# Models of Psi Mediation: A Classical and Quantum Approach

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**Abstract**

In this chapter I address both classical and quantum mechanical modeling approaches to psi phenomena including those pertaining to the role of psi phenomena such as the psi-mediated instrumental response (PMIR) and relative need-serving qualities of psi, psychokinesis as a primary psi process, and psi as a product of evolution via Darwinian theory. In addition, I address classical models including electromagnetic models, energy field models, and the zero-point field model. I address the associations of psi phenomena with quantum theory, and new approaches to such phenomena via quantum mechanical modeling. Also included is an overview of fundamental quantum mechanical laws, principles, and issues in regards to psi such as the Heisenberg uncertainty principle, superposition, quantum computation, decoherence, entropy, information processing, wave function collapse, and the measurement problem. I elaborate on the essential role of quantum information theory in regards to psi phenomena, the view of computational living systems, the macroscopic challenge for quantum computation and psychical research, the quantum efficiency of psi, and the non-local communicative nature of psi. In addition, I address the part played by Nature in regards to the mediation of psi via my own hypothesis addressing Nature as an experient accessible universal information processing and storage system with features of four dimensionalism. I address geomagnetic entanglement and permanent and seemingly macroscopic entanglement in regards to psi. Importantly, I briefly call for a redefinition of precognition, that does not defy the principle of causality (arrow of time), as a result of experient access to Nature's probabilistic computations in real-time (i.e. once we start to view Nature as a quantum computational system, or similar to the human brain e.g. in regards to predictive coding, we will begin to see that it may not be the "future" experients of precognition receive, but rather probability based on past and real-time events calculated by the system).

**Key Words:** psi phenomena, role of psi, psi-mediated instrumental response, psychokinesis, evolution, Darwinian theory, electromagnetic models, energy field models, zero-point field, quantum theory, Heisenberg uncertainty principle, superposition, quantum computation, decoherence, entropy, information processing, wave function collapse, measurement problem, quantum information theory, non-local communication, mediation of psi, universal information, four dimensionalism, geomagnetic entanglement, macroscopic entanglement, precognition, principle of causality, arrow of time, predictive coding, probability.

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Models in regards to psi are separated into two main categories: [1] the basic physical mechanism [*psi mediation*], and [2] the psychological aspects of how and when human beings are able to utilize psi [*experiential phase of psi*]. The first category will be addressed in this chapter, and the former will be addressed in another. There have been many types of models constructed throughout the history of parapsychology including theoretical and hypothetical models. It should be noted that parapsychology is focused more upon scientific rather than mystical modeling, where Nature and the laws of Nature are addressed to explain the mediation of psi. Psi modeling provides a hypothetical and theoretical basis for the multitude of theories and hypothesis of paranormal phenomena. These concepts have included electromagnetic theories, space-time theories, neurophysiological theories, and theories based on brain-mind dualisms, only some of which will be discussed here. Such theories are accompanied by many problems, such as coding-decoding issues when considering electromagnetic radiation.

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Although psi modeling is mainly concerned with the physical aspects of psi, there is hope among the parapsychological community that a comprehensive theory of paranormal phenomena may be provided allowing such phenomena to no longer be considered in the category of the "anomalous." Such models are constructed to answer the core questions concerned in the parapsychology field, such as: "how is psi possible?" and "how are people able to produce psi phenomena?" Unfortunately, the common view of physics leaves very little space for paranormal phenomena. Therefore, the objective of parapsychologists and researchers in related fields is to use that "very little space" to their advantage as best as they can.

## The Role of Psi

When psi is regarded, spoken or written, as an ability, caution should be taken against a casual perception of the term "ability." Typically, an "ability" implies some degree of conscious control, such as verbal ability. However, psi is assumed similar to a physiological function such as the sensory feature of hearing. Perhaps it is best to view psi as an ability, or feature, in which is bound to an individual human being as a function of his or her personality in the broadest sense of that term. Much effort has

been devoted in regards to speculating on how psi works, assuming that its purpose is either extended communication [*extrasensory perception*] or extended motor action [*psychokinesis*]. However, the consideration of how psi works is not the same as the consideration of what psi is for or why human beings possess such an ability. The former considerations, extended communication and extended motor function, appear faulty; as such extended functions are unreliable and erratic. So again the question is brought to the forefront, "why do we have psi?" or "what is its role in life?" Such questions must be addressed to move forward in an understanding of psi, and this understanding must be applied to move forward in developing a model of psi.

Such modeling points to characteristics of psi such as psi being need-serving; where psi functions to serve goals such as survival and deep psychological needs. These types of needs are not the focus of conscious attention, but rather involve the linking of psi to the serving of subconscious needs. While this is sufficient for spontaneous cases, which lead us to more questions pertaining to the elusiveness of psi, slightly different characteristics are apparent, such as decisions making needs and the need for health and well-being. These types of needs do appear to be the focus of somewhat conscious attention, linking psi to the serving of semi-conscious casual needs, allowing the potential for practical applications. While the practical application of psi may still prove to be somewhat erratic, psi appears to be somewhat designed to adapt to organizing principles, perhaps as a means to maintain the order of mechanisms of probability.

In the mid-70's there was a shift in view surrounding psi phenomena due to the dismantlement of the classical view of psi because of quantum mechanics. This new view of psi proposed greater importance to psychokinesis, suggesting it to be a "fundamental" or "primary" psi process that could subsume extrasensory perception, rendering extrasensory perception an assumed direct result of psychokinetic functions [i.e. the "movement" of thoughts]. I postulate that thought, despite the current incapability of brining a thought "to rest," which is required to submit a single thought to examination, does have measureable mass as thought is capable of moving in waves in which implies mass. The motion of implied mass therefore suggests psychokinesis as a primary psi process. Such a shift in the view of psi

also changed the view of psychokinesis from a psychic mechanism [e.g. a psychic lever] to a force-like function, and then to a view of psychokinesis as the ability to shift probabilities of events, to bias probability distributions. In other words, practical applications can be found through the usefulness of psychokinesis in the area of changing odds in our favor.

With a fresh new view of psi, soon thereafter came the consideration of the systematically possible function of psi and the introduction of the *psi-mediated instrumental response* or PMIR. The basic concept surrounding the PMIR was that human beings utilize psi to accomplish something that fulfils certain needs in which the individual consciously or subconsciously possesses. Such concepts lead to arguments suggesting that psi may be far more common in daily life than immediately apparent, but that psi does accomplish its goals in a subtle elegant manner void of conscious awareness. Further arguments then direct us towards the question "if psi is a staple in our subconscious daily life, can psi be directed to be a staple in our conscious daily life to any extent? The assumption in which describes how the PMIR should work has been summarized in the following points:

1. Psi [as PMIR] is probably operative in daily life far more than we realize.
2. The chief function of PMIR is to accomplish certain goals or to fulfill certain needs of human beings.
3. PMIR operates for the most part unconsciously. Not only is the operation of psi unnoticed by the individual, but also the need might not even be consciously recognized.

Continued insistences have been made over the years in regards to the role of psi as a function to serve the needs of the individual. If psi is such a useful psychic device, then it should have, and therefore has become, the responsibility of relative scholars to consider more seriously the possible psychological and biological implications of the phenomena deemed "paranormal" and to consider more seriously possible practical applications. It is also therefore the responsibility of the individual to consider more seriously the need to strive for a better understanding of psi functioning in everyday life before they expect to capture it in a practical sense. The practical use of psi is assumed possible via therapeutic and experimental applications in which can be utilized on a daily basis. Regular conscious use of psi, via the subconscious need to perform,

appears to be the fundamental key to regular successful psychical influence.

Psi ability is viewed as the product of evolution, of the same processes of *natural selection* that has yielded human beings all other features and abilities. Such a view of psi's evolutionary nature allows a working assumption. This working assumption leads us to look to evolutionary biology for the answers to the initial question 'what is psi for?" Here we find answers that are more straightforward. Darwinian Theory has a base explanation for any ability: it serves to help human beings survive and pass on their genes to the next generation. The base explanation here is *survival* in the biological sense. The real survival in an evolutionary view is the survival of the gene rather than the being. If psi is indeed a product of evolution, then its function is to help ensure survival. We have already addressed that psi is need-serving, and these needs are significant as they contribute to the health and well-being of the individual so as to make the individual better able, and more likely to reproduce to ensure the passing of genes. One may take the tem "survival" to assume psi is only useful in a critical moment collective with a critical need, but the term "survival" should be understood to mean more plainly: the ability to endure on a daily basis, to withstand hardships and stress [i.e. to be well].

Considering psi as a survival-related product of evolution, proposed speculations as to the characteristics of psi include the relation and contributions of psi on the mental and physical health of the individual, and quite possibly the individuals' children. This implies that the individual will know, typically subconsciously, in what circumstances psi may or may not be needed. In other words, their subconscious will recognize when the application of psi or "*probability shifting*" would help the individual, or recognize when there is no need for the application of psi. Such is fundamental to the idea surrounding an "ability," i.e. that the individual will know when to apply that ability to their best advantage. Again, this is not to assume psi can only be used in critical situations or that any event in which can be attributed to the application of psi must have a need behind it, but the latter does seem to be the case. It is believed that psi is unequally distributed amongst the population, in other words, some individuals may be more successful than others at the application of psi to serve their needs, but that is only to say that psi is like any other human ability.

Here a new set of questions are brought to the forefront, "if psi presents itself as being characteristically subconscious, how is one to consciously control psi to better apply it? Here we try to define the appearance of semi-conscious psi, where a need is consciously known to the individual, and psi is utilized to shift probability. Here we can simply attribute the application of psi to the subconscious element even though the conscious element was aware of the need. However, if being consciously aware and therefore subconsciously aware of the need for psi, how can one increase their chances of shifting probability? This question could be answered with "the avoidance of antagonists of psi" or "the implementation of enhancing elements of psi" within the individual [e.g. enhancement: personality] or within their immediate environment [e.g. antagonists: an abundance of sensory stimuli]. While we know psi can be elusive in the laboratory, and in real-life use, and this elusiveness is assumed a byproduct of the nature of psi, could it be that psi is elusive because imperceptible psi is more effective? Could this imperception, this hidden characteristic, be a necessity for the individual's protection? Are their safeguards that can be put in place to utilize psi at a conscious level?

Take shamanic practices, where psi appears to be relatively consciously controlled by the individual, yet also involved in practice are features of spiritually tending to their tribe/community and tending to the health and well-being of their tribe/community. These characteristics appear to remove the individual from the limitation of subconscious applications of psi, whereby allowing semi-conscious control. This can also be seen in other career-focuses of psi such as card readers and energy healers, where a need to help, providing a service to others, is applied. Here the need could consist of the individual feeling the need to help others and therefore placing themselves in a position of continually needing to help, or that another individual possesses the need, therefore the first individual can apply psi to help the second individual.

This takes us back to the individual utilizing psi for the survival of themselves and their children. Could "children" be diversified to "family?" Many spontaneous cases of psi suggest the individual producing the psi effect required the application of psi to survive, but there are nearly as many cases where the individual utilized psi as a means for the survival of a loved one. In the case of the shaman, his tribe is his

family, so again we diversify. Could "tribe" then be comparable to "community" today? In any case, psi tends to present itself in cases involving people the individual care for [i.e. know and have strong feeling towards]. The definition of "community" a few hundred years ago has changed when considering the definition of "community" by today's standards. Today many are unlikely to know all the citizens in their community, some people may even be unfamiliar with their own neighbors. Therefore, if the definition of "community" is so subject to change, perhaps we should be looking at the limitations not of the people surrounding the individual, but rather the limitation of "loved ones."

Other cases report the application of psi in ensuring the survival of a friend or colleague, someone the individual cared for, but not necessarily in a deeply emotional way. This may suggest that regular repeated spatial interaction may play a role in the application of psi, or simply *spatial proximity*, which we will go into more deeply later.

Whether it be a self-serving need or a need for a loved one, need appears to be a requirement. So how does one create a conscious need on a regular basis, enough to have some level of semi-conscious control of psi? For the development of a need, there has to be a relative consequence for the individual. The individual therefore would need to develop or employ a practical daily application where if the semi-conscious control of psi is not obtained, then a consequence will befall the individual. While one with a scheming mind may hesitate at such a proposition as a consequence, evidence supports that the consequence need not be a life-or-death matter. Instead, they can be psychological needs such as approval or status, feelings of achievement, i.e. real needs on regular bases. Such needs can be found in traditional medical and alternative medical fields.

Healing practices, consulting practices, etc. can provide a practical daily need to help others, maintain status in field, and to seek achievement for their contributions to society. The complexities of psi make it proper for career focuses, rather than a general interest where the application of psi is irregular and not focused on a real need. To understand the whole of the question "what and why is psi," we need to first look at how psi mediates, then later, we will look at how psi manifests.

**Electromagnetic Models**

Early in parapsychological history, some accounts of psi were believed mediated by *electromagnetic radiation*. Suggestions were made theorizing that in regards to extrasensory perception, radiation affected the electrical activity in the brain in a direct manner [e.g. void of passing through any known sensory organ]. In regards to psychokinesis, electrical activity in the brain was theorized to be "transmitted" as electromagnetic radiation. During this time, telepathy was viewed as a sort of "mental radio" where *extremely low frequencies* [ELF] waves played a fundamental role. The electromagnetic hypothesis suggested that "signals" conveying psi information affected a primitive portion of the brain rather than affecting neurons [e.g. the glial cells]. This elementary form of conveyance was assumed to work more effectively during periods of low *geomagnetic activity* [a variable intensity of Earth's magnetic field], and at times in which an individual is exposed to a minimal amount of sensory stimuli [e.g. *sensory deprivation].*

Further support for this theory was due to correlations between cases of spontaneous extrasensory perception and low levels of geomagnetic activity, which were later observed in spontaneous and experimental psi performance. However, the data for extremely low frequency waves is not conclusive. Related questions pertaining to geomagnetic activity and psi mediation proposed investigations of *atmospheric electromagnetism* as a possible psi mediator. Investigations produced a small, but significant negative correlation in regards to extrasensory perception and atmospheric electromagnetism. However, there have been various arguments surrounding electromagnetic theories. One reason that lead researchers to object to the theory of electromagnetic mediation was that psi seemed independent of distance. Another strong argument for electromagnetic theories stands at the fact that psi continues to mediate within a *Faraday cage* [a small chamber designed to exclude electromagnetic radiation of specific wavelengths] during experimentation. While a Faraday cage possesses no obstacle for extremely low frequency waves due to resonate frequency, this theory is still objected due to a lack of clarity as to how an experimental participant could "sense" and interpret *resonate vibrations*.

Other arguments have been made regarding how the human brain could not possibly act as an antenna for such waves being that the brain is small com-

pared to the considerable proportions that would be required. Such considerable proportions would be required as such waves possess a poor capacity to travel over large distances. Around this time, hypothetical "advanced" electromagnetic waves were assumed, but also were declined. In the end, electromagnetic theories could not be fortified enough to explain the mediation of psi, and were therefore replaced with other theories.

**Energy Field Models**

Another common theory researchers attributed to psi mediation involved some undiscovered or unrecognized form of physical energy assumed to radiate from the individual as a field effect. The energy was assumed to exist as small energy packets or quanta, so small that they were assumed to not interact with matter, whereby allowing the energy to pass though solid matter without difficulty. Interests in such a "bio-energy" lead to the type of research commonly called *psychotronics*. The momentum of energy raised arguments targeting the theory, as energy tends to pass through matter unimpeded, therefore how could the energy be rendered inert as to be detected by the brain in cases of receptive psi? The response to this argument was based on the supposition that the energy was not rendered inert, but rather effected via an interaction with neurological processes as the energy passed through the brain, correspondingly to how magnetic fields can induce electrical flow.

Unfortunately, even after years of psychotronic research, such a form of energy with these characteristics has not been found to exist. Because the energy field has not been found to exist, it cannot be subjected to empirical testing. Therefore, this "theory" in terms of legitimacy is better categorized as a hypothesis. However, future quantum mechanical models of psi may lead to the discovery of this "bio-energy." Current candidates include *biophotons*, which appear capable of quantum information transference.

**Zero-Point Field Model**

While the scientific concept of the *zero point field* is not a topic of controversy, the pseudoscientific concept surrounding the harnessing of the zero point field is a controversial matter. This hypothesis suggests that a human being can harness perpetual motion machines and other generating devices assumed based on zero point energy. This hypothesis has been criticized as being in violation of fundamental physical laws. The con-

cept remains a hypothesis because there has been no level of demonstration to substantiate the claim, nor has a "plausible" description of the mediation process been given. The scientific community's findings suggest that zero point energy is a minimum energy below which a thermodynamic system [including human beings] can never go. Therefore, such energy is unobtainable or incapable of being withdrawn.

However, if zero point energy is dynamic, which is assumed the case, then it constitutes as a large pool of energy and momentum flux inherent to the "fabric of the universe." If this is true, then the ability to tap into this pool may be allowed. If such were the case, then systems [e.g. human beings] in which draw from this pool of energy would not necessarily violate any conservation laws. However, there is no theoretical basis or practical evidence suggesting that an infinite amount of energy is available for use, nor a basis suggesting that it is not. While those in alternative medicine [e.g. energy healers] emphasize the implication of zero point energy in the rational for practices such as Reiki, much of the scientific community considers such claims to be based on misunderstandings in regards to physical laws, biology, and medical science.

**Quantum Mechanical Models**

The study if psi or psychical phenomena involves assortments of disciplines including quantum mechanics. Many readers of this book may have had some exposure to quantum physics. Therefore, they may be rightfully perplexed [e.g. the absence of wave function]. Psychical phenomena alone can be perplexing enough, let alone when approaching it from other disciplines such as quantum mechanics. Understanding the certainty of uncertainty can be frustrating at times [e.g. knowing the more certain you are about one aspect, the less certain you are going to be about another], as well as understanding the relevant affairs of the macroscopic and microscopic aspects of the phenomena. However, parapsychologists have associated parapsychological phenomena with *quantum theory*. As the classical views of parapsychological processes were dismantled, the adoptions of quantum mechanics lead researchers towards two new approaches to parapsychology. These two new approaches include [1] the "weak quantum theory," in which quantum theoretical concepts are directly applied to the phenomenology of parapsychological processes, and [2] the examination of ways in which the quantum world acts at the physical level

that are assumed to lead to large scale psi effects.

The fundamental change in our understanding of how the universe works started with the first quantum theory in physics, Planck Law. This law was discovered by *Max Planck* in 1900 and resulted in a Nobel Prize in 1918 in recognition of the services rendered to the advancement of physics his discovery made – energy quanta. The foundation of this law is the *Planck constant*, which was first described as the proportionality constant between the energy of a photon and the frequency of its associated electromagnetic wave. Albert Einstein soon after suggested that the energy in a beam of light occurs in individual packets, later called photons, and the energy of a single photon is given by its frequency multiplied by Planck's constant. While the energy of a photon could be approximated at this time, whether light was a wave or consisted of a stream of was up for debate for some time after. Several physicist composed particle models, others wave models, but neither appeared to fit entirely.

In 1924, French physicist *Louis de Broglie* proposed the idea of *wave-particle duality* suggesting that light has both wave-like and particle-like properties, as do electrons, atoms, and small molecules etc. In conclusion, neither of the classical concepts of particles or waves could fully describe the behavior of quantum-scale objects be they photons or matter. This discovery has since served as a central concept in quantum mechanics.

Quantum mechanics [QM] is briefly defined as a body of scientific principles describing the behavior of matter and its interactions on both the atomic and subatomic scales. QM's development, a revolution in physical theory, is the result of physicist coming to terms with the limitations of classical physics. The principles of QM are difficult for the human mind to comprehend. This is mainly in part by the fact that humans are accustomed to reasoning in regards to the world on a scale where classical physics is an exceptional approximation. QM is counterintuitive, and in the words of *Richard P. Feynman*, a founder of quantum electrodynamics [QED], "I hope you can accept Nature as She is – absurd." Many fundamental components of the universe exhibit wave-particle duality where their behavior is in some ways particle-like and in other ways wave-like, such as *photons* [discrete packages of light]. In regards to electromagnetic radiation, the laws of

QM predict such energies, colors, and spectral intensities.

Unfortunately, because QM laws are counterintuitive, predictions in one area instantly creates unpredictability in another area. For example, the more one comes closer to measuring the position of a particle the less predictable the measurement will be regarding its momentum as stated by the *Heisenberg uncertainty principle*. The result here are different outcomes when measuring position and then momentum compared to momentum and then position. In addition, particles can be paired and *entangled*, which results in an action where if one of the entangled particles characteristics are altered [influenced] its pair will instantaneously alter to match its entangled twin. This instantaneous action is regardless of the distance between the entangled twins.

Another issue that arises in regards to measurement is the unresolved problem of how *wave function collapse* occurs, termed the *measurement problem*. Wave function collapse is defined as the process by which a wave function initially in superposition [in multiple states at once] appears to reduce to a single state after interaction with the environment. In other words, it is the condensation of physical possibilities into a single occurrence. While a physical system can be described by its wave function, a systems wave function cannot be directly observed without initiating wave function collapse. This measurement problem has posed a particular problem in parapsychological research and is a central issue in the interpretation quantum mechanics.

**Quantum Information**

Since the development of *quantum information theory*, quantum information has been considered an essential role in the description of Nature. The quantum theoretical descriptions of physical systems were and continue to be formed by the hypothesis that we exist in a universe in which there is specific constraints on the acquisition, representation, and communication of information. These descriptions are viewed as complimentary to the classical description of physical systems in terms of the laws of physics, and can be reducible to information at their most primitive state. The role of information in this view is to reveal the deep nature of our physical reality. This view suggests that a quantum state is a construct of the observer and not an objective property of the physical system. It also assumes that the nature of reality can potentially be explained by subjective knowledge.

However, an opposing view exists, one in which I strongly agree upon, which infers underlying laws of our physical reality with a range of flexibility. This view is based on considerations of physical reality, and assumes that any constant description of Nature is composed of both the flexible, but finite, laws of Nature and the sum of its finite sub-systems including their past, present and potential future positions. Nature is not deterministic in all regards, but is subjected to indeterministic properties in quantum systems in which are finite. These *indeterministic properties* result in an absence of predictability throughout Nature and therefore throughout our physical reality. It is assumed that Nature is aware of the finite probabilities for any object or event, and is therefore prepared for any probability when it occurs. Therefore, Nature itself is never exclusively sure of the result of quantum interactions, but it is able to calculate the most likely probabilities to occur and arrange them based on highest percentage of probability.

These laws and information aid Nature and us in distinguishing one aspect of the system from another. This is important, as without distinguishability, all aspects of the system would appear identical. The fundamental concept of distinguishability between systems is found in the states of the systems. These different states are essentially referred to as a "*bit* of information." A *bit* is the most essential measure of information in the classical sense. In QM, the most essential measure of information is the *qubit*. In the classical sense, when one has more than two outcomes, the system simply uses more bits to distinguish one from the other. This is commonly understood when viewing computer information in binary code (e.g. 0101000101001101 = QM). Indeterminism is best understood when a coin lands on its side (not heads or tails, but both). In technical terms, this would be termed *quantum superposition*.

A rule exists in QM stating that to know the exact value of a property of a system [e.g. energy, momentum, location, etc.] we have to destroy its quantum nature or "quantumness" in order to obtain the information. Not only our interaction with a quantum system causes this result, but also through the systems interaction with its environment. Systems are in a continual engagement with the environment, as Nature continually wants to know more about quantum systems [quantum objects] as to measure their properties and log changes to those properties. Cur-

rently, the scientific community cannot prevent the environment from interacting with a quantum object for more than a few seconds except through experiments involving free-space [vacuums] etc. Within this time, physicists are currently able to use quantum indeterminism in applications such as *quantum computation* and quantum cryptography. This quantum indeterminism, being in several states at once, is not just confined to the microscopic scale, as it also exists on the macroscopic scale. It is responsible for many macroscopic effects that we can see with our own two eyes, possibly including instances of psychical phenomena.

Typically, quantum physics is not applied to macroscopic objects as classical physics is usually sufficient and reduces complexity, except in regards to more complex phenomena. Through the analysis of information, we can review the two most important properties of quantum theory. The first property is that qubits can exist in various states at the same time. The second property is that when we measure a qubit, we reduce it to its classical result [i.e. we can derive a definitive result]. A qubit is briefly defined as a quantum system that can exist in any combination of two states [e.g. zero and one], unlike the classical bit, which can only exist in one state at a time. Therefore, in QM, to quantify information we use entropy of a qubit, rather than entropy of a bit. While the change from a qubit and bit may seem inconsequential, there are profound implications. Such implications involve how the quantum entropy of two correlated quantum systems can be smaller than the entropy of the systems individually. These reductions of information, and other factors not applicable to classical information, provide us with a great deal of available potential in regards to what we can accomplish in information processing in normal regards, and in paranormal regards.

Computers at a basic level are defined as any object capable of taking instruction, and performing computations based on said instruction. Two valid examples of computers by this definition are living organisms [e.g. human beings] and atomic physical phenomena. Like computers, the human mind is capable of encoding and decoding information in the brain, and parpsychologically speaking, is assumed to be able receive and decode information from the environment, or other individuals, and encode and transmit information to the environment or other individuals. In regards to encoding information quantum me-

chanically, there are many different systems that could be involved in such processes [e.g. photons]. However, there are debates regarding how quantum information can be receive and interpreted by the human brain or measured by the environment in this manner, for as soon as any information in superposition is observed, it is destroyed. We will discuss more on this in the next chapter, but for now we will be addressing issues with parapsychological research and *quantum decoherence.*

Quantum decoherence is the mechanism by which quantum systems interact with the environment to exhibit probabilistically additive behavior. Decoherence presents the appearance of wave function collapse. It is the mechanism in which the classical limit [ability to recover classical information] emerges out of a quantum system and determines the location of the quantum-classical boundary. In other words, it is the process by which the "quantumness" of a system is lost and replaced by its classical counterpart. While the discovery of decoherence works well in laboratory physics, when applied to treat the whole of Nature as a quantum system, the strategy of decoherence fails. It fails because Nature has no "external environment." While decoherence is considered a key aspect in QM and parapsychology, far more information is needed as decoherence theories are not capable of resolving the measurement problem, and while this may be of a lesser importance to quantum physicists, the measurement problem is a central issue in parapsychological research.

Fortunately, some development in this area has been made in the area of quantum computing, which also requires the use of quantum information at a macroscopic level. The initial challenge for quantum computation was a constant battle with entropy. As with human beings, the lower the overall entropy of a physical system, the higher the chances that its constituent atoms may become entangled. Atoms initially utilized for quantum computation typically needed to be at temperatures close to absolute zero [about -459.67°F], but today, materials have been found only requiring temperatures as high as room temperature. Due to this, physicists are now realizing that quantum effects are far more ever-present in macroscopic systems. This provides physicists with the hope that one day they may discover that Nature has already supplied us with a computer capable of quantum computation, and the only thing left for them to do, is program it. The direction

of this discovery is relatively parallel to the direction of parapsychological research. That is, to seek out the ability to tap Nature in a quantum respect at the macroscopic level as a means to explain the nature of psi and discover how to make the most of psi through practical applications.

Could it be that a human being is a quantum computer, or perhaps exclusively the human brain? What if quantum computation is so ever-present that it can be found in every living cell of our bodies? There is consistence evidence suggesting that natural processes must be based on quantum principles in order to function in the manner in which they do. In fact, the possibility that quantum computation can be implemented by living systems is a growing area of *scientific* research. However, if parapsychological processes exist at the quantum level, why do they not exist at the classical level, or rather why qubits rather than bits? While utilizing a single bit may appear simpler, Nature somewhere along the way decided to make an extra effort, well, kind of. The answer here may be in regards to the central function of psi, information processing. While it may be simpler to utilize single bits, there is a significant quantum advantage in *search* when utilizing two quantum bits [qubits]. With qubits, Nature can complete computational search-based processes in one simple step. Therefore, Nature is designed, and therefore quite possibly human beings are designed, to allow more efficient information processing than if we were to utilize one classical bit in the same number of steps.

This poses the question, "can DNA actually be a quantum computer?" It is unclear at this time how DNA could exist in several different states at once [superposition], and whether DNA is more quantum than classical is unknown. The discoveries being made in the quantum-computing field are showing us that larger and larger systems appear capable of exhibiting quantum effects under certain conditions. However, the ability to "look at them in the right way" may be many years away. Does this mean that any complex portion of matter or energy could potentially, under specific external conditions, be considered or used as a quantum computer? Could Nature itself be a complex brain or multi-layered quantum computer?

**The Nature Hypothesis**

The following is my hypothesis on the part played by Nature in regards to the mediation of psi. Here the whole of Na-

ture cannot be correlated with any other system, since by definition, reality comprises all physical systems. I believe that the method utilized by experients of psi phenomena is best comprehensible via the convergence of the mechanics and laws pertaining to Nature understood as a *universal information processing and storage system*. Nature appears congruent in respect to the ontological view of four dimensionalism, which is concerned with how objects persist in time. These proponents of four dimensionalism claim that both past and future objects lay equal claims to having the same level of reality as does the present moment. Therefore, if any object or event [x] is a past reality, then the past object or event [x] is equally as real as the present object or event. In addition, the equivalent idea applies for any future object or event. If any future object or event [y] is a future reality, then the future object or event [y] is equally as real as any present object or event. The system appears to order events into a single distinct mode. In this mode, events are ordered by way of non-relational singular predicates “is past”, “is present” and “is future,” which is similar to the A-series of temporal events, a type of ordered relation among events referenced in modern discussions of the philosophy of time.

A-series suggests a series of positions, which run from the remote past through the recent past to the present and from the present through the near future, and continues on to the remote future. The essential attribute of this descriptive modality is that one must think of the series of temporal positions as being in a continual transformation, in the sense that an event is first a potential [future], then a part of real-time [present], and then the past. In addition, assertions made in regards to this modality implies the temporal perspective of the system. I have hypothesized that Nature stores factual information deemed declarative, procedural, conceptual, or contextual. In regards to an experient requesting declarative or procedural information, information can be explicit, intentionally requested, or implicit, unintentionally requested. These two forms of information can be further subdivided into conceptual and contextual information.

**Conceptual Information**

Conceptual information refers to meanings, understandings, and other concept-based information unrelated to specific experiences of Nature. It may however be independent of contextual information. Conceptual information is best defined as generalized information

that does not involve specific events or objects. Conceptual information is likely acquired across various contexts and is able to be used across different objects or events, and is considered the *sum* of all information within Nature, or portions of Nature. It is an abstract information subset that applies to a wide variety of experiential objects and events in which delineates categorical and functional relationships between objects or events.

This subset is hypothesized to operate and organize based on networks internal, and possibly external, to its locale composed of finite nodes connected by finite links. Each node may represent concepts, perceptual features, probabilities, or nothing at all. A node is directly linked to other nodes in which are either deemed a subclass or a superclass inferring a hierarchical information representation in which high-level nodes representing larger categories are connected. These high-level nodes can be either directly or indirectly connected to many nodes belonging to those categories, whereas nodes representing specific experiences are at a lower level, hypothesized to be connected only to their superclasses. Links may be weighted, in that some links are stronger than others are, and equivalently every link posses a length, which results in some links requiring more time to traverse than others do if we base the system on classical physics. If we base the system on quantum physics, system links are not subjected to distance or length. Information in this subset is stored at the highest category level in which it applies essentially, that is, at the point in which the information becomes critical. Nodes may also store negations of information regarding their superordinate nodes.

When a node becomes active, during a request from Nature or experient request, this activation spreads to other nodes via the links between them. In a exclusively classical sense, the time to request and receive information is a function of how far the activation between the nodes must spread, but considering the quantum mechanical nature of Nature, this time would always be instantaneous. All nodes involving the activation spread are linked together, which removes an adequate description of single nodes without the full consideration of the other nodes involved, whereby creating difficulty for experients with a single query or request rather than a series of queries or requests. This includes individual nodes that are spatially separated in a spacelike manner, whereby again possibly inferring the

principals of quantum entanglement, or quantum non-local connections, which is a property belonging to the quantum mechanical state of Nature.

The defining feature of this network is that its links are nearly always directed as they only point in one direction, from base to target, and the links come in many different types, each one standing or representing a particular relationship between two nodes, or a set of nodes. When two nodes are simultaneously active, the association between them grows stronger, and whereby the more likely the scenario of either node activating each other. These associative characteristics not only appear in Nature in regards to nodes, but also in regards to experients [i.e. the stronger the association between two individuals, the more likely the scenario of either individual activating information transference during highly emotional states.] It is unsure whether the conceptual information subset of Nature is in and of itself a subset located within one subsystem separate from other subsystems or if it is widely distributed across all of Nature. However, the latter presents itself as more of a possibility.

**Contextual Information**

Contextual information refers to historical events [times, places, associated objects or events, and other contextual information] that can be explicitly or implicitly accessed. It is assumed that the formation of new contextual information requires the utilization of several information structures. Without the utilization of these structures, Nature may be unable to form new procedural processes. This subset is assumed to store new procedural processes without storing relative events during which Nature learned these processes resulting in different experient search or request parameters for information regarding [ESP] or interactions with [PK] events and process. It is assumed that Nature learns new contextual information in an organized fashion associating recognition and recollection [recognition of an object and recollection of the contexts relative to the object such as position or location]. It is also assumed that Nature organizes all information in an organized manner for more efficient storage, drawing upon its role in executive functions. This information is stored in several different ways, and is moved from one area of Nature to the other based on how long nature is aware of the information or what type of information it has obtained [probabilistic, real-time, or historical]. All information is eventually

consolidated as historical information. This is due to Nature requiring the removal of outdated time sensitive information from select areas to increase its efficiency to obtain and process new information.

Contextual information differs from conceptual information as contextual information is saved as instances only saved once, while conceptual information is updated per each experience. Contextual information can be described as a mapping system in which ties together conceptual information. For example, contextual information will address what an object looks like while all contextual information regarding an object will reference a single conceptual representation of the object, and all new experiences regarding the object will modify the single conceptual representation of the object. Contextual information informs conceptual information and contextual information is reliant upon conceptual information, but as time passes, Nature appears to retain the separation of these types of information and does not consolidate either type into the other.

Historical information is a representation of general or specific events and facts. Historical information also refers to Natures history as a whole. Stored information is constructive, whereby previous experience affects how Nature organizes, stores, and recalls information. The information is constructed and reconstructed as an evolving process. Types of contextual information include specific events [when an event first took place], general events [describing the experience of the event], object facts [relating to the objects or persons involved in or around the event], and flash information [critical information regarding major events]. Conceptual information is stored in autoassociative networks, which are forms of backpropagation or other networks that enable Nature, or an experient, to retrieve or interact with entire bytes or packages of information from only requesting a tiny bit of relative information. These forms include “fill in the blank,” association, and translation. In conclusion, autoassociation networks can recreate the whole of an event from merely requesting parts of the event.

**Subsystems**

Nature is hypothesized to have several crucial subsystems in which enable Nature-to-experient communication. These include, but are not limited to, transmission, personal network, interpretive and, search based subsystems. In all cases, it appears that Nature is the determinate

of the minimum and maximum information capacities required to reliably transfer information. This infers transmission based subsystems in which determine transmission properties such as information capacity, coherence, and comprehension. While this hypothesis suggests the experient is entirely subjective to these properties and parameters, it appears that experients do possess the ability to widen and constrict their own parameters to a slight degree [i.e. experients appear to be able to consciously/subconsciously control, or lose control, of how much data is sent or received]. When Nature has an expectation of the amount of information contained in a transmission, it can properly determine the minimum capacity required to transmit. During minimum capacities, psi remains nonintrusive; while maximum capacities are seen as intrusive, [i.e. experients are consciously aware of the information received].

It is assumed that there is a relatively fixed capacity for transmissions directed towards experients to prevent psychological or physiological harm. Experients also appear to be subject to fixed transmission speeds determined by the experients state of consciousness during transmission. Experients of extrasensory perception in which request information from Nature consciously, report decelerated transmission speeds as opposed to subconscious requests. Decelerated transmission speeds tend to result in equivocal and reduced quantities of information while accelerated speeds tend to result in more unequivocal and extensive quantities of information. These speeds are assumed to be relative to information processing in the brain, rather than in Nature, as such processes in regards to Nature are assumed to be instantaneous.

**Geomagnetic Entanglement**

In regards to Nature and magnetic entanglement, reports and research suggest that entanglement not evoked via spatial proximity may be the result of magnetic entanglement. Microscopic and macroscopic correlations without spatial proximity is consistent with the temporal congruence in recent observations with Quantitative Electroencephalography [QEEG] showing that global geomagnetic activity affects brain activity. Because all biological beings [e.g. humans] are immersed within Earth's magnetic field, even spatially separated pairs of "strangers" might show similar EEG power shifts. The shared external geomagnetic fluctuations would facilitate the entanglement of particles [and aggregations of particles – e.g. two human brains] without past interaction.

**Permanent Macroscopic Entanglement**

In experient reports involving entanglement with friends or strangers, entanglement appears to have a "shelf life" after spatial proximity has been reduced. Reports suggest that in order for the experient to become again entangled to the person, close spatial interaction has to be made. This interaction appears to include spatial proximity or an electrical medium such as a computer or telephone. On the other hand, experient reports suggest that entanglement continues regardless of proximity and void of an electrical medium in regards to persons genetically related to the experient. This form of entanglement appears to persist from birth to death regardless if the family members have ever directly interacted. Such a potential finding could explain when one family member is able to tell another family member is upset, ill or in danger despite years of no interaction. This interaction appears stronger in twins where several sensory modalities come into play not typically reported in non-twin related cases [e.g. tactile and thermoception]. Such a hypothesis would require the existence of permanent macroscopic entanglement possibly in regards to DNA.

In experient reports involving physical objects [fluids, solids, particles, etc.] rather than biological organisms, entanglement also appears to have a "shelf life" after spatial proximity has been reduced. In all accounts, experients suggest that after they have distanced themselves from the object, or person, entanglement is broken and influence can no longer be achieved. These distances appear to vary subtly per type of psychical phenomena.

**Quantum Non-Local Communication**

Heading back to more popular quantum models, *quantum teleportation*, or *entanglement-assisted teleportation*, is a technique utilized by Nature to transform quantum information from one of its systems to another. This form of transport does not involve relocating a system, nor does it allow faster than light communication. Quantum teleportation does not include the rearranging of the particles of an object to copy the form of another object. In other words, the word teleportation here is not used in the context most familiar. Instead, quantum teleportation's distinctive characteristic is that it can transmit the information present in a quantum superposition, which enables quantum communication and computation. Quantum teleportation is crucial to the practical realization of quantum-based communication efforts, including of a parapsycho-

logical nature. In the case of psi communication efforts, research shows the required involvement of a "sender," in which wishes to transmit information or Nature wishing to transmit and arbitrary quantum state of a particle, to a distant "receiver." In other words, for quantum teleportation to achieve information transfer, there must be a sender and receiver involved whether it be experient/Nature, Nature/experient, Nature/Nature, or experient/experient.

Some attempts to explain psi have been focused on this form of nonlocal communication. However, current understandings of precognition tend to hinder this explanation as most parapsychologists believe that precognition is the result of defying the principle of causality [cause and effect], rather than assuming precognition to be the result of experient access to Nature's probabilistic computations in real-time. If precognition is assumed a result not in defiance of the principle of causality, then we can begin to apply quantum teleportation as a function of the two main problems of parapsychology, specifically of the mediation and the manifestation of psi.

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