

Timeless: the truth about time



The conception of time is seemingly self-evident. Tick, tock. A minute consists of sixty seconds, an hour of sixty minutes, a day of twenty-four hours, and a year of 365 days. It is quite rare that the fundamental nature of time itself is ever even brought into questioning. What is time? What do we mean when we say time? Is time even real? These questions have all been contested and an answer has been long sought. It rarely occurs to us about how little we know about time, yet, time is a factor in almost every part of our lives; everything we do revolves around time.

Perhaps examining the philosophical implications of what we call 'time' will help us relate to what time actually means, if it means anything at all. Time has always been a main concern of many different subjects, but defining the term in a non-controversial fashion that can be applied to all fields of study has regularly eluded even the greatest of scholars. Defining what time is might guide us in the right direction by helping us understand how time is viewed in our day-to-day activities and how it affects us.

When we talk about time, the first thing that comes to mind is the use of time as a unit of measurement. Time is used to sequence events; by identifying now as the present, we can provide a definitive before and after to the present, commonly known as the past and the future. Time can also be used to compare the duration of an event or the intervals between two events; in which time is once again used as a tool used to measure change.

These definitions are quite simple to understand and have been around for centuries; however, it has only been quite recent in human history that we understand time as a measurement to quantify rates of change such as the

motion of objects. Time can be understood as a fundamental structure to human empirical knowledge; as a point of reference, time revolutionized our understanding of when certain events occur or when we can expect certain events to occur.

When we use time as a quantifier of rates of change for the motion of objects, we can plot points in the universe and refer to them to show motion of two celestial objects. Time can also be understood as a dimension in which events occur in a specific order or sequence. This determination of sequences, what comes before or after a certain event, is otherwise known as causality. Time can once again be used to plot points linearly, so we can ascribe a past time, a present time, and a future time. This linear timeline' is understood as giving time several meanings that we can identify with (in time, this time, remember that time, etc.). J. M. E. McTaggart published his paper on the Unreality of Time in 1908, right around the time of Einstein's special relativity was published. McTaggart differentiates two properties of time in his A-series and B-series. The A-series is the notion that time is the continuous flow along a time line, from which we get our traditional intuitive sense of time. The B-series explains time as earlier than or later than some time position.

The A-series allows us to sail through time and experience the present, while understanding the past, hoping to predict the future. The B-series plots the past, present, and future events as if they had already happened and the only distinction to be made is which event occurred before or after another event. Imagine for a second that you are independent of time and can see everything (all that is past, present, and future) all at once; you could

distinguish the events by when each event occurred but that's about all you can do, there is no experience of time passing.

McTaggart's series pose contradictions to one another and that what makes it a much more difficult task to prove in either direction. Time is the measurement of change, this is the general way we relate to time and it is one of the definitive features of time. The A-series is a good example to see not only how time portrays change to be a key factor in describing time, but also that change is required for time to be what we know it as. Human beings relate to time by perceiving the changes that come as we move from the present to the past, and future to the present.

The B-series fails to show any change between two events, and only concludes that one event precedes another. The B-series suggests that all events are predetermined and there is no timeline in which future events become the present and then the past. Therefore the B-series cannot explain 'time' as we perceive it, the explanation only offers a different explanation of time. Our association of time with some kind of change that is occurring is intuitive indeed, but is also the only way time can truly make sense.

Time if it is indeed real, must always be changing as we move along our timeline. Part 2 Now that we have some sort of an idea of how we have come to understand various different notions of time, how can we use what we know to get an understanding of what time really means? It seems as if the closer we look into how we understand time, the more time becomes obscure and hard to relate to. There are several philosophies of time, and different interpretations as to what time really means.

All of these different interpretations seem to start clashing one another with contradictions. Many philosophers have been intrigued and yet puzzled with the philosophy of time, and have since, tried to answer the mystery of what time actually is. We can examine each philosophical inquiry of time to try and sift out what time is, what time implies about the world around us, and if time even truly exists according to the philosophical findings of each man. One of the oldest philosophers to try to give some insight into understanding time was Aristotle.

The great ancient Greek philosopher, once said, “ Whether, if soul (mind) did not exist, time would exist or not, is a question that may fairly be asked; for if there cannot be someone to count there cannot be anything that can be counted...” Aristotle’s questioning of time started something that would catch the attention of many men throughout history. One of these men was Sir Isaac Newton, the man who gave birth to modern physics. 1 Sir Isaac Newton adds his insight to the understanding of time in the 17th century by claiming that time exists independently of motion or change and that time was infinitely large and continuous.

Newton proposed that the infinitely large and continuous container for all events, otherwise known as time, existed independently of the events actually taking place. This notion that time and space are both absolute and independent, came to be known as realism. Realism was the doctrine that objects of sensory perception have an existence independent of the act of perception itself. Newton’s position on the understanding of time was later regarded as “ Newtonian Time”. This realist approach on understanding time would not go on unchallenged for long.

Decades within Newton's position, the German mathematician and philosopher, Gottfried Leibniz, would propose a completely opposite philosophy of time than Newton. Leibniz argued that time was not something that could exist independently of actual events. Leibniz implied that without any events taking place, time could not exist. Time involves the ordering of events, whether they occur simultaneously or not, and the overall order of these events constituted what time was. Leibniz made it clear that without any events to take place within the notion of time, there could be no time.

Leibniz opposed Newton's Absolute time with his own notion of relational time, which confined time to the relationship it had with an object. The greatest opposition to Newton's work had still not made itself known. It wasn't until Immanuel Kant, the 18th century German philosopher, that "Newtonian Time" would be so greatly challenged. Kant would go on to question the ontology of space and time in a completely different way than Newton and Leibniz. Kant proposed the idea that space and time were not objective.

Kant could not grasp how time could be viewed as something existing independent of thought or an observer as part of reality, he would instead argue that time was subjective. Kant's understanding of time was that it existed only in the mind, and belonged only to the realm of human consciousness. Kant would argue that time was only real in the nature of thought; time was confined to the human mind. This understanding of time is regarded to as idealism; in complete opposition from Newton's realism.

Kant's understanding of time would later be termed as "Kantian Time". It is through Kant's idealism that another major branch in the philosophy of time originated. The understanding of time could now be broken down into one of two major branches. Newtonian Time and Kantian time were the main ideologies of how time could be understood. Realism now had to share the spotlight with idealism. The work of these two men was to be the focal point of how the world would interpret what time meant for the next several centuries.

With so many different opposing ideas on the philosophy of time, one can only find it confusing and difficult to grasp what is meant by time. If Newton and Leibniz are correct then time exists independently and objectively, however if Kant is correct then time exists subjectively and our understanding of time is intuitive. How can we explain what we as human beings perceive as time and lapses in time? More importantly however is the question: Is time even real? Let us closely examine each party's philosophy to try and uncover these questions Part 3

Aristotle began by asking whether time was objective or subjective. Little did Aristotle know that this question on time would someday lead to Newton's ground breaking work in Principia. Sir Isaac Newton was not actually the first man to claim that time was a real entity, many men before him proclaimed much of what Newton said, before Newton even considered his view on time, William Charleton published *Physiologia Epicuro-Gassendo-Charltoniana*, a paper which has several of the same key points concerning time later put forth in Newton's Principia. Newton explained in his paper that time was a real-flowing entity.

To Newton, time was continuous, infinite, and absolute; this was not the same time that was used to measure the lapse of a sequence of events, this 'time' was not to be confused with what Newton would classify as relative time. Newton explained why there had to be some sort of distinction between the understanding of time as a measurement, and the concept of linear time. Newton established that although time could be used as a measurement of events, time itself could not truly be measured because its motion was never changing. Time was now understood as being a linear line which was never changing, but this was not enough for Newton, because time embodied the concept of change in motion there had to be some coexistence with the understanding of space itself.

Newton adopts Charleton's idea but wants to incorporate his understanding of relative motion and absolute motion into the equation. What Newton comes up with is that relative motion is the movement of a body from one relative place to another, and absolute motion is the movement of a body from one absolute place to another.

Time and space both had one thing in common; they both had the ability to measure the same thing, motion. Newton realized that motion could be either absolute in its time and space, or motion could be relative to specific time or a specific space. 5 As a real entity, time no longer needed to depend on the events it measured to exist. Newton claimed that time was absolute, and that absolute time, passes continuously and uniformly without any relationship to external events.

Newton simply said that even if there was nothing occurring within the confounds of time, time still existed and did not depend on the existence of physical events in time occurring. Time did not need events in order to give it any definition, Newton had defined what absolute time was, and that absolute time existed without any relationship or reference to the properties of time as a measurement of motion. Time was used to measure moments of duration, but absolute time is an indivisible moment of duration; time just occurs and will always occur no matter what. Newtonian time was the basis for the idea of realism, the idea that time did exist as an entity without any relation to anything external.

Our story would end here of course if Newton's work was the last on the philosophy of time, but it most certainly isn't. Newton wanted the objective reality of time to be the final word, but what waited ahead was a transition from Newton's realism to Kant's Idealism. Now that we have thoroughly examined Newtonian understandings of time, let us venture into the opposing ideas to Newton's realism.

Where Newton would go on to produce his substantival theory on time and space, Leibniz went on to produce an opposing relational theory of time and space. Leibniz did not agree with Newton's establishment of absolute time, space and motion. Leibniz claimed that without any thing or event taking place, one point in space could not differ in any way whatsoever from any another point in space. ⁷ Leibniz's views were that space and time were not absolute and independent. Newton's realism did not provide enough to make Leibniz believe that Newtonian time was complete understanding of time.

Leibniz's work, however, was only a stepping stone to the next step in understanding the ontological nature of time. Part 4 Immanuel Kant would come into the scene and along with Leibniz, hold the position that time and space do not exist in themselves as entities. Kant would much rather cope with the understanding of time by explaining time and space as products of the mind and the way humans represent things. Immanuel Kant was greatly influenced by both Newton and Leibniz when writing his Critique of Pure Reason.

Kant, just like Leibniz, disagreed with Newton's idea of realism which claimed that space and time are both real entities. Kant went further and also branched away from Leibniz's approach to the question as well. Kant believed time and space both to be as something subjective and ideal and claimed that time and space could not be something objective and real because, as Kant says, "...time and space originate from the mind's nature to account for everything externally sensed or perceived in accord to stable laws to explain [that which] could not be directly observed (or sensed)..."

Kant wanted to dive deeper than both Newton and Leibniz by asking whether space and time were "real" or were they "ideal". Kant posed many questions which other philosophers either failed to ask or answer. Could space and time both be substances in their own right or merely properties of a substance? Are space and time dependent on the relationship among objects or independent of those relationships? What was the true relationship between time, space and the mind?

These were the questions that begin to form Kant's understanding of transcendental idealism, which was Kant's explanation of the relationship of time and space with the world we perceive around us. The ontology of time and space with regard to the framework of metaphysics suggested that if time and space are to exist they must either be considered substances in their own right as Newton would claim, or as properties of some substance as Leibniz claimed.

Kant could not wrap his head around either approach; time and space seem distinct from any substance because they are both infinite, time and space are independent from alterations caused by interacting with any other substance. Because time and space cannot be changed, and are infinite they cannot be described as a substance. Kant also saw it difficult to see both time and space as properties of some substance for they would then have to be dependent on a substance to exist.

To claim that space and time were properties of some substance leaves questions as to what would happen to space and time if that substance did not exist; space and time would then have the possibility of either changing or possibly not existing at all. Another ontological question arises if we consider time and space with regard to the framework of metaphysics about the relationship of time and space to physical objects. The approach through substantivalism suggests that time and space, exist independently of all possible objects or relationships through objects.

Relationalism suggests that, time and space, depend on objects and relationships through objects in order to exist. Kant wanted to pursue what

the origins of the conception of time and space were, what the representation of time and space were, and what was the relationship of space and time to the human mind. In Kant's eyes both Newton and Leibniz have made a tremendous error in their understanding by revolving their ideas of time and space based on the concept of motion. Newton's mathematical approach and Leibniz's metaphysical approach both use motion to define what is meant by time and space.

Kant raises apprehension to the relationship between the motions of objects and the understanding of time and space. Motion, was, after all an empirical concept, and time and space can't be empirically understood, so motion could not be used to describe something that did not have any empirical proof. Kant said that time and space are conceptions that are externally observed and perceived, and therefore the representation of time and space cannot be something empirical; an external perception or observation of an event cannot be represented to me the same way that I may represent it to someone else.

Kant began his assault by challenging the ontological perspective of his opponents, and Kant showed that the substantialist approach and the relationalist approach both were not plausible and shook the foundations of Newton and Leibniz's theories. Kant now wanted to finish his attack by targeting the core of the issue; as stated earlier, Kant wanted to know where did the representation for time and space originate, what was the content of that representation, and lastly what did it mean for the relationship with the human mind?

Kant has already stripped down the issue to make his claim that time and space cannot be empirical, this is only the first step in establishing an understanding of time and space which is completely independent of all particular experiences. Immanuel Kant claimed that the understanding of time and space has not yet been grasped because all those before him try to represent time and space as conceptual ideas, Kant argued that this was not the case and that our understanding of time and space is completely intuitive.

Kant draws a line between intuition and sensation and suggests that time and space cannot be sensed; there is no sensation of space or time, instead there is a single, immediate intuition of what time and space are. In his Critique of Pure Reason, Kant explains that time and space, through Transcendental Idealism, can be understood that the origin, representation and notion of time and space are separate from our material reality. The understanding of time and space is through intuition, and therefore Newtonian time and Leibniz's relationalism fails to correctly and completely answer our questions.