

## The deep nature of reality

**Note:** John Wheeler ideas condensed on this contest theme seems an anticipation at this essay. I wrote about the quality or property of every physical existing thing “**motion**”, the word **time** can be seen frequently, it is only use as a reference word  
My language Spanish

Of course not thinking about fundamental physics, is a serious problem, because as everybody knows a change, or a new thing at the base, can modified many things at the top, and make a big difference for the discipline.

Most research on the subject especially by physicist's takes the so called **time** as it was **gravity**, a physics entity, a natural thing that came from the beginning of the universe, if it was one. So as always, they fail to find a definition and an experimental meaning for it, disappointed some decided that **time** didn't exist and quit the search. None that I know face the search of the so called **time** as a **primitive man creation**, as a tool to satisfy its needs. That's why nobody found a **physical prove** of its existence. Searching people takes a different approach that we here, but the same words, given them similar meanings, as we here, so this make the theme a slippery one.

Seems that many people say the same, but if you see it carefully nobody says this.

I do hope that what I say on the theme comes clear and reach all peoples minds; I understand it is badly needed since fifty years ago

The so called **time** was search since the beginning of written history, when physics as such didn't exist, different cultures and great thinkers fail the intent till now days.

Heraclites, Plato, and Aristotle in different ways related the so called **time** with “**motion**”. Since physics become a new science, in almost every consideration of nature, the so called **time** formed part of it

Mankind inherit the so called concept, together with the “**day**” concept, which is the primitive and first “**unit period**” from one sunrise to the next

To satisfy precision in positioning men actions and nature events in a “**day period**”, this was divided by men in many “**parts**”

I suppose in those days, they was only aware that those was “**day period parts**”, probably they did not know if those were “**parts**” of the so called **time** or what? But were useful for comparative measurement of “**motion**”

In that epoch, periods became “**periods of time**” and Egyptians succeeded dividing the **day period** in 24 equals hours and Sumerians the hour in 60 minutes and the minute in 60 seconds, so the need was satisfied.

They ask themselves what the **time** was, but there was no urgency to know that, the need was “**improving precision measurement**”

In those days **measurements** were made using “**sun and stars passages**” The use of those became so common, that a more practical measurement was needed, and **men copy** sun and stars “**motion**” and designed “**clocks**”, there was different kinds, but they had in common a “**constant**”, “**uniform**”, “**regular**” “**motion**” as celestial bodies had, and they check their functioning with them

Of course a clock to be one has to have only “**that kind of motion**”, being a **variable** does not make a devise a **clock**, I think that kind of “**motion**” is **indispensable** and **no just convenient** to become one. All progress about the so called **time** was on the quality of measurement, till the atomic clock with small parts as nanoseconds etc.

But after general relativity when, physicists began to look for “**a theory of everything**” the above wasn't enough

For more than fifty years, physicists have been trying to develop a theory that describes both the very large and the very small. “It's an unusual situation that it takes so long,” says physicist Christopher Isham. “Finding a theory of quantum gravity is a huge conceptual challenge.” (1)

The main procedure is the quantization of general relativity, the first inconvenient found was the problem of the **frozen time**, known as “**the problem of time**” because it produces –the Wheeler-DeWitt equation, **without a time variable**

So let me cite Chris Isham, he describe three different possibilities to make the above possible. **I chose this one:** “It is possible that time it **is not truly lost** but **merely hidden** among the canonical variables that are constrained by the theorem egregium. **To obtain a**

sensible quantum theory of gravity may require identifying such an internal time prior to quantization"(2). At the moment I can say that **time** it is not lost, neither hide, the variable is there but not recognized as such

**"Changes"** on the **three spatial dimensions** describing an event, **also represent "motion"**, this is the supposedly hide **time** variable. **The fourth Ds.** is an especial kind of **"motion"**, **constant, uniform, regular**, **"the clock"** **Einstein** sometimes call it **"imaginary"**

Most people who intent to reach the goal of **"the theory of everything"** needed to know **"the nature of time"** as physicist Carlo Rovelli quoting Isham said: **"at the basis of contemporary physics lies a fundamental problem** which is still open. It has to do with the definition of space and time."(3)

When saying we are measuring **"motion"**, we should be **conscious** of it (its etymology is **"with science"**, scientifically) and no because of **tradition**, or because people felt it, of course the last approach **its wrong**. **"Motion"** which is the real thing, was always hide behind **time**, and covert by its shadow, it was hide in front everybody eyes, during two millenniums at hand of almost everybody

So in those years almost every theoretical physicist was looking for **"the time nature"** Carlo Rovelli since he was very young (3), physicist Lee Smolin also wrote a paper when he was very young, about it, and I understand that physicist Juan Maldacena and many others did it

Why **"the experimental meaning of time** which is **"motion"** is so important for the discipline to be known? Because I think that the failure to found it, deviate many theoretical physicists, trying other theories, in their effort to joint general relativity with quantum mechanics. So physicist Lee Smolin with Carlo Rovelli create **"the loop quantum gravity"** Juan Maldacena join many other physicists to create the **"String theory"** As a great mathematician he was able to joint the two main groups of physicists of this theory

I am not a physicist, so I have no certainty if these theories are cause or not of discipline deviation, but it seems to me that those theories born mainly because **"the experimental meaning of time"** was not found

**Chris Isham** who I understand is one of the physicists who know more about **"quantum gravity"** said **"String theory and loop quantum gravity are currently the two main programs attacking this problem"**, says Isham **"but personally, I think they're both wrong. In my opinion, quantum theory needs to be changed"** (1)

For the following I am going to recall some of John Wheeler sayings : **"According to the it from bit, we create not only truth, but even reality itself--the "it"--with the questions we ask". "Reality might not be wholly physical; in some sense, our cosmos , requiring the act of observation--and thus consciousness itself"**

**We ask**, from where **time** comes, there are many suppositions, that **time** came together with the Big-Bang immediately after, or before, supposing the Big-Bang existed, Why? Because people think of **time** as a physics entity of natural origin as **gravity**, something that existed and men nominated as such

They never sensed the so called **time** with any of their senses, they wasn't able to **describe it, or recognize it**, as they could with **gravity** and **inertia**, so lacking what we couldn't say it's a real **concept** either, then and now on, we are going to call it the so called time concept

Scientifically to say that something has physical existence, you have to have some kind of proved fact as evidence, as we have with **gravity** and **inertia**, about them we can discuss many things, **but not their existence, which we experiment daily**

Nobody even dare to think that the so called **time** is a man creation. In fact is **"an atrophic participatory phenomenon"** which starts thousands of years before written history begun, when this already happen pre-Socratic Heraclites and a couple of centuries after, Plato and Aristotle, related the so called **time** to **"motion"**, the first synthetically said **"time is a manifestation of motion"**, the second **"the motion of celestial bodies"** the last **"time must be motion"** a few lines after he said **"can't be motion"**

He also said **"time seems to be motion and change, but the change and motion of each thing is just there where it is that change. Time is indifferently everywhere and beside everything. Change can be faster or slower and time can't"** (5). As everybody can see, if he did born after relativity, he could see that the so called **time** can be slower or faster, as **change, transformation** and the **"motion"** that allowed them possible, and of course **"motion"** is part of everything and so is everywhere. I think that the problem in that epoch was that the above

was against the established. If were not so, since then we will knew that the so called **time** is **"motion"**

**"How could we all have been so blind for so long!"** We had the **unreasonable certainty** based on an unexplained feeling, of the so called **time** existence. People usually thought that the so called **time** ever existed as a physics entity. Most theoretical physicist's disappointment for the unsuccessful search for **"time definition and experimental meaning"** give up their efforts especially **feeling back up**, with more than two thousand years search failure, of so many cultures and great thinkers

Some after they quit the effort, denied **"time existence, also implying with it motion"** decision that guide them theoretically to create a physic without **time** and **"motion"** as physicist Julian Barbour and Carlo Rovelli, the last one didn't reach its theory yet

Till around fifty years ago, search wasn't intense because practically the main use of **"time"** for physicists was **its measurement**, it was so, because **classic physics, relativity, and quantum mechanics** was created, developed and actually physicists work with them without the need to know **"the nature of time"** or its **"experimental meaning"**

Lee Smolin quotes physicist Sean Carroll saying: **"There is no question that time exists—we use it everyday," (4)** How we can state with certainty **time** existence, without any prove of it?, and worst than that, make the supposition, that something we don't know of its existence "it is being used by us everyday"? and finally giving this "use supposition" as a reason of **time** existence?

How physicist Sean Carroll knows that what he is using everyday is **time**? Couldn't be something else? Like **"motion"** for example. The wish thinking to know **"the nature of time"** misguide people to wrong reasoning, which is forced by the need to know, they cheat themselves closing their eyes, also they misguide everything you base in such wrongly got knowledge, helping to deviate the discipline

For every day and practical reasons does not matter if the scientist that is measuring **"motion"** is conscious or not he is doing it, or instead he think he is measuring the so called **time**. Anyway in both cases the result of measuring will be the same, because physically both would be measuring **"motion"**

The question comes when they want to know **"the nature of time"** or **"its experimental meaning"**

John Wheeler said: **"According to the it from bit, we create not only truth, but even reality itself--the "it"--with the questions we ask"**

One of the reasons that definition and empiric meaning of the so called **time** wasn't find, was because **we didn't ask the right question**. We always asked **What time definition is?, What its empiric meaning is?** The answer to those questions wasn't what we really want to know. The probable answer to those questions are, that the so called **time** was a **"remnant word"** that millenniums ago represented an important concept, probably related with the process of measuring **"motion"**, that mankind already forgot its meaning. Those were the wrong questions, and the answers weren't the ones we needed to know.

Einstein said **"Space, time, and event, are free creations of human intelligence, tools of thought" (6)** He knew was a man creation, what he didn't knew was that what we measure with a clock is **"motion"** a physical existing quality or property of everything. **Asking** the right question is **What are we measuring?** we are going to look for, and we are going to reach the answer which is **"motion"** this is not just an statement, **we are going to offer a demonstration with undoubtedly proved physical facts**, most of them are centuries old, that will show that we measure **"motion"** and no **time**. With the above question **"we create not only truth, but even reality itself"**

Lee Smolin ask **"The key question is, is time real or is it an illusion? (4)** Answer, the so called **"time"** can't be prove of any physical existence, is not an illusion either, Probably is a **"remnant word"** of a **"motion measuring system"** Mankind forgot this. This still is an anthropic creation or **"might be a participatory phenomenon, requiring the act of observation--and thus consciousness itself"**. Men consciously or not with the physical natural quality of **"constant motion"** of celestial bodies and a **day** as its consequence, with its man made **fractions: hour, minute, second...** created a necessary system to satisfy his needs

**"Motion"** as opposed to the so-called **time**, has definition and experimental meaning, is perceptible by all our senses. With current scientific knowledge, we know that all things with physical existence, possess the quality or property of **"motion"** which is everywhere in our universe, from a Galaxy to a subatomic particle, all of these moves

They use to say that the so called **time** was everywhere and in everything that moves, that wasn't **time** but "**motion**"

Which is the difference in physics between using the so-called **time** or "**motion**", **time** just has been used to measure the **duration** of different phenomena, why only for that? Because it was impossible for physicists to relate a mysterious **time** with the rest of the physical elements of known characteristics, without knowing what **time** is and which its physical characteristics were. On the other hand "**motion**" is not something mysterious, as we have described above, it is a quality or physical property of all things, and can be related with all of them, **this is a huge difference** especially for theoretical physics

Men have measured virtually everything that is within their reach, couldn't leave "**motion**"! We know that "**motion**" was measured before the first civilizations come to be (anthropologists, talk of about 30.000 years), with the name of **time**, Einstein call it "**pre-scientific concepts**". As he recommended, we would have to transform ourselves to anthropologists to locate its origin

To measure it, men designed clocks, achieving to copy a fundamental and indispensable "**celestial bodies**" "**constant**" "**uniform**" or "**regular**" "**motion**" Without this "**specific motion**" a clock is not a clock, be a Sun, sand glass, water or atomic one.

Why it is essential that "**motion**" be **uniform**, **constant** or **regular**?, Because **this variable** is the only kind of "**motion**", that **because of its characteristics** can be divided in several **equal parts** or "**fractions**", as **Egyptians** and **Sumerians** later on did, so having "**motion units**" as **hours, minutes and seconds** and with them men would try to measure comparatively all "**non-constant motions**" that are integrated and being part of **all changes and transformations** that happens to us, and around us

The following, is what we at the beginning promise to do, an extremely hard to read demonstration, because we repeatedly made a physical description of what we have in each hand, but I think proves that what we are measuring with clocks is "**motion**" and not the mysterious **time**

The **day** first primitive "**motion unit**", was the period limited by one sunrise to the next. At first men thought was a consequence of "sun passages", millenniums later we find out, was because an earth "constant" complete "**rotation motion**"

Looking at the dial of an analog clock we will know in which part of the **day**, or of the "constant" earth's complete "**rotation motion**" we are, the clock with its numbers indicates us 5 pm, is the day "**fraction**", or the "**fraction**" of a complete "**constant** earth "**rotation motion**" where we currently are. A couple of centuries ago "**rotation motion**" or repetitive sunrises also was used to check clock functioning. Also we commonly use the clock to measure the **duration** of things. How we do that? Comparatively, when the race begins, we look at that "**fraction**" of the day we are in, 6 pm, and when finished, we go back to look at the clock, to know on what **fraction** of the day, or of the earth complete "constant" **rotation "motion"** we are, 7 pm, how much earth "**motion**" has happened, from 6 pm to 7 pm?, **one hour**, how much "**motion**" is that, is the twenty fourth part of a complete earth's "constant" rotation "**motion**" What have we measured? With "constant" "**motion**", just "not constant" **motion**- Which is the "measured" not constant "**motion**? Is the **duration** of displacement due to "**motion**" of the career automobile, from the start until the arrival line, meanwhile the earth made a twenty fourth part of its complete "constant" rotation "**motion**", the automobile traveled the distance, between the start and finish line of the race. What we have done? (A hard to read) experimental physical description, that, what we measure was "**motion**" and not the mysterious **time**, and this is not a statement, I believe is a demonstration that proves it.

Duration: the dictionary defines it, using the word **time** and if we are looking for **time**, dictionary defines it, using the word **duration** (in 80% of cases). We need a new definition that describes reality.

Duration: it is the **period** of change or transformation that "**motion**" allows and man limit

Of course our mind luckily simplifies things, but in some cases like this, leaving something out as known, for practical reasons we shouldn't do that here, because is a slippery subject, that leads to misunderstandings

More practical and simple it is to say, what time is it? 5 pm. How long the race last, 1 hour. We have done this for millennia, what we have left aside? Time nature

Now what theoretical physics need "The nature of the so called time" or "its experimental meaning" here it is: "**motion**"

Now if they want to know the forgotten and **probable** meaning of the remnant word **time**: Is I think a "motion measuring system" which consists in **measuring comparatively** with "**constant motion**" (celestial bodies, clocks) "**not constant motion**" which is a necessary property and an integrated part, of every changing and transforming physical things. Mankind keep using it, till now days, but without being conscious of the above description

In Wheeler words "*a mystery left to explain*", time "*now it lights up*"

I think is a **fundamental of physics** which is part of the deep nature of reality that now comes to light

Experimental application of the replacement of the so called **time** by "**motion**"(Now we should rewrite Newton laws of motion without changing the experimental meaning)

I am not a physicist and because of that I am not constrained by physics methods, so I think I had the possibility to an ample look to realize "**motion**" as a quality or property of every physical existent thing, so as a **physic fundamental**

Einstein said: "It is fascinating to muse: Would Faraday have discovered the law of electromagnetic induction if he had received a regular college education? Unencumbered by the traditional way of thinking....."(7) He also suggest the conditioning of studying or being a physicist. As Einstein said, Faraday didn't have a regular study of physics, neither knew mathematics, he expressed his theory with words, iron fillings, and rubber bands, he was lucky, to find or being found by a great mathematician and physicist, Maxwell, who put the necessary mathematics to Faraday ideas to make them workable for the discipline

Relativity mathematically proves and technology in GPS experimentally show, that the so called **time** with **speed** and **gravity** slows respect the observer, but people **don't know why?** The so called **time** "slows", that's logical because people don't know what the so called **time** is, they see it as a mysterious thing that can't be related with **physical gravity** and **speed**, but when we replaced it by "**motion**" this becomes a physical quality or property, that can be related with an speeding space ship, that carries a clock, which will increase its **mass, inertia**, which will slow clock pieces "**motion**" slowing its functioning (and not slowing time) respect a similar clock on land. The clock on the valley, slows its functioning respect the clock in top of the mountain, because is closer to the planet gravity.

GPS at 20.000 Km. high it is far from the planet **gravity** so is faster that the one on land, but because satellite **speed** of around 24.000 Km.hs, **inertia** makes it slower, so we have to rest the last difference from the first, respect the similar atomic clock on land. Without taking into account those differences of clock functioning, (being call relativistic times), positioning would be miss by hundreds of meters

As John wheeler said, "*I would like to stand for. We can and will understand.*" I also stand for it too

What **speed** and **gravity** affected is **clock functioning** (not **time** flow) "**Motion**" as general relativity says it is not only affected by **speed** because **inertia** and **gravity**, but also **cold** affect "**motion**" and even more

**Diminishing temperature** a refrigerator, diminish molecular and atomic "**motion**" of everything in it. Inert things like metals because diminished "**motion**" change their properties, but in things that were alive, like vegetables and meats, diminish their catabolism (decomposition) which to become possible, chemical combinations must happen, cold is in fact slowing molecular and atomic "**motions**" diminishing free energy, necessary for combinations to achieve catabolism, so beef **prolong its duration** as an eatable food. Spermatozoids at -169 C° **prolong their existence, they stop living but they are not dying** they stays in a kind of latent life, a couple years later, turning back the necessary temperature, they can fertilize an egg and develop a human been. People would say **the so called time stop for them**, what really stop was "**motion**" as it could happen for spermatozoids, in a space ship almost at the speed of light, **inertia** will stop all motions of spermatozoids molecules and atoms (twin's paradox) as relativity says. I think this means that not only **inertia** but the lack of "**motion**" **itself**, caused by any other way (Bose-Einstein condensation) and the lack of free energy, slows all changes and transformations. As I said before it seems that "**motion**" and energy are the same

If light (electromagnetic waves) didn't exist, inertia, gravity, and cold will slow "**motion**" anyway.

An **idea for theoretical physics** research. Scientifically it is known that if a subatomic particle speed increase, its decay becomes slower. To people who are involve at looking for

quantum gravity, we can ask: couldn't be that general relativity gravity also applied to quantum mechanics? The reasoning is: Can be any change or transformation happen without **"motion"**? The speeding particle decay, to decay should have some kind of change or transformation in it, even if we don't know which one. When the speed increase decay's become slower, I suggest that **inertia** slows decay, even if the mass is almost inexistent, but its speed is enormous. Certainly in a **black hole** because of his gravity there wouldn't be almost any **"motion"** change and transformation

**"Space-time"** we can say that while there is consensus on the mathematical significance of **space-time** in theoretical physics, for a hundred years there has been no consensus on **the nature "of space-time itself"**.

I suppose there it is as many descriptions of **"space-time"** as physics theories are. Einstein was the first that use the construction in a theory and made it unsolvable, it looks that nobody or almost nobody read the **short verbal Einstein definition of "space-time"** **"There is no such a thing as an empty space without field. Space-time does not claim existence on its own, but only as a structural quality of the field".....** "It requires the idea of the **field as the representative of reality**, in combination with the general principle of relativity" (8)

Knowing that the so called **time** in fact is **"motion"** we have **"space-motion"** as he said these don't claim existence on its own, this allowed us to interpret **"space-time"** as **A continuous moving and changing ("motion" time), disposition or distribution (space), of reality** (the "field": matter-energy and its different "states") **which curved their own structure** (more like spheroid), **around massive and no so massive bodies of reality**, (also, "field": matter energy) **both of which it generates** (some way?) **the gravitational force among themselves.**

I never read the Einstein **"space-time"** verbal description in any book or paper of any physicist; I suppose they rather have their own. Usually people don't know why **"space-motion"** can't be separated, as you can see, it is clear **it is only one thing, the field structural distribution by "motion"** To have **"motion"** you should have something that moves. **"space-motion"** does not claim existence on its own, these only **are structural qualities**, that has no existence **without the field**

I thought **"space-motion"** as a gross general description of everything

There is not energy without "motion" or "motion" without energy, couldn't be energy and "motion" the same thing?

I wonder, why nobody, that I know at least, are working on trying to prove as a reality, the Ernst Mach wonderful idea, that the **inertia** of bodies should be **traced back** to relative **"motion"** on their part, **not to absolute space** but against **the totality of other ponderable bodies.**

The following I thought was needed to be done, because of all the **confusions** about **present, past** and **future** partially caused, by not knowing that the so called **time** in fact is **"motion"**

## **Psychological and Physical present, past and future**

**Psychological present:** every reasoning it is made always in the **present** in which it is being considered and this one **has variable durations**, agreeing with our reasoning duration, a few seconds, minutes or hours and when we refer to **longer durations** which involucrate **past, future** and the **present** during which we are referring to, we say: during the **present** day, the **present** month or the **present** century. The **psychological present** has not determined physic duration

When we consider the **present** hour, this one consist of the **past** minutes, the **present** minute and the **future** minutes that are lacking to complete the hour

**Reasoning about something** is a continuous process, which its recognizable unique limits, are given by the beginning and the finalization of it

**Past:** this one only exists during the **present** on which we are considering it (Egyptian pyramids included)

**Future:** this **consist on the speculation** during the **present**, of what possibly would happen later, generally based on our **past memory** and **present** sensed knowledge

The great confusions that usually happen along our history, happen mostly because they mix **psychological present, past and future** with the **physical present, past and future** considering it as only one.

**I think exists only one present** in the whole known and unknown universe

During our **psychological present** with some of our senses we can consider the **physical continuous present information**, that reach us **from an inexistent past**, which allowed man to have an idea of shape and distribution of stars and galaxies as these were, which certainly change and transform the shape we are considering, move to different positions and probably many of these already cease to exist during this present

This **physical present does not need to be considered for anybody to exist**, it succeed to itself and have **not duration**, none, it is not just part of a continuous, **it is a continuous** ! It is like when we shoot an arrow, meantime it is flying, its flight it is not a sum of little "motions" like points in a straight line, but **its flight it is only one and continuous. We are considering a continuous**

Reality show us that when with our **psychological present** whose consideration would be continuous, we consider the **physical present** which also is continuous, the last one would be considered by **our psychological present** with a retard, because the duration of the physic-chemical process needed to do the perception by our senses, nervous transmission of signs, that would be interpreted by our brain, it would take around a second

In other words, during our **psychological present** when we consider the **physical present**, this one already **it is not the one we are considering**, but one that pass a second ago

There **it is not possible to register by ourselves the continuous physical present when it is happening**, neither by our senses, nor by any device we can design, because this one data would always had a retard of a second at least, to reach our brains to be interpreted as such

**The consideration by men of the possible physical existence of a static present**, of any duration as a **now** or an **instant**, took them to confusions without end. Being the physical present a **continuo makes impossible their existence**

**None of them has physical existence. Only are concepts of great utility for our communication**

Héctor Daniel Gianni

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