

The Problem of Time and the Single Particle Perspective (T^∞) vs (T_d)

by Kirt M. Rebello
krebello@comcast.net

<https://sites.google.com/metalartforms.com/the-problem-of-time/>

Abstract

This essay contemplates time, time dialation and universal structure from a single particle perspective and, from this perspective, develops many postulations. Chief among these postulations is the proposal that the “problem of time” and the lack of attainment of a unified theory, is the failure to recognize the condition of non-dimension and the continuum of non-dimensional time (T^∞), as well as the failure to recognize dimensional time (T_d) as simply – *“the movement of matter relative to matter, and the measurments, thereof.”* Among the many propositions developed from this perspective is the bold suggestion that the recognition of non-dimension might also help bridge the gaps between science, psychology and theology.

Preface

I’ve long held a personal obsession with theoretical physics and that obsession took a significant turn one day as I contemplated spacetime, time dilation and time travel. I had felt for some time that our understanding of time, as well as the traditional thoughts and the hypothetical concepts of time travel, were missing a fundamental component to the understanding of time, and that this component was at the heart of the problem of time. More specifically, I struggled with special relativity’s conclusions on time dilation and the effects of gravity on spacetime. And despite the irrefutable results and calculations that relativity presents, I felt that some fundamental component appeared to be missing from our understanding of time.

At the forefront of my thoughts was the idea that time, as defined in special relativity, seemed to fall short of being an all encompassing dimension or continuum as I would understand time to be. Although I completely understand the idea that time is the fourth dimension in spacetime, I felt that this definition of time was tantamount to nothing more than *“the movement of matter relative to matter, and the measurements, thereof.”* I felt that it made more sense to me that what relativity was actually measuring, especially with respect to time dilation, were the effects of gravity on *“the movement and densities of matter,”* rather than on time, itself. Instead, I felt that the space between celestial

bodies was not empty space at all but was, instead, filled with yet discovered dimensional (perhaps dark?) particles. And I felt that the gravitational forces of celestial bodies merely created a greater density of matter in (and near) the dimensional space they occupied, and this greater density of subatomic matter is what actually changed spacetime and caused gravitational lensing around celestial bodies.

With a lack of time dilation in quantum mechanics, I felt that some basic understanding of time was missing and that some merit remained in the classical mechanics' understanding of time, albeit it free from its Euclidean understanding of space. I felt that perhaps it made sense that gravitational forces were creating a "Euclidean distortion" of space and perhaps that was the basis for time dilation in spacetime, but I still felt that an overarching continuum of time existed, separately from spacetime. What drove my primary thoughts for this belief was the idea that I thought it was a bit presumptuous to think that the movement of matter within the confines of our very finite Universe, made up the "continuum of time" for everything that existed. Something was amiss and I was unable to wrap my head around it until a simple thought crossed my mind one day.

The Single Particle Perspective

As I contemplated my thoughts on time as the "movement of matter," rather than an "unbreakable continuum," I contemplated what I thought it would take to "travel back to a previous point in time." I surmised that to replicate a previous moment in time, one would only need to "reposition" every particle of matter in the Universe to the exact positions and trajectories of motion that they were located at (and moving on) in the Universe, in that previous moment in time, and "time travel to" (or more precisely, "replication of") that previous moment in time would be accomplished.

And if one takes the time to contemplate that proposition, it becomes irrefutable... if **every** subatomic and super atomic particle of matter in the Universe were repositioned to the respective positions and trajectories that they were on in a previous moment of time, that moment in time would be replicated. All that has been created since that previous moment in time, would cease to exist in the "rearrangement process" and if the positioning and trajectories of matter were exactly placed as they were in that previous moment in time, even the chaotic movement of matter should replicate itself ... and time from that previous moment in time would resume and cyclically repeat itself.

Obviously, the capability and energy required to accomplish this form of "time travel" is beyond comprehension but it is, quite frankly, the only way to replicate a "previous moment" in our Universe's time. However, I further surmised in this scenario that if one single subatomic particle of matter were "out of place" anywhere in the Universe, or set on a different trajectory, then a new and "different" moment in the continuum of time

would be created, and the continuum of time would progress on a new and different path. However, it was also glaringly obvious to me that an “unbreakable” continuum of time still existed throughout the whole evolution of "repositioning" the Universe to a previous moment in time... and it was at that moment that I had another revelation.

As I pondered how that one particle of matter could completely change the continuum of time for our Universe, and I eagerly sought a simplistic way to understand the complexities of time, a fantastic idea came to mind: “What if I revisited the building blocks of spacetime and theoretical physics from an exceptionally simple and hypothetical perspective - as if only one particle of indivisible matter made up the entirety of our Universe?” In other words, what if I supposed that ***absolutely nothing*** dimensional existed in our Universe except for one, indivisible “single particle” of matter... and what if I then began asking fundamental questions from that perspective? And with that, the obsession began.

“What if I revisited the building blocks of spacetime and theoretical physics from an exceptionally simple and hypothetical perspective - as if only one particle of indivisible matter made up the entirety of our Universe?”

As I contemplated and began to embrace this perspective, a floodgate of questions and (I believe) answers began to reveal themselves to me. Over the course of the last several years, I began to achieve what I believed to be was a more complete understanding of our existence and the structure of our Universe. As I searched for classical studies that might reflect what I began to understand, I found none, and (in my narrow understanding of theoretical physics) I wondered if I had stumbled upon something that has not yet been considered in the way it began to reveal itself to me.

The Revelations

As I contemplated the single particle, perhaps the most stunning revelation that presented itself to me was that, if only one particle of dimensional matter existed there would be no “spacetime,” nor would there be a classical “passage of time” for that dimensional particle. The particle would be the extent of all that dimensionally existed and without other particles to measure relative velocities and positions to (and from), there would be no “passage of time.” And, hence, there would be no “spacetime” as we understand it because the single particle would make up the entirety of all dimensional space. There would be no “space” for the particle to move through and, even if the particle exerted fundamental forces, there would be no other particles for those forces to act upon, and there would be no time dilation. There simply would be no “passage of time.” The particle would only have two possible events in its life... its creation and its destruction. There would be subatomic activity for the particle and even if the particle exerted fundamental forces... there would be no passage of time as we know it.

In this scenario, despite the existence of a dimensional object, all of the theories of general and special relativity would be impossible to calculate and, thus, rendered inconsequential. Yet, this scenario reveals that dimensional matter could actually exist, and create dimensional space, without the continuum of spacetime. This reinforced my thoughts that our understanding of time was incomplete ... and the floodgate of questions and answers opened further for me.

The state of Non-Dimension

I then began to contemplate the single particle. Where did it come from? What is the particle made of? It had to be “created” and events obviously occurred to create it. How could this single, dimensional particle exist without some “passage of time” to design it and create it? If the particle is the only “dimensional” item in existence, then it must have been designed and created in and from a state of “non-dimension,” with non-dimensional processes and components. If the particle was created in a non-dimensional state, what were those non-dimensional components that created it? And if that “creation process” occurred in that non-dimensional state, then isn’t there a non-dimensional “passage of time?”

And with that final question, another floodgate opened and another stunning revelation revealed itself to me: "Our understanding of our existence, especially as it pertains to spacetime and our quest for a unified theory, failed to recognize the state of “non-dimension” and the passage of “non-dimensional time.” And, I would surmise, that the non-dimensional passage of time is truly the “continuum of time” that we have failed to recognize.

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As I contemplated (and continue to contemplate) what a non-dimensional state (or realm) consists of, it became irrefutable to me that a state of non-dimension must exist and the passage of time must occur in that dimension. And as I contemplated the realm, the pieces of that puzzle quickly began to fall into place for me. I soon recognized that many entities in our Universe exist without the requirement of dimensional space and are, thus, non-dimensional. Chief among these entities are: information; intelligence; the structural calculations of Pi (π); and the concept of infinity, as well as the fundamental forces in our Universe (gravity, electromagnetism, strong and weak interactions)... are all by themselves non-dimensional. Could it then not be argued, that the building blocks of our dimensional existence are, by themselves, non-dimensional?

"If information, intelligence, the structural calculations of Pi (π), the concept of infinity, and the fundamental forces in our Universe (gravity, electromagnetism, strong and weak interactions) are all, by themselves non-dimensional, could it not be argued that the building blocks of our dimensional existence are, by themselves, non-dimensional?"

For instance, concepts like that of infinity are impossible to attain within the confines of dimensional space. Dimensional space, even as vast as our Universe, is limited to its macro and micro structures. At some point, in our Universe's structure, you find the smallest particle, the largest dimension, the coldest and the hottest temperatures, and the slowest and fastest speeds... but each and every structural aspect of our dimensional existence is eventually finite in its structure. The only realm in which the concept of infiniteness can truly exist, is in an informational state of non-dimension.

Yes, the smallest particle in our Universe should be able to be "divided in half" and made to be dimensionally smaller but, I would argue, that can only happen if the particle is "designed" to be divisible. Quite simply, if the smallest particle in our Universe is not designed to be divisible, then you have reached the smallest dimensional limit of our Universe. For that particle to be divisible, it must be "designed" that way, and a "design" is merely structured information and, therefore, a non-dimensional function.

As the evidence of a state of non-dimension revealed itself to me, and it became irrefutable to me that the particle in my "Single Particle Proposal" had to come from a state of non-dimension, I wanted to give this condition, realm and/or state a name. After contemplating what I felt was the primary function of this state, I debated whether-or-not I should refer to it as the "Information Dimension" or the "Design Dimension." So, for the purposes of this paper, I decided to refer to this non-dimensional condition/realm/state as the "Design Dimension."

As the contemplation continued, it became apparent that a series of events had occurred in the Design Dimension to "create" the dimensional particle, and that these events represented a passage of "non-dimensional time." Designing, processing information, exerting fundamental forces, all had to occur to create the single particle, in a non-dimensional continuum of time, free from Euclidean geometric space and the gravitational forces of dimensional celestial bodies and, therefore free from time dilation. This left me to surmise that a clear distinction existed between "non-dimensional time" and "dimensional spacetime," where non-dimensional time (T^∞) represents the true, infinite "continuum of time" that we've sought to understand in our dimensional existence, and dimensional time (T_d) simply represents the movement of dimensional matter (in our Universe) relative to other matter, and the measurements thereof.

As I pondered how our current understanding of time has been developed, it was inescapable to recognize that our measurements of time are derived from a narrow frame of reference that is based on the Earth's rotation and orbit around the sun. This, in and of itself, is merely a representation of the movement of matter relative to matter, and the measurements thereof. Although most theories we hold dear have been mathematically proven in both the quantum and general theory realms, we've let our current understanding of "earth time" (T_d = seconds, minutes, days, weeks, months, years, etc...) cloud our understanding of recognizing the non-dimensional, infinite continuum time that exists, separately from relative and classical interpretations of time.

The fundamental argument that I believe supports my supposition of this definition of time is that non-dimensional time (T_∞) is infinite and dimensional time (T_d) is dependent on the existence of dimensional matter and is, therefore, finite.

Much like the "single particle" is finite and for the purposes of dimensional time (T_d) only has two events in its passage of time (its creation and its destruction), so too does our Universe and, therefore, so too does the "continuum" of dimensional time (T_d) have a beginning and an end. This, I believe, supports the postulation that dimensional time is simply "the movement of matter relative to matter, and the measurements, thereof." And I believe it further supports the postulation that the true "infinite continuum of time" is non-dimensional. Both passages of these times (T_∞ and T_d) simultaneously exist but I believe that neither has been recognized for their significant differences.

The question then came to my mind: "Is the inability to reconcile time into a Unified Theory not problematic at all but, instead, a confirmation that the two forms of time (T_∞ and T_d) simultaneously exist?" Instead of a unification of quantum mechanics and general relativity, could it be that "time" as it is defined in quantum mechanics, is more representative of non-dimensional time (T_∞) and that "time" as it is defined in relativity and spacetime, represents dimensional time (T_d) or simply the movement of matter amongst the gravitational forces in our dimensional Universe?

(T_∞) = The non-dimensional, infinite continuum of time.

(T_d) = The movement of matter, relative to matter and measurements, thereof.

At one point in the evolution of my thoughts, I even came up with a convenient formula for dimensional time, that actually spelled out the word "time." The formula was: " $(T_d) = (i)+(m)+(e)$ " whereby, " (T_d) " = dimensional time; " (i) " = information; " (m) " = mass; and " (e) " = energy. However, I soon realized that the formula was incomplete and, perhaps, more loosely defining dimensional matter than it did dimensional time.

As I pondered these questions of time from my "single particle" perspective, I began to ponder the "problem of time" and the inability to renormalize calculations that produce

infinity as results. Since a dimensional existence is finite and the attainment of infinity can only occur in a state of non-dimension, could it be that the inability to renormalize these calculations are not problems at all but are, instead, a confirmation of the state of non-dimension? Are these calculations a representation of the “crossover point” to (and from?) the state of non-dimension? Could it be that the results of infinity in these calculations are merely a confirmation of the “Design Dimension” and that, in the non-dimensional realm of the Design Dimension, all things are infinitely possible to create?

Perhaps the points of singularity that have been hypothesized in both the creative processes (like subatomic structures and the "Big Bang") and destructive processes (like black holes) are merely the points at which “non-dimensional building blocks” are transformed into dimensional matter (creation process), and dimensional matter (and all of its information) are returned to the state of non-dimension from which they came (destructive process)? Perhaps the “event horizon” of a black hole is actually the dimensional to non-dimensional crossover point in the destructive process ... or the return of dimensional matter to the non-dimensional “Design Dimension?”

∞ = Singularity = The condition of non-dimension.

As I further contemplated the Single Particle and the state of non-dimension, another postulation came to me from a non-dimensional “building block” and “design standpoint,” and that was the thought that the only true structural calculation for our dimensional existence is the infinite calculation of Pi (π). With Pi’s existence as non-dimensional information that has a capacity for infinite accuracy and infinite spherical design capabilities, I would postulate that Pi is the primary calculation used in the Design Dimension. And I would further surmise that the only “natural dimension” in our dimensional existence is the sphere (particle), and that all other dimensional shapes within the Universe are only “assembled compilations” of spherical particles. Of course, I recognize that this postulation is probably common knowledge to science and its revelation to me tantamount to a small child, in a room full of adults, recognizing something that everyone else already knows... so I'll digress from that.

However, given the aforementioned postulation and given that the dimensional “space” of our Universe is created with spherical particles, can it not also be surmised that the "dimensional space" that the particles create can never be completely filled, because of their spherical shape? And, can it also further be surmised that the accuracy to which representative mathematical calculations can be attained in our dimensional Universe, is limited to the structural dimensions of the smallest particle in our Universe? Could it also be stated that, much like marbles in a jar, the Universe's mathematical accuracy limits (or inaccuracies) are equal to the relative dimensional voids between the smallest particles in our Universe? Furthermore, could it be surmised that, perhaps the state of non-dimension and/or the “singularity” conversion point, to and from the non-dimensional Design Dimension, is what exists between the smallest particles in our Universe?

With the concept of a state of non-dimension, many other fundamental questions and possibilities now occupy my mind. Could the idea of a non-dimensional "Design Dimension," where non-dimensional components like information and energy reside, also be where "intelligence" resides? Could the concept of a non-dimensional existence help bridge the scientific, psychological and theological gaps that have plagued mankind for millennia? Could this open more fundamental doors where we might further postulate that the "soul" within us all is, in fact, "non-dimensional" and our "interface" to the Design Dimension? Does the information we've generated in the dimensional existence of our lives, forever live on with us in the non-dimensional realm?

Perhaps the infinite state of non-dimensional existence is where our "creator/designer" exists? Perhaps, it is where "we" eternally return, until we decide to take another escapade in to a dimensional existence? Although I've referred to this state of non-dimension as the "Design Dimension," it will likely prove to be too narrow a description, as the possibilities for the state of non-dimension are quite literally, infinite.

"Could the concept of a non-dimensional existence help bridge the scientific and theological gaps that have plagued mankind for millennia?"

From within the confines of my limited education, many questions and postulations remain for me. However, in the interests of not "muddying the water" and trying to keep this paper focused, I will digress from further postulations and conclude with a final question. Although I feel excited to have finally refined and successfully assembled my thoughts into writing, after all these years of contemplation I wonder: "I am just a fool who has wasted many years contemplating something completely that is inconsequential or did I present something that is worthy of consideration?" This final question is the only one that I am confident is sure to be answered, one way or the other.

Regardless the final prognosis, recognizing what I believe is the existence of the state of non-dimension and its possible ramifications for understanding the problem of time, has left me with a sense of clarity and an reluctant eagerness to share this unfinished work with whoever might be interested. I nervously, yet eagerly, await and welcome the scrutiny of this proposal with the hopes that it is found to have merit.

Respectfully submitted,

Kirt M. Rebello