ChemXpress
ISSN: 2320-1975

ChemXpress

Research | Vol 10 Iss 3

Worries of a Bio Scientist: Can We Trust the Physics on Which We Rely?

Laurent J

Department of Applied Engineering, Karel de Grote University College, Antwerpen, Belgium

*Corresponding author: Laurent J, Department of Applied Engineering, Karel de Grote University College, Antwerpen, Belgium, Tel: +3236633031; E-mail: laurent.jaeken@hotmail.com

Received: Sep 09, 2017; **Accepted:** Oct 12, 2017; **Published:** Oct 16, 2017

Abstract

Cell biology has entered the age of quantum biology. There are situations in which a single electron matters, particularly with respect to the mind-body dialogue. This necessitates the question: Can we trust the physics on which we rely? To some surprise the answer is definitely: No! This review summarizes the not very much known discoveries of Kanarev and of Thomson and Bourassa, who revealed an astonishing number of mistakes in the very basics of physics as it are instructed in introductory university courses. One mistake elicits another and that might have been the reason why the developers of quantum theory found themselves in front of such a difficult task. Mistakes were found in not considering the unity of time-matter-space, in Bohr's equation for line spectra, in the way Maxwell's equations are applied at the quantum level, in the way the original insights of Coulomb were mistreated, in the historical abandonment of the concept of the aether by the experiment of Michelson an Morley, who disproved a static aether, but not a dynamic one and in the obsession of seeing particles at all levels. In an independent way the above authors developed their own alternative theories in which the weird aspects of classic quantum theory fade and become replaced by Newtonian mechanics and simple algebra. It is amazing how these independent theories developed in much different ways come to quite similar insights. As far as known these two approaches were not put together and compared up to now, while together they are so much complementary and constitute the main elements of a new atomic theory. The advice is to read the original manuscripts.

***Keywords:** Atomic theory; Aether physics; Atomic line spectra; Quantum structure; Quantum mechanics; Newtonian mechanics*

Introduction

Bio-scientists are learning that in living systems sometimes the activation of a single electron matters. Detection of a single photon in the eye is an example. The information processing system of microtubuli in neurons proposed to function as a quantum computer is another [1-2]. The direct *in vitro* demonstration on a single microtubule of resonant radiation linked to this information processing and its global effects throughout the brain seem to underscore this view [3]. It becomes more and clearer that life makes use of coherent systems, even quantum coherent systems and consciousness may depend on it [1-6].

Citation: Laurent J. Worries of a Bio Scientist: Can We Trust the Physics on Which We Rely? ChemXpress. 2017;10(3):130
© 2017 Trade Science Inc.

Experimental

In this context the bio-scientist poses the rightly question: "Can we trust the physics on which we rely"? In my opinion the answer is definitely: no! In this review a number of situations are outlined where it is clear for every un-biased scientist that there are some great mistakes in what looks to be 'classic physics' and 'classic quantum theory'. For a biologist it is not possible to follow the latest advances in such a broad field as physics, but when a mainstream well-established theory is only able to quantitatively explain a very limited part of the available experimental data and a new alternative theory can explain all the data, there can be no doubt that we have to abandon the reigning theory and adhere to the new one until future data necessitate to formulate yet something else. The possible mistakes in reigning physics communicated here in this review are clear-cut cases. Since they regard very basic concepts, generally learned in introductory university courses, some instructors in their busy life might have a tendency to consider the issues too quickly as against common knowledge. Of course: they are. Or they will not find the courage to adapt their courses.

However, in my view this is the only correct way to act. In my previous review in Volume 10 (2) of this journal I gave convincing evidences of some deeply embedded mistakes in mainstream thinking in the domain of cell physiology, going back to the first half of the 20th century. In a footnote, I wrote that there might be deeply embedded mistakes in atomic theory as well, going back to even earlier times [7]. They will be described here. The present review does not pretend to be complete. It only briefly mentions a few very fundamental problems, described by Kanarev and by Thomson and Bourassa [8,9]. The reader does not need to believe me, but he is invited to read the original manuscripts – the least he can do and decide for his own. Of course, it is the task of the community of physicists to engage in an open-minded and critical discussion about the presented topics. Not reading the original works and not initiating an open debate looks to me the continuation of spreading one-sided information and that's against the scientific method per se. Anyhow I decided for myself that there is some very deep truth in the problems attacked by the above authors, which may make 'the difference' for bio scientists, chemists and physicist, as well as for engineers, particularly those studying energy systems.

Some aspects of the work of Kanarev

The unity axiom and its consequences

The work of Kanarev goes about quantum theory in general and atomic theory in particular [8]. His monograph 'The foundations of physchemistry of micro world' starts with a very important primary axiom, the axiom of physics, namely: the 'unity axiom'. It states that matter, space and time cannot be thought of as independent from each other. There is no scientific proof for it. It is an axiom, which is a self-evident logic. Matter cannot exist outside space. And the movement of matter in space is inseparable from the time lapse process. While the 'space-matter-time unity axiom' is self-evident, this evidence has been neglected at some critical times in the history of science. And there some fundamental errors arose, which came to be propagated through scientific education. Kanarev takes Lorentz transformations as a first example. They exist of two separate equations, one for x' and one for t' and that's it. But since time depends on space and space on time, a third equation in x' and t' is required. It is obtained by dividing the first by the second. Taking this necessary correction and addition into account he finds mistakes in applying the geometries of Lobachevsky, Riemann, Minkovsky and Lorentz. As a result there are consequences for the photoelectric effect as described by Einstein.

A new equation for line spectra and a new model for the atom

Next comes a penetrating discourse of Bohr's work on line spectra, which is central to contemporary atomic theory. He finds two mistakes. First, Bohr wrote down a wrong equation to describe the line spectra of elements, which although wrong worked for hydrogen, but failed for the other elements. Because of this failure Schrödinger had to develop a statistical approach to describe the lines of the other elements. This leads to orbital theory, the fundament of present-day chemistry. Secondly, Bohr's view holds that electrons would orbit around an atomic nucleus and in a more probabilistic way this also holds for orbital theory. But an orbital movement is not figuring in his equation for energy exchanges during electron excitation, although – if the orbital model would be correct − it should be there.

In the classic view the energy of an electron is supposed to exist in its orbital movement around the nucleus. The case of the hydrogen atom will be taken as an example, because the data of the line spectrum of the hydrogen atom anyhow supports the equation given by Bohr. For the hydrogen atom this orbital movement fits to a circular movement around the atomic nucleus in the view of Bohr and to a movement somewhere on an orbital cloud according to Schrödinger's probabilistic description. However, Kanarev argues that "When the electron moves from orbit to orbit, binding force of the electron with the nucleus should be changed. That's why energy, which corresponds to this force, should exist and it should be in the spectra of the atoms. There should be a law of dependence of this energy on the number of the orbit where the electron is situated, i.e. on value". So, any equation should contain binding energy E_b, which is different for each excitation level, being maximal for the ground-level and becoming zero, when ionization is initiated and the electron is liberated and no longer bound to the nucleus.

In Bohr's equation for the calculation of the energy of the photon emitted or absorbed during a change in the excitation level of an electron ionization energy E_i is occurring. In Kanarev's new alternative equation this is replaced by binding energy E_b, something really logic. For the hydrogen atom electron binding energy in the ground state is equal to ionization energy. For other elements and their isotopes, however, $E_b \neq E_i$ and that's why Bohr's formula only works for the line spectra of the hydrogen atom (and hydrogen-like electrons in other elements), while with Kanarev's equation (and with an additional equation by him for electrons on deeper shells) all lines of all electrons of all isotopes can be calculated in a simple algebraic way, making orbital theory superfluous. The only difference between the two equations is that energy levels are seen from the other side. In the ground state binding energy is maximal, at ionization it is minimal (zero). Binding energy gives the energy in the system, while ionization energy gives the energy to be added from an external source in order to achieve ionization by disrupting binding and quantitatively opposing binding energy.

Bohr's equation: $E_{photon}=E_i.\ [1/n^2 - 1/(n+1)^2\ ]$

Kanarev's equation: $E_{photon}=E_1.\ [1/n^2 - 1/(n+1)^2\ ]$

With E_i=ionization energy; E_1=binding energy corresponding to the first line; n=excitation level.

Care has to be taken to the following. When in the hydrogen atom, the electron is in the ground state it has a binding energy of 13.60 eV (electron volt), which is quantitatively equal to its ionization energy. Absorption of a photon with energy of

10.20 eV brings this electron to the second state (first excitation level). Logically the energy of the electron should now be 13.60 eV+10.20 eV=23.80 eV. However, this contradicts experiment, which indicates that binding energy is in fact decreased, being 3.40 eV and arising from 13.60 eV-10.20 eV=3.40 eV. In order to alleviate this contradiction a consensus has been agreed that energy of the electron should be considered as negative, which gives,

$$-13.60\ eV+10.20\ eV=-3.\ 40\ eV$$

Kanarev argues that this agreement is inconsistent. Energy per se cannot be negative. An electron has both potential and kinetic energy in its total energy and in the above equation total energy (E_e) is missing. Even if total energy is not quantitatively known, one can introduce it by a term E_e and then it follows:

$$E_e - 13.60\ eV+10.20\ eV=E_e - 3.40\ eV$$

Where, by 13.60 eV is ionization energy and E_e – 13.60 eV is binding energy of the ground state.

When an electron is pulled away from the hydrogen nucleus, its binding energy is changed according to:

$$E_b=E_{i/}n^2=E_{1/}n^2=13.60\ eV/n^2$$

The general law for absorption (and emission) spectra for hydrogen and hydrogen-like electrons is then,

$$E_e - E_i+E_{ph}=E_e - (E_1/n^2)\ \text{thus}\ E_{ph}=E_i - (E_1/n^2)$$

Going further, the energy of the absorbed or emitted photon is also $E_{ph}=h\nu_{ph}$
For photon absorption, which lifts the ground state to the ionized state, it follows $E_i=h\nu_i$

So, ionization energy is determined according to the same relations as photon energy and this also holds for binding energy.

$$E_{b=}E_1/n^2=h\nu_1/n^2$$

In the hydrogen atom $E_1=E_i=h\nu_1=h\nu_i$
So, changes in energy level of an electron in the hydrogen atom can be written as:

$$h\nu_{ph}=h\nu_i -(h\nu_1/n^2)$$

Or dividing by h $\nu_{ph}=\nu_i -(\nu_1/n^2)$

There are only frequencies in this law, nothing which relates to the energy of a particle orbiting around a nucleus. The only conclusion is that electrons are not orbiting around a nucleus. Obviously, a new structural model for the binding of an electron to a nucleus is needed without orbital movement.

Kanarev then develops a new model for the electron and for the binding of electrons in atoms and molecules.
When there are two or more alternative views on a certain topic, all models should be considered. This is science. So let's look to Kanarev's model.

The most obvious alternative is that an electron is not orbiting around an atomic nucleus, but is kept in position at a certain distance from its associated proton by the balance of two forces: electric (attracting by different charge) and magnetic (repelling by like spins). This distance can change by means of photon absorption or emission.

According to Kanarev an electron has a toroidal shape and spins around the toroid's main axis, which links the electron to its proton in the nucleus. The situation in molecules can be illustrated by the hydrogen molecule, whereby all participants are aligned along one axis and rotate around that axis. This axis coincides with the binding axis. It is known that the hydrogen molecule can exist in two forms: the most abundant form with an electron pair in the middle, the more seldom configuration with a proton pair in the middle. In the first one each proton binds its own electron in an electrostatic way and the two electrons, having like charges, are bound by opposing magnetic spin. In the second form the two protons are adjacent to each other and are bound by opposing magnetic spin and each proton binds his distantly located electron in an electrostatic way.

The above corrections of Bohr's mistakes allowed Kanarev to propose the three-dimensional positions of protons and neutrons in atomic nuclei, i.e. it allowed him to propose models for the structure of atomic nuclei. Those models make some additional assumptions and hence they should be looked at critically by specialists. But the two mistakes, which Kanarev discovered in Bohr's theory of line spectra, cannot be denied. Kanarev's alternative is straightforward theoretically and the new equations he developed allow describing all lines of all isotopes in a simple algebraic way. What you want more? Complicated calculations using Schrödinger's probabilistic approach are no longer needed, a definite advantage in the study of complex macromolecules such as proteins, RNA and DNA. The orientation of binding axes in molecules together with binding distances and spectral data are directly relevant and can be introduced in simple algebraic equations. Lewis effects, which are central to Ling's 'association-induction hypothesis' could be calculated directly and compared with experimental data using Ling's equation for cooperative adsorption [7,10]. All this will simplify structural calculations of molecular structure and changes of this structure during conformational changes.

So, since this piece of science is theoretically so straightforward and in full agreement with all experimental data, whereas the classic theory is not, this new alternative should be admitted by the scientific community at large and introduced in textbooks and general courses of physics, chemistry, biology and associated sciences as soon as possible. In this way not only the occasional reader of this review, but everybody can judge.

Limits to the correct application of Maxwell's equations

In the third chapter of Kanarev's monograph Maxwell's equations are scrutinized with the unity axiom as a judge. These equations together form the basis of electrodynamics. Usually, there are four, written in differential form (below). But these

are not the original equations derived by Maxwell in 1865, but a simplification by Heavy side. Originally there were 20 equations with 20 unknowns.

Rot H=(δ D/δ t)+J with H=H (r, t) magnetic field intensity
rot E=-(δ B/δ t) with E=E (r, t) electric field intensity
div D=ρ with D=D (r, t) electric induction
div B=0 with B=B (r, t) magnetic induction

In the above equations r and t are independent variables, but the unity axiom stipulates that in reality space and time are mutually interdependent. Also, the above equations are differential equations in partial derivates, meaning that they are not applicable in general. So, they cannot be used in the context of the unity axiom. The problem is not that they are not general per se, but that everyone things that they are general and applies them as being universal, while they are not. They might work well for the invention of macroscopic electric devises, but they cannot serve in calculations at the level of quantum mechanics. If one does, many mistakes may follow. Those mistakes are described in Kanarev's third chapter. It would lead us too far to repeat all this here. Suffices to say that the heart of quantum mechanics is touched hardly. Kanarev is able to develop a new toroidal structural model for the photon and – amazingly – he is able to derive quite simply the kinematics for the photon using just Newtonian mechanics. Adieu to some of the weird aspects of classical quantum mechanics. It looks to me that classical quantum mechanics is so weird only because some very fundamental mistakes were introduced at the time of its formulation. This is no blame to the brilliant developers of quantum mechanics. The difficulties they faced were huge. The only to blame could be those who do not take the time to read, consider and discuss the discoveries of the scientists of today, who try to decipher the possible mistakes which were committed in the past. In science one learns from mistakes.

Existence of a dynamic aether

The aether (or ether) is often defined as 'a hypothetical medium that was formerly thought to be required for the propagation of electromagnetic waves'. The word 'formerly' indicates that the whole idea is outdated. Yet, all of Maxwell's original work on electromagnetism is built upon this 'hypothetical medium' as are many of Tesla's practical devices. The latter not only include applications in electricity and magnetism, which are still used to these days, but also some apparatus said to extract zero-point energy (vacuum energy, aether energy). If true, Tesla foresaw the energy of the future and – if true – built himself some devices to extract it. Also Kanarev considers the existence of the aether and claims to have developed a zero-point-energy device. Many other patents said to extract zero-point-energy can be found on the internet. Some may work, some other may not. Measurements should be done and in some cases they seem to corroborate the issue. The usual critique that this contradicts all existing knowledge particularly that it violates the first law of thermodynamics, should not lead to close your mind and not to consider the measurements per se. They may only show the existence of an overlooked kind of energy (associated with dark matter [9]), instead of being a violation of the first law. This point, however, is not the aim of this review.

The principle of the existence of the aether, as a real medium for the propagation of light, was generally accepted in the period preceding the 20th century. Newton's study of optics clearly indicated that light has wave properties and waves ask for

a medium which can undulate. In the early 20th century the existence of the aether quickly disappeared from the scene, as a consequence of:

1. The famous experiment of Michelson and Morley, which seemed to definitely disprove the existence of the aether.
2. Einstein's discovery that the photon also has particle properties.
3. The development by Einstein in 1905 of his relativity theory, which appeared as an alternative explanation to those phenomena which were previously thought to rely on the existence of the aether.

The question posed was: If one has to describe movement, one needs a reference frame with respect to which movement takes place and can be described. The aether was supposed to be the most obvious space-time-reference-frame, the 'static' grain of the universe, which stood on place. But Michelson and Morley apparently proved its non-existence. So, Einstein proposed the existence of a dynamic, non-stationary, relative, changeable and flexible space-time-reference frame described in his relativity theory. But his space-time-reference frame is something abstract, geometrical and mathematical. So, in this way the appearance of his theory reinforced the idea of the non-existence of the aether as something with more physical attributes.

However, the experiment of Michelson and Morley only disproved the non-existence of a static aether and not that of a dynamic aether. Just suppose the aether being something dynamic and this concept may disclose some of his more physical secrets, which remain untouched when only relativity theory is continued to be used.

In this respect the 'Aether Physics Model' (APM) of Thomson and Bourassa [9] needs to be mentioned. It describes a large number of important aspects of quantum theory, particularly quantum structure, but also reveals some additional mistakes. There are some important similarities with Kanarev's new atomic theory which will be listed in the discussion, but the approach is totally different.

Some Aspects of the 'Aether Physics Model' of Thomson and Bourassa

Defining the aether

Thomson and Bourassa took a remarkable approach. Instead of applying the classic 'meter-kilogram-second' dimensional system, they developed their own system adapted to the size of electrons and protons [9-12]. The unit of length is 1 Compton wavelength, the unit of time expressed as frequency (1/time) is 1 quantum frequency, the unit of mass is 1 mass of the electron, etc. So, the numerical value of all coefficients appearing in this measurement system becomes one. This very much helps the better understanding of dimensions, particularly at the quantum level. This approach leads them to find a mistake in the way the law of Coulomb is used (see further). But it also helped to define what they call 'an aether unit', the unit in which an electron (together with its corresponding positron) or a proton (together with its corresponding anti-proton) can reside, or which in a high vacuum can also be empty. In this way the concept is proposed that the aether, the fluidum for photon conduction (which consists of a real and a virtual part), consists of a dynamic flexible ensemble of aether units.

Results

They defined the aether as a field and aether units as the 'primary units of physical and non-physical existence equal to $16\pi^2$ times Coulomb's constant'. In this way they were attributing it some physical properties and making it quantifiable. Aether units could be considered the dynamic 'units' of 'space-resonance', which is a more fundamental concept than 'space-time'. In their words: 'aether is a dynamic fabric of space-resonance composed of independent quantum units. Each unit of aether contains three dimensions of length and two dimensions of time (this is distributed frequency, which is the unit of resonance). In addition, aether also contains one dimension of mass, two dimensions of charge and spin. Together the above named dimensions produce a quantum unit of rotating magnetic field'. Resonance is frequency squared ($freq^2$) or 'distributed frequency'. The mass of all aether units corresponds to dark mass.

A personal comment on the term 'aether units' is made, since it may give the impression that the word 'unit' is against the idea of the aether as a continuum. And that would also be against Kanarev's unity axiom. Though Thomson and Bourassa depict their aether units in nice illustrations as something clearly delineated, they also defined the aether as a dynamic field and the concept of a field is that of a continuum. Therefore, in my understanding the delineation of the aether units is more comparable to the isobars on a weather map. They are the iso-surfaces in the continuum of space-resonance where the field has a particular value able to interact with electrons, protons, etc.

An aether unit, as it comprises both real and virtual reality, presents as two touching spheres, one real and one virtual. It has four spin positions: in the real realm one to accommodate an electron, which is linked to a positron in the virtual realm and one for proton linked to an antiproton in the virtual realm. Each position is characterised by a half spin. The structure of one of these spin positions when seen in 5-dimensional space-resonance (3 lengths, 2 frequencies) graphically presents as a tubular loxodrome ($4\pi^2$) at the surface of one of these spheres. To accommodate an electron-positron pair, then needs a tubular loxodrome over the two spheres ($8\pi^2$). Also a photon, which necessitates both the real and the virtual realm, has this $8\pi^2$ geometry in space-resonance, in agreement with having 1 spin. In the aether unit four spin positions lead to geometry of $16\pi^2$. The surface area of each half-spin tubular loxodrome is always equal to the Compton wavelength squared. These graphical presentations are, however, not spatial geometries, but representations in space-resonance. When only looking to it in a Cartesian diagram with 3 lengths the 3D-geometrical shape shows up as a cardioid, which belongs to the ensemble of 'toroid-like' geometries. Aether units can expand and contract, as can for instance the electrons which they accommodate. Atom-bound electrons expand and contract during excitation or relaxation when they absorb or emit photons. Their toroid-(like) shape keeps a constant surface corresponding to the constancy of their primary angular momentum expressed in Planck's constant. But this toroid-(like) shape can get a thinner internal diameter combined with a wider overall diameter or the reverse.

Planck's constant also applies to protons, implying that they have the same angular momentum as electrons and their toroid-(like) shape has the same surface, but the internal diameter is much thicker and the overall diameter is much smaller than that of electrons. The superposition of an aether unit containing a proton (plus antiproton) and an electron (plus positron) yields a neutron, whereby the superposing process is accompanied by the liberation of a neutrino, which can move between aether units.

An important tenet of APM is that all physical existence ultimately derives its geometry from the aether. Aether units are not physical particles. They are more like a field of rotating magnetic moment that acts as an eventual container for angular momentum (electron-positron couples, proton-antiproton couples. The latter's angular momentum must be exactly of the same magnitude as the aether spin positions. If not they will wander between aether units, unable to interact with the physical world, as neutrinos do. The aether is the non-physical 'field' in which physical matter exists.

The aether is not a wave, but because of the independency of the aether units (comparable to the gaseous state), aether units can produce waves, even without photons travelling through them. These are like longitudinal waves of 'gaseous' aether movement, quite similar to the way Tesla had in mind, when he devised all its electric apparatus. In Tesla's view these waves might travel faster than light, a possibility which was also suggested by the famous thought-experiment of Einstein-Rosen-Podolsky.

An aether unit corresponds to the formula:

$$A_u=16\pi^2 . k_c$$

With A_u=aether unit, $16\pi^2$ referring to the geometry of the 4 spin positions as seen in space-resonance and:

$$K_c=m_a\lambda_C^3F_q^2/16\pi^2e_a^2 \text{ (Coulomb's constant)}$$

With m_a=mass of an aether unit, λ_C=Compton wavelength, F_q=quantum frequency and F_q^2=quantum resonance and e_a^2=electrostatic charge of an aether unit.

This equation can also be written as:

$$A_u=16\pi^2 . c . Cd . \mu_0/\varepsilon_0$$

With c=speed of light in vacuum, Cd=conductance, μ_0=permeability of vacuum and ε_0=permittivity of vacuum.
Clearly, these quantifiable descriptions tell something more as compared to Einstein's relativity theory.

Wave-particle duality questioned

Thomson and Bourassa's attention to dimensions aims at describing the structure and properties of electrons, protons, neutrons and aether units. For instance, they describe electrons by Planck's constant, which represents angular momentum

$$h=m_e . \lambda_c^2 . F_q$$

With m_e: Mass of electron ; λ_c: Compton wavelength ; F_q: Quantum frequency.

According to them "Planck's constant is generally defined in modern physics as: 'The constant of proportionality relating energy of a photon to the frequency of that photon'. The standard model has missed the fact that Planck's constant is actually the physical quantification of the electron. It could be taken as a general rule that if any unit or constant shows up in physics, it has real-world significance."

In the above formula for Planck's constant there is mass, length squared, which is a surface, not a volume and frequency or 1/time. Together this is angular momentum. So, from this Thomson and Bourassa deduce that 'an electron is primary angular momentum'.

One could remark that an electron has also charge, namely unitary negative charge. But in their theory the electron adopts this charge from the fact that it occupies the negative part (with unit negative charge) of the real part of an aether unit, in which the angular momentum (electron) gets captured due to its exact fit. Also some other properties are derived from the electron's inhabitancy of the negative part of the real part of an aether unit.

Since Thomson and Bourassa take Planck's constant as the description of an electron, it is clear that an electron and similarly a proton, do not have volume, but are only surface, which depending on the coordinate system can be depicted as that of a tubular loxodrome or of a cardioid, i.e. hollow tube-like toroidal structures which have two different radii, as also mentioned by Kanarev. Planck's constant makes clear that the surface of an electron and similarly that of a proton remains constant, but this can be obtained by many different coupled values for their two radii.

The fact that the electron and similarly the proton do not have volume makes sure that they are not a particle. They are neither particle nor wave. But the spinning of the toroid has a frequency. The question which I pose here is: if so, are they 'matter'? When we think about the word 'matter' as it is used in a daily context, we automatically think about volume and something particulate. They might be the building blocks of matter, but are themselves 'angular momentum' and this means only having surface. The aether unit, in which they reside, however, has volume since one of its properties is λ_c^3, which in the mks-system is expressed in m^3. Electrons and protons also accrete supplementary properties such as charge and magnetic spin by occupying non-physical aether units. So, it is proposed here that what we call 'matter' originates from combination of the angular momentum of electron (s) and proton (s) and eventually neutron (s) and positions of the dynamic fluidum of the aether, which has volume by virtue of the λ^3 factor being present in the definition of the aether units.

Because electrons and protons are not 'particles', it is not good to speak about 'elementary particles'. Thomson and Bourassa call electrons, protons, neutrons, positrons and antiprotons 'onta', after the Greek word for 'existing things'. Maybe such word should be really adopted in general in order to turn the attention away from the concepts of particle as well as that of wave, when describing the quantum world. So, 'onta' constitutes the hierarchical level below the level of elements/atoms/isotopes. Describing all physical things as 'particles' is becoming an undesired obsession in physics. A human body is not built of smaller human bodies and these of yet smaller human bodies, etc. No, it is built of organs and organs are made of tissues, tissues of cells, cells of molecules, molecules and atoms of 'onta' residing in aether units. And if

there is a hierarchical level below, it will have yet different properties. This hierarchic non-particle view might be very important to come to an understanding of consciousness.

In conclusion, both the work of Kanarev as a whole and that of Thomson and Bourassa as a whole appear sufficiently solid, particularly with respect to the structure of the electron, proton, positron, antiproton, neutron and photon to adopt the toroid/cardioid structure and to eliminate the concept of wave-particle duality.

Misconceptions about electric charge and weak force

Thomson and Bourassa demonstrate that modern physics has many errors and that many of them arise from incomplete understanding of the nature of charge. The first measurements of a small but perpetual electric current flowing through a toroidal ring of ordinary metal at near zero temperature in the absence of an external power source were made in the laboratory of Harris. They are an illustration of coherence. What is observed is believed to be a direct demonstration of the quantum state of electrons, which possess the generally agreed property of perpetual motion. Mainstream science considers the charge of the electron to be of electrostatic nature. By 'static' they mean that it does not move. Yet they maintain that the movement of this charge generates magnetic fields. This is a huge contradiction.

In the APM of Thomson and Bourassa this contradiction is eliminated by the insight that there exist two distinct manifestations of charge, which are related to each other, but are yet two different phenomena. The 'static' electrostatic charge belongs to the 'aether unit' properly. It is distributed over the surface of the double sphere (real and virtual spheres) of the aether unit, one of the spheres being positive, the other negative. Charge is always present at a surface. The spherical shape of the aether-unit half makes that electrostatic charge has radial geometry. The electron or another onta residing in an aether-unit's half has toroid-like geometry and its mass, which has zero dimension, exerts a spinning movement at the surface of this toroid. The moving mass has a one-dimensional character because moving is distance per unit time. Hence moving mass appears as a spiralling line at the surface of the toroid. Due to this movement this mass generates the subatomic entity's electromagnetic charge (or strong charge), which appears distributed at the surface of the toroid and hence as toroidal geometry. So, two corresponding forces occur: respectively electrostatic force and electromagnetic force (strong force), which are both quantitatively and geometrically different. Thomson and Bourassa directly observed and measured the existence of these two manifestations (or types) of charge. It appeared that they stay into a quantifiable relation to each other, which can be expressed into an equation. So, electrostatic charge of the aether unit and electromagnetic charge associated with an onta occupying an aether unit are different types of charge with different geometries and relate to each other according to the differences in these geometries. These differences will become clear after the next misconception is tackled.

Thomson and Bourassa very much scrutinized when it comes to dimensions. Mass is a point (zero dimension) and when moving at a speed it draws a line (one dimensional). This line as it moves scans a surface, the surface of a loxodrome spin position. This definition does not necessitate that this line is a straight line. A kind of spiral is more appropriate.

Gravitational force only comes into play, when one considers at least two masses. The force is exerted by the two masses along the straight line connecting the midpoints of the two masses. The word 'point-charge', often used in electricity is a real misnomer. Charge is always distributed over a surface and hence should be written as e^2 and be quantified in units of coulomb^2, as was originally done by Coulomb. There was still some correctness in the cgs dimensional system, rather by accident.

The real mistake originated during the transformation to the msk-system and the symbol 'e' became common. $e=1.602 \times 10^{-19}$ coul should be replaced by $e2=2.567 \times 10^{-38}$ coul^2 By discovering this important mistake Thomson and Bourassa established a major breakthrough leading to the distinction of the two kinds of electric phenomena associated with charge: electrostatic and electromagnetic. Since electrostatic charge is primarily a property of the aether unit, an aether unit devoid of an electron or proton, i.e. an aether unit in the vacuum still has electrostatic charge, indicated as e_a^2. When an aether unit becomes occupied by an electron or proton, the later picks up the unit's electrostatic charge of that aether unit. Electrostatic force comes into play when considering at least two aether units, whether or not filled with an electron or proton. In the case of electrostatic forces surfaces are attracting or repelling each other. When an electric charge, having two dimensions, starts to move, it follows a path and hence a third dimension is added, although the charge itself remains two-dimensional. But, as additional kinetic energy is added, the electric energy of the total system is increased. Therefore Thomson and Bourassa speak about $e_{max}^2=1.400 \times 10^{-27}$ coulomb^2, which is also quantitatively different from $e^2=2.567 \times 10^{-38}$ coul^2.

One of the consequences of solving the problem of the above misconceptions connected to a wrong interpretation of the work of Coulomb necessitates reconsidering the different kinds of forces. Traditionally four different forces are recognized: gravitational, electromagnetic, strong nuclear and weak nuclear force. According to Thomson and Bourassa only three kinds of forces exist, those mentioned above: electrostatic, electromagnetic, which appears to be equal to strong nuclear force and gravitational. Weak nuclear force appears not to be a force of its own but a ratio of two forces, namely: the ratio between electrostatic and electromagnetic force and hence it is dimensionless.

$$e^2/e_{max}^2=8\,\pi\,\alpha$$

With α as the fine structure constant of the respective onta (electron, proton,...) so that the weak interaction (ratio) is different for each on.

Coulomb's electrostatic constant refers to the fixed proportionality between electrostatic force and electrostatic charge. Similarly Newton's gravitational constant is the fixed proportionality between gravitational force and mass. In APM the newly discovered aether unit constant is the proportionality factor between the unit of rotating magnetic field and the electromagnetic force. These 3 forces are known to operate at right angles to each other. And because of the fixed proportionalities there is no obstacle to consider these three forces as one force with different aspects in the 3 geometrical directions.

This finding can be considered as the first unified force theory many scientists are looking for. The accumulation of several mistakes in classic theory, however, made this search hard and even without prospect. Thomson and Bourassa called this unified force 'G-force'. G-force is enormous. It keeps the whole universe together. They contemplate about. Science cannot

tell what this force is, neither where it is coming from, but it can be calculated. Also in the classic view there is no explanation to the origin of forces.

From the above it appears that the quantum world of electrons, protons, positrons, antiprotons, neutrons and antineutrons consists of neither particles nor waves; and there is good hope that a simple description in algebraic terms is within reach, apparently just by applying Newton's laws.

Discussion and Conclusion

In my opinion the mistakes described in this review are real. The evidences are strong both at the theoretical and the experimental level. They necessitate the rewriting of introductory university courses of physics and of general chemistry. Though the approach of Kanarev and that of Thomson and Bourassa is very different, there are many remarkable similarities. They include:

1. Everything should be regarded in a unitary way.
2. Particular scrutiny is taken to the correct interpretation of dimension.
3. A dynamic aether exists.
4. Electrons, protons, neutrons and photons possess toroid geometry.
5. These toroids are spinning around their main axis.
6. Electrons and protons are neither wave nor particle.
7. The quantum level can be described by simple algebraic equations.
8. Probabilities are not required.
9. The mechanics of Newton can be applied.
10. Maxwell's equations are not correctly used at the atomic level.

Many readers might be troubled with this information. There is but one way out. The issues are too important. Read the original work and decide for yourself. But do not silence such important information. When there are two or more views about the same important topics, try to know all of them and communicate them all. The descriptions given here are too brief and do not tell all aspects. They are but an appetizer. But both monographs are very concise and not too lengthy. They are surely understandable for students. After all they are simpler to understand than classic quantum physics. Anyhow, this information is absolutely needed in introductory university courses. For the time to come both classic quantum theory and the important alternatives presented here should be presented side by side, so that also students can make a choice.

REFERENCES

1. Hameroff SR, Watt RC. Information processing in microtubules. J Theor Biol. 1982;98(4):549-61.

2. Hameroff SR, Penrose R. Consciousness in the Universe: A review of the 'Orch OR' theory. Phys Life Rev. 2014;11(1):39-78.

3. Ghosh S, Sahu S, Bandyopadhyay A. Evidence of massive global synchronization and the consciousness. Comment on “Consciousness in the universe”: A review of the ‘Orch OR’ theory” by Hameroff and Penrose. Phys Life Rev. 2014;11(1):83-4.
4. Ho MW. The rainbow and the worm. The physics of organisms. 3rd edn. 2008; World Scientific, Singapore.
5. Jaeken L. A new list of functions of the cytoskeleton. IUBMB Life 2007;59(3):127-33.
6. Del Giudice E, Voeikov V, Tedeshi A. The origin and the special role of coherent water in living systems. In: Fels D, Cifra M, Scholkmann F, editors. Fields of the cell. Research Signpost Fort PO, Trivandrum, Kerala, India, 2015;95-111.
7. Jaeken L. How the physical-chemical study of cells took a wrong direction some 50 years ago: The greatest scientific error in biological sciences initiated in 1930. ChemXpress 2017;10(2):122-8.
8. Kanarev PM. The foundations of physchemistry of micro world, 15th edn, in Russian; English 10th edn. 2008.
9. Thomson DW, Bourassa JD. Secrets of the aether. Unified force theory, dark matter and consciousness. The Quantum Aether Dynamics Institute, 2004.
10. Ling GN. Life at the cell and below-cell level. The hidden history of a fundamental revolution in biology; Pacific Press: New York, 2001.