree that Einstein's intervention in the controversy settled it in his favor when he responded to Varicak with a short note in which he stated that "The question of whether the Lorentz contraction does or does not exist in reality is misleading. It does not exist 'in reality', i.e., in such a way that, in principle, it could be detected by physical means, for a comoving observer. This is just what Ehrenfest made clear in such an elegant way."

Einstein's intervention in the debate was necessary to suppress the divergent views that were becoming prevalent within the physics community. For example, in 1909 Lewis and Tolman wrote that "The distortion of a moving body is not a physical change in the body itself, but is a scientific fiction." They also asserted that "changes in the units of time and length...possess in a certain sense a purely factious significance". Their conclusion was "Although these changes in the units of space and time appear in a certain sense psychological, we adopt them rather than abandon completely the fundamental conceptions of space, time, and velocity upon which the science of physics now rests."

Einstein's statement, later reinforced by agreement with his position by Lorentz, seems to have settled the argument against the viewpoint that the Lorentz contraction is not a real but merely an apparent effect. However, in the same year, Langevin reopened the issue with a new and different

approach to the paradoxes of relativity. He introduced the clock paradox, which was then termed the paradox of the travelers. Langevin did not question the conclusions of the theory of relativity, but this paper became the source of the arguments by critics who argued that the paradox showed that relativity was logically flawed. The main critic that pushed this viewpoint was Henri Bergson who published a critical evaluation of relativity in his 1922 book Duration and Simultaneity.

Bergson's views provoked another bitter controversy centered upon the nature of time in the context of the paradox of the traveler. Bergson is generally regarded as presenting fallacious arguments, because he was effectively answered in a series of articles which refuted his views. In 1939 Herbert Dingle reignited the controversy with the publication in Nature of an article which maintained the viewpoint that "There is no evidence of any kind for the definite retardation of clocks, and it is impossible that there could be, for there is in physics no explicit definition of a clock. The statement that a clock is slowed down in such and such a proportion is therefore meaningless." Dingle's paper appears to have been an attempt to refute the arguments by Kennedy and Thorndike that claimed to establish the "relativity of time" experimentally. In a 1940 article in Nature, Dingle reiterated the view that "in physics there is no explicit definition of a clock. A time scale only is prescribed, and any instrument which records intervals agreeing there with can legitimately be used as a clock." These articles and the resulting controversy began thirty years of bitter controversy and struggle with the physics establishment.

The clock paradox is based on one of the most famous results of Einstein's special theory of relativity (STR). In his foundational paper on relativity, published in 1905, Einstein deduced the famous result that "moving clocks run slow". He used this result to assert that "a balance clock at the equator must go more slowly, by a very small amount, than a precisely similar clock situated at one of the poles under otherwise identical conditions." This statement formed the basis of the clock paradox, which was first discussed by Langevin in 1911. The clock paradox questions the statement that a clock in motion will run slow compared with a clock at rest because, by the principle of relativity, we can view the clock at the pole as in motion relative to the clock at the equator, so that it can equally be regarded as moving with respect to the equatorial clock at rest so that the conclusions are exactly reversed, the clock at the pole runs slow relative to the clock at the equator. This is the substance of the clock paradox. It has provoked more bitter controversy than any other physical problem in the 20th century. The arguments are unresolved because Dingle's criticisms have not been effectively refuted, and the debate continues unabated to this day.

Dingle's first attack on the relativity establishment was delivered in a 1937 Nature article titled "Modern Aristoteleanism". This article was not a polite academic criticism, but a direct frontal assault upon the prevailing dominance of metaphysics in scientific thought, which Dingle says "came by metaphysics out of mathematics". He calls it an idolatry "of which 'The Universe' is the God...its various forms have this in common, that they transcend observation and cannot be

derived by induction from observation alone. Furthermore having, been created, they dominate experience instead of representing it...What is more surprising is that the world of science is generally accepting it with at best a silent protest, kept inarticulate by a lurking fear that what cannot be understood might haply be true." What is the cause of this sea change in scientific method and belief that has brought metaphysics to a dominate position in science at the expense of The Art of Experiment? Dingle tells us that "The theory of relativity appears to be the innocent cause....This was a mistake." Unfortunately, the rest of Dingle's insightful paper is outside the scope of this discussion.

In his 1939 paper, Dingle continues his argument that relativity is metaphysical and not based on sound principles of experimental method. Dingle makes a very tentative and crude start at redressing this fault, by trying to outline some of the necessary principles in his discussion debunking the new "metaphysics of time", which he saw as embodied in the recently reported results of the now famous Kennedy-Thorndike experiment. Dingle vainly endeavors to remind the scientific community that time is an observational phenomenon, and that it is conventionally defined by measurement relative to a prescribed standard of time. Dingle defines it this way. "A clock is any mechanism which successively records time intervals certified as equal by comparison with the standard intervals adopted at Greenwich and other observatories."

The years of controversy had the beneficial effect for Dingle that he was able to carefully reduce his arguments to their crucial essence in a succinct manner. This was eventually summarized in his 1972 book Science At The Crossroads. There the essential issue was reduced to the following problem. The theory of relativity predicts that given two relatively moving clocks A and B, the moving clock A runs slow relative to the rest clock B. But, as Dingle pointed out, we can reverse the roles of the clocks so that now the opposite result occurs, B runs slow relative to A. Since both clocks can not both run slow relative to each other, the basis of the theory must be false. This contradiction remains the fundamental basis for the refutation of relativity. Since there is no proof that it is fallacious, the theory is disproved.

3.0 The Fundamental Contradiction Of Special Relativity

This section defines the fundamental contradiction at the heart of relativity. The procedure used in relativity is to define the two famous postulates, the relativity and light constancy postulates, then to define coordinate systems. It is the procedure that defines these coordinate systems and methods of measurement that is crucial. The assumption is that the standards of measurement are the same in the two different coordinate systems S and S'. Identical clocks and distance measurement scales are defined for both systems. Hence, it is assumed that at time t=t'=0 by the time measure of both systems, all clocks read zero, and the distance measure scales coincide. So in every respect, at this moment of coincidence, systems S and S' are indistinguishable. They are identical, and no differences can be discerned between them by observers at rest with respect to them. It is now assumed that the systems are in a state of relative motion v so that the S' system

moves in the direction of the x axis of the S system. Hence, at time t, the x'=0 coordinate of S' is located at the x=vt coordinate of S. Likewise, at time t', the x=0 coordinate of S is located at the x'=vt' coordinate of S'.

There is nothing controversial up to this point. But is important to notice the following. Since it is assumed that the clocks and distance scales in S and S' are identical, then it follows that x=vt' gives the time in terms of measurement by an observer at rest at x'=0 in S' when he passes an observer at rest in S at coordinate x. Likewise it follows that x'=vt gives the time in terms of measurement by an observer at rest in S at x=0 when he passes an observer at rest in S' at coordinate x'.

In his 1905 relativity paper, Einstein deduced the result $x=\beta^{-1}x'$ and the result $t'=\beta^{-1}t$. Here x' is the coordinate measure in S' of an object at rest at x', and x is the coordinate measure of this S' coordinate viewed from coordinate system S. The time t' represents the time indicated on the dial of a clock at rest in S' viewed by an observer at rest in S, and the time t represents the time indicated on the dial of a clock at rest in S. In 1907, the result for time was changed to the now familiar equation of time dilation as $t=\beta t'$. Here the time t' is the time measure on the dial of a clock at rest in S' and t is the time viewed by an observer at rest in S when a clock at rest in S indicates the time t'. Notice that the statement is clearer for distance measure than for time. The reason is that the measurement scale for distance is assumed to be rigid fixed rods, while for clocks the establishment of time reference is not as easily fixed. For this reason we take up the transformation of distance first.

The result that $x=\beta^{-1}x'$, contradicts the hypothesis that x=x', which was assumed for the two coordinate systems S and S'. The usual interpretation of this kind of result would be to conclude that the theory which claims this as a true statement must be false. But, relativity turns this contradiction into a paradox by claiming the result is true because of the relativity of simultaneity. Since events in S' are not simultaneous with events in S, an observer in S' measures the distance to be x'=x, while an observer in S measures the distance to be x<x'. The result x<x' depends upon the relative state of motion of the two different observers at rest in S and S'. So while the result x=x' is true for these observers relatively at rest, the result x<x' is true for these observers relatively in motion. Hence there is no contradiction only a paradox due to a failure to appreciate the relativity of simultaneity. The reader should refer to section 2.0 for Einstein's interpretation of this explanation.

Unfortunately, this explanation doesn't satisfactorily resolve the contradiction. If x=x' for both observers at rest, and x<x' in motion for the S observer, is x'<x also true for the observer in S', or is it that x<x' is only true for the observer in S? There is no way to determine by the measurement procedure which is really true. Did motion cause a change in the coordinate measure by a physical contraction, or is the result an effect due to the relative perspective of the observers?

It is an act of faith to conclude either. If it is assumed x<x' is only true for the S observer and not for the S' observer, then it is an act of faith to believe in the relativity of simultaneity and conclude that x<x' for one observer but that x=x' for the other. If it is assumed that x'<x for the S' observer, and x<x' for the S observer, then it must be asserted that objects shrink physically when in motion and it is an act to faith to believe this. Both of these viewpoints cannot be true so we no longer have a paradox but another contradiction. But this time the contradiction involves what different people believe about the contradictory result of the theory.

Explained in simple terms the problem is one of definition of reference unit of distance measure. The measurement is performed in the S coordinate system by an observer at rest there using a reference unit measure of distance defined in S. Now it is assumed by hypothesis in relativity that the observer in the moving coordinate system uses the same scale of measure so that his reference unit of distance is the same as the one used by the observer in S. But this is an hypothesis, not a proof that it is true. If the observer in S measures the x' coordinate to be contracted relative to the assumed reference unit in S', he has no objective way of knowing whether this result supports the claim that this is due to relativity of simultaneity or whether the reference unit in S' changed as a result of the motion.

This difficulty becomes much clearer when the problem is examined for the transformation of time. The conclusion of relativity is that a clock at rest in S' is slow when viewed by an observer at rest in S. This result contradicts the hypothesis that the clocks in S and S' were identical. The contradiction is turned into a paradox by invoking the relativity of simultaneity. The problem becomes whether you believe that the proper times in S and S' are the same or different. Again it is a question of what is the state of the reference unit of time in the moving coordinate system. This is compounded by the careless statement that moving clocks run slow. This says that the reference unit of time in S' is different from the reference unit of time in S. Hence it contradicts the hypothesis that the proper times in S and S' are the same.

The result is the twins paradox controversy. Depending upon whether you believe that the clock in S' runs slow or seems to run slow makes a difference. If you believe the clock runs slow, then you can accept the claim that the traveling twin ages slow relative to the twin in the rest frame. But if you believe in the relativity of simultaneity explanation, then the proper times in S and S' are the same and there is no difference in the aging rate of the twins because each is at rest is his own coordinate system. Curiously relativity turns this backwards. The conclusion is opposite to that of length contraction. For length contraction the change in measured distance is claimed to be applicable only for the observer in S. But for time we have the opposite result. It is the observer in S' that ages more slowly and is younger than his twin when the journey ends. Here is another contradiction on top of all the others.

In the following sections, the objective of this analysis will be to expose the fallacies and errors

upon which the oxymoronic theory of relativity is compounded. Most of the ones discussed here will be philosophical and methodological. In previous papers the author has exposed the errors and fallacies that show the mathematical method and conclusions are false. Essentially, the mathematics of relativity is based on some very obviously incorrect mathematical deductions. That these errors of mathematics were accepted has more to do with the mysticism and obscurity of relativity than with the rigor of scientific method.

4.0 Is Einstein's Relativity Really Relative?

Clearly if we are to believe in relativity, then it must really be consistent. In other words, the theory must be consistent with the relativity postulate in all of its claims and assertions. Unfortunately, the theory of relativity contradicts the idea of relativity, because its conclusions imply statements which are absolute. So, we can not be sure if the theory is a theory of relativity or not. The persistence of this state is due to the vagueness and obscurity of its claims, and to the astonishing fact that there are multiple theories of relativity each making different and contradictory claims of truth in physics. We are left with a problem. What is the true theory of relativity and what really are its claims regarding truth in physics? This section examines this problem.

Fundamentally, all of physics is based on the paradoxical character of measurement. This paradox, it is really a paradox, is that in order to make true statements in physics we require a measurement and all measurements are relative to an absolute standard of measurement. So all of physics is relative. But this is not the kind of relativity that Einstein envisioned. It is a relativity based on an absolute. What this shows us is that all true statements in physics require two concepts, an absolute standard of measure and a measurement relative to this standard. Fundamentally, Einstein's relativity ignores this reality and proceeds upon different principles.

The ironic aspect of relativity is this. It is impossible to construct a contradiction free theory of relativity using Lorentz transformations. As long as the relativity postulate is maintained, the theory becomes contradictory. This defect results because there is no way to determine, within the structure of the theory, whether a particular theoretical deduction or statement of the theory is true. For every true statement, there is another one which contradicts it. This situation results from the relativity postulate, which claims there is no absolute rest frame. Hence, all frames are equivalent, and the result when implemented mathematically is a system which is self contradictory. It is an inherent mathematical flaw. Einstein's Theory Of Relativity is inherently a contradiction.

We are indebted to Herbert Dingle for making this problem clear. Dingle clearly showed that within the theory of relativity, we can make no contradiction free true statements. His argument was simple. This was eventually summarized in his 1972 book Science At The Crossroads. There the essential issue was reduced to the following problem. The theory of relativity predicts that

given two relatively moving clocks A and B, the moving clock A runs slow relative to the rest clock B. But, as Dingle pointed out, we can reverse the roles of the clocks so that now the opposite result occurs, B runs slow relative to A. Since both clocks can not both run slow relative to each other, the basis of the theory must be false.

This is essentially the clock paradox reduced to its bare essence. Relativity escapes the conclusion in a curious way. It abandons relativity, and becomes an absolute theory. This is not immediately clear, and this has been kept a secret. But it is clear, from the above discussion, that in order to make any true statement in physics, it is necessary to adopt an absolute reference of measurement. Relativity does this by establishing the rest frame as absolute, and then concluding that the time in the moving frame is slow relative to this absolute reference. The result is a bizarre claim. That the relativity postulate is true (by the relativity postulate it is assumed that all rest clocks run at the same rate), and that it is also true that moving clocks run slow (a result deduced from the Lorentz transform). Both can not be true, but relativity claims it is so. So in the end, we are not really sure what relativity means. Is it an absolute theory or a relative theory, or an absolute theory with the name relativity given to it so that it appears to be a relative theory when it really isn't?

The reader should understand the following result and always keep it in mind. It is impossible to construct a contradiction free theory of relativity based on the relativity postulate and Lorentz transforms. The reason is clear once we understand the mathematics. The Lorentz transforms only work in a theory which takes a designated reference frame as an absolute reference frame. Once this is done, it is possible to use Lorentz transforms to prove that moving clocks run slow. But, we can not go backwards using the same Lorentz transform and prove that relative to the moving frame, the rest clock runs slow as relativity does. The reason is that the mathematical structure becomes inconsistent and contradictory. Hence any theory which asserts the conclusion that moving clocks run slow, must rely upon an absolute reference frame.

5.0 The Idea Of Relativity

The fundamental concept of relativity, that nothing is absolute in physics, is both a strength and a weakness. Einstein's idea that there is no absolute was seductively appealing for metaphysical reasons and seemed to open the door to a new era in physics. But a physics without an absolute is absurd as discussed above. Physics is a construction built upon the tension between two ideas, natural philosophy as a theoretical mathematical speculation and the experimental philosophy based upon experimental evidence ultimately based upon measurement. In relativity these two approaches clash rather than work together towards truth. The success of relativity has been at the expense of the experimental method, because relativity being primarily metaphysical and not based securely upon experiment has forced the wrong conclusions on physics. Ultimately this is based upon the purity and beauty of mathematical thought founded on attractive philosophical principles that trumps all doubts. But, physics is not possible without the absolute knowledge

provided by measurement, but measurement is worthless without an absolute basis of comparison.

In relativity, there can be no absolute basis of comparison. Hence it lacks essential rigor and its conclusions must be deemed false. Ultimately, we can't ascertain whether any statement is really true in a system in which all statements are either true or false depending upon who does the measuring. This isn't rigorous mathematics, and it isn't physics either. Hence, it must be metaphysics.

The mathematical system is false because it is inconsistent, which means it is contradictory. The experimental evidence doesn't help us escape the dilemma, as claimed in relativity, because the interpretation of experiments is based on the contradictory mathematical system. While experimental physics appears to support it through experiment, it is also false because it is based on the false mathematical analysis of relativity. The theory has no absolute and this means there are multiple ways to assert the theory agrees with experiment. All may be false, one of them true, who can tell?

Since in relativity any equation we choose can be true, it can be interpreted to prove consistency with experiment, but looked at differently this equation is also false, so the experiment doesn't confirm the mathematics. Therefore, we can't tell whether anything is really true or false, because in a system in which all statements are both true and false, what can we conclude? There is no criteria to apply to what is true or false. There is no absolute reference, so we can prove anything, and support it with an experiment that matches the mathematical prediction. But, which is correct and which false? The experiment, or the mathematical equation? We have no criteria in relativity to separate true from false, hence everything can be true if we choose to believe that or false if we choose to believe that. But, objectively, there can be no true statements in relativity at all, only metaphysical belief.

A brutally true, but unrecognized fact about relativity, is that Einstein changed his theoretical prediction made in 1905 to agree with experiment when he wrote his 1907 paper, and tried prove the theory by experimental verification. But, we expect an experimental verification to be independent of the mathematical prediction, not based upon it. The 1907 theory is specifically designed, incorrectly it turns out, to agree with experiment, while the 1905 theory contradicts the experimental verification. Which of the two theories is correct? No one can say. It is better to say all of them are false, and reject the entire concept of relativity and its metaphysics.

6.0 The Contradiction Of A Void Space-Time Without Ether

It is now universally believed that the ether doesn't exist, and it is acknowledged that this is one of Einstein's greatest achievements. But it is not appreciated that the resulting physics of the space-time continuum is absurd. The result is another contradiction which afflicts the theory of

relativity. Without an ether of some kind, the concept of constant light velocity in a void space-time leaves the realm of physics and relies on metaphysics for an explanation. The reason is simple. Physics knows of only two kinds of motion, wave motion and ballistic motion. Ballistic motion is characterized by the fact that its velocity is variable and independent of a medium and is determined by an intensity measure such as force, momentum or energy. This is impressed upon the motion by its external source. Hence the velocity is a function of some quantity such as force impressed on the motion. On the other hand, the velocity of wave motion is not a function of any impressed force, it is always the same, or a constant, determined by the characteristics of the medium through which it moves.

Relativity presents us with a contradiction. It posits that there is no ether or electromagnetic medium, but insists that the velocity of light traveling through this void space-time is a constant independent of the force of the source exerted upon it. Light velocity is therefore a contradiction. It is constant, which implies a medium to establish the constant velocity, but the existence of the light medium is specifically prohibited. This contradicts the established principles of physics, and *requires an ad hoc metaphysical explanation. But there is none, other than the claim that the* velocity of light is an absolute constant for all observers in relative motion. The explanation is purely metaphysical and relies upon the idea that there exists a Minkowski space-time which justifies the contradiction. This belief is absurd.

This absurdity is further compounded by the almost universal acceptance of the idea of the photon. This compounds the absurdity, because the concept of a photon is based on the idea of a ballistic mechanics. A photon is a not a wave, traveling at a velocity defined by the medium through which it moves, a photon moves through void space-time. Hence, there is no reason for this photon to have a fixed constant velocity as a wave does, but this is the opposite of what relativity physics insists we must believe. The photon is a contradiction, Why does this particle travel through a void with a velocity not dependent upon the intensity of its source? Physics has no answer other than an appeal to an arbitrary metaphysics of belief.

7.0 The Fallacious Operational Method Of Relativity

To understand Einstein's resolution of the debate with Varicak (see above), we must change our thinking to conform to the operational method. This is a nice metaphysical argument that justifies the conclusions given by Einstein. For according to the operational method, the length depends on the operation of measurement and this becomes a function of who does the measuring. The comoving observer at rest in S' measures the length L, which was measured at rest in the frame S, and then placed in motion. However, the relatively moving observer measures the contracted length $\beta^{-1}L$. Hence, the length depends upon the operation of measurement and this is a function of who does the measuring.

Unfortunately, this ignores the difficulties that arise in practical physics. Eddington gives a

simple answer which exposes the problem very well. He draws a distinction between what is *true* and what is *really true*. He says a true statement is one that deals with appearances, and a really true statement deals with realities beneath the appearances. By this reasoning the Lorentz-FitzGerald contraction effect is true for the relatively moving observers and completely false for the comoving observers. But relativity asserts that the contraction effect is real, but which reality do they refer to?

This problem becomes crystal clear in the case of the twins paradox. Here a funny thing happens which has drawn a lot of criticism. While it is claimed that the rate of clocks observed by comoving or rest observers is the same in frames S and S', it is concluded that the rate of the clocks observed from the relativity moving reference frames are different. The moving cock runs slow. Hence we must conclude by the operational method that the slowing of moving clocks as observed in relative motion is true, but not really true, because the comoving or rest observers do not observe the slowing of their clocks. But in the twins paradox, it is claimed that the slowing of the moving clocks is really true. This is of course a contradiction of the conclusions of the operational method which asserts that no such conclusion is possible. Hence, the operational method of relativity is false, since it leads to two contradictory conclusions regarding which observations are true and really true.

Essentially, whether or not you believe that the traveling twin returns older than or the same age as the stay at home twin depends not upon any thing physical in the arguments offered, but upon whether or not you believe in the metaphysical claims of the theory. Hence, the theory reduces to metaphysical belief and is no more scientific than superstition in this regard.

8.0 Summary and Conclusions

The function of the paradoxes of relativity is to turn these from being symbols of failure into symbols of success. The language of belief in relativity has made it necessary to conceive of the fatal flaws that exist as contradictions as mere apparent paradoxes and declare the contradictions as void. But relativity goes further, it takes contradictions as liabilities and transforms them into assets. But they still maintain their contradictory nature. The real meaning of the so called paradoxes is that they show to us that the theory is false, and upon careful study reveal why this is the truth. The untiring resistance and hard-headedness of relativists is explained by their unfailing belief in a metaphysical religion, which has only a faith of believing to support its fallacies.