Syntropy, Teleology and Theology

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Abstract

The energy/momentum/mass equation of Einstein's Special Relativity is a quadratic equation:

$$E^2 = m^2c^4 + p^2c^2$$

*Where **E** is energy, **m** is mass, **p** momentum and **c** the constant of the speed of light.*

Quadratic equations always have two solutions: one positive and one negative. The variable time is in the momentum (p) and consequently the positive solution describes energy which diverges from a cause, whereas the backward in time solution describes energy which diverges backward in time from a future cause and corresponds, for us moving forward in time, to energy which converges towards an attractor. The backward in time solution implies retrocausality and was therefore considered unacceptable. Einstein solved the problem assuming that the momentum (p) is always equal to zero, since the speed of physical bodies is extremely small when compared to the speed of light (c). In this way the equation simplifies into the famous $E = mc^2$, which always has positive solution. However, in quantum mechanics the spin of particles nears the speed of light and the full energy/momentum/mass equation is required with its unwanted negative solution. In 1941 Luigi Fantappiè, listing the mathematical properties of the negative solution found that they coincide with the properties of life: concentration of energy, increase in differentiation and complexity, and came to the conclusion that the unwanted negative solution is real. This solution implies retrocausality, a teleological universe and provides the ground for the scientific discussion of theology.

Keywords: Special Relativity, Advanced waves, syntropy, teleology, theology.

Syntropy, Teleology and Theology

1. Introduction

In 1925 the physicists Oskar Klein and Walter Gordon formulated the first equation which combines quantum mechanics with the energy/momentum/mass equation of special relativity and found themselves faced with two solutions: one that describes waves that propagate forward in time (retarded waves) and another that describes waves that propagate backward in time (advanced waves). In 1926 Erwin Schrödinger removed the energy/momentum/mass equation from Klein and Gordon's equation and formulated his famous wave equation (Ψ). In 1927, Klein and Gordon formulated again their equation as a combination of Schrödinger's wave equation and the energy/momentum/mass equation of special relativity. Retrocausality was considered to be unacceptable and in 1928 Bohr and Heisenberg met in Copenhagen and suggested an interpretation of quantum mechanics (known as the Copenhagen interpretation) based on Schrödinger's wave equation which treats time in essentially the classical way (only moving forward). They stated that matter propagates as waves which collapse into particles when observed. Consequently, the act of observation creates reality. This interpretation supported the idea that men are endowed with powers of creation. When Erwin Schrödinger discovered how Heisenberg and Bohr had used his equation, with ideological implications, he commented: "*I do not like it, and I am sorry I ever had anything to do with it.*" Paul Dirac, tried to settle the dispute by applying the energy/momentum/mass equation to the study of the electron. To his great disappointment, he obtained two solutions: the electron (e^-) and the neg-electron (e^+ the anti-particle of the electron), which moves backward in time. Heisenberg reacted violently and wrote to Wolfgang Pauli: "*I regard the Dirac theory ... as learned trash which no one can take seriously*" (Heisenberg, 1928). However, in 1932 Carl Anderson observed in cosmic radiation Dirac's neg-electron, which he renamed positron, thus opening the way to the study of antimatter.

In 1941 the mathematician Luigi Fantappiè (1901-1956), while working on the properties of the equations that combine quantum mechanics with special relativity (Klein-Gordon's equation and the d'Alembert operator), found that the forward in time solution describes energy and matter that diverge from a past cause and tend towards an homogeneous and random distribution, whereas the backward in time solution describes energy and matter that converge towards a future cause (an

attractor/absorber) and increase differentiation, complexity and the concentration of matter and energy. Fantappiè showed that the forward in time solution is governed by the law of entropy (from the Greek *en* = diverging, *tropos* = tendency), whereas the backward in time solution is governed by a symmetric law which Fantappiè named syntropy (from the Greek *syn* = converging, *tropos* = tendency). Listing the mathematical properties of the law of syntropy, Fantappiè was faced with the properties of life and formulated the suggestive hypothesis that life is caused by the future. This hypothesis was first published in the volume "*The Unitary Theory of the Physical and Biological World.*" (Fantappiè, 1944)

Experimental evidence of Fantappiè's hypotheses

Fantappiè was one of the main mathematicians of last century, full professor at the age of 27 and invited by Oppenheimer to become a member of the Institute of Advance Study. However, he failed to devise experiments which could test his retrocausal hypothesis. Now, thanks to REG (Random Event Generators) devices, it is possible to manipulate causes in a way which is unpredictable in the past. In 2007 Antonella Vannini reformulated Fantappiè's hypothesis in the following way: "*if life is sustained by syntropy, the parameters of the autonomic nervous systems which supports vital functions should react in advance to stimuli.*" In scientific literature several experiments can be found that show the existence of pre-stimulus reactions of the parameters of the autonomic nervous system, such as heart rate and skin conductance. A review of these experiments and the description of four experiments conducted by the authors can be found in "*Retrocausality: experiments and theory*" (Vannini and Di Corpo, 2011).

Another hypothesis that stems from Fantappiè's works is that the speed of propagation of gravity should be instantaneous since, according to the interpretation of the negative solution, gravity is a diverging force which propagates backward in time. Equations show that forward diverging forces cannot exceed the speed of light, whereas backward in time diverging forces can never propagate at speeds lower than the speed of light. Consequently, if the backward in time solution is real we should observe that gravity propagates at an instantaneous speed. This would contradict the standard model of particle physics that states that gravity is caused by massless particles called gravitons that emanate gravitational fields. Gravitons tug on every piece of matter in the universe and prevent gravity from propagating at speeds higher than that of light.

But, can we perform experiments in order to measure the speed of propagation of gravity and test which of the two models is correct? The answer has been provided by Tom van Flander (1940-2009), an American astronomer specialized in celestial mechanics. Van Flander noted that no aberration is observed when measuring gravity and that this puts the propagation of gravity at a speed higher than 10^{10} the speed of light. With light the aberration is due to its limited speed. For example light from the Sun requires about 500 seconds to travel to Earth. So when it arrives, we see the Sun in the sky in the position it actually occupied 500 seconds ago rather than in its present position. Consequently the light from the Sun strikes the Earth from a slightly displaced angle and this displacement is called aberration. If gravity would propagate with a finite speed we would expect gravity aberration. The Sun's gravity should appear to emanate from the position the Sun occupied when the gravity now arriving left the Sun. But observations indicate that none of this happens in the case of gravity! There is no detectable delay for the propagation of gravity from Sun to Earth. The direction of the Sun's gravitational force is toward its true, instantaneous position, not toward a retarded position, to the full accuracy of observations. Gravity has no perceptible aberration and this tells that it propagates with infinite speed.

Time

In order to better understand the implications of the syntropy hypothesis it is important to note the three typologies of time which the fundamental equations predict:

- *Causal time*, is expected in diverging systems, such as our expanding universe, governed by the properties of the positive solution of the equations. In diverging systems entropy prevails, causes always precede effects and time moves forward, from the past to the future. Since entropy prevails, no advanced effects are possible, such as light waves moving backward in time or radio signals being received before they are broadcasted.
- *Retrocausal time*, is expected in converging systems, such as black-holes, and it is governed by the properties of the negative solution of the equations. In converging systems retrocausality prevails, effects always precede causes and time moves backward, from the future to the past. In these systems no forward effects are possible and this is the reason why no light is emitted by black-holes.
- *Supercausal times* would characterize systems in which diverging and converging forces are balanced. An example is offered by atoms and quantum mechanics. In these systems causality

and retrocausality would coexist and time would be unitary: past, present and future would coexist.

This classification of time recalls the ancient Greek division in: *kronos*, *kairos* and *aion*.

- *Kronos* describes the sequential causal time, which is familiar to us, made of absolute moments which flow from the past to the future.
- *Kairos* describes the retrocausal time. According to Pitagora *kairos* is at the basis of intuition, the ability to feel the future and to choose the most advantageous options.
- *Aion* describes the supercausal time, in which past, present and future coexist. The time of quantum mechanics, of the sub-atomic world.

In the supercausal time syntropy is available and consequently at this level life can originate. A question naturally arises: how do the properties of syntropy pass from the quantum level of matter to the macroscopic level of our physical reality transforming inorganic matter into organic matter? In 1925 the physicist Wolfgang Pauli (1900-1958) discovered in water molecules the hydrogen bridge (or hydrogen bonding). Hydrogen atoms in water molecules share an intermediate position between the sub-atomic level (quantum) and the molecular level (macrocosm), and provide a bridge that allows syntropy (cohesive forces) to flow from the quantum level to the macroscopic level. The hydrogen bridge makes water different from all other liquids, increasing its cohesive forces (syntropy) with behaviors that are in fact symmetrical to those of other liquid molecules. For example: when water freezes it expands and becomes less dense, the process of solidification starts from the top, water shows a heat capacity by far greater than other liquids. Consequently the syntropy hypothesis expects life to show whenever liquid water is available, also when conditions are extreme, such as on comets and asteroids.

A converging teleological universe

A similar description of life was reached by Pierre Teilhard de Chardin (1881-1955). Teilhard was a well known evolutionary scientist and became famous after his death with the publication of his books, among which "*The Phenomenon of Man*" and "*Towards Convergence*". Both Fantappiè and Teilhard were subject to strong censorship due to the fact that their theories broaden science to a new type of causality which retro-acts from the future. According to Fantappiè life is subject to a

dual causality, efficient causality and final causality, and for Teilhard life is guided by final and converging aims. Teilhard argued that while astronomy detects an initial event from which the physical world originated (the Big Bang), paleontology identifies an end point towards which life is evolving and converging. Teilhard calls this end point the Omega point and states that a correct reading of sacred texts shows that the origin of life is in the future and not in the past. Teilhard's claims have sparked debate within the Catholic church and a decree of the Holy Office chaired by Cardinal Ottaviani, in 1958, imposed religious congregations to withdraw the works of Teilhard from all their libraries. The decree states that Teilhard's texts "*offend Catholic doctrine*" and alerted the clergy to "*defend the spirits, especially of the young, from the dangers of the works of father Teilhard de Chardin and his disciples.*"

Fantappiè noticed that syntropy and entropy are complementary, since they stem from the same equation. At the cosmological level this implies that diverging and converging phases should alternate. Consequently, Fantappiè supported the Big Crunch hypothesis. This hypothesis is exactly symmetrical to the Big Bang and maintains that the universe will stop expanding and begin collapsing on itself because of the strength of gravitational forces. Eventually all matter will collapse into black holes, which would then coalesce producing a unified black hole or Big Crunch singularity and the universe would collapse to the state where it began and then initiate another Big Bang, so in this way the universe would last forever, but would pass through phases of expansion (Big Bang) and contraction (Big Crunch).

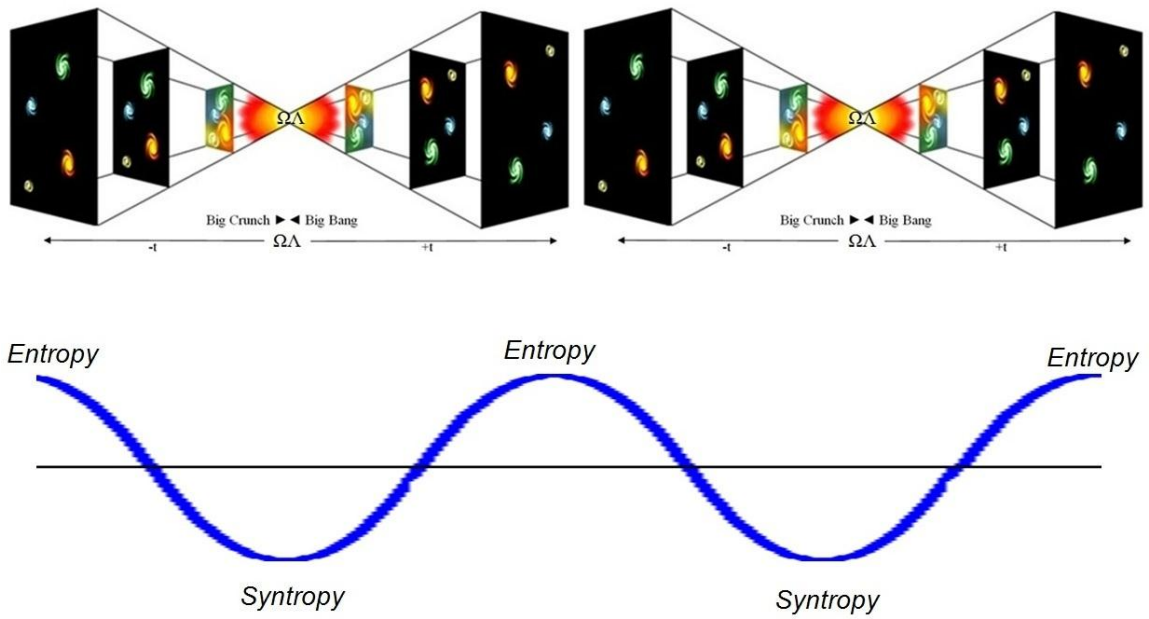

Figure 1 – Big Bang and Big Crunch cycles

According to this hypothesis time flows forwards during the diverging phase (Big Bang) and backward during the converging phase (Big Crunch).

However, recent evidence, to be precise the observation of distant supernova, has led to the speculation that the expansion of the universe is not being slowed down by gravity but rather accelerating. In 1998 the measurement of the light from distant exploding stars lead to the conclusion that the universe is expanding at an accelerating rate. In the attempt to explain these observations, which contradict the hypothesis of the Big Crunch, physicists have introduced the idea of dark energy, dark fluid or phantom energy. The most important property of dark energy would be that it has a negative pressure which is distributed relatively homogeneously in space, a kind of anti-gravitational force which is driving the galaxies apart.

On the contrary the syntropy hypothesis suggests that the increase in the rate of expansion of the universe would not be due to the effect of dark energy or to any mysterious anti-gravitational force, but rather to the fact that time is slowing down. In June 2012 Professors José Senovilla, Marc Mars and Raül Vera of the University of the Basque Country, Bilbao, and the University of Salamanca, Spain, published a paper in the journal *Physical Review D* in which they dismiss dark energy as fiction. Senovilla says that the acceleration is an illusion which is caused by time itself gradually slowing down. The corollary of Senovilla's team is that "dark energy" does not exist. The team proposes that there is no such thing as dark energy at all and that we have been fooled into thinking the expansion of the universe is accelerating, when in reality, time itself is slowing down.

Teilhard de Chardin considered life organized in concentric spheres. The innermost sphere is the Omega point (which coincides with the Big Crunch), in which all of matter will be transformed into organic and conscious matter. The outer sphere is the most distant from the Omega point, the realm of inanimate matter. Teilhard relates the Omega point to consciousness and Fantappiè considers syntropy the source of the Self, the feeling of life. Consciousness and the Self are attributed by Fantappiè and Teilhard to the final attractor (Omega Point / Big Crunch). The closer we evolve towards the final attractor and the more conscious we become.

In addition, Fantappiè associates the final attractor with love, and states that:

"*Today we see printed in the great book of nature - that Galileo said, is written in*

mathematical characters - the same law of love that is found in the sacred texts of major religions."

Similarly Teilhard describes the law of love in the following way:

"*The universe, taken as a whole, concentrates under the influence of the attraction which arises from the Omega point, which takes the form of love. People can evolve and become more human since they share at the core level the same attractor of love. According to this view we are all immersed in a converging flow of conscious energy, whose quality and quantity is growing at the same rhythm of our complexification*." (Teilhard, 2008)

Final consideration

In his "*Unitary Theory of the Physical and Biological World*" Fantappiè shows that all the laws of the universe derive from one equation. But he also notices that the equations which can yield a coherent universe are infinite. Why is our universe governed by an equation based on a dual solution and not by other equations? According to Fantappiè the answer to this question implies the existence of a theological plane, external to our universe, in which the choice of the equation took place.

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