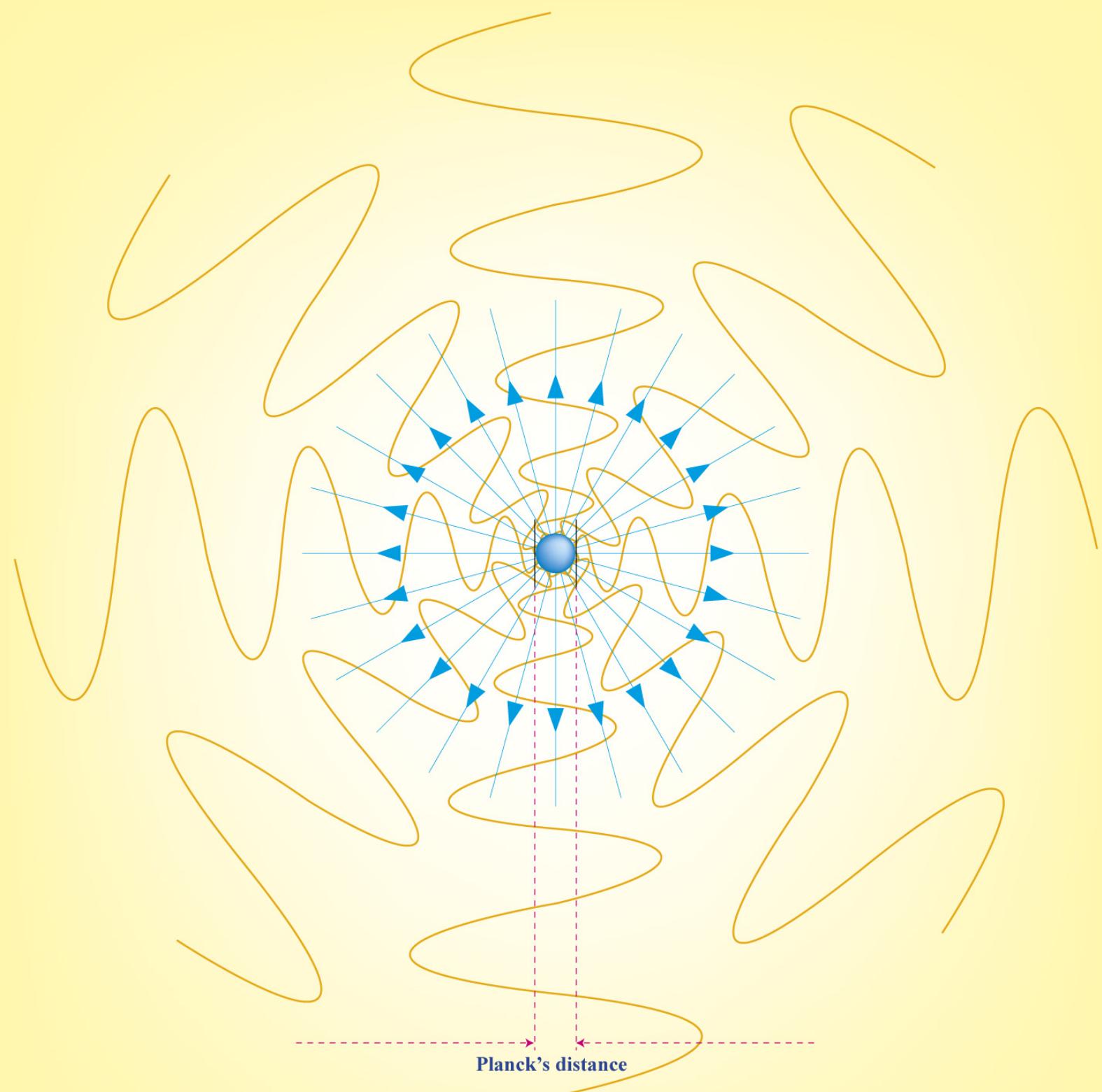


# THE GOLDEN CENTURY

## - Science and Scientists -

year I - N. 9



**Cosmic Background radiation**

**Planck's distance**

**Physical expansion of the universe**

## Preface

In my first argument Cosmic Background Radiation I made a reference to gamma rays, GRB locution for *Gamma Ray Burst*. These gamma rays besides being considered the most energetic phenomenon observed so far in the universe, are also distributed homogeneously over all the surface of the universe in more or less the same way microwaves are. These two aspects of gamma rays if put together they would acquire a fatal meaning, since it is clear that if they are distributed homogeneously over all the surface of the universe their energetic explosions would destroy life in all those planets where life has developed the way it did on planet Earth.

However, before invoking the end of the world, there could be a different explanation of the socalled “gamma rdays”. We know, for example, that the distance groups for visual reasons what locally is very much spaced. Let us take as a pertinent demonstration the Andromeda galaxy which stands at a distance of 2 million 537 thousand light-years. From here we see a star of small magnitude, but in reality we looking at the summation of a trillion stars. If the galaxy were to be smaller from here we wouldn’t even see the flickering of a starlight. With gamma rays is, or could be, the same thing. We are looking at and see only the very high energy end of billions and billions of stars showing up here as a short burst barely perceptible, but that locally wherever they stand are separated by deep interstellar spaces. Stars, as I have demonstrated in another forum, much before their birth are in need of an’area thousands of times bigger of what afterwards becomes their stellar system.

With reference to my second argument, I decided to give a place of preeminence to Planck’s distance. In this month’s cover, I identify the point-source with the magnetic monopole which I encased in-between the limits of Planck’s distance. It is this distance, and the energy developing from the monopole, that marks the pace of the electromagnetic process for the creation of time and space and that imparts the operative speed to electromagnetic radiations in their nonlinear conformation (expansion and conversely gravitation) and equally to their linear conformation (Maxwell’s radiative field).

The reader that stayed with me up to here knows that I have always included cosmic rays in the electromagnetic radiations’ scale (electromagnetic spectrum). In Max Planck’s times and even today Science and Scientists alike have always excluded cosmic rays from radiations considering them to be extra-galactical. In this work of mine, I have taken the liberty of shortening Planck’s distance by two quantities of scientific notation, I have taken it to  $6.67 \times 10^{-36}$ . Maybe one of my readers or some experimentalist could continue to his credit my work.

In my third and last argument The physical expansion of the Universe, I have appealed once again to the antenna of one of the very many radio stations. I wanted to remind the reader that the wavelength has been always associated to time through the relation  $f = 1/T$ . Hence, the frequency is inversely proportional to the wavelength. When one goes up the other comes down and viceversa. By extension, and for the first time in the history of science, I have sustained that space is quantifiable by its density or electromagnetic compactness of the oscillating frequency or better still by the number of electromagnetic filaments occupying a given frequency. While the wavelength has always been associated to time, from now on the frequency will be associated to space. Further, the frequency and/or wavelength recognizable at the whip antenna tip of a very common mobile radio is confirming the existence of what in my work I call time and/or space sub-dimensions.

... o ...

May the 2<sup>nd</sup> 2018

Domenico Idato  
[info@idato.it](mailto:info@idato.it)  
[domenico.idato@gmail.com](mailto:domenico.idato@gmail.com)

Scientist  
Lexicographer  
Novelist  
Poet



## Cosmic Background Radiation

### *Foreword*

The following three fundamental axioms are the foundation pillars upon which the proposition herein put forward rests.

- I. Time and space are physically created by an electromagnetic process of temporal expansion and/or spatial extension to be identified with the existing electromagnetic spectrum.
- II. Time and space have their origin in each and every electromagnetic pointlike point-source in free (optical) space as well as in matter.
- III. Given (I) and (II), it follows that the speed at which time and space are created: (a) is the upper limit and dictates the physical laws in the world we live in (fully expanded time dimension), and (b) it is a function of linear and nonlinear motion in free (optical) space.

In particular, axiom (II) implies that space is permeated by an all-pervasive and permanent substance which I shall herein label *time-fabric*, meaning to say: a permanent non-zero source of energy. From this we may deduce that space is filled by pointlike point-sources which are magnetized by the finite and uniform speed of the expansion and/or extension. These point-sources during their decaying process form all lengths of time and all lengths of space. These lengths are the effective volume containing energy. The entire free (optical) space is, therefore, a universal unsaturated sink with continuous absorption because of the finite and uniform speed of expansion and/or extension.

### *Argument*

The well known background radiation in the microwave range of frequencies was detected in 1965 and found to be isotropic; that is to say, thermally consistent in all directions of the sky. Its presence was associated to the expansion of the universe at the beginning of times and to the ensuing lowering of temperature. The radiation was thought to be the residue of the spectrum (thermal radiation) of the primordial stage of evolution, or the *afterglow* of the big bang and was explained away with the *tired light* theory; that is to say, the cosmic radiation, due to the distance, is supposed to have shifted to a lower frequency and it is now received here as cosmic microwave radiation. This not only brain-washed the scientific community but and more important still, demolished the *steady-state* theory which was, as it were, the only scientific theory sustaining a realistic and comprehensible structure of the universe.

In support of my ongoing discourse, I shall now recall and put in evidence two important points:

- ① the imprint of the radiation
- ② the presupposed redshift

Let me take point ② first. The tired light theory purports that when cosmological distances are taken into consideration the signal, or radiation during its journey will shift from a higher to a

lower frequency. In order to connect this theory to the microwave radiation in question, I must now recall to memory that the light of an approaching galaxy has shorter wavelength (it shifts towards the blue end of the spectrum); the light of a receding galaxy has longer wavelength (it shifts towards the red end of the spectrum). Since we are dealing with microwave radiation which is supposed to have existed much before the condensation of matter evolved under the influence of the force of gravity, the question that comes to mind is: what was actually receding?

The problem, to date, has been given discordant interpretations, with none gaining full support by the scientific community. Considerable circumstantial evidence tends, however, to favour the idea that the universe has indeed evolved from a denser state. Although the theory herein proposed does not subscribe to anything of the sort, I must say that this line of thought is tied up with the big bang version as a possible *starting point* and the microwave radiation fits very nicely within this scheme.

The cosmological redshift has been a controversial issue ever since its formulation. The actual physical concept is rather simple: at the receiving end we have longer wavelength and/or lower frequency. The redshift is usually denoted by the letter "z" and is given by the following relation:

$$1 + z = \frac{\lambda_o}{\lambda_e}$$

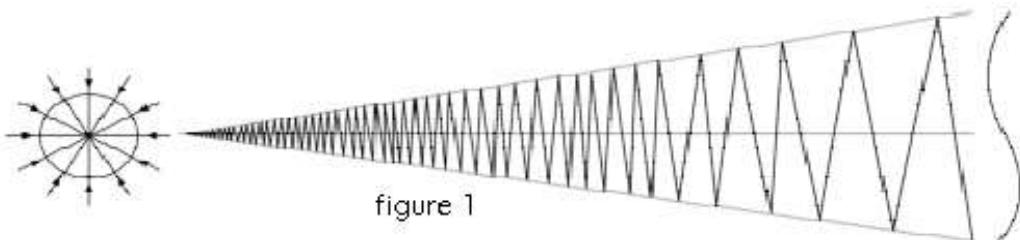
where  $\lambda_e$  (lambda<sub>e</sub>) is the emitted wavelength and  $\lambda_o$  (lambda<sub>o</sub>) the observed wavelength. If we apply the equation to the cosmic microwave radiation, we will be hard put not only to explain the non-zero value of the parameter z; but, and most important, to accept the uniformity of the microwave background radiation.

Let me now bring the picture into focus. The big bang and the microwave radiation as its *afterglow* do not account for causally disconnected regions of space. More specifically, astronomical evidence shows that two or more given points in space can be almost twice as far apart as the believed age of the universe; and although these points should not be, they are in thermal equilibrium with the *totality* and this would make it difficult to explain the microwave radiation coming from all directions of the sky at a uniform temperature of 2.7 °K (Kelvin degrees) above absolute zero.

The almost compulsory question that comes to mind at once would then be: if these regions of space were never in contact with one another, how it comes they are all bathed by the same thermal radiation? It is my view, and I shall put it in the form of a resolve, that the acceptance of electromagnetic radiations as a permanent non-zero source of energy will amply explain the thermal equilibrium of the said radiation. In other words, I am referring to the entire range of electromagnetic radiations which, in their nonlinear conformation, are represented by the electromagnetic spectrum. Ergo, it is the electromagnetic spectrum (the driving force) pushing outwards to create it all; it used to do it billions of billions of years ago and it is doing it today. Over and above, and this is the crux of the argument in question, the physical process of creation materializes itself in the band of microwave frequencies in the fully expanded world (our world). The physical process, therefore, pervades the whole of free (optical) space of the universe. Its continuous renewal hence its presence in our world manifests itself as a magnetic hum due to the continuous loss of energy. The presence of microwaves on the universal surface is, we may say, a local phenomenon for local consumption.

Retaining in the background the electromagnetic radiations represented by the electromagnetic spectrum, I shall now introduce the *physical process of creation* which is afterall the negative

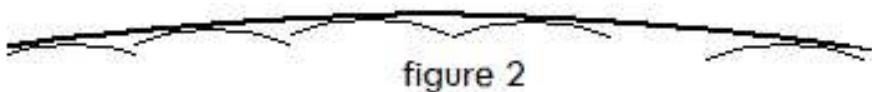
energy pushing outwards, the first cause of what science calls “the expansion of the universe”.



As we can see in figure 1, the process is subdivided in three parts. The first part is the magnetic monopole created by the magnetic source. The second part is the process itself which during its creative stage it comes to form a nonlinear field characterized by ascending wavelengths (the creation of time) and descending energy levels (the creation of space). The third part shows instead an adynamic magnetic undulated line as a final result of a single process of creation lasted just one second.

Back from our digression necessary to give a meaning to some points that the reader might have found rather obscure, I shall now say that the theory herein proposed visualizes a much more extended universe containing infinitely many universes whose size we could, for argument sake, assess to be similar to our visible universe. The expanding nature of such a universe would cause periodical occurrences which I shall herein label *timequakes*. For our purpose the term *timequake* is proposed, and it is defined, as a recurring cosmological event which, in line strictly theoretical, gives birth to one or more stars, to a galaxy, to a cluster of galaxies or assemblages of clusters, or perhaps although very unlikely to a space region as big as our visible universe which will then become a part of a much wider domain. If these events are a feature of our expanding universe, infinite in its extent; then, they are happening since the very dawn of time, and they would abundantly explain the non-zero value of the redshift as well as the common thermal bath for all space regions irrespective of their existing distance in-between.

To help the mind by way of the eye, I am showing in figure 2 the picture I have in mind of our hyperbolic universe which I am representing as a celestial vault in the form of an open curve built by many branches extending to infinity in all directions, and where there are embedded many universes with the same physical size and variable density belonging to a single domain.



These universes are under control of the finite speed which physically creates time and space. Because of this, they have a visible horizon up to, and not exceeding, 15 thousand million light-years and must, therefore, be considered as independent units embedded in the hyperbolic plane of the universal *great domain*. I put in relief a possible space *pocket* where may be formed nebulae or nebulae clusters which with the passing of billions of years give existence to new worlds. These vast space areas where even the tremulous glitter from stars disappear constitute the suitable site for the formation of nebulae and for what I have called *recurring cosmological event* with which the universe is renewing itself. If this is a pristine description of what we call universe; then, the big bang supporters should multiply n-times the age of our visible universe to obtain a rough picture of the great domain.

Before moving to point ① mentioned earlier and to complement or better still to clarify the idea that microwaves covering the whole universal surface are believed to be the afterglow of the big bang, I would like to refer to two other types of electromagnetic radiations: cosmic rays and gamma rays. In line with Science and Scientists alike, cosmic rays are generated by atomic nuclei endowed with very high energy and bombarding our planet from sidereal space. They were discovered by the German physicist Victor Hess at the beginning of last century. Hess by using a leaf electroscope on a hot air balloon demonstrated that radiation was mounting up with altitude and concluded that radiation did not have a terrestrial origin, but was coming in from deep space with galactic and/or extra galactic origin, hence the name “cosmic rays”.

As regarding instead gamma rays, they too have been classified radiations made by radioactive decay of atomic nuclei. Towards the end of last century were thoroughly studied the socalled gamma ray bursts discovered in the sixties. The GRB are intense bursts lasting a few milliseconds (short gamma ray bursts) or some minutes (long gamma rays bursts). They are characterized by powerful explosions and constitute the most energetic phenomenon observed so far in the universe. Thw GRB are homogeneously distributed over the entire surface of the universe in more or less the same way microwaves are. It seems that all of these three radiations are believed to be lodge or perhaps reside in the galactic expanses and tghey are associated to the atom as well (the time world). Contrary to all this, the theory herein proposed sustains that all electromagnetic radiations, including the three radiations above, belong to the nonlinear conformation represented by the electromagnetic spectrum (the driving force) which is a local phenomenon for local consumption. Their interaction with the atom and with the subatomic world (the time world) comes later, much later. To pass a judgement scientifically valid one must study radiation in their pristine aspect, one must see them (in the space world) as electromagnetic massless filaments whose oscillatory movement creates time, creates space, and it pushes outwards to help expand the universe.

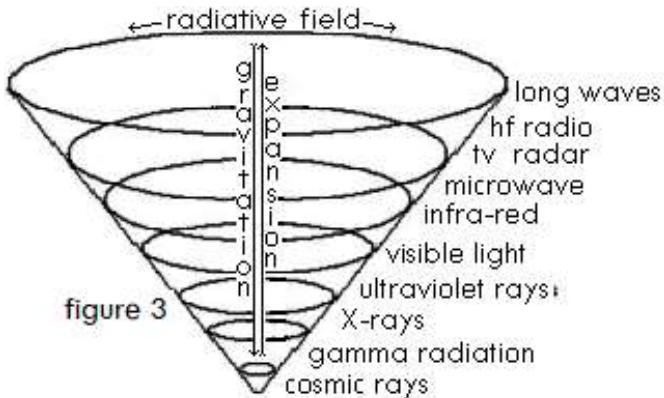
Let me now move to point ①. As I have stated in my work *linear field and nonlinear field* published here in this forum, an electromagnetic signal on entering a frequency will imprint its own signature and it is this signature that travels with direction in space in that frequency. As we have seen, the extending waves must leave the frequency. The signature, however, travels transverse to the extension and along a *spatial path* dictated by the discreteness of the electromagnetic point-sources. Better still, an electromagnetic disturbance travels and it can only travel along a space possessing the same frequency, that is the same electromagnetic compactness.

My reasoning can be supported by the evidence that all celestial bodies are emitting radiation covering the entire scale of the electromagnetic spectrum. I am trying here to rectify some ongoing inconsistencies. It is scarcely necessary to remind ourselves that it is not possible to receive from the edge of the universe: on the one hand cosmic radiation, visible light, and radio waves; while, on the other it is claimed the detection, from the same distance, of cosmic radiation camouflaged as microwave radiation. The latter by deduction eliminates the former. From a purely scientific standpoint this is an inconsistency without a justification.

As we all well know, all blazing bodies in the universe, including our sun and our galaxy, emit radiations covering the full range of the electromagnetic spectrum. We do have some exceptions, things such as black holes, for example, where the only thing left of the atom is an amorphous magnetic substance which used to be the core of the nucleus and which because of a gravitational collapse, or compression no longer vibrates and hence causes the celestial body to cease emission of radiations (it has none). There are also neutron stars where due to the same gravitational

collapse, or compression the atom has been mutilated; that is, the expanding and/or extending electromagnetic process has been shortened and the celestial body itself emits radiation only in the atomic wavelengths of cosmic, gamma, and X-rays. These, however, are non-blazing bodies they are just the vestiges of what used to be a shining star in its main sequence.

I shall now recall something of paramount importance. Astronomical observations putting on the test bench our remote past, are clearly telling that the entire range of electromagnetic radiations has always existed. If this is true, then not only the cosmic background radiation and its shamefully enormous redshift is a great fairy tale, but the big bang as well is also one. To realise the why and the wherefore we must believe astronomers, I shall now introduce the electromagnetic spectrum in its nonlinear conformation to better understand the ongoing argument.



The function of the electromagnetic spectrum (the driving force), encompassing the full scale of electromagnetic radiations, is to lengthen, during the process of creation, its own wavelengths, the wavelengths of time and space, and to deliver at each second of time an adynamic magnetic ondulated line as a contribute to the universal expansion. I am here noting that in describing the magnetic ondulated line materializing in the world fully expanded, I used the adjective *adynamic* to indicate almost nil electricity to avoid creating a ball of blazing fire and almost nil magnetism to avoid creating a ball of deadly heat.

### *Conclusion*

The microwave radiation, according to the theory herein expounded, is not of primordial origin; rather, it is an almost uniform humming and its weighty message is that the universe taken in its wholeness is consistent in the first place with the physical process of expansion in time and/or extension in space and then with the contribution of one and all adynamic magnetic ondulated lines for its own expansion. Above all, there is the fact that the presence of microwaves with wavelength of one millimetre (the blue end of microwaves) covering as a snow mantle the whole of free (optical) universal space is confirming beyond any reasonable doubt that electromagnetic radiations are integral part of the universe, are continuously created by the expanding universe, reside in its bowels (microworld) to physically create in turn time and space, and thereafter manifest themselves in the fully expanded dimension (macroworld) to contribute to the universal expansion.

What I am about to say, it is only my own supposition. Nevertheless, I am convinced that Georgij Antonovic Gamov born at Odessa (Ukraina) and naturalized American citizen with the name George Gamow was one of the few scientists back in 1948 to realise that electromagnetic radiations were leaving the microworld to enter the macroworld on the blue end of the microwave

band of frequencies. At the time it was fashionable what from 1949 onwards came to be called *big bang*, and for Gamow himself it was natural enough to associate the microwaves to the big bang; also because already in 1940 he proclaimed himself a strong supporter of the big bang so much talked about in scientific circles. Also for me, then, as faraway as I am from the incongruous big bang, it is natural enough to associate microwaves to the wavelength of one millimetre (the blue end of microwaves) which is the energy level where the process for the physical creation of time and/or space leaves the microworld to surface into the macroworld to occupy the lower level, the base level, we may also say, the ground floor of the whole universal free (optical) space. This is the microwaves' state in being. Only this can explain, and fully explains, the presence of microwaves. A much more practical presence, more truthful, closer to nature; better still: a presence more scientifically and mathematically articulated.

In nearing the end of this rather interesting essay, I shall say that the continuous proliferation of hydrogen atoms created by incident light impinging upon the time-fabric permeating the vast expanses of free (optical) space, proceeds uninterrupted. A time-fabric permeating the totality which we call universe, and which is so vast where clusters of galaxies or assemblages of clusters are irrelevant. A universe whose homogeneity is given by the existence of free (optical) space with a linear geometry; and of mathematical necessity by a spherical geometry of time. The microwave radiation when it will be probed thoroughly in the entire canopy of the heavens will be found to be thermally consistent to show the interaction of incident light with the time-fabric for the creation of particles throughout the vast expanses of free (optical) space and, at the same time, will yield only very small variations to indicate the large-scale galactic structure.

In closing, I just want to point out that I have ascribed the presence of the so-called cosmic microwave radiation to the existence of electromagnetic radiations which in their nonlinear conformation are represented by the electromagnetic spectrum (the driving force) and have the function to create first in the microworld time and space, all lengths of time and space, and then in the macroworld to contribute with an adynamic magnetic undulated line to the expansion of the universe; and this, mark you, is an ongoing electromagnetic process and not some hypothetical *afterglow*.

Before closing, I shall recall to memory that if the universe is expanding as it appears to be, then only electromagnetic radiations in their nonlinear conformation can supply the necessary energy. Only electromagnetic radiations occupying the whole of free (optical) universal space can expand this balloon whose circumference seen along billions and billions of light-years it is shown to be almost a straight line. It does not exist and nature does not offer any other type of energy so equally distributed that meets the requirements. These are: ① starting point the bowels of the universe (Planck's distance) to circumscribe the whole, ② energy pushing outwards (negative) available locally on the entire universal surface to guarantee a uniform and constant expansion, ③ magnetic charge to trigger the electromagnetic induction, ④ high energies: (i) for the lengthening of wavelengths (the creation of time), and (ii) for the compactness of the sub-dimensions (the creation of space) along the physical process of creation, ⑤ low energies to surface in the fully expanded time dimension (our world) without causing any damage, ⑥ adynamic magnetic undulated line, (i) to contribute to the expansion of the universe, and (ii) to complete the physical process in the macroworld.

... o ...

March the 3<sup>rd</sup> 2018

Domenico Idato  
[info@idato.it](mailto:info@idato.it)  
[domenico.idato@gmail.com](mailto:domenico.idato@gmail.com)

Scientist  
Lexicographer  
Novelist  
Poet



## Planck's Distance

### *Argument*

During our excursion along the twists and turns of science, we had a way to ascertain that the technical term *electromagnetic spectrum* is used to indicate the gradation scale of all filaments of electromagnetic radiations and their wide range in the form of electromagnetic vibrations. We have also learned that these vibrations start from an intensity in the order of 300 million cycles per second, and conclusively end up as an undulating magnetic line a million metres long. This undulating magnetic line is the only thing which has persisted to create a length of time and/or space, and it is also the only thing left out of all those filaments with vibratory motion just mentioned which during the physical process of expansion in time and/or extension in space have cancelled orderly and progressively one another out.

If we take into consideration the expanding and/or extending nature of the wave, and bearing in mind our 2<sup>nd</sup> axiom, we may clearly see the why and the wherefore of this progressive and uniform neutralization. The vibrations generated at the point-source are all around separated, from adjacent point-sources, by an extremely short distance of  $6,67 \times 10^{-23}$  millionth millionth of a centimetre. This distance together with the wavelength changing continuously because of the expansion and/or extension causes a superposition of the waves and when these become out of phase, being mass-less, they cancel one another out *without much fuss*. I am saying without much fuss in contrast to the high energy radiation released from the clash particle-antiparticle with its own mass and the ensuing annihilation marked by a flashing display of fireworks.

In passing, and with a view to put more emphasis on the superposition of the waves, I shall point out that if we consider a given region of free (optical) space, the expansion and/or extension of the electromagnetic process implies:

- ① the existence of waves filling the whole of space,
- ② the existence of superposition, e
- ③ the unavoidable destructive interference.

In our scientific excursion we have also learned that when a wave-packet is torn away from the time-fabric by a disturbance from within and/or from without becomes a mass carrying particle. On the other hand as long as the waves remain as constituent parts of the time-fabric they carry no mass and this explains why waves during their expansion and/or extension cancel one another out without physical consequences.

I envisage the radiating orbits to be those regions of free (optical) space where the vibrations are out of phase and cancel one other out forming buffer zones where the partially superposed vibrations become weaker and if sufficiently excited are more prone to be torn away from the time-fabric. These buffer zones become, so to speak, unstable in the sense that emissions of

radiation can be observed within their orbits. It is clear, then, that electromagnetic waves can interfere destructively to create regions of no displacement (non directional motion). It is also clear that during the expansion and/or extension the interference configuration will continue to stay constant; that is to say, the buffer zones remain always in the same position relative to the originating point-source of the waves.

In addition to it, if we consider that to cover the entire distance of the electromagnetic spectrum we lose all those filaments we started off with, we may, by hypothesis, assume that for each radiating orbit the amount of filaments exiting it must be half the amount entering it. The other half being lost through a mutual neutralizing (superposition) caused by interference of the out of phase expanding and/or extending waves.

What seems to be an arbitrary statement can and will be substantiated by increasing exponentially the cycles of the electromagnetic spectrum. If, in fact, we double the cycles from the end of the spectrum; that is, 1, 2, 4, 8, 16, 32 cycles and so forth, we shall find that by the time we reach, figuratively speaking, the beginning of the spectrum the number of cycles per second is  $3.02 \times 10^8$  (a tiny fraction over the speed of electromagnetic radiations). This is, according to the theory herein put forward, the vibrating speed of the electromagnetic process for the creation of time and/or space at the instant of being generated, and without impediment from external influences; i.e., prior to the expanding and/or extending process, and therefore in the total absence of any gravitating influence. This is the vibrating speed supplied by each and every infinitely small electromagnetic point-source in free (optical) space. This is also in complete agreement with what Planck had to say back in the year 1900.

Planck's constant of  $6.62 \times 10^{-34}$  can, in fact, be obtained by halving the full run of the electromagnetic spectrum. The quantity of this spectrum is  $3 \times 10^{35}$ , dividing it by 2 equals  $1.5 \times 10^{35}$ . This is the equivalent of half the spectrum. If we want to obtain the strength of a single unit of it we divide 1 by  $1.5 \times 10^{35}$  which gives  $6.67 \times 10^{-36}$  which in turn is the reciprocal of half of the spectrum. This is an extremely small value indeed and it will be seen, when comparing it to Planck's constant, that there is a discrepancy of two scientific notation quantities. To provide a reasonable explanation for this discrepancy, we should go back to last century or better still go back to our first argument "Cosmic Background Radiation" where it was shown the reason why cosmic rays were not included in the electromagnetic spectrum scale; an error persisting even today. For then reason given above, Planck had to assess the full run of the electromagnetic spectrum to be  $3 \times 10^{33}$  which did not include the frequencies associated with cosmic rays and which gave him his well known constant.

I should perhaps add here (i) although Planck's formula at the time fitted well the experimental data, it would not be the first time in the history of science that the experimenter unknowingly moves, so to speak, the goal posts to please the striker; (ii) the cosmic rays range of frequencies cover very neatly the two scientific notation quantities missing; (iii) the value of  $6.67 \times 10^{-36}$  is Cavendish's familiar universal gravitational constant over again. In addition, I would like to recall that in the relation

$$\hbar = \frac{h}{2\pi} = 1.054 \times 10^{-34} \text{ joule/sec}$$

where  $\hbar$  (h cross bar) is Planck's "rationalized" constant; the  $2\pi$  factor has the quantitative value of 6.28 and in this context sounds suspect; that is, it was possibly been chosen to fit what were thought to be facts given by experimental evidence. One way or the other makes no much difference in the sense that usually these things are being improved upon with time. Here, suffice

it to say that if the  $2\pi$  factor is applied radially its quantitative value would be 360 degrees and this would make the *rationalized constant*  $1.83 \times 10^{-36}$  which is a lot closer to the universal gravitational constant and therefore to our own constant. It is my view that if the  $2\pi$  factor is empowered with and seen as a radial action operating on Planck's constant it would be more in harmony with the radial character of this constant which in all evidence was extracted from, and is enforced within, a radial source of energy.

### *Digression*

I wanted to present Planck's distance since it is from this distance that everything evolves. It is from here that one must begin if he wants to circumscribe it all. And it is this, the point-source, dictating the absolute precision, the continuous consistency, the qualified determination, the temporal and spatial certainty, the quantitative and constant push for the universal expansion. It is Planck's distance that shapes the precision of the speed of electromagnetic radiations, the perennial expansion in time and/or extension in space, the impeccable oscillatory movement of its filaments, the perfect reproduction of whatsoever signal or electromagnetic disturbance along the linear channels or frequency carrier, the punctual and regular passage of electromagnetic radiations in their nonlinear conformation from the sub-dimensions to the fully expanded dimension (our world) for billions and billions of years over the very same wavelength (1 millimetre) time wise and with the very same oscillatory compactness (microwaves) space wise. This is the *space universe*.

After, very much after, we have the *time universe*. In this universe exists the atom: the milestone of the universe. An incontrovertible truth of all times and in all universal space visible or otherwise. An atom losing an oscillatory cycle for every 14 billion years. An atom from whose oscillatory chain falls for every 14 billion years a sinusoidal filament. If one considers that from Planck's distance (point-source) are created for each second of time 299 millions 792 thousands 458 oscillatory filaments or cycles then it becomes impossible for any human mind to conceive that only one and one only of these filaments gets dispersed, gets lost, disappears for every 14 billion years. Hence, a world precise, deterministic, systematic, orderly, and whose connection inbetween parts shows itself to be perpetually lasting along the billions of years.

If all this corresponds to truth and if it is also true that Science and Scientists alike have the task to describe nature, enunciations such as the uncertainty principle, the wave-particle duality, the principle of complementarity and all the rest have stopped and are stopping scientific progress. In particular, the uncertainty principle over which I have given, in one of my recent arguments, a hard judgement it needs to be put under the right light. First, however, I would like to say that almost all which was achieved by the fathers of quantum mechanics, including also Einstein with his judgement over the same discipline and with his relativity, is dated between the beginning and the forties of last century and it was elaborated in all its wholeness in the name of a space empty and of a universe static.

### *Postscript*

I shall now start by saying that Heisenberg's uncertainty principle sustains that it is not possible to determine accurately and at the same time position and velocity of the particle. If we try to measure its position and its velocity these same measurements have some uncertainties associated with them. The uncertainty principle is very powerful, generally speaking there is no disagreement about it. Whether we think in terms of electronic contrivances, satellite technology or the

latest sophisticated computers; the uncertainty principle is the basic concept that made them all a reality of our world. Where is the hidden strength that supports a highly mathematical discipline such as quantum mechanics which is governed by the uncertainty principle which in turn is giving us only probabilities and uncertainties instead of definite answers? We have now a given particle in a quantum state (a mixture of position and velocity) rather than a particle with well designated position and well specified velocity (momentum). We do not get a definite answer after an experimental observation of the microworld; we get only a number of possible answers and the probabilities that each of these has; mark you, probabilities which by their very nature are positive quantities. The micro domain, from our point of view, is much too small. We all can well see the impossibility to assess the microworld and draw well defined answers with a degree of certainty; so that, the alternative has been to work on chance, or on a vague percentage. A percentage of what? We have no choice but ask ourselves: a percentage of what?

The question reminds me of long ago and a leisure-fishing trip with some friends of mine. To someone wishing me a good catch for the day; I replied that I was no fisherman, and that I could only try my best at being one. That someone gave me an answer that has something to do with our discourse. She said: *keep on throwing the line and you will catch them; I am sure a fish will come your way, the sea is full of them.* I was told, I gather, that my chances were good at catching some little fish only because, and only because of their high percentage roaming the sea at any given time.

With Schrödinger's standing wave, what are our chances given by the uncertainty principle at observing a torn away wave becoming a mass carrying particle? How far can we really succeed in pin-pointing an electron? Common sense is telling us that the chances are none if the space surrounding the nucleus of the atom is empty; the same chances are very good, exceptionally good, as any experimentalist will readily tell you, if the same space is permeated by a permanent non-zero source of energy where at any instant of time we find millions upon millions of waves ready to be torn away; and where we can construct a probability distribution of very high degree indeed.

Expressions such as games of chance, blind bargain, leap in the dark are none other than uncertainties. A chance is an uncertainty, it is: *an absence of design in the succession of events.* Do we have an absence of design in the succession of events? Yes! if we believe in the vacuum. No! if we believe in free (optical) space and the time-fabric permeating it. In the latter case we have a comprehensive knowledge of a precise design, we know how these events unfold and there is no need to rely on the uncertainty of this design. We must acknowledge, of course, that we have relied and we are still relying on the uncertainty principle, and one might add, with enviable success. On the other hand, we may remind ourselves that one cannot miss the mark free (optical) space has by far too many waves for that to happen.

In point of fact, I must say that I have no choice but share with Einstein and a few old-timers the view that the uncertainty principle is an incomplete theory. It will suffice until we are willing to accept and to master the design in the succession of events; it will, then, be obsolete and a thing of the past while man, armed with more efficient means, will press forward for a better understanding of the universe. Ever so thankful however, for the unparalleled contribution that this functional principle of physical science made towards the evolution of our scientific knowledge. Moreover, the uncertainty principle is, at present, an essential element in the world of science and an undeniable successful tool for the exploration of our microworld. It has given and it is giving us an orderly lead; and, come to think of it, a faulty order is better than no order

at all. All the same, if we want to think positively, as we should, we must bear in mind at any rate that wherever and whenever someone over there is trying to tell us that the uncertainty principle is a fundamental property of the world; we should not listen to. If we do, we are slowing down scientific progress.

My personal view is that the uncertainty principle is the safest bet there is. To demonstrate the point, here is what quantum theory postulates: *The wave function can be either positive or negative. The probability to find the particle at a position equals the square of the wave function at that position.* The whole thing may and it will be put in the following mathematical form:

$$P(x) = \Psi^2(x)$$

Here, at once and before going any further, I must stop short to decode and comment upon the pictorial symbol representing the wave function  $\Psi$  (psi). The square sign on the wave's symbol indicates a scalar quantity with no direction in space in its dimensions. More specifically, the spread out wave function probability amplitude will determine the state of the system in some position. To put it yet in another way, the equation is unknowingly portraying an existing field permeated by real waves standing there just for the calling. The only thing missing in the equation is the deterministic nature proper of the electromagnetic process expanding in time and/or extending in space. As I have remarked a while ago, no wonder why one cannot miss the mark. To conclude the argument, my own way of interpreting the uncertainty principle is that in any microscopic measurement, the required information is not accessible and the probability relation is no more no less than that of statistical mechanics so-called classic.

I shall now recall to memory how according to the uncertainty principle a physical system under identical circumstances will sometimes do one thing and sometimes another and how we cannot identify the particle with a degree of certainty. I think I have also made a convincing case for the asymmetry of time. There is no doubt that it is the process for the creation of time and/or space that makes both the uncertainty principle with its implied denial of the law of cause and effect and the time symmetry with its implied time reversal, or mirror image unsuited and intrusive in the world we live in.

We are dealing with a deterministic process existing in the “present” from time immemorial. Even though we have been using its mightiness for years, even though we are recalcitrant to recognize and accept it; we are finally and unavoidably confronted with this deterministic element. The universe, when we get to know it better, behaves both positively with no uncertainties and keeps on expanding in the direction indicated by the arrow of time. If, in the impossibility-type postulate, the speed of this evolution instead of being that of the electromagnetic wave were to be that of the sound wave, our physical laws would have hit the right nail on the head. The difference between yesterday and next year would be only a matter of travelling time. If the speed of electromagnetic radiations were easy to handle, things would be quite different; I can certainly see that. To give life and movement to my words, I could add that the electromagnetic wave is the absolute present and, on its way to the past, it is forcibly propelling us into the non-existent future at the speed of 300 million cycles per second. This is all, and we have to make do with it. The idea of running ahead of this speed might be attractive and might boost our ego, but it will also take us into the field of philosophy and if we keep on arguing about it, it will land us in the realm of metaphysics.

### *Conclusion*

With my last comments of practical character, I wanted to put in evidence that the platform of quantum mechanics stands mainly on Heisenberg's uncertainty principle enunciated in 1927 and on de Broglie's wave-particle duality enunciated in 1924. These two concepts together with all the others that crown quantum mechanics' platform have seen the light of the day in the general belief that the universe was static and that space was empty yes, but capacious of unknown and non quantifiable energy. The universe in 1949 was found to be dynamic, in perennial expansion and as such changed many things that previously were never taken into consideration. Space on the other hand has remained even today the way it was: a "vacuum" charged with energy. An empty pocket full of small change (I ask to be forgiven if this makes no sense). A bottomless energy well from where one can take never ending energy. Energy galore. Energy quantifiable only when the wave becomes a particle. Energy which noone can tell you where it comes from or where it is going to, who or what put it there, what is its function, and how long it will last. With a static universe it would have lasted a few days, and I am talking about billions and billions of years ago. With the dynamic universe, or better still, with the universe in full expansion after seventy years (almost three generations of scientists) science to be called such should have specified or it must as quick as possible specify in great details the why and the wherefore the energy at any given energetic level (from cosmic rays to long radio waves) occupies the whole of universal free (optical) space and renew itself at each second of time. Without prejudice to the fact that the universe in expansion should have alerted Science and Scientists to start changing some of the things that I am changing now. Electromagnetic radiations existing in natura allover the universe in their nonlinear conformation in the process of expanding in time and/or extending in space generate a sea of energy. Energy quantifiable in the form of a wave (space world) and in the form of a particle (time world).

Throughout three different arguments of my work, and with reference to what I have called sub-dimensions of time and/or space, I said that their physical presence within free (optical) space is recognizable by a radio or TV antenna. Leaving aside big antennas of all types and measures, a very common whip antenna protruding from the roof of our car is a kind of window that allows us to log into a great number of radio programmes which are all there in the space in which stands the tip of our whip antenna. The only thing we have to do is to turn the small knob of our radio to chase the wavelength and consequently the frequency of the radio station.

The wavelength was always associated to time by Science and Scientists through the relation  $f = 1/T$ , the frequency therefore possesses the dimension of inverse time. In this piece of work of mine, I associate swith mathematical backing and for the first time in the history of science the frequency of oscillations with space. It is therefore the compactness of radiations of a given sub-dimension that identifies the oscillatory motion of the filaments of electromagnetic radiations; and this knowledge will allow the operator to log directly into the type of space required to carry out the work at hand. We may therefore sustain that the time and/or space sub-dimensions go from Planck's distance (cosmic rays) up to the length of 1 millimetre (microwaves) where they leave the microworld to manifest themselves in the fully expanded dimension and here they leave and indelible mark of their own passage covering like a snow mantle the whole of the universal surface. The sub-dimensions, as I have just said, occupy the micro section while the fully expanded dimension occupies the macro section of what we may call a foundry where it is shaped time and space and where the expansion in time and/or extension in space create also the outwards push participating thus to the expansion of the universe.

In my work I used a cone-like electromagnetic spectrum (see figure 3 of the first argument Cosmic Background Radiation) to present electromagnetic radiations in their nonlinear conformation (expansion in time and/or extension in space) which is the primary function of radiations and in their linear conformation (Maxwell's radiative field) which is the other function born from the first one as a logical consequence. So that, the universe has two *manifolds* one running transverse to the other and this explains why for a hundred years now Science and Scientists haven't been capable and if they don't move towards me will never be able to coordinate (unify) the four fundamental forces of the universo which moves, and it always moved, in two distinct and separate ways.

Let us now list the main characteristics of this new world the way I have presented it in this work of mine.

- ① Planck's distance (the point-source), the way I tried to represent it in the cover, consists of a magnetic monopole generated by the constant and uniform speed of the universe in expansion. The monopole at the very instant of its creation, and in obedience to Faraday's law, induces an electric field which in turn induces a magnetic field which in turn induces an electric field etc..
- ② Planck's distance (the point-source) contains and encloses the energy of the monopole (300 million cycles or filaments with oscillatory motion). The energy is renewing itself at each second of time.
- ③ The energy acquired by the magnetic monopole, by inducing an electromagnetic chain, creates also a nonlinear conformation of electromagnetic radiations represented by a cone-like electromagnetic spectrum with all its energetic levels.
- ④ Each energetic level creates and distinguishes time with the wavelength (enlargement of oscillatory filament or cycle) and space with the electromagnetic compactness (number of oscillatory filaments or cycles).
- ⑤ The *manifold* is the legitimate *habitat* of filaments with variable sine curve which come to form the electromagnetic waves. There are sporadic electromagnetic disturbances or signals in transit along the radiative field (same frequency and same wavelength to infinity). And there are also sporadic particles born and instantly extinct by annihilation in the nonlinear field [changing wavelength (time) and frequency (space)]. This is a local process for local consumption along which operate the universal expansion and conversely the force of gravity from Planck's length to the length of 300 million metres].
- ⑥ The *manifold* therefore is a world where everything moves at the speed of electromagnetic radiations apart from sporadic particles forced by an electromagnetic excitation to leave the spatial world and fall materializing themselves in the temporal world. It is clear then that the definition "sub-atomic" in this case is simply incongruous.

There is something else which I shall resume in another occasion. I shall now close with a thought turned to the path that Science and Scientists have decided to take and that from the ether led to empty space, to the vacuum carrying energy, to the virtual particles, to the ethers and condensed matter; a long and dusty road.

7<sup>th</sup> of May 2018

Domenico Idato  
[info@idato.it](mailto:info@idato.it)  
[domenico.idato@gmail.com](mailto:domenico.idato@gmail.com)

Scientist  
Lexicographer  
Novelist  
Poet



---

## Physical expansion of the Universe

### *Foreword*

The following three fundamental axioms are the foundation pillars upon which the proposition herein put forward rests.

- I. Time and space are physically created by an electromagnetic process of temporal expansion and/or spatial extension to be identified with the existing electromagnetic spectrum.
- II. Time and space have their origin in each and every electromagnetic pointlike point-source in free (optical) space as well as in matter.
- III. Given (I) and (II), it follows that the speed at which time and space are created: (a) is the upper limit and dictates the physical laws in the world we live in (fully expanded time dimension), and (b) it is a function of linear and nonlinear motion in free (optical) space.

In particular, axiom (II) implies that space is permeated by an all-pervasive and permanent substance which I shall herein label *time-fabric*, meaning to say: a permanent non-zero source of energy. From this we may deduce that space is filled by pointlike point-sources which are magnetized by the finite and uniform speed of the expansion and/or extension. These point-sources during their decaying process form all lengths of time and all lengths of space. These lengths are the effective volume containing energy. The entire free (optical) space is, therefore, a universal unsaturated sink with continuous absorption because of the finite and uniform speed of expansion and/or extension.

### *Introduction*

My three axioms have certainly done quite a bit of damage. I have come to find myself in an unpleasant although necessary predicament. The reader will have to agree with me that in such a situation, one can only feel a mixture of dismay for having demolished something that was a milestone of our history and a scientific truth for a very long time, and of intellectual elation for the forthcoming construction on the existing ashes; ashes that will always be of inestimable value. It is in this state of mind, then, that I shall set about to elaborate and present what I may call here the *physical shape* of an infinitely small pointlike point-source in free (optical) space. In the first place then, and by virtue of what we have learned so far, let us ask ourselves: what does *absolute space*, as portrayed in this work, mean? Is it an infinite, unbounded reality? A physical quantity free from restrictions, independent of other systems? Is it a towering quantity where time performs its dynamics? If this is the significance that I have attributed to absolute space, “how” did I come to such a conclusion, and “why”?

To answer first the “how” of my question, I must go back to the beginning of last century. Einstein grew up and accomplished the whole of his relativity in a world believed to be static

by heritage and in a space empty by belief. Whether the distances were finite or infinite: to Minkowski's mind, in creating the four-dimensional geometric space-time framework used in the theory of general relativity and to Einstein's mind space was a component of this static universe. Space was there, always the same and almost palpable; space was empty and was ready to be moulded, and because it was the same unchanging space surrounding a celestial body, it was also eligible to be warped by it. In putting together time and space, Einstein had no misgivings, he never had a doubt. On the one hand, he had a powerful physical entity extracted from the speed of light which he called time, although he did not know that he was dealing with *time in the flesh*; on the other, he had a fixed, empty quantity of space as the main component of his static universe. Putting them together, it was, we may say, the most natural thing to do.

Having answered the "how" of my question and while attempting to answer the "why", we should ask ourselves: when we refer to the expanding universe, what do we mean? What is expanding, and where? Our universe has been often likened to an expanding balloon, hence it can be safely assumed, without fear of being mistaken, that the air inside the balloon, or the space inside the universe is always the same save some continually added quantities, in either case, only all along the perimeter. This implies of course that space inside the universe, being always the same, can be warped, and it can be also retrieved. If and when I try to envisage such a universe, I must remain non-committal simply because there is no scientific evidence of space being warped and there is no scientific evidence of space being retrieved. In point of fact, with respect to the warping of space, I think the reader is already in a position to draw his own conclusions. As for the retrieving of space, what I can propose as a reality of our world is that space is not retrievable and if it is not retrievable it is not there to be retrieved or to be warped.

### *Argument*

In order to prove that time expands and therefore space extends as stated by our second axiom, I must recall what I have said in another forum. I have stated: *the expanding and/or extending wave is ever present at any given point in space and ready to be used by a transverse signal of any given frequency at that point*. How do we visualize that point? What is the physical shape of that point? The physical shape of that point, of any point of the universe, is given to us by the time expansion, by the expanding universe generating locally new space extensions.

Although it is taken for granted that the horizon of our universe expands as light moves outward into space, I do not believe the universe can be explained this way, as some cosmologists would have it. The electromagnetic nature of the expanding and/or extending process for the creation of time and/or space is a local phenomenon, very much so in fact. What we fail to see, in my opinion, is that each and every infinitely small pointlike point-source in free (optical) space is the very edge of it. The best I can do to portray such point in the process of "becoming", within the very fast expanding time and the very fast extending space, is to represent it with a three-pronged conical surface, or better still one eighth of a sphere.

As we can see in figure 1, the vertex represents a point in physical (optical) space called universe, the perpendicular height, or altitude and the slant heights of the cone represent the full scale of electromagnetic radiations along which the oscillatory movement of its filaments expands time and extends space. The spherical triangle at the base of the cone with its three curved sides each 300 thousand kilometres long, highlighting the extension along the three space coordinates (x, y, z), marks the time line which we call second of time and which can be summed up to other seconds of time, and marks also the space limit; the other entity equally fleeting. At the base

line of the cone, time is gone out and gone out forever; space is gone out and gone out forever.

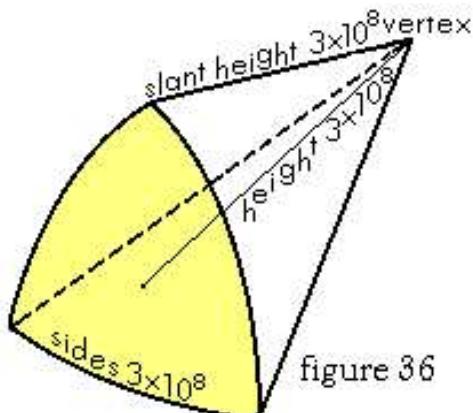


figure 36

Let me now specialize two aspects of my discourse: ① the radial nature of the electromagnetic process for the creation of time and/or space is here portrayed with direction in space (the cone-like section of a sphere) to help the mind by way of the eye, and ② the electromagnetic process is here emphasized as a spatial extension to adhere to the ongoing argument. The reader will have understood that for anyone sitting somewhere the extension of space becomes expansion of time.

Back on course, as I have said on a couple of occasions, we can simultaneously detect hundreds of electromagnetic signals which can coexist in the same tiny bit of space where the tip of the antenna of our radio receiver is resting. What I could not say then and I shall say now is that the “tiny bit” of space is 300 million metres long with a base, or space line as much wide and capable of moving from the present to the past a myriad of electromagnetic signals which we may think of as time envelopes contributing to the venerable age of the universe, or space envelopes contributing to the limitless dimension of the universe. Given the above conditions, any tiny bit of space is not tiny bit at all. Rather, it is a cone-like quantity which is big enough to accommodate for each second of time a large number of electromagnetic signals, and receptive enough to take from the present to the past any electromagnetic disturbance imprinted at the origin within its boundaries, and fast enough to remain on our planet no longer than four hundredth of a second and five and half hours later it has left our solar system altogether never to return. I can see clearly now this ever changing quantity of time within space and I have no doubts whatever that electromagnetic waves could not coexist in the same tiny bit of space if the universe were static and hence if time were always the same time within the same space. Electromagnetic signals are not crowded at all, they can spread their wings along 300 million metres of space for each second of time. This is then, the reason why electromagnetic signals, whether received or transmitted on the same wavelength at different times or on different wavelengths at the same time, do not interfere with one another; either way, they simply occupy a different time and/or space sub-dimension; and this is why we are unable to retrieve a radio signal once that it is on its way, the signal is simply a “time envelope” directed towards the past at the speed of 300 million metres per second and as such non-retrievable. This is also why I have the certainty that time and space are two separate entities created by the same matrix; and finally, to answer the second part of my question, this is why I have, in full possession of my mental faculties, come to the conclusion that space is the absolute quantity, the infinity by definition, all-vast and omnipresent.

At the end of what I may call a labour of love, and to summarize briefly, I have sustained that each and every infinitely small pointlike in free (optical) space gives rise to electromagnetic point-sources that continually emanate electromagnetic waves intended to create time and space, to create all lengths of time and/or space. I have also stated that the electromagnetic process hence the irreversibility of time makes the flow of *change and becoming* a temporal process of both the micro and the macro world. I have also asserted with adequate mathematical support that the nucleus of the atom is surrounded by an electromagnetic spectrum in miniature with the underlying assumption that here too the speed of light, itself also in miniature, is a transverse physical property of the expanding waves. I have equally asserted more than once that the point-source is the apex, the centre, and the edge of the universe implying that the continuous creation of expanding and/or extending waves makes the point-source become the inertial axis to create for the benefit of living and non-living things the hyperbolic universe. I have also just stated that these waves, on their way towards the past, take along with them any electromagnetic disturbance suffered from within and/or from without. This is, then, *the external visualization* that I have of the expanding universe, and this, apart from explaining the transfer of electromagnetic signals, gives a physically articulate account for the expansion of time and for the extension of space. Looking back at my work, I have come to realize, I must say with much delight, that my readers have unknowingly spurred me to ever greater heights. As for me, I think I have come a long way from my humble and moderate beginning. I have at first timidly and sporadically, then more and more systematically, gathered momentum and in one way or another I have presented the foundations of my theory with a mixture of enchantment for the new and melancholy for the old. Viewed in this manner, I see my theory coming to light not only as a way of arranging past and present knowledge and predicting certain physical processes which may or may not find intellectual resistance, but above all as a way of propelling with enthusiasm a subjective flow of new, mathematically sound, ideas.

I have come to the final note, and somehow I feel that I have safely brought to its end the presentation of my work. It would be proper now to say that if my line of inquiry so forcefully articulated would displease some scholars, it will bring some sadness for me too. I might here add that the journey has been long and very fruitful; and the toll, if materializes, commensurate and no different from that paid by the many apostates before me. Meanwhile, it is rather gratifying to know, to possess the well-founded belief, that soon this work of mine will contribute to the evolutive nature of our modern scientific thought. Above all else, there is a certainty within myself, a certainty based on rationale and a little mathematics. It is, then, with joy and in the light and under the auspices of this certainty that for the moment I shall say: arrivederci.

... o ...