INTERGENERATIONAL EFFECTUATION OF FUTURE-DIRECTED DECISIONS: A PROPOSITION ABOUT SPATIO-TEMPORAL ASSUMPTIONS AND NOVELTY

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By

Michael Francis Miller

Thesis Committee:

Jairus Victor Grove, Chairperson
James Allen Dator
Jenifer Sunrise Winter

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Preface

Our collective conception of the future is problematic. We face three fundamental problems concerning the future. One is grounded in its relationship to reality, another is grounded in obtaining knowledge of the future, and the last is grounded in the ability to affect the future. How can we assign reality to the future that does not exist? How can we gain knowledge of the future that does not exist? How can we affect the future that does not exist? These questions have led me down a path of inquiry that has questioned the some of the core assumptions concerning the subject of the future. This study is exploratory. I have come to reject the foundational assumptions upon which much of the general perception of the future is founded.

Raphael van Riel, in his book, *The Concept of Reduction* (2014) states that, "The concept of reduction is supposed to reconcile diversity and directionality with unity, without relying on elimination" (van Riel 2014, 1). The concept of time is theoretically reducible to a diversity of its parts. The concept of time establishes directionality with respect to its parts. The parts are declared to be the past, present, and future. The process of reduction is deterministic in that it forces a line of thought—a pathway, upon anyone attempting to conceptualize the future. A temporal reductionist line of thought by the authority of its argument defines the future, provides a locus for the future, creates a unity between time and the future, and imbeds the whole phenomena within a spatio-temporal structural assumption of reality.

In general, thinking about the future is based upon certain foundational structural assumptions are not satisfying. These assumptions are derived from socially constructed spatio-temporal structures and processes which have come to have a commanding influence on most futural conceptualizations, abstractions, thoughts and language. A major problem has evolved concerning how to approach the subject given these barriers. Traditional conceptions associated with motion, change, driving forces, trajectories, time and space, and space-time have become questionable. I have concluded that the idea of the future needs to be redefined in the context of an alternative theory and method of inquiry that is not based on spatio-temporal assumptions. A categorization of approaches to the future differentiates between theories and methods that are grounded in spatio-temporal assumptions and those that are not.

The structure that is built upon spatio-temporal processes is rejected and an alternative structure is hypothesized. The alternative structure is presented based upon a theory of monadic

motion and relations, and a different understanding of what constitutes the future. In this new context, the relationship of the future will be reevaluated in its relationship to reality, in relationship to knowledge about the future, and in the ability to affect the future. My proposition will then be reexamined in light of this alternative theory.

Chapter 1. Introduction

Presentism is the notion that the present is existent and the past and the future have no being, becoming, existence, or reality. Classical presentism is problematic. Within the present there is a growing concern that continuity is being overcome by novelty. In this context, the conceptual spatio-temporal structure cannot support the novel perception of the future. The spatio-temporal structural assumption needs to be reexamined. The spatio-temporal thought collective cannot sustain its spatio-temporal ideology in the face of novelty. The idea of the future needs to be removed from the tripartite reductionism of the past, present, and future. If the ideas of the past and future have utility, this usefulness is only found in the acceptance of their respective pluralities and not in any absolutism found in continuity. It is contended that the past and future constitute images of the pasts and images of the futures as social constructs. Both the past and the future are to be understood in the plural form. If we are to find a means of command and control over our collective future, it can only be found in the locus of future-directed decision making with respect to the collective carrying capacity of society in motion. The struggle to maintain images of the pasts and create images of the futures as the basis for command and control over the future is untenable. The question posed by Frederick L. Will in 1947, “Will the Future be Like the Past? is still debated today. We are still using the pasts to predict the futures. This approach has failed to provide understanding of the concept of emergent novelty. Any argument that is solely dependent upon the transmission of future-directed decisions across generations must be questioned. This thesis is an attempt to provide a holistic view of an alternative to time and change.

My research into the theoretical foundations of the conceptions of time and space has been a struggle to first encounter and then overcome the ideological dominance of the spatio-temporal thought collective. Being a student of that very thought collective, it became difficult to separate my thinking from their compelling arguments. This emergence occurred in the process of my review of the literature and a great deal of attempting to think it through. I am still in the process of development of an alternative theory to spatiotemporalism. This thesis is reflective of this emergence. Much work remains. My work is an exploratory attempt to establish some directions for futures research.

The idea that the idea of the future must be grounded in both theory and method has led to a multiplicity of theories and methodologies. The idea that any theory of future must be based

on a theory of social change is pervasive. A theory of change grounded in cause and effect, event and process, being and becoming, statics and dynamics, and other such notions has become deterministic along linear pathways of thought. The concept of change itself must be reexamined. This is necessary in order to avoid deterministic trajectories that are used to create, make, build, shape, and apply all manner of verbs to the idea of the future. This begins with the acknowledgment that reality is not affected by a constant state of change occurring within an inertial reference frame or medium which is the result of some phenomena being acted upon by external driving forces. The conception of change has a spatio-temporal dependency that cannot be overcome. Motion defined in the context of a different representation of reality may offer an alternative perception that is free of any spatio-temporal dependency.

It was reasoned that if reality could be represented by a model that correctly explained motion not burdened with differentiation theory; that a model that correctly describes motion as being inherent in all things at every possible scale in which it takes monadic form in order to distinguish one thing from another; and that further includes the relations (entanglements) inherent among these monadic things, that this could serve as a foundation for understanding motion in its true relationship to that unknown beyond the cutting edge of monadic motion that we call the future.

The question is posed how this alternative to spatio-temporal thinking could than find some explanatory utility for analyzing the operations of a future-directed sensorium, and to further explain the role of human agency that equates the command and control (raw power) over the future as the basis of social and political interaction. How is it possible to extend power over the ruptures represented by novelty and generational death in order to affect the future?

Chapter 2. Proposition

A research proposition rather than a hypothesis is selected as a means of addressing the subject of this thesis. If a hypothesis is defined as a *falsifiable* statement that is testable, it is not appropriate to the subject of this inquiry. This distinction was drawn for two reasons: that the empirical part of the study is of an exploratory nature, and that a propositional model provides for a much broader pragmatic and holistic view of the conceptual arguments concerning the relationship of time and space to motion and the future. A proposition also provides a lens through which to examine intergenerational change as a driving force. Over the course of this research, I have questioned and re-questioned my original proposition. I maintain that the proposition within the context of the alternative theory of reality presented herein.

In the thirteenth century, there was a debate whether the *future proposition* signifies that the future is determinately true. John Duns Scotus (1266-1308) asserted that something will have "determinate being at some future time, which is why it is neither determinately true nor determinately false now" (Duns Scotus 2014, 327). "John of Seccheville (d. before 1292), an Oxford master, discussed the question of whether future contingent propositions are determinately true" (Duns Scotus 2014, 318). Is it arguable "that a singular proposition about a future contingent is neither true nor false without qualification nor determinately true nor false" (Duns Scotus 2014, 320)? Modality applies to the *future proposition*. Based on a *reductio* of time, if a future will be true in the future, that future is true now, and if a future is true now, it will be true in the future. This vicious circle questions the relationship of the past and present to the future. It questions the *reductio* of time. Understanding the *future proposition* is important for the introduction of novelty whether novelty is emergent or spontaneous. The emergence of novelty is problematic. The idea of the *future proposition* is not a contradiction of the utility of other forms of inquiry concerning the future. The *future proposition* is a problematization of the determinism of spatial and temporal dimensions. Is a proposition about spatio-temporal determinism indeterminate of true or false?

The living *sæculum* is in a continuous state of motion that is unable to sustain the continuity of any image of the future that is impacted by emergent novelty. Discontinuity is the result of a natural process of the intergenerational diffusion of values provided that the corporate structure of a society is degenerative. A continuous regenerative corporate structure of a society

pushes the intergenerational diffusion of values by causing a direct intervention on the part of the new *sæculum* in reintroducing the similar images of the future.

Emergent novelty is a consequence of the increasing population density, the lengthening of the duration of life, the acceleration in the diffusion people, goods, technology, and information, and the resultant complexity of the social order.

Intergenerational effectuation of future-directed decisions fails to persistent in the face of emergent novelty beyond the living *sæculum* in which the decisions were rendered except where future-directed decisions are re-embedded within the collective memory of the succeeding generations and communicated within the new living "*sæculum* in motion."

The problem inherent in thinking about the future is whether future-directed decisions have any affect upon the future. How can future-directed decisions persist past the life and death cycle of multiple generations? It is difficult to perceive how any future-directed decision collectively made by one generation could be actualized across the emergence of subsequent generations? How does the present determination to perform an action become obligatory upon a future generation? How is this possible without invoking a theory of determinism in which a future is the consequence of emergent consistency or emergent novelty? How is it possible without imposing a spatio-temporal structure in the form of a continuum upon reality? Agreeing with the premise that the future does not exist and that possible, probable, plausible, and preferable futures constitute the core of the conceptual basis for a theory of the future, it became problematic as to how possible futures could ever relate to an actual future. The fact that a future would occur was a foundational assumption within certain aspects of futures thinking, but this leaves unanswered how the collective intent translated into collective action given the passage of generations. These questions led to the formulation of this proposition.

My thesis covers three major parts. It addresses the conception of the future and provides for conceptual separability of the concept of the future from the spatio-temporal structure. It also provides for a conceptual separability of the concept of motion from spatio-temporal assumptions. It provides a theory of how human agency can affect differences in the content of what is being carried in motion. Lastly, it addresses the problems with generational theories based on lifecourse, cohorts, and generations as being path dependent upon the spatio-temporal structure. This thesis provided an alternative to spatio-temporal deterministic assumptions.

Chapter 3. Methodology

My methodology was designed to question assumptions and explore alternatives. An extensive search of materials relevant to each related subject was made. In addition, a search was made within each selected reading for the purpose of identification of related concepts. A literature search was then made on each concept identified in the various readings in order to establish the usefulness of each idea with respect to the thesis topic. Concepts were weighted in terms of relevance to the central proposition. These concepts were categorized for the purpose of determining similar concepts that may employ different terminology describing the same basic functionality by the various authors. The concepts that were interpreted by different authors were than compared for purposes of identifying real similarities and differences. This interaction was made by comparing the views of the respective authors followed by an interaction with my own thinking. This last step was designed to engage my own thought processes for purposes of concept clarification and re-categorization.

The goal was the development of an alternative theory to the various theories of social change, an alternative to the theories of the future, an alternative to the theory of time and space, and space-time, an alternative to the theory of motion, and an alternative to the theories of intergenerational transmission of future intent. With the emergence of my own ideas, the literature was reexamined for support for my proposition.

In addition, a survey of methodologies was make for purposes of relevance to my approach. I attempted to adopt a process of “problematization” along the line employed by Michel Foucault for politics. I wanted to identify thoughts, theories, and methods that posed problems for perceiving the future. I focused on the underlying assumptions made in the literature.

One major guiding factor was understanding collective action in the context of affecting the futures. I wanted to understand the application of the formula involved with the idea of the masses becoming one people refusing to be scattered, having one identity and one name, being gathered together with one intent or mindset in collective motion along a single pathway in terms of an intended purpose to affect the future. This was conceived in terms of swarm theory. I also wanted to understand rule-following as a means of transmitting future-directed decisions that transcend intergenerational lines. Lastly, I wanted to investigate how to affect intergenerational futures in terms of actualization.

I try to keep Thomas S. Kuhn's words in mind and was reminded again by Ina Hacking in his "Introductory Essay" to the 50th Anniversary Edition to Thomas S. Kuhn's *The Structure of Scientific Revolutions* (2012). He wrote "The most striking feature of the normal research problems we have just encountered is how little they aim to produce major novelties, conceptual or phenomenal" (Hacking, 2014, xvi). As Hacking stated, we have to go beyond the determination of significant facts, the matching of facts with theory, and the articulation of theory (xvi). The missing element is thinking about foundational assumptions. The application of one's own thought rather than reliance solely upon the thought of others is a necessary supplement. The work involved in the production of this thesis is an attempt to break away from the thinking that forces a student down an established pathway of deterministic theories and methods. John Law's book, *After Method: Mess in Social Science Research* (2004) has been a significant influence in the process of re-thinking assumptions.

Chapter 4. Monadic Motion and Relations Theory

The spatio-temporal structural theory of change is based upon the foundational assumption that the concepts of time and space, or space-time constitute the structural basis for a frame of reference that represents reality and is thereby proved by its utility. This thesis purposes an alternative to this spatio-temporal assumption that is not built upon a theory of change, but on a theory of motion drawing a distinction between change and motion. This alternative theory explains a theory of motion that is radically different that the common understanding of motion that is grounded within the spatio-temporal assumption. This alternative theory also explains that the foundational assumption upon which it is built can only be understood from a non-reductionist wholeness that does not resurrect any segment of the spatio-temporal assumption with respect to utility. The alternative theory claims as its basis a fundamental existence grounded in an *infinite motion* that is not spatially grounded or existent within an aether, æther or ether like medium.

The choice of words that can be used to describe this motion are not fully acceptable. But for the lack of something better, motion can be likened to something that is infinite and perpetual. It is motion as having a sense of existence or being without constraint. The difference is that it cannot be understood in terms of continuity. Motion defined within the context of a continuum reverts back to a spatio-temporal structure. In order to envision motion as a concept with an unconditional reality, motion must be perceived in an absolute form. In order to conceptualize motion without continuity requires the exercise of an unbounded imagination that might place us squarely within the ancient debate (Heraclitus and Parmenides) between being and becoming except for the qualifier that continuity is removed from consideration. This raises the issue of the constant (to be universal and non-varying). For example, “Change is the only constant in life” (Heraclitus). The idea of the constant reverts back to a spatio-temporal structure.

This different concept of motion might be defined in an ontic sense (from the Greek ὄν, genitive ὄντος: "of that which is" (Wikipedia)) in that it has a real existence. The idea of motion without continuity is difficult to grasp because the classical idea of motion has been taught from a starting assumption of origins or causal theory. Motion seems unknowable without a frame of reference. Motion seems unknowable without the concept of change of position. Motion seems unknowable without an object. An object in motion conforms to the spatio-temporal “in” structure (object-in-motion structure) which demands a frame of reference and a medium. As an

alternative, we want to conceptualize an object being in motion where the motion is inherent in the object or the object is inherent in the motion, and not being in a state of motion contrasted with being at rest, static, or in equilibrium. Discrete motion and continuous motion are both based upon a spatio-temporal frame of reference.

Theoretical motion has been understood in the context of motion detection which is an idea developed from emergent sensory adaptations. Our human sensorium functions like motion detectors. Motion detection is a cognitive or machine function where the output is still subject to cognitive interpretation. Machine generate motion detection in the final analysis still resorts to human interpretation. Motion detection requires a frame of reference in order to compare one state of action against another state of action. The projection of motion detection from its evolutionary basis as a fundamental survival mechanism to the level of a law of physics is a source of error. It is an error to equate theoretical motion in the same context as motion detection that demands a frame of reference. Transferring the frame of reference used in motion detection to a universal theory of motion is not useful for explaining how motion functions in reality. How we conceive of an alternative theory of motion becomes essential in order to overcome the spatio-temporal assumption.

I have attempted to establish a basis for conceptualizing motion. Perhaps an illustration may be helpful in this conceptualization. At the start of this illustration, we need to conceive of light as composed of particles rather than waves for argument purposes only. A single particle of light traveling from a star millions of light years away toward earth anticipates an arrival point. This particle is deemed as being light-in-motion because of a frame of reference established by a point of origin, a point of presence (being or becoming) and a point of destination. The distinction between a discrete motion and a continuous motion are consider relevant in this illustration because both are measured within a frame of reference. However, if the frame of reference is removed and this particle of light is still in motion, the illusion of a flow of travel or trajectory is no longer conceived as relevant. The particle might be perceived as being between the point of origin and the point of destination, but lacking a frame of reference, these points are irrelevant. Place, position, and location become moot. The *motionness* of the light particle only has existence in its presence of motion. As it moves, it creates presence and it destroys any so-called former presence. Its motion is not constant and not directional. The foresight of presence or hindsight of presence are absent. It has no pre-presence or post-presence. It only has being-in-

motion. The distinction between being and becoming is lost. Being-in-motion is not a form of discrete motion nor is it a form of continuous motion. It's so called discreteness is inherent within its presence and it's so called continuousness is also inherent within its presence thus rendering the ideas of discreteness and continuousness meaningless. In order to complete this illustration, there is nothingness and emptiness in the fore-motion and in the after-motion because the words "before" and "after" describe no reality, having no existence. In this illustration, I am not trying to recreate a Stephen King "langolier" type motion in order to destroy where it has been to create where it is going. It is an illustration of being-in-motion.

This alternative theory to the spatio-temporal structural theory of change is grounded in the concept of wholeness. This alternative theory creates an alternative model of the structure of reality based on the existence of things-in-motion and things-in-relations notwithstanding the "in" structural problems.

Monads are in motion and entangled in relations. The development of a new conceptual base that reflects this reality is the first task. Secondly, a new structure that represents this reality will need to be conceived. We want to avoid designing a frame of reference that refers to any kind of coordinate system for the simple reason that frames of reference tend to force structure upon reality—reality is perceived to represent the model. The structure must be grounded upon three foundational ideas: things (monads), motion of a different kind, and relations seen as entanglements.

The alternative theory draws upon the ideas of Gottfried Wilhelm Leibniz (1646-1716), Immanuel Kant (1724-1804), and Gabriel Tarde (1843-1904) with respect to the concept of monads. The idea of the monad as it is used in this alternative model is different in many respects to the monads painted by these authors. I define the idea of a monad, the idea of motion, and the idea of relations differently within a context of wholeness. This thesis develops an alternative theory of immanent wholeness that expresses the inherent wholeness of monadic form and density, monadic motion (infinite and perpetual), and monadic relations (entanglements). Immanence implies not a combining or aggregation of the parts to the whole, but a subjectivity of wholeness. This alternative theory shall be called Ontic Random Motion Model (ORMM). In this context, an ontic state refers to "precisely the way it is" where random is the opposite of sequential, and motion is infinite, unbounded, and perpetual existence in an extended vacuum.

This theory includes what will be explained as monadic motion and monadic relations. This theory will be used to model reality as an alternative to the spatio-temporal model of reality.

There is no differentiation possible with respect to this wholeness. They are all inherent in each other. There is no tripartite reductionism where three separate things also exist as a single thing. The monads have no existence without motion and no existence without relations. Similarly, motion has no existence without monads-in-relations, and relations have no existence within monads-in-motion. There is no independent separation that is possible. We are so accustomed to perceiving things from a reductionist perspective that we find it difficult to perceive that the parts simply do not exist without the whole. Non-existence in this context means nothingness and emptiness. We could take this line of thought a step further and state that all that exists does so as monads-motion-relations. This becomes comprehensible by understanding existence and wholeness.

There may exist an innate *conatus* for monadic motion and monadic relational attractions. This *conatus* is an innate inclination of a thing to exist. The concept of existence is a critical idea in this alternative theory. There is a kind of *simultaneity of existence*. Simultaneity must be understood in a context of motion and not in a context of time. The term "simultaneity" is so embedded in our thought and language as meaning "at the same time" that is difficult to change its context to mean "within the same motion." In the thought process, simultaneity needs to move from a temporal context to a spatial context; then from a space-time context to a motion context.

This monad-motion-relation has wholeness and existence, it also has a simultaneity of existence and a simultaneity of motion. All the problems associated with spatio-temporal contrivances disappear once this model is understood.

A *simultaneity of existence* is a *simultaneity of motion*. The opposite is also true. The relationship of simultaneity to locality and nonlocality is difficult to comprehend. This line of thought also seems to fly in the face of relativity and locality. How can there exist a simultaneity of motion and also a relativity of motion? The simultaneity of motion is shared in that all monads are linked by the simultaneity of motion irrespective of direct or indirect monadic relations. Nonlocality implies a monadic indirect relation or entanglement and is not spatially defined. Locality implies a monadic direct relation or entanglement. It is not that monads are mutable, monads-in-motion are perpetually new where the context of new implies being-in-motion. New in the context of old imply a temporality. Monads simply exist in motion. Monads come into

existence by the very act of motion and relations. There is no temporal change from one thing to another in continuity or persistence as the spatio-temporal doctrine holds. With the simultaneity of motion, things are what they are. Monads are not in multiple locations at the same time or are monads capable of irreversibility as these are spatio-temporal contrivances. Nonlocality is a descriptor of monads indirect entanglements. Locality is a descriptor of monads direct entanglements. Relativity of motion is the same as the simultaneity of motion except it is observed in the context of monads direct entanglements.

The answer to the question of how can there exist a simultaneity of motion and also a relativity of motion is that all monads are actualized in the singularity of existence. How can all monads also exist in terms of locality and nonlocality? The answer is that monadic relations are causal of relativity and locality. This causality is the consequent of motion and is not temporal. Locality is not spatial, but relational. Nonlocality is also not spatial, but simultaneous. Monadic motion and relations are also causal of shifts between solitariousness and gregariousness. There are two general types of monadic relations represented by scatterings and gatherings. Monadic motion functions according to a simultaneity and nonlocality and also according to a relativity and locality. The multicity of all monad-motion-relation phenomena function according to a simultaneity and nonlocality and according to a relativity and locality.

A simultaneity of motion means that all things, the very wholeness, are in motion. There is no state of rest or equilibrium. This kind of motion cannot be understood in terms of linear movement, or sequential movement, or succession. It is not a motion from some position or to some position.

It is hard to conceive of motion that does not conform to a human preconceived spatio-temporal pattern. The spatio-temporal idea has been introduced to almost every human generation as a learned phenomenon. It is part of the baggage that constitutes the carrying capacity that will be discussed in due course. The simultaneity of motion is like movement with no memory or imagination of a trajectory. It would be unknowable except for the relativity of its action in the context of other monads-in-motion and monads-in-relations. It is motion without structure, without any system of reference, without any cognitive constructs that interject structure. It is motion that creates existence in its action and nonexistence apart from its action. One might think of it as surrounded by nonexistence as it moves. All things are in motion which creates a *simultaneity of motion*. This simultaneity of motion is an action in nothingness and

emptiness. There is no medium or ether. As it moves it creates in the face of nothingness (having no face) and as it moves it destroys or leaves nonexistence in its wake (having no wake). This simultaneity of existence-in-motion is the basis of an alternative model of reality.

Noise, Sequencing and Pathways

Reality can be perceived as a totality of internal and external noise. We create this internal and external dichotomy. However, we can reasonably state that we have the capacity to understand this noise as being the same regardless of its source. The fact is that we can only perceive that portion of reality that our exclusionary sensorium is able to abstract. Reality is reduced to sensorium created abstractions that are conditioned reflexes filtered by excitatory and inhibitory mechanisms. Nonetheless, because of the *telos* (from the Greek τέλος for "end", "purpose", or "goal" (Wikipedia)) of human perfectibility, we believe that a totality of knowledge about this noise is achievable. We generally call this *telos* of perfectibility the end goal of "progress." However, between the emergence of our being and the emergence of the *telos* of perfectibility, we are forced to model our perceptions of reality. But how do we wade through the ubiquity of abstractions derived from noise? We do so by means of conditioned reflexes filtered by excitatory and inhibitory mechanisms against the magnitude of noise and agency created new names, new terminology, new concepts, new perceptions, new theories, and new methods.

If reality is a social construction that is grounded first in the self and the other, the self becomes the locus of reality that is grounded in being alive and consciousness. We are designed by intent or accident for survival and reproduction to obtain information or data from the noise in which we are embedded or embodied to varying degrees. We are by design, the means of which is beyond the scope of this thesis, extended living beings that find existence in the realm of this noise. This is applicable to all extended living things. We are extended in the sense of our relations. There appears to be no exclusivity in this design among life forms. It is in this extendedness that we perceive as reality or realities.

The noise that is existent from this extendedness derived from our relations is detected by means of a sensorium. The sensorium is a sensory wholeness. Any part of the sensorium cannot function independent of this wholeness. The purpose and necessity of the sensorium is to react to and limit the intake of noise. Inhibitory categorization of noise content is a primary function of the sensorium. Inhibitory categorization provides for a means to identify like kinds. This function further inhibits or reduces the net amount of noise that is introduced to the sensorium.

The sensorium is able to utilize what we call memory and imagination to categorize noise in sequential patterns. This sequencing is a sensorium construct based upon sensory arrival by the motion of all things and relations resulting from motion. Sequencing is a learned phenomenon. The use of memory and imagination are essentially the same operation in terms of sensorium functionality. We equate the use of memory and imagination with what we call thought. Rationality is concerned with sequencing. Sequencing represents a means by which we categorize order over chaos, structure over disorganization, stability over instability, security over insecurity, certainty over uncertainty, discipline over confusion, method over randomness, intention over fortuitousness, control over lawlessness, continuity over rupture, and progression over degeneration. Sequencing is the categorization of motion resulting from conscious experience. Sequencing is a consequence of motion. It is an invention that has transformed our perception of reality. Sequencing is the basis for other constructs such as statics and dynamics, rest and change, event and process, before and after, yesterday and tomorrow, past and future, being and becoming, possible and actual, and time and space. This list is not exhaustive.

Sequencing also cannot exist in the absence of a medium in which it is believed to function. The medium is also a social construct. Some might argue that sequencing is a survival necessity. They may also argue that sequencing is hard wired into brain function. They may further argue that sequencing is the order of nature. However, the disorder of nature is random complexity. It is the functionality of sequencing that concerns us in the development of this thesis. The idea of sequence becomes important in its contrast with the idea of simultaneity. I want to explore this in a different manner than Lee Gilroy and Howard Hock in their 2009 paper. They write that “Motion perception usually is accompanied by the phenomenological impression of sequence as objects move through successions of locations. Nonetheless, there is accumulating evidence that sequential information is neither necessary nor sufficient for perceiving motion” (Gilroy and Hock 2009, 1563).

It is generally argued that the purpose of science is to describe and explain natural and social phenomena. A distinction is commonly made between the natural and the social. Science employs a method to produce useful models of natural and social realities. There is also another distinction commonly made between conception and perception of reality. We create a great chasm between a perceived function of the mind based upon one form of thought that is based on reason or reflection alone and a perceived function of the mind based upon another form of

thought that is verifiable by observation or experience. The function of the mind based upon reflection is weighted against some construct of truth value and found lesser than the function of the mind based upon imposing a social construct upon consciousness derived directly from investigation, observation, experimentation, or experience. The method we apply toward observation and experience is weighed against a truth value. The question is whether the brain function is the same in either case. Given that all exogenous and endogenous information is derived by means of the sensorium in some sequential order, the only fundamental difference is based upon its sequential relationship to consciousness. This breaks down to the difference between order and chaos or *methodness* and randomness. Cognitive random connections are weighed against cognitive methodical sequences imposed upon the thought processes by the force of human will power. It is like saying that emergent brain function is lesser than willful patterned brain function. This dichotomy of brain function is problematic.

The notion of path signifies that being on-path leads to knowledge of reality, truth and order. The path represents logic and rationality. Whereas being off-path leads to the antithesis of knowledge and truth. Off-path represents chaos and irrationality. From a perspective of the mind, if reality consists of noise, how can we make noise into ordered sound? The brain functions as an excitatory and inhibitory mechanism that constructs a kind of music from noise. It seems that we than confuse music for the reality and filter out the noise. The reality is the noise.

One of my initial questions is whether noise is in motion and whether this noise is sequential or whether motion and any sequencing is a function of the brain? What is noise doing? My assumption is that noise is in motion. Or is my brain constructing motion where noise is in fact static and constant? I doubt the latter. I reject the notions of static and constant as having any reality. This is in line with the idea of infinite or perpetual motion. With this line of thought, I am getting closer to a model of reality based on a different idea of motion. I am compelled to conclude that noise is in motion and that reality is not comprised of a linear sequencing of this motion. I am removing motion from the socially constructed continuum. I further conclude that statics is also a social construct.

In this context, path is equated with sequencing and method. We strive to control brain function by means of imposing a sequential inhibitory pathway with a defined start and end upon everything. One might argue that the emergent mind that evolved over many measures of sun

rotations is less reliable than a willful disciplining of this emergent mind over a few measures of sun rotations.

We generally define this form of discipline as rigor or method. Method becomes the focus rather than the object of inquiry. The scientific method is based on the application of a logical and rational order to achieve its means and ends. Method is employed because of the assumption that thought needs order, command and control, that the natural mind lacks order, and command and control. It is assumed that there is something about natural brain function that seems to alter the conception and perception of reality. *Techne* (etymologically derived from the Greek word τέχνη for a rational method in reaching a goal (Wikipedia)) becomes more important than *telos* (from the Greek τέλος for "end", "purpose", or "goal" (Wikipedia)). *Telos* is judged by the rigor of *techne*. At the heart of this journey from *techne* to *telos*, we have turned the path into method. I have strived to associate method, rigor, and discipline in the same light. They are manifestations of the pathway.

There are four aspects of this idea of path or way that serves my thesis. These involve, the *pathway* itself, the *directionality* of the pathway, the *trajectory* established by the pathway, and *sequencing*. The path is bounded. The path is directional. The path points to the horizon. The path is linear. The path has structure. The path is deterministic in that it creates a form of path dependency. Path is a process generating notion. We also need to consider the purpose and necessity of the pathway. We also need to distinguish what happens relative to the pathway. Our tradition tells us that something is on the path and it is not static. Statics is the antithesis of the purpose of the path. The path does not move with the mover. The path is external to the mover. The path is a medium upon which the mover moves. The path is projected ahead of the mover. The path has a history. The mover perceives the path-horizon, a continuous new horizon. These ideas of motion along the path, of change occurring along the path, of ruptures in the path, and of path defection are aspects of the idea of the path that find utility. The pathway leads to the spatio-temporal assumption.

Emerging out of pathway thinking is a host of conceptions and perceptions that have influence the evolution of thought, of abstraction, of language, of culture, of science, to name a few. Pathway thinking has resulted in spatio-temporal thinking. Pathway thinking is the source of emergence of all kinds of false thinking. Pathway thinking is also a source of great utility. We must try not to confuse what goes on in the brain pathways in terms of models of reality. I want

to explore alternatives to the dogma created by making sequencing constructs. I want to return to the idea that pathway thinking creates structure. It imposes some sort of order on structural thinking. The path is not the reality. I have explored these concepts as being necessary in order to develop an alternative to the spatio-temporal structure of reality that dominates most thought processes. I shall approach this by means of discussion of various problems.

Problem of Wholeness

The basis of an alternative theory is with the wholeness of what will be the conceptualization of monads, of motion, and of relations. It is this wholeness that creates the density of form that gives each wholeness its separateness as a kind of monadic identity. Each thing that exists has a wholeness to its form. This is a kind of density of form. The monad-motion-relation constitutes a wholeness. Each monadic wholeness has existence of being-in-motion. For the purposes of explanation or clarification, I think of wholeness in terms of a relational or entanglement context. Monadic form does not mean a change a place or position for this geometric structure is moot. Monadic form cannot be compared against a pre-existent state of being of itself as an indicator of change because such a state is non-existent. Perhaps, the following analogy will serve my purpose.

Change is a concept which will be later rejected for its relation to continuum theory, but serves a degree of initial usefulness for purposes of communication. The only means of control or power over the monadic wholeness is through to be a kind of swarm affect. Monadic transformation involves the shift from the solitarious to gregarious form not as a consequent of movement along a continuum, but in its existence in motion. It exists in the form that it exists. Monadic transformation is inherent in the wholeness of its being-in-motion. The ideal of a gregarious state raises the level of complexity, but is not the primary means to effectuate what we traditionally call “change.”

Problem of Reality

The idea that knowledge can be derived from external reality by means of a differentiation of the human sensorium in which one part of the sensorium moves contingent discursive knowledge and another part of the sensorium moves contingent intuitive knowledge is problematic to a holistic view of the human sensorium. By this reasoning, empirical knowledge is thought to derive directly from some sensory experience and intuitive knowledge is thought to derive from other cognitive processes that cannot be traced back to some sensory observation,

experience or experiment. This dichotomy divides the human sensorium into parts that are purported to function differently in delivering knowledge from sensory input to action (behavior). It is as if there existed some direct source of knowledge from an external reality to human consciousness as opposed to an indirect source of knowledge from an external reality via abstraction to consciousness. It is further thought that this direct route to consciousness can be controlled by means of a method imposed by human willfulness. It separates all knowledge into intuitive and discursive types. It is argued here that the perception of a holistic human sensorium is in conflict with any view based on a differentiation of the sensorium. Arguments over the source of knowledge, whether directly from the external reality or from other cognitive processes, are based on the premise that the goal is knowledge rather than consciousness-in-motion. This distinction is also problematic. A holistic view of the human sensorium is a totality encompassing sensorium-arrival, sensorium-construct, sensorium-reflex, and sensorium-volition.

There is no wholly *a priori* (from the earlier type of knowledge) separate from a wholly *a posteriori* (from the later type of knowledge). Aside from the possibility of genetic transmitted knowledge, it is a grounded assumption that all knowledge is derived from a holistic perception of the human sensorium. It is suggested that a differentiation of data received by a living being at the sensorium-arrival from data produced at the sensorium-construct is incomprehensible in their parts as separate forms of data. There is no contingent empirical intuition directly derived from external reality. There is no contingent empirical discursion directly derived from external reality. Likewise, there are no contingent intuitive or discursive forms of knowledge. If one accepts the holistic notion of the human sensorium, a division of knowledge based upon a dichotomy of data transmission directly from external reality to human action (behavior) is moot. The issue of whether the real passes through the sensorium directly to consciousness and to action seems more to the question than being subject to sensorium modified abstractions. The idea that empirical knowledge can be directly known is problematic.

The concept of reality is based upon the idea of existence. These are things that have some level of discrete being-in-motion and not a continuous becoming. They have an appearance with form and shape. They have boundaries or edges that distinguish one thing from another. They have an appearance of wholeness. There is also the perception of a gap or threshold between things and a relativity of location. This perceived gap is equally important to our inquiry as is the entities themselves. It is this separateness of entities upon which our cognitive

categorization rests. Separateness seems to have two parts—form and gap. We think of form in the context of continuants (retaining identity in a state of change) and gaps in the context of occurrents (actually occurring static or dynamic states) and apply this distinction to various things. This manner of thought forms views of what we refer to as reality. Existence in motion is not conducive to these lines of thought.

It must be pointed out that all such views are grounded in spatiotemporal logics. We confuse our cognitive function with external reality. The first question is whether cognition and reality are separable. Our inquiry is guided by the answer to this question. If reality is embedded in cognition, than what we perceive constitutes and defines reality. If cognition is embedded in reality, than reality defines our cognition. If reality exists separate from cognition, what is this reality? How is it knowable? A reality that is not knowable is problematic. Does external reality exist or is it contrived? Reality represents existence in motion.

There is an intuition that reality exists based upon the acceptance of our own existence and the existence of others—both living and non-living things that present a perception of separateness as parts of a wholes. We have divided any knowledge about reality into *a priori* knowledge as being independent of experience and *a posteriori* knowledge as being dependent on experience. In both cases, there is an acceptance of the existence of reality. It is common to attempt to define reality based upon location rather than its ontology. Theories of location and length fail to define the content of reality provided that a content exists. Reality is not a construct of location and length.

In any case, a definition of reality must be attempted. The idea that reality must be subject to a structure or framework is rejected. Reality is not our preconceived notions of order and chaos. The idea that reality is subject to dynamics and statics is also rejected. The idea that reality constitutes domains of entities is rejected. The idea that reality constitutes sequencing, succession, change, or duration is rejected. The search for causation of being-in-motion is beyond the scope of this inquiry. Reality is defined by the existence of motion. The reality of motion is the foundational assumption of this alternative theory. Reality is not contingent upon motion. This is to say that reality is dependent for its existence upon motion. Motion is not here defined by a change of relative position. The thing in motion has being. There is no separation of the thing from motion. Knowledge of motion is not defined by direction and speed. Reality is in motion. Reality is being-in-motion. Reality is not becoming-in-motion that is derived from a

spatio-temporal structure. What does reality do? Reality is motion without any spatio-temporal structure.

Knowledge of an external reality is based upon its impact upon the human sensorium. We are conscious of the sensorium-arrival that things external to the sensorium have impacted the sensorium. We use language to denote these things as the external reality. We separate what the sensorium constructs from the noise of this external reality. A problem is created by projecting sensorium constructs as representing the external reality. Is the declaration enough to assert that the external world exists independent of human consciousness and an observer's knowledge?

There is an assumption that there exists a "reality" or "realities" independent of the "living beings." There is another assumption that information and data exists that describes reality or realities. There is a third assumption that the "living beings" are able to attain knowledge of reality or realities. All three assumptions are from the perspective of the "knowing living beings" alone. Is knowledge acquired at sensorium-arrival a form of futural knowledge passed immediately into memory? There is no independent validation of reality beyond that made by mankind without extending the inquiry into the realm of religion.

It is argued that, there is no persistence of reality whether singular or plural. The word "reality" henceforth does not distinguish between singular or plural notions. There is no "extended reality" by spatial and temporal notions of reality. If reality has being, it is a being-in-motion. Being-in-motion implies a state of nothingness beyond its state of motion. Beyond motion is nonexistence. In other words, there is no past reality and no future reality as these notions only reflect an illusion of reality imposed by the human mind.

If the illusion of continued existence was stripped away from the mind of the living beings by their conceiving of reality from a position of motion, not statics, there would be literally, in your face, the reflection of nothingness, emptiness, darkness, and nonexistence. This is the unknown, the uncertainty, the insecurity, the great anxiety and the real fear. This is the reality at the edge of your face or closer. This is the reality at the edge of motion, so to speak. Strip away the illusions and you are literally at the "face of the deep." Reality is in the motion. Beyond motion there is no information or data of reality, and lacking data, there is no knowledge. In other words, this description of reality is based upon a rejection of the position of statics.

Is there a reality distinct from the data about reality and distinct from knowledge of reality? If the assumption of the existence of reality separated from the concept of mankind is valid, the data about said reality is about motion, the things in motion, and the contacts these things have with each other within a context of motion. If the assumption about this data is valid, it is in its totality, unknowable as to its order or chaos. The living beings are capable of a spectrum or range of knowing as is evidenced by the creation or emergence of the sensorium. Outside this range, nothing is knowable. The living beings are embedded, implanted or embodied in reality. I have suggested a distinction among the ideas of the totality of reality, the totality of data about reality, and the knowledge capacity of living beings about the data pertaining to reality.

The assumption of chaos and order is premature. Whether reality exists in a state of order or disorder or in a state of equilibrium is premature. All interaction with reality is initiated at the sensorium-arrival. What is real at the sensorium-arrival cannot be known as order or chaos. The raw reality is what exists without value. The raw reality is in motion. The raw reality meets the sensorium. The sensorium detects the raw reality. As pure excitement or sensation, the raw reality is absorbed. The raw reality is inhibited as to content. The raw reality can only be detected within a narrow spectrum of sensory specialization which exists to limit the amount of external noise. Direct human sensorium detection of raw reality manifests no rational versus irrational symptoms. Raw reality is not perceived as chaotic or ordered. Methods are a social construction designed to give order or control to the complexity created by technology. Methods such as naming, numbering, measuring, counting, categorizing, writing, symbolizing, temporalizing, spatializing, grammarizing, and communicating are social constructs.

Problem of Monads

Monad is an idea borrowed from the Greeks (μόνος *monos*) meaning "alone" (Wikipedia). The conception of a monad is of anything that exists that takes a bounded form and shape. The monad holds a density that keeps it from being another thing. There are monads within monads. Monads are non-extended. Monads are in motion. A monad takes form only in motion. A monadic-form is any gathering together. We shall define the thing as the monad as having a composite-form relative to all other monads. A monad has a carrying capacity.

Problem of Motion

Ion Soteropoulos, in her book on the problem of motion (2013), writes: “Since the time of the Greek philosopher Zeno (fifth century BCE), who formulated his paradoxes of motion, our faculty of analytic understanding has failed to comprehend motion through the ages” (Soteropoulos 2013, xi). She attempts to show “why analytic principles of thought, which are abstractions of our individual perception of things, can in no way help us to comprehend continuous motion from *a* to *b*” (xi). Soteropoulos approaches the problem of motion from the perspective of “continuous motion,” the existence of a “container of motion,” and the principle of rest and motion within a geometric framework. She is seeking an image of motion by means of a representation of the reality of motion. She has taken one approach to motion from which I hope to find an alternative. She is still trying to locate her motion within the spatio-temporal assumption.

How do we approach the reality of motion where reality is understood as pure existence? The reality of motion is either true or it is not true. "No third possibility is given." The existence of motion is the foundational assumption of this thesis. The assumption of motion within the context presented here is that motion in reality is not continuous motion, there is no container of motion, and motion cannot be understood from a perception of statics and dynamics. This pure existence theorem of motion is difficult to comprehend. Motion is a primary physical reality. The problem is how to model the physical reality of motion at a fundamental level. More specific is the problem of the relationship of motion to the future where the future is beyond the existence of motion. Motion is within the conception of existence. The future is not within the conception of existence. The future is conceivable only from the vantage of motion where motion occupies no static place or position for viewing. The future can be likened to a screen or veil edging the motion upon which a projection reflects images back of the reality of motion where the sensorium reimages the reflection.

Any attempt to construct a phenomenological model that could turn the question of motion into a futural empirical question is difficult. The declaration that absolute motion is not knowable without an absolute frame of reference is the idea that I want to problematize. If we assume that motion is universal, that all things that exist are in a state of motion, that motion can only be known based on the existence of objects in motion, and that motion is a “change of place” or “change of position,” we set a thought pathway defined by a frame of reference that

becomes a deterministic framework for how we perceive motion and how we perceive the future. If we accept that motion can only be perceived by measuring its change of position relative to a frame of reference, this frame of reference defines the conception of motion. Any alternative to this framework is rendered nonsensical by the very assumptions that are used to establish the frame of reference. I want to consider motion without using a frame of reference grounded in statics or in a "change of place." I want to consider motion without using a frame of reference or at least in terms of a different frame of reference that is not based on spatio-temporal assumptions that represent notions such as "length" or "duration." If there is only one notion that represents the structure of the motion in the physical universe, I question whether it is found in "temporal and spatial discreteness" or in a spacetime continuum.

We can began with the premise that a notion is perceivable irrespective of its basis in reality. Some would argue that such things are independent of our descriptive ability and cannot be decided empirically. I want to try to perceive of the idea of motion absent any deterministic assumptions that might guide the perception in a specific spatio-temporal direction. I want to avoid any contextual terms that might render the idea of motion-as-being impossible. If motion is not a traverse along a continuum as a constant within a medium, how can we understand motion? Motion seems only knowable in relation to other things in motion. I shall return to this relational aspect of motion later, but first, it is possible to perceive of motion from the perspective of the declaration alone. There is no assumption of statics in this conception of motion. The functioning of the motion detector does not constitute a model of reality. The idea that the sensorium creates the sense of motion that is superimposed over the model of reality is to be avoided. Any idea of a pure form of motion outside of structure seems impossible. This is the start of an alternative definition.

The removal of structure means the elimination of causal factors, the elimination of boundaries, the elimination of medium, the elimination of start and stop, the elimination beginning and end, the elimination of direction and speed, the elimination of sequence and succession, the elimination of trajectory, the elimination of consistency of form in terms of a constant velocity, the elimination continuity, the elimination of persistence, and the elimination of a continuum. This concept of motion is absent the notion of change in its state of motion by the elimination of event and position. This line of thought seems to push us toward a description of motion in a void without an external medium and an observer's sensorium as factors in the

description. This motion might be perceived as random and nonlinear, but these notions are also derived from the spatio-temporal assumption. It is acknowledged that it is difficult to conceive of motion within the context just described.

If we insist upon the reality of an object in motion, my argument can also accept the idea of any object in motion where motion is inherent in the object in a wholeness absent any notion of statics. The object and the motion can be perceived as one. If motion does not exist without an object, than the object cannot exist without motion. This wholeness of object and motion having being-in-motion is basic to my thinking. This object-in-motion does not constitute a singularity, but is a multiplicity.

This multiplicity represents an external picture of reality consisting of many objects-in-motion. These objects-in-motion have a carrying capacity defined by their wholeness. Objects-in-motion have existence with no thought of an anterior state of motion or a posterior state of motion. They carry their form and being in their wholeness. They carry their lesser density or their greater density. There multiplicity in motion results from their entanglements. Relational reflexes add content to their carrying capacity, in the form-of-object in terms of smaller and larger, in the form-of-motion in terms of slower or faster, and there randomness like behavior. I could use the analogy of the seed in terms of carrying capacity. The seed carries information or data in its form. A seed has existence. A seek has separateness. A seed has motion inherent. A seed is not static. A seed does not need a spatio-temporal frame of reference in order to conceive of its existence.

I could liken this alternative theory of motion to a kind of Brownian random motion absent the medium necessary only for observation purposes and model building. There is no "random walk" along a path consisting of a succession of random steps. There is no path or succession of steps. There is only the action or existence of the motion. There is a "nonlocality" in consideration of the relations among the objects-in-motion. This implies a direct interaction or entanglement that cannot be described independently as to what is discrete from the wholeness of the object-in-motion. This does not result in changes in the context of differences in a thing at different points along a continuum. In this context, the relation moves with the being or nonbeing of the object-in-motion or moves with the carrying capacity of the object-motion-relation whole.

If this motion could be observed, it would be like seeing it without the use of memory or projection. Without a reference system, it would appear to be stationary, but is not. If we

conceive of a form, and state that the form is in motion, and add a multitude of such forms-in-motion, we have created a simple structure for the perception of motion. We are not perceiving of a form-in-motion relative to itself as constructed in memory. We are trying to perceive a form-in-motion relative to other forms-in-motion. This is the important distinction. The traditional view of motion is based upon perceiving a form-in-motion within a structure that allows an observer to plot discrete or continuous motion of the thing itself. My view of motion is based upon the perception of a form-in-motion relative to other forms-in-motion.

Problem of motion begins with the framework in which motion is perceived. Motion can mean many things depending upon the context in which it is understood. We seem to talk around the subject of motion, rather than in trying to define the concept of motion. The idea that motion exists within some medium is one source of the problem. The idea that motion is a part of a continuum is the second source of the problem.

I want to conceive an alternative perception of motion as a means of inquiry into the structure in which motion is traditionally perceived. The purpose is the problematization of the entire façade of the social construct associated with motion. This brings into question the concept of motion whether absolute or relative. This renders useless the idea of a frame of reference or coordinated system regardless of whether the frame or system is static or dynamic. I want to render position and displacement pointless. The idea of a medium or æther or ether also are denied. If the concept of motion is problematized, other related concepts within the structural conception of motion become questionable. The ideas of an open system or closed system affected by internal or external forces becomes moot. In this context, the ideas associated with a structural notion of motion lose their connections. The notions of trajectory, succession, and sequence; rest, equilibrium, and statics; change, dynamics, cause and effect, velocity, momentum, constant, driving force, inertia, speed and direction, acceleration and deceleration time and space, event, being and becoming, continuum, duration, continuity, progress, and process all become irrelevant. This partial list of associated notions serves my point. This list is not exhaustive.

The purpose of motion is at the root of the problem. At the start is the assumption of motion. Our minds struggle with the notion of motion without an object. Motion in nothingness and emptiness seems irrational. The conception of motion as having being, *creatio ex nihilo* "creation out of nothing" is a causal argument lacking in utility. By claiming motion as a start of

this inquiry, I am privileging presence over absence. Motion is existent. Motion has presence. For argument sake, this is a presence without structure. If we perceive motion as an action or process of moving, it seems inconceivable that motion is existent without an object. In order to move past this dilemma, there is no differentiation between motion and object. Motion in inherent in the object.

Motion is not embodied in an object. It is not a constituent part of an object. Nor is motion embedded in the mass of an object. Motion is intrinsic to the object. In other words, the object is non-existent without motion. Statics is the antithesis of motion. This line of thought makes the idea of an object at rest moot. This is also applicable to the idea of equilibrium. The traditional view of motion finds this unity of motion and object problematic. The tradition attempts to make a dichotomy of motion and object. The tradition attempts to make the notion of object subject to the theory of statics. It is with the construction of structure that the problem is perpetuated. It seems that the only solution to the problems created with this traditional line of thought is to construct a different structure and associate it with ideas of motion and objects in motion. The traditional structure provides the assumption of a medium in which motion and object operate. The traditional structure provides the assumption for force as a causal solution for motion. The traditional structure provides the assumptions of speed and direction relative to motion and object. The traditional structure provides the assumption of trajectory, succession, and sequence. We need to challenge that there is a privileged fixed structure at which the meanings associated with motion are anchored.

Absolute motion has nothing to do with the notions of absolute time and space. If we remove the concept of motion from the context of space and time, the problems will no longer appear valid.

I also want to attempt to change the position of our thinking from one based upon continual change to one based upon a perpetual like motion without reintroducing the spatio-temporal structure upon which the concepts of change and position are depended. I am employing a simple means of comparison, and not invoking a cause and effect. Modern mathematics and science has employed a rigor, a method, and a structure in dealing with the subject of change. This structure is rejected. The idea of change cannot be confused with the idea of motion. We need to substitute the idea that reality is always changing with the idea of reality in motion. We must not get hung up on causation in order to validate the reality of motion.

Problem of Relations

A relation is an interaction among monads-in-motion. A relation exists at every distinction of monadic form. This is the case from galactic relations to atomic relations to cellular relations. A relation exists in a state of random like motion. Motion exist beyond the ranges of perception where slowness and fastness prevent observation. All things are in motion. This motion is not constant and not directional, and random. This is a non-spatial and non-temporal randomness. A density of encounters results from this motion. Monads interact in ways that cannot be described independently. A relation is perceived as an entanglement within a locality. Yet quantum entanglements suggests non-locality.

Problem of Change

The notion of change commonly signifies the making or becoming different or change of place or position. For discussion purposes, a distinction between the action and process of change becomes important. This is a transitory distinction. We tend to place action within a locality of experience, and we place process within a locality that transcends experience. We might perceive action in an endogenous context and process in an exogenous context. We associate action with agency and process with structure. This distinction is problematic, but useful for discussion. I want to first direct our focus on the notion of change as a phenomena that is external to agency collective action, which is something that is currently happening, or that is something that extends beyond what is currently happening in a diachronic sense. My purpose is to eventually discard this line of thought. For the moment, it has utility.

The locus of change perceived as a process is within the context of divine, natural, and human theories of change that exist at a grand causal level. There are divine, natural, and human theories of change. These theories of change have a common characteristic. They each perceive a development and progression, moving under the influence of given driving forces, along a pathway, trajectory, in a directional flow, along a continuum described by such terms as continuity, sequence, constancy, continuance, endurance, perpetuity, and persistence. Change is confused with motion along a pathway marked by points with causal claims. Change is a continuity between stages where each stage gives rise to the next. Change takes the form of a transition from one steady state to another as a process driven by feedback mechanisms.

Andreas Wimmer distinguishes between mechanistic models of change and post-mechanistic models of change. He notes, that “All major disciplines have moved – some earlier

than others – beyond older teleological views, which saw change unfolding along a pre-defined path from stage to stage until it reached a known endpoint" (Wimmer 2006, 1). "Today, processes rather than stages have moved to the centre of attention. Notions of equilibrium, reversibility, and determinacy have been displaced by disequilibria, irreversibility, and contingency" (Wimmer 2006, 1). "All patterns are at least partially probabilistic and are time dependent" (Wimmer 2006, 9). The difference between the older and newer views is grounded in different possible trajectories of change, between linear and nonlinear, reversibility and irreversibility, absolute deterministic and relative deterministic.

Universal Spatio-Temporal Thought Collective

In the article by Wojciech Sady written for the online *Stanford Encyclopedia of Philosophy* (April 19, 2012), there appears a summary of what constitutes a "thought collective" according to Ludwik Fleck's 1935 analysis. Sady states that "*A thought collective* is defined by Fleck as a community of persons mutually exchanging ideas or maintaining intellectual interaction." "When social forces connecting people operate for a long time, there arise thought collectives lasting for many generations." "The social structure of a scientific thought collective is reflected in types of scientific literature." "What was collectively developed plays an active role in cognition: shapes modes of perception and the thinking of members of a thought collective." "The next aspect of social nature of cognition is the phenomenon that members of a thought collective mutually reinforce themselves in the conviction that their thought style is true." "Fleck defines a thought style as the readiness for directed perception, with corresponding mental and objective assimilation of what has been so perceived, characterized by specific problems of interest, by judgments which the thought collective considers evident and by methods which are applied as a means of cognition." Sady addresses the question "How a Thought Collective Transforms What Is Socially Constructed Into "Reality"?" Sady answer is worth quoting, "Yet, one may say, the conviction as to the truth of a thought style can break down under the pressure of facts that contradict it, and also as a result of confrontation with those who think differently. The remarks given above quite clearly show that this is not the case. Nonetheless let us summarize Fleck's views on those matters."

Sady lists seven bullet points.

1. A thought style is included already in meanings of words, and those meanings are considered by members of the collective not as something formed by people but as "objective". Thus, opposing a system is unthinkable: someone who opposes it is considered to be the one who does not understand meanings of the words used (1935a, IV.5; 1936, VI).
2. Scientific instruments which embody some results of a thought style, "direct our thinking automatically on to the tracks of that style" (1936, VI).
3. Forming our cognitive activity, our perception and thinking, "[c]ognition modifies the knower so as to adapt him harmoniously to his acquired knowledge" (1935a, IV.2). Since everybody sees the world in a way imposed by one's thought style, in every step one notices facts corresponding with that style and does not notice what does not fit active assumptions of it.
4. Even if facts incoherent with a given thought style are noticed, one ignores them as unimportant. For example, for several decades physicists knew that Mercury had not moved as it should according to Newton's mechanics, but they failed to mention this fact to the general public. Only today one precisely describes those facts because they confirm a new thought style: the general theory of relativity (1935a, II.3).
5. Cognitive problems we choose to solve do not come from a neutral reservoir of problems which existed prior to the development of sciences, but we choose those which are born on the ground of a thought style imposed on us—and they are usually successfully solved within its confines. And we do not work with problems which are born within other styles —our collective considers them not worthy of attention or even senseless (1935a, IV.3).
6. When anomalies can be no longer ignored, one attempts to show that they are not incompatible with one's thought style (1935a, II.3). (Today we would say one adds to the system various *ad hoc* hypotheses.)
7. Sometimes in old texts we find descriptions of results of experiments which we, as the users of another thought style, consider illusions. It happens that somebody sees

something what corresponds with prevailing views and other members of a collective confirm his experiences (1935a, II.3).

Klaus Eichmann also wrote about what he called the "network collective." He stated that in writing the book, *The Network Collective* (2008) that it "had initially been an attempt to understand what made me participate in and contribute to what now seems to be a major scientific vagary." "He wrote, "By comparing the network vagary with more successful explorations in the life sciences I arrived at a number of conclusions as to how scientific notions turn, or may not turn, into scientific facts in biology." (Eichmann 2008, 3). Eichmann claimed that the book "is an adaptation Ludwik Fleck's term 'thought collective', meaning a group of scientists who share a certain 'thought style'" (Eichmann 2008, 4, 6).

Henri Poincaré (1854-1912) expressed an idea in *Science et méthode* (1908) that explains the emergence of things that I liken to a spatio-temporal "thought collective." Poincaré words are worth quoting.

> "If we knew exactly the laws of nature and the situation of the universe at the initial moment, we could predict exactly the situation of that same universe at a succeeding moment. But even if it were the case that the natural laws had no longer any secret for us, we could still only know the initial situation *approximately*. If that enabled us to predict the succeeding situation with *the same approximation*, that is all we require, and we should say that the phenomenon had been predicted, that it is governed by laws. But it is not always so; it may happen that small differences in the initial conditions produce very great ones in the final phenomena. A small error in the former will produce an enormous error in the latter. Prediction becomes impossible, and we have the fortuitous phenomenon" (*Science and Method*, Dover edition (1952), Poincare 1908, 68).

A slightly different version of this was published in 1912.

> "If we could know exactly the laws of nature and the situation of the universe at the initial instant, we should be able to predict exactly the situation of this same universe at a subsequent instant. But even then when the natural laws should have no further secret for us, we could know the initial situation only *approximately*. If that permits us to foresee the subsequent situation *with the same degree of approximation*, this is all we require, we say the phenomenon has been predicted, that it is ruled by laws; but it is not always so. It may happen that slight differences in the initial conditions produce very great differences

in the final phenomena; a slight error in the former would make an enormous error in the latter. Prediction becomes impossible and we have a fortuitous phenomenon" (Poincaré, 1912, 34).

The idea that "small differences in the initial conditions produce very great ones in the final phenomena" is at play within the idea of a thought collective. Small assumptions initially adopted by the few produce great assumptions by the many. This is evident where ideas or assumptions of a single person or gathering of persons can become the dogma adhered to by the many based upon some range of utility and assumed to constitute the sole reality. We tend to question utility more than assumptions. The idea of a range of usefulness is important in that many pathways can be walked to the same destination. It is those areas outside the range of utility where grand assumptions cease to have a functionality, where uncertainty resides. We desire one grand law of certainty, one path to the knowledge of reality. If we acknowledge the range of utility with respect to all things in motion, we are better able to question the assumptions of the thought collective.

The term "butterfly effect" is a metaphor for Poincaré's "fortuitous phenomenon" (Tuszynski 2006, 175). This metaphor is applicable to the functioning of assumptions within a thought collective. "In chaos theory, the butterfly effect is the *sensitive dependency on initial conditions* in which a small change at one place in a deterministic nonlinear system can result in large differences in a later state" ("Butterfly Effect," Wikipedia, 28 September 2014). There is a form of the butterfly effect that is operational among the different thought collectives. The thought collective attempts to determine the path of thought. The important question is how this diffusion of thought is carried from one generation to another. What is the carrying capacity of the thought collective? The thought collective creates a dependency based on initial thought patterns which emerge as a deterministic factor in intergenerational thought. The thought collective is responsible for much of the structure that is deemed deterministic of reality.

This is a phenomenon that I am attempting to explore. More will be said about this "carrying capacity." In order to break with the spatio-temporal thought collective, I have had to reconceptualize ideas that are dominated by thought, language, abstractions, perceptions, and conceptions developed by the thought collective. I have had to also use much of their terminology and concepts as a basis of communication.

Keith Kelleher, in his dissertation titled, "Spatio-Temporal Information Processing in Single Neurons" (2010) puts forth the theory that temporal patterns (Kelleher 2010, 15), sequencing (21), and spatio-temporal sequencing (23) are learned. Noel Cressie and Chritopher Wikle in their book, *Statistics for Spatio-Temporal Data* (2011) boldly state the position of the spatio-temporal thought collective. They write that "conditional thinking allows us to model a spatio-temporal process as it actually *evolves* through time" (Cressie and Wikle 2011, xvi). "In this book, we have proposed spatio-temporal statistical methodologies that align with the science, and we have found that hierarchical thinking is a natural way to achieve this" (xvii). "We approach the problem of 'scientific understanding in the presence of uncertainty' from a probabilistic viewpoint, which allows us to build useful spatio-temporal statistical models and make scientific inferences for various spatial and temporal scales" (6). They go on to say that "Although somewhat arbitrary, it is sometimes convenient to characterize temporal processes as either deterministic or stochastic (i.e., random). One might say that for a deterministic process the future is completely determined by the past" (58). "For *stochastic* or *random* processes, we might say that the future is only partially determined from the past" (60).

Reformational Anti-Spatio-Temporal Movement

There is a challenge to the Universal Spatio-Temporal Thought Collective. Although, there is no formal Universal Spatio-Temporal Thought Collective or Reformational Anti-Spatio-Temporal Movement, these labels illustrate the point. The reformational anti-spatio-temporal movement is largely comprised of individuals from many disciplines representing the physical and social sciences. They hold a variety of views with respect to space and time, and space-time. They are less intimidated by the universal spatio-temporal thought collective. Some futurists have joined their ranks. They have begun to publish their findings in books, academic journals, and online. They are questioning the assumptions handed down by the pillars of the faith who have dominated the creation of theory, method, and language with respect to spatio-temporal orthodoxy. The majority are clustered around a so called "a-temporal" view of physics. Many take their root in the work of J.M.E. McTaggart who published a paper titled, "The Unreality of Time" in 1908. Some in the field of quantum theory are questioning whether time does exists. Many of the universalists the acknowledge problems that the spatio-temporal structure has imposed upon reality and adopt a different stance with respect the nature of time by redirection to less forceful language. They begin by pushing concepts like "becoming" and "duration."

However, their compromises are still grounded in the spatio-temporal structure. Many, falling under the categorization of the reformational anti-spatio-temporal movement, are still marginalized by the thought collective.

The popular press has begun to publish articles questioning the existence of time. In 2010, the *Scientific American* published an article titled, "Is Time an Illusion?" The Science Channel television station has aired a program titled, "Through the Wormhole: Does Time Exist?" in 2011. Scholarly opposition has gone public between Julian Barbour, who wrote *The End of Time* (1999) and Lee Smolin, who wrote *Time Reborn: From the Crisis in Physics to the Future of the Universe* (2013). Smolin's *Time Reborn* was reviewed in The New York Review of Books (June 6, 2013). Smolin will publish along with Roberto Mangabeira Unger a book titled, *The Singular Universe and the Reality of Time* in November 2014 on the subject of the crisis in physics. Many of these issues have been written by Amrit Srecko Sorli.

Chapter 5. Definition of the Future

The Futural Problem

Any attempt to understand an abstract idea that constitutes a phenomenon such as the future must begin with a definition of its meaning and describe the theoretical basis upon which it is established. The conscious conception of the unknown to which the name future was assigned did not always exist. Nor was this conception attached to the flux or flow that later became time. The idea of the future is not derived from empirical observation, but is an invention of the imagination. The argument could be made that these conceptions evolved from the idea of change. The future is not existent as we attempt to understand reality. Existence takes on a great significance. For the very fact that the future does not exist, it creates a special case in our collective dealings with respect to the subject of the future. However, this fortuitous phenomenon is anticipated. We can surmise that at the origin and realization of human consciousness, the future became something that we desired to create, make, shape or control. We made the future subject to action verbs. In this sense, the future or futures became what we commonly define as both a social and political phenomena. The idea became a collective issue and a power issue. Not only is the exercise of power about controlling the memory of others, but also in controlling the imagination of others.

It is argued that humans invented a paradigm which established a structural trajectory context by which the subject of the future could be understood. It was grounded upon assumptions constructed on the basis of perceptions of comparisons between memory generated images and imagination generated images. If the memory generated image seemed to match the imagination generated image, it came to represent order and stability in the form of continuity and equilibria. If the memory generated image seemed not to match the imagination generated image, it came to represent disorder or chaos and instability in the form of novelty. We have argued over causal factors for this dichotomy for thousands of years. The locus of the problem is in this constructed dualism between order and chaos and whether the cause is determined by exogenous or endogenous factors. We have translated this dichotomy into whether there should be an internal corporate responsibility or a structural external responsibility for establishing the best probability path or integral. In either case, we have constructed a structural trajectory, a path for grounding the location of our existence. We have perceived the distinction between statics and dynamics and attempted to location ourselves somewhere between collective memory and

collective imagination over a constructed concept that change. We seem to think in terms of static comparisons or comparisons of bounded-memories (establishing boundaries on both ends) and locations that are static as to place and position. We imagine static things moving along trajectories or paths and do not perceive any contradictions. We compare images of sets of past memories (both individual and collective) and perceive change (the act or instance of making or becoming different). These images are only sensorium constructs which we assign some sequential value by comparing relatively static images collectively derived. We create a structural trajectory around this concept of change. We develop multiple theories of change based on the assumption of change—on the basis that it describes reality and is proved by its utility. This is the facade of the future.

The important factor concerning this structural trajectory, in addition to its sequential attribute, is the construct of a medium or æther as the locus of this sequential trajectory. We invent a medium for this purpose defined as space and time. We construct driving forces that project change along this irreversible sequential spatio-temporal trajectory. This force-driven irreversible sequential spatio-temporal trajectory becomes the basis of any theory of change. It forms a structural argument for any perception of reality. The question is raised as to whether this driving force is derived from an external structure of nature or an internal structure of human agency. The argument becomes moot if we reject the force-driven irreversible sequential spatio-temporal trajectory assumption. The force-driven irreversible sequential spatio-temporal trajectory assumption creates a cognitive path-dependency that becomes deterministic. This is the dominate basis upon which many theories of change persist. What do we replace it with and how is any replacement useful? How can any proposed alternative develop a futural explanation?

The first question is whether this force-driven irreversible sequential spatio-temporal trajectory is a divine order, natural order, or human order of reality? In the context of this thesis, the force-driven irreversible sequential spatio-temporal trajectory constitutes a human invention. It is a human structure that conditions our language, our collective memory, our collective thought patterns, and our collective imaginations.

The force-driven irreversible sequential spatio-temporal trajectory is problematic. It assumes the purpose and necessity for an æther, a path, driving forces, time and space, change, a deterministic trajectory, and a future.

In theory, the controller (divine, natural or human) would be able to control or have power over the future. If man can control the driving force, sequence, and trajectory, direction, and speed, it is perceived that he can control the future. If man can control the driving force of social change along a continuum—sequencing of social change along a continuum, and the trajectory of social change along a continuum, along with direction and speed, he could conceivably control the future. This idea is based on the assumption that human agency is able to affect motion. Those who control change, control the future. We have defined this as a continuity of change. The exception is random change. Randomness is the opposite of sequential.

Thinking like Karl Schmitt (1888-1985), in a different context we might conclude that sovereign is he who decides on the state of exception which is novelty rather than continuity. As a point of interest, I am beginning to think that the state of exception is novelty. If human agency can control the gathering together (motion) and the scattering (rest)—states of the swarm based on whether the collective can achieve motion with one lip and one path. The lip represents collective speech and thought including collective memory and collective imagination. Path represents a medium, direction and speed, a sequential trajectory. In this line of thought, the power of human agency over the future makes future-directed thinking and actions political provided that human agency can control the exception—swarm effect and novelty. Short of this situation becoming a reality, human agency will remain scattered. I draw this analogy for the purpose of illustrating the political nature of future-directed thinking—that it is as old as civilization. Such thinking is made possible because of the structure that has been collectively described as the spatio-temporal assumption.

Many people believe that they can know, forecast, predict, and anticipate the future. Many people also believe that they can make, create, change, construct, design, direct, plan, manage, form, and shape the future. They freely apply action verbs to the object they define as the future. They believe that they are in motion towards the future or that the future is in motion towards them. They also believe that there is an arrow of time, a trajectory to a flow to or from the future. These notions are grounded in the assumptions that the future is existent and that human behavior and collective action are determinant of the future. Do humans have the capability to realize, actualize, and effectuate the future?

What does the word “future” represent? Does the idea of the future represent reality? Is the future existent? Is the future actualized? Does the future have being or is it becoming? Can

the future be experienced? Can the future be changed? Is it something always ahead of change or motion? Is it always ahead of consciousness? We perceive that we are moving toward the future or that the future is moving toward us. Does the future assume a relative location to the observer? Can we avoid all the problems associated with the idea of the future by placement of the concept within a spatio-temporal structure or by declaring its nonexistence and plurality?

In the context of the unknown, the future is a projection rather than an extension. It is necessary to make a distinction between projection and extension in this context. This distinction is important for purposes of perceiving the idea of the future. For my purposes, a projection is defined as an image on a surface. The idea of a surface is relevant. This surface is likened to a veil (*vēlum*). Whatever is projected is reflected back because of the veil (an image itself) is over the unknown and blocks perceiving. An image and the veil are constructs created by the projector. An extension is defined as a continuation of something that has existence. This is a continuation without rupture. The idea of rupture to an extension brings into question its continuity. The idea of a future as an extension implies an extension of the existence of the past and present. The idea of a future as an extension also implies that the extension is broken into two parts, one part knowable (having existence in the form of the present) and another part unknowable (not having existence). This line of thought places the future within the context of a continuum. The reality of the continuum than becomes the issue. This line of thought also renders the idea that the future does exist moot.

This in turn brings us back to the dichotomy between projection and extension, between existent and nonexistent, and between being and becoming. We are close to a vicious circle in our thinking. If the future has existence, it is problematic to perceive of the necessity for an extension. Continuity should resolve the problem. If the future has existence, it is knowable in some form. However, the future constitutes the unknown which should render the future into the realm of nonexistence. This line of thought returns us to the great debate over the known and the unknown, and to the evolution or perfectibility of mankind as the emergent knower.

Yet, why do we still ask the same questions concerning the future for thousands of years? We do not even understand that which we have given a name—the future. We only perceive the name in the context of its unreality. We lament that "something *ought* to be known about the future," we hope that "something *can* be known about the future" (Dror 1975, 147), and we

relegate the future to the realm of the possible, plausible, probable, and preferable (Masini 1993, 9).

It is a universal conclusion that the future is not existent, actual, or real from our collective and common vantage point. We are left with the necessity to socially construct a structure in order to give the future some meaning. We transfer importance from the idea of the future to the idea of the spatio-temporal structure. We nearly always revert to explaining aspects of the spatio-temporal structure rather than explaining the future. This structural invention is not structure that is the future, it is the spatio-temporal event-process structure—one step to be followed by another. The spatio-temporal structure provides the medium in which we have placed or located the future without understanding its relationship to that structure or to reality. This placement of the future is also a social construct.

The medium, aether, æther, or ether where we locate the future is also a projection. The idea of the future is directly connected to the projection of this medium in which it is alleged to function and operate. The future, in order to have existence, must therefore exist as an extension and not as a projection. It can only have existence within the structure of a continuum. It can only have existence within a medium or ether. It can only have existence within a structure of sequencing. It can only have existence within a structure providing a direction and a trajectory. It can only have existence within a structure that provides for change built upon statics and flows. The future has emerged as an idea dependent upon a socially contrived structure. If the spatio-temporal structure is false, the idea of the future as it is commonly understood also is false. The future is not an extension of the continuum. The future is a projection derived from change. The idea of motion itself cannot coherently be perceived in the context of the spatio-temporal structuralism.

Futural Motion

What does it mean that something is an attribute of the future or pertaining to the future? The response demands an idea. If the idea remains an internal mental image—a thought, it may affect the individual's dreams, thoughts and actions, but for the idea to be communicated it must be given a name or a sign, if for no other reason except to communicate our thoughts with dispatch (Harris and Taylor 1989, 163). If the idea is meant to represent reality, that complexity must be represented at a minimum with a name. The future is such an idea—an abstraction. It demands a definition of the name "future." The word without meaning cannot be communicated.

The idea of the future demands a context. The word future represents something, but what is it? The future is a social construct, unless it is externalize—that is, it is conceived to have an external reality or existence. An external context for the idea of the future, one which removes the idea from the mind and is communicated must be invented or shown to have reality. It is externalized to a separate reality that removes it from human agency. There is no empirical external noise that at the sensorium-arrival is proof of the reality of the future. Therefore, it is concluded that a context was invented much the same way that the idea of the future was conceived. What linked the idea of the future with the idea of a context which could be used to create a locus for the future? It is suggested that the sequence between the invention of the future and the invention of the external context—the continuum, was separated by a great gap until it become necessary to establish the link. It might be argued that the future had an independent collective image all its own before it was connected to the idea of the spatio-temporal continuum. This linkage may have developed over the issue of causation of the future. The relationship between futural cause and futural effect may have been the catalyst for inventing the contextual structure.

The future can only be perceived from the mental state of motion without a before and after. There is no knowable causal explanation. Motion is ontic (genitive) ὄντος "of that which is" (Wikipedia). It has a physical, real, or factual existence. Motion has reality without dimension or extension. This is an infinite form of motion without being or becoming. It is described as a wholeness of motion. It is without direction and is nonlinear. It is a perpetual motion. It is likened to a quantum hovering at every musical scale. It can only be perceived on the basis of relativity and described in terms of acceleration and deceleration. There is no medium in which motion has reality. It exists in an emptiness, a nothingness, and a darkness. One source gives this lack of medium a name: *tohu wa bohu* (תֹהוּ וָבֹהוּ). Pure motion encounters this void as a totality of motion. The void is describe only in terms of a surface appearance over emptiness, a nothingness, and a darkness. Motion can be perceived as a reflection as in the metaphor of the “face of the deep.” The surface is perceived, but nothing beyond it. It stirs the emotion of uncertainty. What is reflected from this surface is a creation of the human sensorium. Memory and imagination, consciousness of being-in-motion and external-relations invent the reflection of this surface. We have given this reflection a name. That name is the future. The future does not

exist. The future is beyond the edge of motion. I want to arrive at the idea that the *telos* of motion is the future.

We have wrongfully embedded this idea of the future as a part of a continuum that exists in a contrived medium we call time and space or change. Future is not a temporal or spatial concept. Time and space do not exist. The human sensorium compares sensations that are triggered by the motion-relation process with what is defined as sensorium-arrival (excitatory and inhibitory encounter with external stimulus). Any perceived distinctions are deemed to reflect change. Change is a construction of the sensorium. It is from this cognitive comparison between sensorium-creativity and sensorium-arrival that we derive the sense of order and chaos, continuity and discontinuity, security and insecurity, certainty and uncertainty, and continuity and novelty. Images of the futures are thus created. Images of the future do not constitute the future, but are the sensorium derived surface reflections of our motion at the face of reality. These images are derived from the content of the carrying capacity of monadic motion.

Does a word become deterministic in meaning and methodology? Can a single world command thereafter the context of all thought? Some words, being a name for things, are not subject to the same degree of statics as others. There is an evolution of language. Words are a driving force of thought and methods. Words represent lumps of things. Words are an abbreviation or substitution for the complexity they represent. Words evolve into relationships with other words. Take the English word “future” and all its derivatives. What does it represent? We have made it into a part of something and lost its meaning. The word “future” should be understood as a whole thing. By making it a reductional part, we lock our thought patterns along a deterministic path. What should this idea of the “future” represent? It is something beyond our consciousness if we accept consciousness in the context of the existent. It is something beyond our knowledge. Our physiology directs us forward and for most of us it works to project or extend our consciousness forward by means of our sensorium. For example, eyes look forward, feet point forward, and motion projects forward. We exist as directional beings. This physiology impacts cognition in that we think forward. We think sequentially in order of successions. Therefore, it is not surprising that we suppose reality to be based upon sequences.

The unknown aspect of this sequencing—that which we perceive to be beyond our experience in a sequence, is what the word “future” represents. In other words, the future is what we perceive it to be beyond our experience based upon our being-in-motion. The future

represents that which is beyond motion. This line of thought forces us to consider the concept of motion. Our assumption is that all things in existence are in motion. Based upon this foundational assumption, the future can be defined as that which represents the unknown beyond our individual and collective experience as living beings in motion. If we can conceive of an edge to motion, the future is beyond that edge. Some call this edge a "horizon"—the limit of a mental perception, experience, or interest. These descriptions are inadequate, but serve to illustrate the point. For my purposes, this future is not a part of a spatial or temporal process. This will become evident in due course. The future is not in motion. The future is beyond existence. The future is non-existent.

The future is an idea or notion that represents the unknown that is created by human consciousness based on conceiving of a *projection of existence in motion*. The assumption is that the future is non-existent. Humans are not capable of using the brain to acquire knowledge of the future? Humans are also not capable of changing the future? It is asserted that humans can acquire knowledge of images of non-existent futures and that humans can change images of non-existent futures so conceived. Humans can create images of the future and use these images to change human behavior. Humans can create images and act upon these images collectively. The question is raised as to whether collective action based on images are deterministic of collective motion? If knowledge of the future is acquired, it is assumed that the future can be changed.

Humans use brain function as a future-directed survival mechanism by means of the wholeness of memory capacity and imagination capacity. Memory and imagination do not function separately. We create a mental image of the future and adapt human behavior to these constructed images of the future. This adaptation is a reflex action. The significance is that these are not static processes. There is a collective sharing of these images.

An alternative understanding of the reality of motion is the basis for understanding any concept of the future. All theories of the future are embedded in conceptual frameworks. A framework is "a set of basic assumptions, or fundamental principles" (Popper 1994, 35). There is a path of thought that structures the future as a part of a process based on the assumption of change. There is an alternative to this assumption. Process philosophy views change as the basis of reality. An alternative view makes motion as the cornerstone of reality. This perspective creates a dichotomy between change and motion that must be clearly defined. The theory of change forms part of the futural framework. The theory of change is engaged in the problems

associated with causation and sustainability. These theories are concerned with structure and agency in terms of causation, and with continuity and rupture in terms of stability. The problem of change is the problem of comparison or the problem of repositioning along a continuum. All knowledge of change is derived from some form of memory. Memory capacity includes all technological devices used to supplement human memory. The assumption is that all *techne* derived data must be repeatedly reentered into human memory.

Are we to be confined to a frame of reference for purposes of observation and description of futural phenomena that structures our actions and directs our thoughts down a deterministic trajectory? The externally imposed rules of observation and methodology control futural thought collective. The structure is dominated by differentiation theory and theories of change around which language has emerged that precludes novel conceptual thinking that rejects the pervasive traditional structure. An alternative means of inquiry is forced to question foundational assumptions, mold different conceptualizations, and alter the language in order to reflect novel ideas. At the start, let us ask whether it is possible to reject the choice between *constant change* and *constant being*? It seems that the problem of change is fundamental to futural thinking. The ideas associated with change, the ideas associated with statics, and the ideas associated with trajectories are at the root of the biggest problems. The concepts of change, rest, and path directly relate to the subject of motion. The concept of motion is foundational to my proposition and it must be understood in the context around which this theory of the future rests.

There has been shifts of the idea of the future as an existent that can be acted upon within the divine order, natural order, and human order. It is with these paradigm shifts that the conceptual separability of the future can be understood. We can add to the list of divine order, natural order, and human order, a machine order—a communication technology order where complexity and acceleration are becoming deterministic. Each of these orders has defined the future and its context differently. The future was predestined by divine command. Fate was replaced by evolution. External change was replaced by human will or volition. Franco Berardi declares that "The process of decision making and projecting a future in which one future among many can be selected depends less and less on human will" (Berardi 2011, 57). The machine order is emergent. This is contingent on whether one accepts the theory of emergent novelty or spontaneous novelty.

Chapter 6. Intergenerational Transmission

Problem of Sæculum and Generations

The reader will observe that certain spatio-temporal terms and concepts have been initially used for purpose of communication. A de-spatialization and de-temporalization of conceptual language is problematic. In the context of this thesis, the social entity is defined from a holistic perspective of a monadic social entity that exists in a state of perpetual motion and not in a state of rest or equilibrium. The monadic social entity is defined by its motion and relations within the context presented in the body of thesis. A holistic approach to defining the collective memory is utilized. A generation is defined by the collective memory of those sharing life simultaneity as living beings. This constitutes a collective memory simultaneity. A study of the concept of simultaneity of motion will help shift the meaning of this term from occurrences at the same time to a relativity of relations as used in the context of this thesis. It is not a frame of reference that defines the concept of a simultaneity. Simultaneity is defined as the wholeness of monadic-motion-relations.

The problematization of human generations begins with the problems associated with static spatial and temporal perceptions. A generation does not exist in a form subject to statics. A generation is defined by motion, relations, and memory. The idea of the sæculum is helpful in understanding the problem of generations. The sæculum is determined by the criteria of living beings. The sæculum was originally measured from a foundation point regardless of date of birth or age of any person until the death of the longest living person within the social entity. The foundation point or originary event of the sæculum was intended to be the establishment of the society. Most of the foundation points have been lost to history. The boundary of the sæculum was established by death and not by birth. The turning from one sæculum to the next was determined by the death of a generation. During the life span of the longest living person there existed multiple parent-child generative processes. A sæculum contained the potential for one to four generations of living beings.

Generational motion is a biological and social generative process. It is generative at the physical level of procreation and in this respect it is deterministic. We try to make it subject to some form of generational sequencing or chain of being. Generational boundaries are fuzzy conceptions characterized by constant transfusions and bleedings. Generational core is dynamic

and characterized by motion. A kind of "generational motion-relation simultaneity" is what unites a generation.

A sæculum is a representation of a multi-generational generative processes encompassing generational transfusion and bleeding resulting from births and deaths comprising all aging living beings sharing a common generational consciousness based upon a simultaneity of information and communication acquired by means of interaction. Intergenerational is the transmission of culture—how cultural information is collectively transmitted from one generation to the next within the *sæculum.* It is how cultural information is collectively transmitted from one *sæculum* to the next. The *sæculum* that transcends a content of living beings constitutes the future. How can future-directed decisions constituted within the limitations of a living-*sæculum* by any collective agency be effectuated within a future-*sæculum?* What is the informational and communicational carrying capacity of the generative process in motion?

Motion and Carrying Capacity

The idea of the wholeness of existence of the monad-motion-relation is not subject to any form of reductionism. The monad-motion-relation as a phenomena cannot be explained based upon any separation into its parts as independently existing phenomena. It is a composite of various descriptive parts, but is not reducible to those parts. It existence of the monadic whole in motion and relations is derived from its wholeness. It is a carrier of information.

The carrying capacity of a monad in motion and relations is the totality of information or data that the monad-motion-relation holds about itself. The carrying capacity is the totality of information that can be carried, communicated, and transmitted in the context of inter-monadic relations. This form of information is not static, at rest, or in equilibrium. It is actualized in motion and relations. All umbilical relations are lost within its perpetual motion.

Problem of Simultaneity

The idea of simultaneity is important because it presents an idea that transcends relativity and locality. The argument is not about relativity and locality. The idea of existence begs the question of whether there is a ubiquity to motion—a universal commonality of motion, which is also translated into a universal commonality of consciousness. This implies a wholeness to existence that is shared by all things in motion as presented in this thesis. It is a simultaneity of existence or a simultaneity of motion. All things that exist are in motion and there is a simultaneity of motion that is not representative of time and space, or space-time.

Simultaneity, in this context, is not pertaining to change, event, or moment, occurring at the same time. In addition to being applicable to monadic motion, this line of thought is also applicable to all monadic relations. This notion becomes confusing if we try to impose sequencing, distance, length, and duration upon our consciousness of thought. It only becomes an issue if the spatio-temporal structure is imposed upon the functioning of the human sensorium, upon collective memory and collective thought, and upon collective consciousness. It has nothing to do with occurrences (events) happening at the same time in a spatio-temporal frame of reference. There is a sense of presence in the simultaneity of motion. We are so conditioned by the spatio-temporal frame of reference to think in terms of everywhen and everywhere, but in not in terms of everymotion. It is a ubiquitous motion. Existence is perceived as motion. It is a simultaneity of motion representing a model of reality.

Chapter 7. Future-Directed Decision Making

Any exploration of the idea involving a future-directed collective action is problematic. The problems began with the idea that mankind can in fact create or make the future. This is implied by the idea of being able to create or make a thing can only be understood in the context that all collective action is future orientated. Otherwise, it is void of meaning.

Collective action is comprised of future-directed decision. Within the theory of Ontic Random Motion, future-directed decision immediately pass in the collective memory that comprised the monadic carrying capacity. They in fact do not exist with respect to the simultaneity of motion with the exception that the intent can be acted upon from the constraints found in the monadic carrying capacity in its context of being-in-motion. In theory the effectuation of the content of the carrying capacity drives monadic relations or entanglements.

For example, the U.S. Constitution seems to have had existence over a continuum. The Constitution is an example of a future-directed decision. The continuity of the Constitution is an illusion created by the spatio-temporal assumption. The Constitution only exists by its being part of the content of the monadic carrying capacity in motion. The illusion seems to tell us that the Constitution of a moment ago persists into the now moment based upon its being in the continuum. The alternative way of thinking involves understanding that the continuum does not exist and that the Constitution has not persisted. The Constitution of a moment ago is not the same Constitution of the now. The slowness of motion that carries this information or data is beyond the range of our motion detector. There could also be a fastness of motion beyond the range of our motion detector. The Constitution of a moment ago is not subject to an irreversibility existence in that the being-in-motion has made the Constitution of a moment ago moot in that it has no continuity. The information content about the Constitution is part of the content of the carrying capacity. It is only realized in the monadic motion. This is probably the consequence of rule-following that is also informational content of the carrying capacity. The analogy is a kind of death and resurrection without the immortality of the soul heresy.

Future-directed decisions are meaningless collective actions unless they constitute part of the content of the monadic carrying capacity. Future-directed decisions are subject to the transfusions and bleedings inherent in monad-motion-relations.

Chapter 8. Results

I have attempted to shift an aspect of futures thinking from a spatio-temporal deterministic frame of reference grounded in the assumption of a continuum as medium to an alternative frame of reference grounded in a perception of the wholeness of monads, motion, and relations. Monads are defined by their density of form that hinders the blending of all things into a singularity. A monad can be anything that exists with or without life irrespective of size and shape. Monad are defined by anything that gives it defining form—that distinguishes one monad from another. Monads exit within monads. This monadic wholeness makes locality an issue.

Motion is defined as being inherent in monads as some form of perpetual motion in that nothing is at rest or equilibrium. This motion can only be perceived in its existence irrespective of cause and effect, sequence and succession, event and process, and time and space.

Relations are defined as entanglement resulting from monadic motion. Relations and motion define the monad. I have tried to move the basis of inquiry from social change to monadic motion. In the context of the wholeness of the monad-motion-relation, existence becomes the sole descriptor of reality. This conception of existence is a form of a simultaneity of existence or simultaneity of motion. Simultaneity describes the existence of motion. All monadic motion is a simultaneous existence irrespective of speed. Entanglements or relations describe monadic relativity and locality.

In the search for an appropriate metaphor to represent this reality, a Brownian type motion was considered with two fundamental modifications—the removal of the medium (continuum) and the removal of the observer's distortions created by the sensorium which imposes the memory of a change of position. Any conception of discreteness and continuousness of the monad-motion-relation must be removed from the theory. This allows for the concept of a new metaphor that represents the wholeness of the monad-motion-relation reality.

The metaphor of the seed might be helpful. The seed is like the monad in that it has a carrying capacity. The seed is subject to monadic motion, having simultaneity of existence. The seed has entanglements or relations that describe monadic relativity and locality. The seed moves with its existence, i.e., within the wholeness of existence of all things. The seed has being-in-motion. The seed also carries in its being as much stuff as its carrying capacity allows. Nothing that it carries is of itself static. The content of the seed's carrying capacity can be ruptured in that the monads can be ruptured by their entanglements or relations based on monadic relativity and

locality, the existence of motion cannot be altered, but motion can be ruptured by means of slowness or fastness, and relations can be ruptured as they exist-in-motion. Motion has different forms that can be described by such notions of vibration, hovering, action, moving, or dancing that exist without durational process. The basis of these ruptures leave no state of before-rupture or state of after-rupture in that they can only be described by their existence. I cannot use the concept of change to describe this reality. Change implies a process of becoming different or of discrete differences compared along a continuum.

In this context, how does existence of the monad-motion-relation (a kind of tripartite) function with respect to the future? It cannot effect the future. The future does not exist. The future as it is redefined within this thesis is beyond existence, meaning that it is beyond the simultaneity of motion. Within the ability of the seed metaphor to explain this motion, it is in the area of the carrying capacity that the monad-motion-relation can be primarily affected. The questions remain as to whether the form of the monad may be affected and the speed and direction of motion may be affected.

The concept of the future becomes useful as an abstraction beyond existence where existence meets nonexistence, but not in a static sense. It is in the anticipation of motion toward the unknown that we can collective examine the content of the carrying capacity. It is here that human agency can affect what we carry. It is unlikely that we can move with a new monadic form. It is equally unlikely that we can affect the speed of motion. It is unlikely that can interject a directional into the simultaneity of motion. The area of greatest affect is with relational entanglements.

Chapter 9. Conclusion

The application of politics to futures theory is based on the assumption that all politics is fundamentally future-directed. It might be argued that politics is the human pursuit of command and control—the elements of power, over the future. A great deal of literature is focused on shaping some aspect of the future. Much of politics is concerned with attempting to change "the environment of action" (Jervis 2012). This is attempted by some form of anticipation of possible futures, and attempting to actualize current behavior in response to these anticipations under the belief that this will in some respect affect the future. This kind of thinking is grounded in the belief in a picture of reality defined by a process of homeostasis in which the internal and external environments are regulated by natural laws that provides for stability and constancy (equilibrium) of all movement (changes in position) along an irreversible linear continuum. Some argue for the existence of a nonlinear continuum in order to account for the randomness of change. Others reject this picture of reality in its totality.

The goal associated with this thesis was to examine the persistence of intergenerational effectuation of future-directed decisions across the "generational continuum." The idea of the generational continuum is defined by the Continuum Development Index online. They claim to measure "human potential by examining physiological and psychological factors, and recognizing that humanity is a generational continuum, whereby each generation is affected by the last, and affects the next. That is, we cannot conceive of human potential without recognizing the inherently social nature of our species and accounting for the institutional gifts of our forefathers and effect our actions have upon the unborn" (Continuum Development Index webpage, http://generativetransformation.typepad.com/continuum_development_ind/#sthash.HbC0puvH.dpuf). It seems reasonable that the notion of multiple generations consisting of living beings each having existence at the same time does make it possible for intergenerational relations to occur. We are collectively conditioned to accept this premise by having learned that time and space make this possible. How the living generations effect the nonliving generations, i.e., future generations is questionable. Potentially there will always be older living generations in existence with the emergent newer living generations and that this process could explain the transmission of the collective actions by the former upon the latter. This notion creates the idea of a continuity among the living generations. This is the basis for the idea of a generational continuum. The

problem lies with how a generation is defined. How can a bounded generation be understood? A generation must have a simultaneity of existence and be definable in terms of statics and dynamics. The idea that generations can be collectively be deconstructed into age groups and cohorts fails to establish the reality or existence of a generation. The relativity and locality of age groups and cohorts contradict the simultaneity of existence of the age group. There is a distinction between a cohort and a generation. There is no way to reconcile generational theory with spatio-temporal theory. However, if a generation constitutes a monad, and a simultaneity of existence can be established based on a simultaneity of motion, than intergeneration relations could become the transmission vehicle for information or data to become the content of a monadic generational carrying capacity. This idea of a generational monad takes the form of a monad-in-motion much like the seed analogy presented above. The problem of establishing the generation with a wholeness that the idea of a monad-motion-relation presents is still not resolved. For this reason, the idea of the living *sæculum* that represents all living beings in existence in a simultaneity of motion might find more utility in explaining how relations or entanglements create the content of a monadic carrying capacity based the relativity and locality of these relations with their transfusions and bleedings.

The generational continuum idea is depended upon a generation being definable and that there are generative processes (emergence) that cause generational change. The generational definition problem has never been resolved. It is also believed that exogenous and endogenous factors exist in the form of emergent novelty that could alter the effectiveness of future-directed decisions made by a living generation aimed at shaping the future of a nonexistent generation. This is a form of thought dependency or path dependency (deterministic) derived from the spatio-temporal assumption translated into the concept of the generational continuum.

It is given, that images of the futures create the possible and that some form of actualization could occur in the future. It involves understanding how social change occurs over time and the role of driving forces of social change. It is believed that each generation carried possible futures, and by the process of intergenerational change, future generations would affect the actual future with the embodiment of future-directed decisions made by the former generation that may no longer exist into the value system of the later generation. The unit of analysis was defined as the generation, and that generational change functioned as a casual factor

that might explain diachronic movement and change. All underlying assumptions associated with this line of thinking are grounded in the spatio-temporal frame of reference.

In the course of research, I came to the realization that the underlying assumptions were invalid, and that the foundational theories and methods of perceiving the future were at best questionable because of the acceptance of the truth assumption of the spatio-temporal structural framework. I realized that I needed to address the foundational assumptions upon which my futures thinking rested. I needed a theory of the future that was not built upon the assumptions derived from the spatio-temporal frame of reference.

This thesis is an attempt to explore the development of an alternative theory of the future as opposed to the spatio-temporal theory of the future. At the least, it serves as an exploratory means for developing a theory of the future. I feel that my alternative theory better supports my proposition.

Intergenerational effectuation of future-directed decisions will fail to persistent in the face of emergent novelty beyond the living *sæculum* in which the decisions were rendered except where future-directed decisions are re-embedded within the collective memory of the succeeding generations and communicated within the new living "*sæculum* in motion." How is this possible?

The socialization of rule-following is more persistent in intergenerational effectuation of future-directed decisions based upon the followership of the masses to authority, but is highly exceptional based upon a host of problems. Ivor Leclerc identified that a center issue involved the definition of motion. He stated that, "The new concept of matter involved a new concept of motion, of activity, and of the ontological status of form and the soul. The new doctrine was also immediately plunged into the problems of the continuum, that is, of divisibility and indivisibility, of continuity and discreteness, and of finitude and infinity" (Leclerc 1972, 151).

The brain is an excitatory and inhibitory mechanism. Any change in stimulant to the brain produces a reflex action which triggers an excitatory or inhibitory response. The brain is only able to detect change by means of memory or imaginary inferences. Man is conscious of motion and this awareness produces anxiety and fear. Crowding and fast motion produces a reflex action that I call the swarm effect. Man is compelled by the need for order and security. The future represents chaos and insecurity. Can man gain control over collective motion? Can the human kind make the future inevitable by means of creating a locality of change, establishing a

trajectory (directional), controlling the velocity (speed), and communicating and effecting a simultaneity of collective action?

An attempt to render this alternative theory into a readable form using the language inherited from the spatio-temporal thought collective has proved problematic. Nonetheless, an attempt is called for. This thesis represents my engagement in exploratory research for an alternative theory of existence, reality, and presence represented by a form of infinite motion (an omni-motion) without any influence of statics or equilibrium in an ætherlessness having an asymmetrical wholeness of nonsequencial chaotic random motion (without pattern or structure or continuity or consistency), as a nonlinearity (atemporal) and nonlocality (aspatial) with a relativity relevancy to relations and entanglements among a generative monadic plurality each having a carrying capacity inherent in this motion that never pierces the veil over the face of emptiness, nothingness, and the unknown future.

For my purposes, a generation can be defined as a monad, in that I assign a shape-shifting form to this phenomena at every scale of existence. A generation is not perceived as a singularity. Generations are distinguished as a multiplicity within a "living *sæculum* in motion." This is true because monadic motion carries generational death within its carrying capacity. It can be theorized that generational motion functions similar to monadic motion, and that intergenerational relations or entanglements also function similar to monadic entanglements. Generational entanglements are defined by relativity and locality. Generational relations are not defined by a continuity. Whereas, the *sæculum* in motion is defined by a nonlocality. The *sæculum* in motion has existence in reality in that it is represented by a model consisting of living beings in a *simultaneity of existence*. A generation functions like a seed-in-motion with form of wholeness and a carrying capacity of information or data carried by it. The generation has a simultaneity or presence of existence found only in the reality of motion defined by its relativity and locality. The generation is like the monad, it is what it is in motion. Understanding motion stripped of the continuum is critical. The generation itself is not static, but in motion. The metaphor of the seed gives the appearance of being static, this is an illusion. Intergenerational monadic distinctions are only illusionary, in that the memory of monadic existence has no real existence. Generational death is the reality of motion which exists in a simultaneity of existence. Therefore, the generation that has a simultaneity or presence of existence is equated with the theory of Ontic Random Motion.

There is no emergent novelty in generational existence. This can be understood by purging the idea of duration and replacing it with the idea of motion without duration. However, there is novelty derived from perpetual motion and resulting relations. Novelty is not dependent upon the image of a chain of being. It has a true randomness to it. In motion there are transfusions and bleedings derived from monadic entanglements, not as events or processes, but inherent in the existence and wholeness of the monad-in-motion-in-relations. These transfusions and bleedings are imbedded in the monadic carrying capacity. There is a plasticity to the carrying capacity. There is a notion of the greater the monadic relations, the greater the complexity.

Future-directed decisions are perceived as static phenomena. If future-directed decisions are to affect the content of the carrying capacity of monads-in-motion with a novelty of monadic relations, there is a notion that the content of the carrying capacity must remain static in order for the future-directed decision to persist. This creates a contradiction. If it is reasonable that future-directed decisions can be carried by means of the monadic carrying capacity, it is also reasonable to assume that such decisions could influence generational collective action. Keeping in mind, that generational motion and entanglements have not bled these decisions. In theory, the future can be affected by means of shaping the monadic carrying capacity, and affecting the relativity and locality of monadic relations.

In the course of attempting to build upon this alternative theory, I have found it almost impossible to escape the prison-house of spatio-temporal language (see Jameson 1972), the language created by the spatio-temporal thought collective that has been embedded in the carrying capacity of monadic motion. As a consequence this is a work in progress (another spatio-temporal example of the prison-house of language). Language is a key to persistence, how language holds ideas that affect future-directed decision making given the reality of monadic motion. Intergenerational effectuation of future-directed decisions is possible and can be actualized by means of idea carrying mechanisms that form the content of the carrying capacity of monadic motion.

One of the biggest problems has been how to conceptualize motion. Motion needs to be distinguished from change. The dichotomy between motion and rest is not relevant to the existence of motion. The basic question is not between a kind of motion where nothing changes versus a kind of motion of constant change. We do not want to be forced to choose between a static (less change) form of motion and a dynamic (more change) form of motion. Thus, the

notion that everything is in a state of constant change is questioned because of its spatio-temporal dependency. These differences between change and motion are only issues associated with accelerations and decelerations, and equilibrium balances perceivable within a narrow range of sensory ability. This is a discrete versus a continuous framing of the issue where the frame of reference determines the contradiction between the two positions. Let us take a conceptual step back and look at motion outside the context of change. I want to envision a form of motion that is removed from any frame of reference. It is also difficult to perceive of motion without an object in motion. I want to envision a form of motion that is not concerned with causal forces. I want to try to conceive of motion without fabrications created by the sensorium with respect to its remembering and imagining. I do not want to imagine a thing being "in" motion. I want to envision the wholeness of a thing--a singularity that "is" motion. It could be on the scale of a universe or a single quark. I want to conceive of a thing that is not reducible to its parts. It would be a "motionthing" or a monad-in-motion where the "in" signifies a wholeness.

This kind of motion can be likened to our consciousness as we acknowledge our state of being where we are conscious of the "I am" and our consciousness in motion. We carry our consciousness in our motion, or do we carry our motion in our consciousness? I am suggesting that this is the motion that exists. It is what it is. It is not a continuant. This motion is reality. The questions that we pose about constant change and continuity become moot by removing the continuant frame of reference and all its trappings. All other perceptions associated with this concept of change are mental constructs. Reality is motion. This is the idea that I am looking for. It is motion unencumbered with our inventions and frames of reference. It is likened to motion in a void. Once our thoughts are removed from the baggage of time and space, we can perceive motion in reality. We will also be able to see what the future really represents being removed from continuum thinking and reductionism. It is an unbounded and unextended motion. I have called this view of motion Ontic Random Motion. We are now positioned to contrast spatio-temporal assumptions with ontic randomness and novelty.

Inference, whether derived from inductive and deductive reasoning, purports a conclusion that a future is a probability or a certainty based upon truth assumptions grounded in cognitive processes. These cognitive assumptions are associated with the concept of possession—a state of having, owning, or controlling something. Examples are possession of being, of identity, and of location or position. Possession is perceived in terms of statics with a background perceived in

terms of dynamics in a continuum. This statics and dynamics contradiction is the basis of the arguments between being and becoming.

Our consciousness provides for the notion of our being and the notion of our changing. This cognitive process is based on the function of the sensorium which has a capacity for memory and imagination which are derived from the same operation. We project this cognitive process to all other things that are deemed to have existence or reality. The striking thing about this cognitive process is that it can only function in terms of sequencing. We perceive one thing following another. This is the foundational reality. This provides structure or order out of chaos. Dilman Walter Gotshalk sumerizes this argument: the "definition of space as the extensional structure of continuants, and of time as the sequential order of events,"…(Gotshalk 1937, 149). "Events are in space, continuants in time, so space is not merely a structure of continuants, not time merely an order of events. The more adequate definitions are that space is the extensional structure, time the sequential order, in concrete fact, the unity of event and continuant" (Gotshalk 1937, 149). The three foundational ideas are possession (location), structure (continuum), and sequence (succession).

We assume the structure for reality. It is evident that many living beings do function in terms of sequential structuring. This structure is the lens by which the sensorium senses existence. But is this representative of reality? There is no evidence that all living things and non-living things function under the assumption of sequencing. I would suggest a negative response—that reality is grounded in an unbounded and unextended motion that is not structured on succession. In other words, existence, consciousness, and reality are actualized by unbounded and unextended motion. The underlying reality is unbounded and unextended motion which is herein designated as ontic random motion. The idea that is attached to the future is that of an extended idea from the horizon where unbounded and unextended motion meets emptiness and nothingness and darkness.

Appendix - Literature Statement

The works listed in this literature statement provided me with a broad view of the various concepts that are relevant to my thesis. Many of these works are peripheral, but necessary. This list is not exhaustive. I wanted to conduct a wide survey of materials that developed the core concepts of time, space, space-time, motion, change, and the future. There are a number of subject areas which provide background to the core subjects. Criterial to this task was the categorization of the various works according to whether any particular publication was grounded in the spatio-temporal structure of reality. It is not surprising that the majority of works accepted the authority of the spatio-temporal thought collective. These works were consulted for purposes of consideration as to whether or not they contained a persuasive argument. Other materials provided me with a conceptual trail for a wide exchange of ideas. The volume of materials prevents a complete listing in this review. Journal articles alone would fill about 54 banker boxes. The core materials related to the subjects of time and the future will be listed in the bibliography. Many of the books and articles dealing with the subject of time and space, and space-time were quite interesting, but were not persuasive. There is a growing trend of questioning some of the dogmatic assumptions about time and space.

Materials that specifically relevant to the subject of the future are too many to be summarized in this literature statement and will be covered separately.

Works Related to the Challenge of Time

Research into the concept of the question of time and other things included journal articles and books such as John McTaggart's article "The Unreality of Time" (1908); Davide Fiscaletti and Amrit Sorli's *The Infinite History of Now* (2014); Gerald Rochelle's *Behind Time* (1998); Eva Brann's *What, Then, Is Time?* (1999); Palle Yourgrau's *The Disappearance of Time* (1991), *The Forgotten Legacy of Godel and Einstein* (2005), *Godel Meets Einstein* (1999); Lee Smolin's *Time Reborn* (2013); Dewey Larson's *Nothing But Motion* (1959), *The Universe of Motion* (1959), *Beyond Space and Time* (1995), *Beyond Newton* (1964), *New Light on Space and Time* (1965), *The Neglected Facts of Science* (1982); Ilya Prigogine's *Is Future Given?* (2003); Lee Smolin's *Time Reborn* (2013); and Julian Barbour's *The End of Time* (1999).

Works Related to Action

Research into the concept of action included journal articles and books such as Maurice Blondel's *Action* (1893); C.R. Gallistel's *The Organization of Action* (1980); John Friedmann's *Planning in the Public Domain* (1987); and Karl Palonen's *The Struggle with Ti*me (2014).

Works Related to Assumptions

Research into the concept of assumptions included journal articles and books such as Alexius Meinong's work *On Assumptions* (1983) served as a basis for understanding the purpose and necessity of making assumptions. Yehezkel Dror's article "Some Fundamental Philosophical, Psychological and Intellectual Assumptions of Futures Studies" (1975) described nine main assumptions. James Dewar wrote two books related to assumption-based planning. Wendell Bell and James Mau, *The Sociology of the Future* (1971), Wendell Bell's *Foundations of Futures Studies, Volume 1* (1997) contains a chapter on "Assumptions of Futures Studies."

Works Related to Acceleration

Research into the concept of acceleration included journal articles and books such as William Scheuerman's *Liberal Democracy and the Social Acceleration of Time* (2004); Hartmut Rosa and William Scheuerman's edited book, *High-Speed Society* (2009); Gerard Piel's *The Acceleration of History* (1972); Hartmut Rosa's *Alienation and Acceleration* (2010), *Social Acceleration* (2013); and James Gleick's *Faster* (1999).

Works Related to Anticipation

Research into the concept of anticipation included journal articles and books such as Robert Rosen's *Anticipatory Systems* (1985) and *Anticipatory Systems, Second Edition* (2012); Stephan Meisel's *Anticipatory Optimization for Dynamic Decision Making* (2011); Martin Butz, et al., *Anticipatory Behavior in Learning* (2003); Martin Butz, et al., *Anticipatory Behavior in Adaptive Learning Systems* (2007); Martin Butz, et al., *Anticipatory Behavior in Adaptive Learning Systems* (2009); and Giovanni Pezzulo, et al., *The Challenge of Anticipation* (2008).

Works Related to Becoming

Research into the concept of becoming included journal articles and books such as Foland Faber and Andrea Stephenson's *Secrets of Becoming* (2011); James Felt's *Coming to Be* (2001); Andrew Pickeering and Keith Guzik's edited book, *The Mangle in Practice* (2008); Ilya Prigogine's *From Being to Becoming* (1980); William Connolly's *A World of Becoming* (2011);

Lawrence Fagg's *The Becoming of Time* (2003); Robin Small's *Time and Becoming in Nietzsche's Thought* (2010); and Elizabeth Grosz's edited book *Becomings* (1999).

Works Related to Carrying Capacity

Research into the concept of carrying capacity included journal articles and books such as Nathan Sayre's article "The Genesis, History, and Limits of Carrying Capacity" (2008); and Irmi Seidl and Clem Tisdell's article "Carrying Capacity Reconsidered: From Malthus' Population Theory to Cultural Carrying Capacity" (1999).

Works Related to Change

Research into the concept of change included journal articles and books such as Andreas Wimmer and Reinhart Kossler's edited book, *Understanding Change* (2006); Lena Soler, Howard Sankey, and Paul Hoyningen-Huene's edited book, *Rethinking Scientific Change and Theory Comparison* (2008); Govindan Parayil's *Conceptualizing Technological Change* (1999); Robert Wardy's *The Chain of Change* (1990); Catherine Malabou's *The Heidegger Change* (2011); John Mansfield's *The Nature of Change or the Law of Unintended Consequences* (2010); Stephen Barker's edited book, *Signs of Change* (1996); Herbert Carr's *The Philosophy of Change* (1914); and David Lane, Sander van der Leeuw, Denise Pumain, and Geoffrey West's edited book, *Complexity Perspective in Innovation and Social Change* (2009).

Works Related to Consciousness

Research into the concept of consciousness included journal articles and books such as Jack Tuszynski's edited book, *The Emerging Physics of Consciousness* (2008); Barry Dainton's *Stream of Consciousness* (2000); Vwadek Marciniak's *Towards a History of Consciousness* (2006); Charles Whitehead's edited book, *The Origin of Consciousness in the Social World* (2008); Daniel Wegner's *The Illusion of Conscious Will* (2002); Erich Neumann's *The Origins and History of Consciousness* (1954); Stanislas Dehaene's *Consciousness and the Brain* (2014); Julian Jaynes' *The Origin of Consciousness in the Break-Down of the Bicameral Mind* (1976); Annals of the New York Academy of Sciences, *The Emerging Science of Consciousness* (2013); Jean Gebser's *The Ever-Present Origin* (1953); Gaston Bachelard's *The Philosophy of No* (1968); Gerald Edelman's *The Remembered Present* (1989); and William Seager's *Natural Fabrications* (2012).

Works Related to Contingency

Research into the concept of contingency included journal articles and books such as Robert Jervis' *System Effects* (1997); and Jules Vuillemin's *Necessity or Contingency* (1996).

Works Related to Continuity

Research into the concept of continuity included journal articles and books such as David Wiggins' *Identity and Spatio-Temporal Continuity* (1967); Michael Spivey's *The Continuity of Mind* (2007); Benjamin Buckley's *The Continuity Debate* (2008); Fernando Zalamea's *Peirce's Logic of Continuity* (2012); Dionysios Anapolitanos' *Leibniz: Representation, Continuity and Spatiotemporal* (1999); and Fabio Sani's edited book, *Self Continuity* (2008).

Works Related to Decision Making

Research into the concept of decision making included journal articles and books such as Stephan Meisel's *Anticipatory Optimization for Dynamic Decision Making* (2011); J. David Velleman's *The Possibility of Practical Reason* (2000) and *Practical Reflection* (1989); Robin Hogarth's *Insights in Decision Making* (1990); Mary Zey's *Decision Making* (1992); and Michael Bratman's Intention, Plans, and Practical Reason (1999), and *Shared Agency* (2014).

Works Related to Determinism

Research into the concept of determinism included journal articles and books such as John Earman's *A Primer on Determinism* (1986).

Works Related to Diffusion and Cultural Transmission

Research into the concept of diffusion included journal articles and books such as G. Elliot Smith's The Diffusion of Culture (1933); Everett Rogers' *Diffusion of Innovations* (1983); Scott Montgomery's *Science in Translation* (2000); and Regis Debray's *Transmitting Culture* (2000).

Works Related to Duration

Research into the concept of duration included journal articles and books such as Gaston Bachelard's *Dialectic of Duration* (2000).

Works Related to Ether

Research into the concept of ether included journal articles and books such as Edward Grant's *Much Ado About Nothing* (1981); Ludwik Kostro's *Einstein and the Ether* (2000); Hilton Ratcliffe's *The Static Universe* (2010); and Michael Duffy and Joseph Levy's edited books (three volumes), *Ether Space-Time & Cosmology* (2008 and 2009).

Works Related to Event

Research into the concept of event included journal articles and books such as Claude Romano's *Event and World* (2009) and *Event and Time* (2014); Thomas Shipley and Jeffrey Zacks' *Understanding Events* (2008); Francois Zourabichvili's Deleuze: *A Philosophy of the Event* (2012); Martin Heidegger's *Contributions to Philosophy (of the Event)* (2012) and *The Event* (2013); and Brian Massumi's *Semblance and Event* (2011).

Works Related to Driving Forces

Research into the concept of driving forces included journal articles and books such as Ronald Havelock's *Acceleration: the Forces Driving Human Progress* (2011); and Bertrand Roehner's *Driving Forces in Physical, Biological and Socio-Economic Phenomena* (2007); Halvdan Koht's *Driving Forces in History* (1964); Max Jammer's *Concepts of Force* (1957); Herbert Spencer's Chapter on "The Persistence of Force," from his First Principles of a New System of Philosophy (1876); Amitabha Ghosh's *Origin of Inertia* (2000);and Sen McGlinn's *What Was Mechanical about Mechanics: The Concept of Force Between Metaphysics and Mechanics from Newton to La*grange (2002).

Works Related to Futurity and Other Topics

Research into the concept of futurity and other things included journal articles and books such as Jean-Paul Martinon's *On Futurity* (2007); Neal DeRoo's *Futurity in Phenomenology* (2013); B.C. Hutchens' *Jean-Luc Nancy* (2005); Catherine Malabou's *The Future of Hegel* (2005), Ontology of the Accident (2012), and *Plasticity at the Dusk of Writing* (2010).

Works Related to Generational Studies

Research into the concept of generations included journal articles and books such as Judith Burnett's *Generations* (2010); Fausto Colombo and Leopoldina Fortunati's edited book, *Broadband Society and Generational Changes* (2011); Elise Boulding's *Building a Global Civic Culture* (1988); Merril Silverstein's edited volume in series, *Focus on Intergenerational Relations Across Time and Place* (2005); Sharon Scully master's thesis, "The Theory of Generational Change" (2000); Nathan Widder's *Genealogies of Difference* (2002); Shmuel Eisenstadt's *From Generation to Generation* (2003); Joerg Tremmel's *A Theory of Intergenerational Justice* (2009) and *Handbook of Intergenerational Justice* (2006); Julian Marias' *Generations* (1967); William Strauss and Neil Howe's *Generations* (1991) and *The Fourth Turning* (1997); Kurt Wolff's *From Karl Mannheim* (1993); Axel Gosseries and Lukas

Meyer's *Intergenerational Justice* (2009); Angie Williams and Jon Nussbaum's *Intergenerational Communication Across the Life Span* (2001); Paul Baltes and K. Warner Schaie's edited book, *Life-Span Developmental Psychology* (1973); Ernest Partridge's edited book, *Responsibilities to Future Generations* (1981); Glenn, Norval's *Cohort Analysis* (2005); June Edmunds and Bryan Turner's *Generations, Culture and Society* (2002) and their edited book, *Generational Consciousness, Narrative, and Politics* (2002); Vern Bengtson and W. Andrew Achenbaum's edited book, *The Changing Contract Across Generations* (1993); Ute Schonpflug's *Cultural Transmission* (2009), William Mason and Stephen Fienberg's edited book, *Cohort Analysis in Social Research* (1985); and Donald Hastings and Linda Berry's edited book, *Cohort Analysis* (1979).

Works Related to Edmund Husserl

Research into the works of Husserl included journal articles and books such as Lanei Rodemeyer's *Intersubjective Temporality* (2006); Donn Welton's edited book, *The New Husserl* (2003); *Edmund Husserl's Ideas I* (2014), *On the Phenomenology of the Consciousness of Internal Time* (1991); and Toine Kortooms' *Phenomenology of Time* (2002); and Alexei Chernyakov's *The Ontology of Time* (2002).

Works Related to Inevitability

Research into the concept of inevitability included journal articles and books such as G. A. Cohen, R. Veryhard, D.H. Mellor, A.G.M. Last, Randolph Quirk, and John Mason's article "Historical Inevitability and Human Agency in Marxism" (1986); H.C. Steward's article "Determinism and Inevitability." (2006); John Passmore's article "History, the Individual, and Inevitability (1959); Leonard Doob's *Inevitability: Determinism, Fatalism, and Destiny* (1988); and Isaiah Berlin's *Historical Inevitability* (1954).

Works Related to Bruno Latour

Research into the works of Latour included journal articles and books such as Bruno Latour's We Have Never been Modern (1993), An Inquiry into Modes of Existence (2013), Reassembling the Social (2005).

Works Related to Gottfried Wilhelm Leibniz

Research into the works of or about Leibniz included journal articles and books such as Bertrand Russell's *A Critical Exposition of the Philosophy of Leibniz* (1937); Pierre Costabel's *Leibniz and Dynamics* (1973); G. W. Leibniz's *Discourse on Metaphysics and The Monadology*

(2005); H.G. Alexander's edited book, *The Leibniz-Clarke Correspondence* (1956); R.S. Woolhouse's edited book, *Gottfried Wilhelm Leibniz Critical Assessments, Volume III* (1994); Nicholas Rescher's *On Leibniz* (2003) and *G.W. Leibniz's Monadology* (1991); H.T. Mason's *The Leibniz-Arnauld Correspondence* (1967); Kathleen Okruhlik and James Brown's *The Natural Philosophy of Leibniz* (1985); John Dewey's *Leibniz's New Essays Concerning The Human Understanding* (1888); and Michael Futch's *Leibniz's Metaphysics of Time and Space* (2008).

Works Related to Monads

Research into the concept of monads included journal articles and books such as Herbert Carr's *A Theory of Monads* (1922) and *The Monadology of Leibniz* (1924).

Works Related to Motion

Research into the concept of motion included journal articles and books such as Michael White's *The Continuous and the Discrete* (1992); and Franz Brentano's *On the Several Senses of Being in Aristotle* (1975); Ion Soteropoulos' *Metaphysics of Infinity* (2013) and *The Infinite in Act* (2007); Mary Gill and Jame Lennox's edited book, *Self-Motion* (1994); Dewey Larson's *Nothing But Motion* (1959), *The Universe of Motion* (1959), *Beyond Space and Time* (1995), *Beyond Newton* (1964), *New Light on Space and Time* (1965), *The Neglected Facts of Science* (1982); Richard Tolman's *The Theory of the Relativity of Motion* (1917); Wesley Salmon's *Space, Time, and Motion* (1980); Leslie Feldman's *Freedom as Motion* (2001); Thomas Spragens' *The Politics of Motion* (1973); Michael Lane's *The Level of Social Motion: An Inquiry Into the Future Conditions of Human Society* (1902); Carla Palmerino and J.M.M.H. Thussen's *The Reception of the Galilean Science of Motion in Seventeenth-Century Europe* (2004); James Clerk Maxwell's *Matter and Motion* (1991); John Granville's *Discovery of Motion* (2006); Margaret Washburn's *Movement and Mental Imagery* (1916); A.V. Vasiliev's *Space, Time, Motion* (1924).

Works Related to Path Dependency

Research into the concept of path dependency included journal articles and books such as Raghu Garud and Peter Karnoe's edited book, *Path Dependence and Creation* (2001).

Works Related to Novelty

Research into the concept of novelty included journal articles and books such as Carl Hausman's *A Discourse on Novelty and Creation* (1984); Reuben McDaniel and Dean Driebe's edited book, *Uncertainty and Surprise in Complex Systems* (2005); Mario Bunge's *Emergence*

and Convergence (2003); Jarrett Leplin's *A Novel Defense of Scientific Realism* (1997); C. Lloyd Morgan's *The Emergence of Novelty* (1933); Simon O'Sullivan and Stephen Zapke edited book, *Deleuze, Guattari and the Production of the New* (2008); Donald Crosby's *Novelty* (2005); Michael North's *Novelty* (2013); Milic Capek's *The New Aspects of Time* (1991); Sam Gillespie's *The Mathematics of Novelty* (2008); Roy Harrisville's *The Concept of Newness in the New Testament* (1960); Armand d'Angour's *The Greeks and the New* (2011); Nassim Taleb's *The Black Swan* (2007); and Mark Currie's *The Unexpected* (2013).

Works Related to Persistence

Research into the concept of persistence included journal articles and books such as Yuri Balshov's *Persistence and Spacetime* (2010); Katherine Hawley's *How Things Persist* (2001); Jason Waller's *Persistence through Time in Spinoza* (2012); Sally Haslanger and Roxanne Kurtz's edited book, *Persistence* (2006); Christian Kanzian's edited book, *Persistence* (2008); Kristie Miller's *Issues in Theoretical Diversity* (2006); and Jiri Benovsky's *Persistence Through Time, and Across Possible Worlds* (2006).

Works Related to Henri Poincare

Research into the works of Poincare included journal articles and books such as Henri Poincare's *Science and Method* (1952), *The Value of Science* (1958), *Science and Hypothesis* (1952), and *Mathematics and Science Last Essays* (1963).

Works Related to the Possible and the Actual

Research into the concepts of the possible and the actual included journal articles and books such as William Vallicella's *A Paradigm Theory of Existence* (2002); Nicolai Hartmann's *Possibility and Actuality* (2013); Tamar Gendler and John Hawthorne's *Conceivability and Possibility* (2002); Ivor Leclerc's *The Nature of Physical Existence* (1972); John Cobb and Franklin Gamwell's *Existence and Actuality* (1984); Roman Ingarden's *Controversy over the Existence of the World, Volume I* (2013); A.T. Winterbourne's *The Ideal and the Real* (2007); Robert Stalnaker's *Ways a World Might Be* (2003); T.L.S. Sprigge's *Theories of Existence* (1985); Jean-Rene Vernes' *The Existence of the External World* (2000); John Divers' *Possible Worlds* (2002); Jacques Maritain's *Existence and the Existent* (1948); Emmanuel Levinas' *Time & the Other* (1987) and *Existence & Existents* (1978); D.M. Armstrong's *A Combinatorial Theory of Possibility* (1989); Andrew Blais' *On the Plurality of Actual Worlds* (1997); Michael Loux's edited book, *The Possible and the Actual* (1979); Francois Jacob's *The Possible and the*

Actual (1982); Muammere Iskenderoglu's *Fakhr Al-Din Al-Razi and Thomas Aquinas on the Question of the Eternity of the World* (2002); Charles Hartshorne's *Creative Synthesis and Philosophic Method* (1983); David Lewis' *On the Plurality of Worlds* (1986); Otto Samuel's *A Foundation of Ontology* (1953); Karl Frobel's *Definitions and Axioms of a Future Science of Existence or Ontology* (2007); Aryeh Kosman's *The Activity of Being* (2013); and Uwe Meixner's *The Theory of Ontic Modalities* (2006).

Works Related to Presentism

Research into the concept of presentism included journal articles and books such as Ernani Magalhaes and L. Nathan Oaklander's *Presentism* (2010); Ugo Perone's *The Possible Present* (2011); Craig Bourne's *A Future for Presentism* (2006); Hans Urs von Balthasar's *Presence and Thought* (1995); George Herbert Mead's *The Philosophy of the Present* (1932).

Works Related to Randomness

Research into the concept of randomness included journal articles and books such as joseph Zbilut's *Unstable Singularities and Rendomness* (2004).

Works Related to Reality

Research into the concept of reality included journal articles and books such as Wayne Wyrvold and Joy Christian's edited book, *Quantum Reality, Relativistic Causality, and Closing the Epistemic Circle* (2009); Colin McGinn's *Knowledge and Reality* (1999); Paul Davies and Niels Gregersen's edited book, *Information and the Nature of Reality* (2010); and Burkart Holzner's *Reality Construction in Society* (1971).

Works Related to Relations

Research into the concept of relations included journal articles and books such as

James Brown and JurgenMittelstrass' *An Intimate Relation* (1989); and Massimo Mugnai's *Leibniz' Theory of Relations* (1992).

Works Related to Relativity

Research into the concept of relations included journal articles and books such as Tim Maudlin's *Quantum Non-Locality & Relativity* (2011).

Works Related to Rule Following

Research into the concept of rule following included journal articles and books such as Steven Holtzman and Christopher Leich's edited book, *Wittgenstein: To Follow A Rule* (1981); Saul Kripke's *Wittgenstein: On Rules and Private Language* (1982); (Bartosz Brozek's *Rule-*

Following (2013); Gary Ebbs' *Rule-Following and Realism* (1997); Joseph Heath's *Following the Rules* (2008); and Julian Nida-Rumelin and Wolfgang Spohn's edited book, *Rationality, Rules, and Structure* (2000).

Works Related to Sæculum

Research into the concept of the Sæculum included journal articles and books such as Craig Calhoun, Mark Juergensmeyer, and Jonathan VanAntwerpen's. *Rethinking Secularism* (2011); Yehoshua Arieli's article, "Modern History as Reinstatement of the Saeculum: A Study in the Semantics of History" (1994); Hent de Vries' *Religion: Beyond a Concept* (2008); and Robert Markus' *Saeculum: History and Society in the Theology of St Augustine* (1970).

Works Related to Search Theory

Research into the concept of search theory included journal articles and books such as Steve Alpeern and Shmuel Gal's *The Theory of Search Games and Rendezvous* (2003).

Works Related to Simultaneity

Research into the concept of simultaneity included journal articles and books such as Henri Bergson's *Duration and Simultaneity* (1999); Jay Lampert's *Simultaneity and Delay* (2012); Max Jammer's *Concepts of Simultaneity* (2006); Susie Vrobel, Otto Rossler, and Terry Marks-Tarlow's *Temporal Structures and Observer Perspectives: Simultaneity* (2008); William Lane and Quentin Smith's edited book, *Einstein, Relativity and Absolute Simultaneity* (2008); Peter Galison's *Einstein's Clocks, Poincare's Maps* (2013); Albert Einstein's *The Meaning of Relativity* (1922); and C.G. Jung's *Sychronicity* (1960).

Works Related to Structure

Research into the concept of structure included journal articles and books such as Carl Friedrich von Weizsacker's *The Structure of Physics* (2006); and Lutz Castell and Otfried Ischebeck's edited book, *Time, Quantum and Information* (2003).

Works Related to Swarm

Research into the concept of swarm included journal articles and books such as Eric Bonabeau, Marco Dorigo, and Guy Theraulaz's *Swarm Intelligence* (1999); Nadia Nedjah and Luiza de Macedo Mourelle's edited book, *Swarm Intelligent Systems* (2006); and James Kennedy and Russell Eberhart's *Swarm Intelligence* (2001).

Works Related to Gabriel Tarde

Research into the works of Tarde included journal articles and books such as Gabriel Tarde's *The Laws of Imitation* (1903), *Social Laws* (1899), *Monadology and Sociology* (2012), *Underground Man* (2010); Terry Clark's edited book, *Gabriel Tarde On Communication & Social Influence* (1969); Matei Candea's edited book, *The Social after Gabriel Tarde* (2010); Michael Davis' *Gabriel Tarde* (1906); Elihu Katz, Christopher Ali, and Joohan Kim's *Echoes of Gabriel Tarde* (2014); and Bruno Latour and Vincent Lepinay's *The Science of Passionate Interests* (2009).

Works Related to Wholeness and Holism

Research into the concepts of wholeness and holism included journal articles and books such as Franz-Gunter Winkler's *Spacetime Holism* (2009); David Bohm's *Wholeness and the Implicate Order* (1980); Louis Caruana's *Holism and the Understanding of Science* (2000); Michael Esfeld's *Holism in Philosophy of Mind and Philosophy of Physics* (2001); Jerry Fodor and Ernest Lepore's *Holism* (1993); and J.C. Smuts' *Holism and Evolution* (1926).

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