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PARADOX IN SCIENCE, LIFE AND FREEMASONRY

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Author's note: This paper deals with the paradox of Quantum phenomenon and the reflection of this paradox in literature, art, music, religion, and Freemasonry. My objective for this paper is not to serve as a textbook for Quantum Mechanics, but rather to offer that paradox, the seemingly impossible co-existence of two or more contradictory but equally true statements or occurrences, is really very common and is actually built into the very fabric of the universe as part of the design of the GATU. It is my premise that Freemasonry appears to possess a deep and innate awareness of the paradoxical nature of the universe, and that this awareness is widely expressed in our symbolism and ritual, and is provided for our instruction.

Some years ago I was driving to a business appointment and to distract myself I turned on my radio. I always enjoy radio "talk shows" in which a moderator interviews a guest, usually someone who has fallen into the public limelight by virtue of accomplishment, behavior (usually inappropriate behavior), or merely because they have interesting ideas. The moderator of the particular show to which I had tuned was interviewing a prominent Physicist, who was in the midst of explaining his work at one of the local Universities. It seems that this fellow was an expert in the field of Quantum Mechanics.

Quantum Mechanics, as he explained it, is a field of study which concerns itself with the nature of energy and matter at a very small scale. I was about to change the channel to a station which promised greater entertainment, when he said something which peaked my interest. For centuries, mankind believed that the physical universe behaved exclusively in accordance with the laws defined by Bro. Isaac Newton (1642 – 1727). Since the early part of the nineteenth century however, scientists discovered that while Newtonian physics is fairly predictive of the physical world on a large scale, at the scale of the very tiny (10,000,000,000 times smaller than a typical human being[i]) all bets are off. He mentioned a classic experiment performed by a prominent scientist (Thomas Young) which resulted in the discovery of the electron in the year 1897 and that his own work today in Quantum Mechanics was directly tied to theories developed by Heisenberg (Matrix Mechanics) and Schrödinger (Wave Mechanics) more than 100 years ago. This got me thinking.

As many of the better students among you may recall, Young[ii] discovered that when light is passed through an opaque panel containing two narrow slits, the light passing through each of the slits interferes with the light passing through the other, creating a pattern of wave interference[iii]. However, it was later discovered that the manner in which this pattern develops over time indicates that the pattern is produced by particles. In other words, light is both a wave and a particle at the same time[iv]. He further explained that electrons and other bits of matter also behave the same way and exhibit the quality of being both waves and particles at the same time. This of course sounds rather paradoxical, and indeed it is. Subsequently, Albert Einstein blew the lid off classical physics with the theory of relativity and his description of photons as discrete quanta of energy; this was the beginning of the era of Quantum Physics. Quantum physics today spills over into nearly every scientific discipline.

Quantum theory has evolved immensely since the radio show to which I referred, and has become a mainstream science, albeit a very complicated one which relies upon the language of mathematics as the means for its expression. Indeed, the importance of quantum theory to our understanding of physical reality, the nature of life, and the GATU cannot be underestimated.

My objective for this paper is not to serve as a textbook for Quantum Mechanics however, but rather to offer that paradox, the seemingly impossible co-existence of two or more contradictory but equally true statements or occurrences, is really very common and is actually built into the very fabric of the universe as part of the design of the GATU. It is my premise that Freemasonry appears to possess a deep and innate awareness of the paradoxical nature of the universe, and that this awareness is widely expressed in our symbolism and ritual, and is provided for our instruction.

Quantum Paradox

While a detailed discussion of quantum mechanics is both beyond my ability to sustain, and beyond the limited scope of this paper, there are none-the-less some key concepts which I would like to summarize and discuss. First of all, it must be remembered that everything we knew, or thought we knew, about the nature of matter and energy at the end of the 19th Century turned out to be false. Newtonian mechanics were discovered to be inadequate for an understanding of many physical phenomena[v], particularly the phenomena of black body radiation, the photoelectric effect, and optical line spectra. These phenomena were investigated by Messrs. Max Planck, Albert Einstein, and Niels Bohr, respectively, and led to the development of the Bohr orbital model of the atom. While the Bohr model successfully explained the three key physical phenomena which were previously not explainable by the classical equations of Newton, there remained still other phenomena which eluded scientific understanding. Hence, the aforementioned work of Heisenberg and Schrödinger which resulted in an entirely new and much improved version of what we now call Quantum Mechanics. Needless to say the developments in the field today would startle and amaze the men who pioneered this science.

If the reader will permit me the luxury of digressing, such an astounding change in our scientific understanding of the universe has occurred many times before, as evidenced (for example) by the work of Galileo Galilei. Mankind resisted the truth then, and will most likely always be slow to recognize any truth which contradicts convention.

Quantum theory indicates that photons are simultaneously both wave and particle; that Quanta simultaneously exist in all possible states of being, and resolve into a single physical state only upon observation, measurement, or interaction[vi]. Any attempt to visualize Quanta in a meaningful way becomes clouded by the paradox of their perplexing behavior. For

example in the double slit experiment previously mentioned, Physicists have discovered that if they place a photon (quantum bit) detector at one slit they obtain a measurement. However if they then insert another detector at the second slit, no measurement appears. If they then change the setup to measure the second slit first, they get no measurement at the first slit. In our "large universe" experience this doesn't make much sense; however in the Quantum universe, this is what indeed happens.

Quantum theorists tell us that once two Quanta become "entangled" (connected) they remain connected regardless of how far apart they are. Let's assume for example that we have two entangled quantum bits, and we place one at the earth's North Pole, and one at the earth's South Pole. If we measure the behavior of the bit at the North Pole, the bit at the South Pole becomes immeasurable, and vice-versa. For mankind the knowledge we are gaining of Quantum phenomenon will have tremendous impact upon our understanding of such things as how the brain functions[vii], how life may have evolved on earth[viii], and even the creation of the universe. Quantum theory also provides astonishing insight into the collapse of Quanta into matter and energy. By collapse I mean the transformation of Quanta from a condition of infinite possible states of being into one specific state among all of those possibilities, and which is triggered by interaction. Since Quanta are collapsed from a state of potential to a state of physical being by interaction, who does the interacting? Is it the GATU, or is it man? If it's man, how does this interaction occur? Through conscious prayer? Through ritual? Perhaps the historical role of scientists as leaders in Freemasonry and the importance of science to Freemasonry[ix] reflects an understanding of the close relationship between the physical and the Quantum realm. Interestingly, articles discussing Quantum theory such as Heisenberg predictability in Quantum Events and the Bohr Complementarity Principle began to appear in Masonic Journals[x], as early as 1988. While not all paradox may be attributed to Quantum phenomena, it may readily be argued that much of the paradox in the physical and in spiritual world may indeed have a Quantum connection.

Cultural Expression of Paradox

Brother Victor Popov in his address at the 2003 Masonic Spring Workshop at The Delta Lodge at Kananaskas[xi], Alberta presented an interesting paraphrase of an ancient paradox:

"Only one thing is certain – that nothing is certain; if this statement is true, it is also false".

It is my belief that humankind has long understood paradox and at some level Quantum phenomena (though not necessarily Quantum Mechanics and not necessarily using the term Quantum phenomenon) and has extensively incorporated this understanding into its literature, art, religions, and cultural traditions. In literature, Shakespeare's "The Tempest" represents the paradox which exists between nature and society in the character of Caliban. The unfortunate Caliban, half man and half fish is really neither, and yet both; a seeming impossibility. Brother Robert Louis Stevenson in his novel "Doctor Jekyll and Mr. Hyde" portrays the paradoxical nature of humankind through his main character, who manifests both good and evil personalities. Indeed the existence of good and evil in the world is the one of the most common themes in literature and art in general. In the Masonic Opera "The Magic Flute", Papageno, accompanies Tamino into the chamber of reflection and is there put to test. Papageno fails these tests miserably, but surprisingly is rewarded nonetheless[xii], an obvious paradox.

Throughout the history of religion, there have been deities in a multitude of cultures ascribed the paradoxical quality of being both god and man – perfectly divine and at the same time perfectly human. Examples which come to mind include Osiris, Mithras, and of course Christ. In the Judeo-Christian culture, paradoxical character is present in the form of the fearsome God of the Old Testament, who becomes the loving, forgiving God in the New Testament. It might even be argued that paradox expressed in mankind's various VSL serve as purposeful mechanisms for theological insight (and unfortunately for theological conflict).

The Philosopher Zeno of Elea (circa 490 B.C.) is identified[xiii] in Plato's *Parmenides* as having listed 40 "paradoxes of plurality" to show that ontological pluralism (a belief in multiple existences rather than a single existence) leads to illogical conclusions. Aristotle attributes two additional paradoxes to Zeno, and contributed numerous others to the original listing of 40 himself. The famous "Liars Paradox" (Bro. Popov's paraphrase given above appears to be a variation of the Liars Paradox) is attributed to Eubulides of Miletus (circa 4th Century BCE) which may be both summarized and analyzed as follows[xiv]:

This sentence is a lie

If (1) is true, then (1) is false. But we can also establish the converse, as follows. Assume (1) is false. Because the Liar Sentence is saying precisely that (namely that it is false), the Liar Sentence is true, so (1) is true. We've now shown that (1) is true if and only if it is false. Since (1) is one or the other, it is both.

Theophrastus, Aristotle's successor, wrote three papyrus rolls about the Liar Paradox, and the Stoic philosopher Chrysippus wrote six. There are even early references to mankind's acknowledgement of paradox. Pythagoras (circa 1788 B.C.) encountered paradox[xv] during his search for the common denominator.

Paradox then, is a fairly well recognized condition, and one with which mankind, both ancient and modern, has spent more than a little time wrestling. I would submit to the reader that in art, literature, religion, and in cultural traditions paradox is most often described in a reactionary sense, that is to say it is presented as a dilemma to which man's reaction is of paramount interest. I believe this differs from the treatment of paradox in Freemasonry, in which paradox is used in ritual and symbolism as instruction in understanding complex truths.

Paradoxical Masonry

As Freemasons, the very history and nature of the lodge are paradoxical. We are after all a speculative science founded upon operative art[xvi]; we exhibit both an esoteric aspect through our rites, signs, and tokens, and an exoteric aspect through our community projects[xvii]. It is also somewhat paradoxical that Freemasonry, with its abundance of mystic and allegorical ritual flourished[xviii] in the period of the enlightenment[xix] when reason was the prevailing force in science and society. The paradoxical nature of Freemasonry as it relates to the Hermetic[xx] tradition has long been a source of interest to Masonic authors and researchers. Messrs. Albert Gallatin Mackey, H L Haywood in their Encyclopedia of Freemasonry[xxi] point out that Freemasonry represents a paradox as an order with orthodox origin, but which was obliged to meet in secrecy, with covert means of identification, and with tiled doors, or as stated[xxii] by Bro. Tom Driver, author of "Liberating Rites"

"...Ritual stands in contradiction to society while at the same time being a part of it."

This type of paradox however is not that which I intended to explore nor does it have obvious ties to Quantum phenomena. In my discussion of paradox as it relates to Freemasonry, I intend to define Quantum paradox somewhat narrowly as that which reflects paradox existing in the fabric of nature and the universe.

Examples of our acquaintance with the concept of Quantum paradox do proliferate in Masonic ritual and especially in Craft symbolism. One example lies in our Blue Lodge initiation ritual, in which the Candidate is questioned concerning his footwear and attire during his initiation. The reader will recall no doubt that the expected answer is paradoxical, although

perfectly truthful. The repetition of this paradox (with appropriate modification) during all three degrees should alert the Candidate to the presence of paradox in our allegory and symbolism, and further alert him to the underlying truth found (hidden) in paradox as the ritual and subsequent lectures progress.

In his commentary on a painting by Alessandro Botticelli showing the two Saints John together, Brother Stuart Gregory points out that in Masonic symbolism (i.e. Point Within a Circle) we experience paradox in our perspective of these two Masonic Patron Saints^[xxiii]:

"From the Masonic perspective we are given the balanced dualism of John the Baptist on one side and John the Evangelist on the other. Represented together this way they represent the balance of passionate faith with a learned understanding of faith. Individually strong, together they stand as a harnessed focus of zeal and knowledge."

An extremely pertinent example of a connection between Masonic symbolism and Quantum phenomena is to be found in the two pillars (J & B) signifying duality or polarity as twin forces throughout creation^[xxiv]. Further paradox is found to be represented by the Double Headed Eagle in the Scottish Rite^[xxv] for which it is stated:

"In general, its symbolic meaning in the Scottish Rite is that of duality contained in or resolving itself in unity. Thus, among many other things, it reminds us that man, while only one being, is composed of both body and spirit, that he is both temporary and eternal; that both good and evil exist in the world and that we must ever foster good while opposing evil. It reminds us also that knowledge comes both from study and from insight; that we have obligations both to ourselves and to others, and that both faith and reason are necessary."

There are many more examples, coming from a wide variety of Masonic traditions. The Fibonacci sequence (golden mean) used in Rosicrucian initiation^[xxvi] literally translated is the addition of the monad to the initiate who together dominate duality. The Square and Compasses itself has long been held to represent the alchemical joining of fire (male) and water (female). I believe the average Mason could upon short reflection add several more.

Conclusion

What does the presence of paradox in our ritual and symbolism tell us? I believe that one answer to this question is that it communicates to us the complexity of the universe in which mankind exists, a universe which lies beyond the ability of our senses and our minds to directly perceive or to understand in "rational" terms. By "rational" I mean in terms of our experience gained by direct observation in our own limited world. I also believe that the paradox present in Craft ritual and symbolism is purposeful and intended to be instructional at a level beyond rationality, and to teach us that our inability to rationalize paradox does not mean that paradox does not represent truth. Ultimately, acceptance of paradox as truth is necessary for and perhaps the essence of faith.

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