SUMMARY

Quantum nonlocality is described in the context of a subjective duration that has a period of unconscious simultaneity of potentials that are reduced to an actual observably-identical mixed state of consciousness that deposits time and duration at the end of the mental state. Quantum microgenesis involves the observer as the agent of experience, which is a single continuum from depth to surface in the genesis of the mental state, repeating prior states of the individual. Microgenesis is generalized as prior becomings going back to the inception of the Universe. Synchronicity is the fundamental principle of Mind, Self, and consciousness. Mind is always One, which cannot be multiplied. Synchronicity is beyond any process of inanimate quantum nonlocality. It is outside of the physics, as Mind is based on the actualization of the mixed state of the human mind rather than the single quantum eigenstate given by the physics. Consciousness is thus a process of an irreducible and indivisible Mind in ourselves and the acausal realm of synchronicity. The mental-physical process evolves from the unconscious subjective time in the period of simultaneity, proceeding to the actuality of the mixed state of consciousness through synchronicity in its operative role as manifestation of Mind. Periods of unconscious duration and simultaneity exist as potential and only become actual at the synchronous moment of conscious observation at the end of the cyclical mental state.

Keywords: consciousness, quantum, synchronicity, microgenesis, evolution, tenselessness
BACKGROUND

This paper is an exploratory study that assumes a dichotomy of tenseless and tensed time and that explores the meaning of this dichotomy in the context of functions of the mind/brain. The paper focuses on a quantum framework supporting Jason Brown’s theory of microgenesis, building on the quantum nature of a recent treatment (Germine, 2017) and transforming the mechanisms of classical information theory of mental process from probability into quantum potentials. This is based on the conclusion that processes of mind in a classical sense are not true potentials, and free-will is not accommodated by classical mechanisms. Of necessity, this must involve a deeper understanding of quantum processes.

Brown’s theory of microgenesis involves a temporal progressive of the genesis of the mental state in a synchronous developmental sequence. Microgenesis parallels evolutionary development, phylogeny, embryology, and human growth (Brown, 1988). Anatomically this process is a movement up the neuroaxis in a caudal to rostral manner, through successively higher structures and processes (Brown, 1988). The literature on microgenesis has been further enriched from the field of neuropsychology (Pachalska & others, 2012a, b).

Brown (1991) further described the depth to surface movement proceeding with leaps or saltation across temporal instantiations of the mental state in intervals that are atomic units of duration of the microgenetic process. He described the interstices between instantiations as timeless, which comports with the idea of simultaneity within durations prior to actualization and temporalization of the mental state in consciousness. The whole-to-part processes proceed in a micro-temporal manner from an unconscious core, which he had previously called the core of Self, and termination in an objective world (Brown, 2013).

Brown (2013, p. 62) described the need for a theory of the movement from the beginning to termination of the mental state within the tenseless state, and succession across potential states arising in the future. The use of the word “potential” in the ontology of microgenesis as well as in synchronicity cannot apply to terms of classical physics, where everything is actual. Potential in the physical sense is always quantum. This becomes a problem when microgenesis is posited without reference to quantum processes, such as to necessitate the integration of quantum theory with microgenesis prior to elucidating microgenetic phenomena.

Fetal growth is a pattern that continues in development throughout life, which unfolds in thought and perception in microgenetic layers of instantiation. This pattern is transmuted in an analogous fashion, depositing acts of cognition and behavior that punctuate the progression of successive mind/brain states in the processes of growth and development (Brown, 2017).

Microgenesis, as generalized to cosmology, proceeds from the inception of the Universe. The conditions of human’s existing on Earth involve a series of extremely unlikely conditions, including extraordinary fine tuning of fundamental constants and other variables in the inception of our Universe (Hawking, 1996). These extremely unlikely conditions have been explained by the anthropic prin-
ciple, which applies to a single essentially proposes that this virtually impossible Universe exists because humans are in it (Hawking, 1996). The anthropic principle has no causal properties and does not suffice in this role. A single Universe, with extremely unlikely values of constants, is assumed by Hawking (1996), making such a Universe of such low probability as to be virtually impossible. This single Universe has been replaced by a multiple number of Everett-type universes, called the multiverse, in which the experience of the observer or consciousness, makes multiple potentials actual in the process of breaking time symmetry, as they apply to microscopic processes (Brooks and Wiley, 1988). In a wide interpretation of the multiverse, all possible constants in the inception of the universes exist as potential, and the experience of the observer is the process that makes potential actual. Natural selection in evolution then becomes permissive and not causal, and causality in evolution rests on the actuality brought about by the experience of the observer.

Synchronicity is posited to be an instantaneous process stemming from the microgenetic core of self which we designate as Self. Although relativity does not permit signals faster than the speed of light (Hawking, 1996), by introducing the nonlocality and the nature of time in Mind, we find that consciousness is not secondary to any process in physics (Prigogine, 1996), and thus conclude the consciousness or observer is ontologically primary. Brown (1991) has addressed Self residing in the timeless core of mental processes in the human brain. Self is an ancient construct in the Hindu religion of the Upanishads. It goes by many names and qualities. It is translated as Spirit in the words of in the Hindu Bhagavad Gita. It is known as God as the infinite source of mentality by Alfred North Whitehead (1929/1978) and by the all-knowing God of the Judeo-Christian Bible. In Genesis, God is everlasting. Everlasting has been translated as the hidden time, which we equate with imaginary time in physics (Germine, 2004). In Buddhism it is simply mind. Mind, with a capital M, is the manifestation of unconscious Self in consciousness. M and S are capitalized (i.e. Mind and Self) because they are nominatively expressed as singular and universal. The individual self, with a small s, is individual of Self, of which it is a part among other selves, which are also known as souls. Self is unconscious, and, as we will later discuss, is tenseless. Tensed time arises in the ego, as psychologically defined, and must be joined with the individual self in order to be joined with Self in the condition of psychological well-being.

It has been proposed (Germine, 2004) that the properties of mentality can, at least in part, be modelled as a temporal inner dimension mathematically orthogonal to ordinary time, which Hawking (1996) calls “imaginary time.” Imaginary is a term of mathematics. As an extra dimension it includes all of time and possibilities within the moment of real time. This inner dimension (Germine, 2004) has been applied to quantum Hilbert Space, Brown's microgenesis (Brown, 1988), Bohm's implicate order (Bohm and Hiley, 1993) and soma-significance (Bohm, 1994), and in Whitehead's (1929/1978) internal relations and extensive continuum. We will not specifically address the model of an orthogonal second dimen-
sion of time, except to say that it may be involved in what is addressed as non-locality and particularly in the context of final causality.

INNER SPEECH AND LANGUAGE

Luria and his colleagues worked with traumatic brain injuries of thousands of patients, mostly soldiers who had survived bullet wounds to the head. His work was primarily during WW11 and continued some time thereafter. Luria carefully documented areas of brain damage and the resulting syndromes, including of inner speech (Luria, 1970).

Inner speech is the essential link between intention and emergence of audible or external speech and comprehension of verbal speech. Grammatical speech must be constructed by inner speech prior the development of external speech, which would involve the microgenesis of the evolution of language, such that the evolutionary development of mind over time, beginning with intention, as seen in mammals and developed further in the evolution of primates. Expressive language was vital to the social evolution of humans, such as to enable a progression of social life, the affinity between people such as to allow friendship and pairing. Such affiliations led to the to the progressive development of tools, technologies, and the sharing of new discoveries such as fire and the preservation of foods. The microgenesis of this extraordinary progression is written in existing levels of development of human groups and in archeology and anthropology. The microgenesis of inner speech through these successive phases of evolution are repeated in every instantiation of the human mind.

The deficit in inner speech is in the expressive speech center of the frontal lobes (Luria, 1970). Comprehension and transformation of auditory speech precedes comprehension of auditory statements. Disturbances of inner speech can severely impair comprehension of language. Disturbance of inner speech manifests as inability to understand the meaning of spoken words. In some cases, the patient has to read or hear a sentence silently several times prior to comprehension, and sometimes must read the sentence aloud prior to grasping its meaning. In such cases where the patient must read aloud prior to understanding a sentence. This understanding is lost when oral speech is prevented mechanically (Luria, 1970, 320).

The primary microgenetic findings is that disfunction of inner speech causes a variety of deficits in thought, motor speech, comprehension, and meaning of words and sentences in the brain-damaged patients (Luria, 1970). In microgenesis, processes that appear earlier in evolution can cause dysfunction of later-derived evolutionary processes (Brown, 1988). This would then mean that inner speech is essential to all subsequent language functions addressed here. As such, and on the basis of the findings described here, inner speech had to have developed in evolution for some period of time before the ability to verbally think, hear, or understand spoken auditory functions.
In other words, there had to have been a period in time when we could speak silently to ourselves but could not communicate speech to others (Luria, 1970). Reflection occurs during inner speech, and we frequently talk to ourselves in the processing of events and in performing important tasks, among other things. This finding might push back the advent of language in our species, which has been formerly connected to the functions of expressive language and writing. Language functions are subject to heterochrony in microgenetic theory, meaning that functions that revert to earlier processes due to dysfunction do not impair unrelated processes, which are not thereby compromised (Brown, 1996).

**EVOLUTION**

Natural selection is one of many processes in evolution. Much of its explanatory power is based on a tautology: The fittest survive and survivors are fit. Natural selection fails, particularly, in the fact that it does not provide the reason for evolution of the higher taxa, such as humans (Brooks and Wiley, 1988, p. 3). Consciousness creates actuality from potential in a progressive manner. Higher levels of consciousness actualize greater and greater actualization, and so these higher taxa manifest in an observer-created reality.

Quantum entropy enters into the quantum nature of microstates, which are single eigenstates existing in the condition of temporal symmetry, in which time can equally move backward or forward. The introduction of quantum states then creates the retroactive process whereby the measurement or observation of a process reduces the quantum wavefunction of potentials to a single microscopic state or eigenstate. Classical theories of evolution are then constrained to Darwinian parameters, which are pre-quantum, such that all evolutionary processes must be defined in terms of efficient causation, and survival of the fittest comes to replace the actual process by which a mutation or mutations of genes is linked to a pre-existing genome. The link between genomes and gene mutations must be blind, such that random mutations have to refer strictly to an ontogeny that does not yet exist. Classical entropy is seen in thermodynamics and information theory as based on macrostates (Germine, 1993), which are quantized as mixed states that are observables. The observer is restricted to macrostates, since microstates in the mind/brain are not observables, but that many microstates constitute a set of macrostates of varying number in a mixed state that is irreversible (Germine, 1993). This places constraints on backward causation, which are overcome in the context of tenselessness.

Conscious information is then generated in a continuum of higher energy intensity and lower relative entropy. High energy intensity, within the quantum vacuum, is associated with the transition from classical to quantum dynamics. The classical world emerges from quantum processes in the tenseless mode that precedes prior to transformation to the tensed mode (Auyang, 1995). The maximum information depends of the complexity of the mind/brain system, such that lower taxa have less available conscious information than higher taxa. Isolating
brain volume from the variables of complexity per unit volume, we find that creatures with larger brains have higher levels of consciousness. In a Universe that is observer-created, higher taxa arise in the attendant higher levels of experience. Such higher taxa are then actualized in an otherwise potential landscape. This potential landscape is the source of consciousness, such that complexity is a joint function of potential and actualization.

The evolutionary process of neoteny, a movement back to an earlier mind/brain state, has been described as a change in the development of some aspect of the mental or physical state arrested at an earlier level of evolutionary or individual development. Neoteny is linked to deficit syndromes. Thus, the loss of bodily fur in humans is based on neoteny going back, most likely, to near the advent of mammals, and so loss of fur is a deficit syndrome, which may have been adaptive as related to cleanliness of the body and the development of clothes. The deficit syndrome involves a lesion that leads to attenuation of some aspect of mental function (Brown, 1988; 1996). The signature of the attenuated stage is carried through remaining process of microgenesis, leading to objectification of the attenuated phase at the end point of the duration of microgenesis, coupled with a full elaboration of other elements of microgenesis.

The mental pole reaches the highest order of experience and consciousness in humans. Microgenesis (Brown, 1988; 1996) involves the increasing orders of experience going back as far as rudimentary life forms and progressing in the order of evolutionary recency in the course of a single mental state. Experience and consciousness are graded levels of observation, such as to recruit potentials in the process of an evolutionary lineage moving forward at time within the mental state.

Observation is the mechanism of bringing former potentials into actualities over time by final causality in the tenseless mode. In this sense evolution is a teleological process, whereby the past evolutionary changes are the result of processes needed in the future. This is a mechanism that rescues meaning from the graveyard of accidental events of natural selection, which then has a permissive role, since natural selection only entails efficient causation, not final causation.

Information only becomes actual when there are observations and observers. The wavefunction of a photon involves a vast number of potential states of virtual photons, producing an interference pattern in the well-known double slit experiments. With observation, a single point replaces all of the potentials the wavefunction, but if we repeat the process these points will eventually map out as the wavefunction. The process is the same as the unconscious multiple potentials of the mind/brain, with each state becoming actual as a single state of consciousness. This is quantum process. The classical state has no true potentials, only probabilities. Classically, there are no choices, as there can only be one outcome, and not as one of many outcomes expressing multiple quantum states.

In evolution, self-organizing patterns, which seem to be the rule rather than the exception (Kaufmann, 2000), are related to final causality. Preadaptations are features that develop before they are needed, and as such have been de-
scribed in terms of empty areas of the human cerebral cortex called “spandrels,”
which were later coopted for functions such as language (Buss & others, 1998).
The term “preadaptation” has been changed to “exaptation,” reflecting the rejec-
tion of the notion of final cause. This process has been described on the specious
basis of “blind teleology” (Kaufmann, 2000).

SYNCHRONICITY

The acausal nature of microgenesis is due to the nature of experience, which
is ontologically primary and therefor acausal. Synchronicity is the acausal con-
necting principle that underlies our experience and was first developed by Carl
Jung and Wolfgang Pauli (Jung and Pauli, 1952/1955). Microgenesis involves
a narrowing of potential states, which can only happen in subjective, synchro-
nous realm, and thus which cannot be localized in time, which only applies to
the duration of becoming of whole to part. In this continuum the system finally ar-
vives at a single state. This state is not singular, it is a group of states united by
subjectively identical observables, such as to arrive at an actual self and world.
This is the end of the process, since the experience of the mental state is singular.
This role of experience in reduction of quantum potentials cannot proceed past
the observation equivalence stage. The process proceeds in subjectivity as multi-
ple potentials, and synchronous time is expressed to represent this multiplicity.
Objectivity enters the picture in the becoming of the actual, a single state chosen
from the multiple potentials in the transition of the unconscious and consciousness.

The relationship between consciousness and synchronicity has been earlier
been explored (Germiné, 1991), but it was hypothesized that synchronicity is
a phenomenon based on nonlocality, and no distinction between the two processes
was reported. Further study of dynamical systems and the literature on syn-
chronicity still shows a relationship with consciousness, however, we now dis-
tinguish nonlocality from synchronicity.

THE METAPSYCHOLOGY OF TIME

The ingoing process and the outgoing process occur within the duration of si-
multaneity. The ingoing process brings the developing percept into the internal
experience of the unconscious while the outgoing process brings it into the de-
veloping percept of consciousness in the outer world. Wolfgang Pauli gives us a
lucid description of the ensuing process, in a letter likely written in 1954 (At-
manspacher, 2014, p. 185):

…On the one hand, the unconscious can only be made accessible in an
indirect way by its (ordering) influence on conscious contents, on the other
hand every “observation of the unconscious”, i.e. every attempt to make
unconscious contents conscious, has a prima facie uncontrollable reaction
back onto these unconscious contents themselves…
Within the unconscious, however, there is a duration of simultaneity, such that the earliest “clock” time, A, and the latest time of duration, B, are within this simultaneity and thus cannot be separated or distinguished. The instantiation of the duration AB/BA does not entail progression within this duration. The time of actualization is experienced near the beginning of the duration, comporting with our experience, such that there appears to be no perceived delay (Libet, 1985). This duration is the period of unconscious processing, which is the prior to conscious temporalization and therefore cannot be sequenced within the duration. Therefore, the concept of “subjective antedating” (Libet, 1985) is based on sequencing of synchronous events during the period of duration. Iterations of the period of simultaneity include both AB and BA, and such iteration may be operative in the honing of the mental state from potentiality to the threshold of actuality in consciousness.

The period of simultaneity involves quantum nonlocality (Atmanspacher, 2016). Within the duration, subjective experience of a stimulus would then be expected to iterate. This process has been described by Atmanspacher (2016, p. 140): “The process by which unconscious contexts are transformed is active insofar as it includes a reaction back onto the unconscious...just as measurement in physics changes the measured physical state.” The P300, which is the Event Related Potential 300 milliseconds after a stimulus, is a seamless positive waveform, yet it is serving two processes separated by the peak of its depolarization. About half of the waveform is earlier and within the unconscious, and thus in the period of simultaneity, and the other, later half is within consciousness, which is the actuality of experience.

**DYNAMICAL STATES AND SYSTEMS**

It is very difficult to understand how the brain, as a chaotic dynamical system, can produce a fully coherent outcome without some harmonizing influence and connecting principle. The only solution we find to this problem is to invoke the agency of Mind in a singular sense. This kind of “interaction” cannot be attributed to ordinary nonlocality, but demands an agent, which would then be functioning beyond ordinary nonlocality. Accepting this explanation, synchronicity is defined here as that agent, fulfilling the “acausal” nature of its existence.

Dynamical or chaotic systems tend to be unpredictable (Abraham 2004), such that the weather, which is a dynamical system, still cannot be predicted accurately for more than a few days. The brain is another dynamical system. Not only are these systems unpredictable, but they are also critically dependent on initial conditions. This dependence on initial conditions has been illustrated by the “butterfly effect.” There are variants on this illustration, one of which is that a butterfly flapping its wings could in ten years bring about a hurricane half way around the world. Dynamic or chaotic systems often have a fractal phase space and are self-organizing.
The time parameter replaces time in quantum field theory, where the simple past, present, and future tenses are not involved, and are replaced by simultaneity, before, and after (Auyang, 1995). Past, present, and future are properties of irreversible processes, which are not in the physics but rather in us (Prigogine, 1980). This tensed time is associated with the increase in entropy, which we define as ignorance or disorder (Prigogine, 1996), depending upon our orientation toward the observer or the observed. The observer does not enter into the formal physics, nor do the related functions of consciousness and experience. With respect to nonlocality in time there seems to be a memory across durations, which is not fully understood (Ohira, 2009).

THE DUAL NATURE OF TIME

Time is as parameter in a tenseless four-dimensional manifold, R^4, which precedes tensed space and time (Auyang, 1995). These four dimensions, R^4, the dimensions of spacetime in Special Relativity (Auyang, 1995), cannot be torn apart, as they are relative to one another. It seems that the time and space parameters are derived from a primitive manifold M, which is permanent. M is non-temporal, but rather encompasses all time, where the order of events is parametrically nonlocal (Auyang, 1995). Change then becomes irrelevant, since it is temporal in nature. Quoting Auyang (p. 170): “Instantaneity and eternity can be understood in a tenseless temporal scheme... The primitive spatio-temporal structure is permanent; it is independent of temporal concepts. It contains the time dimension as one aspect and makes possible the introduction of the time parameter...”

Such a parametric time may be operative during simultaneity. This transition is from the “primitive” tenseless time to the tensed “mental time,” which is described as follows (Atmanspacher, 2006, pp. 141-142):

The only relation between the instants in tenseless time is that their values on a time axis... are greater or smaller than the other. Mental time, on the other hand, features the tenses – past, present, and future – as key notions. Time translation symmetry and time-reversal symmetry are broken by mental tensed time. Moreover, the phenomenological experience of time suggests that the present is not an extensionless instant between past and future, but has internal duration, an extended nowness, as it were.

The microgenetic process (Brown, 1996) goes all the way down to this most primitive reality that supports time, which entails the deepest level of Self, the core of our being, which is the source of mentality and consciousness. Self at the core of being can only be One, as it belongs to the parametric space that is ontologically prior to tensed time. The illusion of separateness of the individual mind from self may then be the cause of existential angst for that individual, but this kind of despair can perhaps be assuaged by the notion that individual selves are inseparable constituents of the tenseless mind.

Mental time, applied here to microgenesis, has a dual nature. The unconscious core of Self is One and always Now within the four-dimensional framework, R^4.
This framework is described by Auyang (p. 170): “We are relieved from the notion of radical existence change; all changes are conceived as alterations in the abiding four-dimensional framework.” Our instruments cannot detect or measure this primitive framework, since this detection involve our experience of time in consecutive durations. This process is time-creating, “depositing” time from the instantaneous of a primitive undifferentiated and tenseless core to instantiation of the moment, which perishes with the beginning of the primitive phase in a new becoming of time. Since it is our contention that experience or observation is lawful, we have extended the period of microgenesis back from the dawn of evolution (Brown, 1988) to the inception of the Universe or time itself.

In the primitive phase of the core of Self cannot be conflated to a plurality of minds but can only be described as Mind. Mind is “nonlocal,” not in the sense of quantum entanglement, but as a lawful function of Mind based on the operative process of synchronicity. The properties of Mind can be lawfully paradoxical. For example, it cannot be localized, yet it is everywhere, as described by in Whitehead’s (1929/1978) “panexperientialism.”

Synchronicity is instantaneous, such as to instantly propagate within the brain and beyond. Such instantaneous action of Mind would potentially solve the binding problem. The nature of neural processes in the brain makes transmission, processing, and output of the brain much too slow to explain the unity of perception and consciousness. Attempts to demonstrate the enigmatic rapidity of mental operations based on electromagnetism have repeatedly failed to show any link between the two. It is therefore reasonable to postulate some other kind of energy in the binding of mental process. Of these other kinds of energy, only gravity could possibly fulfill such a task. Current data indicates that the “speed of gravity” has been measured to be about the same as the speed of light. Gravity then cannot explain synchronicity, which propagates instantly in the transition prior to manifest time.

Mind exists fully in the unconscious state and precedes the breaking of temporal symmetry; such that instantaneous transmission is the rule in the mode of synchronicity. We have proposed that this is the state of the unconscious. Such transmission is then the answer to the binding problem, which in this paradigm is within the unconscious One Mind. Given that consciousness is derived from the unconscious, processes of consciousness may be propagated unconsciously and manifest consciously, bringing the whole brain into a virtually instantaneous whole. Many decades of research have been spent on theories and experiments regarding the problem of time in the mind/brain have not been supported, such that we must look beyond manifest time as the basis of mental process.

The manifest consciousness is supported by a virtually infinite ground in the unconscious. The unconscious ground cannot be located in space and time or spacetime and can only exist as a singular field, without any particle- nature such as to manifest in a disjoint or divided sense. It is possible that the unconscious field arises at the level the quantum vacuum.
DISCUSSION

Processes of the mind arise in the timeless unconscious, which is not produced by neural tissue, but rather is a principle that underlies the development of such neural processes in evolution. This is in keeping with the work of Jason Brown, who has found that mechanistic processes do not create temporal states in microgenesis, but rather that microgenesis is *time creating*. We have gone to considerable lengths to document the efficacy of mental process is not mechanistic, but rather that mind and self are not in any sense manufactured but are rather causal with respect to the neuronal processes that subserve them. William James (1879) approached the problem of human mechanistic automatons long ago, and, despite all of the evidence that has accrued on the role of the observer in physics and the failure of science to find any cause underlying consciousness, the default mode of mechanism has become entrenched as the only option worth considering.

Whitehead (1929/1978) addressed the issue of epiphenomenalism (p. 292): “… the objective forms of feeling are only explicable by the categorical [sic] demands arising from the unity of the subject… Alternatively, the subjective forms become arbitrary epiphenomenal facts, inoperative in physical nature, though claiming operative importance.” This importance extends to the wider society and the state of our world. For example, when visited in the hospital by many members of the clinical staff, each brought one or more forms to sign, without one inquiring into the nature of the illness that brought me to the hospital. Each, in their turn, would then presumably file these forms and dutifully billed for service, but this was the extent of their “service,” although I was there for many hours. The forms I signed did nothing for me, and in fact I was never given time to read any of them. This is an example of what Whitehead called the “Fallacy of Misplaced Concreteness” (FMC).

This fallacy (FMC) was addressed by Whitehead (1925/1967). The fallacy is a type of inoperative epiphenomenon. In psychopathological terms, we call this instrumental behavior, in that the inoperative terms are instrumental to some gain that is falsely substituted for operative behaviors. For example, if someone were to borrow a substantial amount of money on the promise of returning it after an interval of time, but really has no intention of never paying back the money, their behavior would be considered instrumental to the monetary gain. Such behavior involves combination of narcissism, as the person has regard only for themselves, and is thus antisocial, as the act of lying for monetary gain would do harm to the person from which it was taken. Often the antisocial party has no feeling of guilt or remorse for taking your money against your will, and so would be described as psychopathic. This type of behavior is very often social in nature, involving groups of people seeking gain. The criminal choices made in antisocial and psychopathic activities involve potentials that can only be quantum, since the mechanisms of classical physics cannot elicit true potentials of behavioral choices. The microgenesis of antisociality (Germine, 2008) thus involves willed
behaviors, which can only exist in the multiplicities of choices of a quantum mind. Punishment of willful crimes is thus in keeping with society norms and criminal justice.

Instrumental behaviors and cognitions are epiphenomena of inoperative behavior. The operative behavior is a choice, which involves the subjective nature of mind and of self. However, in the mechanistic scheme, there are no choices, which are effectively removed in the cogs and wheels of the mechanistic mind. Psychology, under these conditions, then has no recourse other than behaviorism. If aberrant behaviors can be prevented, then they are conditioned by reward and/or punishment. The person and his or her wellbeing does not enter the picture, or at best is ancillary to the behavioral agenda.

Such conditions are reflected in the literature regarding evolution. Certain evolutionists have removed behavior from the realm of adaptation of behavior, and, instrumentally, have replaced it by preadaptation, since the desired features involved develop prior to their need and actual implementation. So, birds grew features for thermal regulation. The brain of increased in size or mass in the evolution of Homo Sapiens for no known reason, at the time, even though the size of the cranium was too large to be readily delivered through narrow pelvic orifice, increasing infant and maternal mortality, as well as delivery of the infant at an early stage, such as to require a long period of care and protection. All of these consequences of development of large brains, in a kind of anticipation of their future functions, would have been maladaptive and increase the risk of human extinction. The human species struggled to survive as a result for thousands of years prior to the dawn of civilization. Final causation is forbidden, but we have argued that such prohibition is a vestige of classical physics. So, some mechanism involving natural selection is the only option, and stories of exaptations are certified and stamped as evidence supporting this view.

Given the current evidence of final causality and the role of the observer, evolution reaches up to higher and higher levels of function, experience, and consciousness. Birds have feathers and wings so that they can fly. Mind is lawful; and thought is not produced in the same manner as the liver produces bile, to paraphrase William James (1898). The growth of the human cranium allowed us to create social systems, grow food, acquire civilization, etc. Since the beginning of the industrial age and the age of science, the separation of ego from self has widened, and we have collectively been manifesting the resulting disregard for humanity and for living things.

Now we are seeing a spiraling increase of species extinctions. Homo sapiens is considered an endangered species, due to our own actions, such as to have been estimated to go into extinction at a probability of 0.5% percent per year, based on the possibility of nuclear annihilation. It has also been estimated that if we are to continue our current reliance on fossil fuels, the Earth will become virtually uninhabitable in the next hundred years as a result of climate change, which is already well advanced. Climate change is now irreversible, and the only solution will be the sequestration of carbon dioxide. The tundra of Siberia is now
melting due to climate change, releasing methane, a greenhouse gas, making matters worse. The American Medical Association (AMA) has recently released a statement on climate change, a cause for alarm.

**CONCLUSION**

The role of Mind in evolution is here posited to be necessary. In any theory of evolution, we need to understand the vanishing possibility that we are here along with the earth in any possible universe. DNA would have had to assemble itself after a period of abiotic evolution, and many other conditions and processes that would seem to be impossible would have to be believed to exist. It does not seem that any possible universe would meet such conditions, and there is no evidence that our planet has met these conditions, based on current observation. The only possibility explanation seems to be a final causation of Mind is fundamental to evolution, such as to involve the state prior to breaking of temporal symmetry. This prior time of our Universe would then be “transmuted” as a function of experience or observation. This transmutation would then be entangled such that it is generalized to a nonlocal Mind that has a universal sphere of influence.

The existence of the Universe in prior times would thus reflect the primitive $M^4$ undifferentiated spacetime, which evolved into our sequential time in the course of evolution. Events would then be present but could not be localized in either space or time. Localization in time always entails the “now,” which is the fundamental time that arises in loss of temporal symmetry. The serial order of consciousness is derived from a sequencing process, such as occurs in the remembrance of dreams. Following Whitehead (1929/1978) this process is the becoming of seriality.

Nonlocality is fundamentally proven at this time by a recent study (Kaiser & others, 2017) and supported by earlier studies, which have been built on the theory of nonlocality and progressed to the status of an actual law of nature. This nonlocality of both space and time covers a considerable time period such as to support individual becoming of the microgenetic process of integration of prior moments in time. The recent evidence confirms that nonlocality goes all the way back to the inception of the Universe. It also seems that time, as we know it, is based on a more basic time, which engages all events in a single, timeless or tenseless core, also consistent with microgenetic process.

Since we have ventured into areas of science that are new, we do not expect this essay to be the last word on this subject area. What we do hope is that area of science will be further developed, such that the science so developed will grow within its scope and will be a source for a progressive science of quantum microgenesis and its relationship to synchronicity.

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Address for correspondence:
Mark Germine
Psychoscience,
181 Pine Brook Road,
Montville, New Jersey,
07045 U.S.A.
e-mail: germinemark@gmail.com