Quantum physics theory and ECOintention practice: matching concepts?

Christy Duijvelaar, MSc.

Centre for ECOintention / Ubiquity University

Master of Science in ECOintention

Ir. Hans Andeweg and Peter Merry, PhD

17 November, 2021

Quantum physics theory and ECOintention practice: matching concepts?

This paper examines to which extent the key concepts of quantum physics theory match with the ECOintention method of energetic balancing. The tiny scale upon which quantum effects feature is obviously not literally comparable to the large system approach ECOintention has. Nevertheless, the author found interesting conceptual similarities between quantum physical theory and the ECOintention practice.

Quantum physics: key concepts

The theory of quantum physics concerns the smallest particles, as that is where its effect appears most observable. At a larger than fundamental particle scale, traditional Newtonian physics dominate the quantum effects. However, this does not mean that the quantum effects of nature do not exist at a larger scale (O'Neil, 2021). The boundary of measurable quantum effects has shifted in recent years from the scale of fundamental particles, such as an electron[1] to larger molecules and even the natural peptide oligoporphyrin[2]. (Ball, 2021; Fein & Yaakov et al., 2019; Shayeghi et al., 2020). Recently evidence of quantum effects was found at a scale 10^7 larger than the elementary particle scale. Moreover, also the behaviour of water molecules indicates quantum effects, which might be (partially) responsible for the extraordinary chemical and biological behaviour of water (Lavars, 2021). Finally, the internal compass of migrating birds seems to observe the Earth's magnetic field through the quantum sensitive molecule cryptochroom 4, interacting with other molecules under the influence of light (Wilson, 2021; Hore & Mouritsen, 2016).

The concepts of quantum physics surfaced early in the 20th century, starting around 1905 when Albert Einstein realised that light behaved as particles (quanta) and not only as waves. By 1928 the physicists and/or mathematicians Niels Bohr, Edwin Schrödinger, Werner

[1] Mass of an electron is 9.1*10-31 kg, which compares to a rest energy of 0.51 MeV.
[2] Article refers to >25KDa. Da equals $1.66*10^{-27}$ kg or rest energy of 39,5 MeV. Mass of an average oligoporphyrine molecule is $25{,}000*1.66*10^{-27} = 41.5*10^{-24}$ kg or $25{,}000*39{,}5 = 0.9875*10^6$ MeV.

Heisenberg, and Paul Dirac[3] contributed with their thinking, conceptual steps and equations to the foundation of quantum theory. The quantum physics known and applied nowadays underlies nearly all electronical developments of the last decennia, including screens, mobile phones, medical sensors, cameras and satellites. The theory is regularly referred to as 'the best we have', which means that "essentially all its predictions have been confirmed by experiments" (Smolin, 2019).

In summary, the key concepts of quantum physics are:

Wave-particle duality

At its smallest scale everything in the universe has both particle and wave nature, at the same time (Orzel, 2015). A single particle (electron, photon, quark, etc.) appears a vibrating wave packet. These particles form energy and 'show' themselves for example as light beams, electric current or electro-magnetic radiation. In fact, particles are neither particles nor waves, but a third category, until experimental conditions make a particle appear to act as a particle, while other experimental conditions, make the particle appear to act as a wave. Similarly, under some physical circumstances, electromagnetic radiation acts as a wave, and under other physical circumstances, radiation acts as a beam of photons (Ling et al, 2016).

Nature's granularity

Quantum is the Latin word for amount (Techtarget, 2016). In quantum physics it refers to the smallest possible discrete unit of any physical property, such as energy or matter. The term is introduced by Max Planck in 1900 (Orzel, 2015; Coolman, 2014). According to Rovelli (2017) quantum physics has shown that there is "a fundamental granularity in nature, defined by Planck's constant" (p.122). Moreover, the number of distinct physical stages a system can have is finite and not endless. (Rovelli, 2017)

[3] See Annex 1 for short biographies of the founding fathers of quantum theory.

Superposition

Quantum particles behave like particles and like waves – at the same time. It is therefore mathematically impossible to calculate a particle's location. The uncertainty in the particle's position is called Heisenberg's uncertainty (Rovelli, 2021). A particle's position can be described by a so-called wave function, which is a mathematical description of the location of the particle providing the probabilities for the possible results of measurements (Gilligan-Lee, 2019; Orzel, 2015; Rovelli, 2017). The crucial point is, that the actual measurement defines the properties of the particle, including where it is, how it behaves, what spin it has, etc. Its situation before the measurement, before 'looking' is called superposition. Superposition means that there is more than one possible outcome of a measurement (Ball, 2021; Gilligan-Lee, 2019; Rovelli, 2021). An unobserved particle is a 'shimmer of existence', as it is vague both by definition and by nature,….. until it is observed. Then it becomes a particle and appears as a thing with characteristics, such as a place, speed and/or momentum (Cartwright, 2016).

Non-locality

Although Einstein strongly opposed non-locality as a consequence of quantum physics (Gilligan-Lee, 2019; Rovelli, 2021), it has been proven by Bell in 1964 that the results of measurements made at a particular's location can depend on the properties of distant objects in a way that cannot be explained using signals moving at the speed of light (Gilligan-Lee, 2019; Myrvold, Wayne et al, 2019; Orzel, 2015). The 'connection' of two such particles is called entanglement. When two particles are entangled, they behave as a correlated pair and a measurement on one affects the state of both, no matter how far apart they are[4] (Fine, 2017; Gilligan-Lee, 2019, Rovelli, 2021).

A concluding statement bundling these four key features of quantum behaviour is given by Rovelli (2017), by stating that "the reality is contextual" (p. 124-126).

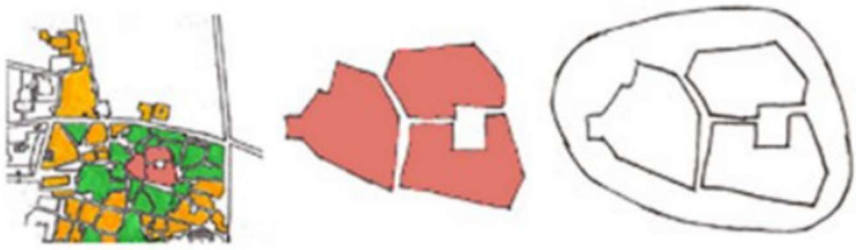
[4] This is also called the 'Paradox of Einstein Podolsky and Rosen.

The ECOintention energetic balancing method

The ECOintention balancing process starts with an energetic scan of the object to be balanced, based upon the request of the guardian(s) of the object/project and their goals. Typical types of objects are organisations or ecosystems, typical goals include increased prosperity, more time, better cooperation, increased biodiversity. The energetic baseline data is collected by connecting to a map of the area, a ground plan of the company or pictures of the object. Such representation of the project/object is energetically connected to the project and allows to assess its energetic parameters (Andeweg 2015/2016). Once the energetic baseline is clear, the energetic balancing starts formally by creating a holon[5].

Figure 1

Example of the steps of creating a holon[6].



The holon provides energetic access to the project's reality and captures a sample of its energy. It serves as a 'tunnel' to the actual project and enables the balancer to assess the project's energy. Every 10-14 days the balancer connects to the project via the holon. The connection is established by rotating the holon into the Critical Rotation Point (CRP) (Andeweg, 2015/2016), which is felt like a 'click' at optimal connection. Hereupon the balancer assesses a variety of parameters of the energetic status of the project/object. The

[5] A holon resembles an energetic resonance box.
[6] https://www.ecointention.com/wat_is_ecointention/ecointention_in_8_stappen_e.htm

data is documented in a standardised form and represented in graphs. The balancer asks the project whether it needs information to transform its energy, additional energy for its vitality or if it needs support in combatting negative, hyperactive or 'death' energy. In case the project needs such support, this is provided in a rhythmic manner[7] by placing an energetic information carrier on top of the holon. The energetic information carrier connects with the object through the holon when they are both in their CRP. Life energy can be added to vitalise this process.

Figure 2

Energetic information carriers used by ECOintention practitioners

The ECOintention method improves the vitality of the project/object, provides access to the information it needs for its wellbeing and increases its resilience to external disturbances. During the balancing process the guardian(s) concentrate(s) on affirming the optimal performance of the object. By affirming the guardian(s) direct the energy flow of the balancing process, thus facilitating the realisation of their goals in the material world (Andeweg, 2015/2016).

[7] 5x2minutes/week usually.

After four to eight months the energetic target values of a healthy project/object are reached. In the stabilisation phase thereafter, the energetic information and life energy provided are fully absorbed. The project/object integrates all information, adjusts to it and materialises (or allows to materialise) it into reality. The guardian often experiences substantial changes in the direction of the set goals during this phase. Continued cooperation of the balancer and guardian(s) is essential to ensure full manifestation of optimal performance. Once the energy is well anchored and aligned the guardian (re)takes full energetic ownership of the project/object, while the balancer disconnects and closes the project.

Matching quantum concepts to the ECOintention method

The following quantum concepts match the ECOintention practice:

1. Non-locality and entanglement

The assessment of the energy of an object happens a) on a distance and b) through a created connection in form of the holon. Capturing an energetic sample through the ‘tunnel’ created or provided by the holon reflects the process of entangling two (or more) particles, after which they act-as-one upon being measured. The balancer senses the energetic parameters of an object through the holon in its CRP and provides information and life energy for the object/project through it. The information flow is immediate and in both directions. Creating the holon is therefore comparable to creating and confirming entanglement and turning it into the CRP comparable to opening non-local communication ports.

2. Superposition and consciousness

Within the quantum physics the evidence points at the actual measurement defining the properties of a particle. Firstly, in the ECOintention method the balancer measures the energetic status of the project and confirms these values in the observation form and graphs. By doing this, the balancer pins the energetic situation down, which is then reflected into the

reality of the object. In quantum terms, the balancer ‘let the wave function collapse and the project’s status falls from superposition to defined characteristics and/or values’.

Secondly, the act of measurement might mean that consciousness is required to pinpoint properties, because only an observing i.e. conscious being can report the values measured. This implies it is consciousness triggering manifestation or the emergence of a life process by influencing probability of a quantum state (Andeweg, 2016, p.19-20; de Morais Smith, 2021; Merry, 2012).

3. Wave-particle and energy-matter duality

The first discovery leading to quantum theory was that light has both a wave and a particle character. Light quanta were called photons, which we now know as one of the elementary particles of the universe. Einstein realised that energy and matter were interchangeable, after which quantum theory took it further by stating that elementary particles reside in a stage before being either wave or particle, before being either energy or matter. ECOintention provides information (through energetic information carriers), combined with guided attention of the guardian (through his/her affirmations), which then materialises in the project/object. Thus, ECOintention overcomes the energy-matter duality by informing/transforming the project’s status when it is neither energy nor matter. One may call this ‘mind over matter’ (Andeweg, 2016; Kastrup, 2021) or, in quantum terminology I propose ‘seeding in superposition’.

Conclusions

Based on my experiences the ECOintention method is a conscious craft for mindful professionals, be it on the balancing (sending & sensing) or the guardian (receiving) end of the energetic balancing process. Based on literature research of the state-of-the-art of quantum physics and my experience as ECOintention practitioner I conclude that the ECOintention method can be described as an application of the key concepts of quantum

physics at our daily life scale. Yet, the scientific evidence of quantum behaviour only refers to the smallest of all physical appearances: elementary particles. I remain hopeful that one day quantum physics meets the ECOintention practice and underpins it scientifically. Until then, I practice ECOintention as an art of consciousness, while following the scientific developments of quantum physics theory. Because, after all "*when quantum is your object, you matter as a subject!"*.[8]

[8] Quantum analogy and free translation of the statement of H. Andeweg: "ECOintention is geen koud, maar een warm kunstje"

References

Andeweg, H. ECOintention in 8 Steps. *ECOintention*, https://www.ecointention.com/wat_is_ecointention/ecointention_in_8_stappen_e.htm .

Andeweg, H. (2015). *Scheppend Leven: Over De Grondbeginselen Van Energetisch Beheer*. Juwelenschip.

Andeweg, H. (2016). *The Universe Loves a Happy Ending: Becoming Energy Healers for the Planet, Organizations, and Ourselves*. Hunter House, an Imprint of Turner Publishing Company.

Ball, P. (2021). How Big Can the Quantum World Be? *Quanta Magazine*, 18 Aug. 2021, https://www.quantamagazine.org/how-big-can-the-quantum-world-be-physicists-probe-the-limits-20210818/.

Cartwright, J. (2016). Collapse: Has Quantum Theory's Greatest Mystery Been Solved? *New Scientist*, 13 July 2016, https://zephr.newscientist.com/article/mg23130820-200-collapse-has-quantum-theorys-greatest-mystery-been-solved/.

Coolman, R. (2014). What Is Quantum Mechanics? *LiveScience*, Purch, 26 Sept. 2014, https://www.livescience.com/33816-quantum-mechanics-explanation.html .

De Morais Smith, C. (2021). Can Consciousness Be Explained by Quantum Physics? My Research Takes Us a Step Closer to Finding Out. *The Conversation*, 19 July 2021, https://theconversation.com/can-consciousness-be-explained-by-quantum-physics-my-research-takes-us-a-step-closer-to-finding-out-164582.

Fein, Y., et al. (2019). Quantum Superposition of Molecules beyond 25 KDa. *Nature Physics*, vol. 15, no. 12, 23 Sept. 2019, pp. 1242–1245., https://doi.org/10.1038/s41567-019-0663-9.

Fine, A. (2017). The Einstein-Podolsky-Rosen Argument in Quantum Theory. *Stanford Encyclopedia of Philosophy*, Stanford University, 31 Oct. 2017, https://plato.stanford.edu/entries/qt-epr/#DeveEPR.

Gilligan-Lee, C. (2019). The Quantum World Is Infamously Weird – Now We Might Know Why. *New Scientist*, 13 Mar. 2019, https://www.newscientist.com/article/mg24132210-300-the-quantum-world-is-infamously-weird-now-we-might-know-why/.

Hore, P. J. & Mouritsen H. (2016). The Radical-Pair Mechanism of Magnetoreception. *Annual Review of Biophysics*, vol. 45, no. 1, 5 July 2016, pp. 299–344., https://doi.org/10.1146/annurev-biophys-032116-094545.

Kastrup, B. (2021). Mind over Matter. *Beshara Magazine | Unity in the Contemporary World*, 22 June 2021, https://besharamagazine.org/science-technology/mind-over-matter/.

Lavars, N. (2021). First Observations of a 'Quantum Tug' Help Unravel the Weirdness of Water. *New Atlas*, 26 Aug. 2021, https://newatlas.com/science/first-observations-quantum-water/.

Ling, S.J., et al. (2016) Wave-Particle Duality. *University Physics Volume 3*, OpenStax, https://opentextbc.ca/universityphysicsv3openstax/chapter/wave-particle-duality/.

Merry, P. (2012). Fundamentals of Cosmometry. *Post Paper submitted in partial fulfilment of the requirements for the PhD in Wisdom Studies at Wisdom University*.

Myrvold, W., et al. (2019). Bell's Theorem. *Stanford Encyclopedia of Philosophy*, Stanford University, https://plato.stanford.edu/entries/bell-theorem/.

O'Neill, M. (2021). Can We See Quantum Nonlocality at the Macroscopic Scale? *SciTechDaily*, 5 Oct. 2021, https://scitechdaily.com/can-we-see-quantum-nonlocality-at-the-macroscopic-scale/.

Orzel, C. (2015). Six Things Everyone Should Know About Quantum Physics. *Forbes Magainze*, 8 July 2015, https://www.forbes.com/sites/chadorzel/2015/07/08/six-things-everyone-should-know-about-quantum-physics/?sh=97de1f77d467.

"Quantum Physics." *New Scientist*, https://www.newscientist.com/definition/quantum-physics/.

Rovelli, C., & Berg H. van den. (2017). *De Werkelijkheid Is Niet Wat Ze Lijkt: Een Reis in De Wereld Van De Quantumzwaartekracht*. Amsterdam University Press.

Rovelli, C. & Berg H. Van den. (2021). *Helgoland: Het Verhaal Van De Kwantumfysica, De Ingrijpendste Wetenschappelijke Revolutie Aller Tijden*. Prometheus.

Shayeghi, A., et al. (2020). Matter-Wave Interference of a Native Polypeptide. *Nature Communications*, vol. 11, no. 1, 19 Mar. 2020, https://doi.org/10.1038/s41467-020-15280-2.

Smolin, L. (2019). Quantum Weirdness Isn't Real – We've Just Got Space and Time All Wrong. *New Scientist*, 21 Aug. 2019, https://www.newscientist.com/article/mg24332440-600-quantum-weirdness-isnt-real-weve-just-got-space-and-time-all-wrong/.

TechTarget. (2016) "What Is Quantum? - Definition" *WhatIs.com*, 13 May 2016, https://whatis.techtarget.com/definition/quantum.

"Wave Function." *Encyclopædia Britannica*, Encyclopædia Britannica, Inc., https://www.britannica.com/science/wave-function.

Wilson, C. (2021). Quantumeffecten Verklaren Hoe Vogels Het Aardmagnetisch Veld Voelen. *New Scientist*, 29 June 2021, https://www.newscientist.nl/nieuws/quantumeffecten-verklaren-hoe-vogels-het-aardmagnetisch-veld-voelen/.

Annex 1. Short background information on the founding fathers of quantum physics

Albert Einstein, (born March 14, 1879, Ulm, Württemberg, Germany—died April 18, 1955, Princeton, New Jersey, U.S.), German-born physicist who developed the special and general theories of relativity and won the Nobel Prize for Physics in 1921 for his explanation of the photoelectric effect.

Niels Bohr, (born October 7, 1885, Copenhagen, Denmark—died November 18, 1962, Copenhagen), Danish physicist who was the first to apply the quantum concept, which restricts the energy of a system to certain discrete values, to the problem of atomic and molecular structure.

Erwin Schrödinger, (born August 12, 1887, Vienna, Austria—died January 4, 1961, Vienna), Austrian theoretical physicist who contributed to the wave theory of matter and to other fundamentals of quantum mechanics.

Werner Heisenberg, (born December 5, 1901, Würzburg, Germany—died February 1, 1976, Munich, West Germany), German physicist and philosopher who discovered (1925) a way to formulate quantum mechanics in terms of matrices. In 1927 he published his uncertainty principle for which he is best known.

Paul Dirac, (born August 8, 1902, Bristol, Gloucestershire, England—died October 20, 1984, Tallahassee, Florida, U.S.), English theoretical physicist who was one of the founders of quantum mechanics and quantum electrodynamics. Dirac is most famous for his 1928 relativistic quantum theory of the electron.

Max Planck, (born April 23, 1858, Kiel, Schleswig [Germany]—died October 4, 1947, Göttingen, Germany), German theoretical physicist who originated quantum theory.

Annex 2. Suggested listening/watching on quantum physics: podcasts and videos

Campbell, MacGregor. *What Is Information*. *YouTube*, New Scientist Magazine, 11 May 2016, https://www.youtube.com/watch?v=2AvIOzVJMCM. Accessed 14 Oct. 2021.

Impey, Chris, et al. *Quantum Physics and beyond - Quantum Experts Discuss Where Physics Is Headed. YouTube*, YouTube, 15 Aug. 2021, https://www.youtube.com/watch?v=4kngnWF8O80. Accessed 28 Sept. 2021.

Rovelli, Carlo. *The Birth of Quantum Mechanics*. *YouTube*, YouTube, 18 June 2021, https://www.youtube.com/watch?v=B_HJtVX9fRM. Accessed 28 Sept. 2021.

Rovelli, Carlo. Lecture:" *The Physics and Philosophy of Time* .", *YouTube*, YouTube, 13 June 2018, https://www.youtube.com/watch?v=-6rWqJhDv7M. Accessed 28 Sept. 2021.

van Noort, Wouter, and Jessica van der Schalk. "Hoe Quantumphysica Onze Wereld Op Zijn Kop Zet - Interview Met Bernardo Kastrup." *NRC Audio Future Affairs Podcast*, NRC Nieuws, 4 Mar. 2021, https://www.nrc.nl/nieuws/2021/03/04/hoe-kwantumfysica-ons-wereldbeeld-op-zijn-kop-zet-a4034181.