

Topological Association of Quantum Mechanics and Consciousness: The Macroscope

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The methods that ancient people used for conveying systems knowledge can still be utilized today in the development of human consciousness. As a component of realizing such methods I propose that the 'quantum scale' is a measure of precision relative to our perception, both innate and technological, and pertains to scales of smallness and largeness. To gain perspective on this concept I present the idea of a 'Macroscope,' a model in which scale-independent forms may be synthesized to derive a symphony of iteration, interaction and change. The 'macroscope' offers a mechanism for viewing envelopes of scale as they emerge, akin to wavelength, relative to viewer perception. To study these methods the 'macroscope' model is presented as a collaborative system of research, the vision and implication of which is presented by this work.

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Hindsight is often given the distinction of being the clearest of the clear stones - yet its perfection is the fixity of a jewel, cut by perspective and polished through reflection. The stone left in the living seam can grow ever further, ripening karats through the swale of time.

Introductions

The methods the ancients used for conveying systems knowledge can still be utilized today in the development of human consciousness. Regardless of the objective existence of patterns amidst the flows of the universe, certain human-recognizable forms are so closely knit with awareness and information that their study is the most effective means of rendering aspects of the 'natural order' as wisdom - capable of being sustained across the evolution of culture. Scale is paramount to this process, as our tools and models for facilitating awareness beyond the dimensions of our body become part of our language of perception and cognition.

Integral to realizing this process is the idea of a 'Macroscope,' a conceptual device that allows one to look outward to see greater range detail, rather than inward toward the tiny. Looking past context to view the nuances of detail is the function of a microscope / telescope. This method of reductionism is bound by resolution, and falls prey to an endless search for fundamental elements. A macroscope would allow one to see a wider context at a smaller scale, and from synthesis derive the forms of iteration and interaction. Although mutable, these forms can be related through context and are thus knowable - and so can be integrated into consciousness.

By peeking through the embryonic macroscope we have begun to see the very large within our system relative to our own scale, and we have found that despite our ability to view the large, we are confounded at understanding its whole. To the ends of creating clarity in this broad new expanse we may generate living principles that aid us in decisions of growth, research and development. In this work I propose that the 'quantum scale' is a measure of precision relative to our perception, both innate and technological, and is relevant to scales of smallness and largeness.

As is the case when we approach the sub-atomic, the absence of a method for perception creates an unavoidable uncertainty. This uncertainty is at the root of the 'quantum,' and is mirrored in complex and dynamical systems. For this reason, quantum mechanics is a discrete range of functioning *only relative to the discrimination and orientation of our senses*. It is the fuzzy 'shape' of our perception.

Because the quantum and the chaotic dualistically originate from our consciousness, each can be used to create models for studying the other. Gaining a sense of the subtlety and variation to consciousness' topology will require the creation of collaborative systems of research. This will allow vernacular symbols of general systems and cultural properties to be rendered - which has historically been the domain of the mythological edges of the imagination. Using a rubric congruent with ancient and latent methodologies we may encode knowledge made available only recently via modern tools and technologies. Several models for such systems, and their implications, are the vision presented by this work.

Scale & Metaphor

In scientific measurement, scale is composed by powers of 10. The central unit in this system is the meter - which is a measurement proportional to the human body. If we reduce this scale by an order of magnitude to 10^{-1} (1/10th of a meter, ~4 inches) we have measurements on the scale of the human hand. If we go up in scale to 10^1 (10 meters, ~30 ft) we have measurements on the scale of a house.

Both of these scales are intimately relevant to our human experience, as the things we design at one scale have a reciprocal relationship to the other. Most tools, or parts thereof, are designed on the scale of 10^{-1} because we use these tools with our hands. Paper, dinnerware, books, etc are all on this scale. As well, most leaves and consumable plants are also of this scale.

Most buildings, or spaces of human interaction are on the scale of 10^1 because this is a comfortable envelope of experience. Houses, dining & dancing halls, courtyards, gardens, street intersections, etc are all on this scale - a comfortable distance for interacting with the personal space of others. In wild nature we also find this scale present in ponds, streams and trees - many of which grow to a scale of 30-60 feet (10-20 meters). It is perhaps no leap of the imagination that houses are also built at this scale, but it does reinforce this understanding of how our lives are influenced by the patterns in nature.

We can see the reciprocity of these scales in the relationship between objects within each. Light switches, door knobs, window latches, thermostats and handles, all 10^{-1} , are the mechanisms that we use to operate the 10^1 scale of the building - such as a home. As well, each sub-division of the house has its own array of hand-sized objects; kitchen utensils, lamps, yard / garden, office, bathroom, etc. As shall be made more clear in the following text, objects of this scale are not truly used at larger scales - only subdivisions of the 10^1 scale. Let us call this reciprocity between 10^1 and 10^{-1} an *envelope*.

At the next envelope of experience we have 10^{-2} (1/100 of a meter, about half an inch) measurements just relating to the fingertips, or other similar sizes. At this size we experience the smallest jewelry, the width of pencils and other delicate hand tools, buttons (on our clothes or to operate our technology i.e. phones). Much of our smallest food (above ground granules) is on this scale; peas, beans, seeds, etc. This is the scale of delicacy, and certain amount more attention is paid to this scale than to a hand-scale.

At 10^2 meters (100 meters, ~300 ft) we have a scale of human experience where rules are used to mediate interaction. This is the scale of arenas, fields, factories, ships, etc. Each of these venues requires rules, a model, in order to have an experience. Games/sports are played in arenas, crops are systematically planted (and fairs are held) in fields, there is an order of operations to factories as well as designed jobs - as also on a ship.

In wild nature this scale is represented by lakes, sequoia trees, and rivers. Rivers and lakes, in particular, are vital elements to the functioning of human functioning at this scale: villages and towns. Towns also have a close connection with the small scale of this envelope. Jewelry denotes social standing, pencils and marking tools record allotments and surplus. Beans and seeds have their greatest value in multitude, where they can feed the people of a town. Both 'directions' of scale at the second envelope require some model, or set of rules, to understand what our interaction and relationship. Without these conventions the interaction of people in this scale of space is known as a crowd, mob or other hive mentality.

At the next envelope we have 10^{-3} , which is about the diameter of a grain of sand. Operation at this scale can be closer linked with its inverse 10^3 - 1 kilometer or 3000 feet. A material can be ground into powder, flour, or sand, but doing so is an operation involving many people - and is an operation that usually benefits even a larger number. Involving this number of people, the scale of interaction is often the size of a town, or larger. A large town and its surrounding clusters has a scale in the thousands of feet; nearly a mile. Appropriately, at this scale unorganized human interaction becomes a riot.

At the next envelope we have 10^{-4} meters - the diameter of a hair, a thread, or plant fibers. Our sense of touch can be trained to feel the difference between subtle thickness differences in hair, etc. Arguably though, measurements at this scale are difficult - mostly requiring the assistance of precision tools for careful measurement - or bulk measurements. The inverse of this, 10^4 meters (10 kilometers, or 30,000 feet) is a scale at which coordinated planning is required to have a distinct envelope beyond the previous village scale. This scale can be associated with a borough or township. A cessation of organization at this scale could be related to battle - border disputes and other matters that, like a cancer, take on their own sub-organization (i.e. militia)

There may be some value to the developing perspective in considering that there are five classical senses, and that each one can be well-associated to one of the first five (0-4) envelopes. The sense of touch is the base scale, that of the body. The sense of taste is that which we can put in our hand, the first envelope. The sense of smell is the second envelope, few people can smell more than 300 ft without a wind, hunger, or other augmentation. The sense of sound correlates with the third envelope, as only a small range of sounds commonly travel farther than 3000 ft. Our sense of sight is generally observes things at far less than a distance of 30,000 ft - to have regular observation over such distances was, in the past especially, the definition of rulers.

Beyond the Basic Senses

The fifth power is the first scale in which perception occurs almost entirely via a model. 10^{-5} , 1/100th of a millimeter, is a cellular scale. Tissues and organs of the body can be differentiated by their constituents. Invisible to the naked eye, 'vision' in this realm can happen through science (lens optics) or medicine (body health). Ailment alleviation at the scale is primarily dietary, where plants are consumed in the whole form. This is also the wavelength of heat emitted by the human body.

Inversely, 10^5 is 100 kilometers or 60 miles. This is the scale of a city area or a county. Both require a model (bureaucracy) in order to conceive of their wholeness. The city scale is comparable to the cellular scale of the body, constituents exists but they cannot survive outside of their system. This is the first appearance of climatological zones. (VLF EM waves)

At the sixth power we cross another envelope of models of perception. 10^{-6} is 1 micron, a sub-cellular scale which references the size of sub-cellular components, some viruses, and the length of an entire DNA strand. Energy with this wavelength is referred to as the Near Infrared. We feel it as heat and some creatures and see in this spectrum. Optical

magnification of this scale is only so effective - energy dynamics, such as light scattering, must be employed to 'magnify' micron-scale events. Medical models of this scale becomes more complex, and incorporates herbs and other remedies, where plant components undergo a process (boiling, crushing, salves, etc.) in order to become incorporated into the model.

10^6 is 1000 kilometers, or 600 miles. This scale encompasses an entire region, island or small nation. For humans, statehood occurs at this scale, as an organizational unit above city and county. Models for human interaction increasingly involve representation and mediation. Our models of organismic functioning on the small scale match closely for organismic functioning at the large scale. As well, the medical and technological models that address the small scale are the platform by which politics positions itself in the large scale. Climatological zones form regional weather patterns at this scale. Relief from dangerously unexpected weather patterns ("Acts of God") is also incorporated into political structure. (ELF EM waves)

10^{-7} is 1/10 of a micron. This scale is populated by viruses and complete protein components - and other orders of building blocks to the building blocks. Cancerous mutations occur at this scale. For scientific models this scale may be very analogous to the previous scale, though it is a small step away from molecular dynamics. Medical models have slight divergence here; new models taking to laser tools and radiation for breaking up cancers, etc.; old (shamanic) models of this scale go beyond herbs and address psychological problems. Both, at times, employ drugs in one form or another. Energy wavelengths of this scale are in the visible light spectrum.

10^7 is 10,000 kilometers, or 6000 miles - the scale of continents. For human organization this is the scale of large nations, or a council of smaller nations. Health trends, such as cancers, differential between regions of this scale. Interaction between sub-national groups, and internationally, is increasingly complex. Arguably, humans are still working at developing effective models for this scale. In nature, continental weather conveyors appear out of the regional patterns. It is also the diameter of the Earth. (VF - voice frequency - EM waves)

10^{-8} is 1/100th of a micron, or 10 nanometers. This is the size of a crystal lattice and basic protein structures - both of which operate on similar molecular principles. This is also the wavelength of ultraviolet light - which is related to why such wavelengths are used to measure things at this scale. Some creatures on earth can see and feel into this spectrum. New medical models generally do not address this scale, while shamanic medical models take an emotional approach to healing.

10^8 is 100,000 kilometers, or 60,000 miles. The primary reference we have to this scale is the circumference of the Earth (40,000 miles). Our models spanning the whole Earth are in their infancy, and encompass human rights, cultural memory and ecological functioning. Ecological awareness at this scale is an international effort, as patterns cover polar weather migration, earthquake dynamics and oceanic changes. (ULF EM waves)

"One Small Step..."

The next envelope of scale is the 9th power. 10^{-9} is one nanometer. This is the width of a chain of DNA, and other primary protein formations. This is also the base level of crystallization. Wavelengths of this scale are x-rays, which are most often used to perform measurements here. Shamanic medical models feel that healing at this level happens spiritually.

10^9 is 1 million kilometers, and almost 1 million miles. This is the rough distance between the Earth and the Moon. Humans have no strong bureaucratic models for this scale. We have rough accords that cover space law and an international / planetary reserve.

This scale begins the strong emergence of mythological models holding equal or greater weight to people worldwide than scientific or bureaucratic frameworks. As the moon is our closest celestial object, and a satellite, these mythological models include stories which encompass cyclical information and generally govern human ritual.

Like the small scale of the ninth envelope, our models are almost entirely representational. As well, the mythological framework used to represent each scale is often the same. Recent technological developments have also created a beautiful reciprocity between scales at this envelope. Increasing proficiency over the nano-scale is yielding carbon nanotubes that are showing themselves to be critical in our move to orbital space - particularly in the development of a Space Elevator.

The tenth envelope of scale contains 10^{-10} . This measure is also known as an Angstrom, and is the width of an atom, including its electron layers. Since we have no tools for measuring this scale directly, all of our visualizations are based completely on constructed models, such as scientific principles represented graphically or pictorially. Coincidental enough, as the scale we measure continues to get smaller, our apparatus for measuring get larger - cyclotrons, particle colliders, other new mechanisms and the systems needed to operate them. 10^{10} is a distance of 10 million km, or 6 million miles. It is the scale of distance between planetary orbits in the inner solar system (Mercury, Venus and Mars). The general accessibility and relevance of our models becomes increasingly skewed toward the mythological, as various systems of metaphor begin to arise based on the movement of planets in the night sky.

The next envelope begins the first significant gaps for the small scale. 10^{-11} is comparable to the outer of three general electron orbital distances (from the nucleus of the atom). Our scientific models are further representational, based on the crystal formations and emitted light. Matter composed of atoms bearing this scale are generally metals, and are often radioactive.

10^{11} is referred to as 1 Astronomical Unit (AU), since it is the distance between the Earth and the Sun. This is also the rough scale of distance between the Earth and any of the other planets in the inner solar system. The process of solar fusion creates the heavy elements that we see at the small scale of this envelope.

10^{-12} is called a picometer, and is the scale of the inner electron orbitals. Matter composed of these atoms can be metal or mineral.

10^{12} is 10 AU, the distance between the Earth and Jupiter, and is a scale for measuring Jupiter's orbital distance from the Sun. This is the first scale to represent the outer solar system. Mythological models also take a leap here as Jupiter is a powerful or elder/grandfather symbol, and the rest of the outer planets are associated to emotional and spiritual aspects of human experience.

10^{-13} is the scale of the inner electron orbits on the atom. Matter arising from this scale are minerals and non-metal elements which are the building blocks of organic life.

10^{13} is 100 AU, and is the distance from the Sun to a sphere material known as the Oort Cloud. The Oort Cloud is a 'shell' of stellar dust which is caught in a kind of orbit around the Sun. It is generally accepted as the leading edge, or envelope, of our solar system.

10^{-14} is a scale which is represented by the diameter of every atom. Our models of this scale are entirely representational, and in our attempt to gain a glimpse of some particles' properties we use the Earth itself as an apparatus - monitored through a global network of sensors and systems.

10^{14} is 1000 AU, and is the scale which we know little about. Many comets have orbits which span this distance. A special place exists for comets in mythological models, naming them the heralds of great change - understandable considering that they travel outside of our solar system and return.

10^{-15} is called a femtometer, and is the classical size of an electron, though at this scale all effects in the domain of 'quantum' are most commonly measured in terms of energy, and not

size. At best, our representations are uncertain, and our methods of measuring the effects of sub-atomic particles are constantly being re-thought.

10^{15} is 10,000 AU, and is the longest orbital distance of any comet we know. It is almost the distance to the nearest star.

A common trend in reciprocity between the scales of the 9th through the 15th envelope is in the intertwining of measurement. Particle physics increasingly becomes a matter of astrophysical observation, as we watch the dynamics of celestial events in order to deduce the inter-particle forces that underlie them. The power that deities are assigned is over a realm that is as fundamental as atomic and sub-atomic forces. Were these forces to suddenly operate differently the macroscopic effect to the human mind would be extremely mythological. It becomes increasingly clear that we use the large to study the small.

“...One Giant Leap...”

What lies beyond this envelope of scale? On the small scale we know very little, with the proposition of subatomic particles dotting the envelopes only through mathematical extrapolations. After the electron at 10^{-15} we have the lepton, calculated to be no larger than 10^{-18} in size. Neutrinos have been estimated around 10^{-30} in diameter - a highly debatable measurement. By proposition, somewhere under all of this is a vacuum state, of which little is known.

On the large scale we know only slightly more. The 16th envelope, 10^{16} , is the distance from our star to other stars. At 10^{21} we have the diameter of our Milky Way galaxy, which hold all of the stars that we can see with the naked eye. Among the models for this scale most accessible to the mind are mythologies about the movement of the stars, and their constellation.

Beyond our galaxy, at 10^{22} , we have the distance to the Andromeda Galaxy, our closest galactic neighbor. 10^{24} , or 100 million light years, is a rough scale of the distance between our solar system and the center of the Universe. Beyond this, in the range of 10^{30} , is the most recent estimates for the diameter of the universe. Including modern science, few human models have any framework for this scale (the Maya of ancient Meso-America having created the primary other).

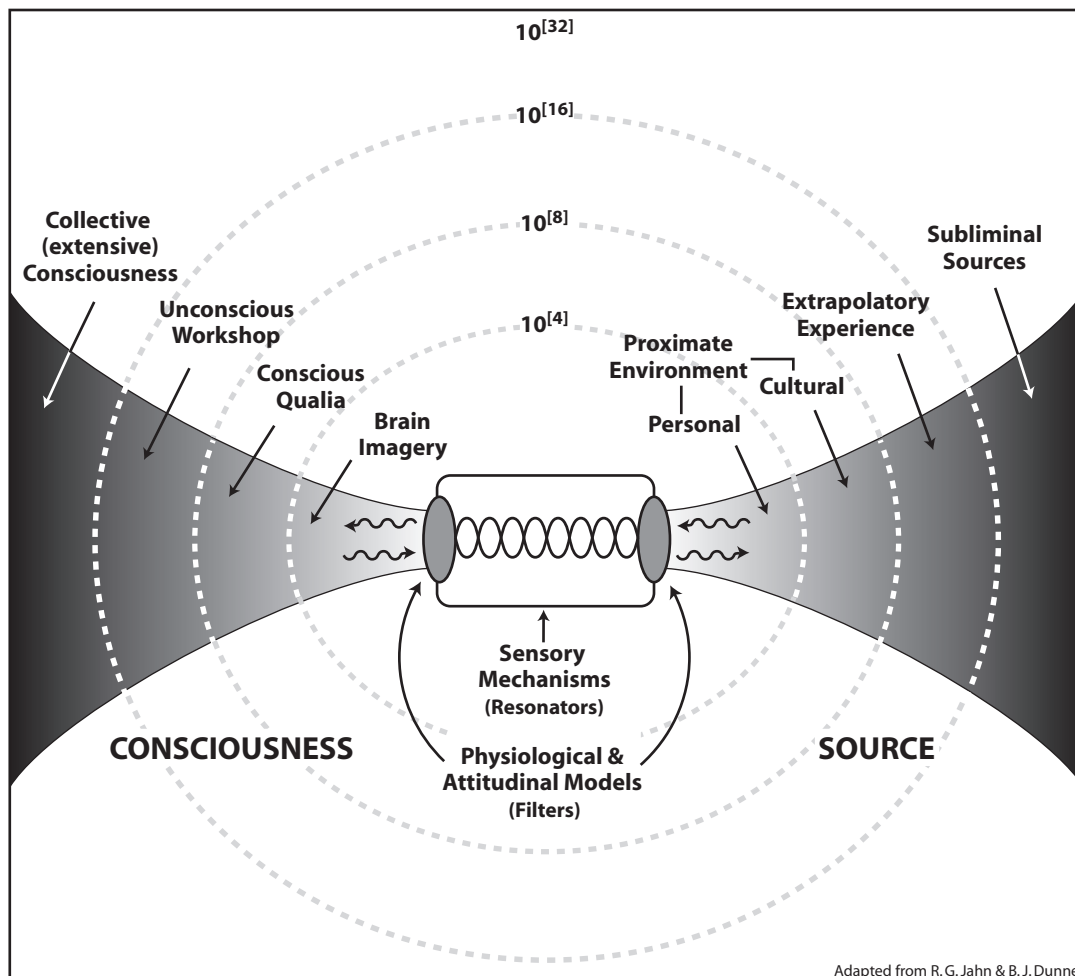
In a metaphorical exploration of this largest scale, the anisotropy direction reveals itself as an orientation of the needle of a cosmic compass - around which the polarization plane of electromagnetic radiation twists the most as the radiation journeys through the fabric of space. In Earth's cosmosphere this axis is drawn through the constellations Sextans and Aquila. The constellation Sextans represents the sextant, the ancient navigational instrument by which seafarers would orient themselves. Aquila is the messenger from Heaven - the mythological Eagle leading souls to immortality. Their association via the 'poles' of the cosmic anisotropy 'axis' echoes the rest of our scientific knowledge, as the 'axis' orients light and all electromagnetic waves.

Since the new polarization rotation we observe has such a systematic dependence on the direction of travel of the radiation, it is implausible that it is generated by cosmic ions and fields via some mechanism similar to the Faraday effect, or some other effect that depends on physical matter in the Universe. One may therefore surmise that it is vacuum itself that flaunts a form of electromagnetic anisotropy - similar to the anisotropy exhibited by many crystals.

It is possible to conceive that the polarization rotation can be generated by a coupling of the so-called "electromagnetic field tensor" to a new, four-dimensional vacuum field, whose "spatial part" is the anisotropy vector we've discovered. Furthermore, when subjected to coordinate transformations ("time reversal," "space inversion," etc.) this new field behaves in the same manner that the intrinsic spin of an atom or elementary particle does, when the atom

or particle is subjected to such transformations. One may therefore affix some sort of "spin" to the new vacuum field.

Let us reconsider that the largest and smallest computable scales that we have to deal with are each on the order of 10^{31} and 10^{-31} respectively. The proposition being made in light of such scientific data is that the largest scale we can project into arises directly from that smallest scale that we can envision. The 'spin' in the vacuum, like a whirling, bring image of a vortex - a form that is morphologically similar to the Picard Topology. Both are drawn from the same scientific data. Perhaps we can lightly enjoy the old expression "there must be something in the water," when we reflect upon the origins of the Picard topological model: the University of Ulm, in Albert Einstein's home town.



Perception of Quantum States

Let us begin again from the base scale of the human body. Our interaction with each envelope of experience is 'framed' through a model. The model formulates awareness of our relationship to all scales, present or represented. Each envelope of scale is an exponent of the

previous envelope, originating from the base 'unit' of our body. That is to say that all of our experience is based on the 'unit' of our body. Experiences at any scale beyond the body is filtered through layered envelopes - and each of these envelopes being composed of reciprocal scales. The envelopes increasingly distant from our own are accompanied by models for perceiving and interacting with each. However, it is these models that constrain our dimensions of awareness, causing our innate faculty lose touch with the world.

The models in the first through fourth envelopes are experienced in-tandem with the basic senses, and thus they require no cognitive modeling. They are a direct transduction of the environment. At the fifth envelope none of our base senses suffice to directly experience the world, and we must rely upon models for perception and interaction. Cultures have chosen to approach this initial 'envelope of the envelopes' in various ways.

Material methods, analogous to a lens, are most often applied when addressing the small scale; i.e. tools are constructed based on models of light, heat or other energy. These tools allow the 'small' to be 'enlarged' - all self-consistent with the models that gave rise to them. As discussed, systems of medicine also apply to conceive of these scales. 'Immaterial' ways are generally used for the large scale; i.e. social systems, governance and their associated material paperwork. Each of these carries a 'particle' metaphor - papers documenting points of data while lenses expanding the motion of smaller things. In this light, particularly, the fifth envelope can be seen as the threshold of 'technology.'

The model that gives rise to a technological tool is organized around a biological sense. It is into this sensory mode that measurements from the more distant envelope are being transduced. This transduction is lossy, however, as our models are focused upon a certain channel(s) of perception. The reduction of information via a tool's model bears a direct dimensional relationship to the uncertainty in our measurement.

As our sensation is increasingly mediated through a model, our uncertainty grows - until we reach the modeled limits of the tool to conduct sensory information of the given mode. This limit is the information density of a tool's operative medium(s), relative to our sensory input. Consider viewing something smaller than the eye can see; often we use light expanded through the glass lens of a microscope. In this case we are limited to the precision our model specifies for the lens material and the order of energy exciting it.

As the scale between our models of material and energy approaches equivalence we reach a boundary. Because of the similarity in scale the certainty of our measurements is increasingly diminished. We have been able to extrapolate our models, generally to the edge of the atomic scale where we reach the classical threshold of quantum mechanical operation. However, the uncertainty inherent in the data of this scale is integral to the model - and that is to say it is integral with our state of consciousness. Thus, the dimensional and topological characteristics of a model's uncertainty are those of consciousness itself.

With this, we can consider the 'quantum scale' to be a measure of precision relative to our perception, both innate and technological. As such, it would be a non-discrete range of functioning *only relative to the discrimination and orientation of our senses* - the 'shape' of our own perception. By that some aspects of 'quantum' may be relevant to scales of smallness and largeness. Popular theory holds that consciousness and quantum states are interrelated, and this notion is upheld here as well.

Given this basis for modeling uncertainty and quantum states we may disregard scale. The operation of quantum mechanics would hold true for systems 'large' to the atomic, even human or galactic, and opens the topic of quantum states in personal and social dimensions. Models existent to quantum mechanics begin to take a new light in the interaction of consciousness with, what are considered here to be, large-scale quantum domains. Models of

particular interest include observation-based wave collapse, dimensional observations of state change, and other aspects difficult to realize when dealing with phenomenon that is confounded with the models we have instrumented.

From the consideration of large-scale quantum domains we may reconsider our 'envelope' model. As photon wavelength is modeled as a [sub-division of atomic operations], so may the envelopes of our perception be reflective of [sub-divisions] within consciousness. We may even consider the 4th, 8th, 16th and 32nd envelopes as corollaries to electron orbital shells.

Where I propose that we will 'get the most mileage' is to understand that all models serve the purpose of systematizing mediated awareness. The more a model is contextualized in relation to other models, the more it can be used as a language component in communicating our state of awareness. The contextualization process allows perceptual dimensions to be linked or synthesized, informing a more comprehensive understanding. By considering these models as residing within a grammar of consciousness I propose that we may develop a framework upon which to explore them.

The Conceptual Macroscope

Association and broad scope are paramount to any systemic exploration of natural phenomenon. The development of modern instrumentation has heavily focused upon increasing resolution. Without context these details begin to lose all association to the environment that supports them. As that association is lost, so is our ability to model them, and thus arises uncertainty - and quantum mechanics. The ramp to realizing macro scale quantum mechanics is sufficient context.

The core of a macroscope is to provide a Matrix of Association - a lens-like mechanism that draws together a greater range of detail, specifying correlation, coherence, etc. The range of focus this 'lens' cover is all articulate knowledge, and moreover it would provide a coefficient of articulation relative to a given context. Thus the macroscopic mechanism may give sight of patterns and associations that have received little or no attention, allowing new nomenclature - the 'creation' of new knowledge.

The functionality of a macroscope would allow a smooth ramp for exploring new areas of knowledge because bridges to these frontiers could be built from many perspectives. Our relative coefficient of articulation for these areas may be used to provide a comprehensive model of our awareness. The modeling would allow us to navigate through the lesser known and toward the pure chaos of the unknown. Mythology becomes part of this dimensionality, as it is a facet of our cognitive system and represents an absence of articulation. Far from irrelevant, the mythological thus maps the terrain of general awareness. Broad domain, from the articulate to the mythological, as a systematization of awareness is a hallmark of a macroscope. Systems modeling, risk management, and other attempts at a comprehensive investigation gain extended 'reach' through the use of macroscopic perception.

Human consciousness has shown not to move and steady, regular paces - but instead to contain periods of rapid growth and change. Rapid acceleration periods are like catalyzed reactions, where a series of events is triggered in complex succession. With chemicals in the lab, controlled conditions are used to guide this process. In the case of social systemics, we have no similar framework for control except for self-consciousness, social identity, and other facets of collective perception.

Without such self-awareness these rapid growths in human consciousness can lead to unbalancing situations such as border conflicts, market prolapses, and technological obsolescence. The effect that these consistently lead to is complicated systematic turbulence. Since this growth is the nature of human consciousness, investigations must address the

mythological foundations of the mind and our imagination. Macroscopic investigation is a method by which these scenarios may be addressed.

A systemic association inclusive of myth contains the roots for developing frameworks capable of understanding rapid accelerations in the growth of human consciousness. Such growths would then not be without informed awareness of their nature, since they would follow trends inherent in the system.

In the implementation of a macroscope using the networks, databases, browsers, and other tools of our day there exists tantalizing suggestion of symmetry with the physical. Relational Algebra and Relational Calculus form the basis of SQL - a language used primarily in databases. Relational Algebra, which has ties to vector algebra and quaternions, is the mathematical foundations of Quantum Mechanics. Calculus is the foundation of atomic-scale physics. Comparing quantum relationships to database queries may yield an associative system for grasping quantum functioning at the macro scale, and linking it to macro-scale physics. The association would also work inversely, like a Helmholtz Reciprocity. Where macro-scale operation would act like a 'quantum microscope', giving insights into phenomenon that would otherwise be difficult to grasp.

Collaborative Systems of Research

To accomplish the task of creating a macroscope we must similarly scale our vision of collaborative research and the tools it will employ. Many sources of information are brought together in the creation of a macroscope, extending from the laboratory and are found in field, communities, and private investigation. By drawing together these varied sources we can realize emergent patterns seen through statistical analysis, set theory and holographic models. This work is beginning within the groups building sensor-nets, urban planning and footprint models, and similar initiatives of broad cooperation.

Open source community contributors have laid in place frameworks for distributed development. These tools are a genus of interface zeitgeists - emergent templates for the human to interact with information. Aspects of those tools may be remixed, creating forums capable of handling the varied aspects of system development, information routing and publishing, graduated educational feedback, stakeholder forums and public play-spaces. Methods of collaborative study may find more ready realization via these mechanisms of community development and refinement.

Consider a diorama of collaboration within the system: people could look through the complex movements of the ecosystem to see the axes of genetic operation. DNA could be rendered as a global 'CPU' - a transducing processor of Earth's dynamics, and the brain of our collective meta-body. Performing this kind of collective exploration across the range of human practice will give degrees of articulation to anomalies, subtle patterns, and qualitative phenomenon for which we lack few ways to explore, yet are equilaterally bridged between all parties. The potential to articulate the 'anomalous' offers one method of providing a new generation of continuity to the P.E.A.R. work that gave birth to the "Sensors, Filters and the Source of Reality" paper.

By their contextualization, metaphor and mythos could span stories, genetics, ecology, food, medicine, language and law. Fleshing cultural forms in this ways brings visions of an Architecture of Mythology, and lends insight into the popularity of the world's most prevalent books, stories and related works. These forms being elementary to our models, the 'grammar of consciousness' our models formulate is itself an element of a 'general systems language.' The role of evolving areas humanity, such as Cultural Property, could more clearly be considered in their framing of next stage of human rights and human development.

Conclusions

Collaborative research systems are hardly novel; Native Americans began hybridization 'programs' for corn and other plants more than 10,000 years ago. The forms of science, agriculture, medicine, sacred practice, cultural tradition and myth were woven together to create a worldly macroscopic vision that reinforced awareness and continued learning of the complex nuances present in the nature. The aim here is no less an integrated model.

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