

A Unique Cognitive Theory of Universal Knowledge Based on Mathematical-Physics Symmetry

Joseph J. JEAN-CLAUDE
September 4 2017, © Copyright
quantogeometry@gmail.com

Abstract

In Science and Philosophy of Science, much has been said about the scientific method and its proceedings. While academic institutions tend to make every discovery a result of the strict application of the scientific method, some critiques argue that random processes or events contribute to scientific discoveries in a much larger degree than scientists may like to concede. When it comes to merits and tributes to ingenuity, one should probably accept the argument that it is well within the empirical research process once engaged that these events of chance may intervene to contribute to positive outcome of the empirical research process. Indeed without the substrate of empirical experimentation itself, there is no favorable circumstance for chance to bear fruit in discovery results. Beyond the vantage of assertiveness and credits to novelty in cognition, it would be interesting to examine the inception, structure and composition of ideas which conform the spectrum of knowledge in general, both in natural and human sciences, that is, as well as establish a basis for comparison and assessment of the validity of these ideas across the many different disciplines belying the spectrum. I will show in this study a mathematical foundation to the spectrum of core ideas in human knowledge and use mathematical categories to compare them to one another in terms their ultra-structure and composition, thereby revealing the unsuspected symmetry orders to which they belong.

Keywords: *ideology spectrum, mathematical physics, knowledge spectrum, quanto-geometry, quanto-geometric theory, theory of knowledge, relativity, intuitiveness, scientific method, empirical method, empiricism, philosophy of science, cognitive science, history of ideology*

1. Empiricism as Bedrock of the Scientific Method

The principal stream that sustains science as a knowledge tool or endeavor is its manifest and exclusive concern in that which is observable and/or measurable. Science further claims to be the only tool able to bring about an understanding of objects and processes that belong in the realm of tangibles. An important choice made in aligning physical science with the stream of empiricism at its very inception was arguably the adoption of the Newtonian concept of time over Gottfried W. Leibniz's notion of time, judged too metaphysical. Scientific empiricism had departed from intangibles, which it left at the purview of natural philosophy and religion. Thus science as a knowledge tool had emerged in opposition to religion in particular, acknowledging utility in philosophy perhaps only in its epistemological attempts to rationalize or evaluate own proceedings and results.

As a reminder and to set common grounds of understanding for the discussion, scientific empiricism is an inquest into an observable of polemic nature, whether object or phenomenon, whereby a hypothesis is formulated in order to explain, elucidate or interpret thru a process of verification or falsification state or behavior of the polemic observable.

2. Incepts and Percepts as Components of Ideas

All Knowledge is based on ideas. It is important to understand that knowledge is not to be construed as perception or the substrate of perceptions. When we internalize an observable, object or event, thru perception, it becomes a mental object or *percept*, a mental representation of the observable. Along with percepts, human mentation creates *incepts*, which result from perception of non-observables, real or imagined. We otherwise call those incepts *intuition*. The rational mind may question whether or not incepts proceeding from intuitive perception may ever be real or of any pertinence or utility. To deny any pertinence to inceptive processes is to deny the intrinsic intelligence of nightly dreams unraveled by Sigmund Freud's psychoanalytic science for instance, let alone paranormal clairvoyance apparently utilized or seriously researched by official government agencies in the West, per testimonies emanating from their very actors [15], however controversial they might be.

Therefore all idea, as notional elements of human mentation in their plurality, individually consists of two components: a percept and an incept. In [3] we have proposed mathematical analysis of mentation in personal psychology based on the tenets of percepts, incepts and attention/willingness.

While percepts and incepts still firmly intervene in the evolution of ideas in the context of collective ideology, they do so in a different operational framework. In that regard, to understand the difference between one context and the other, one ought to consider, on the one hand, that all ideological constructs or ideas always develop over a historical background which influences their modalities in one way or another, and on the other hand, ideas may circulate among ideologues without the agency of empirical perceptibility. These trends in the process of ideation occur beyond the strict boundaries of individual psychology.

A mathematical representation of an idea in the ideology spectrum must lay down a Cartesian coordinate system where one axis stands for percepts or perceptual representations and the other axis for incepts or intuitive representations. These requirements respond to the Quanto-Geometric coordinate system, in which the vertical q -axis ought to stand for percepts and the s -axis for incepts. The function to be mapped over this coordinate system is intrinsically in its geometrical graphism a unified bipolar entity, since each of its (x,y) points results from the application of an abscissa value in correlation with an ordinate value (Fig. 1).

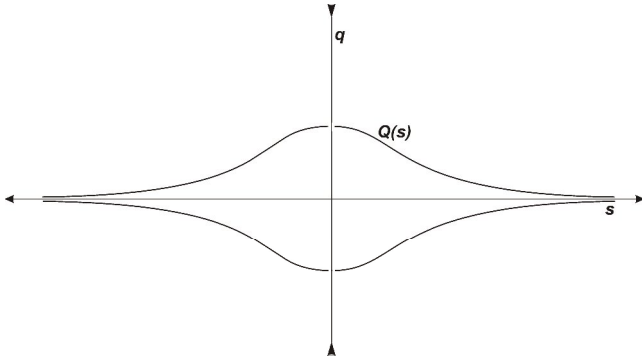


Fig. 1 Q - S Coordinate system belying the plot of the Quanto-Geometric Eigenfunction

In Quanto-Geometric Theory, this characterization is further developed into a 2-space metric where the vertical q -axis takes the quality of discretization and the horizontal s -axis bears the quality of expansiveness. Both axes are Cartesian originally in that they are numerically normed or tallied, however they additionally surrogate or model an *orthogonal* or *reciprocal* quality over their inherent metric as a generalization. Consonant with that condition, we assign the *perception* value to the q -axis of discretization on the map of the knowledge spectrum because percepts are *finite* entities, while we assign the incept or intuition value to the expansive s -axis because *intuitive* incepts are borne out of *in-definition* or openness of the intangible. One may easily concur that there is a definite orthogonal

or inverse quality to the *finite-indefinite* duplet that are manifest attributes of percepts and incepts respectively.

3. Cognitive Foundation of Ideology

Science as a collective phenomenon is about the formation of ideologies or theories based on observation of the natural world. Ideologies are based on a collection of ideas, each to be defined as a singlet bundle consisting of an incept and a percept on the representational plane. It is of utmost significance to recognize that scientific empiricism does not produce absolute certainties just because its feeds and methods are anchored on facts or tangibles. It only produces a form of understanding instituted in ideologies or theories about facts. That form of understanding is not unique for an observable and is only one among many different possible forms of cognition about the same observable. Each of these forms of cognition will be more or less assertive than the other, despite verification or falsification. For example, if we gather an appropriate solution of electrolytes and thru electrodes tap a light bulb into the solution and obtain visible light, we can be sure and explain for a good while that the light is a result of electron flow from anode to cathode. Until we discover that there are more free electrons at the cathode and they flow instead from cathode to anode across the bulb. Until we discover that there is no flow of particles at all, but primarily a wave propagation instead. Until we else discover... You get the idea. Another solid case in point concerns the many shortcomings about the *cosmological constant* figure in cosmological physics, which A. Einstein gave for erroneous shortly after introducing it to explain an “observable” static universe, but firmly revived decades later for the different purpose of explaining “observed” expansion of the Universe, and now in the midst of the biggest predictive disaster in quantum relativity (the so-called *vacuum catastrophe*). As much as our inquisitive minds, and academic establishment alike, seem to request absolute or quasi absolute certainties to rest satisfied, there is always a larger framework of interpretation that brings more insight to all empirical processes.

4. The Three Main Partitions of the Knowledge Spectrum

The distribution of ideas, both in individual and collective mentation, is regulated by a distribution function of the Quanto-Geometric Eigenfunction type over the q - s coordinate system (Fig.1). With the dependent variable q representing notional percepts and the independent variable s representing notional incepts, the $Q(s)$ function graphed on this coordinate system describes the distribution of human knowledge ideologies in human culture. A reminder of the Quanto-Geometric Eigenfunction of two variables:

$$Q(s) = \pm \left| \frac{s^0}{\sigma\sqrt{2\pi}} \bullet e^{\left(\frac{-s^2}{2\sigma^2}\right)} \right|, s \neq 0$$

Science orchestrates the body of ideas configured with percept dominant over incept within the internal correlation between the two components. Every other form of knowledge, which scientists altogether call pseudo-science or non-science at best, orchestrates as a whole a body of ideas with incept dominant over its counterpart percept within the internal correlation between the two components.

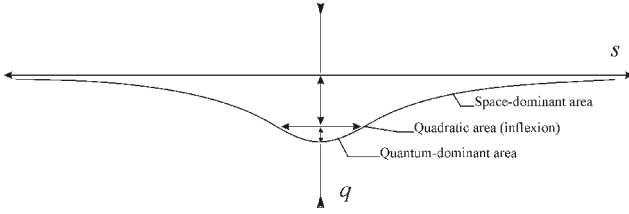


Fig. 2 The three distinct sectors of the Quanto-Geometric Function

To the non-science group belong all the ideas relating to:

- all religions and all metaphysical orders dating back from Middle Ages such as Masons and Rosicrucians
- all philosophies including ancient natural philosophy, which all feature an intuitive approach to the understanding of tangibles as much as an analytical approach to the very intangibles themselves
- all forms of fictional constructions both in literature and in oral folk tradition
- all forms of theories offering interpretation of the natural world from a visionary perspective
- all forms of occult science much in vogue in the West, from Middle Ages thru Renaissance to modernism, including Alchemy, Human Magnetism, etc.

Yet there exists a third layer of knowledge which encompasses ideas that individually feature equal covariant weight between their two internal components, incept and percept, that is. You might call these theories neo-science because they have the appearance of empirical science but are not quite science, not withstanding their catering to the study of tangibles and their rational methodology. Chief among these forms of knowledge is Astrology, the study of how celestial

bodies influence humans and human life. The science or neo-science of Alchemy of ancient times, from which the science of chemistry borrowed its name, could be construed as belonging to this group as well, inasmuch as it claims to harbor practical methods of transmutation of lead into gold. In the modern era, we have as well the neo-science of Christian Science, which is an equal mix of empirical rationalism and spiritual belief system.

One can incontestably note the preeminent role played by observation in Scientific knowledge, the first group, the preeminent role played by intuition in Spiritual canon, the second group, as well as the equalized role played by observation and intuition in the neo-sciences, the intermediate group. We refer the reader to [1] [2] for a detailed explanation of the intricacies of the mathematical-physics characterization inherent to the Quanto-Geometric Theory.

The first group caters to the value of innovation thru discoveries, the second caters to the value of traditions thru faith, and the third group caters to both innovation and tradition. The latter characterization is in clear display in Alchemy for instance, which boasts empirical techniques of physical transformation of a natural element into another, while claiming this capacity to be conferred thru faith in mysteries of the metaphysical order.

In terms of the quality of cognitive elements making up each group, one may conclude that the domain of rational ideas is finite and consists of punctual or atomic ideas, which are well modeled by the graph showing the Function taking its highest value on the q -axis at that point near the origin. Whereas the domain of spiritual and philosophical canon is one of an expansive nature, consisting of extent ideas or representations, which stretch out infinitely as determined by the asymptotic behavior of the graph near the s -axis (Fig. 2).

5. Covariant First-Order Symmetries Throughout the Cognitive Spectrum

Despite all the major differences that are evident between the three groups, and the rivalry relation there exists in culture among their proponents, it may be somewhat surprising to many that there are important elements of similarity between the first and the second group of the Knowledge distribution. This is very much primarily due to the fact that the ultra-structure of the ideas that make up the entire ideology spectrum is based on an omnipresent duplet. What makes the difference between the many different ideologies throughout the spectrum is essentially the covariant weight of the relationship between the two elements of the constituent basis duet. Nevertheless, as much as the scientific method is based on

rational observables, there are always intangible elements that infiltrate the empirical process, contributing in some measure to the outcome. Likewise, as much as matters of spirit and intellect are based on intuition and indefiniteness of the intangible, there are always tangibles or observable elements and a certain degree of cogency that accompany the oracle of intuition.

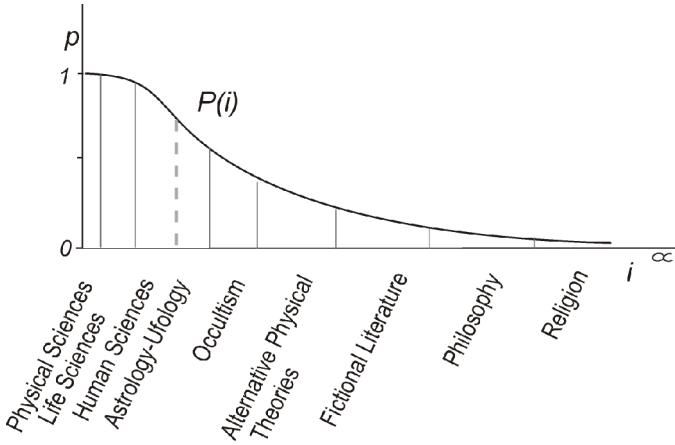


Fig. 3 Distribution of ideologies across the universal Knowledge spectrum

In the following we are going to extol the minority factor that exists in the composition of each of the two main groups of the Knowledge spectrum which register a dominance of one or the other tenet of the basis notional duet. When examining Fig. 3 in confirmation of the development, which proposes a serial enumeration of all ideologies, notice the increasing progression in intuition from one knowledge body to the next as well as the decreasing progression in the level of empiricism in every ideology from left to right of the i -axis.

1. The Serendipity Factor in Science

We have noted at the introduction the intervention of the serendipity factor in all scientific research processes. The history of scientific research is knowingly fraught with these random intervening elements that end up either playing a significant role in pursued discoveries or a central role in unintended discoveries. X-rays and radioactivity are examples of serendipitous discoveries, radioactivity being one that end up claiming the lives of involved researchers because they were ignorant of the danger posed by these unexpected elements which were totally estranged from the formulated hypotheses. Sufficient literature exists about the serendipity factor in science that we need not make the case here for these outcomes. No science researcher sets out on a research project counting on help from chance of any origin to be successful in one way or another in terms of discovery outcomes. However one would be ill-advised to think that the intervention of the intangible on

the course of a research project is to be totally discarded, if we have to pay attention to the historic development of science. At times researchers were even unaware of their discoveries until much later when their data or computational elements were set and analyzed in a different context, such as occurred to Max Planck and his discrete energy quanta. Closer to us in microbiology of the day, nobody has set out to investigate plasmids for gene editing. That capability in plasmids was serendipitously discovered and we learned from them how to edit the genome. Yet the paramount role played by the empirical method in those processes remains undeniable.

2. Blatant Intervention of Intuition in the Midst of Empirical Processes

In the hard core science of theoretical physics, where the scientific method reigns, one would be surprised to know that the Theory of General Relativity, of Albert Einstein's inception, followed an intuitive process instead of an empirical one when coming to light. A. Einstein was very prone to thought experiments. By his own admission, when he realized that somebody falling in an elevator would not experience acceleration but weightlessness, he startled at that thought in his own words and that realization marked the birth of the Theory of General Relativity. Let's listen to A. Einstein himself:

Physics constitutes a logical system of thought, which is in a state of evolution, whose basis cannot be distilled, as it were, from experience by an inductive method, but can only be arrived at by free invention. The justification of the system rests in the verification of the derived propositions by sense experiences [11].

The key word here is most probably "free invention" which is a statement for *intuition*. It is equally interesting that he applies this characterization to the entire science of theoretical physics, for sure an arguable statement. While the Special Theory of Relativity unequivocally responded to the generalized quest in late 19th century/early 20th century physics for an unraveling of Lorentz invariance, well demonstrated experimentally, the Theory of General Relativity responded instead to an intuitive realization that initially subsided all experimentation. Clearly, one cannot justifiably totally disconnect General Relativity from Special Relativity because the first is an extension of the second in that it claims Lorentz invariance or the invariance of the speed of light not only in relation to moving frames of observation at constant speed but in relation to even accelerated frames of observation. In that context, the intuition that percolated into A. Einstein cogitations to give him extemporaneous insight into the relative nature of gravity must be seen occurring in the larger framework of experi-

mental proceedings accompanying the development of the Theory of Relativity as a whole.

Another example of the minor-tenet role played by intuition in hard-core scientific theories is a thought experiment envisioned by Erwin Schrodinger toward framing the conundrum of quantum entanglement, the so-called Schrodinger's cat experiment. He imagined the very real possibility of a cat that must be both dead and alive at the same time as a result of two antithetic random processes with equal probability of occurring in the context of a fully empirical setting. The experiment ties the fate of the cat to a quantum system that operates based on mixtures of states and directly transfers the quantum determinants and outcome to the macroscopic living entity, thereby requiring that the cat be both dead and alive at the same time under these conditions. The extemporaneous insight of that thought experiment was a translation of this question: how can two equated and antithetic elements with opposite causal spur marshal a form of coexistence in a singlet ontological state? A. Einstein himself had his own version of this thought experiment, the so-called EPR paradox involving two entangled photons, and even had a word of congratulation for E. Schrodinger on his formulation. While A. Einstein EPR paradox became in time experimentally accessible, E. Schrodinger's cat experiment remains to this day a philosophical puzzle at the heart of the interpretation problem in quantum theory. Although we believe to have satisfactorily and cogently resolved the quantum entanglement puzzle as exposed in [12], we shall point out that Schrodinger's cat experiment materializes what Einstein had called in the above quote "free invention". Effectively what we are facing here is the free flow of an incept or an intuition in the circumstance of an empirical problem in need of a solution, quantum entanglement, that is. At the very least, one might call it a deep philosophical in-sight in visualizing a problem of the physical order.

Following hard-core physical science in the span of knowledge lie the life sciences. These sciences are as much heavily based on empiricism, despite the fact that they lack the mathematical formalism that enshrines hard-core physical sciences. That very lack is a testimony to the lower level of rigor in the empirical formalism that sustains their development. Effectively their experimental methods utilize measurements in a much lesser extent or less stringency than physical sciences do. Further much of what we argued about intervention of serendipity in the application of the scientific method equally applies to them.

Beyond the life sciences in the knowledge domain of empiricism lie the human sciences or the study of the human

phenomenon in its psychological, social, political and economic dimensions. Since the Encyclopedists' works in French erudition (1751-1765), a tremendous effort had been underway to provide rational empirical bases to the study of the human phenomenon. These efforts culminated in the firm introduction of the use of mathematical categories and measurements of observables in their proceedings. It is by virtue of this empirical basis that we have come to give to the knowledge body about humans and human behavior the stature of a science in its own right. From Pavlov's reflex theory of stimuli and responses, to the economic theory upholding the law of offer and demand in free markets, to Charles Darwin's biology rule of survival of the fittest in generalized struggle for life among the living, to polling techniques and population statistics, the empirical bases of human sciences have been in steady and firm development ever since the Encyclopedist movement. In sociology for instance, Marxism emerged perhaps as the most robust analytic framework ever produced for the interpretation of the social and political aspects of the human phenomenon with the known enormous political consequences it entailed in the historical order. Yet the role played by personal insight had been essential in its inception by Karl Marx. It is very much by reason of "free invention" or free intellectualization, otherwise called speculation in this context, in the theories of human sciences that they are unanimously considered inexact sciences in comparison with the hard-core physical sciences, strictly and profusely based on mathematical categories. It is fair to say that the stake in the development of human sciences, as understood by erudition, is precisely to make unconstrained intuitive insight a definite minor as a component of the knowledge body and the empirical method and proceedings an ever increasing major component of its knowledge base.

3. Incontestable Intervention of Empiricism in Religious Canon

At the other side of the knowledge spectrum which represents the dominion of intuition, the workings of empiricism as a minor component of the knowledge duet are equally quite notable, as much as intuition clearly played the minor-tenet role in the scientific theories of knowledge.

Notesworthy is the fact that the word empiricism takes a rather pejorative tone in qualifying the knowledge proceedings of this group. Researchers of animists religions for instance, generally sociologists and ethnologists, qualify many a set of practices put forward in those cultural religions as *empirical* practices or techniques, given that they do not appear to cater to any form of rationalization. An incantation for instance does not appear to obey any known logical methodology by which an intangible may comprehensively effect elements of

the natural world. An oracular session in Lamaism or Buddhism for instance does not appear to showcase any rational or logical element by which a known cause produces an observable effect. Yet all these practices present and represent a protocol proceeding involving tangibles, the very cultural objects engaged in more or less complex forms of interaction and human manipulations. Ritual protocols make for the most visible and spectacular aspect of religious canon in all creeds and represent the counterpart of the scientific or empirical method in the scientific knowledge domain. No matter how profound and elevated the mysteries of a certain religion, there is always a set of most sacred material objects involving a protocol of manipulation geared to the realization of a particular deployment in the spiritual order. Muslim faith which bans adoration of objects and images regarded as fetishism does showcase at Mecca Allah's rock around which the relentless revolving march of the faithful orchestrates a summon to the forces of the invisible, in their yearly pilgrimage. What's more, the faithful, wherever they are in the world, must turn toward the rock in prayer three times a day, which makes this ceremonial centered on the sacred rock, a perpetual, almost uninterrupted planetary event.

An even more stringent aspect of religious empiricism is given in the sanctification canon of the Catholic Church, which indeed has nothing to envy from scientific empirical methods. In effect, the Catholic Church in its 2000 years of existence has amassed a vast verification protocol concerning the physical manifestation of the Supernatural. While one may think that the priests of Christendom are prone to fool themselves about beliefs in the invisible, in spirits and other supernatural beings and their abilities alike, nothing can mischaracterize more the posture and proceedings of the Catholic Church. Nothing is more stringent, exhaustive, thorough and inquisitive than the verification canon of miracles or supernatural facts held by the Church. No human institution has demonstrated more patience, more inquisitiveness, and even more skepticism when it comes to authentication of facts of miracles pertaining to the Marian phenomenon around the world than the Catholic Church irreproachably has.

Despite the fact that the polemic aspect of the observable is of the mystical order in religious empiricism, the polemic observable altogether remains an observable in its own right. And so it is in complete blindness that the scientific community may choose to turn away from such facts as the pristine conservation of canonized saints' bodies deceased for centuries, such as Sainte Catherine Labouré or Sainte Louise de Marillac, but kept intact without the application of any chemical substance whatsoever, whether natural or artificial [14]. To say the least, these polemic facts have been nurtured by the

Church as a treasure of empirical nature to the faith that they proclaim and hold no lesser empirical value than the polemic observables that motivate scientific quests. The intentional ostracism of these facts from scientific attention, which prefers to take refuge and comfort in secularism, pertains not to scientific discipline and the tradition of demonstrative erudition but to cultural or institutional rivalry in the strictest sense.

In an objective theory of knowledge such as the one here under development, this symmetry, which is given in the presence of the *same* element in both knowledge strains, independently of its minor or major condition at one or the other side of the equation, must be forcefully and unequivocally highlighted.

4. Empiricism in Philosophy

We now turn our attention to the presence of empiricism as a minor condition in the cognitive structure of Philosophy, obviously dominated by free inception or intuition.

One of the most important aspects of Philosophy is its all encompassing construct of rationalization in that it raises the most towering question of sense in every and all matters of consideration or in a word *ontological teleology*. While in religious mysticism absolute openness toward the indefinite overwhelms the mind of the faithful, the philosopher's mind asks the question of *why* because *experience* has acquired a higher level of significance in its cogitations. In cogitations of philosophical nature, the mind attempts to discipline intuition in order to produce comprehension which addresses both experience and reflection, compared to adoration and contemplation as objects of religious mysticism. One of the most salient results of this activity is the abstraction of mathematics which predates in the history of mankind both Greek and Arabic inventions in that area. Such activities may be traced back to the 4000-year Kemetic Kingdom in Northern Africa. The invention of scripture is in itself a testimony to those activities of the human mind in any culture in an incipient form because primal numeric and geometric elements are pre-requisites to the development of scripture in any conceivable manner.

A. Einstein had an interesting interrogation about the origin of mathematics when he expressed:

"How can it be that mathematics being after all a product of human thoughts which is independent of experience, is so admirably appropriate to the objects of reality?"

The question of whether mathematics is discovered or invented has long been debated in the literature with no clear final or definitive consensus. If we consider that the ultra-structure of numbers and primal geometric elements make up

the essence of reality in its fullness, as I demonstrated in Quanto-Geometric Number Theory [1], it may be that humans, as part of reality, experience mathematics as a reflection of these abstract properties via the channel of intuition. This view is certainly in agreement with ancient Platonic philosophy of cognition or *intelligibility*. In Plato's philosophy numbers remain at the heart of human intelligibility of both the intangible world and the natural world. Admittedly, mathematics represents the most constrained of philosophical abstractions, even though science, which heavily peruses it as a tool and a technique, wants to make of it an element pertaining to empiricism, for many formally refer to mathematics in terms of *mathematical science*. Nothing however could be more ill-assessed, because manifestly this assimilation constitutes a cultural fact and not an exacting appreciation. Mathematics is not about empiricism and possesses no empirical proceeding for itself. Mature mathematical theories, as A. Einstein had recognized, are completely abstract productions that are not necessarily motivated by objects in the physical world. This assessment is wholly supported by the fact that pure mathematics may produce schemes that do not meet any form of applicability to objects or problems in the physical world, in contrast to applied mathematics which strictly does. So therefore this motivation to make sense of physical experience stands for the minor component in the knowledge proceedings construed in mathematics, and by extension in philosophy to which mathematics duly belongs as an abstraction.

5. Empiricism in Fictional Literature

Much of what we argued about Philosophy is straightforwardly applicable to Fictional Literature, which notably includes poetry and prose or prosaic novels. The key word here is assuredly *fiction*. Even though the fine arts have a different form of ideological expression than most other elements of knowledge, given that they are not expressed through scripture, they certainly belong to this group as well. Consideration to their main propositions, which are of pure aesthetic order, demands that adscription. Fictional literature is evidently primarily about fiction or fictional incepts. However, fictional literature does express a palpable level of concern for the natural world, both matter and the living, and in a much higher level than does philosophy in its overwhelming abstractions. Much of poetry is a celebration of nature as is, and the better part of plots of novels generally address the all-observable human condition. What the fine arts do for themselves is to start with a tangible material element which they stylize into an aesthetic proposition or representation.

Therefore, here as well empiricism plays a minor role for certain in the composition of the basis cognitive duet making up this ideology space.

6. Empiricism in Occultism

It would be very difficult to exactly pinpoint the precise origin and inception date of occult knowledge, otherwise called Occult sciences, in the Western hemisphere. Occultism is the science of the paranormal, based in essence on the belief of supernormal centers of perception in the human brain and the existence of a well-defined meta-physical (or trans-physical) world. There is no contesting that these beliefs are echos of elements pertaining to old-time Eastern religious mysticism, in particular Buddhism and Lamaism. Occultism seems to have been born in the West around the 15th Century, has flourished therein in the 18th Century even thru the full onset of scientific institutionalization with Enlightenment and was still well alive in late 19th Century. Franz Mesmer's *animal magnetism* (1780-1850), one of the many elements of occultism, is one example of the open practice of bio-magnetism which lived in rivalry with Hypnotism. The annals of Hôpital La Salpêtrière in Paris, France, count long records of mental disorder treatments by Dr Jean-Martin Charcot who employed the strong technique of narcogenic and psychedelic hypnosis, credited to bring about the same physiological states that magnetizers could realize on their subjects. Other authors such as Hector Durville [8], solidly engaged in the experimental practice of human magnetism, have reported very stylized experiments that confirm the metaphysics of Lamaism and Buddhism in relation to the ontological composition of human beings and the living in general as well as the multi-universe vision of the natural world in all of its dimensions. It is evident that in the knowledge history of the West, an official decision, perhaps publicly undeclared, had been made to forge on the side of advancing science preferably on the basis of strict and direct empirical observables, given the shadowy European Medieval history (5th to 15th Century) in metaphysical practices and the success of the entire Renaissance movement alike.

One can clearly see in the terms of the above exposition, which only seeks to remain faithful to known verifiable historical facts, the major role played by abstract metaphysics in Occult science as well as the minor role played therein by empiricism in the embodiment of a squint or under-developed experimental basis.

7. Empiricism in Alternative Theories of the Natural World

The history of ideology counts with a flurry of theories attempting to explain the physical world from a single idealized construct, which qualifies them in the eyes of many as reductionist visions of the world. These theories are borne out of unconstrained abstractions, for the most part, that privilege

one particular construct, such as the concept of *structure* in the theory of structuralism or the construct of *function* in the theory of functionalism. Many are peculiar ephemeral constructions that do not get to echo any durable school of thought.

In the arena of physics, a typical example of these theories is the physical theory of *circlons* by James Carter, extensively reviewed by Margaret Wertheim in [13]. The internet abounds with these alternative theories that do not make it into official bibliography or in peer-reviewed print servers but remain exposed on personal websites for the most part. However debatable, one would be ill-advised to outright invalidate or delegitimize these theories, for the simple reason that many official theories endorsed by establishment have not passed the test of empiricism either and have had to endure eternal sleep in the annals of academia. Let alone the long list of phenomena awaiting now for long elucidation from academic illuminati. Neither should one discredit the authors of those alternative theories and question their intellectual integrity with pejorative terms all too common in the scholarly medium [10]. While one may still view in these theories parenthood with natural philosophy, modern natural philosophy would be a better qualifier for them. In sum, the concern for experience in those constructions is in clear display as a minor, since they do not meet the fullness of empirical standard and most are overtly not intent to meet that standard either.

8. Empiricism in the Intermediate Tier of Knowledge

As previously mentioned, Astrology and Ufology are two of the main ideologies pertaining to this realm of knowledge. What is first noticeable about these ideologies or belief sets is that they are not overly concerned with metaphysics but with behavior and observation in an important measure.

Ufology is a knowledge current that suffers from misinformation orchestrated by World governments, except perhaps for the Republics of Brazil and France [10], which have respectively made official reports of sightings and opened their official dossiers on this matter to public scrutiny (GEIPAN). While one cannot in good conscience caution the secretive attitude motivated by some governments' vision of domination in the concert of nations, one may concede some level of support to government secrecy in those respects when it comes to the negative impacts that such revelations could have on collective behavior of the peoples of the Earth. We rarely witness a Hollywood movie where extra-terrestrial activity is not delivered in the wake of hostilities. We also now know from 'Wikileaks' more about the techniques used by the United States government to propagate misinformation about facts

that, for good reason or not, it does not want the public to be informed about. So have we learned about medical interventions on or illnesses of U.S. presidents carefully covered up by clever misinformation engineered by the government [6]. In the aggregate, misinformation and discredit are the devils that knowledge concerning extra-terrestrial activity on this planet has to confront in establishing a firm observational basis, notwithstanding the many reported and discussed sightings, and over a very long period of time, controversial though some or many are. This question seems to have moved beyond the state of a problem of authentic fact to become one of its establishment instead. Furthermore, one cannot assert the proponents of this stream of knowledge to be disinterested in empirical facts, aside from their clear interest in the marvelous or magical realism. That stands for a statement of equal manifestation of both tenets in the constitutional duplet of knowledge here at play.

As to Astrology, we ought to remember that before Johannes Kepler's work in setting a mathematical basis for the computation of planetary orbits around the sun, so giving birth to the science of Astronomy from Astrology, these cycles were well known in astrologers' practice of direct observation of the nightly sky. If the putative theory of influence of remote planets over life on earth, in its individual and collective dimensions, appears to be borne out of free invention or intuitiveness, empirical proceedings do not falter in this body of knowledge.

Furthermore, numerous studies on the negative influence of the full moon on human beings' mood and sleep patterns have been realized by groups of academics and add to observations by U.S. and U.K. police departments of an accused increase in crime rates in that circumstance in the population at large. The majority of these studies seem to reasonably support the idea of an influence of the moon over human behavior, the so-called lunar effect [4] [5].

Quite aside from the question of validity of the claims advanced in Astrology in relation to human characterology based on celestial configurations and the afore-mentioned claims of influence of astral bodies over humans, what is here relevant to our study is the level of empirical basis achieved in support of those claims. There is obviously here a concern for interpretation of physical experience and an effort to rationalize that interpretation with the utilization of a mapping tool of planetary configurations in correlation to dates of birth. The exact origin of this tool, which is central to astrologers' craft, remains unknown. However, it cannot be attributed to intuition due to its complexity and comprehensiveness. While the basic principles behind the theory ought to be claimed as intuiti-

tive elements due to the void in the knowledge of their very origin and the lack of argumentative logic in its definitions, the existence of clear empirical methods makes the ideological ultra-structure of this science or neo-science one with equated covariant components in its basis cognitive duplet.

6. Ideological Tolerance Throughout the Knowledge Spectrum

If indeed the Quanto-Geometric Grand Eigenfunction closely models the ideology spectrum, then we can predict a further attribute involving covariance within the ultra-structure taken after the first-order derivative of the Function. If i is the measure of intuitiveness of punctual ideas and $P(i)$ the Grand Eigenfunction representing percepts, then the first-order derivative $dP(i)/di$ must measure ideological tolerance across the spectrum (Fig. 4). Below the functional expression of the first-order derivative of the Quanto-Geometric Grand Eigenfunction:

$$\frac{dQ(s)}{ds} = \frac{-s}{\sigma^3 \sqrt{2\pi}} \cdot e^{\frac{-s^2}{2\sigma^2}}, s \neq 0$$

Applying that equation to the modeling of the of the ideology spectrum, the expression becomes:

$$\frac{dP(i)}{di} = \frac{-i}{\sigma^3 \sqrt{2\pi}} \cdot e^{\frac{-i^2}{2\sigma^2}}, i \neq 0$$

This derivative expression is plotted in Fig. 4 below.

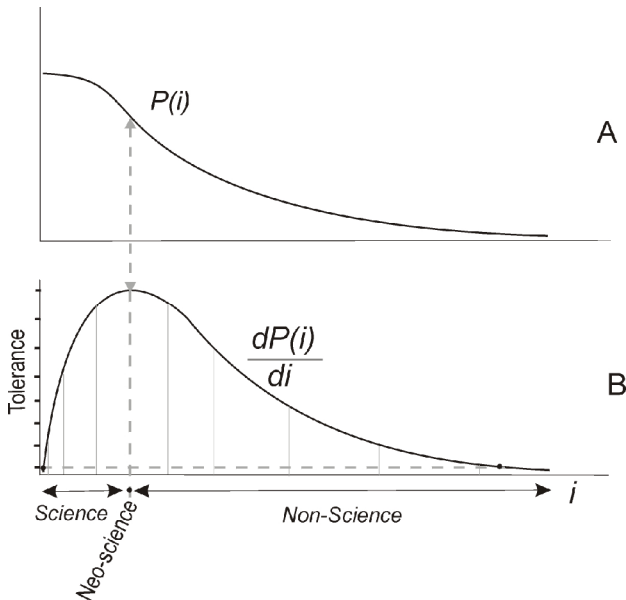


Fig. 4 The first-order derivative of the Quanto-Geometric ideology function

The covariant quality innate to the ultra-structure of the duplet already gives us a hint in relation to the characterization of tolerance inherent to the derivative. Effectively the correlation puts in interaction two elements along the line of dominance of one factor over the other. Therefore we should expect the whole axis to run the gamut of highest dominance or *lowest tolerance* to lowest dominance or *highest tolerance*, in the understanding that dominance is inversely proportional to tolerance. Therefore the derivative function evolving from 0 to infinite on the vertical axis stands for a direct measure of tolerance or ideological tolerance to be exact.

What's more, there will expectedly be a pairing of the values of tolerance across the spectrum because for each point i of the derivative function in one sector, i.e. the slope-increasing sector, there is a matching point i_x with the same value of tolerance in the slope-decreasing sector. This second characterization creates two-to-two similarities in tolerance behavior across the ideology spectrum. The horizontal dash line in Fig 4 highlights two of these points at its crossings with the curve.

Analytically, when theories have matured in academia they become conservative ideas with gatekeepers acting as fundamentalists to enforce them. These notions then become fundamental or paradigmatic ideas. These paradigmatic scientific notions find their match at the other side of the spectrum in the conservative theological principles which are stringently enforced by religious fundamentalists who may go so far as putting heretics to death! The wisdom of keeping senior scientists in active research has continuously been debated in academia, given that for many understandable reasons they tend to uphold their ideas against all odds, thereby blocking progress when these ideas are outright unassertive. Along with gatekeepers, a role which they themselves oftentimes play, they exert ideological fundamentalism or conservatism in one form or another, just as the spiritual fervor of religious fundamentalists may become ferociously intolerant. Intolerance in the scientific community can be so ferocious as to become inhumane. We have already cited the nefarious comments from I. Newton toward Gottfried W. Leibniz at the latter's passing, as well as the barrage of opposition to Ludwig Boltzmann, who had been posthumously recognized a giant in fundamental physics, which brought him to suicide. Closer to us, one ought to mention the quick epithet of "crackpot" that academics stick to authors of alternative theories of the natural world that do not comply with academic standards. Their attitude ignores the important fact that no theory is ever 100% wrong, and downplays the many failures of academically compliant and mathematically sound theories, some of great

elegance I might add, that subsequent empirical evidence nevertheless condemned to eternal death.

From point 0 of tolerance, in fact neighboring 0, corresponding to fundamentalism, we move up to points marking higher levels of tolerance. For instance, one would rarely see fundamentalist levels of ideological intolerance among academics in human sciences, because, for one, their science does not enjoy the level of accuracy that would support such intransigence. Same can be said of their match at the other side of the graph, which is occult science, because there is not enough intuitive certainty in their body of abstractions to warrant intransigence.

The maximum point of tolerance on the axis matches the unique or singular ideological entities where the covariant weight of the internal components of the duet is equated to one another. These theories are poised to demonstrate tolerance at its best, understandably because the absence of dominance of one factor over another allows the whole body of ideas to showcase equal appreciation of rational empiricism and intuitive insightfulness. Accordingly, we have yet to see in culture fanatic movements of Ufologists or Astrologers which are widespread across the planet, as we have seen with and suffered from deadly religious fanaticism at all epochs.

Another modern strain of this tier of ideology is Christian Science as previously mentioned, along with the pursuits of the contemporary John Templeton foundation, to cite only the two best known ones perhaps. While their activities are better qualified thus far as a quest than formal theorization, it is clear that it is only thru the appreciation of the values and virtues of scientific empiricism and the values and virtues of religious mysticism in equal measure that they have catered to and tasked academics with important financial resources in the hopes of unraveling the mysteries of religious canon. The John Templeton foundation has been unrelenting in this pursuit, despite the fact that they have continually been criticized by academics of mixing religion with science or otherwise attacked for attempting to break secularism in science. Without attempting to vindicate the works of these foundations with which I personally maintain no connection whatsoever, I must say that these attacks bear the smell of fundamentalism and come from those academics who may perfectly understand science and its proceedings but remain to this point completely ignorant of the fundamentals of the evolution of human Knowledge.

7. Invariant in Universal Knowledge Symmetry

The very expression of the Function that models the distribution of human Knowledge incarnates endogenously the

invariant that sustains the symmetry in its ultra-structure. This invariant is a precursor of the Quanto-Geometric Eigenfunction and stands for the most towering relation sustaining the Quanto-Geometric Theory:

$$Q_i \times S_i = 1 \quad (2)$$

$$\text{or } Q_i = S_i^{-1} \quad (3)$$

This relation makes up the heart of the metric in the role of uttermost irreducible and posits all ontology to be *invariably* both an orthogonal (3) and a normalized (2) duplet. In this case, the duplet consists of two manifestly antithetic elements: an empirical/tangible tenet vs. an intuitive/intangible tenet. The invariance is further given in the fact that the two elements in the correlation maintain a major-minor balance across the rundown of the entire knowledge spectrum. From this invariance springs the notion of conservation that belies the conservation laws known in the physics of dynamic systems at first order. To make the clearest statement of the reality of this foundational symmetry in universal knowledge, we shall express that:

All products or constructs of interacting minds and spirits, whether related to ideology or mysticism in nature, represent the transformations in collective mentation space experienced by the cognitive engine as embodied in an incept-percept duplet.

This result should be a surprise to no one since the Quanto-Geometric Theory with its ubiquitous Grand Eigenfunction epitomizes unity in Physical Law and is universally applicable to all forms of experience.

It is important that theoreticians of all stripes, all those in the business of mind and spirit, from scientists to priests, that is, recognize the primacy of that invariance as an irrevocable element of symmetry between their propositions and that a derivate of that invariance further shapes their level of ideological degree of tolerance in regards to those propositions. This derivate extends the symmetry in a two-to-two correspondence between mentation constructs at both sides of this particular spectrum and across its entire running. The ensemble of these symmetry orders obliterates all grounds of justification of rivalry long existent historically in human culture between science and theology.

8. Conclusion

The spectrum of Knowledge demonstrably obeys a rule, that of Quanto-Geometric distribution and covariance. We

have pointedly and incisively shown how the totality of the phenomenon of human Knowledge, despite its many different colors and cognitive aspects, is a unified phenomenon fully accessible to the mathematical physics categories subjacent to the Quanto-Geometric model.

Of paramount importance is the realization of the plurality of symmetries crystallized in the spectrum of human knowledge, on one hand, and, on the other, that science based on the empirical method, however instrumental in the evolution of our civilization, does not apportion absolute certainties about any one fact, event or object and only represents one form of knowledge among many other possible forms of knowledge with regards to any one single observable. That realization is rather uncommon among scientists in general, contributing to their intolerance vis-à-vis other products in the ideology space and an overvaluation of their form of knowledge in the context of the knowledge spectrum. I fervently harbor the hopes that a better understanding of the foundations of human knowledge help cure this deficit of perspective and pave the way for wisdom to gain the scientific arena, to the greatest benefit of mankind's advancement.

REFERENCES

- [1] Jean-Claude, J. Joseph, **Quanto-Geometry: Overture of Cosmic Consciousness and Universal Knowledge for All, Volume I**, Quantometrix, 2017
- [2] Jean-Claude, J. Joseph, **Quanto-Geometric Tensors & Operators on Unified Quantum-Relativistic Background**, Academia.edu, November 2016 – Research Gate, 2017
- [3] Jean-Claude, J. Joseph., **Mathematical Foundation of Human Cognitive Categories of Aims and Intentions**, ResearchGate 2017
- [4] The Kentucky Post Staff, **Police busy for full moon**, E. W. Scripps Company, January 2002
<https://web.archive.org/web/20070706203651/http://www.kypost.com/2002/jan/29/chase012902.html>
- [5] Roberts, Michelle., **Full Moon 'disturbs a good night's sleep**. Retrieved 2013-07-26, *BBC News* <http://www.bbc.co.uk/news/health-23405941>
- [6] Brian VanHooker, **The Secret Illnesses of U.S. Presidents: 5 presidents who tried (and didn't always succeed) to hide their health problems**, MEN'S Health Magazine, April 2015,
<http://www.menshealth.com/health/secret-illnesses-of-us-presidents/slide/3>
- [7] Bruce Lamar Rosenberg, **UFOs, Osborne Reynolds, and the One Wind: A New Look at an Old Theory**, June 1979
- [8] Hector Durville, **The Theory and Practice of Human Magnetism, Volume 1900, Part 1** - Primary Source Edition, February 2014,
- [9] French Government, GEIPAN, : <http://www.cnes-geipan.fr/index.php?id=202>, 2007
- [10] Sean Carroll, **The Alternative-Science Respectability Checklist**, Cosmic Variance, Discover Magazine, June 2007 -
<http://blogs.discovermagazine.com/cosmicvariance/2007/06/19/the-alternative-science-respectability-checklist/>
- [11] Albert Einstein, **Physics and Reality**, 1936
- [12] Joseph J. Jean-Claude, **Time-free Description of Motion in Dynamic Systems From Momentum to Entanglement**, ResearchGate, May 2017
- [13] Margaret Wertheim, **Physics on the Fringe: Smoke Rings, Circlons, and Alternative Theories of Everything**, Walker, 2011, ISBN 978-0-8027-1513-5
- [14] Chapelle Notre Dame de la Medaille Miraculeuse,
<http://www.chapellenotredamedelamedaillemiraculeuse.com/wp-content/uploads/2015/07/P1010142.jpg>
- [15] Russell Targ, **Limitless Mind: A Guide to Remote Viewing and Transformation of Consciousness**, New World Library, Publishers Group West Publisher, 2004