Conceptual FrameWorks
Research papers

"The future is history"

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Phenomenological reality seems to be a never ending transformation of observable events. A sequence of successive observable alterations that is called "time". Actually phenomenological reality exists only "at the front" of the evolving transformations. A state of reality we have termed "now". However, what is the physical reality of the concept "now"? Does it depends on the properties of the human consciousness or is the state of reality "now" existent everywhere in the universe, even in vacuum space?

Introduction

We can describe the nature of time as a sequence of fixed amounts of duration that represent observable change, directly related to the transfer of quanta within the electromagnetic field. A field structure that is created by the basic properties of quantized space. In other words, the nature of time is quantum time.

There are more descriptions of the nature of time. For example Albert Einstein's relative time, founded on the constant speed of light. A constant that originates from the linear transfer of quanta in vacuum space, light waves.

Unfortunately there exists only one nature of time. The consequence is that quantum time must be a derivation of relative time, or visa versa.

However, if it is possible to think up different models of the nature of time, it is evidently that the different concepts of time originate from underlying concepts that share the same problem: uncertainty about the right hierarchy of the used basic concepts.

Our thoughts about the nature of time influences our imagination about the meaning of the future and the past. States of reality that differ from the state of reality "now". So how must I interpret those "experiences"?

Relative time

If every change in the universe – the change of a local amount of energy between 2 adjacent points in space – is determined by the speed of light, it is evidently that the future will evolve with the constant speed of light. That means that the moment "now" is like the top of a wave and we – the observers – are riding on top, observing all the changes around with a small delay of time, caused by the constant speed of light. But the observer isn't only me, every observable phenomenon is part of the universal transformations within the universe.[1] So every (tangible) phenomenon exists in the state of reality "now" although every observation with the help of energy transfer is an observation of the past.

Figure 1 shows the transfer of a rest mass carrying particle from position p1 to position p2. It is an imaginary transfer of the particle because if I want to know the real trajectory and velocity of the particle I have to detect position p1 and position p2 and that is impossible without influencing the position and velocity of the moving particle.

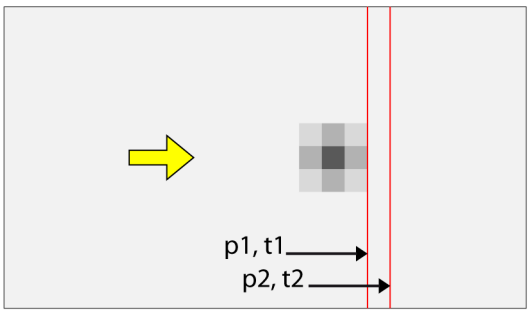

figure 1

The particle in figure 1 shows a structure and that means that the particle has internal changes too. For example because the particle has spin. Spin isn't a property of rest mass carrying particles that is 100% independent from the state of the particle at any moment. In other words, if I accelerate the particle to nearly the speed of light every quantum of energy that is involved in the existence of the mass of the particle itself – $E = mc^2$ – is transformed into a quantum with a nearly linear movement. The spin of a particle is like a clock and now it shows to be a very unreliable clock.

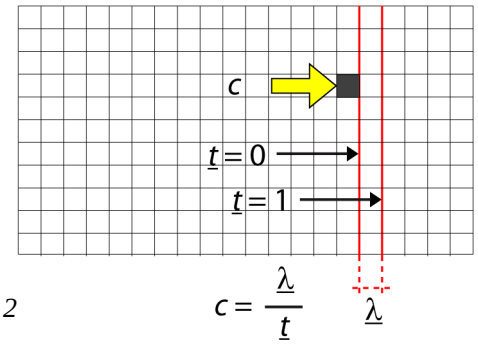

figure 2

If a quantum is transferred in a linear way between 2 adjacent points in space with a mutual distance according to the minimal length scale (λ)[2] – the schematic cubic raster in figure 2 and 3 – every change of position by the quantum is done with the same velocity (c). Thus quantum time is a sequence of identical fixed amounts of duration (*t*). Moreover, the energy of the quantum that is transferred during 1 *t* over a distance of 1 λ is a constant too (1 *h*) because it is a fixed part of Planck's constant (*h*).

I have "transformed" figure 1 into the schematic structure of quantum time in such a way that the distance between p1 and p2 in figure 1 is identical to 2 λ (see figure 4).

If a quantum is transferred in a linear way from p1 to p2 in figure 4 the duration of the transfer of the quantum is 2 *t*. But the particle in figure 4 doesn't represent an amount of energy that's equal to the number of "enclosed" units multiplied with the energy of one quantum. That means that the duration between t1 and t2 = > 2 *t*. In other words: the amount of energy of the particle (n·*h*) determines the velocity of the particle.

Every linear transferred quantum of energy at the moment "now" that is part of the amount of energy of the particle has an identical velocity (c). Nevertheless,

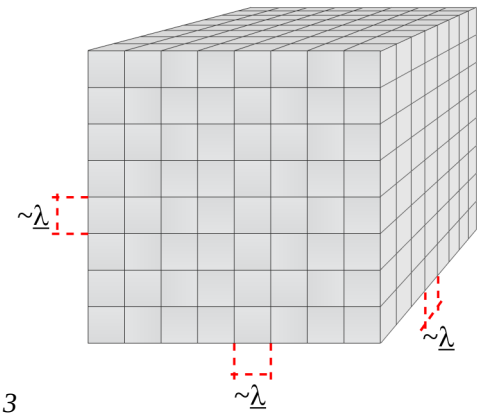

figure 3

if I increase the amount of energy of every unit around the particle the velocity of the particle will increase too. Only because the amount of energy of the particle is decreased relative to the amount of energy of the units around. Therefore the number of quanta that has to be transferred is decreased.

If the duration of the transfer of the particle between p1 and p2 in figure 4 depends partly on the energy "state" of its surrounding I have to conclude that relative time is a simplification of quantum time. Because relative time is derived from the observed properties of the involved phenomena[3]. Quantum time, on the other hand, describes the energy transfer in the whole universe.

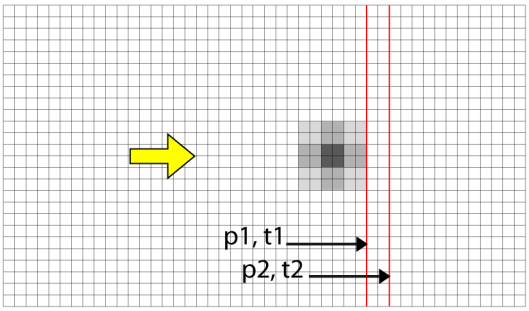

figure 4

The future

If the particle in figure 4 is transferred from p1 to p2, position p2 is the future of the particle if the particle is at position p1. However, I cannot say that increasing the distance between p1 and p2 is increasing the future of the particle. Not only because another phenomenon can appear and influence the transfer of the particle. The energy "state" of the surrounding of the particle determines the velocity of the particle too.

If I think about it I have to admit that the term "future" isn't only related to a certain amount of time between the moment "now" and another moment "now" that are separated by a certain duration of quantum time. The term "future" seems to be an unknown situation that is determined by the sequence of all the related changes in the universe. Changes that are non-local.

In a non-local universe all the local changes influence each other at exactly the same moment. But this is a concept that is hard to imagine if every change in the universe only depends on the transfer of quanta with the constant speed of light. Only if the volume of the structure of space itself – see the schematic figure 3 – is invariant, I can imagine that the interchange of

quanta within the invariant volume of the structure of the universe will influence every local change at exactly the same moment. A mathematical property of space that is called “tessellation”.

Unfortunately, there is a conceptual problem that originates from the discrepancy between the moment “now” and the awareness of the existence of a unknown future that doesn’t exist at the moment “now”. Because the awareness of the future isn’t the result of logical reasoning, it seems to be some kind of an intangible feeling.

In other words: “*Is it possible that our concept of the future originates from the fact that the vague future already exists at the moment “now”?*”

The electromagnetic field

The transfer of a quantum is the transfer of a fixed amount of topological deformation within the structure of the electric field. However, if a quantum of topological deformation is transferred from p1 to p2 – see figure 2 – the transfer of the fixed amount of topological deformation creates a synchronous corresponding vector within the scalar of the flat Higgs field. See figure 5, the synchronous and corresponding change of the electric and magnetic field of an electromagnetic wave.

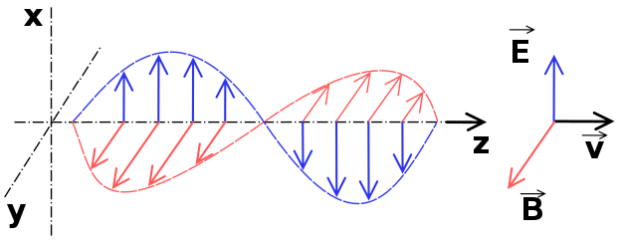

figure 5

Therefore nearly all the quantum transfer in the universe is “companioned” by corresponding scalar vectors that we know as “the magnetic field” (a vector field). The exception is the transfer of quanta by the units of quantized space with a decreased scalar. Like the situation inside rest mass carrying particles and black holes.

Figure 6 shows some scalars of the flat Higgs field[4] that mediate vectors of the magnetic field that are caused by the transfer of quanta within the – not drawn – electric field. Figure 7 shows all the vectors that exist inside one scalar that is part of the flat Higgs field (the image in figure 6).

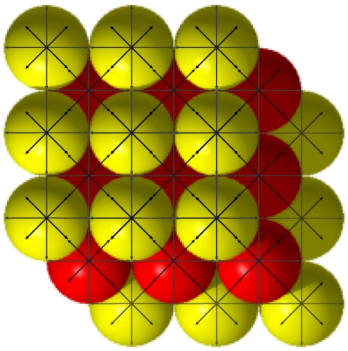

figure 6

Scalar vectors don’t transfer energy (quanta). Therefore scalar vectors are not limited by the speed of light. The scalar vectors represent the distribution of changes within a “solid” medium. Changes that are generated by the transfer of quanta within the electric field.[A]

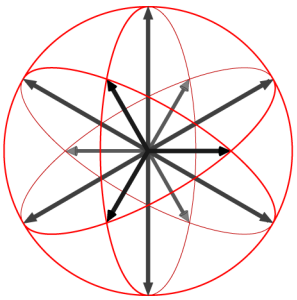

figure 7

If the transfer of a quantum within the electric field is linear the generated vector will influence the symmetrical vectors of the scalar (figure 7). The result is an addition and a subtraction of 2 vectors by the vector that is generated by the transfer of the quantum of topological deformation. Fig. 8 shows the resulting vectors.

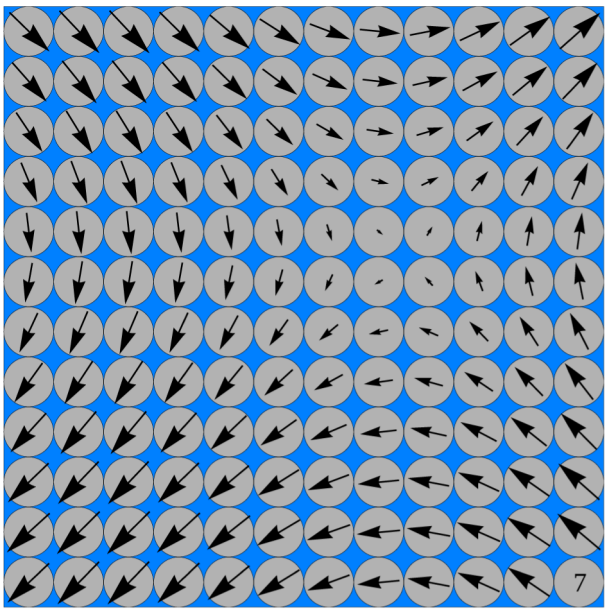

figure 8

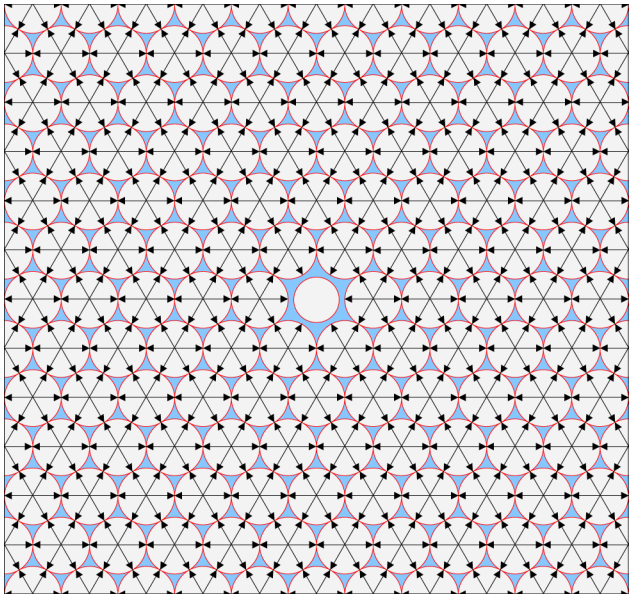

figure 9

Decreased scalars of the Higs field are like “holes”, sparsely distributed within a lattice of identical spheres. In other words, nearly the whole universe is pervaded by the scalar vectors of the magnetic field. Figure 9 gives an impression; I have drawn 1 decreased scalar. The light blue areas represent the electric field.

I can draw one unit of quantized space in a schematic way within the shape of a cube (figure 10). The spherical volume – the inscribed sphere – represents the scalar and the remaining volume of the cube represents the volume of the electric field. The distribution of the topological deformation of the unit by the transfer of a fixed amount of volume within its boundary is represented by the green and red arrows.

Quantized space is in rest in relation to all the transferred observable phenomena. Phenomena represent local configurations of concentrated energy ($E = mc^2$), created by the basic properties of the electric field . In other words, every local concentration of energy within the electric field has a corresponding configuration of scalar vectors, a “duplicate” within the magnetic field.

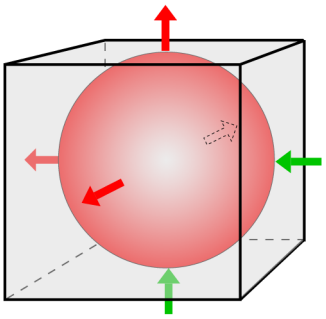

figure 10

The creation of the future

Figure 10 shows the schematic distribution of the topological deformation of one unit of quantized space. A distribution that is known as the transfer of a quantum by the unit and the transfer generates the corresponding scalar vectors (the magnetic field). However, figure 5 shows that the topological deformation of the local electric field generates scalar vectors within the magnetic field and visa versa.

Scalar vectors are not limited by the constant speed of light. That’s why scalar vectors can direct the next topological deformation – see figure 2 – at a distance larger than 1 unit of quantized space (> 1 $\underline{\lambda}$). Moreover, all the scalar vectors are super positioned. That means that a vector to the right with a corresponding magnitude of (e.g.) 5 $\underline{h}$ will be transformed in a magnitude of 3 $\underline{h}$ if there is an opposite vector with a corresponding magnitude of 2 $\underline{h}$. Nevertheless, the cause behind the existence of both vectors – the topological deformation of the involved units – still exists. Thus the distinct corresponding magnitudes of both vectors “are still alive”, although the resulting magnitude is 2 $\underline{h}$.

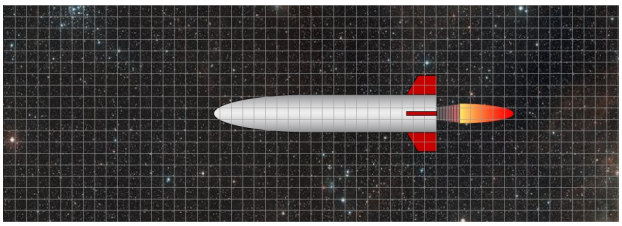

figure 11

Figure 7 shows that every scalar within the flat Higgs field can conduct 6 “pass through” vectors during 1 $\underline{t}$. The total magnitudes of all the scalar vectors in the universe is equal to the total number of transferred quanta. Because the decrease of a scalar within the flat Higgs field – the Higgs mechanism – doesn’t effect the total amount of magnitudes, it effects the mutual relations between the magnitudes of the scalar vectors (see figure 10).

Figure 11 shows an accelerating rocket. The rocket represents a huge amount of energy and vacuum space around the rocket is involved in the acceleration of the space craft.

The rocket encloses a configuration of scalar vectors that equals the shape of the rocket. However at the left side of the rocket – within vacuum space – the

magnitudes of all the scalar vectors are influenced by the huge scalar vectors of the concentration of energy (the space craft). The acceleration itself represents huge scalar vectors too. In other words, the position of the rocket at the moment "now" is preceded by a large volume of space that contains the developing properties of the accelerating rocket.

At the moment "now" the transfer of the local topological deformations of the electric field correspond 100% with the enclosed scalar vectors of the space craft. At the right side of the accelerating rocket there exists what we call "the past". The distribution of the configuration of the scalar vectors of the space craft in vacuum space.

Conclusion

The concept of observable reality is determined by the basic properties of the observer.

"Enclosures" (blue)

To reduce the length of the paper there are links to papers that describe details not mentioned above.

A. "*Quanta transfer in space is conserved*".
DOI: 10.5281/zenodo.3572846
https://zenodo.org/record/3572846

B. "*On the concept of (quantum) fields*"
DOI:10.5281/zenodo.3585790
https://zenodo.org/record/3585790

References (red)

1. Art Hobson (2013): "*There are no particles, there are only fields*".
https://arxiv.org/ftp/arxiv/papers/1204/1204.4616.pdf
2. A brief description of the minimal length scale can be found in:
Sabine Hossenfelder (2013), "*Minimal length scale scenarios for quantum gravity*"
https://arxiv.org/pdf/1203.6191.pdf
3. Albert Einstein: transcription of a lecture at Leiden University in 1920.
https://www-history.mcs.st-andrews.ac.uk/Extras/Einstein_ether.html
4. Hales, Thomas C.; Ferguson, Samuel P. (2006), *"A formulation of the Kepler conjecture", Discrete & Computational Geometry, **36** (1): 21–69,*
https://arxiv.org/abs/math/9811078

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