

“TIME ORIGIN, DEFINITION AND EMPIRICAL MEANING FOR PHYSICISTS

Héctor Daniel Gianni

Dear Sirs:

Time does not claim existence on its own, but only as a **“system of measurement”**

The **“system”** requires, the **“counter”** or the man who records the measurement, as the representative of reality.

Time Definition: a “constant and uniform movement measurement system”.

The “system” is based on a **“Day”** as a **natural fundamental unit**.

The time empirical meaning: is **movement**, a quality or property of everything with physical existence.

The Day unit fractions: **hour, minute, second** and also **Day unit multiple** as **week, month, year**, are properly called **“time”** because these are units of the **“measurement system”**.

Anthropologists supported by archeologists tell us, that man was measuring the so called “time” since ages ago, there are calendars dated on 25.000 years old. (When I mentioned, **“the so called time”** I referred to the mysterious “time” with no definition and empiric meaning, as usually people use the word “time” today)

Earth rotation movement is “constant and uniform”

Day is a **“natural fundamental unit”** of the **time** system of measurement.

The Day is a natural Earth rotation **“movement fraction”**; this **movement period** is limited on Earth surface by two subsequent sunrises.

“Artificial” time units, as **hours, minutes** and **seconds** are **arbitrary** man made units, as **fractions of a Day “natural fundamental unit of movement”**; **week, month and year** are **Day** multiple units.

Earth Translation movement is “constant and uniform”

Clock main quality; is the capability to register units of “constant and uniform movement”.

On the most common **analogical clock**, the **hour**, the **minute** and the **second** hands, measure their own “Constant and Uniform movement fractions”, **counted by us** on dial numbers.

Movement, change and transformation always occur at once

The same happens in an atomic clock, the caesium-133 radiation **cycles changes** are “**constant and uniform**”. Sunlight shadow **as sundial** 1.500 BC, has a “**constant and uniform**” movement. Sand in a **hourglass** has a “**constant and uniform**” fall movement. Water in a water clock or **clepsydra** has a “**Constant and uniform**” fall movement. This are definitive experimental proves that **with clocks we measure constant and uniform movement**. (And not the so called “time”)

Without men, there is no measurement, neither recorded nor registered.

Without men recording the “**constant and uniform movement measurement**”..... **there is no time**.

No men, no time.....

..... But **continuous movement change and transformation of everything in the physical universe**.

The change and transformation that movement allows **are inherent in the “things themselves”** and the relation between them. These have nothing to do **with the inexistent and mysterious “so called time”, acting on them**.

“**Time**” does not act, neither form part of any change or transformation; “**movement**” does. “Time” is the system we use to measure the duration of those.

With those solids scientific proves every physicist can prove all and every one of my statements as real ones.

Since their beginning civilizations knew how to measure “**the so called time**”, but no one of them knew, what **time** was.

That’s why pre-Socratic Heraclitus and post-Socratic Aristotle inherited from prehistory not only the capacity to measure “time”, but the ignorance of its meaning as well, more than thousand years later, still San Agustin said, referring to “time” “I measure and I don’t know what I am measuring”, just like today: all physicists know how to measure “time” with high precision but they don’t know neither its definition nor its empiric meaning.

The “system to measure constant and uniform movement”, **time** as I’ve already said was created before the discipline existed. **Physics methods and terminology were not needed to find “time” meaning, and certainly is not needed to describe its definition and empiric meaning.**

What I think it’s true, is that Physics and specially theoretical Physics is in fact the **only discipline** that badly needs this knowledge, this need grows, to the point that **physicists think it’s their discipline that should solve the “time problem”,** and so became **to own the problem.**

How prehistoric man involuntary time creation come to be? Of course the following can’t be scientifically proved as the “time” bases are.

I think man begun **measuring** the so called “time” without knowing what it was, like nowadays. This situation of **measuring** and **not knowing what we were measuring** did last too long, till right now that we read this manuscript.

As you can see, without the time involuntary man creation, there was no **time**.

We think that “**Time**” was really **born**, when man realized that **sunrises, suns** or the **day** between them, it was useful to know how many sunrises it took them to reach some determined point on earth surface, so they started to measure their trips on the number of **days**, or **sunrises** or “**suns**” it took them to reach that point, maybe it was also when the **duration concept** was created.

I

In the very beginning, when **primitive man** began using a **Day** as a “**natural unit**”, for comparatively **measuring things**, as **the duration of their trips**, he was already measuring “the so called time”, without

knowing what it was, simultaneously he didn't know, how this “**day unit**” was composed, **It was a mysterious thing for him.**

Man just saw the sun on the east, which made a warm daylight, slowly flying in the sky and disappearing on the west, man didn't know where the sun went during the night, but always appeared again on the east making a new sunrise. He ignored how all those things happened, but anyway he was using the **Day as a natural unit** to measure durations of things. **He knew how to measure “the so called time”, but not what Time was.**

The duration of something always **depends on who determines it**, when the “**period**” of change, transformation or movement **begins** and when it **ends**. We know the concept is subjective, only has existence for those who determine their limits, animals with brain or humans.

“**The units**”, used by the Stone Age man to measure the duration of their trips should be almost **evident and natural**, as the **Day** is.

Looking at celestial bodies in the sky, man found that “Sun and the celestial sphere passage” has a **unique “constant and uniform movement”**, which after millenniums, was copied by man, on **clocks design**.

That knowledge, the ancestral experience of using a **day as a natural unit** for **measuring comparatively, their trips duration.....** “and **length**”, which probably were the first way they measured great **distances**, and the....

“**Day unit**”, **naturally fractioned**, **between two sunrises**, of what man thought was a “**complete sun movement** surrounding earth.

All those experiences complete the data he needed through ages to realize the importance of “**measuring constant and uniform movement**”.

Also **copying nature** from the “**naturally fraction**” **day unit**, **man got the idea** and the **need** to **artificially fraction** “the **day natural unit of movement**” into smaller ones, later on, **hours, minutes** and **seconds**, increasing this way “**constant and uniform movement measurement**” **precision**, allowing them to measure all durations lengths.

Man called this practice or system, “**time**”, “pseudo-concept” that after fractioning was made, also could be added and subtracted.

When men measured “sun passages”, they thought they were measuring “**sun movement**”.

Ages after of what we just described, man realized that **on day and year production** the Earth was the one that move and not the Sun,

with two main movements, one around the Sun, translation, and the other around itself, Earth rotation movement.

So they were able to find that a Day was a “natural fraction” of the Earth “Constant and Uniform rotation movement”, limited by sunrises. People were not conscious of this, but could be scientifically proved since centuries ago.

It's possible to fraction movement into equal parts because the movement is “Constant and Uniform”, the resulting units are the day, the hour, the minute, and the second as we said, all of them are “Constant and Uniform” fractions of movement.

Another unit of “Constant and Uniform” movement was discovered by Egyptians who also invented the Hour, looking at the sky, they realized that the first night that Sirius is seen on the eastern horizon just before dawn only happened once every 365 days, so in this way the year was born with all its natural seasons. How the first night that Sirius can be seen on the eastern horizon can be predicted? Just because the earth translation movement around the sun is “constant and uniform” too.

Finally science, let us know how animals and plants are born, grow, reproduce and die and “the so called time” doesn't play any part in it. “The so called time” doesn't make things old, transformation does.

Things move, change and transform themselves and between themselves without any “so called time” action needed. “Time” is a measuring system we use to know the duration of transformations of our interest.

“Time” and movement went along during all written history side by side, they knew what movement is, they didn't know what's “time”, so they couldn't know that both were only one thing.

Physicists will have in movement a very well known property with all its characteristics in every physical existing thing, which allow us to know the real meaning of speed, acceleration, “time” dilation or “relativistic time” and why GPS precision is affected by gravity and inertia?

Every physicist knows that relativity, mathematically proved them, that speed and gravity slow “time”, but I understand that nobody comprehends this experimentally.

Instead, if we know that time experimental meaning is movement, physicists would easily understand that speed inertia and

gravity would slow body's **movement**, inclusive **clock movements**, in fact **slowing clocks** and no **"the so called time"**.

Men shouldn't ask, what's "time" definition, or empiric meaning? Instead they should ask **What are we measuring?**, because "measuring" is the closest and unique thing people really know about "time".

As we know most physicists **"believe"** in **"time"** physical existence and we know that **"belief"** occupied a very important place in our mind with **spiritual** thoughts as God and **urgent** behavior needed on dangerous situations, usually those will prevail over reason,

The place "time" occupies in our minds is a big place, maybe not as big as God in religious minds, but it is very important for every human been since early age, in every culture of the world during the last millenniums, we use the word many times a day. **All this makes it part of our life, securing an important, and "hard to leave" place in our mind,** even when this **belief** is confronted **with real reasons** supported by scientific proves like, **"time"** which is **the measuring of "Constant and Uniform movement"**

We think there is no other way for a physicist to easily understand **"time definition and empiric meaning"**, but to just **let aside everything he believed about "time" physic existence** during his whole life, **of which he doesn't have any scientific prove,** and just **embrace simple and plane reason,** and when he watches his wristwatch dial, he will be looking at its hour, minute and second hands, measuring their own **"Constant and Uniform" movement**, fractions on dial numbers, or **"what people call time"**.

If not they possibly have to search for another three thousand years trying to find a known inexistent thing, which is more dangerous for science, than making inventions for the unknown.

Never cross their minds that **"time"** was a prehistoric man involuntary creation. The disciplines physicists used to search for "time" not only **didn't help, but hurt** their search, producing the deviations mentioned, which take them always **far and farther of their goal.** If some background could help them, it was anthropology and some idea of how the human mind works.

Of course we shouldn't demerit **"belief"**, millions of intelligent and really bright people believe in **God** with no scientific prove of their existence.

Sure **belief** is very important, no doubt, but...

In science belief shouldn't prevail over scientific proves.

I think we could describe “time” so clearly and completely, **because it was a man creation** and not a natural thing like gravity or inertia of which a complete certain description is not possible at least till now. I repeat what Einstein said:

“ The **key step** forward in developing relativity, which is “time” reconceptualization”

We had said that Einstein not knowing the definition and the empirical meaning of the so called “time” did not recognize this one like an elemental concept which plays a role as irreducible element of physics and preferred almost always to talk about him like the “clock” in spite of knowing this as a compound structure.

He said: **(1)** “It is also clear that the solid body and the clock do not, in the conceptual edifice of Physics, play the part of irreducible elements, but that of composite structures, which must not play any independent part in theoretical physics. But it is my conviction that in the present stage of development of theoretical physics these concepts must still be employed as independent concepts; for we are still far from possessing such certain knowledge of theoretical principles of atomic structure as to be able to construct solid bodies and clocks theoretically from elementary concepts”(“Ideas and Opinions” ISBN N°: 440-04150-150, p. 231).

Finally we find out that we don't need to know the theoretical principles of atomic structure of time or clocks, because time **is not a natural thing** but a **man invention** counting on **natural “constant and uniform” movement**, so we should replace “time” by “movement” as an independent concept in theoretical physics. This is an important basic change in theoretical physics. “Movement” is a physical universal property that can affect and be affected in every physical theory where it would replace **time**, so it will change or modify every physics theory where the **time** concept were used as an independent concept.

Late in the manuscript under subtitle **Movement Introduced in Physics as “time”**, it can be found the **conscious need to know “time meaning”** just to find the absent “time variable”, when physicists try to merge **the theory of general relativity with quantum mechanics**, into a **theory of quantum gravity**, using the procedure called canonical quantization. Professor Christopher Isham from the London Imperial

College said “To obtain a sensible quantum theory of gravity may require identifying such an internal time prior to quantization”.

Knowing that “time” is **movement** under that subtitle I suggest the possibility that gravity of general relativity that affects planets **is the same that affects subatomic particles**. The idea comes from **analyzing muon life time**, knowing that “time” is **movement**.

A physicist wrote this: (4) “Muon lifetime. A comparison of muon lifetimes at different speeds is possible. In the laboratory, slow muons are produced, and in the atmosphere very fast moving muons are introduced by cosmic rays. Taking the muon lifetime at rest as the laboratory value of 2.22 μ s, **the lifetime of a cosmic ray produced muon traveling at 98% of the speed of light is about five times longer**, in agreement with observations. In this experiment the "clock" is the time taken by processes leading to muon decay, and these processes take place in the moving muon at its own "clock rate", which is much slower than the laboratory clock”..... **Not exactly**.

I concluded that, even those muons have “almost” no mass (light neither has), but the stars light, passing close to the sun, before reaching our eyes, makes a curve because of sun gravity).

In cosmic muons case, we should consider that speed is enormous, also I think those muon decay processes **must** involve **movement** which **inertia** slows (general gravity), then **slowing decay**. Muons in the laboratory without cosmic ray speed, **certainly** does not show gravity effects, **because as we know its mass is almost none**.

I considered that maybe this idea deserves to be seen by physicists, to see if this is possible.; **INERTIA!**

I also try to show and remark that “**movement**” is **not just change of position, but much more, it can affect and be affected by everything with physical existence**. No change or transformation would be possible in the universe without “**movement**”.

Physicist John Wheeler ventured that **major changes** in Physics often come from outside the Academia.

I know that the meaning of “time” is one of those cases.

Albert Einstein, who said: **“space, time and event..... are free creations of the human intelligence, tools of thought...”**(2) page 354 “Ideas and Opinions” Einstein. With his statement he is saying two things: first, that “time” is a man creation and second, that “time” has no physical existence.

When Einstein was asked by physicists what’s time? he answered **“What we measure with the clock and nothing else.”**

Einstein said “time is what we measure with the clock, and we say “with the clock” we **measure movement, what kind of movement?, “Constant and Uniform movement”, or clock movement.**

(3)Physicist Stephen Hawking in his book “A Brief History of Time” in the second page of its first chapter, asks “which is the nature of time?” He replies himself “when the answer is found, it’ll sound as **obvious** as the fact that the earth goes around the sun.”

In fact what he said was a **premonition**, because, what’s more **obvious** than **“movement”**?

I think that, at this point, we are going to repeat a new definition for **Duration**: the dictionary defines it, using the word “time”. Equally, if we look up the word “time”, the dictionary defines it, using the term “duration” (in 80% of cases). We need a new definition that describes reality.

Duration: it is the period of change or transformation, that “movement” allows and man limits.

The change and transformation that movement allows **are inherent in the “things themselves”** and in the relation between them. These have nothing to do **with the inexistent and mysterious “so called time”, acting on them.**

“Time” does not act, or form part of any change or transformation; **“movement”** does. “Time” is the system we use to measure the duration of those.

I don’t have the necessary space, but knowing that “time” is movement I can easily explain that “time dilation” is a physically inexistent phenomenon, because is just inertia or gravity “clocks slowing” and also can show in detail that twin paradox is not a paradox, but could be a real biological thing.

Héctor Daniel Gianni

References

(1) Einstein, “Ideas and Opinions” New York, New York?, Laurel & Dell, February 1973, ISBN N°: 440-04150-150, p. 231).

2) Einstein A. “Ideas and Opinions”: New York, New York?, Laurel & Dell, February 1973, p. 354.

3) Stephen W. Hawking “A brief History of Time From the Big Bang to the black Holes” ISBN 950-28-0197-0. Chapter I (second page) page 18, Bantam Books, New York.

4) Boundless. “Shifting the Paradigm of Physics.” Boundless Physics Boundless, 08 Aug. 2016. Retrieved 17 Feb. 2017 from <https://www.boundless.com/physics/textbooks/boundless-physics-textbook/special-relativity-27/implications-of-special-relativity-181/shifting-the-paradigm-of-physics-663-6246/>