EDITORIAL

The Equation We're Looking For Must Be Very Simple!

Sultan Tarlacı
Editor-In-Chief, NeuroQuantology

NeuroQuantology 2011; 4: 601-602

Until today, we still do not know what glue binds together neural activity to sub-cellular molecular mechanisms, or the phenomenon which we call "mind" in our organic brains. In physics however, we more or less know what the gluons are that bind matter together. What kind of an equation could this quantum physical/mechanical equation be, which would join mind/consciousness using the knowledge which we have or may have in the future? Very complex? Simple? Incomprehensible? Inconceivable? If such a linking equation were to be found, it would surely give rise to a new age in physics, the queen of existence and science.

In fact, in order to make this deduction, looking at the history of both classical and quantum physics, examining equations which have caused great revolutionary changes has in the past given intuitional information. When we look at these equations, this is what there is to see: revolutions have been brought about in physics by beautiful, simple and generalizable equations.

Of course, the derivation of these equations started from more complex equations involving advanced mathematics. But in the end what was arrived at and caused the revolution was nearly always an equation which was simple and beautiful, and which could be generalized. For quantum physics, the glue which binds the elements in the equations together is always the Planck constant. As will be seen in **Table 1**, the equations which have been the end-product of creative people and which have brought in new eras are in fact not at all complex, but so simple that even a high-school student could understand them easily.

Science was at first a unitary activity but with time it separated into different branches and specializations. But as everyone would accept, these branches which seem separate are constantly in contact with each other. Quantum physics is also a part of this great jigsaw puzzle. And in quantum physics as in other sciences, all theories consist of two parts: the models on which the equations are formed, and the way in which these models are harmonized with observation. Quantum physics has both of these. In the future, an equation which can bring quantum physics together with the mind, consciousness and the operation of the brain will not be too complex. We know what we are waiting for we know who we are expecting it from, so all we have to do is waiting for the zeitgeist – the spirit of the time!

See next page for **Table 1.**

Corresponding author: Sultan Tarlacı, MD
Address: Özel Ege Sağlık Hastanesi, 1399 sok No 25 35220 Alsancak İzmir Türkiye
Phone: + 90 232 463 77 00
Fax: +90 463 03 71
✉ journal@neuroquantology.com
*e*ISSN 1303-5150

Table 1. Equations which caused revolutions in the history of physics, their creators and the years when they appeared. "**.**" has been used as a multiplication sign. *c*: the speed of light; *h*: the Planck constant; *f*: frequency; *m*: mass; *G*: gravitational constant, equal to approximately 6.68×10^{-11} Nm^2 kg^{-2}; *r*: distance; *q*: load; p:momentum; λ: wavelength; *a*: acceleration. The Planck constant *h* and the speed of light *C* are constants. *E, m, p* and λ are variables. *C* is very large and equates a very small mass into a large amount of energy. The Planck constant *h* is very small, and a very large mass has a very small wavelength. The Planck constant *h* is the ratio of the energy (*E*) of a particle to its frequency (f): *h= E/f*. As frequency increases energy also increases, but the Planck constant always stays the same.

Creator	Equation	Year	Explanation
Newton	$F = G\bullet\left(\frac{m_1\bullet m_2}{r^2}\right)$	1687	Gravity
Newton	$\vec{F} = m\bullet\vec{a}$	1687	The relation of gravity to acceleration
Coulomb	$F = k\bullet\left(\frac{q_1\bullet q_2}{r^2}\right)$	1789	The interaction of masses
Maxwell	$F = qv\bullet B = q\bullet E$	1862	The relation between electromagnetism and electric fields
Planck	$E = h\bullet f$	1901	The relation of energy and frequency for quantum particles
De Broglie	$p = \frac{h}{\lambda} = \frac{hv}{c} = \hbar k$	1904	The equation for wave-particle duality
Einstein	$m_{tot} = \frac{\sqrt{E_{tot}^2 - (p_{tot}C^2)}}{c^2}$	1905	Special relativity
Einstein	$E = \sqrt{(pc)^2 + (mc^2)^2}$	1905	Relativistic total energy
Einstein	$E = m\bullet c^2$	1905	The equivalence of energy and mass
Einstein	$T = \frac{T_o}{\sqrt{1 - \frac{2GM}{Rc^2}}} = \frac{T_o}{\sqrt{1 + \frac{2\varphi}{c^2}}}$	1916	General relativity
Schrödinger	$i\hbar\frac{\partial}{\partial t}\psi(q;t) = -\frac{\hbar^2\partial^2}{2M\partial q^2}\psi(q;t) + V(q)\psi(q;t)$	1926	Schrödinger's wave equation
Heisenberg	$\Delta x \bullet \Delta p \geq \hbar / 2$	1927	The uncertainty principle

Acknowledgements
I would like to thank Mustafa Erol and Sinan Canan for reading and correcting the article.