

# Effect of Cybernetic Communication in Electronic Circuits

Reji M. Issac

B. P. C. College, Piravom, Ernakulam, Kerala, India – 686664  
E-mail: [rejimissac@ieee.org](mailto:rejimissac@ieee.org)

---

**Abstract**—Quantum Electrodynamics deals with the interactions of electrons with photons. The relativistic quantum field theory of electrodynamics describes how light and matter interacts and is the first theory where full agreement between quantum mechanics and special relativity is achieved. QED mathematically describes all phenomena involving electrically charged particles interacting by means of exchange of photons and represents the quantum counterpart of classical electromagnetism giving a complete account of matter and light interaction. The movement of electrons and photons from one place and time to another place and time are similar. Also an electron emits or absorbs a photon at a certain place and time. Word is an invisible and intangible creation of God, which shows the dual nature as that of light and electrons, as it have both particle and wave nature, as a human body possess body and spirit, through which God controls everything, which is working with the thought process and brains of all beings. Just like how important are electrons in Electronics, words are important in Cybernetics, which moves through the Cyberspace. As cybernetics deals with tangible and intangible world, which is working through a cybernetic feedback loop, words have a direct influence on electrons as photons influences on the electron. This paper is giving an insight in to the effect of cybernetic communications in electric and electronic circuits.

## 1. INTRODUCTION

Quantum electrodynamics, commonly referred to as QED, is a field of physics that studies the interaction of electromagnetic radiation with electrically charged matter within the framework of relativity and quantum mechanics. More plainly put, it is a relativistic quantum field theory of electromagnetism. It basically describes how light and matter interacts. More specifically it deals with the interactions between electrons, positrons and photons. Quantum electrodynamics is a quantum field theory of the electromagnetic force. Taking the example of the force between two electrons, the classical theory of electromagnetism would describe it as arising from the electric field produced by each electron at the position of the other. The force can be calculated from Coulomb's law. The quantum field theory approach visualizes the force between the electrons as an exchange force arising from the exchange of virtual photons [2]. It is represented by a series of Feynman diagrams. QED applies to all electromagnetic phenomena

associated with charged fundamental particles such as electrons and positrons, and the associated phenomena such as pair production, electron-positron annihilation etc.

QED rests on the idea that charged particles (e.g., electrons and positrons) interact by emitting and absorbing photons, the particles that transmit electromagnetic forces. These photons are “virtual”; that is, they cannot be seen or detected in any way because their existence violates the conservation of energy and momentum. The photon exchange is merely the “force” of the interaction, because interacting particles change their speed and direction of travel as they release or absorb the energy of a photon. Photons also can be emitted in a free state, in which case they may be observed as light or other forms of electromagnetic radiation [3].

The word 'quantum' is Latin, meaning 'how much' (or quantus 'how great'). The word 'electrodynamics' was coined by André-Marie Ampère in 1822. The word 'quantum', as used in physics, i.e. with reference to the notion of count, was first used by Max Planck, in 1900 and reinforced by Einstein in 1905 with his use of the term light quanta [9]. Quantum theory began in 1900, when Max Planck assumed that energy is quantized in order to derive a formula predicting the observed frequency dependence of the energy emitted by a black body. This dependence is completely at variance with classical physics. In 1905, Einstein explained the photoelectric effect by postulating that light energy comes in quanta later called photons. In 1913, Bohr invoked quantization in his proposed explanation of the spectral lines of the hydrogen atom. In 1924, Louis de Broglie proposed a quantum theory of the wave-like nature of subatomic particles. The phrase 'quantum physics' was first employed in Johnston's Planck's Universe in Light of Modern Physics. These theories, while they fit the experimental facts to some extent, were strictly phenomenological: they provided no rigorous justification for the quantization they employed. In the 1960's, formulation of QED led to the unification of the theories of weak and electromagnetic interactions. This new force, called electroweak, occurs at extremely high temperatures such as those found in the early Universe and reproduced in particle accelerators. Unification means that the weak and

electromagnetic forces become symmetric at this point; they behave as if they were one force. In QED, the electromagnetic interactions of charged particles are described through the emission and subsequent absorption of massless photons, best known as the "particles" of light; such interactions are not possible between uncharged, electrically neutral particles. Before black holes were discovered it was known that the collision of two photons can cause pair production. This is a direct example of converting energy into mass (unlike fission or fusion which turn mass into energy). Pair production is one of the primary methods of forming matter in the early Universe. Since pair production is symmetric, matter and anti-matter are formed together

Word is an invisible and intangible creation of God, which shows the dual nature as that of light and electrons, as it has both particle and wave nature, as a human body possesses body and spirit, through which God controls everything, which is working with the thought process and brains of all beings. The word is originated in the East (where the tree of life exists) and flying through heavens [1]. The existence of electromagnetic fields around every object in the known world is a scientifically proven fact. Modern metaphysics identify the aura around a human as electromagnetic fields [1, 10].

The term "cybernetics," designating a distinct field of activity, appeared on the scientific scene at the close of World War II, with the publication of Norbert Wiener's book *Cybernetics: Or Control and Communication in the Animal and the Machine*. Wiener defined the term "cybernetics" as "the entire field of control and communication theory, whether in the machine or the animal" (Wiener 1948, p. 19); he was unaware that the term had been used, in a more limited sense, a century earlier by André Ampère (1834) [7]. Since 1948, research and publications related to cybernetics have proliferated, unfolding the content of cybernetic concepts and their impact on fields ranging from psychology and neurophysiology to sociology and philosophy of science. This continuing clarification of the meaning and implications of cybernetics has influenced attitudes toward and usage of the term, as well as our understanding of it, thereby blurring Wiener's initial definition. A brief look at some of the forces that shaped its development will help in understanding what "cybernetics" means today.

In his personal review of the subject, Wiener recounts that while working on the theory of an automatic system for aiming anti-aircraft guns he and his colleagues were impressed with the critical role of feedback in the proper functioning of a control system. This led them to conjecture that in order for a person to perform motor activities, his cerebellum must embody types of feedback and associated information processes comparable to those used in an artificial control system. If this were so, then the brain could be viewed as a complex communication, computer, and control system; and the concepts of feedback and control theory could account for internal homeostatic control (for temperature, blood-sugar

concentration, heart action, etc.), as well as for control of those motor actions required for purposeful manipulation of external objects. Implicit in these notions was the further thesis that those cognitive activities involved in higher-level problem-solving behavior also could be interpreted mechanistically in terms of the flow and processing of information [11].

The concepts of cybernetics, emphasizing an information-processing analysis of the mechanisms that generate purposeful behavior, excited the interest of some psychologists, physiologists, and even psychiatrists. Psychologists saw a way of relating behavior to the underlying information processes that control behavior. Neurophysiologists found that the brain and nervous system could be analyzed as a special-purpose computing machine "designed" to generate adaptive, intelligent behavior. And for psychiatrists, Wiener argued that functional mental disorders in the human are primarily diseases of memory caused by errors introduced in the processing of information and are not necessarily indicative of a physiological or anatomical breakdown of the brain mechanism. Thus, Wiener's writings suggested that problems in the psychology of behavior, the physiology of the nervous system, and the psychopathology of mental disorders could all be described in the neutral language of information processing and control [11]. In 2011 through the paper [1] Isaac redefined the existing definition of Cybernetics from Control and Communication in the Animal and Machine to Communication and Control through Words and Power.

The inspiration caused for this study is due to the observance of a relationship between the intellectual processes and intermittent electric supply failures as well as electronic circuit failures at various occasions anywhere in the world. As the basis of cybernetic communications is the flow of words through the cyberspace which in turn influences electrons. As just like photons influence electrons, words also influence electrons including exchange of energy. So our attempt in this paper is to give a comparative study of this phenomena in analogy with photons, which also shows wave and particle nature.

## 2. MATERIALS AND METHODS

In this section we will discuss about the various processes involved in this phenomena. Here our aim is to establish a connection between the intellectual processes and electron flow in an electric circuit and in turn in electronic circuits too. Here we mean the intellectual processes as a whole. As in [1] all media are connected through spirit, which is developed through the words that are controlled and communicated through words, which shows both particle and wave nature just like photons except words can penetrate any media through the cyberspace.

### 3. WAVE

In Physics, Wave is defined as a progressive disturbance propagated from point to point in a medium or space without progress or advance by the points themselves, as in the transmission of sound or light or an oscillation propagated through a medium or space such that energy is periodically interchanged between two kinds of disturbances. For example, an oscillating electric field generates a magnetic oscillation and vice versa, where an electromagnetic wave is produced [1]. Similarly a wave on a liquid comprises vertical and horizontal displacements. Here vibrations are physical evidence of waves, such as a loud stereo shaking a table, sound waves cause vibrations, where Waves leaves no physical evidence. Obviously waves have a time delay or velocity depending on the media in which it travels. Electrons have the characteristics of a particle and wave.

### 4. ELECTRON

The electron is a subatomic particle with a negative elementary electric charge, which have no known components or substructure. The electron has a mass that is approximately  $1/1836$  that of the proton [14]. Quantum mechanical properties of the electron include an intrinsic angular momentum (spin) of a half-integer value in units of  $\hbar$ , which means that it is a fermion. Being fermions, no two electrons can occupy the same quantum state, in accordance with the Pauli exclusion principle. Like all matter, electrons have properties of both particles and waves, and so can collide with other particles and can be diffracted like light. The wave properties of electrons are easier to observe with experiments than those of other particles like neutrons and protons because electrons have a lower mass and hence a higher De-Broglie wavelength for typical energies [14]. In precise we can tell that an electron is identified by its mass, spin and charge.

### 5. PHOTON

Photon is an elementary particle, the quantum of all forms of electromagnetic radiation, including light. It is the force carrier for the electromagnetic force, even when static via virtual photons. The photon has practically zero rest mass and as a result, the interactions of this force with matter at long distance are observable at the microscopic and at the macroscopic level. Like all elementary particles, photons are currently best explained by quantum mechanics but exhibit wave-particle duality, exhibiting properties of both waves and particles as a single photon may be refracted by a lens and in doing so exhibit wave interference with itself, or it can act like a particle that has a definite position and momentum that can be measured [15].

### 6. WORD

Word is an invisible and intangible creation of God, which shows the dual nature as that of light and electrons, as it have

both particle and wave nature, as a human body possess body and spirit, through which God controls everything, which is working with the thought process and brains of all beings. The word is originated in the East (where the tree of life exists) and flying through heavens [1]. The existence of electromagnetic fields around every object in the known world is a scientifically proven fact. Modern metaphysics identify the aura around a human as electromagnetic fields [1, 10].

In language, Word is a unit of language, consisting of one or more spoken sounds or their written representation, that functions as a principal carrier of meaning. Words are composed of one or more morphemes and are either the smallest units susceptible of independent use or consist of two or three such units combined under certain linking conditions. Words are usually separated by spaces in writing, and are distinguished phonologically, as by accent, in many languages. It is one of the units of speech or writing that native speakers of a language usually regard as the smallest isolable meaningful element of the language, although linguists would analyze these further into morphemes, which can be considered as an instance of vocal intercourse. In Christianity, it is the 2nd person of the Trinity. It is also a fundamental unit of storage in a computer. The size of a word in particular computer architecture is one of its chief distinguishing characteristics. It also has a meaning "Promise" in theology. In linguistics, morpheme is a speech element having a meaning or grammatical functions that cannot be subdivided into further such elements [1].

We can consider the thinking process as an oscillation between left and right in the brain, which is producing a sinusoidal wave. Left side asks questions and right side gives answers and vice versa. This process can also be considered as involving exchange of energy between them. This is the thought process, which should continue like a sinusoidal wave, without any quarrel, fluently and spontaneously. During the positive half-cycle the right side talks and left side is silently listening. During the negative half-cycle the left side talks and the right side is silently listening. This sinusoidal wave is creating a circular causality in the brain, which is the thought process [6]. This in turn generates words that can travel through the cyberspace limited by the creator. When these words hits the electric circuits which have no proper 'shielding' from these will be affected as the electrons start to behave according to their influence and hence in turn may affect electric supplies and electric and electronic systems in general. The existence of electromagnetic fields around every object in the known world is a scientifically proven fact. Modern metaphysics identify the aura around a human as electromagnetic fields [10].

### 7. RESULTS AND DISCUSSION

The immediate result of this finding is the requirement of the purity of the spirit with which all electric and electronic circuit is to be designed. Any degeneration of the respective items

may cause malfunction of the circuits in turn may result in system failure, about which we must be taken care of. This is especially visible in broadband connections. If we ask the question why it happens so, we can compare it with the electron-photon interactions in the quantum electrodynamics. Here also there exist an interaction between electrons and words, where even words may act as a super force over electrons to control over it. Even minor lightning discharges may be the result of these forces which in turn may ruin the circuit and hence the system.

## 8. CONCLUSION

Quantum electrodynamics is a field of physics that studies the interaction of electromagnetic radiation with electrically charged matter within the framework of relativity and quantum mechanics. More plainly put, it is a relativistic quantum field theory of electromagnetism. It basically describes how light and matter interacts. More specifically it deals with the interactions between electrons, positrons and photons. Word is an invisible and intangible creation of God, which shows the dual nature as that of light and electrons, as it have both particle and wave nature, as a human body possess body and spirit, through which God controls everything, which is working with the thought process and brains of all beings. This paper discussed about the effect of cybernetic communications in electric and electronic circuits based on comparison of quantum electrodynamics and cybernetics to understand and solve the weird issues that we face in the electric and electronic circuits.

## 9. ACKNOWLEDGEMENTS

We are publishing this paper in continuation of the Government of India, UGC Sponsored Minor Research Project titled "Development of an indigenous Brain-Wave Machine", vide letter No. MRP(S)-445/08-09/KLMG066/UGC-SWRO dated 30th March 2009. We acknowledge our sincere gratitude to all who supported and contributed to this research paper.

## REFERENCES

- [1] R. M. Issac, "Communication and Control through Words and Power", *Advanced Materials Research*, Vols. 403-408, pp. 982-993, 2012
- [2] Feynman, Richard (1985). *QED: The Strange Theory of Light and Matter*. Princeton University Press. ISBN 978-0-691-12575-6.
- [3] Richard P. Feynman, *Quantum Electrodynamics* (Advanced Books Classics) New Ed Edition
- [4] The Bible
- [5] Richard H. B., "ELECTRONS IN SOLIDS: An Introductory Survey", Third Edition, Academic Press, 1992, ISBN:0-12-138553-1
- [6] R. M. Issac, "Cybernetic perspectives of Desirable Practices in Teaching, Learning and Evaluation", *Proceedings of the UGC Sponsored National Conference on Desirable Practices in Teaching, Learning & Evaluation*, at BPC College, Piravom, Kerala, India on June 29-30, 2010, pp.46-77
- [7] "Cybernetics." *International Encyclopedia of the Social Sciences*. 1968. Encyclopedia.com. 19 Mar. 2016 <<http://www.encyclopedia.com>>.
- [8] <http://hyperphysics.phy-astr.gsu.edu/hbase/forces/qed.html> retrieved on 10th March 2016
- [9] <http://www.britannica.com/science/quantum-electrodynamics-physics> retrieved on 11th March 2016
- [10] Robert Becker and Gary Selden, "The Body Electric: Electromagnetism and Foundation of life", Tarcher Press Inc., 1985
- [11] Norbert Wiener, "Cybernetics: or Control and Communication in the Animal and the Machine", The MIT Press, 1948
- [12] George, Frank H. 1961 *The Brain as a Computer*. New York: Pergamon
- [13] Maron, M. E. 1965 *On Cybernetics, Information Processing, and Thinking*. Pages 118–138 in Norbert Wiener and J. P. Schadé (editors), *Cybernetics of the Nervous System*. *Progress in Brain Research*, Vol. 17. Amsterdam: Elsevier.
- [14] Buchwald, J.Z.; Warwick, A. (2001). *Histories of the Electron: The Birth of Microphysics*. MIT Press. ISBN 0-262-52424-4.
- [15] Buchwald, J.Z. (1989). *The Rise of the Wave Theory of Light: Optical Theory and Experiment in the Early Nineteenth Century*. University of Chicago Press. ISBN 0-226-07886-8