

Space, Time and Reality

TODAYS PHILOSOPHY...TOMORROWS PHYSICS

∞ A collection of essays on the Philosophy of Physics ∞



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As a philosopher, I have a problem for every solution...but not a solution for any problem.

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“Time is an equal opportunity employer. Each human being has exactly the same number of hours and minutes everyday. Rich people can not buy more hours. Scientist can not invent new minutes. And you can not save time to spend it on another day. Even so, time is amazingly fair and forgiving. No matter how much time you’ve wasted in the past, you still have an entire tomorrow. Success depends upon using it wisely – by planning and setting priorities. The fact is, time is worth more than money, and by killing time, we are killing our own chances of success.”

HH143

This book is dedicated to
everyone who believed in
me...proof that the power of
persistence conquers all.

Montay + Khalil + Danae + Shayla +
Billy + LT + Deshonna + Brianna = The
Future

Forward

By: Ernesto Lee

Like so many things in life, this project was inspired by death. As I watched my elders succumb to Father time, I realized that you are not really dead until the last person alive forgets your memory or die themselves. I realize that every man and woman has a story to tell. This book is a story of a man. It is my philosophy, which to me bares the true essence of my soul. It is my attempt to cheat time by leaving a part of me to mankind.

This is a book of questions. I do not profess to know the answers but I do know that our current paradigm of the world is severely flawed. After reading this book, ordered as a collection of essays, you will realize that I am a strict rationalist and skeptic. I have a question for every answer but never an answer to any question. I have often been pressed about what can be learned if one adopts this attitude. My

response is quite clear. You learn more by asking the right questions than you do by cloaking yourself in the “answers”. Your mind stays fresh and open. You retain the ability to wonder...a child-like quality that we all, unfortunately, lose with age.

I have to invoke a word of caution regarding the topics discussed in this book. Without a doubt, they will challenge the very foundation of human existence. I only have one request. Keep an open mind. When one hears something that disagrees with their core beliefs, they do one of four things: distort it, ignore it, reject it completely, or accept it. I certainly do not ask anyone to accept any of my philosophy without careful consideration and deliberation. But, I do ask that at the very least, one ponder the points and accept or reject based upon the logic.

During the course of this reading, topics such as space, time, matter, reality, and logic will be

touched upon repeatedly. It is my view that these areas summarize the common goal of all human understanding. All scientific thought seeks to break down components until we can develop one unified theory to explain everything in the known universe. However, history has taught us that tomorrow's physics is always today's philosophy. In order to evaluate where we are going, we must first evaluate where we are and how we got there. We must question the source and accept nothing on faith.

My father once told me: "I don't care what you think of me...so long as you think." It is with those words that I begin this journey of space, time, and reality.

TABLE OF CONTENTS

1	Introduction	11
1.1	<u>The Nature of the Paradox</u>	12
2	TIME	18
2.1	<u>The “History” of Time</u>	19
2.2	<u>The Story of Ludwig Von Boltzman</u>	21
2.3	<u>The First Law of Thermodynamics</u>	25
2.4	<u>The Second Law</u>	28
2.5	<u>The Heat Death</u>	31
2.6	<u>The Famous Arrow of Time</u>	32
2.7	<u>The Absolute Temperature</u>	37
2.8	<u>Entropy</u>	41
2.9	<u>Philosophy on Time</u>	45
3	Special Relativity	47
3.1	<u>History</u>	48
3.2	<u>The Light Paradox</u>	49
3.3	<u>The Two Postulates</u>	52
3.4	<u>Simultaneity</u>	54
3.5	<u>Time</u>	57
3.6	<u>Space</u>	65
3.7	<u>Mass / Matter</u>	69
4	Rationalism-the ONE: Interconnectedness	73
4.1	<u>Being and Not Being</u>	74
4.2	<u>Time</u>	81
4.3	<u>Interconnectedness</u>	82
4.4	<u>God Particle</u>	83
4.5	<u>Conclusion</u>	84
5	Skepticism	86
5.1	<u>Paradigm</u>	87
5.2	<u>Which one is correct?</u>	88
5.3	<u>Infinite Regress</u>	89
5.4	<u>Philosophy</u>	90
5.5	<u>Absolute Truth</u>	93
6	What is Reality?	95
6.1	<u>Introduction</u>	96
6.2	<u>Types of Knowledge</u>	97
6.3	<u>A priori vrs. A posterj</u>	98
6.4	<u>Cause and Effect</u>	100
6.5	<u>What do we “really” see?</u>	105
6.6	<u>Who am I?</u>	106

6.7	<u>Who am I -- Answered</u>	109
7	Dichotomy: The Motion Paradox	111
7.1	<u>The Argument</u>	112
7.2	<u>Consequences</u>	120
7.3	<u>Mathematics</u>	126
8	Achilles and the Tortoise	130
8.1	<u>The Argument</u>	131
8.2	<u>Consequences</u>	134
8.3	<u>Mathematics</u>	137
9	The Arrow	142
9.1	<u>The Argument</u>	143
9.2	<u>Uncertainty</u>	146
9.3	<u>Consequences</u>	152
9.4	<u>Conclusion</u>	153
10	The Stadium	155
10.1	<u>The Argument</u>	156
11	The Golden Braid-Math & Physics	159
11.1	<u>The Argument</u>	160
11.2	<u>Math-a-"magic" Mathematics</u>	162
11.3	<u>Being and Becoming</u>	166
12	Conclusion	168
12.1	<u>Conclusions</u>	169
12.2	<u>Final words from the author</u>	170

1 Introduction

This sentence is false.

1.1 The Nature of the Paradox

This sentence is false. Is this sentence true? If it is true that the sentence is false then the sentence is true. If it is false that the sentence is false then the sentence is true. This is a logical contradiction. The sentence can not be both true and false simultaneously. The sentence must be true or false.

This begins our journey into the nature of the paradox. A paradox is an absurd truth that derives a repugnant conclusion from an unquestionable set of premises. The listener will usually agree with the arguments supporting the conclusion but be unwilling to accept the final inference.

To resolve a paradox, one must abandon one of the premises used to support the repugnant conclusion, reject the inference leading up to the conclusion or accept the final result.

Let us begin this journey by demonstrating the Liar paradox:

“All Cretans are liars. I know because one of their own kind told me.” The sentence would only be true in the cases where it is false. This is an example of a semantic paradox that has been in existence since the days of Epimenides.

Another example of a paradox would be Bertrand Russell’s Barber Paradox:

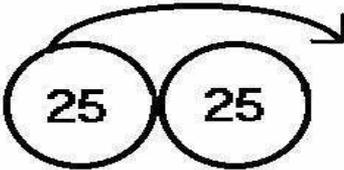
“A man of Seville is shaved by the Barber if and only if the man does not shave himself. Does the Barber shave himself?” Again one is faced with a repugnant conclusion regardless of which answer is chosen.

Here is a practical demonstration of the power of the paradox. Try this. Take two quarters and line them up so that they are both facing the same way. Take the quarter on the left and rotate it half way around the quarter on the right. The

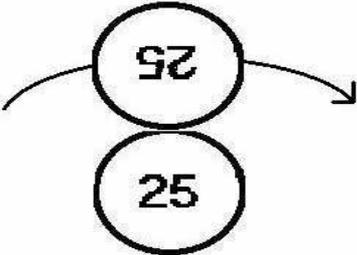
coin undergoes a complete rotation! How can the coin rotate 360 degrees when it has only traveled halfway (180 degrees)?

Coin Paradox

1.

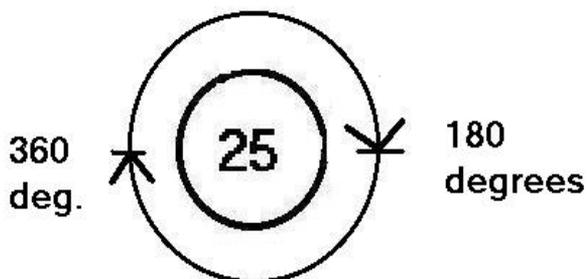
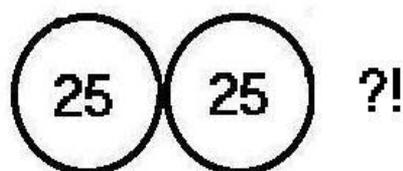


2.



Coin Paradox

3.



How does the quarter traverse 360 deg (full rotation) when it has only traveled 180 degrees?

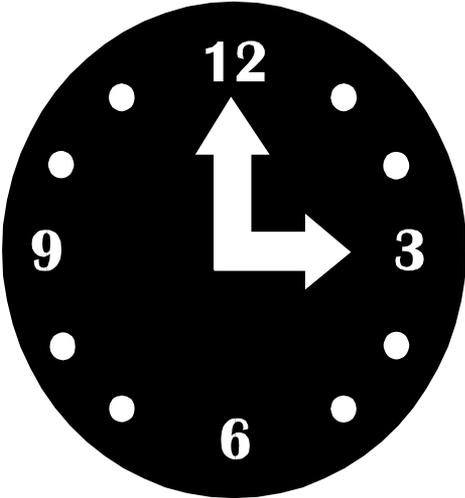
Let's go back to a semantic paradox. Look up the word "heterological". It means a word which does not describe itself. Therefore, the word heterological is heterological if and only if it is not!

One final paradox to get us going. This one is called the Smarandache Paradox. Let A be an attribute (perfect, tall, etc.) If all is A, then even non-A must also be A. For instance, to say that all is perfect would mean that even what we consider imperfect would be perfect. To say that all is possible would mean that even what is impossible is possible. The converse is also true. To say that nothing is perfect means not even the perfect is perfect.

Paradoxes are important because they, more than anything, highlight the problems with our paradigm. If a paradox exists, it means that we have problems with our understanding of whatever the paradox is made of.

Paradigm is the key. When we are faced with a paradox, the fundamental underpinning of our view of the world is forced to change if we can not refute the logic of the paradox. The paradox no longer becomes a paradox, but rather, our new paradigm.

2 TIME



2.1 The “History” of Time

Plato’s great work *Timaeus*, revealed that time was in a sense created, when the god like worksmith instituted form and order on primeval chaos. *Timaeus* begins with the distinction between Being and Becoming. These two concepts reappear time and again in modern scientific and mathematical theories. (As well as one later in this chapter) To Plato at least, Being was a fundamental concept that held within it the realm of reason. It was conceivable to mere mortals through intelligence and logic. Becoming on the other hand, was the concept of time. He considered the concept of becoming irrational, and subject to opinion. He complained that becoming was not real and only being existed for mortals. He made a distinction in the physical world between being and becoming, yet he gave the concept of becoming a secondary reality.

My own personal, and most admired philosophers that preceded him, Parmenides and Zeno of Elea no doubt influenced Plato's philosophy. (Parmenides and Zeno were my inspiration for this book) Parmenides and Zeno believed that reality is indivisible and timeless. The work of these two philosophers, always evoke one of two results: it is written off as utter absurdity, or it is recognized as a stroke of brilliance. Ultimately however, one is forced to choose between denying the reality of "Becoming", in which time and space are essentially equivalent. Or, one must reject the notion that time, like space is infinitely divisible and forms a continuum.

Immanuel Kant tended to view time as devoid of objective reality. He classified the concept of time like the concept of red. How do you definitively define what the color red is to a blind person? You can't. He viewed this limitation as a condition of the human mind. His conclusion

differed only slightly from those of history that reason that time can not be real.

Ludwig Von Boltzman, the great physicist called time a “migraine of the human mind”. Boltzman vehemently opposed the thought of most in the philosophical community, both past and present, for their non-belief in the concept of time. He reasoned that it was the construction of the questions that led to the many paradoxes involving time. Boltzman did not solve any of the paradoxes. He not only criticized them, but he contributed more on the pure science side than any scientist before or since. For this reason, I will begin with a brief overview of Ludwig Von Boltzman, the man and his work.

2.2 The Story of Ludwig Von Boltzman

Ludwig Von Boltzman was a college professor since the age of twenty-eight. His sole purpose in life was to prove that time goes from past to

present and not future to present. Although this appears intuitive, physics then and physics today has no absolute laws that state this. In other words, all of the equations of physics work the same whether time flows forwards or backwards. The arrow of time is not restricted by anything in physics.

Boltzman's signature work was his theories on entropy. It stated that:

Entropy is a measure of change that always increases with time.

This single sentence was a great leap forward in man's understanding of time. It, along with Boltzman's contributions to Thermodynamics, gave time an arrow. And yet, it is inconclusive at best and probably incomplete. It is not deduced from first principles and gets its credence from observations.

Boltzman's work over the years led to him becoming extremely irritable and mentally

unstable. He spent countless hours attempting to “probe the mind of god” and solve the riddle of time. This had made him deranged. He spent so much time thinking about time that he eventually ended up in an asylum near Munich Germany.

One day, while on vacation with his wife and daughter, time decided that it would not reveal its secret. Boltzman was around 62 years old, overworked, underpaid, nearly blind and in bad health. Yet, his greatest concern was unlocking the secrets of time. Mrs. Boltzman decided to take her daughter out for a swim. When she returned, she discovered one of the greatest physicists the world has ever seen hanged. Boltzman took his own life by tying a short rope to the window casement of the rented house and placing the noose around his neck. Lavoisier was decapitated, R. J. Mayer was sent to a lunatic asylum, being run over by a truck killed Pierre Curie, Socrates was killed by poison, and Galileo was censured and forced to recant his work.

Boltzman's death ranks right up there with the tragic premature losses of the above mentioned giants of science.

He died in 1906, because of the weight of the topic. The sheer magnitude of the concept of time is definitely too mammoth for any one man to decipher. Time is the one of the last great-unsolved mysteries of mankind.

There is a bitterly ironic conclusion to the saga of Ludwig Von Boltzman. His student, Paul Ehrenfest, picked up on the work of Boltzman. As he approached a critical moment in his analysis of Boltzman's work, in 1933, he proclaimed that he was beginning to understand what time was. A few months later, he was found hanged. The official report stated his cause of death as a suicide. Ponder the concept of time. But realize that time will not let go of its secrets easily.

2.3 The First Law of Thermodynamics

In 1842, a physician from Germany named Julius Robert Mayer (Mr. Asylum from 7.2) made the bold conclusion that energy, (Potential Energy, Kinetic Energy, or Heat) can not be destroyed and are simply convertible. All manifestations of energy result in a simple transfer of energy from one form to another.

Mayer did not have the benefit of a lab or any scientist willing to test his theories. His work was ridiculed. By the year 1849, his work had made him the object of humiliation and he fell into a deep depression. His two children died. In the same year, Mayer attempted suicide by jumping out of window. He was considered insane and spent the next few years in an insane asylum.

James P. Joule eventually provided the experimental data to support Mayer's theory and