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The Pan and Ipan Theories

A Wholly Unifying Model of Cosmology and Physics

Featuring and Proposing: 1) simple solutions for generally all known problems in cosmology and modern physics 2) the simplicity of reality, contrary to present beliefs and theory 3) another theory of cosmology as a replacement for the Big Bang model 4) One simple particle that accordingly is the sole basis of reality 5) simple definitions necessary to enable a logical understanding of reality 6) another required Theory of Relativity to understand timeframe relationships 7) One simple unifying force theory 8) Another theory of gravity with equations (9) equations that have been derived from the alternative cosmology, that accordingly better explain observed reality. These equations are proposed to replace the Hubble distance formula, alter calculated brightness, time dilation calculation based upon redshifts, etc. 10) the Zero Point Field as a physical particulate background field, a fluid-like flowing aether 11) a return to the wave theory of light and EM radiation. 12) the logic and concepts that accordingly would enable a better understanding of reality. 13) a “Theory of Everything” to unify all of physics

-- Theories which propose relatively simple explanations for everything in physics --

Editor’s edition, version D;
(Edited for spelling, typos,
clarification and enhancement)

by Forrest Noble
author of theories and text

Chief Editor: Timothy Cooper

The Pan Theory

::--that one most elementary particle started the entire universe. By slow division it became strings or clusters of the same identical particle. As these elementary particles decrease in size, they increase in number-- from the beginning to the present time. Their combined forms, size, density, intrinsic and relative motion, position, and interactions are the sole constituents that make up all forms and states of matter, energy, “fundamental forces”, space, and time --the entire universe.

What The Pan Theory above and its Implications within this text theoretically propose to provide answers for or explain:

- The galactic red-shift: is not an expansion of space or a Doppler-shift
- How the universe started, its regeneration and future
- A “Single-Force-Field Theory”—fundamental forces as a state or condition
- All forces of physics explained by mechanical principles
- One fundamental force yielding unification
- Answers to many of the related “well-known” observed anomalies/ quandaries
- How galaxies originate, function and evolve
- Black holes at the center of galaxies; their all-important creation function and make-up
- "Dark Matter", its primary constituents; where it comes from
- ”unknown” mechanisms which mold the universe
- Formulas to rectify many astronomical observations and “misconceptions”
- ”unknown” processes of stellar/ planetary formation and aging
- “unknown” condition of relativity concerning matter, space and time
- the known but unanswered questions of cosmology
- “unknown” mechanisms of atomic and molecular cohesion
- “unknown” states of matter
- "unknown" relationship between particles and waves
- "unknown" mechanisms which cause gravity
- "unknown" mechanisms which cause magnetism

PREFACE

A complete theory of any subject must be able to generally explain all of the observed Phenomena concerning that subject. Even with observational support, observational anomalies must still be explained. Even when using the best equipment and methods, interpretations are often debatable-- along with occasional errors in validity, measurement, significance, etc; but only through this ability to competently explain prior observation and to predict new observations or phenomena can a theory gain or lose its credibility and thereby its advocates.

Arguably the fundamental theories in Cosmology and Physics too often lack in explanatory or predictive capability as well as a logical foundation. Thus the development of new theories was undertaken with an emphasis on their ability to be readily understood as well as provide logical explanations and better predictive capabilities. The result was two Sets of theories with the Pan Theory as their premise, one on Astronomy/Cosmology and the other on Theoretical Physics.

There are several guidelines which I've tried to use in this text:

1. To describe the logic and foundation for each theory.
2. To use the principle of Occam's Razor - the simplicity principle in logic that states that the least complicated explanation (answer) is probably the best explanation, of course with no guarantees that any "simple, plausible" theory is valid.
3. To provide a reasonable perspective to analyze and consider the particles and mechanisms according to the Pan theory that comprise and control the universe. In the sciences of astronomy and physics, observational information has multiplied more than ten-fold in the past thirty years over all that was previously known. Theories have been developed for the purpose of unifying what are presently believed to be the fundamental forces of physics, i.e.: the 'strong nuclear force', the 'weak nuclear force' and the electromagnetic force. Some such theories also include the gravitational force, and some now also include a so-called lambda force the supposedly causes the accelerated expansion of the universe. These theories collectively have been called Grand Unified Theories or G.U.T.'s.

Grand Unified Theories/ G.U.T.'s. (continued)

Other theories have been postulated to explain the beginning operations of the universe as a whole. Some of them try to additionally unify all of these forces; these have been collectively dubbed Theories Of Everything (TOE's) (*reportedly by Time Magazine in '84'*). Most of these theories have been developed from a set of equations which are the bases for the theories which attempt to unify Gravity, Quantum Mechanics, the Strong Force, the Weak Force, and the Electro-Magnetic force. These theories are collectively known as 'M' theory, but more popularly known as String Theory (ST). The premise/ assumption cosmology for all of these described theories is the Big-Bang Theory (BB). The Pan Theory (PT) also could be called a T.O.E., or possibly even a string theory because it proposes the foundation building blocks of all known particles are string-like, but without all the extra dimensions of M theory. Unlike other string theories, the Pan Theory makes numerous predictions.

Information concerning the Pan Theory:

The Greek word "Pan" in the Pan Theory could be whimsically considered a cooking vessel (pan/ pot/ wok) which metaphorically prepares food for the universe to grow. The root-word "pan" is from the Greek meaning all or everything (like Pan-American Airlines). In this case a "Pan" in the Pan Theory means both "everything" and the "only thing." This is the source of the word Pan in The Pan Theory.

Most of the theories within this text are called "Ipan" Theories (IP) except for the brief Pan Theory itself (one paragraph) and three other "primary" theories: The Pan Theory of Relativity, The No Priori Force Theory, and The Pan-Gravity Theory. The "I" in Ipan refers to the first letter of the adjectives which might describe the theory's relationship to the Pan Theory. These Ipan theories are a group/ set of Inter-related theories/ hypotheses, that are mutually re-enforcing. They could be described/ considered as being any one or a combination of the following related Pan Theory adjectives: Included within, Implied by, Inferred by, Interdependent part of, an Incremental-compliment to, or an Independent augmentation to The Pan Theory. The definition of an Ipan theory is simply: any theory proposed by anybody which uses the Pan Theory as a premise.

The Pan theory is cosmological model of materialism, a "mechanistic" model that energy, forces, space and time, are all a function of matter and a background particulate field. It is a model of pancosmism. Pancosmism is defined as: A theory that the material universe is all that exists. The Pan Theory version could be considered a direct challenge to a number of today's fundamental theories and concepts in Cosmology and Physics. The Ipan theories contained herein, on the other hand are the currently-favored supporting theories and hypotheses of many theory details, but not necessarily the only possible explanations that are consistent with the Pan Theory. The Ipan theories will necessarily add refinement to theory, and some will necessarily change over time as new observations and analyses become apparent, but the Pan Theory itself cannot change any of its three primary Propositions and still remain the same theory.

The three fundamental aspects of the theory are: 1) That matter gets smaller as time progresses, herein called the diminution of matter 2) that all forces in the universe have mechanical causes, thereby no fundamental 'a priori' forces of nature 3) that there is only one fundamental particle that is the foundation entity of all reality.

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Section 1: Cosmology

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- Estimates of the age and size of the universe; open or closed
- The beginning of Time and Space, Definitions, Perspectives

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- Types of mass: inertial, gravitational, as well as new proposed types: "pan-mass," and "Virtual pan-mass"
- Types of energy: E.M. Radiation; relative motion, intrinsic particle spin, kinetic and wave motion.
- Wave-particle duality, light, photons, virtual photons
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- Wave--particle duality, photon mechanics, and virtual photons
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- 2) **Explaining Particulate Force Fields** as they relate to the make-up and interaction processes with matter.

New theories of: Gravity; Gravity perspectives and mechanics; Geo-magnetism; Particle Vortices and wave mechanics; Magnetism (the electro-magnetic force); Static electricity; electrical induction; Nuclear Forces (Strong force, Weak force); Quantum configurations; Atomic and Molecular cohesion and bonding; Atomic Theory and an atoms construction; Electron Motion; “Paring”-- a process exclusive to the Pan Theory; Anti-particles/ anti-matter; a Unified Field Theory, better named a “No-Force-Fields” Theory; binding within the nucleus, isotopes, nuclear fusion/fission; Particle spin; revealing observations in Physics;

- 3) The Pan Theory as it relates to:

- Newtonian Physics
- Einstein and Relativity
- Quantum Mechanics and Theory
- Quark theory, String theories
- Particle configurations

- 4) The Pan Theory of Relativity, the implications, math and mechanics

Section 3, Predictions, Propositions, Kinships, Summary

- 1) The Pan Theory as it Relates to Accepted as well as Developing theories in Physics
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- 7) Definitions
- 8) Questions, Answers
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Epilogue

Lighter Perspectives

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Beginning definitions used in this text

In an almost entirely theoretical-scientific context, it is very important that there is an understanding of the words being used. In the dictionary there is often more than one definition of a word. Some of the brief definitions listed below may only apply to this text since making up too many new words could even be more confusing. Later definitions and new words will be added—such as the definition of the word “Pan” below.

- **Assumptions** are assertions made without evidence to support them or reasons for their existence. Many assumptions may be made at the beginning of a hypothesis or theory to facilitate explanation. Later assumptions may be incorporated into the hypothesis or theory by providing evidence to support them.
- A **Concept** is an idea, assertion, perspective or way of looking at something by “putting an idea into words”. Concepts are ideas which may or may not be supported by observation. The foundation ideas herein, that are the basis for all propositions, hypotheses and theories are expressed first using verbal-logic. Mathematics is added as needed.
- **Cosmology**, the study of the Universe (including possible universes) as a whole, includes every existing or proposed state of reality usually involving astronomical expanses of field material, matter, time, space, and radiation.
- **Deductive Reasoning**: a type of reasoning resulting from observations involving inferences from general principles or laws; a valid system of logic that sometimes fails as to its conclusions.
- **Ether** or **Aether** (as it relates to the Pan Theory): A theoretical background Omnipresent field of string-like particulates. These particulates, combined with their energy of motion, are the same thing as the Zero-Point-Field (ZPF). These field particulates are much smaller than atomic particles and permeate all Space and Matter and are the substances which make up waves of E.M radiation (light), as well as the waves produced by spinning matter particles.

- **Happen:** come into being or existence, become a reality.
- A **Hypothesis** could become a Major or Minor **theory** but further support data (or peer-review acceptance) may be needed to reach a recognized “theory” status.
- **Inductive Reasoning:** a type of reasoning which draws from a number of instances or observational information to come to a general conclusion; not necessarily valid logic -- one of the two types of reasoning needed for all theories, the other being deductive reasoning which also can be fallible.
- **Kinetic Motion** (of heat): A type of internal vibrating atomic/ molecular motion that matter experiences as it is being compressed or heated. Generally the more a gas, liquid, or solid is compressed or heated the faster and more frequently the molecules within it will bounce around (Brownian Motion). This is the Kinetic theory for the cause of heat.
- **Pan** (as in the Pan Theory of Relativity) is the name given to the most fundamental particle in this Theory, which accordingly is the building block of all matter. In this text it is theorized as the sole constituent of background-field particles and the only most fundamental particle. The Ancient Greek philosophical school lead by Democritus was named the atomos. (*Greek: a = not & tom = cut; cannot be divided, the source of the word atom*).
- A **Premise** is a statement set forth beforehand as an explanation where no evidence is initially presented to support it.
- **A Priori** – are foundation/ “fundamental laws or forces” assumed to be truth within a logical argument, when logical support or argument cannot or will not be provided within a given context.
- A **Proposition** or **Postulate** is a concept which is needed to add explanation to a theory. It cannot be easily disproved, but an alternative proposition probably could also provide similar support for the hypothesis or theory.
- **Physics** is the study of properties and mechanics involving matter and energy and phenomena associated with them such as magnetism, gravity, atomic forces, electromagnetic radiation, optics, acoustics, etc.
- **Quantum Theory** is a theory of matter and radiation of the atomic particle scale/ realm, differing from classical mechanics in primarily two distinct ways: the principles of indeterminism and discreteness.

- **Red-Shift** -- the shifting of galactic EM (electro-magnetic) radiation to a redder/ longer-wave length of the EM spectrum. The extent of this shift increases in proportion to a galaxy's distance from the observer. This change in appearance has been attributed to the Doppler Effect/ shift based upon the Big Bang Theory.
- A **Theory/ theory** is defined here as a type of Concept, whether verbal and/ or mathematical, concerning organization, function, genesis, behavior, cause and effect sequences, which involves explanations/ equations which is supported by extensive evidence and could be further be substantiated by generally defined testing or future observations. Properly formulated theories must also conceive of feasible ways in which they might be disproved, otherwise they would be considered a hypothesis.
- The term **Theory** with a capital 'T' refers to major Theories discussed herein such as: The Pan Theory of Relativity, The Pan Theory of Gravity, The Big Bang Theory, etc.
- The term **theory** with a small 't' refers to secondary theories which support major Theories, like the theory of Inflation or String theories.
- **Time** is defined as an interval of change in form or relative position of that which exists.
- **Time Frame** is an instant within a time interval such as a photograph, where only the relative position in time is a consideration
- The **Universe**, the combination of everything, all entities that have a state of reality—everything that is real and not imaginary. By this definition nothing can exist outside of it—it is all inclusive. It would include any spiritual entities, other universes or dimensions.

The following is a list of primary concepts that are used in the Theoretical Cosmology and Physics Sections. These concepts are listed now so that a reader might consider referring back to them to aid their reading/ analyses. You will find that some theory has been referenced in the Concept Section just as Concepts have been referenced in the Theory Sections-- to better explain the conceptual intent of theoretical text (Concept summary below). The details of these Concepts are described following the Predictions Section.

Listing of the Concepts

(a detailed presentation of these Concepts is made in Section 3)

1. All else being equal, "The simplest explanation for some phenomenon is more likely to be accurate than more complicated explanations." This 14th century concept was proposed at the beginning of the age of "enlightenment" or free-thinking in Europe. It is called the Principle of Occam's Razor.
2. Something does not come from nothing. This is a very old concept and adage which can be derived from many sources including an old Latin saying. It also can infer the basis for the first Law of Thermo-Dynamics: Mass/ energy can neither be created nor destroyed". Nothingness by itself was never a possible state of reality.
3. Everything can be considered relative. This principle requires a relative comparison for any statement concerning realities of the natural world. This concept was originally conceived by Heinrich Mach. A similar version reached greater fame through Albert Einstein.
4. Either the Universe is expanding, atoms are getting smaller, or both perspectives could be considered valid. Using the concept of relativity (concept #3) to consider the red-shifting of galactic light, one could validly conclude that either or both of these perspectives would be valid.
5. The beginning of the universe would have been much simpler and therefore easier to explain if atoms were becoming smaller in size and greater in number as time progresses. Projecting backwards in time to a beginning could result in a simple fundamental particle starting the entire universe.
6. There is a background field of very small sub-atomic sized particles. An atmosphere of particles having a dual source of potential energy, one intrinsic, and the other derived from relative motion. This field permeates the entire universe with varying densities. The motion of Galaxies, quantum particles, waves of light, as well as gravity mechanics can all be explained in terms of this "background field".
7. The inside of a Black Hole consists of a very dense form of matter-- more dense than a theoretical Neutron Star. This concept is known to many astronomers but currently is supported only as one of the possibilities.
8. Only one particle -- (herein called The God Particle or a Pan) as a solitary entity, started the entire universe. This same fundamental particle is the building block of all matter and of "background-field" particles. This particle produces strings of itself which may be altered by interactions into non-linear loop configurations which produce the most basic atomic particles, protons and electrons. From the beginning of time until now there has always been just one fundamental particle in the entire universe which is the building block for all others.
9. All atomic matter except for hydrogen is created within stars. This process is called Nucleo-Synthesis.

10. The particles which form common hydrogen, protons and electrons are created from stings of field material in the “halo area” surrounding young Galactic Black Holes.
11. A Galaxy of stars forms from a vast quantity of protons and electrons (discussed in Concept #10) most of which were created by the forces surrounding “young” Galactic Black Holes which eject much of this new matter outwardly in polar jets. Consequently it could be said that galaxies form from the inside out for the bulk of matter which will form the stars of that galaxy.
12. The time to create the observable universe by the accretion method from a single elementary particle has been calculated to be trillions of years rather than billions of years for the age of the observable universe.
13. Waves of light and other E.M radiation consist of two distinct and real facets of light moving together. One constituent is small “bundles” of field particles which have been called quanta or photons, the other is a wave (something like a wave in water) of field particles.
14. The Aether might be found in a similar way Michelson and Morley’s experiment proposed to find it, except by using modern more accurate electronic equipment, by measuring the speed of light relative to the vertical acceleration of relatively slow-moving field material into the earth.
15. The gravitational effect begins with field material accelerating into all matter as well as Black Holes. All matter “flattens” the kinetic field pressure surrounding it. This causes reduced field pressure in the direction of matter which accelerates matter toward other matter.
16. There is no such thing as pure energy or fundamental forces in the absence of matter or particle-fields. All Forces and energy are solely characteristics and/ or manifestations of matter and/ or field particles.
17. The “Locally Uniform Cosmological Principle” which the Pan Theory adheres to states: The observable universe from any point, in any direction, and any time frame would look roughly the same, a type of steady-state theory. The word “roughly” means such observations would not preclude local anomalies.
17. The Red-Shift of Galactic light which we observe from all but the closest galaxies can best be explained by a theory of relativity.
18. “Force-Fields” and “Pure Energy” are solely the manifestations of a background particle field of “fundamental particles”. The size and motion of these particles, as well as all matter, decreases as time progresses. This can be called the relativity of size and motion (including the speed of light) to time. This concept is one of the primary foundations of the Pan Theory of Relativity.
19. All matter has the “dimension” of potential energy which perpetuates time. Time is solely an interval of change, having no other meaning.

20. Space can be defined solely as an extension of matter, the distances and volumes encompassed by matter.
21. “Hemispheric Spin” or “Reciprocal uniform Torque” – is a single “dimension” of matter that causes atoms and fundamental particles to spin. It is the same energy source that multiplies fundamental particles resulting in all the forms of matter and energy in the universe.
22. Atomic particles and their anti-particles consist of single looped strings (chains) of fundamental particles. These spinning loops appear to be solid but, like atoms, they mostly contain space.
23. In both man-made devices and nature-made material, Perpetual-Motion machines are theoretical misconceptions.
24. The diminution of matter (discussed in the previous concept as well as Concept #5) is a process that enables the use of Mathematical Limits to consider possibilities of a brighter future for the Universe.
25. Time and Space as well as everything else within the universe is finite! Infinite, like zero, is a valuable concept in mathematics, a tool for evaluating reality rather than reality itself.
26. All interactions in the Quantum world have a mechanical explanation as well as all interactions and events in the entire universe.
27. Every question that can be asked concerning the beginnings of the universe, a condition, event, or relative motion during any time frame, has a logical explanation which can be linguistically described in a simple valid way.
28. A pan, accordingly, could not have just come into existence or just happened. It can be stated: that for all finite time, “Pan” have always existed but accordingly there never was a time before the first Pan, yet time and Pan have existed only for a finite period.

The Concepts above can be categorized in the following way: **Concepts # 1 & 9** are generally undisputed in modern science. **Concept # 2** is a principal of logic few would argue against given the included definitions. **Concept # 3** is widely known and generally accepted. Since the time of Einstein most scientists accept this concept but believe there are “constants” such as the speed of light which are exceptions. **Concepts # 6, 13, 14 & 16** support a type of “field theory” similar to others proposed in the last 150 years-- including a few modern ones. **Concepts #18 &19** are the concepts which describe the Pan Theory of

Relativity. These concepts also are supported by the first six concepts as well as **Concepts # 8 & 12**.

Concepts # 13, 15, 20, 21, 26, 27 & 30 are major concepts of theories which are concerned with the underpinnings of reality. **Concepts # 7, 10, & 11** also support original theories concerning Black Holes. These theories purpose is to explain fundamental creation alternatively credited to a Big Bang. **Concepts # 22, 24 & 25** are concepts concerning the physical/ mechanical innate potential energy, “dimension” of all matter, and how it theoretically relates to the past and future of the universe. **Concepts #11, 15 & 17** as well as other concepts herein are intended to make observable predictions. Together all of these concepts are intended to be the underpinnings of the logic of this text, providing the guidelines to answer the major questions concerning Cosmology, Physics and reality in general. Theory is presented which proposes relatively simple answers to the general questions: How did reality begin in the first place and how is it constructed? It is not necessary to believe or agree with these concepts, only to understand this seemingly simpler perspective of reality. Once alternative theories are known one can follow both observations and predictions with greater insight into theoretical possibilities -- which is a major designed objective of this text.

Below is a brief summary/ explanation of the entire Pan Theory and The Pan Theory of Relativity. It is described here by combining two independent theories. The First asserts that matter decreases in size and increases in numbers as time passes, which is a theory of Relativity. Matter as well as space, and the speed of light are relative to the time frame of observation. The Second theory asserts that all “fundamental forces” can be explained in terms of pushing or engagement. ::: That gravity and electromagnetism are the result of field material pushing on matter. The Strong Force and the Weak Force are both the result of mechanical connections/ engagements within atomic nuclei.

The name Pan Theory generally refers to all the combined related theories. All describe different aspects of reality which are concerned with Cosmogony, Cosmology, and Physics. The Pan Theory of Relativity is concerned with the relative description of Space, and Matter and how their measurement and condition is relative to Time; and that both Space and Time are defined by Matter. Their inter-relationships are verbally and mathematically described/ explained.

The short paragraph below (repeated from the beginning of the text) is the distilled version of the Pan Theory:

The Pan Theory ::::: that one most elementary particle started the entire universe. By slow division it became strings (or clusters) of the same but progressively smaller identical particles. As these elementary particles decrease in size they increase in number from the beginning to the present time. All matter is made up of these particles and nothing else. Their combined forms, potential energy, interactions, relative motion, relative position, and intrinsic characteristics are the sole constituents that make up all forms and states of matter as well as energy. It is the foundation particle which provides explanations that can define all of the “fundamental forces” in Physics as well as matter, space, time, and all other facets of the entire universe.

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Starting from Chapter 1 all theory and hypotheses are according to the Pan Theory model. This theory is often simpler than the Big Bang model and its related galaxy formation theories, or the standard model of particle theory including quark theory.

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The Pan Theory

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new chapter here (Cosmology revisited, and summary)

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Note to the Reader

Some prior knowledge of astronomy and physics may aid a reader in understanding the ideas presented herein but the primary requisite for a reader is simply a strong curiosity of how the universe is formed and how it works. Some of the following theories may seem to be very logical, others maybe difficult or intractable. Some might seem to you to be simplistic, fanciful or too speculative, depending on the reader's inclinations. In addition, most of the theories herein not only deviate from present day theory, but often also perspectives and logic.

A person's beliefs, education and intellectual environment most often causes a bias of perception and a fear of ridicule, concerning proposing or accepting new ideas. This bias often increases with age, for those who might have otherwise continued to examine, develop or support alternative and potentially better concepts and theories. This could likely be the reason why young people (early 20's) often make some of the greatest discoveries and contributions in science. Their insight is equal to that of an older generation but their biases toward established theories would be, accordingly, less entrenched. They have much to gain and little to lose (reputation, ego, career, etc.) by challenging old ideas and by sometimes promoting radically different concepts and theories which may lead to scientific breakthroughs.

To appeal to logic without the standard assumptions of pre-existing physics, this theory has been built "from the ground up," attempt to develop the model from strictly logical conclusions. No laws of physics are assumed or accordingly needed. The Pan Theory may be perceived as a three faceted diminution of matter theory: A Single Elementary Particle Theory (SEP), A Single-Force Theory, and. the Pan Theory of Relativity . On the other hand the Big Bang model includes: the standard model of particle physics which presently includes 61 particles, 4-5 'a priori' forces including dark energy, and Einstein's two conventional theories of relativity.

The goal of this text is that regardless of ones education, background, knowledge or beliefs concerning Cosmology and Physics, that a reader with moderate effort might gain better insights into reality by virtue of the logic and possibilities discussed in the Concepts and Theories herein. Some of this logic involves well-accepted principles in the field of logic; other principles are based upon seemingly simple logical perspectives and arguments concerning the essence of Time, Space, Energy, Matter, Forces, and the sources and inter-relationships of these and other facets of reality.

Some other concepts to be discussed will relate to the beginning of the universe, the age of the universe, the future of the universe, the creation of all matter and related energy, the causes of gravity and the other fundamental forces of physics. All of these concepts in the end are put together to support a group of theories which are included in, or supported by, the Pan Theory of Relativity.

The Cosmology theory that you are about to read is necessarily in a verbal format like the Theory of Evolution, and unlike present day Lamda Cold Dark matter, Big Bang model, of its various versions that emphasize Einstein's field theories. This is because the Pan Theory asserts herein that General Relativity (Einstein's theory of gravity from which the Big Bang Theory is founded upon) would accordingly not be applicable to the universe as a whole because gravity forces between most stars and galaxies would accordingly be based upon non-linear, three dimensional gravity currents of dark matter that would have unpredictable facets to them. The theoretical physics discussed is also primarily verbal with some proposed new mathematical formulations including those for gravity.

Problems with many currently accepted theories including the Big-Bang Model of the universe are also briefly discussed. To gain a better understanding of these problems in Cosmology and Physics, the books "The Big Bang Never happened" by Eric Lerner, and "Bye Bye Big Bang" by William Mitchell, have extensive chapters devoted to these perceived problems. A number of problems that exist in modern-day physics are appropriately presented by Lee Solin in the book entitled "The Trouble with Physics."

My hope is that regardless of your education or present beliefs, after reading and studying this and related reference texts, that you will gain a better understanding of reality. You also might consider the possibility that a logical and most simple explanation for the basis of the whole of reality (matter, forces, atoms, energy, etc.), could be solely the physical manifestations of a single fundamental particle and nothing else, which is the essence of the theories herein.

Prologue

-- The Big-Bang Theory, its history & evolution

The seed for the Big-Bang theory was planted by Einstein's proposed cosmological equations written in 1917, although Einstein didn't know it at the time. This was two years after the publication of his theory of gravity called General Relativity. Einstein's proposed cosmological equations were based upon this theory of gravity which had many possible solutions that were difficult to solve. Those solutions which led to an expanding universe, however, were not developed at that time because Einstein felt that solutions leading to a static universe were more consistent with the accepted "reality" of the time, which was prior to the knowledge of other galaxies.

In 1924 Carl Wirtz a German astronomer, and Edwin Hubble an American astronomer, working independently, both compiled observational data which not only was evidence for the existence of other galaxies outside the Milky Way, but which suggested that these galaxies had a correlation between their calculated distances and an observed red-shift of the spectrum of their telescopically observed light. Hubble, at this time, did not report or suggest this was a Doppler shift. By his writings, he was well aware of the possible interpretation of his data which suggested that the universe could be expanding.

By 1927 two mathematicians worked independently on Einstein's equations, specifically those solutions leading to an expanding universe. The first was Alexander Friedman, a Russian, who had shown that an expanding universe was one of the possibilities. The second was a Belgian Catholic Priest, Georges-Henri Lemaitre. Hearing Hubble's lectures regarding a correlation between red-shifted galaxies and from the inferences of a Doppler shift, Lemaitre developed and published solutions to Einstein's equations for an expanding universe.

In 1929, Hubble published his observations which also inferred a Doppler shift and therefore an expanding universe.

In 1931 Lemaitre developed a Singularity Theorem, basically reasoning that if the universe were expanding, then it probably would have started from a singularity: a single particle, a "primeval atom" as he put it. Lemaitre also believed that a likely way for this primeval atom to evolve would be for it to "explode." In a speech, he presented this theory to the British Association on the Evolution of the Universe. This theory, which Lemaitre referred to as his "Fireworks Theory" would later be called the Big-Bang.

Theorists and scientists of the time did not accept the Big-Bang or any theory of an expanding universe because most felt that there was probably a better explanation for the 'red shift' of galactic spectra other than an expanding universe. Much of this skepticism was most likely due to the fact that the prominent theories of the time were that the universe was infinite in time and space, possibly having local evolutionary cycles but static as a whole.

During the 1930's and the early 1940's many new theories were put forth to explain the newly observed "red-shift" other than an expanding universe. A few of the most prominent theories proposed at that time are as follows:

A theory by Paul Dirac, the famous Oxford theorist, was that not only space, but matter itself was expanding at a constant rate. We would therefore observe a Red-Shift but no real expansion was occurring because everything was expanding in place. Another theory, which later was to have many versions, was that of 'tired light'. The idea is that light would lose both energy and frequency as it travels through space. Another red-shift explanation was that since light is bent by gravity as Einstein had predicted when starlight passed close to our sun during a solar eclipse; light, when passing through our own galaxy, might experience only a few years of bending time; but intergalactic light would be affected by billions of years of bending time which, accordingly, would stretch it out and lower its frequency.

None of these theories have been disproved to this day. However, no further evidence has been presented for their support, other than their original arguments regarding the 'red-shift'. Some of these theories require new laws of physics. None have made observable predictions that have been otherwise acknowledged.

Einstein, during this time, made addendums to his equations which in effect reaffirmed the solutions pointing to an expanding universe. He also theorized about a fourth physical dimension which would close the boundaries of space in an expanding universe.

Sir James Jeans and Arthur Eddington, two famous theorists of the time working independently, both supported a singularity theorem and a finite universe in both space and time. After a few years of exposure, however, many other theoretical problems began to emerge with the Fireworks Theory. A number of its tenets had been generally disproved and, because of these problems, the first version of the Fireworks Theory lost most of its supporters. However, the underlying singularity theorem was alive and well having several prominent supporters.

Following World War II, George Gamow, one of the Project Scientists for the A-Bomb program, resurrected the Fireworks Theory "overnight" using as his model the Atomic bomb. In 1946, Gamow published this revised theory, replacing many of the original details of the Fireworks Theory with 'state of the art' atomic theory coming from the Manhattan Project (U.S. Atomic Bomb Development) -- and there were very few scientists in the world that had the expertise to challenge the details of the new version.

In 1947 Gamow wrote a popular book 'One, Two, Three, Infinity' which brought his theory to the forefront of cosmology in a way that could be generally understood by the layman.

This became a popular new theory of the time but was still not widely accepted by other theorists. As details of the theory became more widely understood, many theoretical problems became known and criticism increased. There were also many existing alternative theories as well as new state-of-the-art theories. The most famous of these new theories was the 'Steady-State Theory' (SST). The SST was proposed by Fred Hoyle and others who were detractors of the Fireworks Theory then promoted by Gamow, and it was Hoyle who gave the Fireworks Theory a new name that is still the name used today, THE BIG-BANG THEORY (BB) -- which was meant by Hoyle to depict a derogatory image of an ill-conceived theory. Although many problems were found with BB model, "improved" models were developed by others to account for new observations in both astronomy and physics. In the 1960's several major observations were made in astronomy which resulted in the Big Bang Theory becoming the dominant model of cosmology.

The Singularity theorem, one of the premises of the BB, is that the universe evolved from a single entity into what we see today, although most 'Big-Bang' theorists had made no other predictions. Because of the Doppler shift premise, the farther away an object was the farther back in time we would be able to look (because the speed of light is finite). They accordingly theorized that we might be able to see evidence of an evolving universe. The first observation which seemed to indicate an evolving universe came from a new technology just emerging. Radio astronomy indicated that the further away a galaxy was, if a galaxy's red shift was an indicator of its distance (the Doppler theory), the more likely a galaxy would be to emit radio waves. At first it was thought that these radio waves were caused by the red-shift phenomena. But after analyzing the radio spectrum of a hundred or more galaxies, it seemed apparent that most of the frequencies of their radio emissions could not be accounted for by red-shifting of intergalactic light. This appeared to be evidence to many theorists that galaxies were different in the past and that the universe was evolving. If very distant observations of proto-galaxies maybe 10 billion years ago, without other observations of mature galaxies, then this would also be strong evidence for a steadily evolving universe's beginning, according to BB theorists at this time.

These new observations in astronomy were named quasi-stellar objects, or QUASARS. They were optically star-like in appearance - not with a fuzzy appearance like galaxies. They were very far away (based on their red-shift), further than any observed galaxy, based on their red-shift analysis. They appeared very luminous, (if the distance interpretation was correct) some more than one hundred times brighter than an entire galaxy would be at the same distance. No object at a close distance had these characteristics. These observations seemed to be evidence for an evolving universe and the BB version of the singularity theorem.

A third observation was made in the field of low-frequency radio astronomy. It was discovered that at a specific frequency within the radio-wave spectrum, there seemed to be low-energy emissions coming from all directions. And several Big-Bang theorists, working together, had predicted emissions somewhat similar to those found. These theorists reasoned that if there was a hot Big-Bang some ten to twenty billion years ago, the heat from this event might still be observable today. These emissions, however, would be tremendously red-shifted according to these theorists. The observed frequencies of emission were correlated with a background temperature of 3.4° K. This was substantially different from their predicted temperature of 30° K. Still, background radiation was not discussed by prominent Steady State theorists, therefore this observation was heralded by many theorists as evidence for a hot Big-Bang.

These observations of a seemingly evolving universe with a micro-wave background radiation pushed the Big-Bang theory into world prominence. Other theories involving a static or steady-state-universe began to lose favor. For the rest of the 1960's a great number of theoretical papers were published attempting to develop a mathematical model for a Big-Bang which might better explain observed operations of the universe. By 1980, a number of mathematical models had been developed and the "Big-Bang" had become the most prominent theory in cosmology. Although many of its tenets were still challenged, no prominent alternative theories emerged. To supplement the purely mathematical models, particle physicists were solicited for their theoretical input.

Cosmologists were hoping to obtain greater insight into the initial Big-Bang, and also to help resolve possible inconsistencies with existing theory. But instead during the time of this collaboration two previously unrecognized potential problems with the Big Bang model surfaced. These problems involved many observations which the Big Bang Model could not easily explain, but even worse they were long predicted requirements of the recently denigrated Steady-State model. They came to be known as “the flatness” and “horizon problem.”

Briefly:

The Flatness problem—*Why is the saturation of matter in the universe so close to equilibrium? – so close to the amount of matter required to have the universe either contract upon itself or not expand at all. In an expanding universe only a relatively short time frame would have this characteristic.*

The Horizon problem—*why are all the farthest reaches of the universe all similar to each other? From a beginning Big Bang there would be no way the outer areas of this expanding sphere could interact with each other and yet all areas are seemingly identical.*

When the above problems became known and accepted as serious problems with the BB model, they became so de-stabilizing to some theorists that many worked tirelessly trying to find an answer. One of these theorists, Alan Guth, came up with a theory involving completely new, seemingly forever untestable theoretical physics which became known as Inflation Theory. This new proposed addendum theory to the Big-Bang was concerned with the mechanics of the “Bang” at the beginning of the universe. One of the aspects of this theory allowed for a very rapid expansion of the universe, millions of times faster than the speed of light which required new physics to be invented. This kind of beginning would mean that the universe would need to be vastly larger than previously theorized. The physics involved in this theory had no counterpart or basis in observable reality but still it could help explain the biggest perceived problems with the existing BB model, particularly the Flatness and Horizon problems. Guth's theories were widely published and well received. Guth knew of several problems with this theory however, but to his credit he was not reluctant in discussing them.

Some of his theory's problems, however, were solved in Guth's mind by a Russian, Andrei Linde." Guth wasn't the sole inventor of the Inflation hypotheses. Andy Albrecht and Paul Steinhardt, Andrei Linde, Alexei Starobinsky, and many others, produced different models. Because of the known problems with Big Bang cosmology, however, Inflation became an indispensable theoretical addendum. Literally hundreds of versions of alternative Inflation theories appeared in leading scientific journals: old inflation, new inflation, newer inflation, chaotic inflation, extended inflation, etc. Since General Relativity was unable to predict galactic stellar motions, modified gravity theories and theories with extra dimensions also provided ways to explain these theoretical problems. The problem with all of these newly proposed theories was that they were all ad hoc hypotheses with no evidence to support any of them.

All versions attempted to iron out Big Bang problems by inventing extensive new physics which either violated or proposed addendums to the known "laws of physics." However, with the exposure of many these new versions of Inflation theory in 1982, most cosmologists felt that these models seemingly could solve more Big-Bang problems than the new theoretical problems which they created which were thought to be tolerable. As a result of their perceived ability to solve the flatness and horizon problems in particular, these numerous Inflation theories necessarily (in one form or another) became an accepted part of the Big-Bang model.

As a result of lingering problems, unanswered questions, and many theorists in the field, The Big-Bang theory has evolved into seemingly countless different versions. Each version has something different to say regarding the theorized beginning of the Big-Bang, the evolution and operations of the universe, or the future of the universe as well as multiple universes, and many other related models. For this reason the theory does not have one voice, instead it has many groups and individuals supporting their preferred version of the theory. The theory's advantage is that if any version or principles of the Big-Bang were generally disproved there would be dozens of alternative versions of the theory to take its place completely changing the mainstream version of the theory overnight. Let's now look at how these Big Bang versions relate to each other. What are the general principles that many of these Big Bang versions have in common?

Common tenets of most variants of the Big Bang model

1. The universe is expanding at a rate as indicated by the Red-Shift and has been expanding since its beginning. Based on this “constant rate” (known as the Hubble Constant), the universe is between ten and twenty billion years old (current estimate 13.7B).
2. The universe started from a singularity (Singularity theorem).
3. From this singularity the universe expanded very rapidly.
4. The universe is evolving from a denser past.
5. The universe will expand forever, or it will eventually contract and then re-expand in a continuing cycle.

-Tenets of many Big-Bang models-

6. Incorporate Einstein’s theories regarding time, gravity mechanics, and his theories of warped, curved, and fourth-dimensional space.
7. Incorporate facets of Quantum theory/ Mechanics into the Big-Bang model.
8. Incorporate one form or another of Inflation theory.

Observational indications of a BB

1. The expansion of the universe is thought to be the most logical explanation for the red-shift of the electro-magnetic spectrum—one of the tenets of the BB model.
2. The micro-wave background radiation is thought to be evidence for a hot Big-Bang.
3. Galaxies at greater distances emit more radio waves. Quasars have a very high energy level. Both of these factors are considered evidence of an evolving universe; one that was progressively denser in the past, implied by these higher energy emissions.
4. The helium abundance in the observable universe is believed to be evidence for the Big-Bang because stellar-evolution theory predicts a much smaller helium abundance based upon a 13.7 B yr. old universe. A major part of the helium is believed to have been created by an original big-bang, A.K.A. -- a gigantic rapid explosion.

Reasonableness and logic of the Big-Bang

Why should we look for another theory? The Big-Bang theory seems to be supported by observational evidence, isn't it? otherwise the world's cosmologists would be looking for alternative theories, wouldn't they? What reasonable theoretical alternatives are known to exist?

Some different possibilities of an expanding Universe:

The mass/ energy in the observable universe seems to be spreading out (expanding and therefore becoming less dense:

1. because the mass/energy is moving away from itself/ expanding.
2. because the space between mass/energy is expanding at a constant rate (the "Hubble Constant").
3. because the universe is expanding at a decreasing rate and would eventually stop expanding and remain stable.
4. because space is expanding at an accelerating rate.
5. that the mass/ energy of the universe is expanding at a decelerating rate. Although the universe would expanding forever, it would have a limit to its size. (Example): $1/2 + 1/4 + 1/8 + 1/16 \cdot \cdot \cdot (etc.) = 1$. The sum (limit) of adding this infinite series is equal to 1. However, it will never for any finite period of time reach this limit of 1.
6. a cyclical expanding universe would be expanding now but there would come a time when the universe would stop expanding and then contract to a "new" starting point, then re-expand again, in another Big Bang or a big bounce.

Most Big-Bang theorists now adhere to 2 or 4-- that the universe is expanding because space is expanding and it would accordingly expand forever without limit until it "burns out" and completely dissipates. Some still have hopes for 3 or 6-- that gravity will eventually prevail and that expansion would cease and the universe would remain stable or contract to another bang or a bounce.

Difficulties with the Big-Bang Model

The most difficult parts of the theory to develop or explain are: 1) the beginning of the Big Bang, i.e. how all of the existing universe could have been condensed at one point 2) The Big-Bang itself, and what caused it to happen, 3) How Big-Bang residue could relate to what we now observe. Although there have been many different Big-Bang theories/ models dealing with these questions, all of them have to be extremely complicated and propose a vast quantity of new laws of mechanics and Physics which would seem to be forever beyond the abilities of observational Physics and Astronomy to test. Inflation proposes details and equations that seemingly could never have an observable counterpart. This diversion from observed reality seems necessary for all the separate Big Bang theories attempting to provide continuity with observed reality, a seeming contradiction. To deal with the lack of theoretical capabilities, an additional addendum to the Big Bang model was created to enable the use of inductive reasoning. This newest version of the beginnings of the Big Bang theory is called Concordance cosmology.

Introduction and Overview of The Pan Theory

The Pan Theory, on the other hand, has considerably fewer problems and more answers, simple answers as to the beginning operations of the universe-- answers which are more in harmony with the principle of Occam's Razor (Ockham's or Occam's); "all else being equal, the simpler answer is the better answer." Another version is: "Explanations of anything should make as few assumptions as possible."

These two theories of the beginning operations of the universe, starting below, are called The **Ipan Bead Theory and hypotheses**, and **Ipan Field Theory**.

After reading the entire text of this book you may come to the conclusion that the following statements may apply to the Pan Theory as well as providing insight into how theories formulated by logic are created.

- 1) The Pan Theory(s) might be viewed as a quintessential theory. Theories that collectively provide the blue print, foundation and keystones that are needed to explain how the inter-workings of reality all fit together.
- 2) A more circumspect viewpoint might be to consider the Pan Theory(s) as providing a logical foundation and diagram which might enable better understandings of fundamental relationships of reality, insights that may point directly toward rapid realization and discovery.
- 3) Through these insights scientific thinking might finally come to the realization that the details of theories in general are a never-ending work-in progress, contrary to present hopes for ultimate theories.

Describing the logical foundations of the Pan Theory

When trying to explain or discuss any part of the Universe, we would need to find a working definition of the word. The ones chosen below are only one of several that you can find in the dictionary but it is the one needed to better explain the beginning of the Universe and this related theory. Other definitions might apply to other theories, general conversation or philosophy.

The Universe: *the combination of everything, all entities that have a state of reality—everything that is real and not imaginary.* By this definition nothing could exist outside of it—it is all inclusive. It would also include, if they existed, any spiritual entities, other universes or dimensions.

The Universe can only have one of two possibilities concerning the beginning of time. Either it was finite (began in a specific relative time frame) or it was infinite in past time. According to the related logic, no person in either case could logically argue that there could have been a cause for the beginning entity; let's explain why. It is simply because of the definitions of the words themselves: finite and infinite, as they relate to past time.

Finite time: *a limited number of cause and effect sequences or events in the past.*

Infinite time: *an unending chain of cause and effect sequences or events that would have occurred in the past.*

If the beginning universe started at a finite time frame in the past, by definition it would have had a limited number of cause-and-effect **sequences** to the present day and therefore no possible cause. In other words, what cause could have come before the first cause? What change could have come before the first change? If it had a cause we are talking about an infinite universe.

If time were infinite, on the other hand, it also would have had no beginning cause because infinity continues forever backward without a starting point or cause by definition.

“Something cannot come from nothing.” This is a very old concept which can be derived from writings dating back to the ancient Greeks (during the 5th century B.C.) but it is best known as an old Latin saying: “nihil ex nihilo fit” literally meaning “out of nothing, nothing comes”. This concept in logic is called The Principle of Sufficient Reason — or the Causal Principle.

So either the beginning was infinite, and would have had no beginning or it was finite. If finite it had to have, accordingly, a beginning entity which by definition could have had no cause. If you still don't understand the logic of why there could not possibly be a beginning cause, read over the material starting from “The Beginning Logic ...” then just think about it for a while if needed. Remember this is not theory or argument; it is simply based upon these definitions. Using other definitions may not render the required understanding for this theory; for important words, when discussing logic, a single definition must apply. A different definition of the words above would have different meanings and implications. This meaning applies to these definitions.

The rest of this very brief theory summary goes like this: You could say that after billions and billions of years, field development progressed from a single simple field particle that started it all. *Note: Any interval of progression of these changes we now describe as time.*

Starting from a single simple particle, continuing on, it resulted in strings of these same particles. Over a very great period of time there eventually would have been a vast quantity of these “field strings” which we could call an aether, or a type of “dark matter” if you prefer. Its energy of motion we will call the zero-point field or zero point fluctuations (ZPF). The separations between these field entities and between matter we will call space. Eventually the densest parts of this field material, by kinetic compression became the first black holes.

Immediately surrounding these black holes some strings of field material, semi-rigid strands, were bent into loops by the same compression forces.

These newly formed looped entities were the first protons and electrons which created an entire galaxy of stars via gravity, surrounding each black hole. After continuous creation of new galaxies over billions and billions of more years, as well as the continuous evolution of galaxies, it eventually progressing into the universe the way we now see it.

That’s the short of it – which might be considered “A PREVIEW OF COMING ATTRACTIONS!”

Preparing for The Journey: The journey’s objective is to build a unique new theory necessarily from the ground up.

- A **Theory/ theory** is a Concept which is supported by sufficient evidence and could be further substantiated by future testing and observations. A well-conceived theory must also conceive of possible ways how the theory might be disproved.

The Pan Theory’s development has been based upon observations, experiments, and reasoning. It is additionally a set of related propositions organized to explain domains of reality and a system of relationships which makes observable predictions some of which have already been observed as well as continuing future predictions.

There were four reasons and evidence which supports why the following course of theorizing took the path that it did.

- 1) There is evidence which suggests the Protons are made up of smaller particles:
- 2) The strong interaction, one of the so called forces which hold nucleons together, acts according to the formulation of a resistance spring:
- 3) Both electrons and protons spin (as well as all fermions).
- 4) Conceivably the simplest explanation for the beginning of the universe would be a single simple physical particle without the pre-existence of a background field (because this fields origin would also have to be explained such as the ZPF)

Starting assumptions for a beginning Hypothesis-- later we will show evidence for these assumptions and assimilate them into the theory leaving us with no conventional “a priori” assumptions. This would seem to be in full harmony with Occam’s razor, whereby explanations (or theories) of anything should make as few assumptions as possible.

- 1) We will start with a universe finite in time, because an infinite universe in time (and space) would have had no beginning by definition and therefore no origin to explain.
This is called an implied assumption.
- 2) We will also use the singular-entity theorem; -- that the entire universe was together at one single point/ position in the beginning, because any other method of creation for the entire universe, i.e. -- starting from more than one beginning point or entity would seemingly have been more complicated and therefore less likely.
This is theory justified by logical probability

- 3) We will use the "ex nihilo nihil fit" principle. -- Something can't come from nothing. Literally, "out of nothing, nothing comes," even though some Quantum Physicists believe otherwise concerning energy-laden space, but that is certainly not "nothing" (the zero point field).

This is a famous principle of logic

These are the three beginning assumptions and the starting point for the development of our theory.

Method of logic:

Instead of going backwards in time from the present, contracting the universe to one point and then trying to figure out how it could possibly all fit together, we'll start from what could be imagined as the simplest possible beginning, and go forward in time - complicating the picture as little as possible. As a result of taking this journey forward in time, we must, of course, end up with the universe the way we presently observe it. But there are countless possible initial configurations for our imagined beginning and countless possible changes that could occur as time progresses, so how can we proceed?

Analogy of a Journey:

There is a paved road leading from the starting point to the present-day observations of reality. There are many potential starting points, like a maze, but none of these roads are the paved road to reality except one. Each possible road from the starting point has many alternative routes. At these maze intersections it is unclear which of the two, or more possible outlets we should take, which is the main road and which are dead-ends. If we travel off course, we could go a long ways down the wrong road before we might find that all outlets in front of us are dead-ends.

We then would have to back-track a bit looking for an open outlet again, and if we still couldn't find any we would have to back-track even further until an open road was finally found for our continued progress through the maze. Subsequent trips through the same maze, however, would be more like a guided tour which is the intent of this journey.

The advantage of a forward-looking perspective is that, although we wouldn't know the correct starting point but we would know our destination which would be our observed reality in the present universe. Those who would use the alternative method, i.e. going backward in time as do Big Bang theorists, would know their starting point, which would be the present, but their destination backward in time would break down when physics could no longer explain the prior step. This extrapolating-backwards method may also be more difficult because one would not know if he'd reached the correct destination, or even whether he'd traveled down the right roads when he came near what he believed to be his destination.

The additional advantage of using a forward-extrapolating method such as we will use, we might be able to formulate hypotheses toward a direction that might explain known particles, EM radiation, gravity, etc., which might help steer us in the right direction concerning our journey since it is intended to be a guided tour of the beginning and development of the universe according to the Pan Theory. The method is called Inductive Reasoning. It is based upon verbal logic and equations inferred by observation. It is one of the two forms of Logic used, the other being Deductive Reasoning resulting from theory and equations. The method might be called building a theory from the ground up, resulting generally in a “no-assumption” theory which in this context concerns a beginning state or reality whereby there was no pre-existing field(s), laws of physics, laws of nature, forces, energy, or any other of the normal assumptions of other beginning theories.


The Exordium

(Exordium defined: an introduction to a paper, discourse, or in this case a theory)

This Chapter is a precursor to The Pan Theory. It proposes and develops beginning concepts, hypotheses, theory, and the necessary logic needed to explain the Pan Theory for the rest of the book.

Chapter 3, Developing a model of the universe that fits

The Journey: to evaluate the possibilities and propose a beginning structure of the Universe

You are here  . We'll start by asking: what was the simplest possible beginning for our universe that you can imagine? We don't have to use any known particles or energy because you are only theorizing what the first reality might have been if there was a beginning and if the universe is not infinite concerning times past. In asking this question: "what was the simplest possible beginning entity that you can think of that could exist" - to a number of educated people I was given answers such as: 1) a hydrogen atom, 2) a quark of some kind, 3) an electron, 4) a virtual particle, 5) a photon, 6) a neutrino, 7) space, 8) the zero point field.

Other answers could have been the Big Bang entity, a sting of some kind, a black hole of some kind, energy of some kind, etc. I then had to restate my question by saying “IMAGINARY” thing. What is the simplest imaginary thing that you can think of. All of the answers given may have evidence for their existence but none were necessarily simple things.

The simplest "imaginary thing" that we usually would agree upon was spherically shaped, made of a uniform imaginary material without parts which we could call substance. Its size would have no meaning since it would be the only thing. We could accordingly consider it to be both the largest and smallest thing, as well as the only thing.

So we'll take this conceived *orb-particle*, in our mind's eye, and place it as a solitary entity at a beginning point (in time). We can't put it inside "space" because our particle is the sole existence of the reality that we can consider (i.e. the simplest thing) because space could be considered an additional reality. So, our orb particle would be surrounded by nothing, or we could say, it isn't surrounded by anything-- not even space.

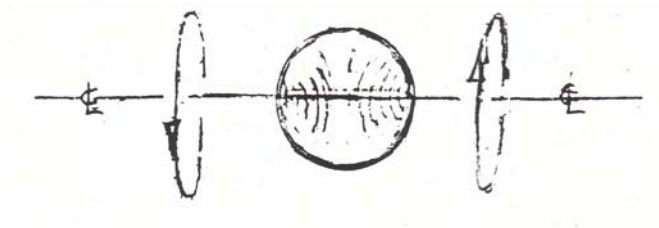
Now, let's examine our particle. It has no inertial motion or relative motion, and it doesn't even spin because what would be the meaning of its motion or spin anyway? Even if we could measure its size, what would be the meaning of such a measurement, relative to what standard? Time itself would also have no meaning or way to count its passing. Even space or matter would seem to have no real meaning if it was the only thing that existed. As we continue to watch this orb particle, in our minds eye, we would not be surprised if nothing at all would happen. The particle seemingly would just "sit there" doing nothing; we also wouldn't be surprised at all that in the very distant future our particle would be exactly the same as when we first "looked at it.". The future itself would have no meaning. We might necessarily conclude that our beginning particle must have had at least one additional characteristic to "progress"- one that would cause it to change in some way — an agent for its change or evolution so to speak.

The primary entity: the Ipan Bead Hypotheses and embedded theory

-- An Ipan Theory concerning the method of particle diminution and new-particle creation --

The Pan Theory states that one elementary particle became many like particles which eventually saturated the Universe by their continuous division to the present day. How this could happen as well as the form and mechanics of the resulting particles, which follows, would be the first Ipan hypothesis presented which might be subject to change over time as new observations and details of the micro-world become known.

The beginning entity



One of the simplest characteristics that our orb-particle could have which according to our hypothetical design could perpetuate continuing change, would be if a beginning particle were wound it up something like a rubber band with a pencil in both ends, then either or both ends could be turned in opposite directions, let's say countless billions of times (much more stress than a rubber band could take needless to say).

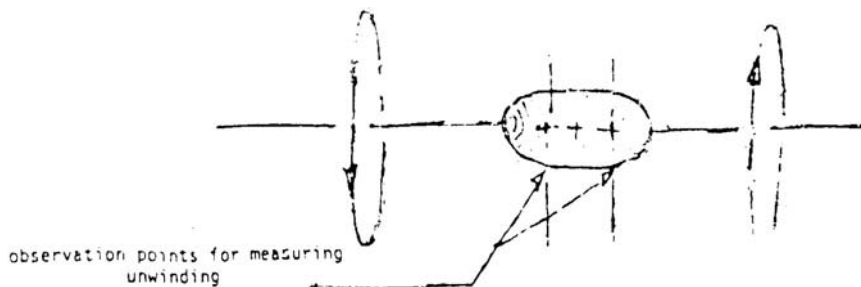
After it's "wound up", we'll pull out the pencils and keep it stationary in our minds eye. Now let's look at our theoretical orb particle: We'll call it an orb, being the same as our original configuration except that now it has the potential (energy) to unwind. It looks the same as before, but because of its windings, we realize that now it would have a linear symmetry of winding, and an asymmetry of internal forces which would perpetuate change. It is wound up at opposite poles (180 degrees apart) less wound in the middle by having an even but opposite torque on each side of the middle.

Also in our hypothetical design this orb would always exist in a pre-wound condition meaning that it could not have existence in an unwound condition. As it would unwind based upon torque forces in one part of its body it would concurrently be wound up in other parts of its body, a continuous type of pendulum/ reciprocal unwinding and rewinding. Now, let's watch our orb-particle in the "proving grounds" at the beginning of time, in our minds eye.

Because of its windings, we realize that now it would have a linear symmetry of winding, and an asymmetry of internal forces which would perpetuate change. It is wound up at opposite poles (180 degrees apart) less wound in the middle by having an even but opposite torque on each side of the middle. It still looks the same as a dormant particle would, except that we can see that it is unwinding. It's lucky that we have our mind's eye to look at our particle unwinding since it has no constituent parts to see it unwind and there would be no light to reflect off it to reach our eye anyway.

So we continue to watch our particle. We still can't see any change and we realize that this is going to take a while, so we could vastly fast-forward its motion in our minds eye. Since its beginning state was pre-wound along a linear axis to provide the potential energy for change, it now has become watermelon shaped as it unwinds and extends along this axis. We have not introduced any laws of physics and we have not brought in space, or time as a separate reality. The only reality that we have is our unwinding particle. At this point we will consider the concepts of space and time, but only at a very basic level.

We will define space and time only for our particle (and not a general definition); we could later examine how these definitions might equate with conventional reality (the real world). We will define space as: The volume which our particle occupies, since there is nothing else to equate our volume with or even to say whether it's big or small, or to give any quantitative number to this volume. We'll equate time with changes in our particle. To define time: Let's say arbitrarily that a unit of time is equal to one complete revolution of unwinding. We don't know, however, how one revolution of unwinding would be explained because our particle unwinds faster at the ends and more slowly toward the middle. So let's arbitrarily select a point half-way between the end and middle of the particle on both sides. We could then count the revolutions at these points relative to the center. We also could have equated time with a proportional change in our particle's configuration if we had wanted to instead.



We will now delineate our particles characteristics. One could say that its characteristics are based on two facets: first - its physical existence would be dependent on its body extension (it takes up space), and secondly, it couldn't have motion without its physical existence. Because both are essential facets of our reality, it could not exist without its internal motion and potential energy. We could also say that our particle must be an entity in motion in order to "display" its physical characteristics and also change. We'll describe the changing configuration by relative measurement--that we'll call dimensions. As it becomes relatively longer, we'll call its longer part length and the narrower part width, by these descriptions we could say that our particle's length is increasing while its width is decreasing as time progresses. Now let's determine how a Physicist might describe our particles displayed characteristics:

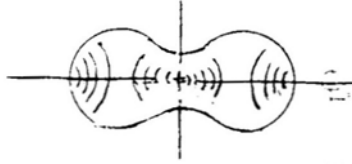
1. Elasticity
2. Dynamic cohesion: ~ a powerful stick-togetherness because it is a uni-plasm
3. Vacillating torsion: tension released by unwinding in one area of a pan's body causes a winding tension in another part.
4. Matter: We'll describe our particle as pan-matter for the time being because it has the characteristic of what we might call extension. The other qualities of particle matter, inertia and mass, have no meaning to us as yet. Our particle started with potential energy and now displays kinetic energy.
5. Potential and Kinetic Energy: Self-perpetuating energy of motion, unwinding and re-winding kinetic energy which causes continuous but very slow evolution of the particle's form. Of course these descriptions don't change our particle. It's still just "sitting there" winding and re-winding.

At this point we'll give our particle a name. We'll call it a PAN, not because we're "goen to be cooken any food here," but because PAN in Greek means "all," and in our case, "all" means everything-- and the only thing.

***Note:** The singular and plural for pan and "pan-chain" are the same which you will observe throughout this book, i.e. one, two, three pan; and one, two, three pan-chain. Characteristics one, two, and three above collectively would be a fundamental non-Cartesian dimension of pan which would perpetuate a pan's existence as expressed in characteristics four and five. Pan have no conceived parts, other than internal density variations, proposed herein. Although further conjecture may be interesting to some, because most of this section is hypothetical, the Pan Theory that will follow is primarily concerned with conceivably verifiable reality. Because the Pan Theory itself, which will follow, is based upon many observations tested by time, it is considered by the author to be theoretical rather than hypothetical, unlike this section which is considered to be hypothetical.*

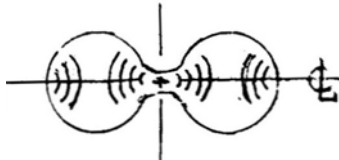
PAN DIVISION AND ACCRETION

Now, let's greatly fast-forward the Pan's motion so that we can observe the continuing changes. Time, from this view point, will be passing very quickly.



The horizontal line shown is the center line of the pan which is its axis of unwinding / rewinding. The vertical line in the middle separates clockwise from counterclockwise rotation.

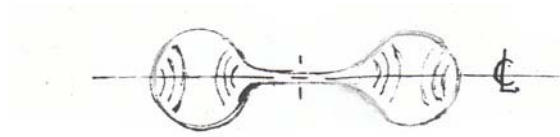
Now our Pan is peanut-shaped. The center area (represented by the cross above) which was unwound when the Pan was spherical is now “winding-up” again-- as the ends continue to unwind and the center is closing down as shown below.



Continuing forward in time, our single Pan has become two separate but joined Pan as shown above, except that each is about half as big as the original. The potential energy of both the Pan and the filament between them combined is slightly less than the potential energy of the original Pan*; but that **each Pan is proportionally identical to the original - having the same amount of potential energy for its size and each about half the volume of the original pan.**

**The small difference in energy loss of the whole was the expended energy of unwinding*

As we continue forward in time, our Pan get smaller and farther apart with a longer wound filament between them as shown below.

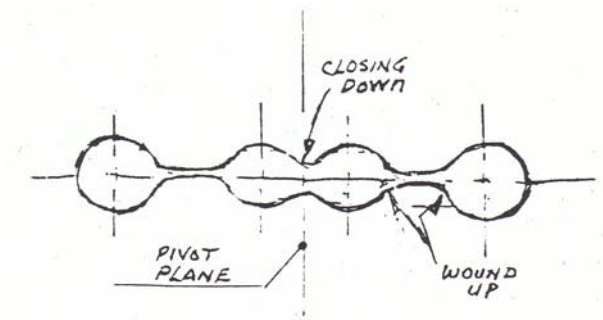


As the potential energy of this unwinding and reciprocal rewinding would continue we could see that it is winding-down in the middle like a poodle balloon when twisted. This material would have a twisting limit like a balloon where further twisting would be resisted. It could not continue twisting until it broke. Once it reached its limit it would unwind in the other direction.

As this unwinding and rewinding would continue, the "umbilical" between the two separate but joined orbs would themselves grow longer and longer until eventually the center of it would start to distend, begin growing in volume again, as shown above. This would also happen to a balloon if there was enough remaining air in the umbilical that had been compressed by the winding. Eventually there would be 3, as shown on the new page and so on. Unwinding would always go in one rotating direction but rewinding, accordingly, would be perpetuated also by the unwinding. This balloon analogy is probably better than the rubber band model which would only show the torque and unwinding potential of the orb.

Now let's look at our "two" theoretical orb particles above. We'll still call them orb shaped, being the same as our original single particle configuration except now there are two with an umbilical between them.

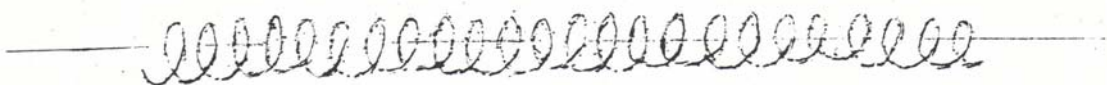
In our theoretical model these orb particles would always exist in a pre-wound condition meaning that they could not have existence in an unwound state. As the orb particle unwinds from torque forces in one part of its body, it would concurrently rewind in another part of its body, a continuous type of pendulum/ reciprocal unwinding and rewinding.



Any Pan chain, regardless of its length, will double its “pan count” in the same period of time as it takes a single Pan to become two Pan. By this method of unwinding and concurrently re-winding, Pan get smaller in size uniformly and remain equal in size to each other. But, as our Pan chain gets longer and longer, we notice a new configuration.



The Pan chain is starting to take the form of a spring or helix. This coiling is caused by the increased torque as our Pan-chain gets longer and longer. This coiling results in a permanent set in the Pan-chain. If the Pan chain were bent by an outside force, it would return to its spring-like form.



Eventually .. our Pan-chain would have countless thousands of individual Pan in the chain, individual coils of pan would accordingly have a visual analog similar to a string of beads, hence the name Ipan Bead Theory.



Before, we used two dimensions, length and width. We'll now add a third dimension and call it height. By measuring three dimensions (length, width and height) at right angles to each other, we can better describe the Pan-chain. These dimensions, however, are still not a separate reality, only a method that we have chosen to measure and describe reality. Now looking at the physical characteristics, one could say that Pan accrete in a continuous linear coil we have called a pan chain, similar to a coiled string of beads. 7. The unwinding rate increases in speed-- with the length of the Pan-chain. The torque, at a specific length, will break the Pan-chain in two separate equal length pieces. When Pan-chain break each new Pan-chain length would be generally equal in length and form its own pivot plane in the middle of the new chain. This new center would become the separation point for the opposing torque motions on each side of each separate chain.

The Inter-relationships that define Substance, Time, Space, & Gravity.

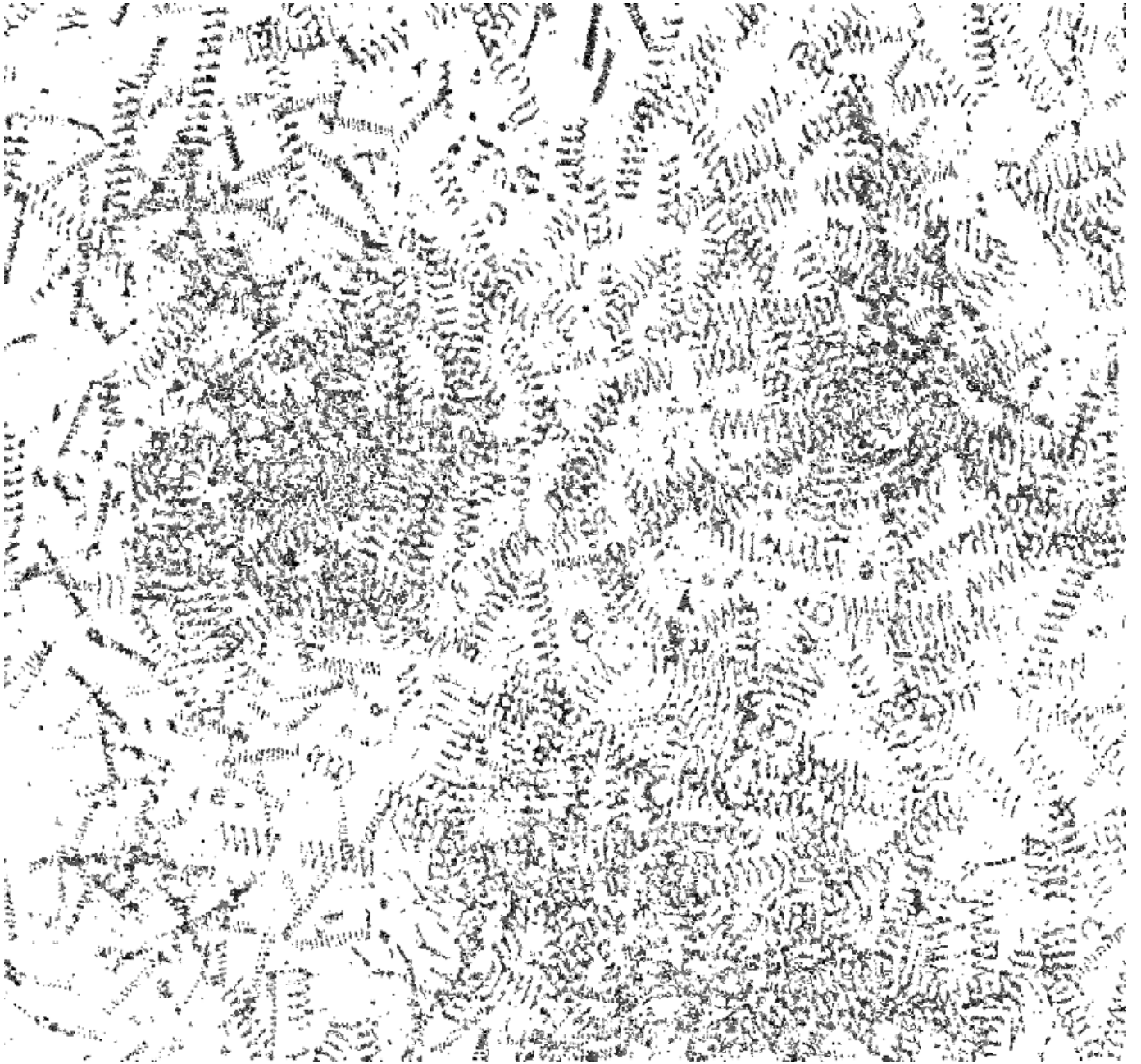
Particle Field-Theory: The development of Omni-present Field(s)

We will again emphasize that on our journey, and the related divisions of reality are not necessarily separate things of existence. Our space is not a separate physical entity; it is only a description of a measured distance or volume which separate substance. Our time has no separate reality since it is only a measurement of a Pan's motion in units of revolution. Our dimensions of length, width, and height, are only our descriptions defined by characteristics of substance (pan) -- none of these entities or dimensions are a form of reality in and of themselves. They should be considered as just descriptions of the inter-related parts of reality (like Cartesian geometry, X, Y, and Z dimensions).

In our universe so far, there is just one single real thing - Pan/ Pan-chain in motion. If we need new definitions or "laws" to explain our reality, we will "bring them in", as needed, as our journey progresses.

In equal time periods two Pan-chain would become four; four would become eight, eight would become sixteen, and so on. They keep doubling in number in the same time interval as our original Pan took to divide into two. This we will define as the rate or period of Pan-Doubling or Pan Accretion, but Pan-chain accordingly accrete and expand in length by forming/ adding but one Pan to a chain at a time.

(Developing a field, continued)

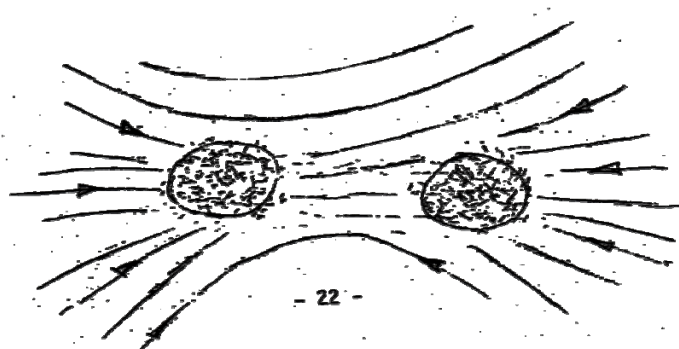


engagement we can see (in our minds eye) other Pan-chain frequently bumping into it from all sides, except the side closest to the other Engagements. The Engagement itself has more bulk and doesn't bounce around much. With interacting forces coming mainly from one side, this Pan-chain is pushed into the Engagement. As we continue watching this Engagement grow, we can see a large quantity of pan-chain surrounding it, but not engaged as yet. Even a larger number than those toward the middle which are "completely" engaged. As other Engagements adjoin with the Engagement we're watching, these loose pan-chain closest to the Engagement are also pushed together/ into the Engagement by impact.

When these Engagements become large enough their centers become very dense and "entangled". Pan-chain coils are deformed, bent into loops, and sometimes broken. We'll call all Engagements which have this very densely entangled central area Pan-chain Entanglements.

This Pan-chain interaction which pushes Pan-chain in the vicinity into an Engagement, we will call GRAVITY. We are not adding anything new to our Pan-chain interactions; we are just giving these interactions a descriptive name.

As time passes and the Entanglements get bigger, we begin to notice that Entanglements close to each other also have motion toward each other-- again, because the field animation and forces of Pan-chain interactions are more intense on the outward sides of the Entanglements than they are between those Entanglements which are in close proximity to each other causing a pushing force.



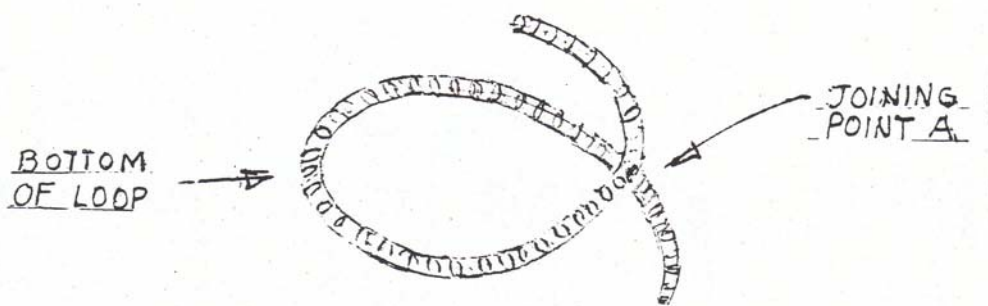
c

Particles of this configuration will spin in either direction, depending on which arm is in front. In the example below, if the left arm (when standing on the bottom) were closest to the observer, at the point of joining (Point A), the particle would spin clockwise when viewed from above; and it will spin counter-clockwise if the right arm is in front. Because of its fundamental spring configuration, one way of joining would require less initial bending for this formation than the other, consequently it will happen-more often. Metaphorically speaking we can see sign posts informing us we'll be crossing the bridge as we approach "known" reality. We'll say goodbye as our status changes from traveler to tourist.

CROSSING THE BRIDGE

-Bridging the gap to observed reality -

Up to this point we have discussed only particles which form the basis for creating our theoretical universe, our gravity and our definitions of time and space. Now we will try to equate our theoretical particles with known sub-atomic particles and observable reality.



The most basic "spinning" looped particle which we just proposed (on page 23) we will equate with an electron. Its counterpart, spinning in the opposite direction and occurring less frequently we'll equate with the positron. Of a similar configuration, only a larger and more massive loop made from a larger coil, we'll equate with a proton, as shown above. Its counterpart, spinning in the opposite direction we'll equate with an anti-proton.



Above you see the conical shaped vortices of opposite spinning particles within a pan field. Each vortex is made up of strings of pan of all different sizes down to individual pan. The mechanics of how these vortices are created by spinning loops as well as how they form and interact will also be discussed in Section 2, Chapter 15.

(Field development continued)

We will now look at what is happening to these electrons and protons (also hydrogen atoms and hydrogen molecules). We can see they are forming in a highly interactive area which appears to be orbiting the central Entanglement. As these particles interact with each other a portion would tend to be pushed away from the Entanglement moving outward toward less dense surroundings.

A Foundation Proposition of The Pan Theory

Mankind has become familiar with atomic fusion. We have good models concerning how heavier elements can be progressively formed from protons (as well as neutrons) within a star. Based upon the theory presented to this point, there is only one fundamental particle which forms our looped-particles, which are the constituents of basic hydrogen (one proton and one electron). So we'll now propose and consider that **this same fundamental particle** (which forms strings of itself) **could be the foundation particle for all of reality found in the entire universe.**

Conclusion: If the above proposition were true, there would be an explanation for everything in the entire universe past and present, including the "laws" of physics, in terms of this particle alone. Conversely, if everything that we could think of including the laws of physics could be "reasonably" explained in terms of this particle alone and its interactions then this proposition might become a model worthy of further investigation. This conclusion is an essential part of the Pan and Ipan theories which could be described collectively as theories and hypotheses that point toward this conclusion.

Overview of theory to this point

We will review the logic that has led us to this point. If we had chosen another configuration, different characteristics, or different methods for a primary particle to evolve — then what particle characteristics would be really necessary/ required to be consistent with the Pan Theory, and which are not? The particle characteristics of the theoretical Pan that we have chosen were given as: 1. elasticity 2. cohesion 3. torsion 4. matter 5. potential energy. Starting with no. (4) matter; the first particle would have required the characteristics of both substance and extension, like atomic matter, but it wouldn't have had mass (because there was no gravity as yet) nor could it seemingly have been pure energy since that is not a simple concept. Next we'll consider No.(1) elasticity; to be consistent with the Pan Theory it seems likely/ advantageous if a primary particle were elastic enough to have potential energy to cause an evolving configuration. Elasticity was chosen as a simple characteristic that can enable a change in form, and with the resistance to enable the return to the original configuration.

No. (2), cohesion, also seems likely/ advantageous if it had stick-togetherness, remaining as a unit for a long enough interval of change to enable its evolution; No. (5); potential energy would be an essential characteristic, like substance and extension, which would cause a particle to evolve (change form). A seemingly non-essential characteristic of a Pan might be No. 3, torsion — since a primary particle's evolution could conceivably stem from another internal form/ cause/ mechanism of potential energy.

For a first particle to have become many, an explosion, like a big bang of seemingly countless complexities, has been shown to be extremely complicated to explain and no generally accepted theory or consensus of its beginning has ever existed. How all this mass could escape the largest possible compression of matter or energy into a super-massive but tiny singularity – then expanding maybe millions of times faster than the speed of light and subsequently applying enormous brakes to this inflation process remaining stable enough to have an expansion constant. Then accordingly it must accelerate this rate of expansion again. An expanding universe of galaxies requires a much denser galactic past. All observations to date seem to contradict a denser galactic past. These are just a few of the very difficult problems that are presently addressed by the Big Bang model(s) with Inflation. Most of these models require completely new, and seemingly forever untestable physics.

(Overview continued)

The Pan Theory requires only the simplest of particles that would only very slowly divide and evolve. It might take seemingly countless billions of years to produce more condensed and complicated structures and distributions of varying forms, but this model is unquestionably simpler than alternative models like the Big Bang. It also seems reasonable that if after forming and without the laws of physics, that the first group of these particles remained attached like a string or cluster, otherwise they seemingly could not form a structural reality. Their hypothetical spring or helical shape would be the result of the continuous axial torsion of the string of fundamental particles.

This helical shape was chosen because it could provide a means by which strings of these particles could “loop” and become inter-connected, intermeshing end-to-end for the looped-particle configurations represented. An initial particle was chosen rather than solely an initial string configuration because the umbilicals between the particles could provide a connection point of looping that could be uniform and stable from one loop to another while the particle spins..

Because the particle loops would be a string of fundamental particles connected by umbilicals, this could explain the **Strong Force** which binds protons together (instead of the “magic” particle force of gluons) as being physical connections. A semi-rigid continuous looped spring, as the proposed form/ model of an atomic particle, could generate tremendous (recoil) energy if disengaged (by particle, anti-particle annihilation or by “proton smashing”, etc.) which would explain the Strong Force in action as observed in particle accelerators. This shape was also chosen so that neutrons, created within stellar nuclei, and protons when forced together by gravitation and fusion pressures within stars, could mechanically engage each other in the nucleus of atoms, explaining the **Nuclear Binding Force** as being mechanical particle connections, and the energy produced by splitting the nucleus of an atom resulting in $E=mc^2$.

There also would be no quarks necessary in this theory; the left side of the coil would unwind the opposite direction as the right side. The top (spinning arms) would appear unique and completely different from the bottom spinning loop. The spinning loop configuration seemingly could give the appearance that there were just a few separate particles, like quarks held together by gluons. According to the proposed model there are no quarks or gluons or attraction forces between particles, solely these “simply-shaped” loops of atomic particles.

Although the theory of how Pan form and evolve, just presented, is an important Ipan theory and contains many necessary facets of the Pan Theory in general, a particle’s form, formation, or dynamics is not a requirement of the Pan Theory itself. This is because a replacement theorem also consistent with the Pan Theory would yield similar theoretical results by design. The only quintessential tenets or features of the Pan Theory which will follow – are that there would be just one fundamental particle which started the universe as a solitary entity, which accordingly had the potential energy to evolve. It accordingly would be the most fundamental particle which makes up all matter.

(Overview continued)

That it continuously gets smaller in its relative size, and continuously replicates smaller versions of itself that result in the continuous creation of new particles and matter. Space will appear to be getting larger as the number of pan and pan-chain increase. As the number of pan increase with time, the relative size of a single pan compared to the whole decreases. .

The mass and energy of an individual pan, however (and thus all matter), decreases relative to the whole. Space is defined by what the Pan inhabit, and when there's gezillions of Pan, there is still no space outside the collective group of all pan. Time has been defined by the rate of pan change. "A priori forces" --unexplained forces as to their cause such as conventional theories of gravity, electric charge, magnetism, The Strong Atomic Force, The Weak Atomic Force, The Strong Interaction, pure energy without particles, etc. (subsequently explained in this text), are not needed by the Pan Theory to explain present-day reality. According to the Pan Theory which follows, reality solely consists of these particles, intervals of their changing configurations, the space which they occupy, their potential energy and resulting motions (kinetic), their combined forms, relative motion, their interactions, and nothing more.

Although the Exordium has fundamental concepts and some theory that provide a foundation for the Pan Theory, it also involves hypothesis. Some hypothesis are needed to provide possible explanations for the gaps that observations accordingly do not provide. It is an hypothesis that can explain facets of observed reality but has its bases concerning the chosen forms, primarily based upon observations of the Strong Force which behaves like a stretched spring in particle physics, and particle spin. It is not based upon enough observational evidence which could exclusively justify the particular configurations and characteristics chosen. This is why the whole of the Exordium is presently not part of the Pan Theory itself, and is instead considered Ipan theory (hypothetical), which means that it is not the only explanation consistent with the Pan Theory.

The Pan Theory -- *starts here*

Section One Cosmology

The essential theories and concepts below have been extracted from the Exordium and will now become part of the beginning state of conditions that existed at a starting time for the development of the Pan Theory. Whether through the processes described in the Exordium or otherwise, the Pan Theory adopts these conditions, concepts, and theories below as its starting point to theorize the reality and mechanics of the universe.

Those hypothesis of the Exordium that will now be proposed as theory:

- 1) The theory that there is only one foundation particle which makes up the whole of reality – based upon the principle of Occam’s razor.**
- 2) The concept of a ubiquitous, dense background field of energetic elementary particles or strings – as evidenced by the ZPF & neutrinos.**
- 3) The theory that these field entities have innate potential energy – as evidenced by the ZPF.**
- 4) The theory that matter has innate potential energy – as evidenced by particle and atomic spin**
- 5) The theory and concepts involving the meanings of time and space – as evidenced by the fact that other definitions of time and space are either ambiguous or causeless and cannot easily explain or be explained by reality.**
- 6) The theory asserting that black holes create protons and electrons via the combined forces surrounding them – as evidenced by the existence of matter in the absence of a big bang.**
- 7) The theory that particles can be forced to join and become entangled/ engaged – as evidenced by neutrons and the so-called “force” that supposedly holds nucleons together, currently called the Strong Interaction.**

The following is a continuation of logic from the Exordium and the beginning logic of the Pan Theory:

We will be starting the Pan Theory in a beginning time period when there first were omnipresent fields which could be called an aether or dark matter. There would have been small amounts of protons and electrons, a few positrons and no apparent anti-protons. These particles created rippled waves within the field as they spin which are the beginnings of what we now call De Broglie waves and Electro Magnetic (EM) radiation. There were also the beginnings of gravity. The state of the densest parts of these fields would have had very fast moving Pan-chain. These areas could be equated to what today we know as the ZPF, the zero point field or zero point fluctuations. These beginning fields would be missing much of the energy which today's fields possess, however, specifically high-energy EM radiation and electron neutrinos. Since there would have been no stars, high energy radiation and electron neutrinos also would not have existed as yet. Essentially the fields although dense, would be less energetic and black. Something like outer space without starlight.

Dense Pan-fields would produce increasingly larger Entanglements. The densest and most massive entanglements we will equate with the widely accepted theoretical entities known as black holes.

These black holes eventually would become the creating mechanisms of the first galaxies. These Entanglements, and the rate of their growth, would be controlled by the density of the surrounding field and the proximity of other Entanglements.

They would become "low-pressure" areas in the surrounding field having no matter particles in their cores, only compressed field material. These low pressure areas would "capture" field particles by entanglement and radiate little or nothing away.

We'll now consider a galaxy model and theory which could explain how a galaxy is formed. How an initial massive black hole could create the matter that would eventually condense into stars forming the first galaxies.

Chapter 2, The Beginning of the Pan Theory

The following is a continuation of logic from the Exordium and the beginning logic of the Pan Theory:

We will be starting the Pan Theory from a period in time when there accordingly was solely omnipresent fields which could be called an aether, along with atomic particles within it, electrons and protons. There would have been small amounts of protons and electrons, a few positrons and no apparent anti-protons (this distribution will be later explained). These particles created aether waves (ripples) within the field as they spin which are the beginnings of what we now call De Broglie waves and eventually Electro Magnetic (EM) radiation. There were also the beginnings of gravity as described in the Exordium. The densest parts of these fields would have had very fast moving Pan-chain. These volumes could be equated to what today we describe as the ZPF, the zero point field or zero point fluctuations. These beginning fields would be missing much of the energy which today's fields possess, however, specifically high-energy EM radiation and electron neutrinos. Since there would have been no stars, high energy radiation and electron neutrinos also would not have existed as yet. Essentially the fields although dense, would be less energetic. Something like outer space without starlight, no visual appearance to it, simply colorless and black.

Dense Pan-fields would produce increasingly larger Entanglements. The densest and most massive entanglements we will equate with the widely accepted theoretical entities known as black holes.

These black holes eventually would become the atomic particle creation mechanisms of the first galaxies. These Entanglements, and the rate of their growth, would be controlled by the density of the surrounding field and the proximity of other Entanglements.

They would become "low-pressure" areas in the surrounding field having no matter particles in their cores, only compressed field material. These low pressure areas would "capture" field particles by entanglement and radiate little or nothing away.

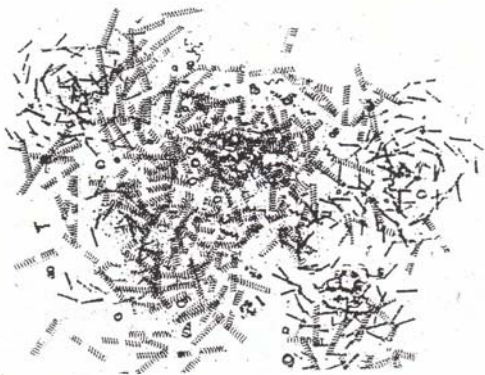
We'll now consider a galaxy model and theory which could explain how a galaxy is formed. How an initial massive black hole could create the matter that would eventually condense into stars forming the first galaxies.

Galaxy Formation, describing the beginning mechanisms of gravity and the creation mechanisms of matter and galaxies; preliminary-Gravity concept; (The Pan-Gravity Theory is in the Theoretical Physics section)

Beginning Pan Engagements and Entanglements



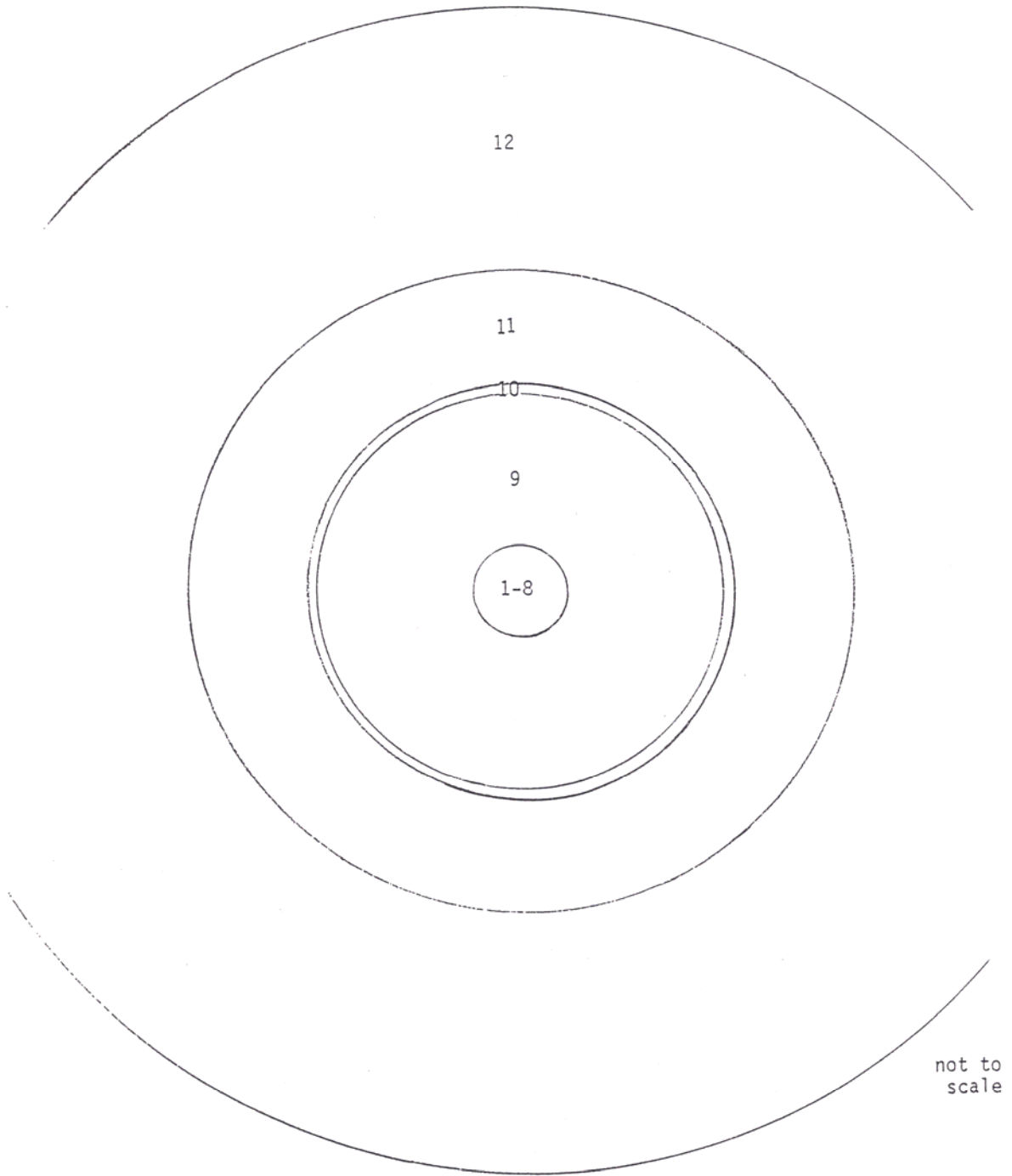
higher density pan-field



lower density pan-field

How galaxies form and how they are organized, starting from these large, dense Entanglements, will now be described in the following galaxy model :

The smallest most dense areas are supposed to give a rough idea of beginning entanglements about the size of an electron, surrounded by mostly Pan-chain Engagements, before the existence of stars or galaxies.

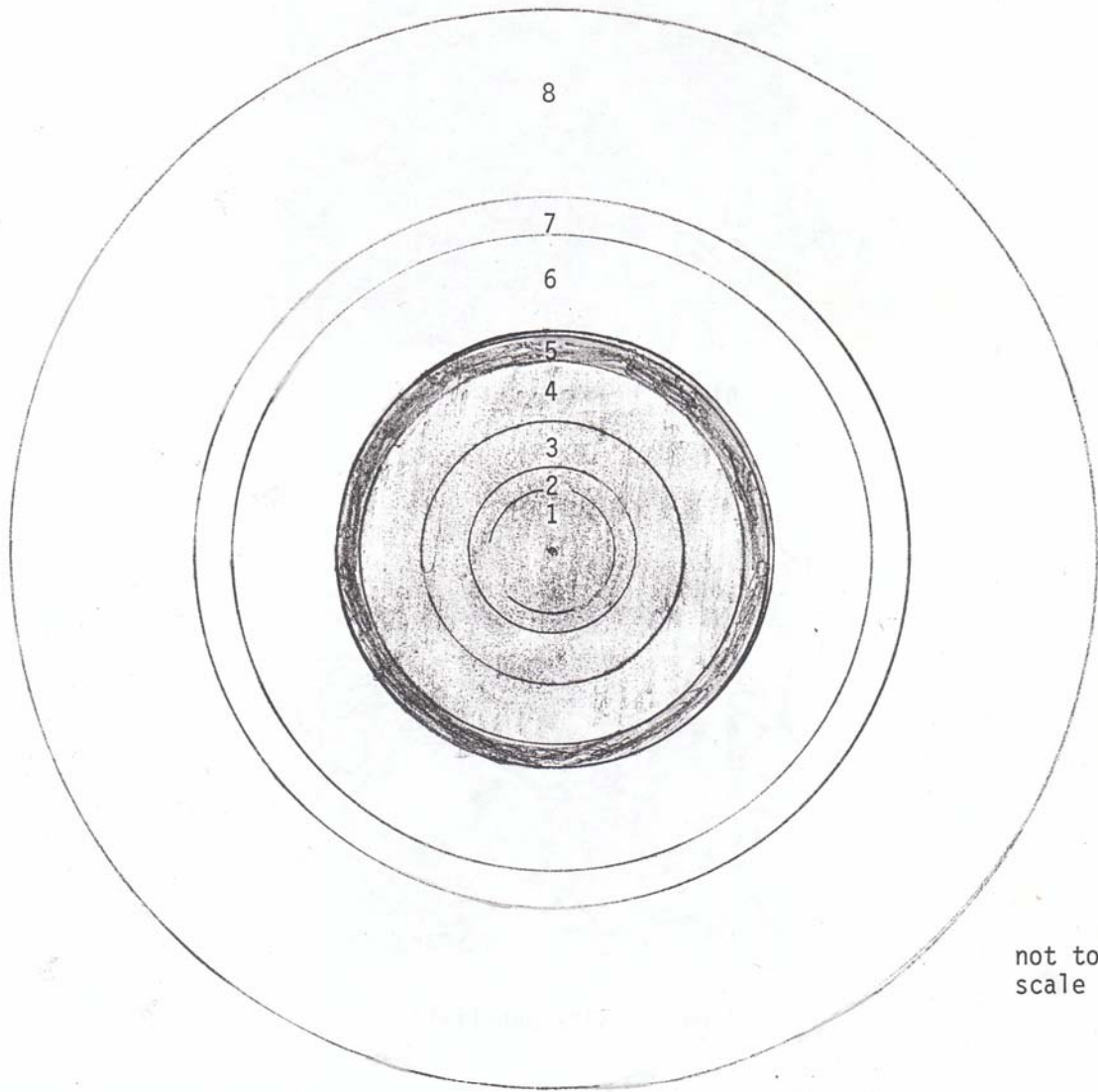


12
galaxy outer core

1 through 11
galaxy inner core

not to
scale

Two dimensional representation of a newly Forming Spiral Galaxy



not to
scale

(the changes from area to area
are gradual and not distinct)

1 through 5
central galactic
black hole

6 through 8
ringed whirlpool
area at galaxy center

CENTRAL GALACTIC BLACK HOLE

Young developing Spiral GALAXY MODEL

Age--roughly 2-5 billion years old, *APT*

Some of the definitions listed below may only apply to this text. Many are words and phrases that have been coined only for the pan theory, and others you may encounter within the text for the first time. Continued definitions and new words, as needed, will be added and available on a “definitions” page. The numbers on the following pages relate to the drawings on the previous pages, 27 & 27-1. There is no intended scale to these drawings. Volumes 1-5 on the drawing are three dimensional areas within the black hole inside of which no EM radiation can escape. Volumes 6-8 are outside the Event Horizon and may be considered as areas with a thickness that would have a rapid orbital momentum. Only a small portion of matter can “escape” from these areas. Volumes 9-16 are areas within the galaxy where stars form. There would be no relative proportions offered for these volumes outside the core since there are too many form variations from galaxy to galaxy.

Note: The following pages, as well as the described areas of a newly forming galaxy have no counterpart in conventional astronomy. Even though some of these areas might be presently observable in our galaxy, this theory/ hypothesis is concerned only with newly forming galaxies which display galactic jets, which would necessarily be different from our own galaxy, The Milky Way. With present observation technologies, the surrounding black hole areas of newly forming galaxies remain difficult to observe. These hypotheses are based upon clues from observations of these galaxies as well as the unique perspectives of the Pan Theory that necessitate this, or a similar hypotheses as to the creation of galaxies. It must also be noted that there is no distinct separation of these areas and there would accordingly be an expected observational variation from galaxy to galaxy. It also should be understood that in many cases it is herein proposed that a three dimensional model would be approximately the same, whereas in other cases there could be a third dimensional variations from this model, especially for highly active galactic nuclei the produce large jets.

(Young developing Spiral GALAXY MODEL continued) numbers coincide with graph volumes depicted in drawings, pages 27 & 27-1 for referral. This is an Ipan hypothesis concerning the structure surrounding and within black holes.

1) **Pan Entanglement area*** -is-- (definition)

The Densest form of matter other than a single Pan; mostly Small broken Pan-chain and tightly packed Pan Entanglements, little motion other than the vibration of unwinding-- no matter particles can exist here because of the huge inflowing field forces. This is the densest solid central regeon of the black hole.

2) **Pan plasma area***: -is--

An area in the background field where Pan engagements dominate --having some motion but with heavy compression forces; some virtual electrons and positrons are momentarily created and disappear, but all pre-existing matter is extinguished, crushed and broken into mostly short Pan Chain.

3) **Matrenaci area*** -is-- (matre= matter, naci= born Latin)

A very energetic and dense area where most matter and anti-matter are accordingly created by the compression of pan-chain into loops.

4) **Interaction area*** -has--

A thick plasma of slowly moving matter/ anti-matter particles; plasma would be more active and fluid, electrons/ positrons would begin to interact and emit E.M. radiation.

5) **Event Horizon of Black Hole -is--**

A large, highly interactive plasma area with extensive particle -- anti-particle interaction. The Boundary, inside of which, vast quantities of matter would accordingly be forced into the black hole and others ejected at high speeds from two very large polar jets coming from opposite poles of the spinning black hole. Few anti-particles escape, mostly positrons. EM radiation cannot escape this area except that created within the polar jets. (the above description of the event horizon for a developing galaxy, is an exclusive hypothesis of the Pan Theory).

(Young developing Spiral GALAXY MODEL continued)

6) **Efferal area** -is— (L. out, al= nature of)

An area outside the event horizon where matter starts to be ionized into active plasma which emits extensive EM radiation. It is dominated by atomic nuclei and electrons.

7) **Anti-particle Horizon** -is—

An area of extensive particle interactions and a fast moving vortex. Any newly created anti-particles that would enter this area would be annihilated. (Most anti-particles that escape the black hole area, do so through the polar jets when they are active. Lesser volumes of all types of newly created or pre-existing particles, may escape in polar emissions on a cronic or continuous basis.

8) **Recycle area** -is—

A hot, interactive, fast-moving whirlpool of stellar remnant material, which, through interaction, pulverizes itself. Many remnant pieces will be pushed into the Efferal area where they will be disintegrated and forced inward, or ejected.

9) **Astranaci area** -is-- (astra= star, naci= birth)

A "Primal Star" nursery: Hot dense, fast orbiting area where the first stars of a galaxy are created and where they extensively interact - ejecting large quantities of stellar remnant material outwardly which become part of the "seed material" for many galactic stars.

10) **Expansion Horizon** -is where--

Most primal stars at this boundary would have an outward-moving orbital momentum.

11) **Inner Core** -is--

A relatively small, hot, densely populated, spherical area of mostly large, outward-moving, newly-formed stars.

12) **Outer Core** -is—

A Large, densely populated spheroid containing stars of varying ages.

Galaxies and the Red Shift

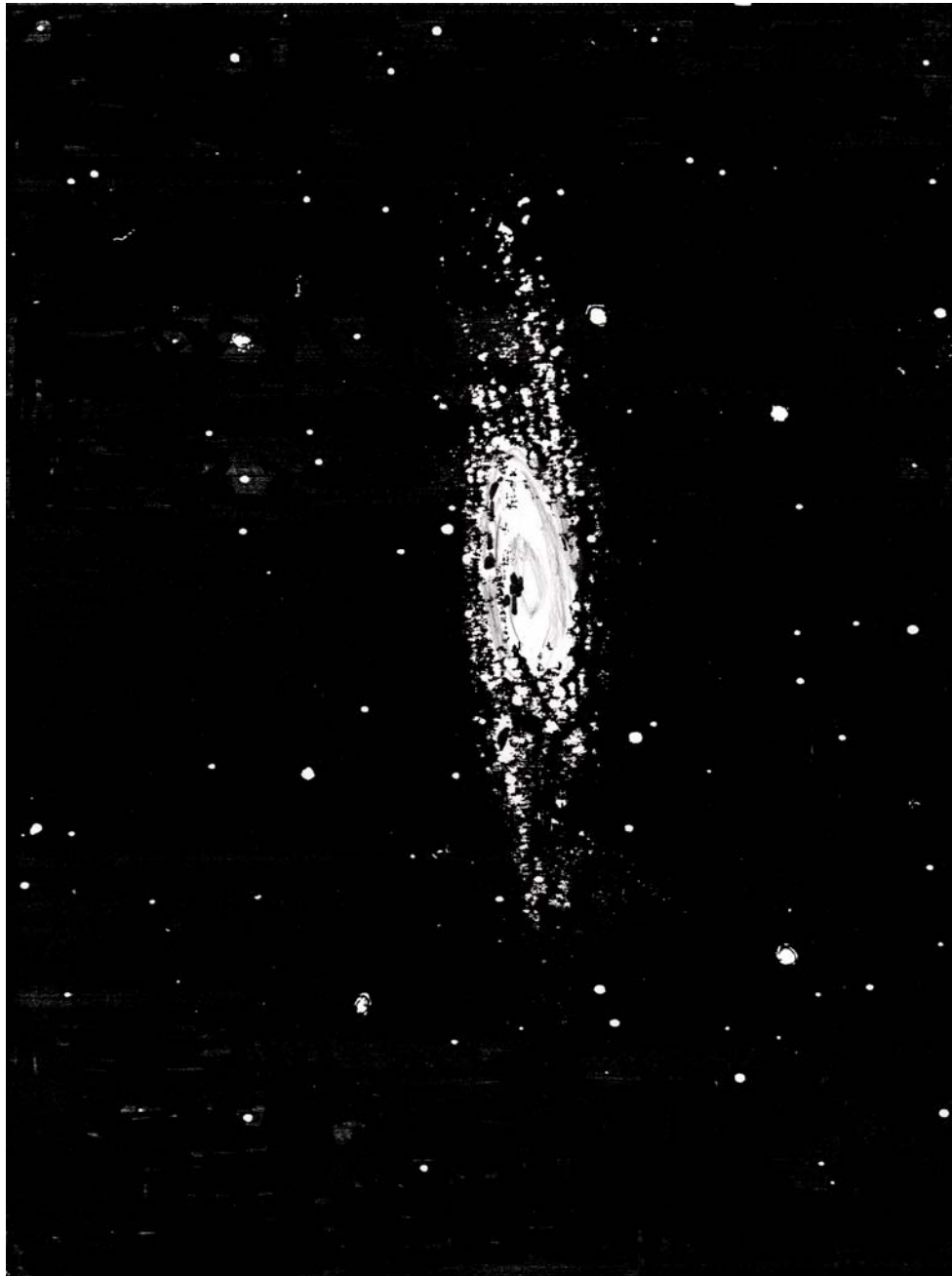
According to the Big-Bang theory, the spectrum red-shift of galactic light is evidence of an expanding universe. According to the measured expansion rate of galaxies, the universe is believed by Big-Bang theorists to be between ten and twenty billion years old. According to the Pan theory however, the observed red-shift of galactic light is the result of Pan being larger in the past (relative to their size today) as well as all matter: protons, electrons, atoms, stars, galaxies, etc., producing observably longer light waves from larger atoms. Therefore, the frequency and magnitude of light would be relative to the time the light was emitted, but everything would have been proportionately the same (details will be presented later in this and other sections). The universe, accordingly, would be very much older than the Big-Bang theory asserts, which would provide ample time for several galactic cycles and the intricate forms of galactic clustering, voids and other galactic distributions we have now observed.

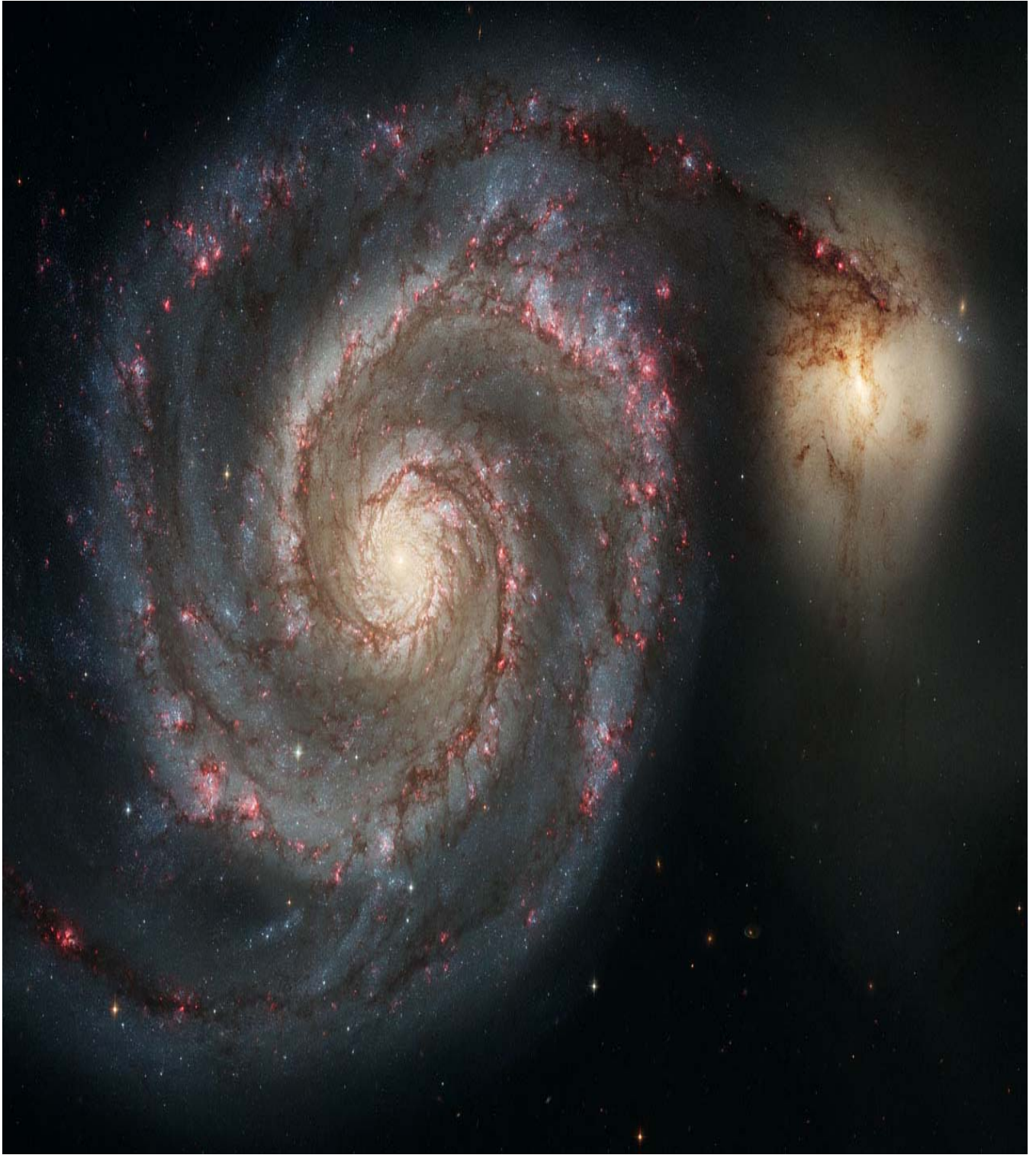
Galaxy Aging

A galaxy would usually expand faster than the so called Hubble Constant expansion rate because of the decreased centripetal pressures upon its stars (as a result of the Pan-Gravity Theory discussed later), because of mass diminution, and because the surrounding field vortex would become weaker as time passes. This expansion would progress as a galaxy ages and the galactic vortex would slowly subside in force. The galaxy's expansion momentum would at this time exceed the force of the inflowing pan-field (centripetal pressure) causing the galaxy to eventually expand at an accelerated rate. This would cause the galaxy's mass to become less centralized. Less of the inflowing Pan-field would move into its central black hole and more will flow into the galaxy's growing stellar remnant fields. As galaxy aging continues, mostly second and third generation stars would comprise the majority of a galaxy's visible body. Some small to average-size stars would not regenerate becoming burnt out stellar remnants. Much of the Central Black Hole would expand, steadily "blowing off" and spinning away its material becoming relatively dormant. It could also be blown apart by supernovae explosions in close proximity as aging continues. The Pan-field pressure within the aging galaxy will increase and the difference in field pressure between inter-galactic space will decrease; eventually most stars would burn out and dissipate.

(Galaxy Formation continued)

A typical Spiral Galaxy





Typical Spiral Galaxy

c

-29B-

Chapter 3– Black Holes and Galaxy formation, stellar types, and anti-matter *APT*

Protons and electrons (as well as all atoms) have intrinsic spin. This is because **their intrinsically twisted pan-chain when formed into a self engaged loop** must unwind. These spinning particles, as well as common hydrogen atoms (a single proton and electron) and diatomic hydrogen molecules (two hydrogen atoms combined), create their own individual tiny field vortices within the surrounding field created by their spin. These vortices are comprised of Pan-chain which continuously push-up vortex waves within the vortex which move away/ are radiated at the speed of light in a form called electromagnetic radiation (EM). As a result of this continuous radiation, a low-pressure area is maintained within and surrounding each vortex. New field material is continuously pushed inward toward these relatively low pressure vortices by the higher pressures of the surrounding field in a continuous cycle.

As we previously discussed Pan Engagements and Pan-Entanglements (black holes) also create low pressure areas surrounding them. For this reason, matter, Engagements and Entanglements that are in close proximity are all eventually pushed together by the surrounding field. This, as we discussed, is the essence of gravity mechanics.

APT. Galaxies today form from vast clouds of atomic particles, atoms, molecules, stellar fragments, planet size material, burnt-out stellar cores, stellar black holes, and material of all sizes which are the remnants of expired stars as well as material from expired prior generation galaxies. All this material, including one or more pre-existing smaller sized galactic black holes, is pushed together by the gravity forces previously described, to form a central core area which becomes very dense. All of the matter within this area will eventually form a single large black hole. All matter as it enters this area will be torn apart into small pan-chain and at the same time compressed into the Pan-Entanglement of the galactic black hole. All matter pushed by gravity into this black hole would have the same fate. After a central black hole is formed, the galaxy would progress in its formation in the manner as we previously discussed, excepting that the pre-existing stellar remnant material would accelerate the process of stellar formation in the new galaxy, conceivably resulting in generally smaller and more rapid forming galaxies today than primeval/ primordial galaxies, even though some large merging galaxies today may be as big as any in the past.

Galaxy patterns and cycles

Our clues are based upon the present-day observation that Galaxies form in clusters. Many galaxy clusters because of their formation proximity, surrounding expired galaxies, form into super-Clusters which in turn form bubble patterns in the overall scheme of the observable universe, which is currently “unexplainable” based upon BB theory.

(Galaxy Patterns and Cycles continued) APT

As previously discussed, once a black hole reaches a certain density relative to the field which surrounds it copious quantities of particles will be formed and ejected by large polar jets as well as forced outward around the black-hole's periphery outside its event horizon. Electrons and protons would be produced and would eventually dominate this area but other particles would also accordingly be produced. Two of these particles which we've already discussed are called anti-particles, positrons and anti-protons. These two particles are also called anti-matter. They are similar in size and form to regular matter except that they form into a loop in an opposite handed manner (as previously discussed), and therefore spin in the opposite direction. When regular particles interact with their anti-matter counterparts, the particle vortices first align themselves then in an instant join together. The looped Pan-chain within these vortices spin in the opposite direction and this contact tears both particles into pieces which are radiated away as gamma rays and other forms of invisible radiation currently called quark jets. The same amount of energy is produced by these particles destruction as it took to create them.

--Anti-particle's (anti-matter) role--

As particles and anti-particles initially interact surrounding the central Black hole of a forming galaxy, vast quantities of matter and anti-matter interact, but little anti-matter is spared from annihilation (discussed in the Theoretical Physics section). Plasmas of primarily matter particles are jettisoned by these interactions/ annihilations, and explosions. Few antiparticles escape destruction. Possibly half of these jettisoned high-speed particles continue unimpeded out of the galaxy into intergalactic space. The newly formed galaxy vortex would not be forceful enough to contain them. Some of the resulting clouds of atomic particles may form small Irregular galaxies surrounding the parent galaxy. By their force these jets would also impart their energy to large quantities of heavier material as they "blow" outwards from the poles of the black holes that created them. Many of the resultant clouds of matter would become low pressure areas in the galactic field and, accordingly, would be kept together by gravitational forces, the inward pushing pan-pressure of the surrounding Pan field into this low pressure area.

Some of the clouds that leave the galaxy with enough momentum will continue in their journey through intergalactic space until they either merge with other clouds of matter and become big enough to cause their condensation and form their own galaxy, or they could invigorate another galaxy.

(Galaxy Patterns and Cycles continued)

As the galactic debris continues moving outwards because of continued Pan-Accretion, numerous galaxies would form in a cluster around the void of the old galaxy. The inflow of the surrounding Pan-field atmosphere will change its direction forming separate vortices for each new galaxy. The continuation of this process will lead to the galactic patterns we see today.

“PRIMAL” STARS (the first stars)

Although we've already mentioned star-formation in general, we'll now look at this formation in greater detail, classifying stars by their "spawning source". In the first primeval galaxies, first-generation stars, we'll call “Primal” stars. These stars form in the "Astranaci" area of the galaxy, between the galaxy's "Expansion horizon," and its "recycle Area." The remnant material from these stars, resulting from many collisions and explosions (supernovae), would be subsequently pushed outwardly into the galaxy by these interactions and explosions. This remnant material, both then and now are the seeds for most galactic stars (discussed later). Primal stars, however, usually form without any large seed material, from large, dense fermion clouds which condense as a "cold" low-pressure field vortex around Pan Engagements and small Black Holes (Pan Entanglements).

A galaxy's first stars: A field vortex moves the material into dense central plasma. When this plasma reaches a critical density of star-mass, hydrogen fusion will begin and the new star is born. Primal stars don't develop significant solar systems because of the absence of large seed material that could become planets, and also because of the close proximity of adjacent stars in this inner core area “near” the central Black Hole.

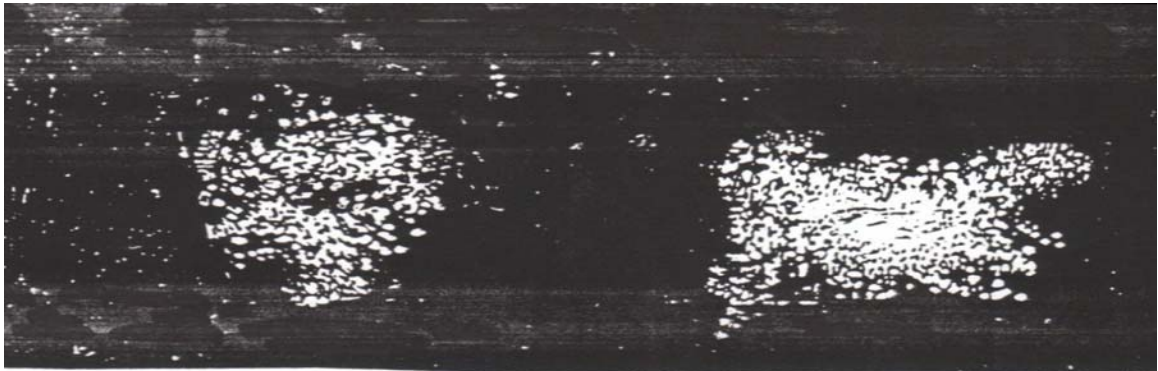
D.S. STARS (Dwarf-spawned stars) *APT*

DS Stars form from a single central core which was the body of burnt-out star, or from stellar bodies known as brown or black dwarf stars. Brown Dwarfs are of two types. The first type consists of remnants of old stars that no longer have sufficient size and/ or fusionable material; although very hot, they slowly cool off. The second type never quite became big enough for nuclear fusion to begin in the first place but they are still very hot. Black dwarfs also come in two varieties. The first types are remnants of first or second generation stars, from the same galaxy, that no longer produce EM radiation. The second types are stellar remnants from extinct galaxies (which may be less common).

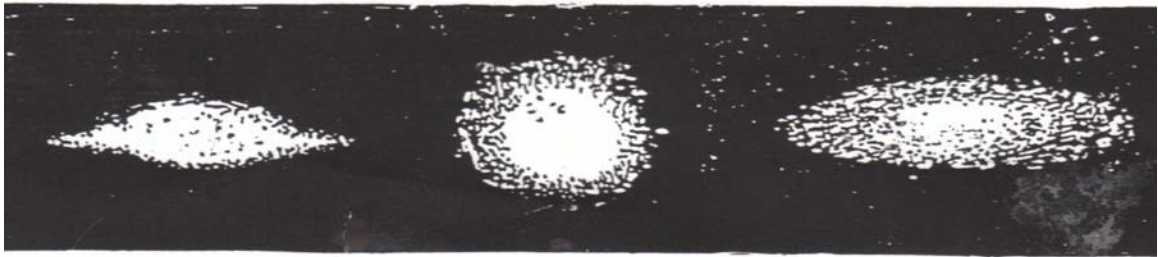
D.S. stars have these characteristics: (1) they form relatively quickly. (2) They can become very large. (3) they often form binary and sometimes triple-star systems (4) many have no significant solar systems. (5) they represent only a small portion of a galaxy's mass.

These stars form quickly because their substantial initial mass accelerates the process. It also takes a shorter period of time for the gravity of the inflowing Pan-field to condense the surrounding hydrogen vortex around this initially large core material. Many will become larger than an average star because of the heat-sink effect of a large "cold" remnant. A large amount of continued gravitational compression of these new materials would be required to heat this remnant into new stellar plasma, which would be necessary for hydrogen fusion. Many of these cores in close proximity, which are in a dense area of hydrogen clouds, would provide the means for the rapid condensation of the field and could produce multi-stellar systems (two or more stars orbit around each other).

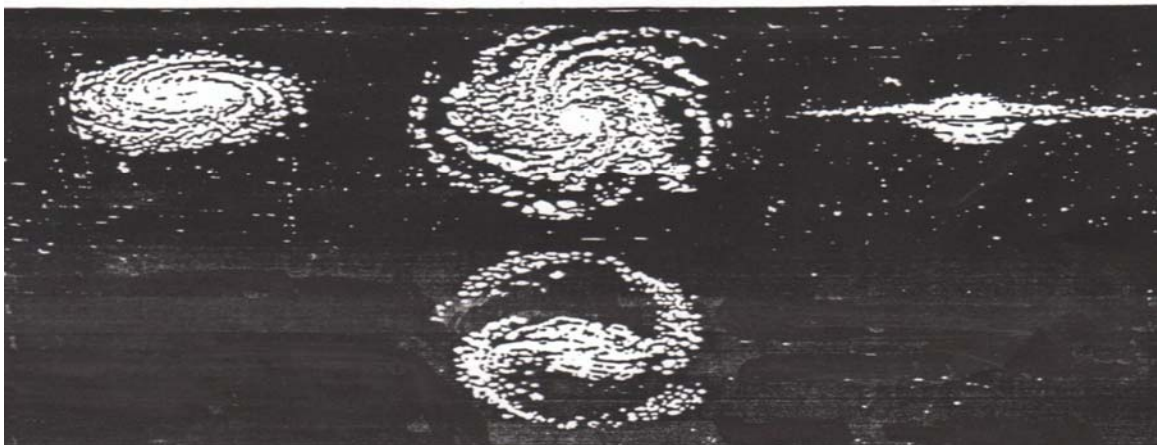
The same amount of mass, but in smaller pieces, would orbit around their mutual center of gravity and would more likely produce a solar system. These are the **R.S. stars**, remnants meaning the cores of burnt out stars.



Irregular Galaxies



Elliptical Galaxies



Spiral Galaxies

Additional definitions

BL LACS -- (BL= Blazar, LACS = Lacertae -- a type of galactic Blazar with smeared lines of atomic absorption; also the definition of conventional astronomy)

Pan Engagements –are springs/ coils of pan chain that by impact or compression forces have been pushed together, resulting in a short lived or long lived condition. Examples of this condition is the “weak force” and the “strong interaction.

Pan Entanglements are volumes of the Densest form of matter other than a single Pan; mostly small broken Pan-chain and tightly packed Pan Entanglements, little motion other than the vibration of unwinding--no matter particles can exist here because of the huge inflowing field forces. This is the densest solid central regeon of the black hole.

Dark matter -- is anything that cannot be directly observed but which causes gravitational influences which often can be observed. It consists of many entities. The greatest quantity of dark matter is **field particles** which are contained within a primary field which causes field currents which are the primary cause of gravity. The second largest constituent would accordingly be **atomic particles**, protons and electrons. The third largest constituent would be **neutral hydrogen** atoms, and then **molecular hydrogen**. Next would be nuclei such as **helium and larger nuclei**, and lastly vast quantities of **stellar and planetary remnants** of nearly countless sizes and varieties of **atomic and molecular matter**, most formed in huge thinly dispersed clouds. Additionally there would be the **vast energy of orbiting EM radiation** which encircles both **galaxies and galaxy clusters**, which also would collectively have extensive gravitational influences. All of these entities are defined herein as Dark Matter because they represent the majority of both matter and its gravitational influences in the universe and yet very little of it can be seen and recognized from our distant perspective. The most apparent gravitational effects, which are currently perceived to be caused by dark matter, are simply a condition of the Pan Theory of Relativity unrelated to dark matter.

Pan Minim -- a single pan; only used where clarity of quantity may be needed.

Galactic Black Hole -- A relatively small region in the center of a galaxy from which nothing, not even light can escape with a gravity equivalent of millions to billions of solar masses.

Stellar Black Hole -- the theoretical remains of a supermassive star where its outer shells are exploded away and its core has collapsed in on itself. No light or matter can escape from this black hole once formed.

Nova -- A nova is a cataclysmic nuclear explosion caused by the accretion of excessive hydrogen onto the surface of a white dwarf star usually from a very close binary companion star often times a red-giant star.

Super-Nova – A huge stellar explosion involving the destruction of a massive star and resulting in a sudden and tremendous brightening, ejecting a large part of the star's outer layers, leaving behind a neutron star or stellar black hole.

Cosmic Microwave Background Radiation (CMB) – low energy radio frequency radiation originating from cosmic sources

Diminution of Matter Principle – According to the Pan Theory of Relativity matter particles and the atoms and molecules they make up slowly become smaller as time progresses.

Pan Doubling Rate – Is the amount of time it takes for a single pan or any quantity of matter the double in quantity. This rate is related to both the rate of the diminution of matter and the rate of pan accretion.

Pan-Accretion Rate -- The rate that pan and matter increase in quantity as time progresses.

‘L;

More definitions used in the text

Pan-matter -- those characteristics of pan field particles which have similarity to matter: form, extension, and capacity, intrinsic internal motion; are pushed by gravity; can have kinetic-like vibrations like heat; exchange energy with other particles, literally their half-life is about 5B years, they get smaller individually as time passes. Unlike matter: Their energy is analog—all minimum energies are possible; their combined forms (pan-chain) change as time passes (their coils change their form, become larger and longer).

Pan Count -- the number of pan within an individual chain

Pan Mass -- (Pan Count), the mass characteristics of pan. A single pan or field particle will get pushed around by the field in a similar manner that matter is pushed around by gravity currents so in a sense it also could be considered to have gravitational mass. Maybe only one ten millionth or less of an electron's mass but still some amount greater than zero. In the same way a photon at rest would not have very much mass (at rest in conventional theory it has no mass or existence) but still mass greater than zero and much greater than a single pan.

R.S. STARS (Remnant spawned) *APT*

These stars form from large pieces of stars that were fragmented by collisions, explosions, and super-nova activity, most pieces originated from the Astranaci area during a galaxy's early formation. They were the pre-existing materials seed materials for the bodies of most galactic stars, their planets, and are the primary source of outer- galactic debris. The greater the relative motion of merging debris, the greater would be the angular momentum of the resulting solar system; the greater its diameter, the greater the chance of forming a multiple stellar system. Our sun and solar system, based upon its size and form would, accordingly, have formed from an R.S. system.

Primordial Galaxies

Are defined as those galaxies which formed in the early stages of the universe, none of which can be observed or exist in today's universe although a few of today's elliptical galaxies have a similar form.

1. most were elliptical in shape primarily containing first generation stars.
2. had a small field vortex and core rotation.
3. formed without stellar remnant material.

The following early galaxies also appear in today's universe

Satellite Galaxies (normal characteristics)--

Were small galaxies surrounding larger galaxies; they had irregular shapes and were similar to the same type of galaxy seen today.

1. had no core. Incorporate atomic particles created by their large neighbor.
2. developed from stellar remnants from the larger adjacent galaxy but were too distant to be incorporated by their large neighbor.
3. were usually younger than their larger neighbor.

Dwarf Galaxies--

Were the smallest types of autonomous, generally irregular-shaped galaxies similar to those seen today.

1. usually were a part of a larger galaxy cluster.
2. had no core, often incorporated atomic particles from large merging hydrogen fields.
3. were small, isolated stellar clusters in inter-galactic space.

Galaxy types/ characteristics *APT*

TYPES OF GALAXIES

Irregular Galaxies -form--

1. when dense galaxies merge.
2. when an old dissipating galaxy merges with an adjacent low-pressure Pan-field and no core develops.
3. when dissipated galaxy-remnants encounter a large hydrogen-rich "cloud".
4. when multiple galactic cores develop in close proximity.

Spiral Galaxies -form--

1. when large fields of galactic remnants encounter a large inter-galactic cloud with a different relative motion.
2. when two or more proto-galaxies merge with different relative motions.
3. when two large fields of galactic remnants with different relative motions merge.

Elliptical Galaxies -form--

Formed more often in the early universe but were smaller than today's versions

1. when a dense vortex from a large slowly spinning galactic black hole with a dense field of galactic remnants which were created by expired first generation stars.
2. when dense compact galaxies slowly merge.
3. when thick Spiral galaxies age -- this is the dominant type today.
4. when two or more aged galaxies merge
5. when a large galactic field develops from vast quantities of pre-existing fermions, often the largest galaxy in the center of a cluster.

Seyfert Galaxies

Have different shapes but all have very active cores which define Seyfert galaxies.

1. are usually young, large galaxies which have a large Pan-field vortex resulting from a massive rapidly spinning black hole and core, usually with massive polar jets.
2. are the same as quasars only closer to us.

QUASARS

(characteristics)

1. Most are distant large Seyfert-type galaxies distinguished by active galactic nuclei (AGN).
 - A. Because of their great distances some of their light has been absorbed and re-radiated by intervening galactic or inter-galactic clouds. This causes the light to vary both in its magnitude and its spectra by adding radio waves.
 - B. Because of their great distances only the most massive of these galaxies can be observed.
 - C. The greater the red-shift, the more its E.M. radiation is magnified by the Pan-accretion effect.
2. Some quasars are relatively close galactic black holes mostly absent of surrounding stars.

GALACTIC MOTION AND DARK MATTER

The motions of individual stars within a galaxy do not follow Keplerean* gravity formulations unless an estimated 90% or more of a galaxy's mass consists of unseen matter orbiting the galaxy. Hence there has been theoretical speculation as well as a search for "missing" matter. This problem A.P.T. has six constituents which control a galaxy's original development, stellar rotation speed, and evolution.

The first is a "pan-field" which is the fast-moving vortex herein described as Pan Fields of aether. The second constituent is stellar remnants, primarily created from expired large first generation stars near the galaxy's core and subsequently spread throughout the galaxies by stellar explosions and interactions. The third constituent consists of copious quantities of fermions which were created by the central black hole and subsequently saturates much of the galactic space. These particles collectively, formed into nearly all the galaxy's stars. The fourth constituents are "brown dwarfs". These are dense proto-stars that didn't acquire enough mass for atomic fusion. A.P.T., galaxies are "full" of these objects. There may be as many or more brown dwarfs as there are stars in a galaxy. But their combined mass is thought to be considerably less than maybe one percent of any galaxy's stellar mass. But these four factors combined only account for a part of a galaxy's observed motion. The fifth and most important characteristic of galaxies which is displayed by their stellar orbital speeds is the failure of General Relativity to predict stellar motion unless dark matter is progressively distributed from the outside of a galaxy inward, reminiscent of Ptolemy's epicycles. This suggests that our current gravity model of galaxies and the universe is incorrect (another model and equations are presented in the Gravity Section). A Sixth factor which determines a galaxy's form is that galaxies, unlike solar systems, develop from the inside out and therefore slowly expand outwards.

*orbital motion formulated by Johannes Kepler and reaffirmed by Newton – displayed in the relative motion of the planets of our solar system.

Conventional Theory

B.L. LACS (B.L. Lacertae; BL is for Blazar, an active galactic nuclei, and Lacertae comes from the first BL lac observed in the constellation Lacerta in 1936. *BL Lacs : Many mainstream theorists and astronomers interpretations now generally coincide with The related Pan Theory concerning the source of these galactic observations .*

1. Are large distant Seyford-type galaxies.
2. Almost all of their light has been absorbed and re-emitted.
3. They have no distinguishable absorption lines (smeared) because of this re-radiation; otherwise they are similar to many quasars.

APT

STELLAR EVOLUTION

Our classification of the origins of stars does not necessarily equate with the characteristics of the star. i.e. temperature (color), size, chemical constituents, etc. which are the classifications used in astronomy. All the different sources of stellar evolution which we've discussed can result, in stars of all sizes and mass. However some, such as D.S. stars, are more prone to accrete a larger stellar mass.

STELLAR VORTICES AND SOLAR SYSTEMS

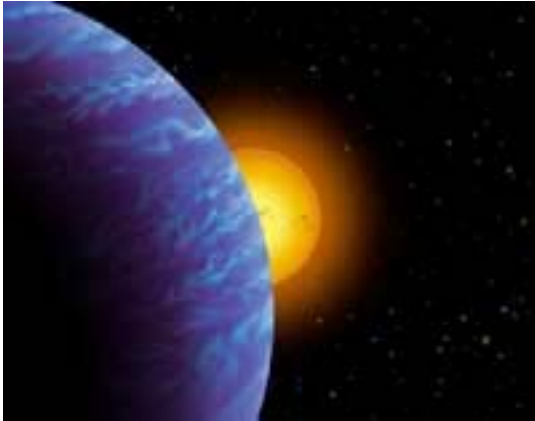
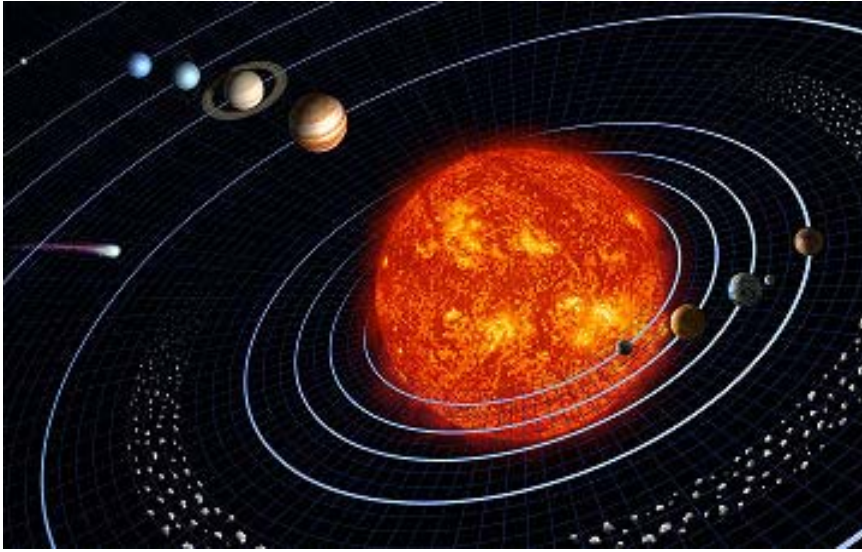
Primal stars probably have the least Pan-field vortex because there would have been little or no matter to divert the inward field flow of gravitational field material. The field inflow would generally be three-dimensional and quasi-linear. Simply from a high pressure Pan-field outside the star, to a decreasingly lower pressure area as the field approaches the star caused by the star's continuous radiation of field material in the form of EM radiation. This vortex motion would not increase the intensity of the inward flow, only change its direction.

If developing stars have a surrounding dense field containing a substantial number of stellar remnants, the proto-star would most likely develop an extensive ring shaped vortex. It would follow that the greater the combined mass of a single vortex and the greater its distance from adjacent stars, the larger and more massive would be the resultant star and solar system.

For a considerable time period prior to stellar ignition as a result of gravitational compression and friction the temperature of the inner solar system would progressively rise. Most of its mass constituents would either remain molten or would molecularly reform. These molten remnants could more readily join together than if they were solid because of the reduced carom effect, and the increased adhesion characteristics of the semi-molten state including the surface tension restrictions of separation following collision. After stellar ignition, radiation would force/ push most peripheral gases away from the new star until the force of the inflowing Pan-field (gravity) matched the outward force of radiation. Until this equilibrium was reached the lighter materials were pushed outwardly by radiation and the heavier materials would slowly be moved inward by gravitational forces continuously increasing the star's mass and temperature. As most conducting gases would move away from the star after stellar ignition, the solar systems newly formed planets would begin to cool.

After gravitational equilibrium, the remaining remnants in the solar system would settle into semi-permanent orbits according to their angular momentum. As the solar system would slowly cool by radiating away its heat, gases such as water would condense around cooling matter. Liquids could accelerate the process of joining together remnant material because of the added mass of the liquid, its surface tension, and by decreasing the carom effect of colliding matter. Eventually most of the remnants will join together forming both planets and moons of the new solar system.

The average Remnant-Spawned stars will probably have solar systems similar to our own. Solitary Dwarf Spawned stars, however, would usually form larger more massive stars. The size of their solar systems could vary from just a few eccentric large planets, to a solar system considerably larger and more massive than our own. The size of their solar systems, like R.S. stars, would be dependent upon the quantity and density of the remnant material that was in their stellar vortex, the orbits of their largest planets, and their distances from adjacent stars. The larger and more massive a stellar vortex is, the more likely a large solar system would result. Some stars for unusual reasons also may have no planets. The most likely candidate for these may be a close binary or trinary star system with eccentric orbits.



NEUTRON STARS, SUPERNOVAS, PULSARS, STELLAR BLACK HOLES APT

According to twentieth-century theory of stellar evolution, a star, like our sun, will end its stellar life as a white dwarf (a small white star). But, stars having a solar mass of 1.4 (Suns) or greater, might end up as a supernova, a neutron star, pulsar, or a small black hole (most would be much larger). A number of these supernovas and pulsars have been observed; but neutron stars and small black holes are theoretical entities, albeit with substantial evidence of their existence. Also, according to prevailing theory, these objects are stellar remnants. I believe these theories provide logical explanations which can be analytically supported. Of these stellar remnants, the one which the Pan theory might shed the most light on are stellar black holes (pun intended).

According to conventional theory, when gravitational forces become great enough, a neutron star will collapse into in dense central area forming a black hole or void. According to Ipan theory, in contrast, there are two additional states of matter denser than a neutron star:

1) Matrenaci Pan-plasma and 2) Pan-Entanglements , as previously discussed, both of these forms of very dense material would be found in large Galactic Black Holes. In Newtonian physics, as well as Ipan theory, something cannot change into nothing (or visa versa). A Stellar Black Hole is the result of a neutron star first collapsing into a thick Pan-plasma of Engagements having a central black hole, retaining the same gravitational force. It could eventually become a large future-generation star, nova, or supernova, of the same galaxy, or it could slowly degenerate from this state by radiation as the galaxy ages, or become part of some future galaxy by an infusion of a merging galactic cloud or by galaxy dissipation.

SMALL BLACK HOLES *APT*

(of non-stellar origin)

Another type of theoretical black hole is the "small black hole." There is no significant evidence to support the existence of non-stellar black holes outside of the theories which predict them. In the Pan theory, there are two possible types. The first one is Primordial. In the beginning universe there were many small dense Pan-entanglements (pages 21 & 22) which could be considered small black holes - (some maybe as small as a baseball). As they grew larger and merged with other Entanglements, most became surrounded by Pan-plasma having a significant Pan-vortex evolving and merging into galaxies. Today probably few of these types of black hole develop because atomic particles dislodge their surrounding engagements. Entanglements now may only form in the central area of much larger Pan-plasma where compression sustains their form and where atomic particles cannot exist because of their density.

Another additional type of black hole in the Pan Theory is a core-remnant black hole. A galactic black hole may encounter a lot of matter in large quantities near the end of its life. Some may be explosive encounters which could break away star mass chunks from the central black hole, which prior to this time had lost most of its orbiting material near its event horizon. Some of the stellar mass pieces blasted away will fall back into the black hole and some will be blown clear. The smaller pieces might evolve into stellar plasma if there is enough material around it, while the larger may spawn supernovae during the galaxy's demise. If not they can have enough momentum to leave the vicinity of the galaxy to become part of another galaxy or become seed material for another forming galaxy.

Now we'll consider the universe as a whole -- describing its "fields-of-influence".

Note: (Galactic Black Holes are discussed in the Galaxy Evolution section)

Chapter 4 – How the Universe functions

APT

Expansion, background radiation, age, size, open or closed

Underlying Cause of Expansion: As we started our journey, one of the first things which we observed was Pan-Accretion. One Pan became two, two became three, etc. As we looked outwardly into the Universe, we realize that we were looking back in time, (because of the finite speed of light). Besides looking back in time we would also, accordingly, be looking at larger atoms and molecules in the past which produced longer EM wave lengths. Going forward in time the increasing number of Pan and matter results in increased interactions which results in the outward expansion of the universe.

EXPANDING UNIVERSE:

The following describes how galaxies expand and multiply as time progresses. There are several driving forces of expansion involved. The most basic of these is Pan-chain interactions; this causes the perimeter of the universe to expand outwardly, atomic-particle interactions, radiation, gravity, and the form and structure of the universe in general. -- The universe's most powerful internal driving expansion comes from galaxy cores which manufacture almost all atomic particles and galaxy expansion forces. Galactic expansion is expressed in a number of ways:

- 1) High-speed atomic-particle radiation from galactic cores --including matter/ anti-matter interactions around the perimeter of a Galactic Black Holes
- 2) Total galactic E.M. radiation.
- 3) Nova and Super-Nova activity.
- 4) Stellar core interaction and ejections during a galaxy growth and demise.
- 5) Galactic orbital momentum and inertia of its mass is caused by the inflow of a galactic Pan-field vortex. The inertial motion of its remnants becomes the galaxy's expansion momentum as it ages.

6) Increased galactic Pan-field density as a galaxy ages -.which decreases the inflow of new material and the outflow of old material. 7) The “Diminution of Matter Principle” of The Pan Theory--as Pan get smaller, but more plentiful, so does the matter it forms, and the space between the matter becomes relatively larger -- taking Pan-mass away from the Pan-"rich" galaxy matter, and returning it to the galactic Pan-field. Therefore, as a galaxy ages, the relative distance continues to increase from the galaxy's stars to its center, whereby gravity is overcome by a galaxies expansion and the galaxy drifts apart. Its stars expire and become intergalactic remnants. Some galaxies, however, get lucky and continue merging with younger galaxies and/ or capturing smaller galaxies, or large intergalactic clouds which would give them a new or extended life. 8) Another primary factor and reason for galaxy expansion is that at stellar distances gravity does not work in a linear manner. Linear gravity instead becomes a perpendicular force at stellar boundaries reinforcing stellar orbital motion – described in the Theoretical Physics section.

THE BACKGROUND RADIATION

The amount of infra-red radiation coming from any source is a measure of its molecular, atomic, and particle’s relative and kinetic motion, and consequently its temperature. The Pan theory directly implies the omnipresence of Pan Fields --a single “Pan atmosphere” everywhere in the universe.

The largest galactic field interactions occur in the core areas of galaxies around the central Black Hole. The smallest is the interaction of the surrounding Pan Field with intergalactic matter. This kinetic motion generates low-frequency fermion radiation. The radiated heat can be measured and would be observed as omni-present background radiation having the same relative motion as the field.

RED-SHIFT AND DISTANCE ANALYSIS

Red-shift analysis, when correlated with other distance measurements such as parallax analysis, comparative luminosity, etc. when they are available, is only a reference indicator, but in most cases at greater distances the red-shift of a galaxy’s spectrum is the only available distance indicator. For distant objects, this use of the red-shift may also be usable for Pan Theory determinations of distance may be estimated providing mathematical adjustments to conventional formulations are made.

Relatively speaking, there would be no difference in spectrum red-shift interpretation whether stars or galaxies remained the same in size and the distance between them increases/expands, or the distance between them remains the same - and stars, galaxies and the atoms within them are getting smaller. A.P.T., this rate of relative change between distance and matter is the indicator of the Pan-Accretion Rate - therefore, galaxy spectrum red-shifts are not Doppler shifts, or an indicator of an expansion constant but instead can be used to estimate distances as well as and the Pan Accretion rate which would be the equivalent of an exponential growth rate or accelerated expansion of space.

Estimating the Pan Doubling Rate

In order to make a rough estimate of the age of the universe, we will first calculate how long a single Pan takes to become two Pan. This is the same amount of time as it takes a single hydrogen atom to double its Pan-mass, or for an entire galaxy to double its Pan-mass. This is the Pan Doubling rate, a function of Pan Accretion.

Before we start our calculations, we will state our purpose: To show that according to the Pan theory, the universe is much older and larger than the Big-Bang theory estimates. We're not suggesting a quantitative value for its actual age or size, only an estimate of its minimum age. To start our estimate, we will determine how big an atom would appear to be if it were double the volume, therefore double its mass. What would its diameter be?

If we doubled the diameter, the volume and mass would increase by a factor of 8 where changes in volume and therefore mass are determined by $\frac{4}{3} \pi r^3$. For the mass to only double, the diameter would increase by a factor of only 1.26 which is the cube root of 2 ($1.25992^3 \dots = 2$). The next step is to find the red-shift that corresponds with a factor 1.26, i.e. this red-shifted spectrum of waves would be 1.26 longer. An atom with a diameter of 1.26 times larger than today's atoms would be made up of protons and electrons (and Pan) all having diameters 1.26 times larger. The wave-lengths of emitted light would also be 1.26 times longer and consequently redder, while everything else would remain proportionally the same.

Estimate of the Pan-Doubling rate

The Pan Doubling rate would accordingly be the same as the atomic doubling rate, and the universe's doubling rate.

To calculate the Pan Doubling rate we need to use the Hubble "constant". A.P.T. there is no constant rate of expansion—but this so-called "constant" could be considered herein as the average rate of the galactic expansion determined by over-all red-shift of galactic spectra.

Conventional theory proposes that these longer wave lengths are due to a Doppler-shift of the spectrum which would occur if the space between galaxies was expanding. If we went progressively farther backward in time based upon this average speed of recession, all galaxies would have been together at one point, between 10 and 20 billion years ago; this, according to Big-Bang model, would be the age of the universe. Although the Pan theory proposes that matter is getting smaller, instead of space getting larger—both are the same relative condition. Space is becoming increasingly larger than the size and mass of existing galaxies it separates.

More recent estimates based upon observations tend to indicate a closing time of closer to 10 billion years than 20 billion years (which would be the range of the possible age of the universe according to the BB model; 13.7 billion years was the accepted age at the close of the 20th century). For this and other considerations, we will use an "closing time" of roughly 14 billion years, as being the most accepted closing time if the universe were expanding (which in this model is only a relative condition since accordingly the observable universe is not expanding). This would be the estimate of the furthest theoretically observable parts of the universe from earth. At a redshift (Z) of 6, wavelengths of EM radiation will be 7 times longer than how they appear locally. This according to the Hubble formula is at a distance of about 13 1/4 billion light years distance from us.*

Calculations can now be made as to a time when according to this proposed model the emitted wave lengths of EM radiation would have been double their present wave lengths. We can now use a calculating technique based on this equation. $X \cdot .933^{10} = \frac{1}{2} X$, or conversely $X \cdot 1.0698^{10} = 2 X$. One of the simpler calculating methods would be to divide time into 10 periods. For each period, a pan will be about 1/13 ($1/13 = .077$; $12/13 = .923$) smaller in the future and about 1/13 bigger for the same time period back in time. ($\ln 2 = .693$; $e^{.693} = 2$. where $x = \text{the rate of increase times the number of time frames}$; $e^x = e^{\text{rate} \times \text{time}}$; the rate is .0693 and there would be in this example 10 time frames).

* the redshifting of galactic light will be discussed later in this text

By the end of 10 periods of time a pan would be 1/8 its present mass but just only half its former diameter—as well as the atoms which it makes up. Therefore wave lengths of EM radiation would also be one-half as long.

How long would it take if we went back in time for matter to have been 1.26 times its present diameter? This is when an atom would have been double its present mass. Mass is proportional to volume for the same element, so with a diameter 1.26 larger its volume and mass would have been double its present size; this is because volume is calculated by $\frac{4}{3} \pi r^3$. The cube of 1.26 is 2 ($1.26^3 = 2$).

Dividing time into 10 equal periods, each would be 1.436 billion years long. 1.0718 would be the amount an atom would increase in diameter every 1.436 Billion years. To find out how long ago it would have been for an atom to have been 1.26 in diameter the related calculation would be 1.0718 to the Y power, where Y would equal the number of periods 1.136 B years that it would take. The equation would be $1.0718^Y = 1.26$; the answer would be $1.0718^{3.333} = 1.26$; this would mean 3.333 periods of 1.436 B years which would be about 4.8 billion years. This would be a rough estimate of the minimum pan doubling rate. Accordingly, 4.8 Billion years ago there would have been half as much atoms (matter) emitting wave lengths and diameters 1.26 times longer. So whatever Hubble constant rate we choose to calculate the age that the universe, we could take 1/3 of that age to find the minimum Pan doubling rate, the atomic doubling time, and the universe's mass doubling rate. This is because 1.26 is the cube root of two. Accordingly, three pan doubling cycles back in time a proton's or atom's diameter would have been twice its present size and 8 times its present volume and mass.

Looking back in time APT

Using red-shift distance analysis this correlates with a distance of roughly 4,800,000,000 light years away (4.8 billion). A.P.T. this would mean that 4.8 billion years ago there were half as many galaxies but they would appear to be twice as massive The atoms within them as well as the galaxy itself would disappear 1.26 times larger in diameter, with twice the apparent mass and E.M. radiation. The volume of the observable universe can be calculated as the volume of a sphere, where the radius would be the farthest quasar observed, roughly estimated to be 14 billion light years away: a sphere of 28 billion light years in diameter (with current technology the size of the observable universe) APT.

As subsequently calculated, a sphere of this size would have an age of about 175 billion years -- which would be roughly the age of 7/8ths of the observable universe. Our previous estimate of one galactic cycle was about 60 billion years; this would indicate there have been roughly three complete galactic cycles within this volume of observable universe but with no apparent cyclical distortion. Accordingly we can observe both old and young galaxies at these great distances but because of the BB premise astronomers can only believe that the most distant could only be “young”, newly-forming galaxies. Although the farthest we might currently observe is no more than, according to conventional theory, maybe 13 billion light years old. The Pan theory predicts that instead we would be looking back in time roughly 3 times longer or roughly 40 billion light years. This however would not be the limit. We, accordingly, will be able to see progressively much further as technology continues to improve. This will require present astronomers and cosmologists to continuously increase their estimates of the age of the universe until finally the BB paradigm will be seriously brought into question.

Evidence of these three previous galaxy cycles would be observable, based upon the formations of galactic clusters. Each cluster of roughly 4,096 galaxies will form collectively around the remnants of an expired galaxy for each galactic cycle of 60 billion years. The average “bubble cluster” would be the result of two galactic cycles and contain an average of $4,096^2$ galaxies, or about 17 million galaxies. The “great wall” would be just a small arc of a third cycle which is mostly unobservable and would, accordingly contain roughly $4,096^3$ including most of it that we cannot see, this would be roughly 68 billion galaxies. It would have taken roughly 180 billion years to evolve into its present form.

Looking back in time (continued) *APT*

There are many variables as we have previously discussed which control the cycle's longevity. A short galactic cycle may produce a small galactic cluster, a longer cycle a super-cluster. Larger, loosely formed galactic mega-clusters, could be evidence of two previous galaxy cycles, could be 10 to 20 times larger in diameter and comprised of thousands of galaxy clusters. Many galaxy clusters will continue their momentum outwardly from their original source -- a single expired galaxy. Very large structures such as "the great wall;" large voids, and groups of adjacent galaxy clusters having the same relative motion could be evidence of the oldest expired galaxies in our corner of the universe, having died and dissipated roughly 175 billion years ago.

Chapter 5-- Estimating the age of the Universe

The "Vital signs" of the Pan Theory.

How long did it take the first "mean-density", galactic size Pan Field to develop from a single Pan?

The observable universe is most likely only a small part of the whole universe. Our part, like all the others, started with a mean-density Pan-field of intergalactic space. Roughly 90% of its Pan-mass was originally made up of Pan-chain of all sizes. The remaining Pan-mass consisted of all possible sizes of field material Engagements and Entanglements.

After galaxies began to form, they consisted for the most part of smaller sized field material, black holes (Entanglements), free hydrogen, molecular hydrogen, electrons and protons. For a galaxy to "condense" from a galaxy-size field, the field's density would have necessarily been roughly 10 times greater than the average intergalactic field density, whereby maybe 80% of the galaxy's field material and remnants would have surrounded the galaxy's visible stellar boundary. Excepting for a larger portion of heavier nuclei (due to stellar fusion), the observable universe would accordingly be similar today.

A mean-density galaxy-size Pan-field has approximately the same Pan-Mass as an average galaxy's stellar mass. However, a galaxy could not condense from this field unless the field density would have originally been roughly 10 times greater than the mean field density as we have previously discussed. This density difference would progressively condense in a central black hole.

We'll start our calculations by using the mass of an "average" galaxy's stellar mass, which has been estimated by astrophysicists to be $4 \cdot 10^{71}$ electrons. We have estimated the field mass would need to be at least 10 times greater for dense galactic clouds, which are the precursors of stars, to form. This density would then, accordingly, be equivalent to $4 \cdot 10^{72}$ electrons. Following below are math calculations for the estimated age of the observable universe. If math isn't your forté you could just peruse the material below.

For a single Pan to develop to this size field the calculation would require continuous doubling every 4.8 B yrs, starting with a single Pan --which was our previous estimate of the Pan doubling rate-- until we have $4 \cdot 10^{72}$ Pan. We would then multiply that amount by the estimated minimum amount of Pan that make up an electron. Granted there's a lot of estimation going on here so that the answer could be off by a factor of 1000 or more but as you will see below even a factor of a thousand would have a small impact on the relative age difference. We will get some ball park figures as to the ages for the observable universe we are talking about if the Pan Theory in general were true.

The base 2 equivalence would be: $2^{239.179} = 4 \cdot 10^{72}$ where 2 to the power of 239.179 represents the number of doubling cycles. There accordingly would be 239.179 doubling cycles that would be 4.8 billion years long. $239.179 \cdot 4.8$ billion years (which is 10^9) = $1,148.059 \cdot 10^9$ = 1.148 trillion yrs. There are roughly a minimum of 540 Pan per electron. $2^{5.755} = 540$; an additional 5.755 cycles of 4.8 billion years = 27.674 billion yrs. = .027 trillion yrs.; adding these together we get: 1.148 tr. + .027 tr. = 1.175 trillion years—now we have how long it took to create a galaxy about the size of the Milky Way – from just one Pan.

There are roughly 300 billion galaxies in the observable universe; this is an additional 38.126 cycles of doubling. $2^{38.126} = 300 \text{ B}$; $38.226 \text{ cycles} \cdot 4.8 \text{ B yrs} = 183.484 \text{ B yrs.}$, or .183 tr. yrs. So we'll add this on to our $1.175 \text{ tr.} + .183 \text{ tr.} = 1.358 \text{ tr. yrs.}$; besides all the galaxies there is also all the empty space which has, as we said, roughly 1/10 the field density of a galaxy and its surrounding halo. There are roughly 8,000 volumes of galaxy-size volumes of space for every galaxy in the observable universe. This calculates out to be 8,000 divided by 10 = 800. There would be the equivalent of 800 more volumes = $2^{9.644}$ volumes, which would be 9.644 more doubling cycles—or: $9.644 \text{ cycles of } 4.8 \text{ B yrs.} = 46.291 \text{ billion yrs. more,}$ or .046 tr. yrs. Adding this on to our total we now get $1.358 \text{ tr.} + .046 \text{ tr.} = \underline{1.404 \text{ trillion years old}}$, the minimum age of the presently observable universe $\pm .144 \text{ Tr. yrs.}$ (for about a 26 B light year diameter).

If we were to take all the matter in the observable universe away some how, how long would it take to create all the galaxies, stars, and matter in the observable universe from the existing “zpf” (zero point fluxuations, zero point field which in the pan theory is the major portion of dark matter)? It is currently believed that atomic matter only represents just 10% of the total “matter” that that exists? A.P.T perspective this percentage also seems realistic even though the reasons for the same ration is a little different. If 100% represents the entire field plus all the matter, stars, and galaxies then 90% would represent a saturated field without matter. 10% of the time of 1.404 Tr. would be 140 Billion years which would be the estimated time that it would take to create all the matter in the observable universe from a saturated field where all the matter was eliminated (from a blank slate excepting for the ZPF). If a galactic, from the last page, is about 60 Billion years long, then we accordingly would be able to see roughly 2 1/3 galactic cycles in the observable universe.

There is presently no known way A.P.T. we could estimate the size of the whole universe, but if it were arbitrarily a billion times bigger than we can observe this would only be (approx.) 30 more cycles, 144B yrs, or .144 tr. yrs. more. If it were a trillion times bigger than the observable universe now, this again would only be about 10 more cycles another .048 tr. yrs. more. For every 1000 times larger in volume, assuming the same density, it would be .048 tr. years older. Or if there were more than the minimum of 540 pan per electron, there were instead 540,000. We may ultimately be talking about an age for the entire universe as being between 1.5 trillion and 2 trillion years of age. Of course if the pan doubling time were twice as long, the age of the universe would be twice as old

How many cycles of doubling then would it take to produce 1000 times the size of the presently observable universe: the calculations would be 1.452 trillion years; divided by 4.8B which is -- $1.452 \cdot 10^{12} / 4.8 \cdot 10^9 =$ about 303 total cycles of 4.8B years each. This would be equivalent to 2^{303} or about 1.63×10^{91} total pan.

Chapter 6– The Universe, space, time and their inter-relationships: The “defining dimensions” of the Pan Theory

SPACE

At the beginning of our journey, we defined space for our first Pan, and eventually a string of Pan which we called a Pan-chain, but how do these definitions relate with the universe in its complex totality as we know it today? Space we defined as “the volume which Pan-chain encompass.” This definition was developed for our early journey, but do we need to improve this definition so as to include the “expanded” reality that we have described to this point? We could now consider Space as -- any measurable volume of “void” which "Pan-matter" encompasses, which also could be described as an extension of that matter. Putting together an augmented version of our previous definition we will now define space as: Any measurable volume, distance, or area describing the relative positions of matter.

THE UNIVERSE AND SPACE

We stated in our model of the universe that it is generally spherical, finite in volume, and at the present time could be considered relatively constant regarding its overall size and the comparative size of its less dense volumes of the outer universe as described in previous chapters. Its spherical-shaped boundary is still expanding but at a decreasing rate -- approaching a mathematical limit.

As we have previously indicated, gravity may best be described as a pushing force. (Gravity is more extensively discussed in the physics section). As a result of Pan-pressure, which also causes this pushing gravity, the outer "perimeter" of the universe, which is not restricted, will still expand. Individual Pan-chain will move outwardly when pushed by other Pan-chain increasing the diameter of the pan-field (AKA zero-point fluctuations/ field, ZPF). However, this expansion is proportional to the size of the Pan within the field - which decreases as time goes forward. So the expansion of this perimeter, and therefore, the universe as a whole, although continuous, expands at a rate which accordingly would be a decreasing mathematical progression - such as the progression: $1/2 + 1/4 + 1/8 + 1/16 \dots \dots$. Even though this sum would continue to increase indefinitely it would never reach its limit of 1. In the same way the universe could expand forever while approaching a limit to its "volume" which it could never exceed. In other words, the universe (according to this theory) would have a limited maximum potential size, and accordingly would be “closed.” Space could not exist outside of it according to our definition of the word “universe.”

THE WHOLE UNIVERSE -- refer back to the drawing on the previous page. The numbers below refer to the areas/ volumes denoted in this two dimensional drawing of three dimensional space. The words describing these areas/ volumes are defined both here and in the previous “definitions section” of this chapter.

- 1) Primasphere -- High-density sphere of Galaxies including the Milky Way.
- 2) Stellasphere -- Less dense volume of widely disbursed clusters of mostly Elliptical galaxies, Satellite galaxies, and Dwarf galaxies.
- 3) Molecular-sphere -- Contains a low-density pan-field containing mostly atomic particles, with a small portion of molecular remnants.
- 4) Proton-sphere -- contains a low-density pan-field containing widely disbursed protons and electrons with a trace of alpha particles, and anti-particles.
- 5) Electron-sphere- contains a low-density pan-field containing only electrons, with a minimum photon radiation.
- 6) Photosphere-- contains a thinly disbursed pan-field, with minimal E.M. radiation from the Electron-sphere.
- 7) Panasphere-- contains a thinly disbursed pan-field containing mostly very long, uniform-sized pan-chain and nothing else.
- 8) Universe boundary -- nothing would exist beyond this “slowly” expanding realm, not even the ZPF.
- 9) Universe Limit -- The mathematical Limit which the edge of the universe could never reach. (Details page 45)

---Pan-vector sphere -- contains the inner Universe, called the Inner Cast. All pan-matter within the Inner Cast is affected by gravity, with an inward influence.

---Inner Cast-- 1 through 5+ on drawing.

---Outer Cast—The Outer Universe would accordingly be a vast volume containing pan-chain with little field interactions, having a relative motion in the Panasphere, greater than the photon velocity (the speed of light) in the outer-most boundary of the Photosphere. As a single field, it has little or no real motion. Scale: to have an idea of the scale involved here, just the Primasphere alone would accordingly be a minimum of hundreds of billions of light years in diameter A.P.T.

DESCRIPTIONS OF REALITY *APT*

What about the hypothetical area beyond the limit(s) of the universe? We can certainly see it in our mind's eye. A.P.T. this area is only imaginary, having no existence in a finite reality. It could not exist according to our definition of space, which is: A measured volume which matter encompasses, an extension between inter-related matter.

What about the space within our universe? How should it topographically be defined? X, Y, Z - three physical dimensions; or X, Y, Z, and T, three physical dimensions and time as the fourth dimension called Minkowski space – or a fourth dimension of warped or curved space?

X, Y, Z and X, Y, Z, T coordinate systems have both been shown to be indispensable analytical tools. A.P.T. none of these dimensions have an independent existence from matter, they're only a good man-made descriptive system of measurement that enables calculations.

The theories of fourth-dimensional physical space, curved or warped space, are not part of The Pan theory, because space, by the definition above, can be considered only a simple extension of matter, by whatever system we choose to measure it. It is the distance between physical entities, the measured "void", and the less-dense areas between denser areas. Space could be considered the simplest dimension of matter and therefore reality.

TIME

As we did when re-defining space, we started with our previous definition of it. Our previous definition of time was concerned with a relatively small quantity of pan-chain. We will now re-define it as it would accordingly relate to the entire universe. A unit of time was previously given as: One complete revolution of Pan unwinding. In modern physics, time is measured by atomic clocks which measure revolutions of electrons around the nucleus of atoms. In Pan Theory, electron motion and nuclear particle spin are directly related to the rate of Pan unwinding. Therefore, a unit of time, as we have defined it, is a similar commodity to conventional time - just a smaller unit of it. But, to provide a broader definition, we have asserted that: A unit of time can be equated with a change in something being measured and would be relative to its surrounding field, therefore, we will now define time as: A measurable interval of relative motion, which is our new definition of time, very similar to our previous definition. To provide the simplest understanding of time: Time is equivalent to change and nothing more. It is perpetuated by the innate potential energy of matter (electrons, protons, and their conglomerates: atoms) to spin.

Time and the Starting Assumptions

---Assimilating the initial assumptions---

The definition of “assumption” being: assertions made without theory or evidence presented to support them, usually presented at the beginning of a hypothesis or theory to facilitate their initial explanation. How about finite time and the other two assumptions made at the beginning of “the journey”? Is there any theoretical or evidentiary support for these three initial assumptions?

Initial assumptions:

1) The universe is finite in time and space. 2) The universe started (in time) as a singularity 3) At any point in time (time frame) including the beginning time frame, something can't come from nothing?

--- (1) **Time** has been defined as a measurable interval of relative motion – the motion of matter or pan-matter. Time was theorized and accordingly defined as only the relative change or motion of particles. **Space** was defined and theorized as an interval or extension between matter. Both were theorized by the Pan Theory as having a finite beginning starting from the first Pan. Reasons have therefore been given to support this theory so that, accordingly, it is no longer needed as an assumption since it has become part of the theory itself. Following the Pan theory back in time there would eventually be a point in time when the very first change occurred. We could say that this occurred exactly at the time frame $T=0$. At time Zero the volume of space was the volume of the first entity, which accordingly was a single Pan.

--- (2) Our journey, as well as --the universe accordingly, started as a single entity -- a singularity. The theorized character of this entity has been described, including its solitary theorized finite beginning. A finite beginning, according to the dictionary definition, cannot have a cause. Theoretical reasoning has also been presented why **something cannot come from nothing**.

According to our theory so far, the universe began as a single entity. It seems unlikely, but still possible, that this beginning entity started from two or more constituent parts instead of just one, or that some other conceivable beginning like: there could have been many strings which make up a single pan which themselves would require billions or trillions of years to evolve into a single pan, or that the original entity and its replication mechanism(s) could have been quite different. All these other possibilities could be considered alternative Ipan theory as long as the primary tenets of the Pan Theory (the single paragraph at the beginning of the text which is the entire Pan Theory) were not altered. Other conceivable assumptions such as all that we perceive is a virtual reality, are not seriously considered.

(Time and the Starting Assumption continued)

--- Definitions and explanations of reality have been given -- i.e. those things which can exist. All of reality A.P.T. is either pan-matter or the interactions of pan-matter. All of these combined forms can be traced back in time to a single “simple” entity. "Nothing without pan-matter, A.P.T.. is not a possible state of reality. This has already been proposed and is no longer something assumed.

When included with its definitions and propositions, the Pan Theory stands as a complete theory without “a priori” assumptions, right or wrong, everything is explained and has supporting logic and evidence. Some of the most prominent evidence like the observed galactic red-shift would necessary have to be the same evidence that is also used to support alternative theories like the Big Bang, the Steady State theory, and the Plasma Universe theory.

Of course there will always be unspoken assumptions, like assuming that observed reality is a valid perspective, separate from a dream or virtual world somewhere. This is a scientific theory being proposed, religion, metaphysics or seemingly unrealistic possibilities like the above are not considered or discussed.

It may be considered just semantics but the Pan Theory asserts that it is based upon “no assumptions”-- like all other theories seemingly must necessarily have—especially the “a priori” of forces, Gravity, Magnetism, the Strong Force, Weak Force, Strong Interaction, Dark Energy, etc. The three assumptions that were originally made when starting The Journey were also not considered assumptions by BB theorists-- they are considered, by the same logic, part of the theory itself, i.e. the singularity theory and the finite aspect of time are all mainstream theory with evidence to support these concepts (there are some non-mainstream alternative BB theories of course). The third “assumption” is also a mainstream principle, or “law” of mainstream Physics-- **that something doesn't come from nothing.** There is a “mountain” of information/ evidence to support it including countless observational information, the first and second laws of thermodynamics, $E= mc^2$, etc. A theory would need new physics to go against this principle. Assumptions, according to the definition which was given, would only be needed if there was no explanation for their existence or source within the hypothesis or theory itself.

TIME AS A WHOLE APT

What about time as a whole? Can we describe it, as we have discussed on our journey and “postulated in detail?” The universe is finite in age and therefore finite in time. It had a beginning but it would have no end and could be described by a non-ending vector. Considering this vector of time--could it run backwards? Absolutely not, no more than one can undo what has already happened. Pan unwind in only one direction. This results in an irreversible increase in the number of Pan within the universe and an unchangeable vector of the infinite potential of time. Our intent in the following few pages is to answer some of the biggest questions of all times. To do this the “ground work” may seem to be elementary and simplistic as well as, to some extent, a reiteration of premises already presented, but it seems necessary to have complete clarity of simple theoretical possibilities not discussed, so that the Pan theory can but put in a comparative light as far as other theories are concerned, that a logical foundation is laid for these well-know quandaries of the ages which will presented in the next few pages.

COMPARING DIFFERENT THEORIES OF TIME

Our symbolic representation of a Universe of infinite time would be a line which continues indefinitely in both directions. We'll say that the infinite past is to the left and the infinite future is to the right. An infinite-time based universe would have had no beginning or end of time to explain. *All possible time schemes will be described as comparisons for further discussion.*

Infinite time below

Past <-----> future

A universe with a finite beginning and a finite ending could be symbolically represented by a line of a specific length shown below.

Beginning •-----present•-----end

The above and other conceivably time schemes, are not part of The Pan Theory and therefore will not be discussed any further in this text but they are still real theoretical possibilities of time, alternatives to the Pan Theory as far as time is concerned.

(Finite time continued)



Finite time, on the other hand, could be represented as a vector indicated by the arrow above which represents an unending future. This vector starts at a single point and extends infinitely in one direction.



Above, time starts at point A to the left and extends infinitely to the right as indicated by the arrow. For any point in time B, the totality of the entire previous time interval would be represented by line segment AB, and the future after that would be represented as the continuing vector to the right starting at point B. We will define this vector as, not only time, but as the history of the entire universe APT. Point B for instance would represent a “picture,” a point in time, or time frame of what the universe looked like at that particular moment in the past.

For any commodity, “infinite” would be for most, a difficult concept to understand; but to be finite, is arguably an equally difficult concept when it comes to time - yet the universe must be one or the other. Either the universe had a beginning, or it didn't. There are no other possibilities. However when people talk about a finite universe, a language problem often develops, a problem inherent in our written and spoken language--a problem that arguably can distort perspective and therefore logic. This problem however is not inherent in symbolic representations. For example --



For any point in time, B or C, or any time interval BC, we could ask the same questions as any good newspaper reporter, or scientific investigator: What? When? Where? Why? How? Point C for instance might be what we are now observing.

Where or when is it taking place relative to the whole scheme of time? How did it happen? (4) Did it happen? The last two, “how?” and “why?” and additionally, “where did it come from?”, are all questions regarding time-sequenced events: Any answer to these questions requires a cause-and-effect response. In the absence of a "purpose," these are the same questions -- that is, how, why, and where requires essentially the same answer.

(Examples: How did the matter get there? Why did the matter appear just there, why not somewhere else? Where did it come from?)

If we only considered point A, however, analysis, including all the various possibilities could be considered relatively simple. We would describe the changes in the Pan as we did at the beginning of our journey. The questions; where? or when? would not be relevant or valid at the beginning. Where was the pan? At Point A, the first Pan was the entire universe. It would have had no relative position in an overall time (or space) scheme. When did this event take place? No time had yet elapsed as our Pan was first starting to unwind which was the beginning of time. So, again, the first event would have had no relative position in an overall time scheme.

“How or why did the Pan get there?” “Where did it come from?” or “What was there before that?” These are all cause-and-effect questions. The initial Pan would have had no relative position in any time scheme, a relative position in a cause-and-effect sequence or space at the beginning of time frame. These questions would be like asking – What change came before the first change? or, “where in space did the universe start?” In other words, these questions, when referring to beginning Point A, are flawed in their logical makeup. Any “answer” to them would contradict the meaning of a finite beginning. The definition for the word "finite" refers to a limited quantity. Time has been described for the Pan Theory, in this section, as a vector having a limited number of cause-and-effect sequences. In the case of space it was defined as the distance between matter. In formal logic these types of questions are called "Implied statements of a false premise." Also in formal logic they are collectively called "FALACIES OF COMPLEX QUESTIONS."

If we use the definition of the word universe to mean everything that exists including, spiritual entities, other universes etc., then we could logically assert the following: By any dictionary definition, neither a finite nor an infinite universe could have had any possible cause unless the definitions of these words were changed. Any cause would contradict the meanings of infinite or finite as described by our previous examples of the theoretical possibilities for time.

However, for beginning Point A, we could still ask the “very difficult” but logically valid question:

What would have been the first entity that started the entire universe, which has been called herein the prime mover?

A.P.T. the answer would be:

A SINGLE PAN WITH THE POTENTIAL TO CHANGE!

This single entity would also be the exact same entity or particle which would accordingly be the building block of all matter, for all times. Leon Lederman has “humorously” dubbed such a particle “the god particle.”*

*Leon Lederman, the Nobel laureate, wrote an overview of modern physics called “The God Particle” which would be a single particle that would be the fundamental building block of all matter. As far as a beginning particle, most physicists ascribe to the BB entity which would, accordingly be the compression of all matter and energy that exists into a single beginning “particle” which would have been the beginning of the BB.

Section Two, Theoretical Physics

Chapter 7 --Closer to home; the foundations of Physics--

This section as well as the Cosmology section may sometimes seem as if there is no common thread, but theory in both sections might be considered essentially field theory.

We've made the journey and have taken some tours of interesting places in "our universe". Because our perspectives are different from the normal way of looking at things, we may be able to see things which have been hidden from those who have gone before us. One of the main perspective advantages we have over the other "tourists" is that we have developed a different theoretical insight into fields and their mechanics. Field-theory is a necessity part of modern physics, and especially necessary in the Pan / Ipan Theories. There is arguably more evidence to support the existence of fields such as the long observed ZPF, than there ever has been. Although the Pan and Ipan theories, for the most part, could be considered field theories which are quite different from other field theories in conventional physics; both believe that fields form the foundation of reality, whether particles, pure energy or both.

By using "a Single a priori Force Theory" -- called the Ipan Field Theory*-- we will consider how the Pan-field perspective relates to an established functional system: the science of Physics. This could be considered a "local tour closer to home."

* Ipan Field Theory: the physical, functional, interpretive, and definitive characteristics of a Pan Field -- generally explained by the Pan Theory of Relativity and the Ipan Theory of Pan Configuration at the end of this Section defined by a single force of self perpetuation.

Section Two Theoretical Physics

MASS AND ENERGY—definitions

1. Gravitational Mass - atomic or molecular mass. A gravitational field will cause it to move toward a center of gravity.
2. Inertial Mass - its atomic/molecular mass times its inertia- which is defined as its relative motion to the gravitational field surrounding it. Or, it could also be defined as its gravitational mass times its energy of linear motion. This would be the same formulation as Momentum (M) -- where $M=mv$, mass times velocity. Accordingly, a smaller mass with greater speed would have the same impact strength (mass effect) as a larger body with a lesser speed.

APT

3. Pan Matter-- the total number of Pan within any designated entity regardless of its configuration or relative motion.
4. Virtual Pan Matter-- (used for virtual particles) is the estimated count of its Pan-matter, the time of its estimated spin (existence and its proposed estimated velocity (if any) -- to be used for particle interaction analyses.

The first two could go without further explanation. They have been used in classical physics since Newton first described them. Although these definitions might differ to some extent from the classical definition, their general application would remain the same.

The second two are unique to the Pan theory, (3) Pan-matter refers to the actual number or Pan count contained within matter, or the Pan density within a field. As to (4) Virtual Pan-matter, in the related Ipan Theory, so-called virtual particles that seem to appear momentarily and then disappear in particle physicists laboratories, appear to be the same as real particles that have both Pan-matter and inertia. For a brief moment, usually caused by an interaction with matter, they form into familiar particle configurations, but in a fleeting moment they disappear probably because of some deficiency in their physical make-up. Their energy of motion or spin would be absorbed by the field. Their unlooped configurations would again become an inconspicuous part of a field of pan matter.

Theoretical Physics Index (what you will see in the following pages)

- 1) Aspects of the Pan Theory involving new Physics.
- 2) The Pan Theory concerning Force Fields and the processes and/ or make-up of: Pan Gravity; perspectives and mechanics; Geo-magnetism; Particle Vortices and wave mechanics; Magnetism (magnetic forces); Static electricity; electrical induction; Nuclear Forces (Strong Force, Weak Force, Strong Interaction); Quantum configurations; Atomic and Molecular cohesion and bonding; Atomic Theory and an atoms construction; Electron Motion; “Paring” (a process exclusive to the Pan Theory); Anti-particles/ anti-matter; a Single-force Field theory; bindings within the nucleus; isotopes; nuclear fusion/fission; Particle spin; other revealing observations in Physics.
- 3) The Pan Theory as it Relates to both Mainstream and Developing theories in Physics:
 - Newtonian Physics
 - Einstein and Relativity
 - Quantum Mechanics and Theory
 - Quark theory, String theories
- 4) The Pan Theory of Relativity
- 5) Predictions
- 6) Pan configurations

-- Summaries of Logic and Concepts of the Pan and Ipan theories --

Explaining the Pan and Ipan Theories in-a-nutshell; Evidence, predictions and Logic; Kinship of Theory; terms unique to the Pan and Ipan Theories; summary of Concepts, Questions & Answers; Lighter perspectives.

Chapter 10 ----Theoretic Physics Section----

Definitions/ descriptions used in this text *APT*

Stellar Black Holes and Black holes in general – are very dense spherical, highly compressed forms of dark matter which are herein also called Pan Entanglements. Stellar black holes can go down in mass to maybe 3.4 solar masses. Galactic Black holes can contain as much as billions of solar masses and have been found to be statistically proportional to the size of the galaxy. Black holes would not accordingly be the dimensionless points proposed by many mathematically related theories. A.P.T. both bigger and smaller black holes than the above could exist.

Galactic Black Holes -- Are usually at the centers of large galaxies which are the source of the creation of most all matter. Their centers are herein described as a highly compressed, very dense spherical forms of highly compressed dark matter which is herein also called a Pan Entanglement.

Novas and Super-Novas – are herein defined the same as in conventional theory.

Background Radiation – the Micro-wave background radiation that has been observed to be radiating generally from all directions at about 2.7 degrees Kelvin. In the Pan Theory the original heat, which is the source of this radiation, was star light.

Diminution of Matter Principle – roughly every half million years matter decreases in volume by about 1/18, by the same proportion it increased in number. This is directly related to the pan doubling rate defined below.

Pan Doubling Rate -- roughly estimated to be every five billion years a single pan or any given number of pan, as well as matter, will double in quantity.

Pan-Accretion Rate – the rate that a single pan will be created from a pan chain of a given length that can be calculated directly from the Pan Doubling Rate.

Space-Time – An inter-related multi-dimensional, measurement, and continuously extending condition of Matter. It is the amount of space measured in a specific time frame which would continuously change as time progresses.

In this type of theoretical setting, the probabilities for a field's potential to generate virtual particles can be calculated by using the Pan theory. The use of this description of mass, needless to say, will develop no faster than the investigation of field theory as a whole, and the related Ipan theory in particular.

ENERGY, LINEAR MOTION, VELOCITY, HEAT

1. Inertia (speed)--distance traveled per unit time relative to a gravitational field. When it's not combined with mass, linear motion can be categorized as a separate entity --the energy of inertial motion relative to a gravitational field, commonly called speed.

2. Kinetic motion - heat

Heat is another form of energy-of-motion. The almost universally accepted Kinetic theory of heat states: All matter is made of molecules, and these molecules are made up of individual atoms. Heat is the extent of these molecules' or individual atoms' random motion which subsequently emit EM radiation within the range we define as heat. This theory has been known for about a century and has been an invaluable tool to physicists.

The Pan theory agrees with the general tenets of the Kinetic Theory of Heat. It has two well known facets: molecular oscillating motion, and the motion of individual atoms and particles within a plasma (like the sun). In general physics, heat which is this kinetic motion is transferred in three ways. First by conduction, one fast-moving hot source will motivate a slower-moving cooler object by contact -- and Kinetic Motion, called heat, is transferred.

(a faster moving molecule transfers motion to an adjacent slower-moving molecule. The second molecule becomes more agitated, therefore hotter, more rapid in motion, and/ or vibration. The first molecule would transfer some of its energy of motion and becomes less agitated and cooler. This process would continue to all matter in direct contact-- the denser the material the faster this process will occur—which is called the conduction of heat).

Convection-- is the same process as conduction except that air, other gases and fluids, are an intermediary, median or conductor for heat transfer.

Radiation-- The last type/ form of heat transfer is EM radiation - like the transfer of heat or light from the sun to the planets or the heat from a light bulb. This occurs when electro-magnetic waves leave a generating source at the speed of light and are radiated away.

The Pan theory generally agrees with these long-accepted principles of heat transfer as described above excepting by perspective. The Pan theory adds the additional constituent of Pan-field kinetic motion, which also in cases of a very energetic fields, could add to the Kinetic motion of matter within the field which is a similar process to convection which will be discussed in further detail in the Gravity Section (as well as the previous section The Journey).

3. Field Motion: *APT*

Each planet-size gravitational field could be considered a separate Pan-field by definition. They could be divided up into volumes of gravitational influences; i.e. the earth, planetary, stellar, galactic, mega-galactic (galaxy clusters), super-galactic (large structures containing up to roughly 4 billion galaxies each). All are structures whose field motion is controlled by a common center of gravity--and therefore, can be considered/ analyzed as a single gravitational field. Field motion, however, is also controlled by the relative motion of its matter constituents which sometimes--because of reasons previously discussed in the Galaxy chapter—can move away from their center of gravity. Any portion of a field(s) or any specific volume of space might also be considered as a single entity for the purpose of analyzing the relative motion of its constituent parts.

APT

This field motion (Pan-fields) directly interacts with matter and influences its motion. It can be categorized as linear, vortex, or kinetic motion (similar to the Kinetic vibrations of heat), or wave motion. The first two types create the influences we call gravity.

4. Particle/Atomic/Molecular Spin

Spin energy is derived from looped Pan-chain unwinding (perpetual reciprocating torsion) which can be considered a dimensional characteristic of matter which perpetuates time as previously discussed-- Without it, matter would not exist. It is one of the primal energy sources which enable interactions of matter by causing particle spin.

5. Wave Motion

- a) Molecular: such as sound density waves, vibrations
- b) E.M. Field Waves: such as light and infra-red radiation, micro-waves, radio, X-rays, gamma rays.
- c) Particle generated Waves: particles generate waves in two ways: All fermions as they spin produce waves in the aether field as well as atomic nuclei. These waves are called De Broglie waves. Secondly fast moving particles push-up field waves by their forward motion relative to the motion of the field like a boat moving through water..

ELECTRO-MAGNETIC (E.M.) RADIATION

The most widely known type of electro-magnetic radiation is light, but it makes up only a small fraction of the total E.M. radiation. We can feel infra-red radiation which heats our skin. Microwave radiation which heats our food, and radio/TV waves provide us with long-distance communications around the world via satellites. X-rays are used in medicine, gamma rays in industry. Their frequency of oscillations per second, range from 10^8 for radio waves to 10^{23} for gamma rays.

By the beginning of the 20th century most scientists believed this radiation to be a wave which moved in a medium which they called aether. They thought that these waves might move somewhat like sound waves through the air or other mediums. Another simple model mentioned above is like a boat moving through water, where quanta (photons) would be push up waves as they move at the speed of light relative to the background aether field. This was the theory.

In 1905 Einstein presented evidence for the photo-electric effect - where certain metals give off electrons when light or other E.M. radiation hits them. The intensity of photons that were emitted could be explained only if light was emitted in discrete quantities which Max Plank, the pioneering physicist, called Quanta.

Today we more often call those quanta within light frequencies -- photons. The wave character of light had also been clearly shown by the interference patterns displayed when light waves from the same source are mixed. So, there was an ambiguity of evidence. Current theory holds that E.M. radiation can be both a particle and a wave, depending on the circumstances-- but if it's a particle, what is it made of? If it's a wave, in what medium does it travel -- since we know that star-light can travel through the "vacuum" of space?

E.M. RADIATION, WAVE-PARTICLE DUALITY, PHOTON MECHANICS

According to Pan Theory, these photons are made up of quanta, which are comprised of Pan-Chain Engagements that are radiated by fermions both electrons and nuclei in motion. Those Pan-chain Engagements which become quanta are a part of an omnipresent background "Pan-field" that also could be called aether. These pan-chain interact with electrons and are sometimes captured by them. If not continually excited, the electron will lose some of its energy of motion due to resistance from the surrounding Pan-field, and will give up one or more captured Pan-chain. These quanta or Pan-chain are then radiated at the speed of light - the spin-rate of the electron at its outer perimeter. Those quanta within visible red-shifts are called light. These density waves are very forceful compared to other motions within the field because of their inertial energy (high speed). The initial, or primary wave, is generated by the spinning electron which created it, and is reinforced by the energy of preceding waves. The pan-chain that make up the wave do not move at the speed of light - only the waves themselves.

APT

The light speed of the wave is derived from the electron or nucleon that emitted it, as previously discussed. Its energy is fortified by the wave behind it. Most waves, as we know, can and do reflect off some matter, but particle vortices act as a cushion and actual contact with a particle does not usually occur. Most photons within a wave are short lived and are absorbed by the waves which carry them. **For this reason all photons could be considered to be virtual photons (short lived particles).** If waves are disrupted by matter or photons within other waves which it may encounter, a photon would immediately lose the energy of its momentum to the surrounding field. Once again it would become an insignificant part of the background field retaining its same pan count.

Photons of the same frequency would not necessarily have identical structures, but they would necessarily need almost the same Pan-count to be fully manifested by contact. They would be formed from small Pan Engagements of a limited size range garnered from the surrounding electron or nucleon cloud or within generated waves. The measurement of the inertial mass of the photon would be analogous to measuring the energy of the wave the perpetuated its motion. Accordingly, would photons then have conventional mass when they're at rest? In classical physics, as well as Pan Theory the answer would be "no"; however, all photons of the same frequency would have a similar pan count. When a photon loses its speed it would be absorbed by the surrounding field and we would no longer call it a photon; its pan count would still be there but it would lose its energy which is dependent upon its inertia. Its wave would also dissipate at that point if it were disrupted.

Virtual Photons

Small pan engagements or large solitary pan-chain that travel within waves but are not big enough to recoil upon contact into a photon, might be called virtual photons or virtual quanta. They move within particle waves accompanying full size potential photons. Within less energetic waves the ratio of virtual photons to potential photons becomes greater. For these wave virtual photons could outnumber real photons by a thousand fold but their total energy equivalence per given volume may be only a few times greater than the potential photons they accompany. For this reason however virtual photons could, in the overall scheme of reality -- have more field influence than full sized photons. The three constituents to all E.M. radiation would accordingly be potential photons, virtual photons, and their perpetuating field waves. Potential photons only recoil into observable particles upon contact at which time they may be considered photon particles by definition.

Chapter 8 -- States of Matter, Thermodynamics and Entropy: Physical “Characteristics” of the Pan Theory

STATES OF MATTER

Depending upon what text you are reading in modern physics there are generally four, and possibly five, classified states of matter. This matter is comprised of single elements - atoms/ molecules and compounds, two or more atoms join together in a molecule. These atoms/ molecules can display different states of matter. Their classifications are: **1. Solids, 2. Liquids, 3. Gases.**

Most elements can exist in any of these states depending on the temperature and surrounding pressure. Each of these states displays different familiar physical characteristics. Additionally, there is another classification of matter in modern physics

4. Plasma: Plasma is the state of matter of which the sun is comprised. Atoms are ionized (nuclei without electrons) combined with free electrons, protons, and E.M. radiation, Kinetic motion, various forms of wave motion and magnetic fields. Usually all of these constituents make up a stellar plasma. Although plasma physics is a relatively new science since fusion has been studied, most of its tenets and observed and calculated mechanics have been known for over 50 years - since the advent of atomic fission.

5. A Neutron star (both conventional and Ipan theory): A fifth theoretical state of matter could be contained within a theoretical entity known as a neutron star. This state, according to theory, is when a very large star collapses from gravity - when its fuel is spent. The star's mass would then collapse pushing the plasma together until the protons and electrons would join together like one giant neutron plasma which might conceivably in time become a compacted entity comprised mostly of tightly compacted neutrons with progressively less E.M. radiation.

APT

The Ipan field might suggest new perspectives for Plasma Physicists because of the Pan Theories perspective that the majority of stellar plasma would be made up of Pan-chain whose motion is influenced by a perpetually inflowing pan-field which causing both gravity and heat.

APT

Ipan field theory would accordingly purport several new perspectives for Plasma Physics because of its tenet that the major portion of stellar plasma is made up of Pan-chain whose motion would be agitated by a perpetually inflowing pan-field.

New States of Matter

Besides these five states of matter, the Pan theory is predicated upon the existence of additional states-of-matter, which in the Pan theory are comprised of Pan-matter (Pan mass). The first, which we've discussed, we called pan-fields, which accordingly is one form of Dark Matter which comprises over 95% of the Pan matter in the universe, and is the source and reason for gravity. Pan-fields usually contain other states of matter but are still accordingly would constitute over 95% the mass contained in intergalactic space; According to the diagram on Page 45A they make up all of the outer universe or the Pan-Vector sphere.

The most prevalent definition of Dark Matter and the one used herein is any matter that is not visible because it emits no observed radiation, but it is detectable gravitationally. Dark matter is also called aether, field particles, or pan-matter herein. There energy of motion is herein theorized to be Zero Point Fluctuations/ Field (ZPF). The second largest constituent of dark matter would accordingly be atomic particles and neutrinos, protons, electrons, and electron neutrinos. The third largest constituent would probably be neutral hydrogen atoms, then molecular hydrogen. Next would be nuclei such as helium and larger nuclei, and lastly stellar and planetary remnants of nearly countless sizes and varieties of atomic and molecular matter formed in huge thinly dispersed clouds. Additionally there are vast quantities of photons and the energy of their orbiting EM radiation which encircles both galaxies and galaxy clusters, which also has extensive gravitational influences.

The next two states of matter are associated with Galactic Black Holes (which we've previously discussed). The first, we have previously called a Matrenace State which means (matter forming). This is the particle-forming and particle destruction area within a young Galaxy's Black Hole's event horizon.

It consists of a thick Pan-plasma of pan-chain, pan-engagements and particles, primarily electrons, protons, and their anti-particles. These new particles are created by high-compression and the internal unwinding force of their pan-chain. Particles are continuously created and destroyed.

The second State we have called Pan-Entanglements which form the body of a Galactic Black Hole. This is the densest form of combined matter. When a large galaxy forms, the central area would first become very dense, ultimately it would develop a large Galactic Black Hole (See Galaxy Page).

Because of the extreme outside field pressure within the Matrenaci area caused by the forceful incoming field pressure, a Galactic Black Hole accordingly would become the densest form of matter other than a single pan. At the center of the black hole relative motion would cease except for vibration. Despite this extreme density, Pan and pan-chain would still need to unwind. All pan-chain would be completely crushed with only small pan-chain and single pan remaining. Nothing inside this central area would be coiled enough to be entangled.

IPAN THEORY OF ENTROPY *APT*

Thermodynamics and Cosmology

Tremendous heat and other EM radiation is created by galaxies and their stellar constituents. Galaxies continuously increase in number as time progresses because of the Pan Accretion principle. There is a “Big” theoretical difference between the Pan Theory and conventional theory concerning Entropy. Entropy is the ratio of the total energy to the heat energy in a closed system which is its definition (energy divided by heat). The other common definition of entropy is the amount of usable energy within a system. The universe is considered a closed system since it is generally believed that it can neither receive nor give energy to an outside source. According to the pan Theory the heat energy of the universe increases as time progresses because of the presently unknown process of field generation of both black holes and matter, whereas entropy would decrease in all earthly domains of a closed system as time progresses. This would mean that the entropy of the universe as a whole would decrease as time progressed which would be in apposition to conventional theory which states entropy increases in the universe as a whole.

The reason for the difference is that in Pan Theory the quantity of pan-matter as well as all matter in general would be continually increasing over time, therefore there would be increasingly more particles, particle interactions and radiation which defines energy, and the kinetic molecular motion which would be the source of infra-red radiation which is the definition of heat. Additionally gravitational compression resulting in more galaxies would occur along with increased stellar nuclear fusion, which would be the primary source of heat in the universe. Accordingly, that portion of the total energy which would be expressed as heat energy would be increasing and the amount of potentially usable energy would be increasing because of increased portion of total energy created by new galaxies. The amount of real interactions would increase as a percentage of potential interactions.

This decrease in Entropy however would approach a mathematical limit in the same way as the volume of the universe also approaches a mathematical limit. This was explained in the Cosmology section as shown on page 45A.

Force Fields and Gravity -- **The Pan Gravity Theory**: pages 57A through 58

The foundation for the Pan Gravity Theory is explained in the Cosmology section: Pages 21-22

- The formation of gravity and how it works
- How Gravity Works in a Galaxy
- How Gravity Works in a Solar System

Chapter 9 – The Pan-Gravity Theory

Newton's Law of Gravitation states: Any two bodies in the universe attract each other with a force that is directly proportional to their masses, and inversely proportional to the square of the distance between them. His mathematical model is called the General Theory of Gravity. Einstein's theory makes minor modifications to Newton's Law when gravitational forces become very great.

Einstein's equations are a "vortex-like" model of gravity which he felt was in accord with his proposition that gravity warps space. Accordingly matter would follow the curved contours of space that surround all matter like a vortex. According to the Pan Gravity Theory additional changes to Einstein's formulations would need to be made at the stellar boundaries and long distance gravitational influences (galactic, galaxy clusters, etc.). Newton's "Law" above would be modified changing the words "in the universe" to "within a uniform Gravitational-field." This change would also apply to Einstein's perspective of warped space. This perspective has been described and discussed in the previous Galaxy Section of Cosmology.

A Pan-field vortex (whirlpool) surrounding a spiral galaxy as well as the visible galaxy together could be considered a single field - but not a uniform field. Pan in this type of field are not distributed with a uniform motion or density. Evaluations of Stellar motion and size/ mass in fields where stars are close together, like the distances between stars in the galactic core of the Milky Way, may have some semblance to conventional gravitational theory. But A.P.T. at greater Stellar distances, like our sun from its stellar neighbors, mass and inertial motion calculations, based upon observed stellar motion alone, would be invalid because of the motion/ influence of the background/ surrounding field vortex. The orbital motion of massive bodies like planets within a field, also would change the field's motion which in turn would alter the field's gravitational influence, resulting in rates of field acceleration that cause gravity. The effect would result in a changing quasi-circular or quasi-elliptical* field motion resulting in a weak gravitational vortex acting between bodies such as stars within the field, decreasing the linear gravitational influence between them. This can be evidenced by stellar motion within many mature galaxies which might retain a relatively uniform positioning of the stars within the galaxy for maybe hundreds of millions of years with little observable change in their relative position. The farther out a star from the center of the galaxy the faster its linear motion (velocity) would be relative to the background field of galaxies.

**the actual stellar vortex form would be dependant on many factors, the position of surrounding stars, their relative motion to each other, the orbital momentum of the star itself, the relative position and size of its planets, etc.*

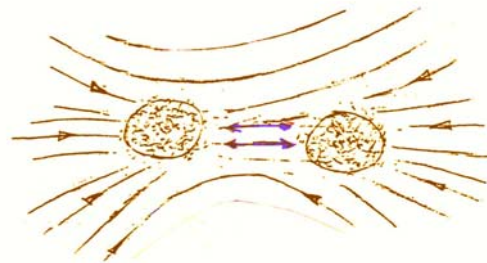
The galaxy would maintain its general form for billions of years of time changing only slowly. Einstein also described curved lines for gravitational motion, in his theory however, this arc-motion would be caused by a warp in space around matter. In contrast, A.P.T., space is not a separate reality from matter, only a measurable distance indicator of its inter-related matter constituents.

GRAVITY PERSPECTIVES AND MECHANICS *APT*

Newton classified gravity as a force or pulling attraction emanating from each body that is proportional to its mass. Einstein (as we discussed previously) did not classify gravity as a force. He proposed that mass deforms space like a lead ball on a rubber sheet - and that each body moves toward the deformation of the other. One problem with this model as a metaphor is that gravity is needed to explain itself (something like using a word to explain its own definition), to pull an orbiting body down on the sheet toward the lead ball gravity is needed. Another problem is that space must deform around matter. There is no evidence for this proposition other than the effects of gravity itself and it brings is an ad hoc hypothesis that would not otherwise be needed.

As we have already discussed gravity, according to the Pan Gravity model, is a pushing force caused by the absorption by matter of the vectors of the continuing inflow of the surrounding Pan-field (AKA Zero Point Field) which moves into all matter in proportion to its mass. Such absorption of field vectors and field material is also continuously radiated out again in the form of waves of E.M. radiation - like a weather system of high and low pressure areas - where matter is the low-pressure vortex center.

In a uniform Pan-field, Pan can be thought of as equally-spaced, having a type of kinetic motion which is influenced by Pan-field density and molecular motion, or heat within the field. When two gravitational masses are introduced into the field, they are pushed together by the vector forces of the inflowing field which are much greater on the outside because it's an open field, than the lower vector forces between them, shown in blue below, because of the close distance. This sketch shows these merging vector forces and the smaller resisting vector forces. Lateral and other pushing force vectors that are unrelated to these bodies merging, are not shown.



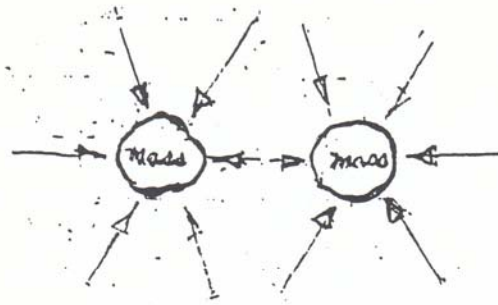
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The gravitational constant “g” (the earth’s force of gravity)

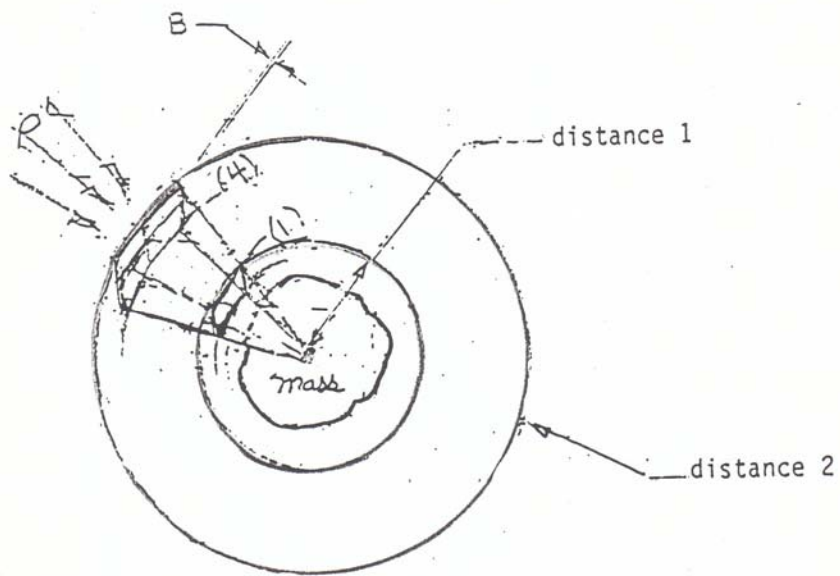
The "g" factor on earth, the gravitational force, accordingly is caused by the acceleration of the surrounding aether field into the earth. All mass creates its own low pressure area around it. This acceleration force is a function of the amount of matter within the field, the pan density of the field, and the densities and motions of other surrounding gravitational fields – neighboring planets and the sun which control the field pressure differential between the earth and the surrounding relative vacuum of the solar system. In general the detectable differences in gravity on earth can be determined by the Newtonian inverse square law of the gravitational force and the object’s position relative to the earth’s center of mass.

The gravitational constant G (this is considered a universal constant in the standard model of gravity)

The gravitational constant G has been experimentally determined to be $6.67300 \times 10^{-11} \text{ m}^3 \text{ kg}^{-1} \text{ s}^{-2}$. This is presently considered to be a universal gravitational “constant” throughout the universe. A.P.T. it is not a constant but varies (as discussed above) according to the density and currents of the gravitational field being evaluated. The Pan theory would assert that for middle aged spiral galaxies like the Milky Way there would be no reason to expect that a similar looking galaxy would have a very different gravitational constant—and accordingly it probably would not. But the vortex field model of Pan-Gravity Theory suggests that there would be differences in some cases. For older galaxies which would usually have an elliptical shape, many accordingly would have more uniform field pressure and density, therefore a more uniform gravitational constant throughout the galaxy. Most would accordingly have a lower pressure differential leading to a smaller average gravitational force within the galaxy. Young spiral galaxies, on the other hand, accordingly could have a variant gravitational field within the galaxy, with stronger centripetal forces toward the core, but decreasing centripetal forces toward the outer galaxy with stronger centrifugal forces because of stronger vortex motion. These differences might be detectable through observational measurements such as orbital motions and stellar interactions within the galaxy, the theory being that the younger the galaxy the greater the gravity variation within the galaxy.



- The push of an accelerating field- gravity.
 Two equal masses & inward acceleration
 --- there is less acceleration of the
 field between the two masses so they're
 pushed together -- by equal vectors (forces).



At distance 20 above, a section of the outer sphere is square-shaped and measures 2 X 2 with a minimum thickness of B. Its cubic volume would be 4B. At distance 0, there is another square identified as (1) with dimensions of 1 X 1 X B which has a

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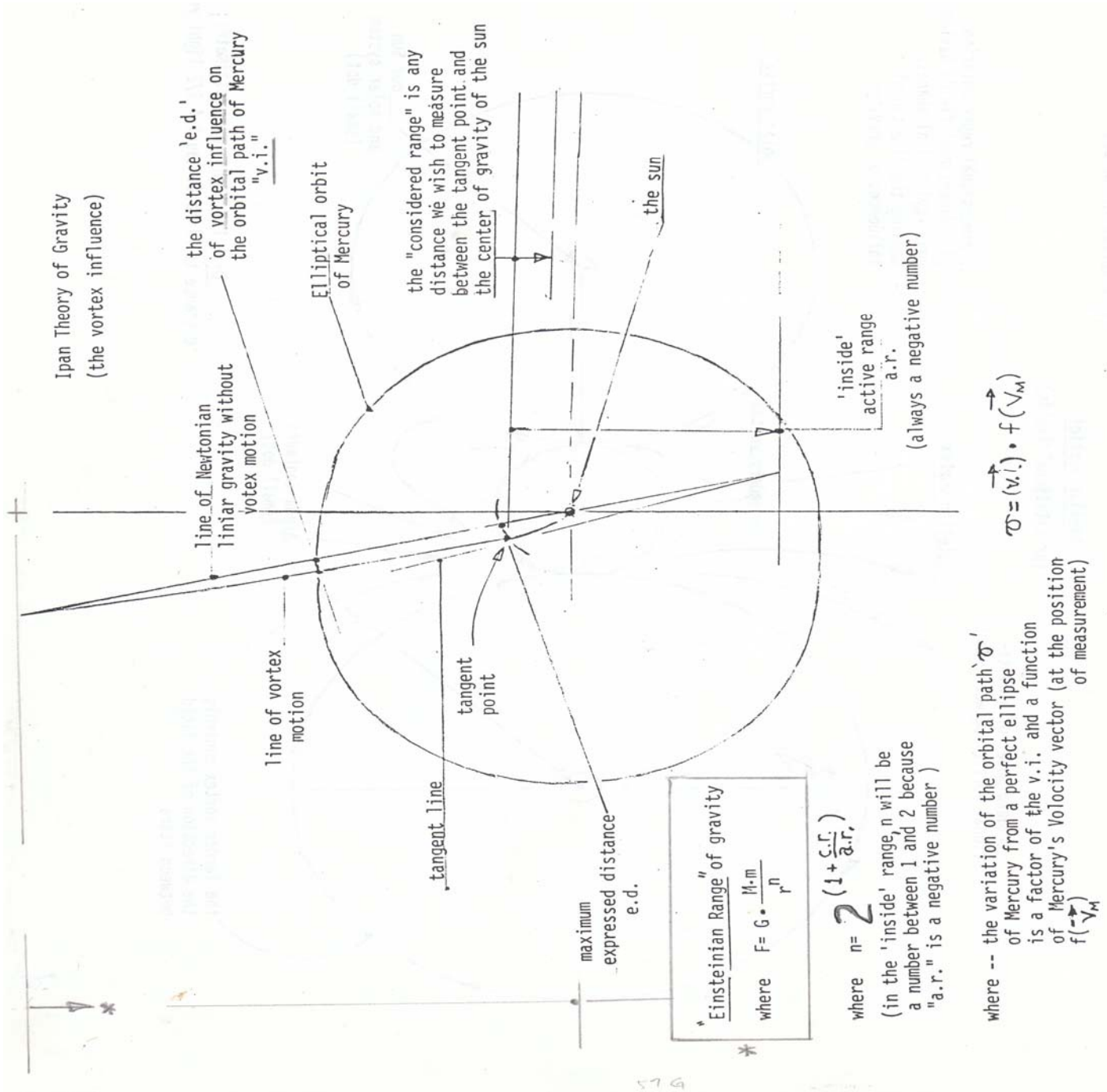
volume of 1B, grid (2) having 4 times the volume as grid (1). As Pan move in from the Pan field toward the center of the mass, at point 'P' it will pass through grid (2) and have an acceleration rate we'll call "A". The entire Pan in grid (2) will also have to enter grid (1). The Kinetic activity of the Pan and a lower pressure in just one direction moves the field in the direction of least resistance, so the Pan are pushed by a pressure differential to a speed and acceleration 4 times faster at grid (1) than at grid (2).

A more familiar perspective of gravity was made famous by Isaac Newton in the late 1600's. His perspective was that gravity was a pulling force, which emanates from all matter in proportion to the quantity of mass. Using both Newton's perspective of a pulling force along with the Pan Gravity Theory we could say-- that as matter continuously radiates away material from a surrounding field in the form of E.M. radiation, a low pressure area, or relative field vacuum, would develop around all matter. This vacuum would continuously pull in material from the surrounding field and then radiate it away at the speed of light. This inflowing Pan-field material would accelerate as it flows toward the mass. This accelerating field material interacts with atomic/molecular vortices of any/ all matter within the field which is a continuous force in one direction--toward the vacuum: This force initiates motion and continuously applies the pressure of the acceleration field - hence the force of gravity.

This is why gravity works the way that it does. It is the reason the force of gravity is inversely proportional to the square of the distance from the center of gravity. Of course these explanations of gravity are only as valid as the premise of a Pan-field and its described mechanics. Pushing gravity, called the kinetic theory of gravity, was first proposed by Nicolas Fatio de Duillier in 1690 and later theorized in greater detail by Georges-Louis Le Sage in 1748. This perspective of gravity mechanics has similarity to the Pan Gravity perspective except: its cause would be the kinetic pressure of a background field material instead of a continuously accelerating field into all matter--which *APT* is caused by matter continuously radiating field material away in the form of EM radiation which would result in a low-pressure field area surrounding all matter.

Newton's laws of orbital motion were first described by Johannes Kepler, slightly modified by Einstein's Theory of General Relativity. The Pan theory generally agrees with Einstein's calculations* of orbital motion and gravitational influences but completely deviates at stellar distances where the boundary with another star's gravity equalizes/ splits gravitational influences. At these distances Mach's principle that every part of the universe instantaneously effects every other part or the universe, would not apply.

*essentially are equations of vortex motion which is also the perspective of the Pan Theory.



The above equation, when the unknown factors are plugged in, proposes to predict the perturbation in the orbit of Mercury using obviously a simpler equation than Eintiens set of equations. This equation predicts a positions but a set of calculations would determine an orbital path.

Vortex Gravity model—its variations from Newtonian and Einsteinian gravity.

Looking back to the drawing on the last page (57E), one can follow the changes in the force of gravity. This is a hypothetical drawing where a star like our sun, called the “primary” star, has one solar mass and would be considered the same age as the sun. It has a stellar vortex which on the drawing extends out to the star’s vortex limit depicted in this two dimensional drawing as a section of the total three dimensional vortex. The vortex of an adjacent star is shown as being slightly smaller and meets with the bottom primary stellar vortex boundary. The distances between these two stars is considered, in this example, to be 4 ½ light years to make it similar to our sun and its neighbors.

The two vortices are rotating in opposite directions. The primary vortex (bottom) being considered, is rotating counter-clockwise as shown by the arrows. The top vortex is shown on the same plane but rotating clockwise, again indicated by the arrows its opposite vortex motion.

As the “closing field,” top right, moves from right to left it intersects the center line of the drawing where a small circle can be seen at top. As you can see at this point the separate vortices are moving in the same direction. An object in this position, which is in gravitational equilibrium between the two stars and on the “solar system” plane of the star standing in for the sun, with no relative motion to either star would very slowly begin moving in the direction of the peripheral field, top left. It would continue in this direction as it leaves the gravitational influences of both stars.

If the location of this object were slightly closer to the primary star then the object would very slowly move in the direction between the primary stellar vortex limit and the line indicated as the “motion-line-of-mass”. The object would eventually accelerate and progress in a highly elliptical orbit around the primary star.

If even closer (but still within the small circle at top) the object would proceed toward the star on the motion-line-of-mass. We’ll call this point “P” for parabolic axis. At this point the object would follow the motion-line-of-mass, eventually colliding with the primary star without orbiting it. If closer yet it would follow a less curved path to the primary star.

To understand the formulations as they are concerned with the motion-line-of-mass we will start with the formula for Newtonian gravity is: $F = G \cdot Mm/ r^2$, where F is the force of gravity on our object, G is a gravitational constant, M is the gravitational force of the

(Pan-Gravity Theory -- Vortex Gravity model continued) APT

The classical Einstein Field-tensor Equation (EFE), shown below, as applied to Pushing Gravity vector forces as asserted herein: This equation, in our solar system, would accordingly vary from Newtonian gravity only within 48 AU from the Sun. It would have no application, A.P.T. to cosmological analyses because related stellar gravitational forces become parabolic, as indicated on the diagram on page 57E and related pages. General Relativity equations have been shown to be quite accurate concerning the orbit of the planet Mercury.

$$R_{ab} - \frac{1}{2}R g_{ab} = -\kappa T_{ab} = \frac{8\pi G}{c^4} T_{ab}.$$

where R_{ab} is the Ricci tensor, R the scalar curvature of space, g_{ab} are the metric tensors, κ (kappa) is the Einstein constant of gravitation, T_{ab} are the stress-energy tensors ; π , π is Archimedes constant, G the gravitational constant, and c is the speed of light constant (in a vacuum).

The EFE, above, is a tensor (vector) equation which formulates sets of symmetric 4 x 4 tensors. It is denoted above in its standard form which uses abstract index notations. Each tensor has 10 independent components. Using four spacetime cartesian coordinates plus time, the above equation will generate six independent equations. For more in-depth descriptions of the above, refer to related textworks concerning the field equations of General Relativity.

Newton's equational vector linear vector force would begin at an estimated .48 AU to ~ 94,000 AU. The Newtonian linear vector force $\theta \approx GM/r^2$

would become $\theta \approx GM/r^n$ after 94,000 AU where the linear force of gravity toward the Sun and the related equations of Newton & Einstein would accordingly start to lose accuracy.

As the linear vector force would decrease, according to the above formula, a vector force orthogonal to the sun and parallel to the plane of the solar system, would slowly increase which would make up the loss in the equivalent straight-line vector. The result, according to the formula above, would be a parabolic motion of an object at this distance as it would move toward the sun. The same result but to a lesser extent, would occur with an object with velocity/ momentum leaving the solar system. vector force (the total pushing gravity force. This parabolic motion and the above gravity formulations are indicated on page 57E.

(Pan-Gravity Theory -- Vortex Gravity model continued) *APT*

The name given to this type of gravity formulation is called MOND – an acronym for Modified Newtonian Dynamics. The first published version of MOND was proposed in 1983 by physicist Mordehai Milgrom of Israel. By its formulations the Pan-Gravity Theory could also be classified as a type of MOND gravity.

Although his formulations are different from the above, the reasons, evidence, and motivation for the proposed change was the same as the Pan Gravity theory. To explain galactic rotation the way that it has been observed would not only require a vast quantity of dark matter orbiting the galaxy, but the dark matter within the galaxy would need to be distributed in decreasing proportions toward the galactic core.

Besides a galaxy's stellar rotation, another bit of evidence concerning gravity might indicate this effect. This would be the small drag effect seen on both the Mariner and Voyager space crafts. For the Mariners, the “drag linear perturbations beyond known sources, has been calculated to be $8.74 \times 10^{-10} \text{ ms}^{-2}$ deceleration or about 5,000. Km. per year. This could be interpreted as aether drag or gravity A.P.T. This is a relatively small alteration in the predicted gravitational effect but still is considered to be significant since mainstream explanations are few and speculative.

In addition to the distance traveled being slightly less than predicted, these spacecraft are also off course to an even greater extent. They are not traveling in a straight line as predicted. This effect seems to indicate centrifugal forces which are a part of the Pan Gravity formulation at great distances from a star. The exact extent of this perturbation at these distances, however, was not predicted since this effect of the Pan-Gravity formulation was thought to begin farther out from the sun (star).

primary star (equivalent to the sun's gravity) m is the force of the object, and "r" is the object's distance from the star. Verbally this equates to any two bodies in the universe proportional to the square of the distance between them. Since the second mass, in this case the object, can be considered inconsequential, the formula would then simply follow the inverse square law: The gravitational attraction of the primary star to the object will be inversely proportional to the square of the distance of the object to the center of the primary star. The formula now becomes simply $F = S/ r^2$, where S is the gravitational force equivalent to the sun and "r" is the objects distance from the star's center.

First it must be noted that these formulations are two dimensional or co-planer. This is the closest approximation when making calculations along the galactic plane where most planetary bodies reside.

We will propose an approximated formula for the "vortex range of gravity" for our solar system which, accordingly, is proposed to be $\emptyset \approx G \cdot M/ r^n$. Looking at the two formulas (the other was $F = G \cdot M/ r^2$) you will see that the only differences are the power factor of "r", one is "2" and the other is "n". What this means is when an object is outside the "range of Newtonian gravity" the power factor begins to increase which decreases the linear force of gravity on the object. The lost gravitational force, or linear vector, would be equally compensated for by a vector force in the same direction as the "closing field", a force perpendicular to the linear force. The equation for this perpendicular vector would then reduce down to: $F = (S/ r^2) - (S/ r^n)$.

Starting at point "P" and progressing toward the star, the object will first start out having nearly a vertical vector, it will progress on this parabolic path indicated as the motion-line-of-mass until it reaches the Newtonian Range of gravity where its motion will become close to linear.

We will call the combined vector forces F_1 . The total vector forces will then become a non-linear force equivalent to Newtonian gravity: $F_1 = S/ r^2$. Although in this example, and drawing, "n" was given a maximum value of 4 for convenience, its actual value would approach ∞ (infinity) with an asymptotic parabolic line – the same as shown on the drawing.

In actuality there would rarely be a situation where there were two adjacent stellar vortices on the same plane moving the opposite direction, without gravitational interferences from other adjacent stars and seemingly unpredictable gravity currents at the stellar vortex boundaries. This formulation of vortex gravity allows for a galaxy of stars to generally retain their relative position within the galaxy which only very slowly would change its form based upon reducing gravity currents, field pressure differences, and the diminution of stellar matter. All these variants would make gravity predictions at this range more a matter of calculated possibilities instead of present day "straight" calculations. No ultimate formulations are possible without tolerances, similar to quantum mechanics.

(Gravity perspectives and Mechanics, continued)

Newton's laws of orbital motion were first described by Johannes Kepler, slightly modified by Einstein's Theory of General Relativity. The Pan theory generally agrees with Einstein's calculations of orbital motion and gravitational influences for stellar distances until the boundary with another star's gravity equalizes/ splits the gravitational influence of stellar influences. In this boundary realm the Pan Gravity equations differ considerably from conventional theory.

The following formulations of gravity mechanics are approximations like all formulas in Physics are A.P.T. -- some would be closer to an analog of reality than others. This would be because fields always have a degree of unpredictability because of unknown, unpredictable random variables. These cases would have kinship to quantum mechanic's probability calculations. These types of equations might be called "Overview Equations". They can provide a quick understanding of what is happening without providing the accuracy of a precise calculation that you might need for a space craft. To be more precise these computations would need the inclusion of some other related variables. Some factors not stated, can be calculated using differential equations of orbital motion along with Newton's related equations.

The difference between these Overview Equations and conventional theory is most notably within the "outer active range". This is the outer part of a stellar vortex that is within the influence of an adjacent stellar or galactic vortex, pa. 57E; how stellar vortices interact as three dimensional cylinders or low-pressure areas are generally proposed on page 57F. The most important difference however is that in this theory, gravitational fields follow the inverse square law of magnitude only within a specific range. Beyond a star's vortex range, the linear influence of its gravity ends.

(Pan-Gravity Theory -- Vortex Gravity model continued) *APT*

Its maximum possible non-linear range would, accordingly, be equal to the total distance of the fields moving between stars -- could travel within a period equal to twice the Pan Doubling Rate (about 10 billion years). This range is only about 12 light years for a star as massive as the sun. This indicates that for the universe as a whole, its organization and changes are primarily governed by field motion, which is only partly influenced by gravity.

The gravity equations used by Einstein were originated to analyze the motions within vortices, which is also a perspective of the Pan Theory. Some changing variables of the Sun's gravitational influences are also based upon planetary positions which have their own gravitational influences. Another variable A.P.T. are solar storms or sun spots which are surface vortices which effect gravity to a minor extent at close range.

The Gravity of a stellar or galactic size Pan-field itself will steadily resist and slowly reduce the linear relative motion of any object that is traveling through its space. In the Pan-Gravity theory this is because the vector forces of pushing gravity are uniform within a uniform field (definition). When a body is moving relative to this field the vector forces would be slightly stronger apposing the direction of an objects forward motion and slightly less coming from the direction opposite its linear motion. (Prediction)

Gravity in a similar manner slowly reduces a body's axial spin. It might be thought of as the effect of gravitational drag caused by the surrounding inflowing aether field. The effect would be generally uniform regardless of the size of an object. There also would be the vector affects of field currents such as vortex motion within a field which would slowly subside as a gravitational field ages due to the aging of a galaxy and the average stellar age within it. (Prediction)

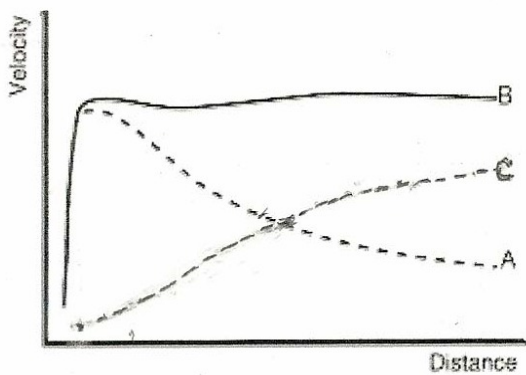
(added, needs review and edit.) (explain line C mathematically)

Modeling a Spiral Galaxy's rotation via another formulation of gravity.

The 2D mechanics of Spiral Galaxies including the Milky Way accordingly can be modeled in the following way. Based upon observations the galactic bulges of spiral galaxies are generally thought to follow Keplerian/ Newtonian mechanics. The disc of the galaxy can be modeled via Newtonian gravity with the inclusion of dark matter, using a MOND-like gravity formulations.

Let's identify a distance from the center of the galaxy outside the bulge as distance D. Now let's set D=1. Now let's define any distance starting from distance D and including any point in the disk outward from distance D, as distance Y, where distance Y divided by distance D is equal to or greater than 1. This would be based upon a vortex speed that increases from the inside outward like a storm or hurricane vortex. Y then could be equal to 1, 1.1, 1.8, 2, 3 etc., any number greater than 1. Now let's call the speed that a star at distance D travels around the galaxy as velocity V.

Theoretical Physics: For the orbital velocity of a star anywhere in a spiral galaxy disk, if the galaxy rotation curve were entirely “flat,” then the orbital velocity of stars at any distance from the center of the galaxy will be $V(Y^0)$; that is R times Y to the zero power which is 1, or simply V. So what the formula says is that the velocity of stars anywhere within the galactic disk will be roughly the same. This defines a flat rotation curve of the disk of a spiral galaxy. Now for a galaxy that would follow Keplerian/ Newtonian gravity (none that we know of) the formula for the rotation curve would be VY^{-1} . That is R times Y to the minus 1 power or simply R/Y. For this formulation as the diameter of the distance from the center of the galaxy doubles the speed of the star decreases by 1/2. Then the general formula for the rotation curve for all spiral galaxies (aside from stellar momentum) would be VY^X , which would be V times Y to the power of X. This formula produces a general 2D rotation curve for all spiral galaxies, VY^X , where X could be any number between -1 to a positive value less than 2. Below is the rotation curve for our galaxy.



Rotation curve Milky Way

So the approximate flat line rotation curve (line B above) of stars in the Milky Way if it were exactly flat could be formulated as VY^0 . The rotation curve formula for Newtonian/ Keplerian gravity would be the dotted line A above, which accordingly could be formulated as VY^{-1} .

So the following is what the Pan-gravity model proposes. The linear inward pushing vector component of gravity pushes (pushing gravity, centripetal force) toward the center of the galaxy. The formula for this is Newtonian Gravity, where: $F = G \cdot M/ r^2$ [note: the mass of the star itself is insignificant compared to the mass of the galaxy (without added hypothetical dark matter) as a whole so a star's is not considered in the formulation] ; F being the force of gravity, G being the universal gravitational constant, M would be the estimated mass of the galaxy inside the volume of the galaxy circumscribed by a sphere inside the diameter determined by the stellar location, and r would be the radial distance from the center of the galaxy to the star.

A second force of gravity proposed would be a force perpendicular to the centripetal force, which can be called the stars centrifugal force. This is not the force of momentum of the star. It is a force pushing the galaxy as a whole to rotate based upon the vortex motion of the aether. The overall formula of gravity then could be formulated as $\emptyset \approx G \cdot M/ r^n$, where \emptyset is the combined vector forces of gravity divided into two perpendicular vectors, one pushing toward the center of the galaxy and the other pushing perpendicular to that in the direction the galaxy is rotating. 'n' is an exponent equal to, or greater than 2, which changes depending upon the galaxy. What this means is that when an object is outside the galactic bulge the force of gravity becomes non-linear as the force inward decreases. The lost gravitational force inward would be compensated by a perpendicular vector.

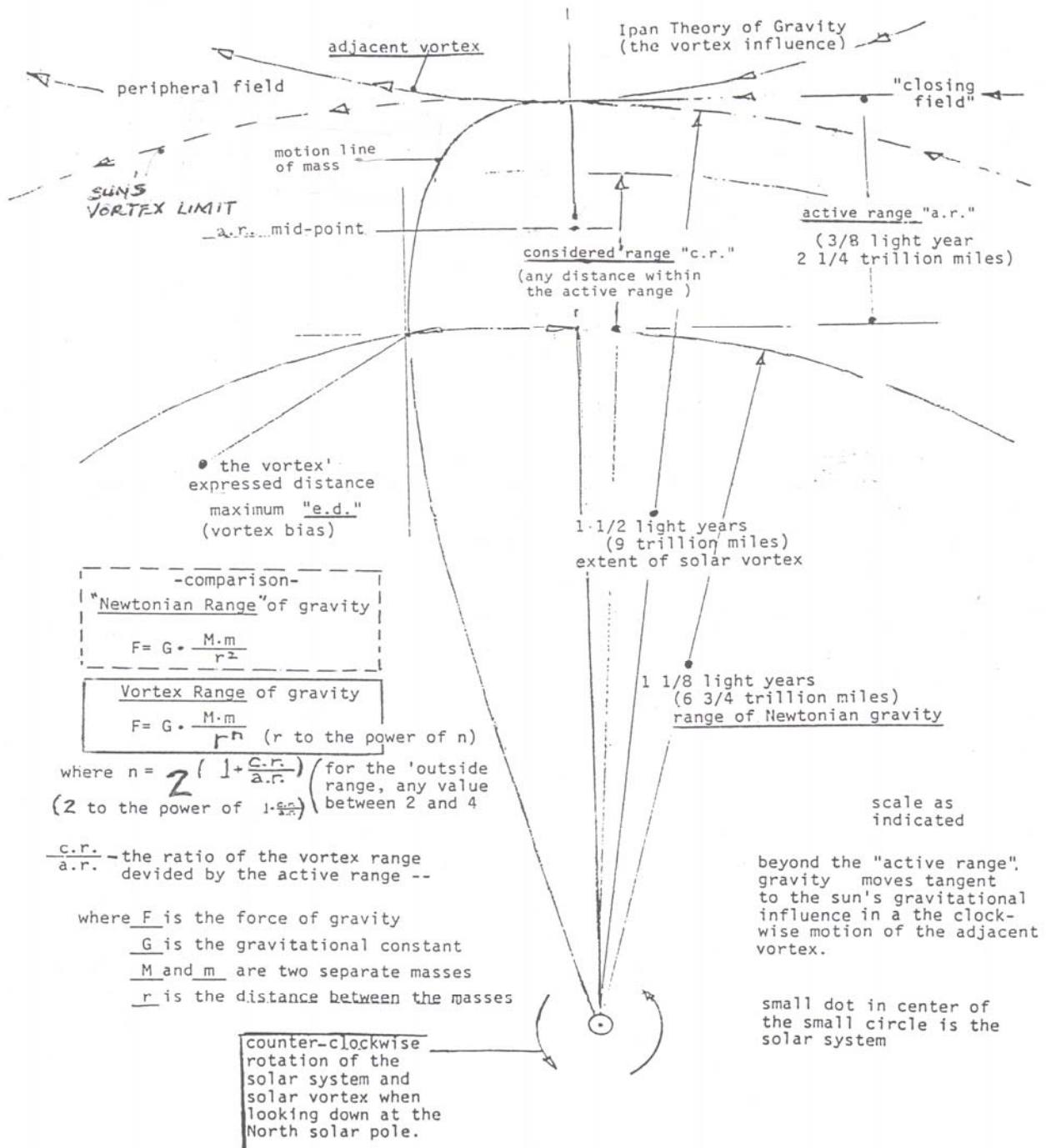
This is how it can be described mathematically. But in reality accordingly it is simply the vortex pushing at an angle as the vortex pressure pushes inward, which would be at a 45 degree angle if the forces were divided evenly, which they generally would not be since it would be different for every galaxy depending upon: its size, form, age, amount of available gas and dust, and its relative position to its surrounding galaxies and the motion of galaxies in the cluster. To divide the two perpendicular forces it can accordingly be formulated like this:

$F_1 = a (GM/ r^2) + (1-a) (GM/ r^n)$, where the power of gravity F_1 is the vector force of gravity divided into its separate X and Y two dimensional coordinate vectors. 'a' is a constant less than one that divides up the proportions of the two vectors. For instance if a were .5, then $1-a$ would also be .5, and the vectors would be evenly divided. The angle of push would then be 45%, for instance. The momentum of the star keeps it orbiting in the same place within the galaxy if not interfered with by other stars, but in this scenario and formulation of gravity, of faction of the speed of the orbiting star would be gravitational push rather than momentum like Newtonian gravity. So the push inward on the star would be balanced against the centrifugal push of the vortex along with the stars momentum.

Note: If the sum of the strength of gravity from both vectors above were added together in a single direction, the resulting vector would be equal to the inverse square law of gravity, Newtonian Gravity, no stronger or weaker.

In a strict linear calculation the summation of all the stars would have the rotation curves something like $V(Y^{.03})$ for the outermost visible stars of the Milky Way. The formula for line C above would then be $VY^{.03} - VY^{-1}$. The reason why the disc star rotation curves would somewhat vary from linearity is because of the density variation of stars in the disc. The denser arm areas of the disc stars will move slower than the surrounding plasma field. In the Milky Way the outermost visible stars are about nine times farther out from the galaxy center as the innermost disk stars beyond the galactic bulge. The calculation then becomes $9^{.03}$ (9 to the power of .03) which is equal to 1.068, which is about the increase in speed of the outermost stars of the disc to the innermost disc stars of the Milky Way, according to some observational data. The Tully-Fisher relationship can be used as a type of double-check concerning the speed of the outermost stars of other galaxies, where roughly speaking, luminosity is proportional to the velocity of the outermost stars, to the fourth power, relative to the galactic background.

That's a brief and simplified summary of my theory of gravity that can be found in greater detail at pantheory.org, beginning on page 57A. A related paper would therefore propose that dark matter is just a patch of GR that would not be needed for a correct formulation of gravity. I've written my "doing away with dark energy" paper 4 years ago, shown in a link above; and this new paper would be my "doing away with dark matter" paper. This paper, like my dark energy paper, would include much observational data as evidential support for formulations and calculations. Additionally I would need to do the same calculations for galaxy cluster rotation curves which also do not follow Newtonian gravity of GR, without adding hypothetical dark matter according to the velocity observations, a process of retrodiction.



Gravity's Parabolic force/ effect on matter without momentum generally begins at the end of Newtonian gravitational influences and ends as an asymptote to the gravitational boundary equilibrium between stars (explanations given on the following pages).

APT

Gravity and the Earth's Solar System

The Pan Gravity Theory must, by its tenets, add modifications which become significant over long distances, and over long periods of time. In 6 billion years, the earth would be 117,180,000 million miles (or $1.26 \times 93,000,000$) away from the sun because of the relative change in the size of matter and the space that it occupies. This of course would be more a change in scale than it is a real change of distance. The converse is that the Earth would have originally formed 73,809,000 miles from the sun.

Planetary systems accordingly are somewhat unpredictable as far as changing distances of the planets from the sun. Supposedly our moon was formed from a large planetary collision which may have changed our distance from the sun. Accordingly the solar vortex and the associated gravitational influence can undergo considerable change over its planetary history unrelated to the above predicted change. Accordingly there could have been periods of where greater distance changes would occur in a relatively short amount of time and other periods whereby we could have been closer to the sun. There are several other factors of gravitational influence which will also affect our distance from the sun.

---The rotational momentum or spin of the sun, the earth, and all the planets decreases without reinforcement. This eventually lengthens their period of rotation. This is the result of the inward acceleration of gravity which is a resistance to the spin of any mass. --- As a galaxy ages, (like the Milky Way) its gravitational field (pan-field) will subside in intensity, for most all of the stellar systems within the galaxy. This occurs after the galaxy is saturated by the creation of matter by its core. The sun's life cycle (as well as other stars) would accordingly be much longer than current theory predicts, as much as 3 times longer (Prediction). This is because a considerable portion of the sun's heat would accordingly be produced by the inflowing pan-field which is the force of gravity. This would be called the compression and heating force of gravity.

All these factors collectively have caused the earth to continuously get colder, from its creation until now it will continue to get colder with short-term variations (maybe tens of thousands of years) such as those which may be produced by green-house gases that may temporarily reverse this very slow but relentless trend (Prediction). Although the earth and sun were used in this discussion, the same principles would be involved with all the other planets of our solar system as well as other stars and stellar systems in general.

This vortex model of gravity asserts that there is a continuous drag against anything rotating relative to the surrounding field. Even though the field comes almost straight in, there is a slight angle of drag caused by the earth's rotation. There also is past evidence of this effect on Earth—that the rotation speed used to be greater. Probably would be true for most, if not all of the planets. Possible exceptions, the vortex actions produced in some multi-stellar systems.

Chapter 10, Magnetism as a field pressure differential: *APT*

There are two types of forces defined by the Pan theory. Both types have no independent reality. They are the effect of Pan interactions. The first type we'll call Transfer forces. The second type we'll call Binding forces.

Transfer forces (pushing forces) like gravity and magnetism, are a continuous transfer of motion from one entity to another resulting in differential field pressures. The other forces we call Binding forces (holding) which are mechanical connections between particle that we have called "Engagements", which accordingly holds neutrons and protons together resisting separation in atomic nuclei such as the Strong Interaction.

ELECTRO-MAGNETISM

Magnetism, like gravity, is called a transfer force; a directional transfer of motion resulting from atomic/ molecular vortex alignment, related interactions, and resulting differential field pressures in the Zero Point Field (ZPF). The types of motion which provide clues to the magnetic Force are:

- The discovery of atomic polar alignment within Ferro-magnets.
- The discovery that Magnets as well as all matter produce De Broglie waves.

The molecular alignment of iron is a cubical form of alignment. Atomic alignment according to the Pan Magnetic theory means that most of the "mouths" (figure) or receiving ends of an atomic vortex funnel would be facing in the same direction and the flute (or small end of the funnel vortex) would be facing in the opposite direction. This non-random alignment within two magnets and the medium between them reduces the intervening field pressure resistance which normally acts similar to Boyle gas pressures. In this case it would reduce the field pressure between the magnets.

The other consideration is that all matter produces De Broglie waves. This has been called the wave nature of matter.

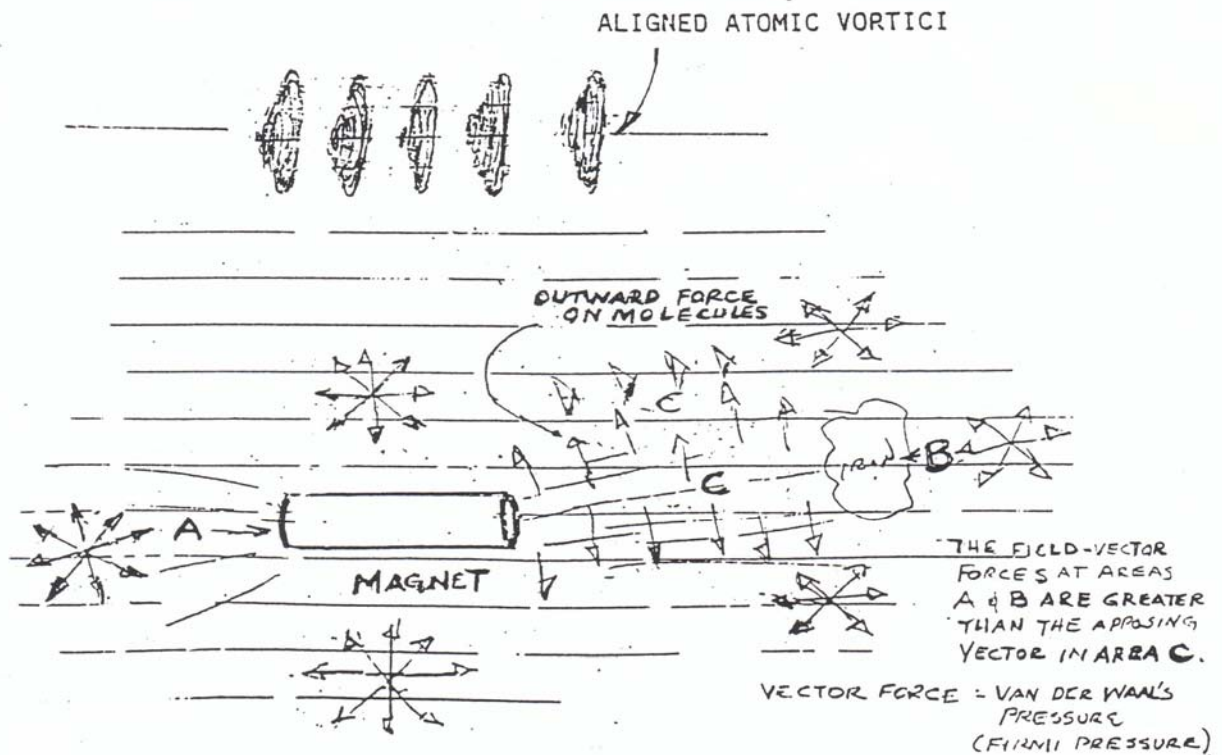
MAGNETIC ATTRACTION

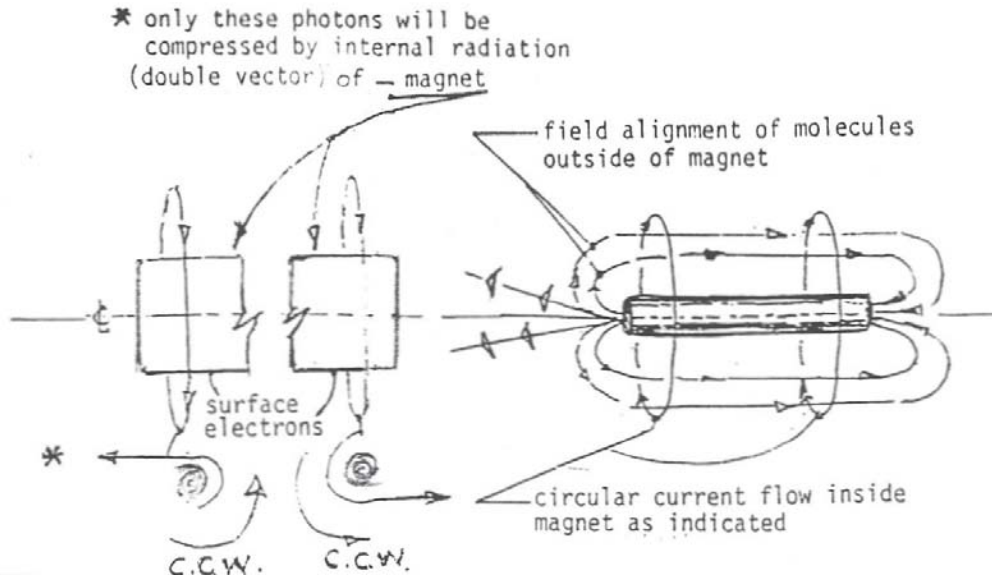
Magnetism works by a difference in field pressures in the ZPF (zero point field, AKA aether). The magnet's atomic alignment funnels the aether into one pole of the magnet and out through the other. In this alignment De Broglie waves are emitted in coherent waves. If these De Broglie waves encounter a piece of iron in the field the surface molecules they encounter will align with the magnet causing a domino effect of atomic alignment within and throughout the iron. After alignment De Broglie waves will pass through both the magnet and the iron which becomes temporarily magnetized. Free electrons in the open field between two magnets also align with the De Broglie waves between the magnets and will move with the field either toward or away from a magnetic pole depending of the polarity of the magnet and iron.

With flowing field and flowing De Broglie waves between the magnets, the field pressure vectors within the ZPF between the magnet and the iron become linear and not random pressures as it usually has. This random field pressure might be likened to Boyle's pressure concerning gases. This reduced field pressure between the two magnets (one a temporary magnet of iron) and the outside field pressure being higher would push the magnet and iron together depending on their weights and distances from each other.

These De Broglie wave upon encountering the surface atoms of a piece of iron cause a domino effect of alignment which initiate small circular currents of free electrons within the iron, a flow of electrons perpendicular to the contact point of the initial De Broglie waves. These De Broglie waves when passing through the iron initiated electron flow within the iron also influencing the atomic vortices to align themselves in the position of least resistance to the current flow. The result of this periferal current flow would be the temporary atomic alignment and magnetization of the piece of iron.

If the area surrounding the magnet and the iron is air, it's comprised of gas molecules. If it's a so-called "vacuum" made on earth, it's also comprised of gas molecules of a lesser density. As these De Broglie waves move through molecules until/ unless they are absorbed by the iron, they perpetuate alignment in the iron with the same orientation as the magnet. Atomic "Funnels" face in the same direction; this is the orientation of least resistance to surface electron/ current flow as well as aether flow because of reduced kinetic field pressure in that direction. Internal electrical currents would also strengthen surface electron flow.

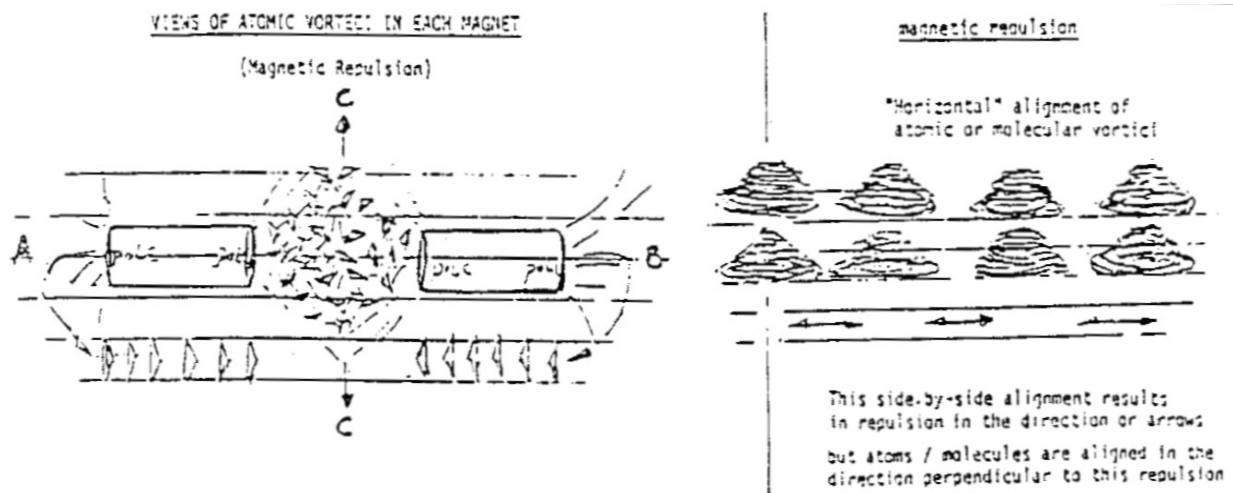




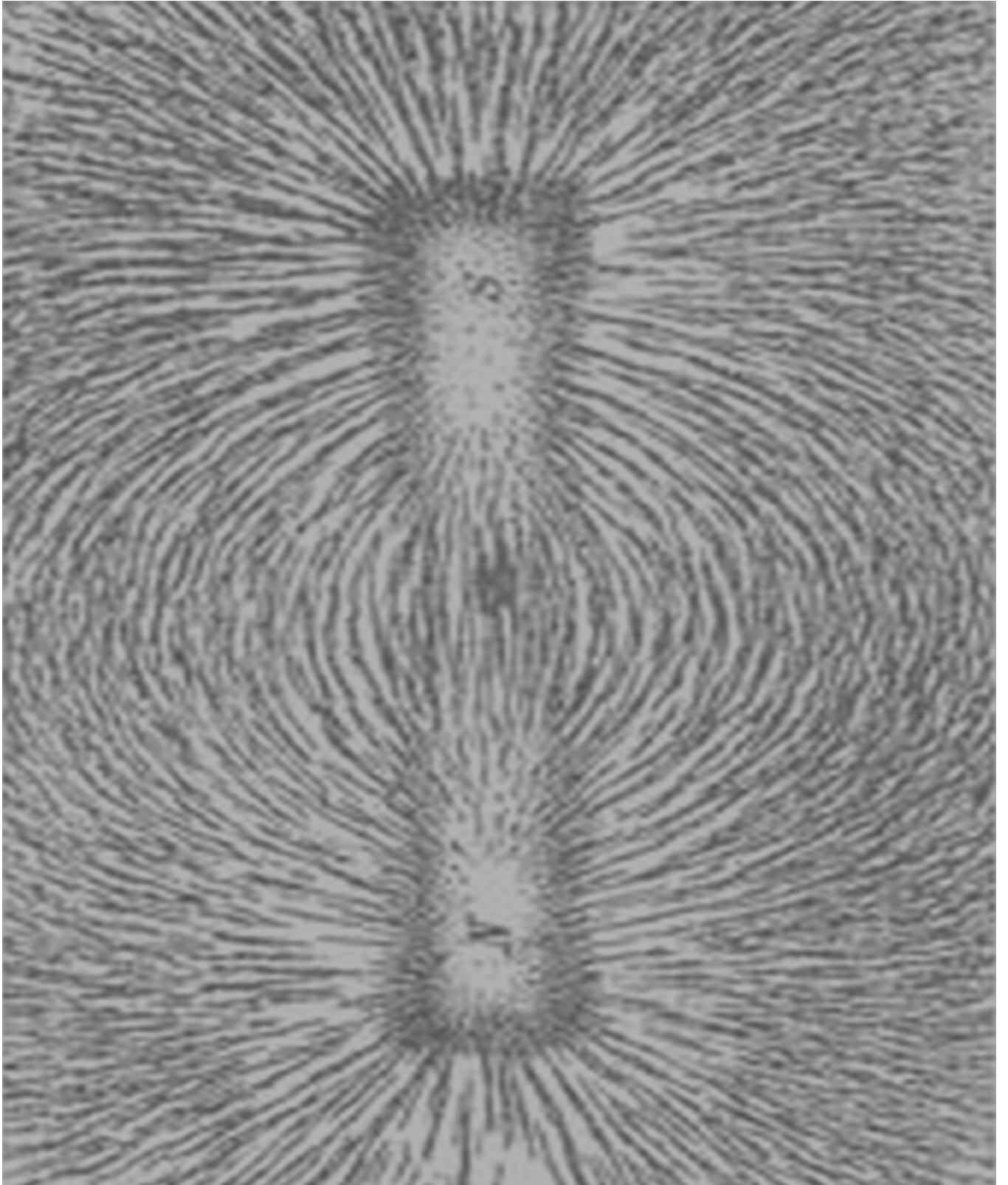
Radiated De Broglie waves emanate from both poles of the magnet as indicated. When De Broglie waves are emitted from the left magnetic pole above, they will carry with them two vectors. One is the primary vector which is in the direction of the field flow, and the secondary vector is in the direction of the electrons that also produce these waves. This potential energy is stored in the form of compressed pan-chain within the wave. This compression recoils when the wave strikes an atomic electron (or other particle). This recoil-vector along with-the primary vector will turn an atomic vortex away from the emitting magnetic pole as indicted above (vortices "arrow" indicates flow direction of the vector). The De Broglie waves that are emitted from the other pole have the opposite compression vectors shown above.

When a magnet "activates" a piece of iron the air molecules between these "two" magnets are also pushed into magnetic orientation -- bombarded on one side by double vector waves, and on the other side by single vector waves. As a result electron Fermi pressure or Van der Waal's pressure in the field will be less between the magnet and the iron because of the molecular/atomic alignment and the magnet and the iron will be pushed together by the differential electron and aether pressure regardless of the field density. In the absence of electrons, magnetism would have a slightly lesser strength but would still exist with just aether differential pressures.

In this case the iron, which becomes a temporary magnet, would emit coherent De Broglie waves and the magnet would absorb them (reinforcing its strength). The intervening air molecules would again line up in the direction of the aether flow, reducing Fermi pressure (the pressure which atomic electrons exert, a.k.a. van der Waals' pressure) between the magnet and the iron. De Broglie wave striking the iron's surface motivates the motion of free electrons within the iron - again resulting in a small rotary current. The end result is the same; the iron atoms would align within their cubic molecular structure, in the same orientation as the magnet, causing a pressure differential in the space between the magnet and the iron. This pressure tends to push the magnet and the iron together while the surrounding Kinetic field-pressure remains the same. This differential is not air pressure but fermi pressure, the pressure of atomic electrons and free electrons) contacting each other. If the fermi pressure between the two magnets is less than the fermi pressure of the field, the magnets will be pushed together. If greater, as in the case of like poles, they will be pushed apart (opposite poles attract, like poles repel)



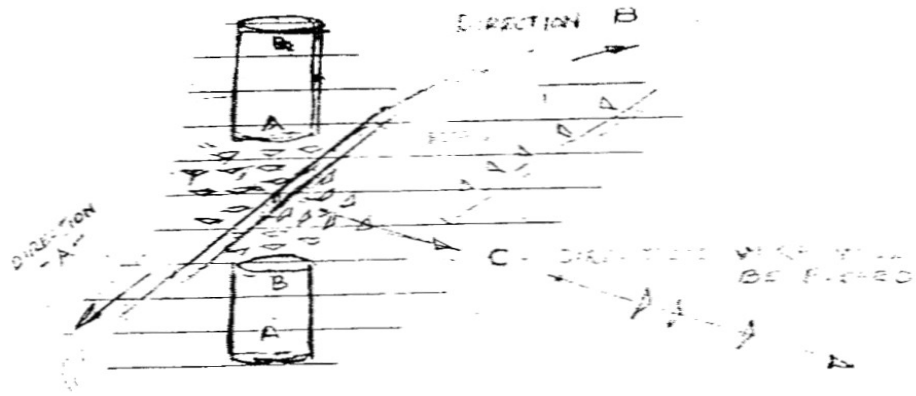
The pressure in area C pushing the magnets apart is greater than the pressure in areas A and B: -- fermi or van der Waals' pressure.



c

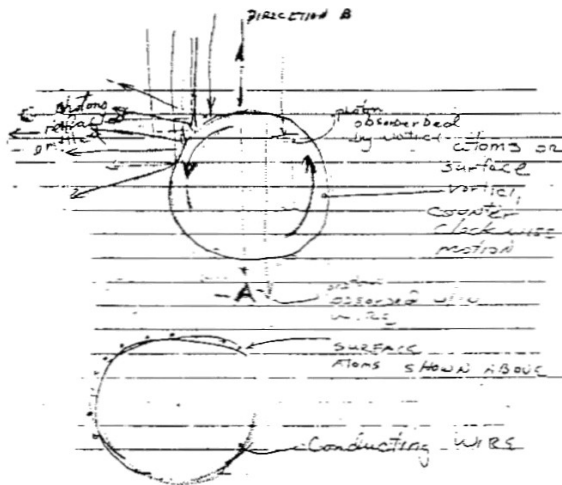
Field Lines of a Magnet

Another magnetic phenomenon is shown when a wire carrying a direct current is placed between magnets of opposite poles A & B. Current will flow from pole A in the top magnet, to pole B in the bottom magnet.



The current flows in the direction as indicated.

Looking down the wire in direction A of the current flow, the aligned vortices turn counter-clockwise as quanta flow from A in the top magnet to B in the bottom magnet.



Direction B is at the top of drawing; direction A is at the bottom, and direction C is to the left of drawing. A large percentage De Broglie coherent waves radiated from magnet surface A above, are redirected in direction C which is to the left when facing the direction of current flow. These waves redirected in Direction C, re-align atoms in the air toward direction C to the left strengthening the magnetic repulsion effect.

As a result of an electric current, a wire normally will emit quanta equally in all directions (360°) at right angles to the current flow; but more quanta will be emitted from the surface of least resistance which in this case would be in the direction away from the quanta emissions of the magnets current-carrying wire, which by its wave emissions realigns the atomic/ molecular structural alignment of the air (gasses) between the magnets. The result would be magnified quanta emission toward direction C which is the direction the wire is pushed. When the current is reversed, the wire will be pushed in the opposite direction (180°) also at a right angle to the line of the wire and a line drawn through the center of the two magnets.

Magnetism Conventional Theory

Magnetism is by far the most well understood of all the so-called fundamental forces in physics. Both the molecular and atomic makeup which determine the magnetic character of an element, alloy, or compound, have been extensively studied and “correctly” analyzed - and are well understood. In contrast to this understanding however, modern physics accepts the principle of magnetism as an “a priori” force--piori meaning; fundamental constituent of reality that existing from the beginning of reality. There is no theorized reason for its fundamental cause within conventional theory. The dominant theory is that virtual photons “carry” the force.

Instead APT the cause of atomic alignment produces a field pressure differential which is the force of magnetism.

It may be only a “small” step from today’s understanding to a generally complete understanding that: 1) magnetism like gravity is a Pushing Force. 2) both the “pull” and push of magnetism is determined by a field pressure differential resulting from molecular and atomic alignment that results in the field flow of the ZPF 3) magnetism is initiated by De Broglie waves emitted as a result of the atomic alignment within both a permanent and electro-magnet.

Static Electricity and Magnetism

The Ipan theory of static electricity and the mainstream theory are generally in accord with each other excepting as to the cause of magnetism. Its cause, atomic alignment, would occur when two differently charged ionized particles or objects come in contact. Their atomic alignment would be the result the orientation of least resistance to electron motion and current flow (toward the positive ions). This alignment is the same alignment we discussed in a magnet which, in this case, occurs during direct contact concerning realive motion where one material picks up electrons from another. The result is the reduced firmi pressure between the two masses enabling them to “stick-together” until current flow ceases. Electrons in this case flow in one direction only nullifying most random Fermi pressure. When the current ceases the atoms return to a state of random alignment and the electrical potential of static magnetism ceases.

Para-Magnetism and Dia-Magnetism

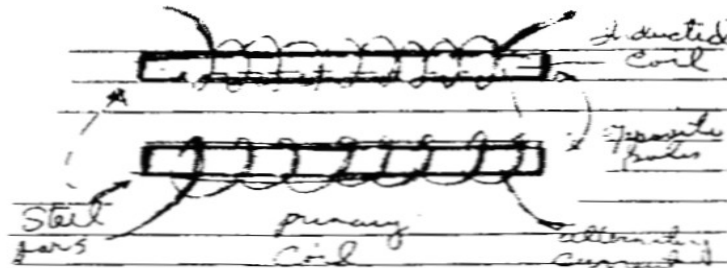
Other than ferromagnetism, there are two other primary types of magnetism which we will discuss in modern physics. First, Paramagnetism – is where atomic alignment is in the same direction parallel to the stimulating source. Second diamagnetism includes those elements which line up in the opposite direction or anti-parallel to the stimulating source magnet. Both types of magnetism are very weak compared to ferromagnetism however.

APT --Ferro-magnetism (primarily found in the iron family of materials) is initiated by De Broglie waves being emitted from a source magnet which causes the object's atomic realignment according to the element's susceptibility to a magnet. These waves interact with electrons in the atom. These De Broglie waves, in turn, interact with the electrons of other atoms which first change the alignment of electrons and then atomic nuclei and hence the orientation of their atomic vortices. The result is an atomic realignment initiated by wave contact, to the extent of the materials vulnerability to magnetic influences. In other words, an element's atomic and molecular structure determines in which direction the material's atoms will turn or not based upon magnetic influences. A chain reaction event after wave encounter consequently determines the type and degree of magnetism a material will experience.

c

Electrical Induction APT

Electrical Induction is an electro-magnetic phenomenon.



As an alternating current flows in the primary coil, De Broglie waves are emitted at a right angles to the changing directions of the current flow. These waves and field flow contacting a steel bar inside the coil initiate an induced current flow within the bar. This current flow results in the bar becoming an electro-magnet which changes its magnetic pole back and forth as the current alternates. This steel bar magnet can initiate magnetism in a second steel bar in the manner previously described and the second bar will alternate its magnetic pole in response to the primary magnet. An alternating current flow in the second magnet will induce current flow in the secondary wire coil via De Broglie wave field current motivation, with the strength of voltage proportional to the quantity of insulated wire wrapped around a secondary bar. Doubling the winding in the second coil will result in the voltage also doubling. This is the principle of Electrical Induction APT.

Magnetic Force and the "Inverse Square" Law APT

Magnetism is controlled by field flow of the ZPF and De Broglie waves. The candle-power of light including the magnitude of photon emissions in all visible frequencies, as well as the De Broglie waves and field flow of the magnetic force, all decrease in intensity according to the inverse square of the distance from the motivating source. If we double the distance from the magnetic source, we would reduce the magnetic effect (force) to one-fourth of its original strength. A.P.T., The explanation for this effect from light is the same for the magnetic force. EM radiation and the magnetic influence are emitted from a source that can be thought of as the center of a sphere.

APT

Place an object in the path of De Broglie waves and aether flow at a given distance. The surface of the object, which is contacted by these waves and field flow can be thought of as a portion of the surface area of the sphere. If the diameter of the sphere is doubled, the surface area of the new sphere would be four times larger than the first, and the portion of waves contacting this object would be one-fourth as much (Surface area of a sphere, $4\pi r^2$). So the “inverse-square” law - both of light and magnetism can be derived from the surface area of a sphere and also applies to gravity which we have already described.

The Earth's Magnetic Field:

The Earth's magnetic field is approximately half-way between its orbital axis, and the plane of the solar system, i.e., about $11\frac{1}{2}^\circ$ ($\frac{1}{2}$ of the 23° orbital axis). It has long been known that the earth's magnetic field fluctuations are coincident with solar cycles of sun spots and solar rotations. The earth's magnetic field is formed and controlled by several factors. The density of the earth's atmosphere, its rotation rate on its axis, and its proximity to the sun.

As the earth rotates on its axis the atmosphere moves relative to the earth at varying speeds blowing over both the oceans and the land, which we call wind. This friction of the wind to the surface causes electrons to be stripped from atmospheric atoms ionizing them. More atmospheric ionization occurs during the daytime, and at the temperate zones more than in the polar regions. More ionization results when it is moving over land than over the oceans. These atmospheric ions move around the earth with the wind - primarily westerly. As these ions move over the oceans, they initiate electric currents along the ocean's surface in the same direction as the wind (primarily east to west), or clockwise, when observed from the North Pole.

One effect from electric currents is quanta emissions which result from all electric currents. As in other electric currents these quanta are emitted incoherently. As in the case of ferromagnetism and other forms of magnetism, these quanta move at right angles to the current flow through the water and many subsequently refract through the atmosphere over the entire Earth's surface. These photons cause a prevailing magnetic surface influence and alignment as well as atmospheric molecular and atomic alignment. This polar alignment of the molecular vortices face either north or south based on the prevailing alignment which generally maintains the same direction (Prediction).

Solar radiation and particle emissions usually enhance the strength earth's magnetic field and can distort it during solar storms. In addition to the solar effects, the earth's magnetic field is also influenced by the very large magnetic field-influence of Jupiter from ions. Jupiter emits more EM radiation and ions than it absorbs from the sun.

The earth has experienced over its history, many reversals in its magnetic field. Although solar radiation and emissions usually strengthen the earth's magnetic field, most of the known geologic reverses in the magnetic field were probably caused by very large prehistoric solar storms. Some may have been additionally influenced by major geologic events or changes in Jupiter's magnetic field, or possibly by other non-terrestrial sources or any combination of these sources.

The earth's outer core is primarily molten iron, but iron in its molten state has no magnetic memory and is not a ferromagnetic attractor. For this reason, and because of its remoteness, the core of the Earth's and its interior probably plays no relevant role in the earth's magnetic field. Usually the strength of the earth's prevailing magnetic polarity will resist reversal excepting by extreme solar ionic influences. The strength of the earth's magnetic field also varies, sometimes in relatively short periods of time.

Chapter 11, Quantum Configurations: The Outward Appearance of the Pan Theory. *APT*

Atomic and other elementary particles, and their quantum configurations of Pan-chain: Early in our journey analogy of the Exordium, we first encountered elementary particles. Now we will continue this theory and discussion as to how elementary particles form, evolve, and interact. We will do this by discussing elementary particles and their quantum configurations of Pan-chain.

Particle formation: In a previous discussion we described how electrons, protons and alpha particles by fusion are formed in and around galactic black holes. Neutrons and alpha particles are primarily produced by compaction of fusion respectively of atomic nuclei within stellar plasma.

- An electron (as previously described) is a single coil of pan-chain of similar size to each other, joined to itself by being bent in a loop end-to-end.
- A proton is a large-coiled Pan-chain of a specific length bent into a larger loop end-to-end.
- Muon and Tau particles can be described as very short lived engaged electrons, like neutrons they would not be single particles. They are an electron mechanically joined with a neutrino sized field particle. They are not stable particles, only having a very brief existence.
- Neutrons are also not a single elementary particle. They contain a proton, electron and additional pan-chain which are joined together mechanically; outside an atomic nucleus they soon decay into a proton, electron, and a neutrino (their half-life in an open field is about 11 minutes).

Spin: All “looped” particles have intrinsic spin because, as previously described, the pan-chain within them perpetually unwind and concurrently rewind. Particles with $\frac{1}{2}$ spin wobble on their axis of rotation, showing the same face to an observer every two revolutions. This spin is real, not just a name for a characteristic which some theoretical physicists assert.

Neutrinos APT

Neutrinos, as well as all unlooped pan-chain, are pan-matter which have no intrinsic spin. Their apparent spin is caused by the compression of their pan-chain at high speeds; this compression is released when detected, causing the particle to spin momentarily. In the case of looped particles (charged particles), the directions of its spin and the orientation of the vortex “funnel and flute” are the determining factors of a particles electric charge and whether it is a particle or an anti-particle. Unlooped Pan-chain are all neutral and could be classified as Neutrinos. However, there are accordingly millions of different lengths, starting with a single Pan and continuing incrementally upward in length to chains larger than a proton. Small Pan-chain are omnipresent in the entire universe and would accordingly be the major constituent of what we’ve called Pan-fields. A pan-field can be defined as any large or small volume of space, but usually those volumes which have a common gravitational influence, such as planetary, solar, galactic, etc. Large pan-chain are rarer because their interactions with spinning particles of matter can break longer chains. A single pan, which we’ll discuss later, may also be rarer.

Additional forms of neutral particles are pan-engagements. These, as previously discussed, are small, loosely-knit bundles of pan-chain which make up EM radiation as well as the W^+ , W^- & Z^0 particles. These pan-engagements are made by atomic nuclei. Their spin is real but not intrinsic; they are all very short-lived, non-permanent particles.

The Weak Nuclear Force

W^+ and W^- and Z^0 Particles and the weak Force:

These are particles which, according to conventional physics, “carry” the weak force that supposedly controls atomic neutron radiation as well as supposedly the identity exchange of neutrons and protons within atomic nuclei.

(The Weak Nuclear force continued)

A singly neutron can join with a single proton if they are forced together in nuclear bonding. The resulting nucleus of one proton and one neutron is called a deuteron and is a stable nucleus. Some larger nuclei with more neutrons than protons are unstable. The nuclear configuration for each element which is the most stable is called the standard configuration, or the most common isotope. Other isotopic configurations which radiate neutrons away quickly are called radioactive isotopes. The rate that neutrons are radiated away has been determined for most all isotopes and defines their half-life.

APT, - Unpaired neutrons (neutrons that are not attached to just a single proton) can escape their nuclear binding because two neutrons are accordingly attached to a single proton, which is a less stable configuration than a one-to-one ratio. Relatively long Pan-chain within the atomic vortex also interact with the nucleus. As these particles interact with a nucleus, they will be thrown from the nuclei and may display a momentary spin which make them detectable. These are the W+ and W- and Zo particles. Some will be captured by the nucleus enabling the nucleus to capture more neutrons. Neutrons will not decay inside the nucleus but, through forceful impact, they may be compacted, changing them into a proton and emitting their binding pan-chain as an electron and an electron neutrino.

This is generally considered a type of nuclear enhancement, giving the atom a higher atomic number with one less neutron. Nuclear decay, on the other hand, occurs in two prominent ways. The most well known is by neutron radiation known as radioactivity. The second way is when a proton loses “full engagement” and incorporates pan-matter between its body and its “free” arm becoming a neutron. Although a neutron is a more massive particle state, it is a lower nuclear state, reducing the atom’s atomic number and emitting binding pan-chain in the forms detected as a positron and a neutrino.

The Strong Nuclear Force

In conventional physics theory, the Strong Force is a force which holds protons together. According to Quark Theory, protons are made up of six quarks: Up, Down, Top, Bottom, and Strange. According to quark theory, quarks are the most elementary particles that exist. They, accordingly, are joined together by equally small particles called gluons. Gluons, according to quark theory, “carry” the Strong Force by holding quarks together. Together they, accordingly, would make up all known particles.

(The Strong Nuclear Force continued) *APT*

The problem is that no free quarks or gluons have ever been shown to exist because, according to the same theory, they can't be separated without their annihilation. Ipan theory states that a proton consists of a spinning, looped string of ~10,000 or more pan, something like a coiled string of beads. These links or strands between pan are an integral part of each adjacent pan, a single strand of uniplasm with connecting umbilicals with no internal parts. If a proton's loop is broken by another proton or anti-proton, the remaining parts (no pan are destroyed) will decay into many possible potential forms depending on the size and momentum of the remaining pan-chain. In proton division, few stable particles can be created. The remaining pan-chain will become field material and their momentum will be absorbed.

Paring – is a process unique to the Pan Theory

Paring is an essential part of the Pan-Theory. Spinning particles, as well as all Pan-chain, grow in length as time progresses. As previously discussed, this Pan-accretion occurs in the center of the Pan-chain. For spinning particles, the center loop maintains a consistent size and form. An increase in its pan-count and length would incrementally change the length of its "arms," the parts of the chain past the looping point. Its mass would be affected little because most of the mass of these spinning looped atomic particles consists of highly energetic vortices which they create by virtue of their spinning rather than their own mass being primarily a function of their physical-Pan count.

Paring is a process where particle arms, when they begin to extend outside the primary vortex due to pan accretion, would ultimately be trimmed through interactions with other particles in the same condition. Electrons which exceed a maximum length are either pared off in the same manner, torn apart, or their loops are forcefully disengaged. For protons and neutrons which have exceeded their maximum stable lengths, the tips of their arms would be slowly pared away, possibly as little as a single Pan at a time (roughly 1/10,000th of a proton's Pan-mass, conceivably only a millionth of its gravitational mass).

The small Pan-chain which would be pared off might become a part of the vortex surrounding the particle but eventually would become only small field particles. For all spinning particles, their gravitational mass would be determined by their spin rather than their Pan-mass. For this reason, any variation in pan-count size between atomic particles would seemingly be undetectable, at least with today's technology.

Anti-Particles, Anti-Matter

Antiparticles start as ordinary Pan-chain which were forced to loop in the opposite direction of “conventional” particles. In physics laboratories, these particles are always created in pairs: a particle and, spinning in the opposite direction, its anti-particle. One is a conventional particle of matter, and the other--playing no role in forming normal atomic matter--is called an antiparticle. Antimatter particles have the same mass but have the opposite electrical charge and spin. A.P.T. anti-protons and not simetrical to protons and accordingly have a relatively shot half-life as discussed below.

When these particles are formed by compression within the galactic central matrenaci area, they are also often created in pairs. Because all the pan-chain unwind in only one direction, there is a bias. Electrons are created more easily than positrons, and antiprotons are created more often than protons. Anti-protons are theoretically less stable than protons, unless their spin is reinforced by a magnetic field as in antiproton capture techniques here on Earth. Consequently, antiprotons within the Matrenaci area surrounding a black hole would appear mostly as virtual particles; their particle life would only last a brief moment. Most that conceivably could stabilize would not escape from this area, as explained below, but some of the protons created in this area would remain stable and could be forced out along with electrons in large polar jets. Many positrons also only form as virtual particles, whereas electrons more readily form as stable particles. Unlike antiprotons, fully formed and engaged positrons remain stable particles like electrons.

The reason for this break in symmetry is because pan-chain-coils form and unwind in only one direction but a pan-chain can become looped in two ways as previously discussed, either left-handed or right-handed depending upon which arm is in front. Because of their unwinding, these coils can be forced into loops more readily one way than the other. This again would be the electron and the antiproton: both would be spinning in the same direction, the direction that would reinforce their form, spinning them into their loops. Electrons would form first within the field along with some stable positrons. Both require smaller coils and less force to form. Since electrons form stable particles more readily, most of the stable positrons would be annihilated by the prevailing electrons.

The outer part of the Matrenaci area would then become dominated by electrons before forces would become strong enough to form protons and anti-protons. With the outer field first dominated by electrons, only protons could escape the field. Any surviving antiprotons would be repelled by this field of electrons because of their charge. Few, if any, could escape the Matrenaci area where they soon would become disengaged or be annihilated by protons..

Because particles and antiparticles annihilate each other when they engage (upon contact), even a slight break in symmetry would seemly lead to the domination of regular matter. With a greater number of particles than antiparticles, the life expectancy of an antiparticle would be short. Any antimatter (which potentially would be an anti-proton and a positron jointed together as an antimatter atom) would seemingly be short-lived and, accordingly, would be inconsequential in the universe as a whole, should it exist at all.

Particle Vortices and Wave Mechanics

-- Particle vortices and charge --

APT

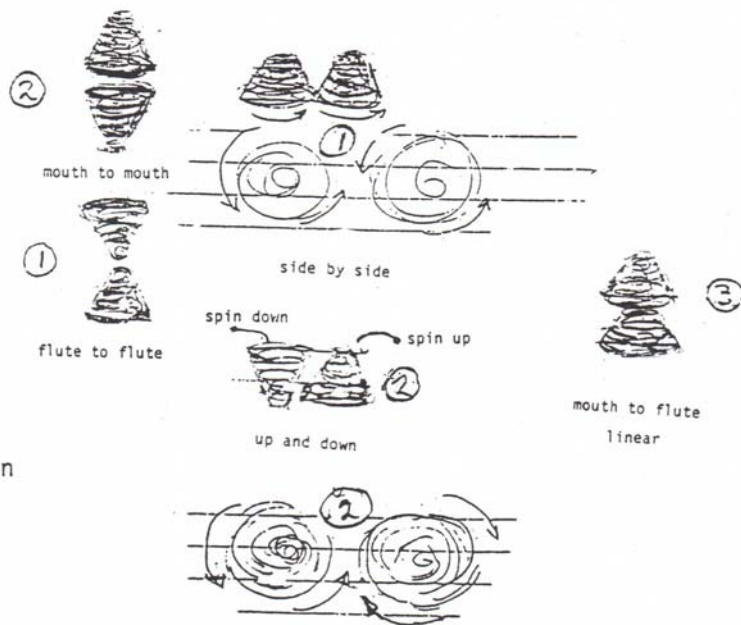
Electric charges only occur in particles which have spin and is an indicator of the particle's vortex configuration and direction.

vortici with the
opposite spin



Positive and negative charges can be held together in a single vortex such as a hydrogen atom, two vortices that merge - a proton and an electron. If they are a particle and an antiparticle, they will soon thereafter engage and annihilate each other. Annihilation, in this theory, means to be torn into pieces of Pan-chain. Particles rotating in the same direction (having the same spin) and which have the same directional vortices repel each other. Particles with opposite spinning directional vortices are pushed together by a difference in pan-field pressure.

vortici with the
same spin



- (1) most repulsion
- (3) least repulsion



Atomic and Gravitational vortices have similarity to a weather vortices

Chapter 12, Nuclear make-up and Behavior

PARTICLE VORTICES

As a particle spins and interacts with its surrounding Pan-field, a vortex--which is a whirlpool of field particles--develops around the particle in accord with the particle's configuration and rotation. This vortex acts as a buffer between the particle and other particles. The inflowing Pan-field material (defined as the cause of gravity as previously discussed) holds the vortex together and is the source of its Pan-chain makeup. As a particle spins, its coils interact with the surrounding field something like a rotary egg-beater in water, where most of the water moves toward the outer edge of the bowl. Like a bowl, the surrounding Pan-field density holds the vortex together. Toward the center of the vortex field pressure progressively decreases.

As discussed in previous chapters, all atomic particles are loops with "arms" extending beyond the loop. As these loops spin, fluxing waves develop within the vortex because of its "rotational wobble" which will be discussed in the next section. This wave cycle is repeated every two-particle revolutions and extends beyond the vortex's boundary into the surrounding field. Each particle type has its own unique wave, the larger and more "excited" the particle, the bigger and more intensive is the wave it creates.

PARTICLES AND WAVES

All particles push up waves. If the particle is in motion, stronger and shorter waves will precede it, and longer and weaker waves will be emitted in the direction opposite its motion. These particles reinforce the wave in front of their forward motion like the bow wave of a boat; the greater the particle's mass and speed, the larger the wave. When moving in quantities, a dominant wave pattern may develop where particles will be contained within the troughs between waves. Like bow waves from a ship, if unperturbed, they will continue a constant speed but will fade away and be absorbed if the particles within it encounter resistance to their motion. A wave pattern within an atomic vortex is controlled by the nuclear spin of the atom's protons and neutrons. Its wave intensity is proportional to the number of nucleons. This wave intensity extends about the same distance from the nucleus regardless of the number of nucleons. They are waves moving outward through an inflowing field. The waves' frequency and their minimum energy level are also proportional to the number of nucleons. The inflowing field increases in intensity to replace the pan-chain radiated away (quanta/photons), while the outgoing waves change in intensity depending on the atom's excitement (temperature), which stems from the kinetic motion of the nucleus.

(particles and waves continued) *APT*

An electron has a gravitational mass $1/1836$ that of a proton. It will be pushed toward the outer limit of the atomic vortices by the wave produced by the spinning nucleus. It would settle at a distance where the influence of the inflowing gravity field would equal the nuclear wave-pressure moving outward. The electron can be buffeted around within a wave trough which restricts the electrons' position within the Pan-field vortex, regardless of the atom's changing orientation.

The outer-most electrons of an atom, called its valence "shell," when encountering energetic particles or photons would increase in energy and be pushed outwardly to a new wave trough indicative of a higher state of energy, one wavelength further away from the nucleus. This process may continue outwardly to other successive shells. As the atom loses agitation, the inward field flow pushes the electron against the inward side of the wave which it previously crossed. Here it will encounter increased "friction" from the Pan-chain within the wave, resisting its inertial motion. If it engages Pan-chain within the wave the electron will propel these Pan-chain as quanta (EM. radiation). By doing so, it will lose orbital momentum and be pulled through the wave to the next inward trough. This may continue until it reaches its lowest possible orbit/ state.

An orbiting muon will be pushed more extensively toward the nucleus by the inflowing gravity current and will be less affected by the outward-moving nuclear waves. Its gravitational mass is 200 times greater than that of an electron while its orbital diameter within an atom has shown to be only $1/200$ that of an electron.

NUCLEAR BINDING, ISOTOPES, FUSION, AND FISSION

The simpler the atom, such as hydrogen, the easier a neutron can engage the nucleus without interacting with electrons. A slow-moving neutron, when inside the innermost electron's orbit, will be pushed (by gravity - Page) toward the nucleus by the inflowing vortex current of the atom in the same way as the muon.

(nuclear binding, isotopes, fusion, and fission continued)

The neutron's individual vortex merges with the atom's and intensifies the combined vortex while moving toward the atom's nucleus, pushed by the gravitational inflow of the field. Experimentation has shown that slow-moving neutrons will interact with a nucleus more often than faster-moving neutrons. A.P.T. during stellar fusion the resulting engagement of a new neutron with a nucleus occurs when Pan-chain from the neutron (which we previously identified as a proton engaged by pan-chain) engages an "available" proton in the nucleus.

NUCLEAR MAKE-UP

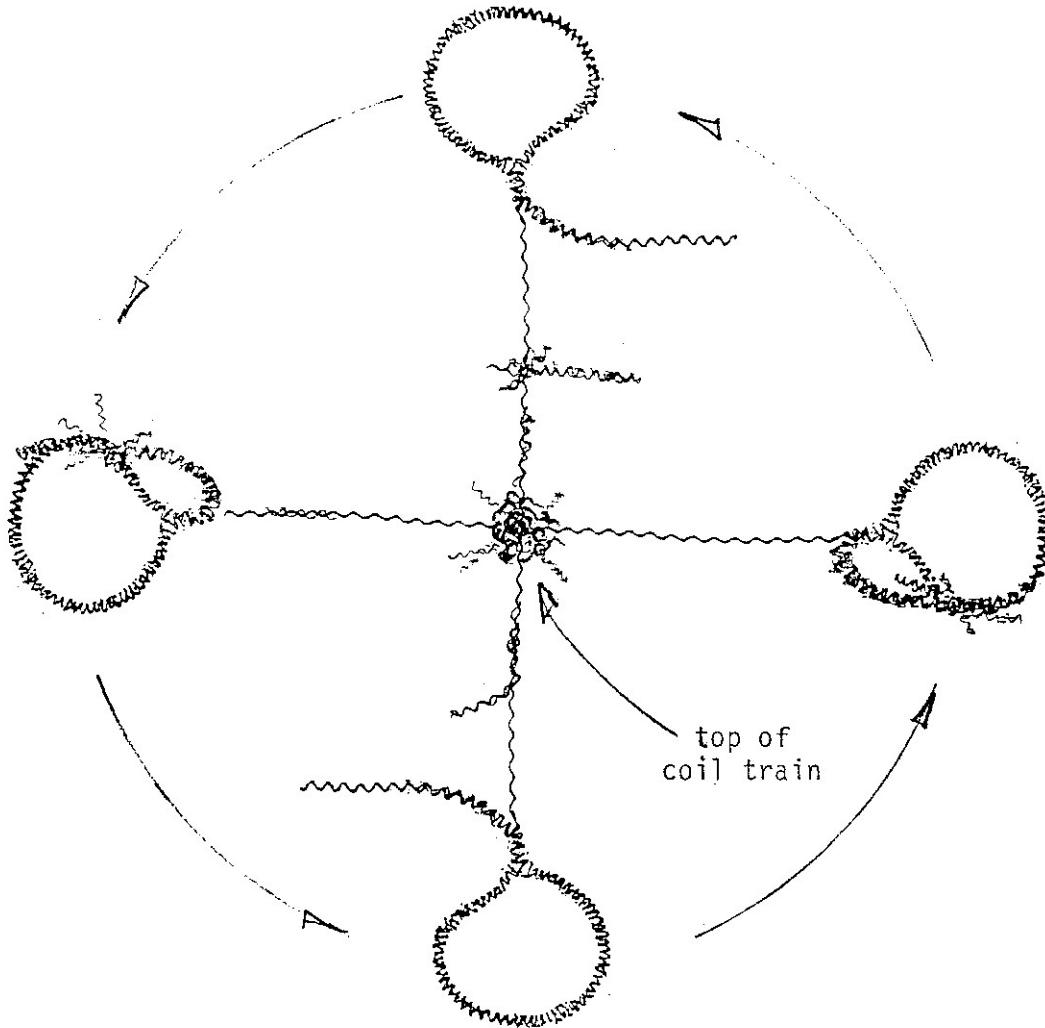
The resulting nucleus will resist separation. This separation force is called the Strong Interaction or the Nuclear Binding Force. This connection is a mechanical linkage which holds "primary" nucleons together; the other so called nuclear force is called the Weak Force. This is when an additional neutron connects primarily to another neutron, which is a weaker connection than a neutron-proton connection and is thus more vulnerable to disconnection. These nucleons individually spin due to their internal unwinding forces and their associated waves cause additional tension on their connection strands. An additional neutron would add additional intensity to the nuclear vortex, but little or no stress to the pre-existing nuclear connections, so an atom made from this enhanced nucleus, although more massive, holds the same number of electrons in its vortex and is classified only as a different isotope of the same element.

More neutrons can engage the nucleus in the same manner, providing an "alpha grid" (building blocks of helium nuclei subsequently discussed) in the nucleus has an available connecting point. When the nucleus is bombarded with high-energy particles, peripheral neutron connections become the most vulnerable to disengagement by these interactions. When matter radiates neutrons from degenerating nuclei the material is called radioactive. For radioactive matter, low-level field interactions will cause decay at a predictable rate which defines the isotope's half-life (the time it takes for half of the nuclei of a radioactive substance to decay into another isotope or element).

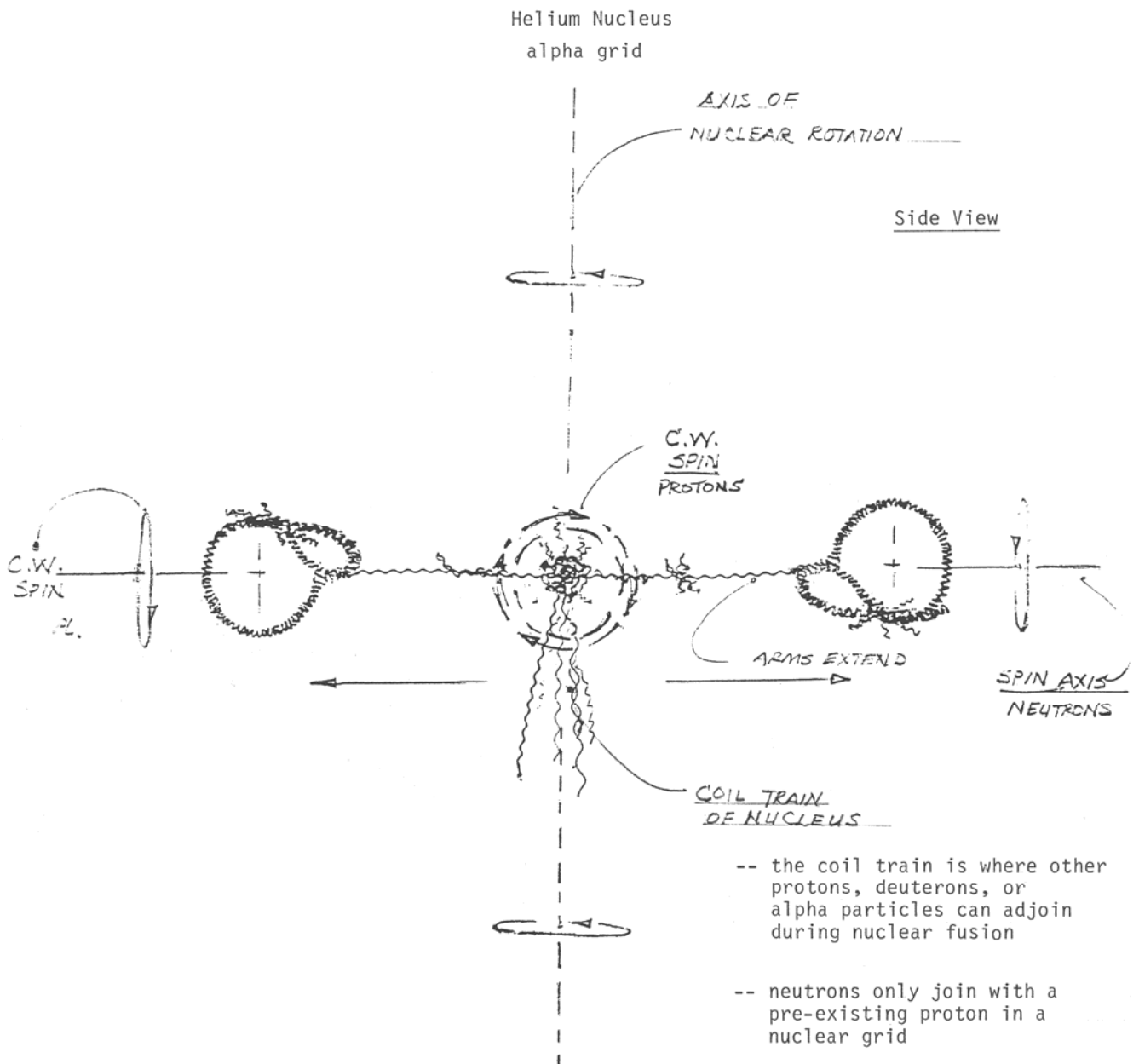
To increase the atomic number of an element, and thereby its proton count, different things can be used: high-energy neutrons, protons, deuterons (neutron and proton combined), or alpha particles, or helium nuclei (two neutrons and two protons combined). High energy particles can increase how tightly packed a nucleus is, and thereby increases its symmetry and stability. This packing of the nucleus will result in the emission of a pion from the nucleus, and a neutron will become a proton (which is where the atomic number increase comes in). The pion will decay later into an electron and a neutrino.

Alpha-Particle
or
Helium nucleus

Top View



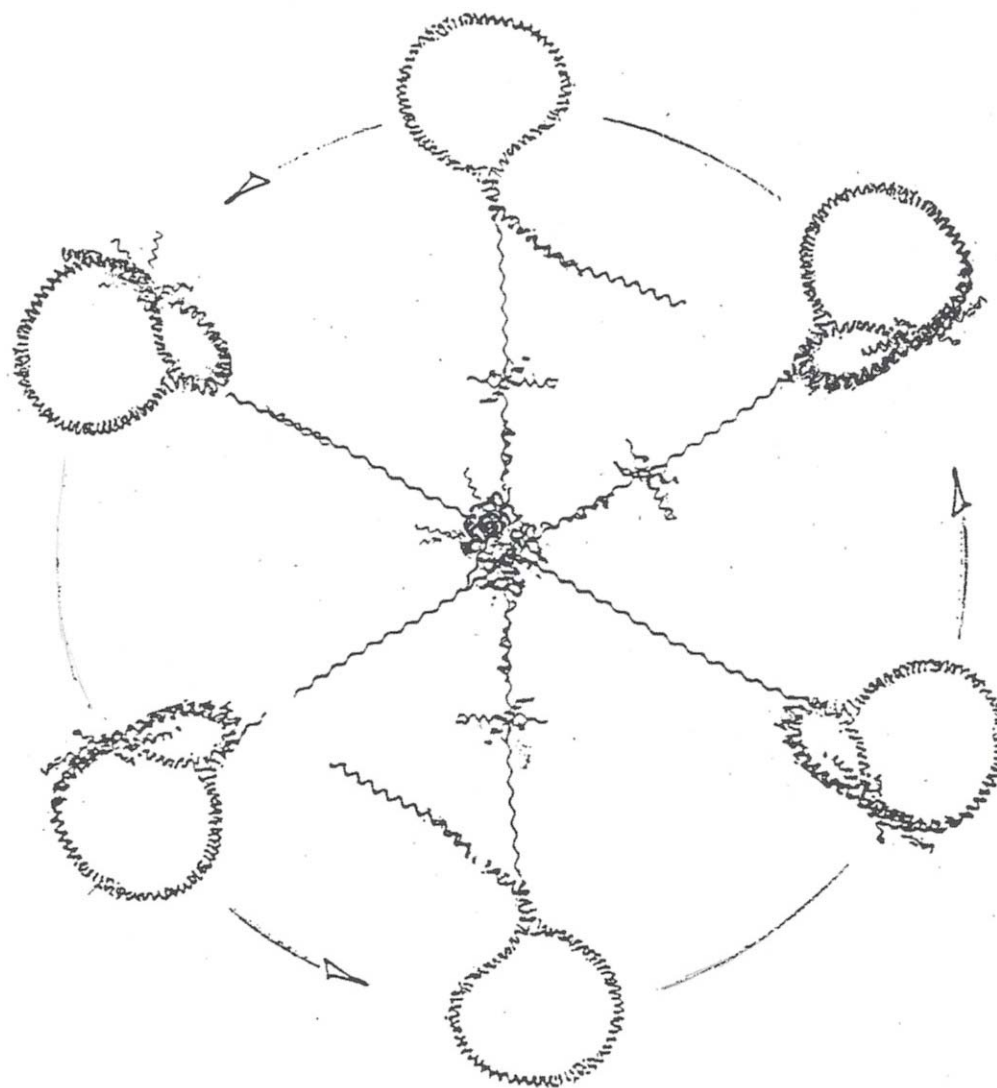
APT The basic building block of all of larger atomic nuclei is the helium nucleus. When ionized (without electrons) it's referred to as an Alpha particle. As a nuclear building block, it's referred to herein as an "alpha grid."



-- the coil train is where other protons, deuterons, or alpha particles can adjoin during nuclear fusion

-- neutrons only join with a pre-existing proton in a nuclear grid

-- for less stable nuclei two neutrons can join with a proton or another neutron

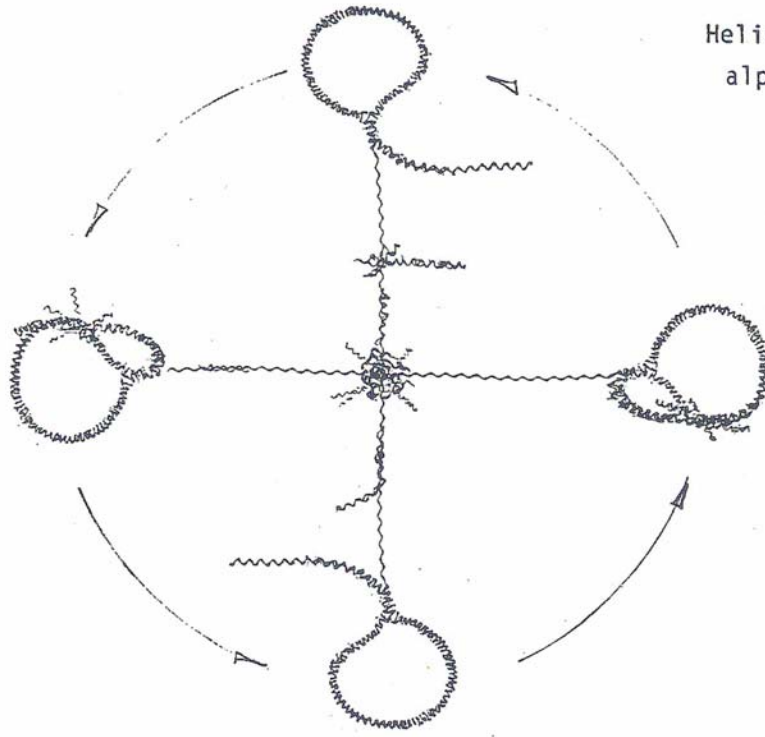


The Nucleus of
a He₄ atom

helium, with 2 protons
and 4 neutrons

-- Nuclei with additional neutrons are
called isotopes; they are less stable and
radiate away extra neutrons over time --

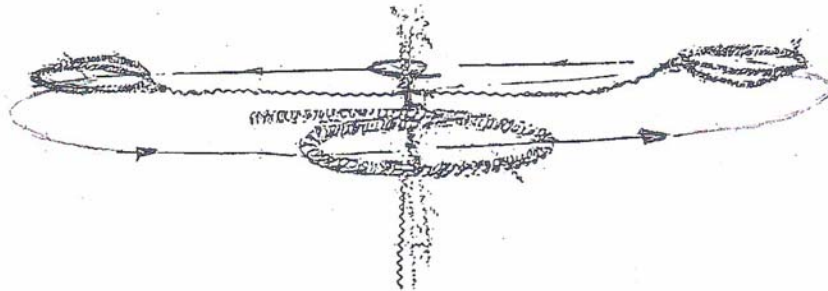
Helium Nucleus
alpha grid



Top View



Side View



Perspective View

APT

When a neutron becomes a proton in this manner, the atomic vortex would become slightly more conical--the Pan Theory equivalent of being positively charged--until the atom captures another electron; this is how high-energy particles can increase the atomic number of an atom. When nuclei join together, the process is called nuclear fusion. High-speed alpha particles can also knock neutrons out of the nucleus of large atoms such as uranium, making the nucleus less stable (such as in uranium 235). Unstable nuclei can be split into smaller nuclei by additional high-energy particle bombardments, and the resulting division process is called nuclear fission. The heat and light produced by the fission are the result of degenerating nuclei and atomic vortices and their ejected high speed, high-energy particle constituents and their associated EM radiation. Neutron and alpha-particle emissions are the measure of the extent of nuclear fission because they are the remainders of nuclear division.

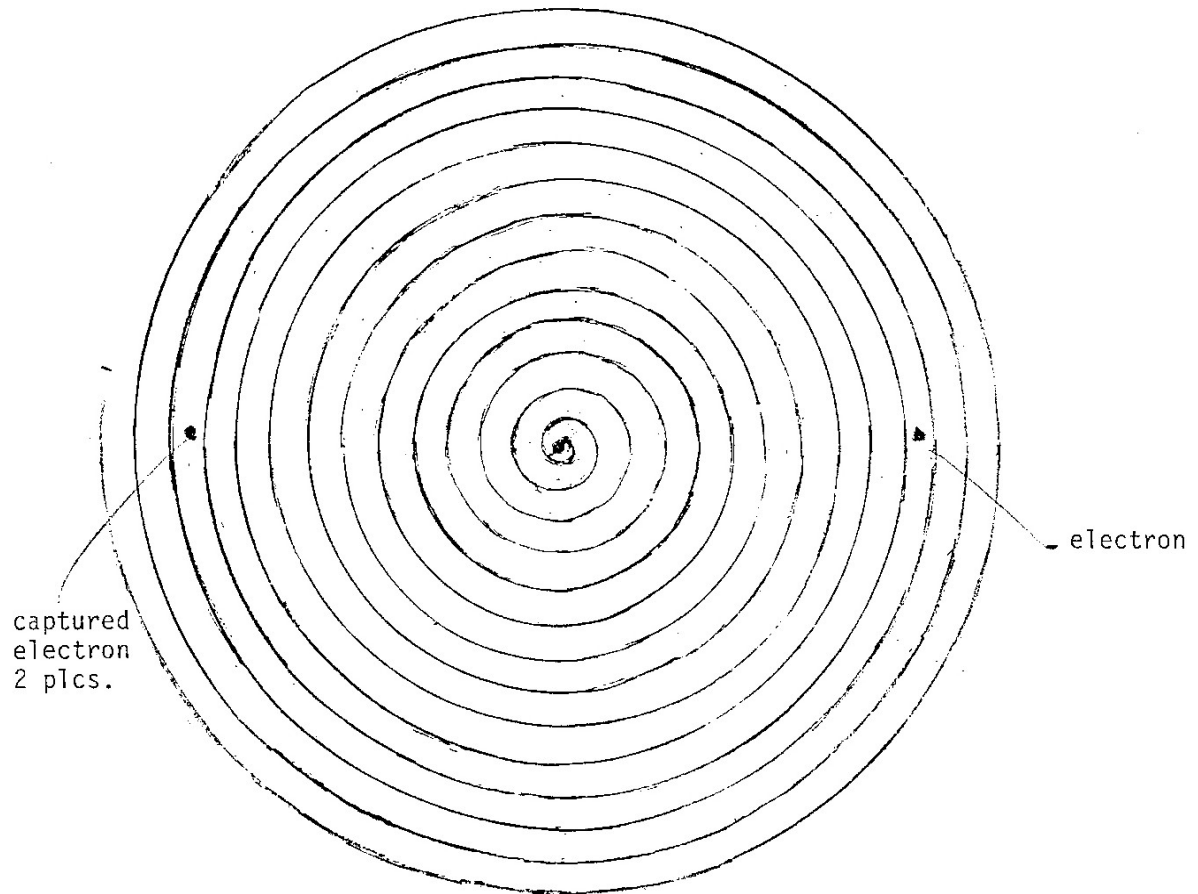
ATOMIC VORTEX BONDING (molecules)

Atoms of the same kind, such as hydrogen, may bond together in a molecule: for example, hydrogen atoms bond to make diatomic hydrogen (H₂). Oxygen also can bond with another oxygen atom to form an O₂ molecule. Ozone is a molecule of O₃. This bonding occurs most readily when atoms are hotter and compressed into a higher density, which forces some atoms into complimentary vortex orientations.

The atoms still retain some of their own vortices, but their orientation within the molecular vortex becomes limited. The stronger the molecular bond, the greater the molecular vortex and the smaller the individual atomic vortices. Their orientation results in a complimentary field-flow which generates a difference in field pressure that holds the atoms together-- an assisting factor is their shared electrons.

It is known that atoms bond according to the number of electrons in their valence ring which is exposed to external atoms, particles and forces.

ATOMIC VORTEX WAVES
(helium atom)



Particle-spin of atomic nuclei create
vortex waves as indicated above.

Captured electrons are positioned between wave crests where the force of the outgoing waves and the force of the inflowing field at a distance proportional to their mass are balanced, and they are spaced in accord with their momentum and their collective radiation.

Some molecules are three or more atoms which combine together. Others, such as hydrocarbon compounds, can combine in almost endless chains of complex molecules. Molecules can be stable and long-lived, or unstable, lasting only momentarily. Different molecules have different binding characteristics. Some compounds can be separated easily with heat or electricity, while others are more difficult to break their bond and require other atoms or molecules, along with heat as a catalyst, to separate.

AN ATOM'S CONSTRUCTION APT

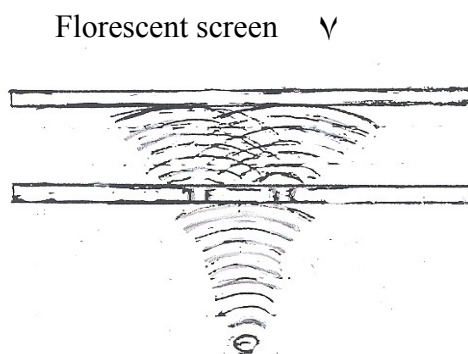
How nuclei capture electrons can be demonstrated by the vortex model of the atom. Each particle in the nucleus creates a small vortex of mostly small Pan-chain around itself as it spins, while larger pan-chain are radiated away. The combined nucleus spins as a reaction to the individual spinning of the neutrons and protons within it. If the atom remains in the same orientation, rotational flow will form a vortex of mostly small Pan-chain as seen in magnetic influences. This vortex funnels Pan-chain material in one side of the vortex toward the nucleus and out the opposite side of the atom. Since nuclei vary as to their configurations, so do their vortices vary as to their form, strength, and the efficiency of their directional funneling capability.

The wave-frequency and intensity of nuclear vortices are controlled by the number of nucleons within it. This also controls the number of electrons which atomic vortices can retain. The electrons have their own mini-vortices, also creating small waves within an atomic vortex as they orbit the nucleus. The intensity and frequency of the nucleon waves, along with the individual electrons' vortex waves and the additional waves created by the electrons' energy of motion, control the spacing of atomic electrons. Electrons ride within the troughs between nucleon waves. Because of the continuous E.M. radiation of field material by the nucleus, and by electrons, new field material would always inflow into the vortex toward the nucleus. This inflowing field holds the atomic electrons "in orbit," as previously discussed, which we call the force of gravity.

The nucleus, on the other hand, is held together by mechanical connections of its constituent parts, protons and neutrons. Alpha particles (two neutrons and two protons) are the general building blocks of larger nuclei.

PARTICLE SPIN

All particles which have gravitational mass have intrinsic spin. Atomic fermions (protons, neutrons, and electrons) spin twice before showing the same face to an observer. In particle physics this is called one-half or half-spin. There are no well-known theories concerning the cause of particle spin or why some particles' spin is one-half. But A.P.T. the explanation is not complicated. As we previously discussed, all Pan-chain intrinsically unwind, which is one of the "dimensions" of their make-up. When Pan-chain of a required size are bent into loops the particle would begin to spin. This spin enables the individual particles within the loop to continue to unwind. Looped particles wobble on their axes, exchanging hands as their axis of rotation, showing the same face to an observer every other revolution.



Light source _____ †

REVEALING OBSERVATIONS IN PHYSICS

Double Slit Experiment - In a well-known experiment, electrons are emitted from a single point and directed toward a perpendicular wall shown in the middle above. In the wall, there are two tiny slits, one on each side of the center, and at equal distances from the emitting light source as indicated above. Electrons passing through these slits impact a fluorescent screen. The pattern of their impact-points displays a wave-interference pattern. However, when one slit is closed, the wave-distribution disappears and statistically becomes normal.

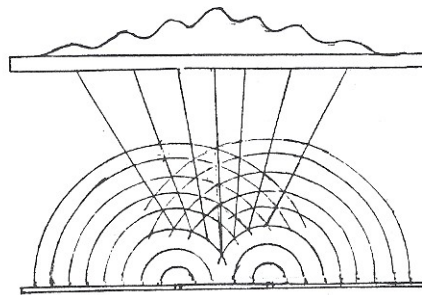
-- ANALYSES OF THE FAMOUS DOUBLE-SLIT EXPERIMENT --

There were two small slits made at the same height in a rigid wall. Some distance behind it an emitting source projected just one electron at a time, first projecting the particle through each slit while the other was closed. This resulted in a single distribution being displayed on a fluorescent screen on the other side of the wall, recording the electrons' points of impact. When both slits were opened but still only one electron went through just one slit, there was a wave interference pattern shown on the fluorescent screen. As long as both slits were open, the distribution of impact-points had the same predictable interference wave-pattern shown below. The same wave-distribution occurs when photons are emitted instead of electrons. The question is: what influence could an open slit have if a single electron or photon passes only through the opposite slit?

Conventional explanation/ theory: Electrons and photons are emitted as a wave rather than as a particle. When the electron or photon impacts a screen, its "wave function collapses," it coalesces and materializes at a single point, thereby becoming a particle. The point of impact can vary within the limits of the wave. Where these separate waves merge the probability increases for a particle to materialize.

APT-- Each emitted particle, electron or photon, is accompanied by a set of waves, a primary wave which is created by the emitting source and reinforced by the particle itself as it moves forward; a secondary set of waves of diminished intensity are also generated by the emitting source at the same time. An electron moves slower than a photon, but like a photon, the denser the atmospheric medium, the greater the refraction and wider the particle distribution would be displayed. Photons are similarly refracted. The primary and secondary waves interact with both open slits simultaneously forming two separate sets of realigned waves moving parallel through the slits. The separate vectors of the two merging sets of waves would push most particles into areas/ groupings as indicated below. Accordingly this experiment might be more readily understood if the radiation being produced were both particles and their accompanying waves rather than waves turning into particles which is the quantum theory interpretation. A.P.T. quanta do spread out as they move which will be subsequently discussed.

Flourescent screen ν , frequency of stikes seen below (histogram)



Light source

ALAIN ASPECT'S EXPERIMENT WITH LIGHT

Alain Aspect performed an experiment with identically polarized pairs of photons emitted from the same source in opposite directions. These photons were directed toward two polarized spinning filters. Some photons passed through the spinning filters, others did not.

According to Quantum theory, there would be a correlation between the two filters. If a photon passes through one filter, it increases the probability that the other photon from the same wave will pass through the other filter. This is because the two photons “materialized” from the same wave; therefore the detectors are measuring the same quantity. The results of this experiment, accordingly, follow the predictions of the Quantum Theory, asserting communication between the two photons faster than the speed of light. Quantum physicists contended this was proof of the otherworldly/ strange behaviors “observed in Quantum Mechanics.”

APT The central source of light which produced the photons in Aspect's experiment was a white light. White light generally radiates in all visible frequencies at once and therefore has a greater degree of incoherency than monochromatic (primarily just one frequency) light has. Not only would photons from a white light vary in magnitude, so would their accompanying waves, even though the light was polarized by passing it through a filter. The photons within a wave cannot be polarized as far as its orientation within the wave. Because waves are always produced in sets by a light source which emits the photons, each wave that immediately precedes a photon-wave may be a combination wave which includes a primary wave that contains a photon and smaller secondary waves without photons. Because white light is a combination of many colors, each set of waves has its own degree of coherency or lack thereof; accordingly each wave is somewhat unique regardless of polarization.

Because white light is a combination of many colors (frequencies) each set of waves has its own degree of coherency or lack of it, accordingly each wave is somewhat unique regardless of its polarization. It may be a primary wave or a combination of secondary waves without photons, only pan-chain (virtual photons). The magnitude and coherency of these waves themselves, separate from the photons within them, have a uniqueness that will control the refraction and alignment of the photons within them, whether they are so aligned to go through the filter or less likely to do so.

If a photon passes through the filter on one side, the chances are better that the photon on the other side will pass through the other filter because the photons were “riding the same wave” that was emitted from the same source at the same time, and therefore has the same coherency. Accordingly the same circular polarized wave possesses a very similar modality for the photon(s) within it. The related Ipan theory would predict that the same effect would occur using monochromatic light but to a lesser extent of correlation for the reasons given above. There, accordingly, would be no “communication” between the two photons. The correlation would also be predictable, but the results would be explainable rather than mysterious like the original experiment A.P.T.

Chapter 13, Behavioral relationships of fundamental forces APT

The relationship between gravity and magnetism

Gravity is the flow of field material into all matter which subsequently radiates this material away. Magnetism is the result of molecular and atomic alignment promoting the flow of an internal electrical current that results in waves of field material, which produces a difference in atomic Fermi pressure. Both forces follow the equation $F = D \cdot Mm / r^n$; where F is the force between two masses, D is the field strength or differential pressure between the masses, M and m are two masses, r is the distance between the masses; and n is a function of the uniformity of the field: n = 2 represents a uniform field. For magnetism, a single gravitational field parallel to it would be considered a uniform field. Flowing magnetic currents of protons and electrons would be accompanied by field currents which also have gravitational influence. But for galactic magnetism and electrical currents which occur primarily when galaxies are forming, field pressures would vary considerably within relatively short distances of just a few hundred light years. This would result in unusual (visually undetectable) inter-galactic motions caused by the resultant gravity field currents which move to balance the field pressure. Magnetic currents of electrons may also flow huge distances along "field lines" during this era of a galaxy's formation.

The relationship of magnetism to light:

The measured effects of both magnetism and light are functions of waves and both follow the inverse square law of magnitude for that reason. The drawing on page () applies to the magnitudes of gravity, magnetism, and EM radiation within a uniform field based upon a magnitude which decreases according to the inverse square of the distance to the source. Light and other radiation are called electro-magnetic radiation (EM radiation) because it has both an electric and a magnetic field component which oscillate in reciprocal phases perpendicular to each other and the direction of the EM radiation.

The relationship of the Strong Interaction with the Weak Force and Gravity

The Strong Interaction holds neutrons and protons together in all nuclei. It is a function of two conditions: the gravitational inflow into the nucleus and the much stronger physical connection (Engagement) of the "arms" of a neutron and proton which, for larger atoms, form an alpha particle as previously discussed.

APT

Some neutrons that are not paired with a proton can become fully engaged and add balance and symmetry to the nucleus. Those which do not add balance are said to form heavy isotopes of an element which have more tenuous neutron attachments. Gravity assists in holding the nucleus together by adding the surrounding inward vector force of field material which opposes outward-moving wave pressure produced by nuclear spin. In space, lower temperatures and a more constant field pressure would reduce the rate of nuclear decay.

Other than the so called "neutron-proton exchange of the Weak force" (paired neutrons and protons exchanging identities within a nuclei), there are also two other, less frequent, neutron-proton exchange processes. The first is when a neutron permanently becomes a proton within a nucleus. This occurs when high speed particles compress a neutron to full engagement within the nucleus. When this occurs, an electron and pan-chain (which engaged to make the proton a neutron) are radiated away from the nucleus in the form of an electron and a neutrino. This enables the proton to form a part of an alpha-particle quartet. When a neutron becomes a proton it could be considered a type of upgrade since the name of the element changes as well as the increase of its atomic number.

A proton's nuclear connection can also become dislodged when high-energy particles strike an atomic nucleus. When a proton is dislodged it may lose its synchronous spin with the nucleus, initially slowing down its rate of spin. It rarely is radiated away; instead, as its speed begins to increase again it may engage a pan-chain from the "cloud" of virtual particles that surround the nucleus. Such an engagement would cause the proton to recoil, which could strengthen the engaged physical connection with the pan-chain changing the particle from a proton to a neutron. This recoiling action also radiates away a pan-chain in the form of a neutrino and a positron. Gravity is the force which pushes a virtual particle cloud closely around an atomic nucleus. Generally, radiation from the Weak Force reinforces the stability of atomic nuclei. Some of the pan-chain radiated by the nucleus are occasionally absorbed by the electrons' vortices and are subsequently re-radiated by the electrons in the form of E.M. radiation.

The Electrical Interaction vs. the Magnetic Force

The electrical interaction between two particles is the "bombardment" of each by waves and the mostly virtual photons within those waves from one particle to another.

(The Electrical Interaction vs. the Magnetic Force; continued) *APT*

The magnetic force between two particles, on the other hand, is based upon the influence of the field waves and the projected vortex influence of each particle upon the other. This requires the close proximity of particles and generates less influence than the electrical attraction or repulsion.

The Strong Force vs. The Strong Interaction

The Strong Force, by definition, is the force which holds a proton together. This is a Binding Force of the umbilical connections between particles in a chain which are strong physical connections. Considerable force is required to spread the coils of the pan-chain, thereby measuring the extent of the Strong Force. The force increases with distance to a maximum before the chain breaks. Once broken, both the physical connection and the strong force is eliminated, permanently disengaged since the pan-chain would be broken as in particle collisions in a proton accelerator.

The Strong Interaction is also called the Nuclear Binding Force. The connection, in this case however, is not as complete. As previously discussed this connection is an engagement of the free arms of a neutron and a proton, determined by the complete intermeshing of the coils of their arms. This engagement will have similar force resistance as the Strong Force except that disengagement will usually occur before the chain breaks; therefore, the force is weaker.

Newtonian Physics

-Ipan theory comparison- APT

How does the Pan theory relate to Newtonian physics? When Sir Isaac Newton published his works in the latter half of the 1600's, he was asked why do things work according to his laws. His answer was that he was proposing laws of nature and that he would not speculate why these "laws" were true.

The Pan theory is a fundamental theory like Newton's Theories. It differs, however, to the extent that it is a theory primarily concerned with the "Why questions" of the universe, why things work the way that they do, then secondarily how they work and the mechanics describing them. These "why questions" have been generally considered by most theorists to be philosophical or metaphysical conjecture, or simply speculation. The Pan Theory, on the other hand, asserts that only by answering these questions and designing logic and/ or physical proofs for these answers can a true general understanding of reality be achieved.

The implications of the Pan theory seem almost endless, but the Pan Theory itself would have less value if there were no compatible theories to explain why the theory would be true and attempt to explain how the details of reality function from the perspectives provided by these supporting Ipan theories. With these more detailed perspectives, mathematical relationships and functional equations can be developed and some of these proposals are presented in this text.

Using the IPAN theories herein, a few notable differences can be shown between: Newtonian physics and Ipan theory:

1) Newton's first law of motion states, "A body of itself is unable to change its condition of rest or motion"

Ipan theory would state: in interstellar or intergalactic space, a body would be considered at rest if it had no motion relative to the Pan-field (gravitational field) which contains it. However, all Pan-fields have both relative internal motion and motion relative to surrounding fields, such as the inflowing vortex motion of our own gravitational field. The same would apply to the motion of matter. A body is said to be in motion when it is moving relative to a chosen reference point determined to have significance: accordingly, a point within the gravitational field which contains it. This is a condition of relativity, a perspective of reality explained by both Mach and Einstein that is also part of the related Ipan theories. This perspective, however, does not change Newtonian law because the surrounding field can exert external forces which might change the motion of any matter within its influence. Contrary to Special Relativity motion has more relevant meanings relative to the gravitational field which contains the body being evaluated.

Its motion will be changed by the acceleration of its containing field, since A.P.T. all of space can be divided into volumes of gravitational fields for the purpose of analysis and all inter- and intra-galactic fields have some areas which accelerate relative to the field as a whole.

Newton's second law of motion states: "The rate of change of momentum is proportional to the force acting and in the direction of that force."

Ipan theory concurs with Newton's second law, but might instead define the momentum or acceleration of a body – adding the statement concerning momentum in general-- that it is relative to the motion of the field which contains it.

Newton's third law of motion states: "For every action, there is an equal but opposite reaction."

This law is acceptable as is but, like all theories according to Mach's Theory of Relativity, it is a perspective of reality and not reality itself. The same is true of the Pan and Ipan Theories, The BB Theory, etc. In this case, this perspective provides a reference frame for calculating opposing forces. As an example of Mach's idea of many possible perspectives, this law could have been stated: "For every action there is a reaction of equal measure." Because of the familiarity with Newton's perspective few would prefer another point-of-view or even a slightly different perspective such as this or one even less familiar. The calculations would be the same, and in this case a slightly different perspective would seemingly not be any advantage. The point is, every theory carries a perspective that in itself can be altered without changing the essential principles involved.

Newton's theory of gravity on the other hand (with its unknown cause) could be improved, accordingly, by the understanding that gravity is a pushing force instead of a pulling force. An example of this is the common household vacuum. In reality the vacuum has no sucking power at all. The motor instead creates an internal low air pressure and the ambient atmospheric pressure pushes air into the vacuum because of this difference in pressure. Even though this perspective is a more accurate description, few would choose it in their everyday thinking because there would seemingly be no advantage except for understanding the mechanical principles of a vacuum, which would also provide the same advantage to the understanding of gravity regarding its mechanics. This perspective, making an assertion, can also be tested and potentially disproved, which is one of the requirements of a good theory by definition.

EINSTEIN AND RELATIVITY

--His Theories of gravity and the constancy of the speed of light etc.—

Einstein's Special Theory of Relativity is concerned with relative (inertial) motion: the speed of light with moving reference points; that time frames are relative to each other; that mass and energy have equivalence; gravity and acceleration have their equivalence. Einstein's General Theory of Relativity asserts that all matter warps space; He proposed that there is a fourth physical dimension that closes the bounds of the universe, and that the gravity of the universe works according to his non-linear equations of General Relativity.

Notable differences of Concepts APT

Einstein/ Lorentz: In Lorentz's model there are background material fields by which inertial motion or velocity can be measured. A hundred years ago these fields were called gravity-centered reference-frames. Any quantitative measure of mass, energy, space, inertial motion, or the speed of light would be relative to its surrounding gravitational field. Ironically, this was the prevailing theory in physics when Einstein came on the scene. Einstein's mathematical model had previously been postulated by Lorentz based upon relative changes in the time frames of varying aether fields as well as the length of matter shortened by speed and the dilation of time. When evidence for this aether was not found and the aether concept was generally thought to have been disproved, Lorentz's version of relativity which came first, and which returned equivalent mathematical results to Einstein's theory, was disregarded in favor of Einstein's model of Special Relativity since Einstein's model did not require an aether field. Lorentz like Michelson never gave up his belief in the aether, gracefully conceded to Einstein if the aether did not exist.

These aether fields, APT, do exist as evidenced by zero-point-fluctuations/ field (ZPF), or the hypothetical entity dark matter. The Pan Theory would resurrect Lorentz's version since the mathematics are equivalent and rewrite the explanations as needed to be consistent with the Pan Theory in accord with preferred reference frames for all relative motion. The necessary changes would be the understanding that all spatial measurements, such as length and the speed of light, are all relative to their own time-frames of their existence as previously discussed. This must be so if matter, EM waves, and photons all get relatively smaller as time progresses.

(notable differences continued)

For instance: when distant galaxies are observed, their magnitude, size, and motion will appear greater than their real size and their light frequencies will appear longer; therefore appearing red-shifted.

Gravity: Einstein's gravitational field is a "drawing medium," and, like Newton's force-at-a-distance, Einstein did not theorize why "his" gravity deformed space. A.P.T. the preferred perspective is that a gravitational field is a pushing force. This force is not a force at a distance; it is pushing via contact made by accelerating field material that results from the omnipresent inflow of field material into all matter. This material is then radiated away by the matter, continuing the inflow. For matter in general, the larger the mass, the greater the radiation and the greater the inflow of field material. Although these three theories (Newton, Einstein, Pan Gravity) are quite different from each other, their mechanics of gravitational motion are similar at planetary distances but the Pan-Gravity theory is very different from these other models at stellar, galactic, and mega-galactic scales.

Space and time: Einstein theorized about curved space, space/time and a fourth physical dimension. In contrast, A.P.T., space and time are only simple dimensions of matter and are not separate realities from matter. In this way, Ipan theory parallels Rene Descartes, who argued that "space is an extension of matter." If there is no matter, accordingly, there would be no space. Immediately outside the confines of the universe, there would be no space by definition: Space in the distance between matter: but as theorists we can find new words to express new meanings. To a limited extent we could call this space "Potential Space" like potential energy. In the final section of this book, we'll get into philosophical perspectives, in this case the perspective would be according to Shakespeare, "What's in a name? That which we call a rose / By any other name would smell as sweet."

Space and time:

Einstein theorized about curved space, space/time and a fourth physical dimension. In contrast, A.P.T., space and time are only dimensions of matter and are not separate realities. In this way, Ipan theory parallels René Descartes proposal: he argued that "space is an extension of matter." If there is no matter, there is no extension; if there is no extension, there is no space. Therefore: Empty space has no reality, existence, or meaning. It would only have a meaning when it is defined by the matter within it.

Quantum Mechanics and Theory *APT*

Quantum Mechanics is a system which uses statistical probabilities to predict the likelihood of occurrences at the atomic scale and quantitative influences inside the atomic realm. It is a system of mathematics and statistics which was developed to describe a historical record of particle interactions, determined by related hypotheses and probabilities in the atomic realm. The primary assertions of Quantum Theory, which differ from classical physics, are that of minimum quantities of energy, matter and lengths, called discreteness, and the concept of Uncertainty.

Quantum Theory, as apposed to Quantum Mechanics, is the underlying theory which tries to explain why Quantum Mechanics is valid, and attempts to provide its foundational logic. It is with this "logic" where the Pan Theory perspective finds fault, not in the mechanics of calculation.

Some varying Perspectives - Electrons in Motion

Concerning Max Born's supposed interpretation of Erwin Schrödinger's equations regarding electron and atomic particle motion often stated as: that electrons act like particles when they're being detected, but their distributions in space are wave-like when they're not measured. Both Schrödinger and Einstein and other famous practitioners believed this interpretation was invalid but it remains the prevailing interpretation today.

Translated from German, Born actually said “The question of whether the waves are something 'real' or a function to describe and predict phenomena in a convenient way is a matter of taste. I personally like to regard a probability wave, even in 3N-dimensional space, as a real thing, certainly as more than a tool for mathematical calculations. ... Quite generally, how could we rely on probability predictions if by this notion we do not refer to something real and objective? (Max Born, Dover publ., 1964, 'Natural Philosophy of Cause and Chance.)

Ipan Theory Interpretation of Schrödinger 's Equations:

An electron, proton, or photon having directional motion relative to the Pan-field which contains it will push up a physical bow wave in front of its forward motion. This wave will be most intense directly in front of the particle or photon, and will decrease in intensity on each side of the "peak" of the wave. Other particles which enter this domain could disrupt/ break up and dissipate the wave, altering the motion of the particle. This is what occurs during the attempted measurement of a particle's location using light.

APT

This is why photons and all atomic particles act like both particles and waves: all atomic particles have an accompanying physical wave. As Plank, Einstein, and others have pointed out, all electro-magnetic waves come in discrete particle packages called quanta.

There are two physical constituents: one of distinct quanta and the other a wave of field material having much smaller particles, field material "pushed up" by the quanta in motion. The field particles which make up the wave do not move much; just the wave itself and the quanta and virtual quanta within it move.

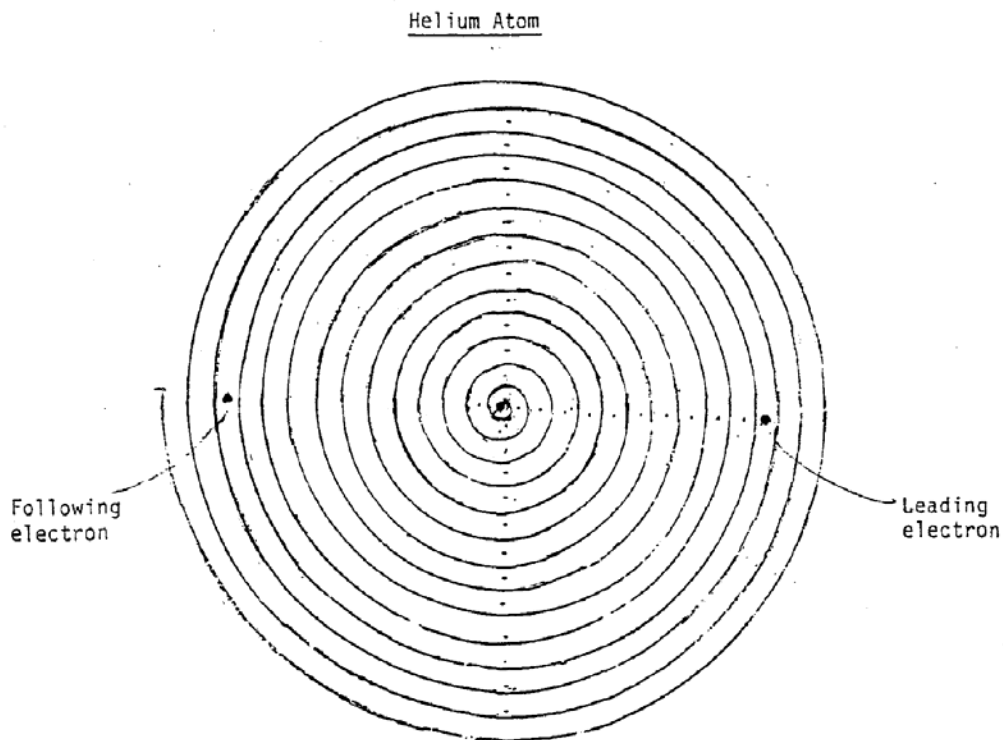
Orbiting electrons also push up waves of field material, which brings us to the next facet of Quantum theory, Heisenberg's Uncertainty Principle: "One cannot know both the exact location of a particle and its momentum. The error will always exceed Planck's constant." This is a cornerstone of both quantum theory and mechanics. Again, in quantum theory this is interpreted to mean that a particle has no exact location unless it is measured.

Quantum theory, concerning Heisenberg's Uncertainty Principle, considers the issue to be one of intrusive measurement. All particles do have an exact location and an exact momentum but, because of their spring structure they spread out proportionally to their inertial mass, the problem, accordingly, only lies in measurement. All present methods of measurement intrude into the particle's domain. This intrusion will always necessarily alter the perceived location and momentum of the particle as well as the additional wave being measured. For this reason Heisenberg's Uncertainty Principle will remain valid until a non-intrusive method of measurement can be devised (conceivably a type of wave-diagonal pattern analysis proposed in the "Proposed Experiment" section).

Pauli's Exclusion Principle: No two electrons can occupy the same quantum state. This means that no two electrons revolving around an atom can not have exactly the same shell location and at the same time have the same state of spin, up vs. down.

A.P.T.

The two electrons shown below are equidistant from the nucleus of a helium atom. The clockwise-spinning nucleus creates a clockwise-spinning vortex. The two electrons shown move within the confines of two nuclear waves in a counter-clockwise direction to maintain their position in the continuously outward moving nuclear waves. This distance and its confines are called the electron's primary shell A.P.T.



The waves produced by the electrons themselves also move within the confines of the nuclear waves. These electron waves move faster in the direction of the vortex than they do in the opposite direction where they are mostly disrupted by the vortex. For this reason, in each shell of atoms containing two electrons there is a Leading electron and a Following electron. Whatever the direction the Leading electron, whether it's spinning up or down, its waves will invert the Following electron to the opposite spin orientation.

APT

Why Pauli's Principle is true is determined by several factors such as the nuclear wave and vortex, the electron's momentum, wave form, and magnitude. These mechanics dictate that there is a "Leading" and "Following" electron for each shell. The wave from the Leading electron inverts the Following electron. (Fig.). If a third electron enters this shell, it will be ejected by the radiation of the electron which leads it, or it may eject the electron which follows it depending on which it is closer to.

Quantum field theories have been developed by quantum mechanics practitioners to assess omnipresent influences of the ZPF both as particles and/ or as pure energy. These theories are generally low-profile, however, because the aether concept of the 19th century is still thought to be a joke amongst many of today's quantum physics' practitioners. As evidence of physical constituents in this field mounts, and new hypothesis such as dark matter become mainstream, an ever increasing number of practitioners will probably start looking at the old aether theories again with a new perspective.

There is a logical answer for all things, once you know the facts, and the logical answer need not be counterintuitive like classical quantum theory. Those opposed to quantum Theory interpretations were: Planck, Einstein, De Broglie and Schrodinger, all highly respected theorists with similar* criticisms. Richard Feynman, another famous quantum physicist, once wrote: "I believe I could safely say that nobody understands quantum mechanics." Of course he didn't mean the mathematical operations; he was referring to quantum theory—the quantum theory interpretations of why things happen the way that they have been observed in the quantum world.

Quark Theory

Quark theory, like quantum theory, has also become two entities: a well-tested predictive system, and a theory of the system's theoretical basis. Without going into the tenets of the predictive system, the theory itself says that there are six smaller particles called quarks which make up all atomic particles and therefore matter. They accordingly cannot be separated from one another. These six quark particles were given the names Up, Down, Charm, Strange, Top and Bottom; accordingly, each would have different proposed characteristics. Particle called gluons would hold all the quarks together as previously discussed.

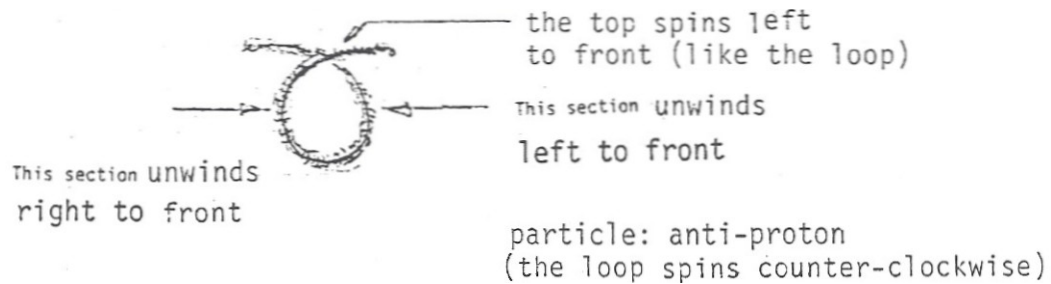
* all objected to the principles of uncertainty and indeterminism

APT

Ipan Theory comments concern the Quark Theory—although quark mechanics have become a valuable predictive system in the quantum world—it does not provide unequivocal evidence for the existence of quarks. There have been experiments which supposedly show that a proton is made up of smaller parts. This does not confirm Quark Theory either since none of these parts have ever been observed independently.

What these theorists call quarks (supposedly dimensionless points) are not separate entities, but continuous parts of a spinning 'looped coil. Example: (The chain below is made of possible millions of individual Pan in a coil).

EXAMPLE

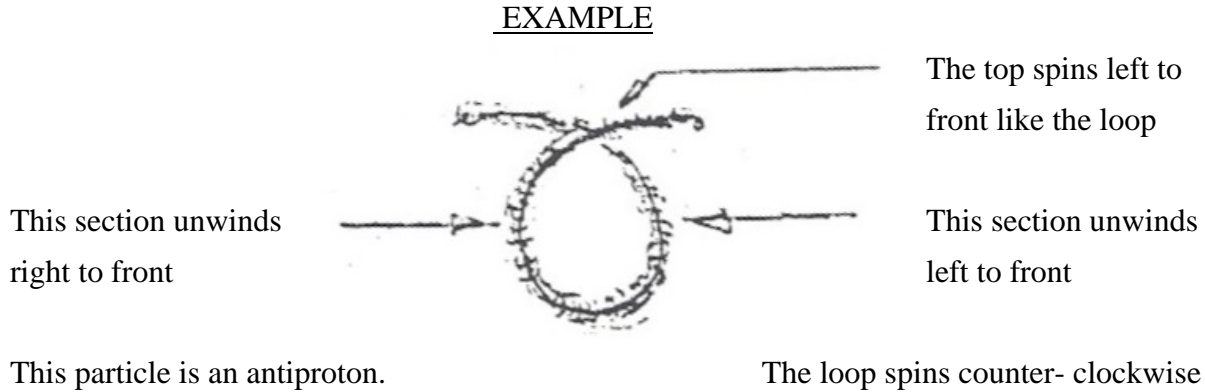


The coil will spin counter-clockwise when viewed from the top or when it's moving away from an observer- the opposite of a proton, the same as an electron. Murray Gell-Mann, the founder of the Quark theory, when he first proposed the theory, stated that quarks should not be considered real particles but instead should be viewed as convenient mathematical constructs, although now he believes the quarks are real particles. These constructs are the operating system of quark theory that will probably continue to evolve but A.P.T. Gell-Mann's original impression was correct, since accordingly spring-coils would be the foundation structure of all matter.

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STRING THEORY -- Theories of Everything (T.O.E.'s):

There are a group of theories called String Theory, Super-string Theory, and “M” Theory.

Most string theories share these things in common:

1. They are mathematical constructs of a theorized model of reality.
2. They are theories of the beginning of the "Big-Bang" and have at least 9 physical dimensions of space.
3. The most elementary material in these theories is “strings” which join together to form all material and resonate at different frequencies depending on their length and form.
4. That the larger universe is constructed in some way by the mathematical equivalent of strings.
5. That the equations of the theory will, in the foreseeable future, explain reality.

These theories have had some success in explaining observed particle characteristics and interactions in micro-physics but have complicated mechanics and mathematics. With at least nine physical dimensions, their theoretical basis is a long way from observable reality.

The related Ipan theories also use strings of particles as its foundation for matter, but otherwise these strings of fundamental particles are quite different from conventional String Theory. The Ipan theory describes a chain of particles which form long coils or springs that can loop and entangle, But the Pan theory is concept-driven, rather than driven by a mathematical model. However, mathematically based models could be devised for the Pan theory which seemingly would be less complicated than other string theories, with no more than three physical dimensions.

Chapter 14, Pan Configurations and Particle make up

-- Questions addressed in this Section --

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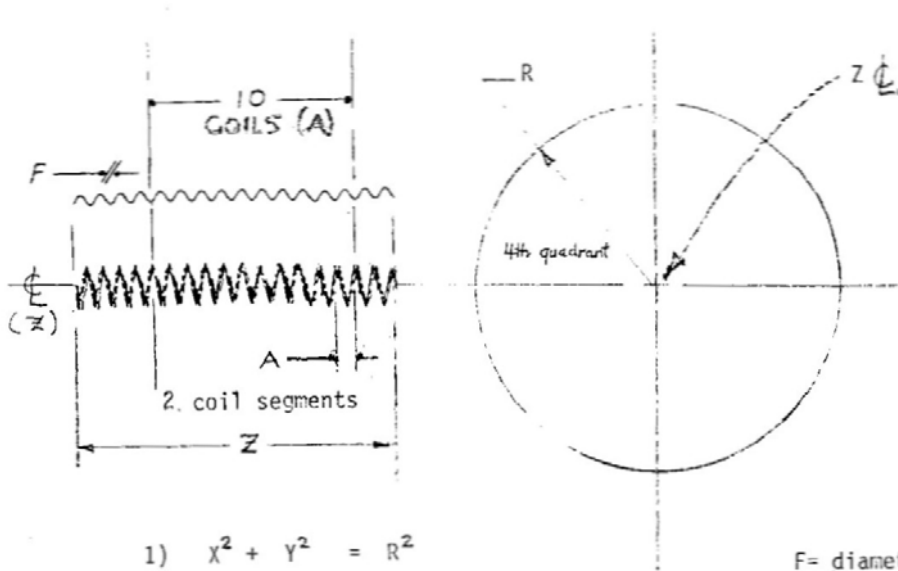
Why do pan coil in a spring-like structure? How sturdy and stable is its coil? How does a pan-chain unwind and still maintain its coiled form? What are a coil's bending characteristics? Why is there more matter than anti-matter in the universe?

Methods and Logic

When we proposed a pan as the most fundamental "particle," some of its essential characteristics were its potential to change (via unwinding), that it continuously grew in length while it coiled, and it has thread-links/ umbilicals between each pair of pan. This was:

- 1) because it had to have the ability to continuously evolve.
- 2) so that it would be able to link together or "engage" to form complexities.
- 3) so that the pan-chain could become long and thin like a string, with the detailed appearance and properties of a spring, being semi-rigid but if bent would bounce back to its original linear coil form.
- 4) so that the string would break eventually, providing for more than one string.
- 5) and also provide that the pan could maintain its individual form in a string of pan; this would give the string a digital (rather than analog) character.
- 6) The "umbilical-link" between the pan would explain the reason why strings eventually break.
- 7) The spring configuration can explain nuclear binding and the equations that describes the nuclear binding force as well as the Strong force, both are equations of a stretching coil-spring.
- 8) The unwinding characteristic can explain particle spin.
To accomplish all of this, linear unwinding would provide the torque to coil the string and to eventually break the coil. If the coil was restricted by other coils, its unwinding torque could contribute to its forming a loop. A coil, when linked to itself and forming a loop, will spin because of its unwinding torque. Fast-spinning loops would be the basis for spherical appearing matter/ mass particles, having both physical and wave characteristics.
- 9) The Pan Theory of Relativity explains particle spin without getting "free energy".

PAN-CHAIN
- CONFIGURATION -



- 1) $X^2 + Y^2 = R^2$
- 2) $-Z = W \cdot A$
- 3) $X < 0$
 $Y > 0$ then $-Z = \frac{-X}{2r} \cdot A$
- 4) where $R = f(Z)$
 $Z = f(R, Z) *$

where:

- F= diameter of coil strand (is the diameter of a single pan)
- D= diameter (or width) of coil
- Z= the Z-centerline of coil
- R= radius of coil
- A= Z-length of a single coil (a constant at any point in time)
- Z= the length of the entire coil (of pan-chain, $\{-Z\}$.)
- W= the total number of coils, whole and fractional
- $W = -Z / A$

1. delinates the circumference of the coil (a circle)
2. the length of the coil Z, equals the total number of coils W, times the(Z) length of a single coil.
3. this 4th quadrant equation defines a left handed coil.
4. this describes the radius R, as a function of the coil length -Z. Also the centerline of Z (Z), starts to form a secondary coil (not shown) and is a function of R and a function of -Z

All the above are a function of time.

* (because of coil fracturing, pan-chain of the same diameter have differing lengths

(methods and logic continued)

A field of mostly un-looped particles would account for the wave character of EM radiation, just like aether theories proposed 100+ years ago. It also accounts for the wave character that both electrons and protons emanate as a result of their spin and inertial motion relative to the gravitational field which contains them. A field-particle's ability to move and react within a field would be a function of its form, material character, and the field density. If these coils bounced about in a dense field of coils, they sometimes would engage and intermesh; this could provide the mechanisms for gravity and so on.

This logic was the basis for a pan's conceived characteristics (initially discussed). The guiding factors were two principles: **1) all else being equal, the simplest answer is probably the best answer (the principle of Occam's razor).** **2) The Ipan principle: An alternative answer should be sought if the prevailing answer is continuously changing and fraught with un-provable hypotheses.**

A better answer may be found if there is adequate and relevant information available, arranged by improved perspective or insight, which can equally or better explain past observations and better predict future observations, either more precisely or more often.

The objective would also be to provide answers to important unanswered questions resulting from the perspectives of other theories. To develop an improved field theory, explaining the ways in which field-particles are created and develop as well as if, why, and how they construct matter.

Pan-chain characteristics: As previously discussed, as a single pan unwinds to become two, three, four, etc. pan. To a certain length -- let's say about 50 pan -- the pan-chain will remain fairly straight without coiling. The pan-chain might be thought of as having a bending and deformation character something like a long, thin spring of small gauge wire but looking more like a string of beads. It could be bent in a 360° loop but afterwards it would return to its straight rod form. If we could tie the ends of the rod together for a substantial period of time and then untied it, it would retain at least a slight permanent set or bend because of its continuous bend over a very long period of time, bent in only one direction.

After the pan-chain reaches a certain length it will have a slight bend caused by its unwinding torque. This is because of the continuous torque in one direction (clockwise). As the pan-chain slowly gets longer it will slowly begin to also coil.

(Pan-chain configuration continued)

Pan in a chain unwind from the outside inwards so it takes a while for this continuous unwinding torque to put a permanent "set" in the chain. From its initial rod shape up to its final coil configuration shown below, the chain always would, accordingly, have a permanent set. If it were bent out of shape it would return to its previous configuration.

Because unwinding occurs primarily on the ends of a pan-chain the coil retains its form from end to end, only slowly evolving because of torque. As time progresses and the coil becomes longer, it begins to display a secondary coil, which starts as a bend in the primary (initial) coil. In the outer reaches of the universe these pan-chain would become very long before they eventually broke, analogous to the first pan chain. Both Intra- and Inter-galactic pan-chain, on the other hand, continuously interact with matter and break up before they might acquire secondary coils. Coils the length of protons, however, have a secondary three-dimensional "biased bend" (not shown) whereas the top view and side view might, accordingly, be similar.



Proposed Proton and Anti-Proton coil prior to looping, with a three-dimensional form (not shown) which is an additional torque-caused "bias bend."

Pan-chain configurations -- as it relates to the creation of matter

The matter-forming area of a Galactic Black Hole was called the Matrenaci area (Cosmology, Sec. page). In this volume within the black hole, pan-chain are very dense but there is still some motion. Pan-chain in this area could be thought of as being on the surface of a sphere (the Entanglement area) which has almost no motion. This surface consists of pan-chain which are engaged or entangled. Once the central Black Hole reaches its maximum size and the gravitational force factor starts to subside, the Black Hole will start to expand, beginning with this surface area. Pan-chain which are restricted on only one end will torque themselves into a loop, like a garden hose held on one end by a spigot. As you torque it in one direction it will loop. For pan-chain this looping starts in only the clockwise direction of the unwinding torque. Because of the high density, some of these loops are forced to be bent in the opposite direction. Loops which self-engage remain looped. The internal stresses of these loops build up as the pan-chain try to unwind.

Some of these loops will disengage from their restrictions like a cork screw. Those unrestricted loops will start to spin, and spinning loops will be pushed in all directions, some pushed outwardly toward less dense surroundings. Although all particles would form in pairs, only the anti-particles would be less stable spin out of engagement. For electrons and protons, their loop would spin in the direction which would further engage the loop, whereas positrons and anti-protons would spin in the direction that could enable disengagement of the loop and end the status of the coil as a looped particle. Of the anti-particles, only the positron seemingly is a stable particle.

These first “escaping loops” would be leptons such as electrons and positrons, the smallest particles, since they would have formed first and more often. Many are also loops of larger leptons, very short-lived particles, such as muons and tau particles as well as their counterparts of anti-particles spinning in the opposite direction, all of which have very short lives. The surviving stable particles in the first round of creation would be electrons and positrons; since a greater quantity of electrons than positrons would remain self engaged, they eventually would dominate the surrounding area after annihilating most remaining stable positrons.

(Configuration of matter continued)

As these loops move into less dense surroundings they will interact with each other. As they interact, these muons, tau particles and anti-particles eventually result in electrons, positrons and their associated neutrinos. Electrons spin counter-clockwise as they move away from an observer, and positrons spin clockwise. As more and more particles are created, the Interaction area of the Black Hole becomes saturated with electrons and positrons. Those particles at the Event Horizon have enough motion to emit light as well as to move outwardly into the Efferal area.

In the Efferal area, there is considerably more room and electrons and positrons widely interact. This interaction, because they are spinning in opposite directions, breaks the loops of both particles. The remaining pieces, because of their coiled configuration, spring back with very high energy, emitting pan-chain close to the speed of light. This radiation drives the Efferal area into a very high energy state of motion. This Efferal area generally lies within the galactic plane and is somewhat doughnut shaped in a spiral galaxy. The primary driving force of motion is the forcefully in-flowing galactic vortex and the gamma radiation from these electron-positron interactions?

The Efferal area would expand in diameter until it reaches equilibrium with the inflowing field vortex pressure (gravity). Once the internal pressure reaches a peak level, particle interaction will be at its greatest. Since electrons dominate positrons by conceivably a two-to-one margin (as previously discussed), few positrons will remain after this interaction. Therefore, the surface area which encircles the Efferal area is almost entirely matter-dominated by electrons. This area or volume is herein called the Antiparticle Horizon as previously discussed. Electrons orbit in this area at high speeds. Pressure increases from both sides of the Antiparticle Horizon, from the internal Efferal area and from the external inflowing field pressure. There are generally only two possibilities of “escape” for these electrons from the Efferal area, both at right angles to the inflowing field and therefore the galactic plane, resulting in galactic jets.

(Configuration of matter continued) APT

Galactic quantities of these electrons are forced out of the Anti-particle Horizon in two galactic jets 180° apart. These very large and concentrated jets of (mostly) electrons and protons continue for great distances and long periods of time until substantial pressure within this area is released and the inflow of gravity causes the jets to subside.

As the central Black Hole continues to expand in volume, larger, more massive particle loops start to form along with the leptons. For a loop to be stable its spin frequency must be in resonance with its unwinding rate. Particles and anti-particles do not necessarily form in pairs as they do here on Earth. But if they do, the anti-proton may often appear only as a virtual particle, as previously discussed. The largest loop that would remain "stable" would be the proton. The anti-proton, which would not be stable, spins in the opposite direction, the same direction as electrons-- and like electrons they may, accordingly, form more often. Unless an anti-proton's spin is continuously reinforced by a magnetic field, it would decay within a very short period of time. (Prediction): Protons Anti-protons also form in the Matrenaci area, and like electrons and positrons some may become temporarily engaged soon after their formation because of the high compression and interactions of the Matrenaci area. Protons might temporarily engage to become neutrons, but anti-protons and anti-neutrons (if any) would quickly decay after formation.

These particles would eventually be forced into the Interaction area; any remaining anti-protons as well as neutrons begin to disengage and decay, producing additional electrons, positrons, and neutrinos.

(Configuration of matter continued)

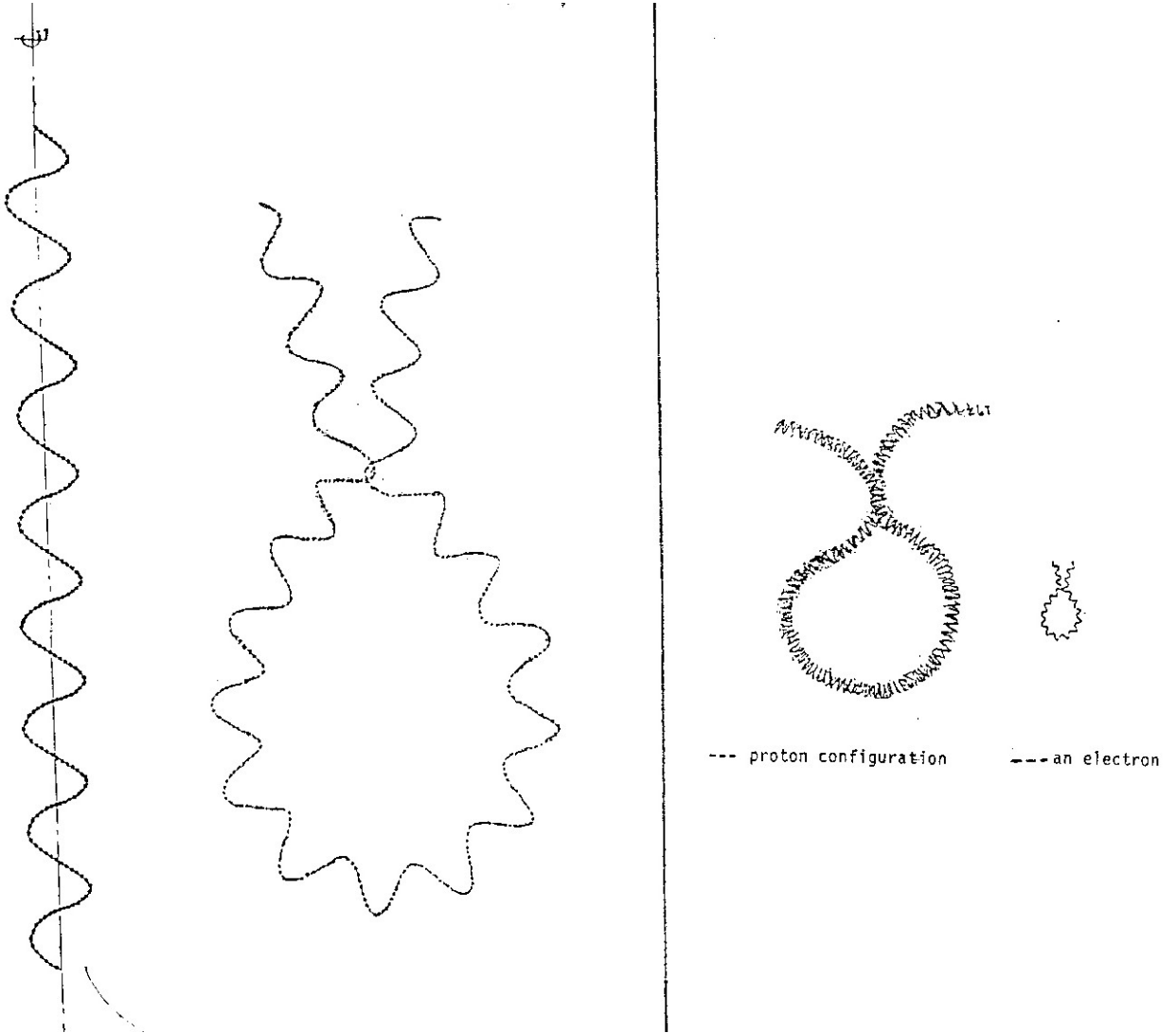
Fewer antiparticles can escape through the event horizon because the area becomes dominated by electrons first. Most antiprotons are repelled from escaping this area by the electrons that got there first since they form more readily and more plentifully. When these particles are forced through the Event Horizon there will be more protons than antiprotons, and because antiprotons are accordingly unstable many lose self engagement and most of the remaining annihilate with protons

For the same reason when protons reach the Antiparticle Horizon, they pass through this transition area easily because their vortex spin is complementary to the electrons that dominate this area. Antiprotons, on the other hand, are repelled and held in the Efferral area for the most part. Because of the proton/ antiproton interactions in the Efferral area, both the quantity and magnitude of the galactic jets greatly increases. These enhanced jets contain primarily electrons and protons with probably less than, let's say, five percent anti-particles by gravitational mass.

This particle production would continue until the reduced inflowing force of the field stops particle production surrounding the Black Hole and equilibrium is again reached. This does not usually happen until the galaxy is saturated with fermions. These fermions form the mass for nearly all the galaxy's future stars.

PROPOSED MINIMUM NUMBER OF PAN AND COILS PER PARTICLE

Straightened Section



- (hypothetical pan count)
eight coils of 20 total in the
minimum electron/ positron
configuration of 540 individual
pan—in a pan-chain of 20 coils,
27 pan in each coil.

(Pan Configuration, continued)

Estimate of the minimum number of Pan in an electron and a proton

The fewer the number of pan in a coil, the greater the degree of bending required between links and the more rigid the coil and pan-chain. On the other hand, if there are too many Pan in a coil loop, the size of each pan would be smaller and the links between pan would be thinner and weaker to withstand the progressively increasing torque in a long chain. The coil loop would also lack the necessary rigidity to maintain its form while it spins but it would bend more easily.

Electron: Based upon the Pan Configuration as it has been proposed herein, an electron requires a minimum number coils in its pan-chain for it to bend, self engage, and form a loop. Based upon these criteria, the minimum number of coils consistent with our proposed design which would still possess the necessary characteristics has been determined to be 20. If the minimum number of pan in an individual coil is 27 then; $360^\circ \div 27 = 13.33^\circ$ bend per pan link. Stretch the coil out and the bend would be less, let's say 10° . A rough estimated of the maximum size for an electron/ positron would be about 5000 pan.

Proton: According to the proposed configuration a proton is at least $4 \frac{1}{3}$ times larger in diameter than an electron. Each of its coils is would accordingly be $4 \frac{1}{3}$ times larger than an electron's coils, and it would have $4 \frac{1}{3}$ times as many coils in its total length. $4 \frac{1}{3} \cdot 20 = 86$ coils; each coil has 27 times $4 \frac{1}{3} = 117$ pan; $86 \cdot 117 = 10,062$ -- or about 10,000 minimum pan in a proton. The estimated maximum size of a proton's pan count if an electron's pan count were 5000 would therefore be about 600,000. All of this of course is just speculation, but these figures are given to provide a mental image and to provide a general model as in the related drawings in this text. The relative pan count between an electron and proton is based upon their calculated mass ratio of 1,836 to 1. The related pan perspective requires a particles volume to be generally proportional to its mass.

The above calculations assume the density of pan within the volume of an electron is the same as within a proton but there seems to be no reason to make such an assumption. There is some evidence that electrons are smaller than the above estimate so my current guess is roughly about $\frac{1}{8}$ the radius of a proton. Regardless of the density or radius differences between a proton and electron, the Pan Theory requires that an electron has a general range of pan count as well as a specific radius/ diameter size or range like a proton and that it is not a point particle as many theorists have proposed concerning standard theory.

--.8768 x 10^{-15} m radius of proton

-- 10^{-16} m estimated radius of an electron (there is presently no accepted radius size concerning an electron)

(Pan Configuration, continued)

Both an electron and a proton form relatively large vortices when their loops spin. The extent of their vortex is proportional to the number of pan in their spinning loop and the volume that the loop encompasses as it spins. According to the proposed configuration, the loop of a proton is $12^{1/4}$ times the pan-mass of the loop of an electron (with is approximately the cube root of 1,836 which is the mass difference between an electron and proton). Accordingly the diameter of a proton's vortex would be $12^{1/4}$ times larger than an electron's vortex. Mass is directly proportional to the volume and density of a particle's vortex. The volume is the cube of $12^{1/4}$ times greater than an electron's vortex, $(12^{1/4})^3 \sim 1,838$ which is about the multiple of its mass. Conventional measurement of the mass of a proton indicates that it is 1,836 times more massive than an electron.

Other characteristics: the links between pan would be roughly $1/4$ a pan's diameter. In the minimum configuration, there would be only about 65 pan in the chained straight line that would equal an electron's loop diameter, and about 80 individual pan side-by-side without links. A pan's pan-mass would therefore be $(1/80)$ or at most $1/512,000$ of an electron. It would have little or no gravitational mass since it essentially "floats" within the field something like an air molecule. The most likely pan count for an electron and proton based upon the proposed configuration would be roughly half way between their minimum and maximum proposed pan count while maintaining the pan count ratio of about 18.5 to 1.

Chapter 16, The PAN THEORY OF RELATIVITY Cosmology, Relativity, and Perspectives:

The Pan Theory of Relativity is not Ipan Theory. It is a perspective on the Pan Theory itself. It is divided into categories: time, space, motion, matter and energy, perspectives, and formations both analog and digital.

--Time and Einstein's Special Theory of Relativity--

Einstein's theories concerning the relativity of time dependent on the relative motion of time frames has generally been proven. The way we measure time is now based upon atomic clocks, more particularly the revolutions of electrons around nuclei of atoms. All matter, including atomic clocks, when in motion relative to a gravitational field will have reduced electron motion in accord with Einstein's theory of time relativity. This reduced atomic orbital motion will be measured by the atomic clock as a reduced rate of time. The faster you go, the slower the rate of time will be compared to a clock on earth.

However, atomic clocks could be made today that would adjust time in accord with motion relative to a measurable gravitational field. When perfected such a clock could measure time equally for all entities relative to a single common gravitational field, such as "Earth Mean Time," "Jovian Mean Time," "Solar System Mean Time," or even "Milky Way Mean Time." This new time could be relative to a particular X, Y, Z, T coordinate system. Galaxies, accordingly, would not generally be moving away from each other but rather getting smaller, so this new time relativity could provide universal standards. This new time could be based upon existing time standards but adjustments would be made according to the gravitational field in general. Such a clock today may only be valuable for space flights. Computer adjustments to generally known conditions, as well as calculated adjustments here on Earth, provide the time accuracies currently needed.

(The Pan Theory of Relativity continued)

Using this Ipan perspective, time could be considered as a constant, but the way we currently measure time (orbital motion of atomic electrons) would be relative to different X, Y, Z, T time frames so from a backward looking perspective time could be perceived as moving slower in the past and that it accelerates into the future.

Axioms of Theory

1) Matter becomes smaller as time progresses.

a) The total quantity of matter remains the same over time since matter gives off a little bit of itself to the background field, the ZPF/ aether, in the form of yet unknown fundamental particles (the pan field) which in time reform into new matter.

2) Space is the volume matter occupies, the distance between matter, an extension of matter, and has no other meaning.

a) Space is comprised of the ZPF, a highly interactive particle field or aether herein called a pan field.

3) Time is defined by the revolutions of a proton (or other fermions) called spin, or in the way that it is presently defined concerning atomic motions. Particle and atomic spin are both real and time has no other "ultimate" meaning.

a) Time appears to speed up as it progresses from a relative perspective, but time does not change by the above definition.

4) The same foundation particles of reality (pan), which make up both matter and the ZPF, become relatively smaller as time progresses. Everything is proportional to everything else when comparing one time frame to another.

a) Because of the changing foundations of reality, it would be inaccurate to call one time frame larger or slower than another. The "actual size difference" cannot be compared, since matter, time, and speed can equally be considered as unchanging in magnitude as space from one time frame to the next.

4a above is the primary axiom of the Pan Theory of Relativity

Space and Relativity

According to Einstein's theories concerning space and General Relativity, space accordingly has physical characteristics and three physical dimensions alone with time as a dimension concerning the concept of space-time. According to this mathematical model space warps or curves at the boundaries of the universe and it warps around all matter. A.P.T., on the other hand, space has no independent characteristics and is merely a condition of the relative position and density of matter, simply the volume which matter collectively occupies.

According to this Pan Theory perspective, the volume of space is relative to the size of matter in the time frame that it's measured. For Example: 15 billion years from now, one mile or one light year of "our". Space would be measured as two miles, or two light years. And in the same way, looking at the edge of the observable universe, let's say 15 billion light years away (and therefore 15 billion years back in time), one mile and one light year in that time frame would be measured by us now as two miles and two light years, and consequently velocities, which are distances per unit of time (to be discussed in the following "Motion relativity"). Just like a constant standard for time, which we just discussed, a measure of space that would remain constant could be easily established for any functional purpose.

Velocity (linear and orbital motion) and Relativity

All velocities are determined by measuring distance per unit of time (distance/time i.e. kilometers or miles per hour). According to the Pan Theory of Relativity, however, the object that's moving as well as its surrounding field material gets smaller as time progresses.

(Pan Theory of Relativity continued)

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(The Pan Theory of Relativity continued)

Because of this factor, the measurement of space changes as previously discussed. The measured distance changes but time remains the same. THEREFORE: the apparent linear, orbital, and recessive motions of distant galaxies would appear greater to us now than they were in their own time frame; however, "real" velocities can be calculated in accordance with relativity adjustments using formulas as indicated in the following section. This factor also applies to the speed of light which is also relative to the time the light was emitted and progressively decreases its velocity as field particles diminish in size. Anything moving at or near the speed of light that we could observe would appear to us as super luminous (faster than the speed of light). This is also the reason for the observed galactic red-shift of light because:

THE FREQUENCY AND SPEED OF LIGHT IS RELATIVE TO THE TIME FRAME THAT THE LIGHT WAS EMITTED.

-- **Matter, Energy and their Relative relationship** --

When any unit of matter or energy is considered as a constant of an unchanging size, the universe could be considered to be expanding relative to this standard. If new matter is being created as the pan theory proposes, then the conservation of mass/energy would be violated. Only by using the perspective that matter is progressively decreasing in size but increasing in number, could new matter be created and still retain the conservation of mass/energy. Possibly the best evidence of this theory of relativity will be the discovery of galactic expansion. New galaxies will expand quickly for two reasons. The first, based on the Ipan Theory of galactic evolution, is that galaxies evolve from the inside out. Instead of matter moving into a central area, it moves out from the center of the galaxy where it was created as previously discussed in the galaxy section. The second factor of this galactic expansion is the principle we're now discussing, the Principle of Matter Diminution.

(Pan Theory of Relativity continued)

This type of observed expansion is a condition of this theory of relativity: if the matter within a galaxy is getting smaller, then the space between matter will appear to be getting bigger. Although this is not "real" expansion, the results will be that the effect of gravity will be lessened and the orbital momentum of the stars within the galaxy perpetuates real expansion. A third factor to galactic expansion is that the gravitational constant G also decreases which we've also discussed. For these reasons galactic expansion will usually be equal to or greater than the asserted expansion of the universe for these same reasons.

The Pan Theory of Relativity in perspective

The Pan Theory of Relativity can be generalized by this statement: Any condition, state, or change of matter should be measured using another condition, state, or change of matter as a standard. Even more basically, we could say that everything is relative. This generalized perspective is very similar to Ernst Mach's original concept (Mach was a 19th century physicist and founder of the concept of relativity as previously discussed).

Pan Configurations and Relativity

One of the primary tenets of the Pan Theory is that pan steadily decrease in size and increase in number as time progresses, All known forms of matter and energy are built upon combinations of smaller entities (outside of theoretical entities such as quarks and pan). This is called a digital formation, where digit means discrete individual parts. The digits of energy are defined by Planck's constant h . Increments of energy smaller than this constant do not exist according to conventional theory.

(Pan Theory of Relativity continued)

However, according to both conventional theory and the Pan Theory, space, time and motion are all analog measurements, where “analog” means a continuous uninterrupted flow. This same analog characteristic is also a fundamental quality of all Pan and a foundation of **the Principle of Pan Constancy: All individual Pan in any time frame are proportionally the same as any other individual pan in any other time frame.**

Accordingly, Pan in the past were larger. The first pan had to be much larger than today’s Pan to contain the entire universe, so how could all pan be the same? The answer: Pan in the past were bigger (relatively), and pan in the future will be smaller compared to those in our own time frame... but is any time frame special in some way? The answer is no, according to this Principle of Pan Constancy. It might therefore be more accurate to say that pan, and consequently matter and space, appear to be larger and moving faster from our distant observation, and that our time frame will appear larger and moving faster to future observers than our present reality actually is. The observed condition would only be a condition of pan/matter/space relativity to time, hence, the Pan Theory of Relativity.

This Principle can also be understood using pan mechanics: based upon this same analog characteristic, pan decrease in size (and increase in number) at a constant rate. For any given time interval pan decrease in size by an exact fraction. This rate, as previously discussed, is related to the Pan Doubling rate. Roughly every five billion years, a single pan will become two pan, so over every 500 million years, a pan will become about 13% smaller*. The mathematical formulation would be $e^{rate \times time} = 1/2$

or, $e^{-.69314} = 1/2$, the reciprocal positive exponent would be $e^{.69314} = 2$;
If the time we are considering is 5 million years of the doubling cycle, the formula

would be $e^{(1.386 \times 10^{-7}) \times (5 \times 10^9)} = 1/2$

or $e^{(1.386 \times 10^{-7}) \times (5 \times 10^6)} = .8706$ or 13% smaller.

c

(Pan Theory of Relativity continued)

Hubble Parameter and Red Shifts

The “Hubble Law” states that the distance to a given galaxy is proportional to its recessional velocity at a constant rate (the so-called Hubble constant) as measured by its “Doppler” red shift. The red shift of the spectral lines is commonly expressed in terms of the z -parameter, which is the fractional shift in the spectral wavelength. The Hubble distance is then given by

$$r = \frac{v}{H_0} = \frac{\beta c}{H_0} = \left[\frac{(z+1)^2 - 1}{(z+1)^2 + 1} \right] \frac{c}{H_0}$$

where r is distance; v is recessional velocity; H_0 is the Hubble “constant”; where β is the “relativity adjustment”; z is the red-shift parameter for the relativity adjustment; and c is the speed of light, Mly is a million light years, and Mpc is megaparsecs (or million parsecs, which is equivalent to $3.26 \cdot 10^6$ light years). “Hubble's law” is an assertion of a direct correlation between the distance of a galaxy and its recessional velocity from us as determined by its red shift. Based upon this assertion, the Hubble distance could then be calculated from the wavelength shift of any spectral line.

The Hubble Constant usually used by BB theorists is 70, here 28 is used ($.4 \cdot 70 = 28$). This difference is in the Pan Theory perspective that the red-shift is partially due to larger atoms and their corresponding wavelengths in the past, as well as the increased speed of light in the past (when presently observed), both factors would accordingly increase the observed red-shift of galactic light.

If a spectral line which is normally 1 nm (nanometer) is redshifted to 2 nm, then $z = 1$, and $v/c = .6$; (as stated above) $r = .6c / (28 \text{ km/s/Mpc}) = 6,428.57 \text{ Mpc} = 20,967.64 \text{ Mly}$ (A parsec = 3.262 light years, mega parsec(Mpc) is a million parsecs).

The remaining cause of the red-shift would be the apparent (but not real) expansion of space which is the only faction/ fraction of the three causes which is a distance indicator. In this case it's about 40% of the total 21 Billion (20.96764) years distance to double the wave length, which would be a Pan doubling rate of about 7.0 billion years ($\sim 21B / 3 \sim 7.0$; three pan doubling cycles to double the wave length, as previously discussed). Our conservative estimate before was roughly 4.8 B years. At 7.0 billion years doubling time, the minimum age of the universe would be roughly 46% greater. This is the current predicted range of the minimum Pan Doubling rate, from 4.8B to 7.0B years. The maximum rate has not been estimated at this time because it is considered to be more speculative because of present observational difficulties, misinterpretations, and inaccuracies.

(Pan Theory of Relativity- continued)

1) Pan Accretion: As time progresses: **the total number of Pan increase, as well as the total number of atoms in the universe increase by 2^F** (two to the power of F), where “F” would be determined by the assessed time period divided by the Pan Doubling Period of 5 billion years.

Examplpes:

- a) So If no time elapses (to test the formula) then F would = 0; 2 to the power of zero equals 1. $2^0 = 1$; The total number of atoms in the universe when multiplied by 1 would remain the same.
- b) If five (5) billion (B) years passes and the Pan doubling period is also 5 billion years, Then $F = 5,000,000,000 / 5B = 1$; $F = 1$; 2 to the power of 1; $2^1 = 2$. The total number of atoms in the universe (when multiplied by 2) would double.
- c) At 10 billion years, F would accordingly equal 2; $F = 2$ and $2^2 = 4$. The total number of atoms in the universe would quadruple.
- d) At 7.3 billion years $7.3B / 5B$, $F = 1.42$; $2^{1.42}$ (2 to the power of 1.42) = 2.68 times, which would be the increase in the the number of atoms after 7.3B years.

2) Galaxy Observation: When viewing/ analyzing galaxies we are looking back in time—Matter would accordingly have been larger and less plentiful. **The factor to determine the relative change in the quantity of matter when looking at distant galaxies and therefore back in time would be 2^{-F}** (2 to the power of $-F$; example 2^{-2} is the same as 2 divided by 2^2 , which is 2/4 or 1/2) When using the same Pan doubling period (5 billion years). 10 billion years ago the number of atoms in the universe would have been 1/4 of what there are today, and each would have been 4 times larger in volume and mass. The cube root of 4 = 1.5874, which would be the increase in the size of the (1.5874) diameter to have been 4 times larger in volume and mass (where the volume of a sphere is $4/3\pi r^3$ and is proportional to mass; when the diameter doubles the volume and mass increase by a factor of 8).

- a) **When looking back in time the diameter of a galaxy or cluster would appear larger as would the space between galaxies by a factor of $2^{F/3}$** , which is the same as the cube root of 2^F . In the above example that would be the cube root of 4, or 2 to the 2/3 power, which again is 1.5874, .

(Pan Theory of Relativity continued)

- b) From this relativity perspective, a unit of time would remain the same going forward or looking backward. All speeds would be determined by distance traveled per unit of time. Therefore, all velocities (including the speed of light) appear greater as we look back in time and should be reduced by the factor $(2^F)^{-1/3}$.
- c) If the light from a galaxy was assessed to be at a calculated distance of “X” light years using the red-shift correlation method: to calculate the actual time that it took the light to get here, and therefore the actual age of that light, multiply “X” times the factor $[(2^F)^{-1/3} + 1] / 2$. This would be because the speed of light was greater in the past and decreases, for any given interval, by the factor $(2^F)^{-1/3}$.
- d) The magnitude of light and all EM radiation, measured in the number of photons/ quanta produced and the magnitude of their waves, decreases as time progresses. This is because their photons would be made up of bundles of Pan-chain that would increase in number in the same way that the Pan constituents of all matter increase. If the magnitude of a galaxy were calculated by using the observed magnitude adjusted by the inverse square law, the resulting calculation would be greater than the actual or real magnitude of the galaxy was in its own time frame. To calculate the real magnitude, multiply the observed magnitude by the factor of 2^{-F} .

Accordingly, the greater the distance, the greater the difference between observed and real magnitude would be.

In the above example we have used five billion years as the minimum possible Pan Doubling rate for convenience’s sake. To calculate the minimum pan doubling rate we could take the estimated age of universe according to the BB model, and divide it by 2.85 as previously discussed (currently the minimum calculated doubling period is $13.7 / 2.85 = 4.8$ billion years. Note that the expected Pan doubling period is over 12 billion).

(Pan Theory of Relativity continued)

--Concerning Pan Configurations & Logic

The Pan Analog Principle

- IF -- the definition of a "digital configuration" is that a sub-structure is made up of individual parts
- AND
- IF -- the definition of an "analog configuration" is that there is no sub-structure of smaller parts
- AND
- IF -- there is/ was only one most elementary particle of which everything else is comprised
- THEN -- this most elementary particle must have an analog sub-structure
- AND
- it would be the foundation particle that would make up all forms of matter and could be used to define everything else.

The Pan Conservation Principle

- IF -- the substance of a pan is formed in an analog configuration (as apposed to a digital with parts)
- AND
- IF -- pan will always decrease in size at a constant fractional rate
- THEN -- the substance of pan will never be exhausted
- AND
- the conservation of mass/energy will be maintained
- AND
- pan collectively would be immortal.

Predictions:

Section 3: Predictions & Concepts

Chapter 16, Predictions of the Pan Theory and their explanations

It should be noted that none of the predictions below have been predicted by the Big Bang Model of the Universe and many are completely contrary to that model. There is a wide variety of scientific theories available. The quantity, quality and detail of any theory's "observed" and observable predictions are the best measurements of its validity and potential. Predictions that the Pan Theory may have in common with standard models in cosmology, astronomy and physics are not delineated below because their observance would proffer no evidentiary support of the related theory herein.

Of course it would be much better to predict a new phenomenon or entity than it would be to explain it after its discovery. Phenomena which were implied or directly predicted by the Pan/ Ipan Theories when the theories were first developed, but which were discovered later and then re-explained by conventional theory after their discovery, are listed below. Some are directly related to the primary Concepts and Propositions presented. All have been derived from theories presented within the text. The following is a list of these predictions, not necessarily in any order of importance.

A number of other predictions of the Pan Theory have not been included because of the difficulty in their observation (and thus proof), but most of these have been included in the text.. Many of these predictions have been abbreviated below but are discussed in greater detail on subsequent pages; others relate back to where they were presented within the text. Most have evidence within the text to support them or are directly implied by the related text; some are supported by numerous observations and a number of them have been predicted via the related text for 30 years or longer as evidenced by previous copyrights of this text. The following is the definition used within the text for the word "Prediction:"

A prediction defined: is a statement or claim that a particular event or relationship will be observable in the future. It foresees future events by providing new interpretations, insights, or perspectives justified by observation, experience, or scientific reasoning.

These predictions can be classified in three categories. The first types are fundamental to the Pan Theory. If these predictions were proven to be false it could disprove one of the two independent facets of the primary theory. These are designated as "F" for fundamental. The second types are an essential part of a supporting theory and are designated by "S" for supporting. The third types are designated as "I" which are presently believed to be an implication of either "F" or "S" theories. These are also separate theoretical proposals designated as "D" discrete.

Some of these predictions might be considered to be separate theory and related hypotheses which like all theory are dependent and may be supported by observation.

Additional designations have been given each prediction. “C” is for those that would contradict present theory, “U” is for those unexpected by current theory, or “A” agrees in principal with, and/or is also Predicted by at least one mainstream theory. “N” (phonetic) indicates a know alternative theory.

Note: As these predictions below are discovered it should be realized that the reasons given by observers will most likely be completely different from the Pan Theory explanation because present theory is so much different. The point is that they are predictions of future observation of the Pan Theory which in general are not predicted by any known BB model. Most of these Predictions would completely contradict many BB versions.. As you read these Predictions, also note that numbers **1, 8, 9, 14, 16, 20, 22, 24, 30, 33, 43, 49, 53, 68,& 69** are explained in further detail in subsequent text just following these Predictions on page 105 as well as the explanations in prior text. The logic and observations which are the basis for these predictions are discussed on page 106. Those Predictions that do not have extended explanations on page 105 are discussed in prior text and their foundation for the prediction discussed on page 106.

The following is a list of the Predictions thought to be the most notable within this text:

- 1.(F)(C) The age of the observable universe is much older than has been asserted** using Big Bang model(s). Continually higher red-shifted galaxies, supernovae, and gamma ray bursts will be found until the Big Bang model will necessarily break down at roughly **35 Billion light years** which is more than twice its present estimated age of 13.7 Billion years -- probably much sooner as a result of multiple inadequacies of the BB model – but probably not until a viable alternative theory(s) becomes well-known. Many of these galaxies will have the same quantities of metal and chemistry within them as comparable middle-age galaxies would have that are relatively close to us including our own. This would be evidence that 13 Billion years or more in the past, middle aged or old elliptical galaxies existed which would be completely contrary to the BB model. (pages 43- 44B, 84-89)
- 2.(S)(C) The observed microwave background radiation is primarily caused by galactic EM radiation (starlight), absorbed, refracted, re-radiated, more distant unobservable galaxies, all redistributed by galactic and intra-galactic matter.** It would therefore not be a heat remnant from a Big Bang seen at a great distance as current theory asserts (page 121A). One of many possible candidates for this re-radiated temperature of stellar heat would be thin galactic and intergalactic clouds containing primarily hydrogen with fine particles of iron and graphite to refract radiation (other related predictions #45 & 80).

- 3.(F)(C). **Distant galaxies, quasars, gamma ray bursts, and supernovae will all be perceived as being incrementally larger, moving faster, and being greater distances apart** than they really were in their own time frame. Many of these same entities will also appear to be **more luminescent** except for the generally lesser counteracting effects in some cases, involving prediction # 43 below. **They will also be perceived to be accelerating** when receding from our perspective, **hence the asserted (but unreal) accelerated expansion of the universe.** This effect can be correlated to distance. This should be a linear effect. The farther away an observed entity the greater this effect would appear to be.
4. (F)(C) **There is only one fundamental force that has always been the motivating dimension of reality. It is the potential energy of fermions to spin** which perpetuates time. It is the innate potential energy of both matter and field material, which might be called **the force of innate potential** for both matter and field material. All the other so-called “Forces of nature” which today are considered fundamental, will all be shown to have a cause relating to matter or field material. These forces are of two varieties, none of which existed at the beginning of the universe and therefore are not fundamental forces. All of these forces are mechanical forces. The first type is caused by field interactions such as gravity and magnetism. The second type is the result of physical/ mechanical connections such as the nuclear forces: the Strong Force, the Weak Force, and the Strong Interaction. (pa. 114)
- 5.(S)(U) **The aether is real:** The old idea of an **aether field with both its hypothetical and arcane characteristics now has new names: the ZPF, and hypothetical dark matter.** This field, by whatever names it may be called, accordingly will be massless but substantive, whereby its energy of motion is accordingly called the ZPF. This field has been associated, by experiment, to be the source of potential energy that can interact with matter, form vortices of virtual particles, and is intimately related to the determination of a particle's mass, one of its expressions we call gravity. **There is a vast quantity of evidence to support the existence of this new aether.** It is an energy source which can manifest its influence in the smallest measurable way (less than 1 : mV, the zpf). Its physical constituents have both potential and kinetic energy and are believed to be primarily neutral in charge, without intrinsic spin. This is not just Ipan theory, but the experimental conclusions of many of today's experimentalists in quantum physicists. (pa. 21)
- 6.(S)(U) **Aether currents and pushing forces are the source and cause of gravity.** Based upon one definition of the hypothetical entity “dark matter,” it is material that exerts gravitational force but does not emit any detectable light or radiation. Hypothetical Dark matter, by this definition, consists of many entities but **collectively cannot explain the orbital motion of spiral galaxies unless General Relativity is incorrect or that dark matter is**

distributed in an uneven distribution with its density progressively decreasing within a galaxy up to its core. Instead the energetic currents of aether are the pushing forces of gravity. The greatest quantity of this material relating to gravitational influences would be the gravitational currents of massless elementary field particles within them which could be called an aether, the energies of which today are called Zero Point Fluctuations/Field (ZPF). This field material transfers the force of gravity between matter as a pushing force as it inflows into all matter whereby the matter radiates it away as EM radiation maintaining a balance saturation. These currents of fundamental particles only trace the motion of matter and so its effect from body to body could be considered a dependent force. The balance of the dark matter, which we generally have not as observed as yet, consists of baryonic matter which includes protons, electrons, atomic and molecular matter of all sizes. The largest constituent would likely be molecular hydrogen since it is difficult to observe.

7.(F)(C) All matter gives off a small part of itself, roughly estimated to be a maximum of 1/1000 its present “size” every 6 million years, in the form of fundamental particles, to an omni-present background-field, now called the Zero-Point-Field. Therefore **atomic particles, as well as all others, have a small variation in their mass in the overall population of the same particles. ---- At the same time matter increases in quantity to maintain a constant density in space.** This prediction is directly implied by the Pan Theory of Relativity and is also directly related to the existence of an aether which absorbs the discarded material and eventually reforms it into new matter. The Pan Theory of Relativity can be observed in almost countless ways as indicated by these predictions. (page 101, 105)

8.(S)(C) Gravity acts as a non-linear force at stellar gravitational boundaries within and between galaxies. At stellar boundaries between stars gravity becomes a perpendicular force that can initiate the rotation of bodies around each other. Gravity acts as a perpendicular vector of increasing increments as its linear vector and decreases up to the boundaries of gravitational equilibrium between stars where it acts solely as a small perpendicular vector which in general would act to maintain stellar distances, speeds, and positioning within galaxies as apposed to General Relativity and Keplerian type stellar motions which would form no observable patterns in a spiral galaxy’s form, contrary to what is observed in nearly all spiral galaxies. (page 57E, 57E1)

9.(F)(C) Gravity at great distances will appear to be stronger than it really was in its own time, another effect of Measurement Relativity to time. Because of the speed and acceleration of orbiting galaxies at a distance, gravity will be perceived as being more forceful than it really was in its own time (page 100, & prediction #3)

10. (S)(C) The **gravity of galaxies does not remain a constant force proportional to a constant “ G .” Instead its force decreases slowly over time within a galaxy as a galaxy ages.** This ultimately affects a galaxy’s form and the gravitational strength of its constituents. As galaxies evolve, intergalactic space fills up with thin dust clouds as the galaxy expands. The central core area also expands and the central black hole becomes relatively dormant. The pressure of field material/ aether within the galaxy increases while the pressure differential decreases which lessens the strength of gravity currents G which determine inter-stellar gravitational forces.
11. (I)(C) **Large gravitational vortex currents surrounding galaxies and galaxy clusters, can cause the separation of E.M. radiation at different angles for different frequencies, which could be called a type of gravitational lensing.** Analyses of this radiation would in some cases show divergence of radiation, like the prism effect, which could accordingly separate the direction of different frequencies. These observations would be evidence of these predicted pan-field gravitational non-linear currents which could be described as another type of gravitational lensing effect. Some galaxies from our perspective will have a slit spectra whereby the same galaxy or group, often in its entirety, would be seen in more than one location.
12. (F)(U) **There are non-linear gravity currents of aether, both inside and outside of galaxies that move with baryonic matter. The affect is that gravity does not work as a linear force at stellar or galactic distances.** Some of these currents could be moving millions of miles per hour relative to the center of the galaxy. The most powerful of these currents, which accompany galactic jets, can extend from galaxy to galaxy in some cases. A number of these jets and adjacent gravity currents would be truly superluminal relative to the center of the galaxy that is emitting the jets.
13. (S)(C) **Planets and stars produce substantial internal heat as a result of the compaction forces of gravity.** Jupiter's infrared radiation as well as the scarcity of solar neutrinos is related to this. Accordingly, a significant portion, if not most of the Earth’s internal heat would also be produced by these gravitational compression forces and would not be a remnant of its primordial heat which is the current theory.
14. (S)(C) **Light and other EM radiation is at the same time BOTH particles and waves, not merely one or the other at one time or another,** as present theory asserts. If there are photons, there would always be accompanying waves. For the weakest waves, the photons within them may not always be observable because of the conceivably great distances between photons within the waves. A modified version of the double-slit experiment might yield results that could more easily be explained based upon this alternative theory.

15. (F)(C) **The speed of light (EM radiation) will appear to be decreasing over time.** Accordingly, the speed of light would appear to be greater the farther away the object that is being observed. The observations and evidence will be like the supposed “accelerated expansion of the universe;” the facts instead will be another condition of the Pan Theory of Relativity like the apparent but unreal accelerating expansion of the universe called the dark energy hypothesis.
16. (S)(C) **The speed of light here on Earth is not constant. It also is not constant anywhere else either.** Outgoing radiation from the Earth would be slower than incoming radiation because of the accelerating aether into the earth which is accordingly the cause of gravity. The speed of light is also relative to the time frame the light was emitted. The speed of light is based upon gravitational aether currents which are gravity centered and directly accelerate into massive particles, planets, stars, etc.
17. (F)(C) **Red-shift correlations of polar jets** emitted from active galaxy cores: **the farther away a galaxy from us, generally the greater the velocity of a galaxy’s polar jets and the magnitude of its jet radiation would appear to be** as a condition of Measurement Relativity concerning the Pan Theory of Relativity. This would be a statistical probability calculation that could be made from pre-existing observational data. This proven correlation would also be a proof for the Pan Theory of Relativity (formulations on pages 57-59 and related index).
18. (S)(C) **In 5-10 billion years, the Earth will be further away from the sun, as far as 117,180,000 million miles, or 1.26 times its present distance of 93,000,000 miles** if the sun doesn’t consume the Earth entirely beforehand during its red giant stage. This would be a direct result of the relative change in the size of matter to the space that it occupies predicted by the Pan Theory of Relativity. The converse would also be true. **The Earth, accordingly, would have formed, based upon calculations, between 74,000,000 and 82,000,000 miles from the sun 5 billion years ago.** Although solar gravitational influence and planetary impacts are believed to be a variable system with chaotic undetermined influences which might have caused these distances to vary in a non-linear manner over time. (see page 107 for continuing discussion).
19. (S)(C) **Black holes are comprised of a presently unknown type of matter and have a finite diameter and are not dimensionless “points.”** Both galactic and stellar black holes are made of a highly compressed form of aether/ dark matter, millions of times denser than a neutron star. They would have a measurable diameter proportional to their force of attraction when they are not spinning. The greater the spin of a black hole, the greater its overall gravitational influence would be but the lesser its linear gravitational influence toward the black hole.

20. (S)(A) **Medium-sized black holes**: The Pan Theory predicts that there are black holes that are **much larger than stellar black holes but much smaller than galactic black holes**. They should be found in both young and old galaxies, more in highly active young galaxies than in small older galaxies. Many would also exist in intergalactic space. This is also predicted by some standard cosmological model theories.
21. (I)(U) **Some black holes “spin-off” pieces of themselves to form new black holes** and subsequently the beginnings of future galaxies. The largest black holes will eventually split up into two or more black holes some of which appear to be quasars of varying sizes. Pages
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22. (S)(C) **Galactic black holes created the matter contained by most of the stars in the same galaxy. Most large Galaxies would have been created from the inside out. Most of the matter and stars of any large galaxy would have been produced from field material (aether) surrounding the central black hole and ejected in large polar jets or polar emitted clouds, primarily in the form of protons, electrons, and positrons.** The first stars formed would have formed close to the central black hole of the galaxy and slowly would have moved outward as new stars were formed closer in. Through gravitational interactions between stars within the newly forming galactic bulge some newly formed stars would be hurled outward to form the outer galaxy. As the galaxy ages, new stars would form both in the core and outwardly to the farthest reaches of the galaxy.
23. (I)(C) Since galaxies would accordingly be created from the inside out, **young galaxies would have a large number of young stars surrounding their central Black Hole.** Most Middle aged galaxies would only have a few.
24. (S)(U) **Galaxies of all ages are generally distributed everywhere within the universe. WE will Find old galaxies in our neighborhood and also at great distances:** Elliptical galaxies are the oldest large galaxies and would accordingly have numerous white dwarf stars, second and third generation stars within them, maybe 40B years old or older. Small, old galaxies would be filled with burnt out stellar remnants and could be recognized by their rotation and gravitation influence.
25. (S)(U) **The Milky Way Galaxy is expanding at a rate similar to the currently estimated Hubble expansion rate.** A number of both older and younger spiral galaxies will be found to be expanding at a faster rate than middle aged galaxies like the Milky Way.

26. **(I)(U)** The **red-shifts of observed galaxies appear to be quantified** in a digital rather than an analog fashion. The prediction is that **these observations are due to the fact that galaxies are generally distributed in Bubble or web-like structures** that are expanding away from their centers, with voids within them that would give the appearance of being quantified since there would be regular gaps between their galactic red-shifts. When necessarily observing from our perspective it would appear that red-shifting of the observable galaxies would “jump” at regular intervals as if galaxies were distributed in a digital formations. Relative to the center of the bubble when looking at it close to edge on, the front side would be moving toward us and the back side would be moving away from us, hence the jump in red-shifts.
27. **(I)(C)** **The Great Wall is only a small arc of a much larger ring structure of galaxies.** The "Great Wall" is a very large “linear appearing group” of galaxies. It is instead a small arc of a huge, mostly unobservable ring structure of galaxies. The observable arc contains roughly 8 billion galaxies. The arc of the Great Wall as visible from Earth would be roughly only .42 degrees (or about 25.2 minutes) of the total ring of galaxy clusters. The amount of galaxies in the entire structure, almost entirely unobservable, would accordingly be roughly 6.87 trillion galaxies. This relates to the prediction of a fractal-like structure of the universe. The structure could have taken three galactic cycles, or 180 billion years to form. All galaxy clusters within this structure (most of the observable universe) will be found to be moving outward, away from a central relative void area of this large structure.
28. **(S)(C)** **A small percentage of observable stars within our galaxy are over twenty billion years old.** Some could conceivably be much older. They would have been created within an older expired galaxy or a satellite galaxy and captured by the Milky Way. **The age of the oldest stars within the observable universe,** some possibly within our own **galaxy, could be over 60 billion years old,** maybe born from a now expired galaxy. These oldest K and M dwarf stars might be few and far between. Their primary characteristics are their small sizes and faint luminosity. This will make them very hard to discover. To recognize the oldest of these stars we could look at the ratio of their chemical makeup. If they are calculated to be fusing hydrogen at a certain rate based upon their radiation, they should have no more than a calculated amount of helium in their body even if they were the first stars formed in the universe according to the Big Bang model. If the amount of helium observed is found to be many times the predicted quantity it would be strong evidence that the star is much older than the presently calculated age of a Big-Bang universe.
- 28A. **Black-dwarf stars exist within our galaxy** which will be first mistaken for black holes if they are observed. Only if its diameter can be determined in some way will these black dwarf stars finally be recognized. Such black dwarf stars would be at the minimum of 100 billion years of age which would entirely be contrary to the age of the universe according to the Big Bang model.

29. (S)(U) **We will find increasing numbers of young, newly forming galaxies in our neighborhood.** This is needed by the Pan Theory to prove the uniform distribution of galaxies of all ages within the observable universe.
30. (S)(C) Correlating **galactic orbital motion** with their distance from us would accordingly indicate that generally **the farther away a galaxy is, the faster its orbital motion within a galaxy cluster would appear to be.** This would be a measurable correlation factor. This prediction is related to prediction #3 above.
31. (S)(C) **Most Galaxies generally expand from their birth until their demise** (discussed in the Pan Theory of Relativity section). They seldom would condense as in current theory. The rate of their expansion would usually exceed the perceived Hubble expansion rate as an average galaxy starts aging, on an average roughly 17 Billion years of age when their expansion rate begins steadily acceleration.(related to predictions #22 & 24)
32. (S)(C) **The rate of Pan Accretion** consists of roughly 12 doubling cycles of roughly 5 billion years minimum per cycle, with an estimated range of between 5-10 billion years per cycle. **This would be a galaxy cycle from birth to reformation of a minimum of 60 billion years long.** After about 20 billion years many galaxy will begin to dissipate. After 35 billion years some galaxy structures may no longer be visible to distant observers. The number of galaxies that would result from the matter that now exists in the Milky Way and the field material in its central black hole (example, for a 5 Billion year doubling cycle), 60 to 120 billion years in the future there could be the mass equivalent of 4,096 ($2^{12} = 4,096$) more galaxies (resulting from the mass and field of the Milky Way) with the same saturation of field material, dark matter.
33. (S)(C) **We will be able to look back in time at the edge of the universe at galaxies roughly 40 billion light years away or farther,** which would be proof of a much older universe. (Calculations on page 63).
34. (I)(U) **Galaxies will produce increasing quantities of radio waves the farther away they are** which can be correlated to their distance based upon the probability **that intervening matter would absorb and re-radiate some of the initial radiation at lower frequencies of EM radiation including radio waves.** The greater the distance, the greater the chance of there being intervening thinly dispersed clouds of matter that would absorb and re-radiate some of the original galactic radiation as radio waves

dimming the original radiation to a greater extent than the inverse square law of diminution due to radial dispersion. **The most distant galaxies will only be observable in radio frequencies.**

35. (D)(U) There is no "**Great Attractor**" or **Dark Flow**. Instead **our galaxy is part of a bubble or ring-like structure of galaxies expanding away from its origin, which accordingly would be a large relatively vacant area in the opposite direction of our galaxies relative motion.** The opposite direction from what they mistakenly call the Great Attractor. Our galaxy's motion is a local expansion resulting from a progenitor galaxy's expansion maybe two galactic cycles past – roughly a hundred and twenty billion years ago. Many other similar areas of local expansion will be found in the observable universe. This is another aspect of the fractal-like predicted structure of the universe.
36. (I)(N) **Galaxies progressively evolve in shape over time.** Most galaxies that form into spiral galaxies do so via merging matter fields with different apposing linear vector motions. After a considerable period of time as these spiral galaxies age, the rotation of their stars slows and its core begins to expand as its stars burn out. The galaxy would fill with dust from supernovae and expired red-giant stars shedding their mass. A portion of these galaxies would eventually evolve into elliptical galaxies as they age and expand.
37. (F)(U) **All spiral galaxies rotate in the direction as would be indicated by following the spiral arms inward** toward the core, CW or CCW. For the few spiral galaxies that seem to rotate in the opposite direction as their form would indicate, based upon the relatively stationary background of galaxies, the background vortex of aether that controls the galaxy's rotation is still spiraling in the same direction as the galaxy. The apparent contra-rotation of these rare galaxies would be the result of the galaxy being imbedded in a cluster the is rotating in the opposite direction as the galaxy. The direction of all spiral galaxies rotation can be determined by tracing a path from the end of a galactic arm moving in the direction toward its inward tracings to the galactic core. This rotating direction can be observed by the "smear" of stars at the visible galactic perimeter.
38. (F)(U) **Galaxy Clusters. Large Galaxy Clusters will be observable in the most distantly observable time frames.** At 13.2 billion light years, according to current Big Bang Theory, the dark ages would have just ended and stars and galaxies would supposedly just be beginning to form. To find large galaxy clusters at the greatest distances would refute the present Big Bang age of 13.7 billion years.
- 38.A (F)(U) The most distant galaxies will appear to be more rare. At about 12 billion light years distance there will appear to be 1/4 as many galaxies, but such observable galaxies will appear to be 4 times larger in mass than local galaxies. The would be because

distances accordingly would increase by a factor of 2 according to the Pan Theory, 12 billion years ago.

39. **(I)(C) Old “star-vacant” galaxies.** According to the Pan Theory the universe would be much older. Accordingly, many galaxies would burn out and their outer stellar remnants would leave the galaxy, many no longer being held by gravity. The core of the galaxy would also expand to the size of a small galaxy. They would then appear to be star-vacant galaxies of dark matter – the remaining stellar remnants would also dissipate unless they would encounter large extra-galactic cloud(s) of hydrogen that could rejuvenate the galaxy making it appear to be a newly forming young dwarf galaxy with a large amount of dark matter.

40. **(F)(C) The most distant observable galaxies will be found to be made up of the same atomic and molecular materials and proportions that can be found here on earth** and in our galaxy, as well as in nearby galaxies. This would be because some of these distant galaxies are fully mature galaxies at least as old as the Milky Way, a complete contradiction of the Big Bang Theory.

41. **(I)(C) The largest known galaxy structures are ring and bubble structures** formed by aggregations of galactic clusters over many galactic generations/ cycles that according to this prediction, most would be **expanding radially outwards from the sparsely populated spatial voids in the middles of them.** The largest of these are huge structures roughly 60 billion light years in diameter. We are on the inside of one of these large expanding structures which also slowly rotates. Although the universe in general is uniform and isotropic, according to the cosmological principle, the relative motions of the observable universe will not be found to be uniform and isotropic. We will find non-uniform expansion rates in different directions along with an orbital motion that would be a remnant of the original source galaxy that through the diminution of matter has vastly expanded.

42. **(I)(U) Many small anomalies or subtle “hot spots” in the cosmic microwave background** will be found to be distant **fully-formed galaxies** not just the beginnings of stars or galaxies which is the current theory according to the Big Bang model. Other hot spots will be found to be concentrations of hot intergalactic matter.

43. **(I)(U) Part of the Micro-wave background is moving.** According to the Pan Theory, intergalactic matter is continuously being moved around by gravity currents. This intergalactic matter is accordingly radiating the entire microwave background radiation. The Wilkinson Microwave Anisotropy Probe (WMAP) or other satellite or ground based radio telescopes will eventually find that some of the observed microwave background including one or more hot spots have moved compared with prior

observations which would be completely contrary to the Big Bang model. Published microwave maps will also be found to be heavily polluted by Milky Way radiation.

44. (I)(U) **The large hole in the micro-wave background discovered in 2007 will be observed to be the result of an absence of matter within the discovered large void, which cannot produce, refract, or re-radiate the EM radiation of matter in our direction.** This discovery is contrary to the Big Bang model which states that the microwave background is the afterglow of the Big Bang and should be omni-present and generally uniform.
45. (I)(C) **Some galactic polar jets are truly super-luminous** relative to the galaxy and the central black hole which produces them, which would not be just a condition of relativity.
46. (S)(C) **Galactic Polar Jets ejected from active galactic nuclei** can be analyzed to determine the amount of material being ejected, **primarily in the form of protons and electrons. The mass of galactic polar jets will be found to be greater than that which could be explained by material orbiting the black hole**, indicating that at least some of the material being ejected is was not pre-existing matter being recycled but instead also consists of newly created atomic particles created from field material molded by the forces surrounding the black hole.
47. (I)(C) **Both deuterons and alpha particles (helium nuclei) are created by the fusion temperatures and pressures within galactic polar jets of active galactic nuclei** which can explain their abundance throughout the universe. **Forces within the event horizon of these same black-holes also produce copious quantities of protons and electrons** which create most of the future galactic matter and which are ejected under great pressure as a result of the newly created particle's interactions.
48. (I)(C) **Current methods of age dating Stars** via measuring ratios of radioactive isotopes within the star **are unreliable**. This is because **in slowly spinning stars (like our sun) the heaviest elements are pushed by gravity toward the center of a star where both fusion and fission can take place.**
49. (I)(C) Because of **Stellar fission processes** discussed above, a portion of **heavier elements are broken down by presently unknown nuclear fission processes within stars producing lighter elements such as deuterium, tritium, barium, etc. which can better explain the abundance and ratios of galactic elements without resorting to Big Bang creation of the lightest elements.** Heavier elements than iron can also be created

within stars by atomic compaction processes, turning neutrons into protons, rather than solely being created in supernovae.

50. **(I)(U) Induced Stellar Heat:** The Ipan field theory implies new understandings for plasma physics because the related Ipan Theory predicts that **a major portion of stellar plasma is made up of field material whose kinetic motion and temperature would be enhanced/ increase** by the perpetually inflowing gravity field.
51. **(S)(C) Particle variation. There is a small variation between the size and weight of individual protons, electrons, neutrons, short-lived particles, and also atoms of the same element.** The variation in the Fine Structure Constant, which is the ratio between an electron's mass and a proton's mass, would only vary based upon very precise measurements of the mass of individual particles or atoms. The primary problem in this measurement would be that nearly all of the mass of any particle consists of its vortex mass and energy which would probably be more than 99% of its measured particle mass/ weight which is dependent on the particle loop size which is a constant in any given time frame.
52. **(S)(C) A Particle's Mass consists of both substance and a self-generated physical field vortex caused by spinning nuclei which produce detectable field waves.** The resultant vortex is the primary interaction force with other matter and the primary reaction entity with gravity by virtue of its interaction with the accelerating inward flowing aether field. The shape of a particles vortex determines its magnetic charge.
53. **(S)(C) Anti-protons are less-stable particles than protons since they are not mirror images or symmetrical to them.** There is much present evidence to support this assertion. These particles of antimatter are stable because the spring-looped form of their makeup only comes in a single-handed form which enables only protons to have a stable form. Opposite handed springs could not exist according to Ipan Bead Theory. Anti-protons can be retained after formation by the continuous reinforcement of their spin and looped structure by the magnetic drive of a cyclotron or by cryogenic storage for up to a few months.
54. **(F)(C) The Strong Nuclear Force is the result of physical/ mechanical connections between strings of individual particles which make up all nucleons.** There would be no gluons or forces between particles, only a continuous, unbroken physically connected string or chain of fundamental particles. This prediction is called the Ipan Bead theory and hypotheses. The force necessary to break a chain of these particles formed in a loop, called a proton, is currently called the Strong Force. This prediction results from a much simpler particle theory than either the standard model or string theory in general. (pages)

55. (S)(C) **The Strong Interaction** is defined as the force which holds stable nucleons together. It is caused by a **physical engagement, a mechanical connection between adjacent nucleons** that generally cannot be disconnected without the forces of fission.
56. (S)(C) **The Weak Nuclear Force is caused by neutron-neutron engagements** which are physical meshing but “less engaged” connections within the nuclei of atoms that are not as stable as the proton-neutron nuclear connections of the Strong Interaction described above. Less force would be required to break these connections and the resulting disconnect would not alter, in most cases, the particles themselves. This theory is an alternative to present day particle physics which requires a fundamental force.
57. (D)(C) **Atomic particle Spin:** The **Half spin** character of fermions is a wobble between alternating axis of rotation.
58. (I)(U) **Particles and anti-particles can be formed separate from pair Creation where one is only a virtual particle.** This is predicted by the Ipan Field Hypothesis. A proton can be created instead with a virtual anti-proton which would be a common exception to pair creation. This would be a common method of particle creation which would occur in generally unobservable areas surrounding the central mass of galactic black holes. This type of “particle virtual-particle pair production” should be reproducible in lab experiments.
59. (I)(U) **Ipan Theory predicts there will be more presently unidentified types of neutral particles found in particle accelerators** which will probably also be considered to be within the neutrino family. This is because of the large number of possibilities associated with particle interactions. Most of the presently observed high-energy pan-chain are currently called “quark-jets.”
60. **Spinning loops back to back can explain the mechanics of a Bose-Einstein condensate** which cannot be explained using the standard model of solid quark-gluon particle formations.
61. (I)(U) **The building blocks for all nuclei are primarily combined layers and matrices of helium nuclei** (two protons and two neutrons).
62. (I)(C) Wave-diagonal pattern analysis: **Heisenberg’s Uncertainty Principle will be shown to be invalid when a non-intrusive method of measurement is devised**, possibly a type of wave-diagonal pattern analysis. The correlation would also be

predictable, but the results would be explainable rather than mysterious. (See details in proposed experiment page.)

63. **(I)(U)** In interstellar/ intergalactic space, lower temperatures and a relatively constant field pressure would slightly reduce **the rate of nuclear isotopic decay**, which accordingly would occur at a decreased rate in intergalactic space.
64. **(S)(C) Aether drag, The relative motion of all matter decelerates in time.** The Mercury and Voyager space crafts have been detected to be slowing down. Although the extent of this reduced speed relative to the sun is very small, it still is statistically significant. This prediction is concerned with this effect which accordingly would be caused by the crafts velocity relative to a small accelerating field motion toward the sun which is the source of gravity. The resistance to their motion would be greater because of the crafts outward velocity relative to the field motion of gravity currents which would be toward the sun.
65. **(S)(C) Magnetism is caused by atomic and molecular vortex alignment positioned by photonic De Broglie waves.** It is initiated by a transfer of field motion of an aether that is funneled in a direction determined by the orientation of the affected atomic vortices. Atomic alignment is initiated by incoherent waves and primarily virtual photons at about 109 hertz (cycles per second), creating reactions of susceptible atoms which align their atomic/ molecular orientations and their vortices in a single vector direction. The result, like gravity, is a difference in field pressure that either pushes together or separates two or more magnetically influenced entities. This prediction stems from the Pan-Magnetic theory and Pan-field theory. If true it would enhance current understandings of magnetism.
66. **(I)(C) The Earth's magnetic field is caused by the earth's atmosphere interacting with its oceans, lakes** and to a lesser extent the land, as they interact via the wind and additionally reinforced by the solar wind. Atmospheric ions cause slow electric currents in oceans and lakes. These currents emit photons and accompanying incoherent waves which create the Earth's magnetic field which is reinforced by the solar wind. A very large number of the free atomic particles within our atmosphere come into our atmosphere at the poles and are part of the solar wind directed by the prevailing magnetic field. Observations have shown that the earth's magnetic field varies from place to place similar to gravitational variations. This might be considered evidence for its causes as indicated above.
67. **(I)(U) Most or all reversals in the earth's magnetic field are caused by very large solar storms. When clouds of ejected plasma interact with the opposite prevailing magnetic pole of the Earth during periods of a weakened magnetic field, the magnetic field can reverse polarity.** Other possible sources for changes in

magnetic polarity could be large changes in Jupiter's magnetic field. Few if any would have as its source changes in the earth's interior.

68. **(D)(U) Planetary magnetism in general is** caused by relatively **differing rotation speeds of strata levels of liquids and gases interacting with each other and solid material causing ionization of varying degrees resulting in the production of a planetary magnetic field** as well as an electrical potential between these layers which results in lightening. In the case of the planet Mercury planetary magnetism is caused by the solar wind (protons and electrons) interacting with the external magnetic field at about a million miles per hour as the planet slowly rotates.
69. **(I)(U) Both the Sun and the Earth would have originally had stronger magnetic fields** as well as all of the other planets. The sun would have a smaller magnetic field than a star of equal size but a faster rotation rate.
70. **(I)(S) Magnetic fields of galaxies** generally become stronger with age as current theory predicts. Contrary to current models, however, **distant large galaxies will appear to have larger magnetic fields**. Elliptical galaxies without observable jets or an observable torus, although old, will have relatively small or even undetectable magnetic fields because of their lack of relative rotation of their stars, gas and dust clouds, or jets and a central Torus. The largest magnetic fields will be found in large galaxies with AGN such as Seyfert galaxies. Some Quasars, because of their distances, will appear to have the strongest magnetic fields when such detection is possible. The farther away a galaxy the greater its apparent brightness and magnetic field, magnified by the effects of the relativity discussed in prediction #3 above.
71. **(F)(C) The density of matter in the observable universe in any time frame would accordingly be generally constant.** This prediction is fundamental to the Pan Theory of Relativity and is directly related to the diminution of matter and the concurrent creation of new matter related theories.
72. **(F)(C) Supernovae and gamma ray bursts** will be found at and beyond the edge of the presently observable universe, currently believed to be 13.5 B light years away. A type Ia super nova is believed to consist of a white dwarf star and a companion red giant star. The white dwarf “gobbles” up the atmosphere of its companion star and explodes in the brightness of billions of suns. The age record for one of these supernovae, observed in 2001, was believed to be 11.3 Billion years old. White dwarfs, according to standard models, are believed to be from 4-8 billion years old. Together these combined ages (11.3B + stellar age) conflicts with the age of the universe according to the Big Bang model. Some of these supernovae will have no observable galaxy and will be older than the oldest galaxies in the observable universe.

73. **(I)(A) The inner planets of the solar system, up to the asteroid belt, originally formed from pre-existing hot liquids, gases, and solids made molten from heat conducted outward within the accretion disc from the proto-sun. The outer planets would have accordingly been formed from large volumes of colder liquids and gasses which first orbited and subsequently condensed upon pre-existing solids.** These molten solids, liquids, and gaseous states would enable rapid planetary formation by reducing the carom effects resulting from collisions of solid materials without atmospheric friction. This prediction also leads to the theory/ hypothesis that the asteroid belt material was not originally in a hot enough part of the accretion disk for the asteroid material to be molten but still too hot for gas or liquid to readily condense on their surfaces to assist in the formation of lunar or planetary sized bodies. This theory also suggests that lacking the molten state liquids, or orbiting gases, this pre-existing stellar material was further fragmented by collisions within this relative position within the accretion disc. Gravitational influences of Jupiter before it condensed may have also contributed to this lack of planetary formation.
74. **(F)(C) De Broglie waves are waves which all spinning particles create in the surrounding field as they alternate their axis of rotation.** These waves are radiated away from the particle. All spinning particles create these waves which cannot be explained adequately using standard particle theory, but such waves must exist in the Pan Theory; if they did not exist it would disprove the Pan Theory field model of elementary particles which would necessarily generate a vortex surrounding any spinning field particle or entity in a physical field of miniscule particles.
75. **(F)(U) The observable universe is not expanding** in general, instead matter is progressively getting smaller. This prediction follows directly from the Pan Theory and Pan Theory of Relativity.
76. **(F)(U) Current estimates of the mass contained in most galaxies,** both near and far, would be considerably **overestimated** by roughly 90%. This statement is based upon current formulations used to calculate galactic as well as galaxy-cluster mass, and the present inclusion of roughly 10 times more dark matter than observable matter in present-day conventional calculations.
77. **(F)(U) Quantum Entanglement of particles** is the same as making a measurement in that particles take on a definite but complementary state.

Predicted observations of the Pan Theory that have either been observed, or where there is continuing observational evidence to support the prediction:

The first complete writing of this book/ text generally in its present form was completed in 1997 from earlier texts, first penciled in 1959. The first two theories (1959) were The Pan Theory of Relativity in general, and the foundations of the Pushing Gravity theory herein, without the mathematics and without the “Single Force Theory.” The first rough draft—and the beginning of the Ipan Bead Hypothesis were completed in 1983. Since that time a number of the theory’s predictions have been “observed.” None of the predictions below were predicted by the Big Bang Model (the numbering system below starts over). All of them of them were contrary to the accepted model at the time they were predicted .

1. The prediction was that most **QUASARS were just active galactic nuclei at great distances.** This prediction was first made by the Pan Theory in the 70’s when QUASARS were first being discovered and named; In the early 80’s, most QUASARS were still thought to be very bright relatively small entities only found at great distances. During **Sept. 1983 observations claimed that stars could be seen surrounding some Quasars. After this and subsequent observations Quasars were subsequently recognized to be active galactic nuclei (AGN)** at great distances as the Pan Theory originally asserted.

Since then it has become well-known and accepted that quasars are just very active centers of Seyford Type galaxies which the Pan Theory predicted when they were first observed. At that time they were considered evidence for the Big Bang Theory, which predicted that the early universe was much different from the present day universe. This was also the argument presented by Steady-State theorists at the time, which disagreed that quasars only existed at great distances. The Steady-State theory was incorrectly criticized at this time because it was believed that quasars were relics from the primordial universe which the Steady State theory proposed otherwise.

2. Prediction #3 above was that **everything at a distance will be perceived as being larger/ greater/ stronger, moving faster, accelerating more, and brighter in many cases** than it really was in its own time frame. This is the primary prediction of the Pan Theory of Relativity. From this prediction one could deduce that someday somebody might mistakenly predict the accelerated expansion of the universe. Instead, said observations are another confirmation of the Pan Theory of Relativity like apparent super-luminosity, and is unrelated to any possible real expansion of the observable universe. This prediction was made in the 1980’s by the Pan Theory and unpredicted by the Big Bang Theory. One of many general confirmations of this prediction came as the **“accelerated expansion of the universe” was proclaimed 1998;** this accelerated expansion would instead be an optical illusion related to the Pan Theory of Relativity concerning measured/ calculated velocity at a distance the extent of which is directly predicted by the theories formulations. Although this prediction has not been removed from above confirmation is taking place in the form

of supernovae and gamma ray burst, although theorists have not yet guessed the cause for such “unusual” data that violated the standard model

3. The observed prediction was that of **super-luminosity** will be observed in the jets of distant galaxies. First, that galactic jets will appear to be super-luminous but instead most observations would be an optical illusion based upon prediction #3 above. Secondly, the EM radiation of some jets would be truly superluminous relative to the galaxy center.

The speed of EM radiation (the speed of light) **would also be relative to the surrounding field motion** that would have a speed limit of the speed of light relative to its surrounding field motion which would be the medium producing the wave and thereby controlling the speed limit. The field could be moving at multiples of the speed of light relative to the central black hole besides the additional light-speed of the EM radiation which is travels at light speed within the super-luminous motion of the field. **This asserts that super-luminosity in some galaxies was real. Aug. 11, 1998, the super-luminosity of galactic jets was claimed.** Since that time there have been alternative and contrary interpretations of this data since this interpretation would seem to violate Einstein’s theory of Special Relativity.

4. Prediction #2 above is concerned with the microwave background radiation: **The Pan theory predicted**, along with other theories, **that the stars themselves produce enough heat to provide a minimum energy/ temperature for the observed background microwave radiation.** Observations to this effect were presented in 2007 in a technical paper by Verschuur, a well respected radio astronomer and author. According to his observations there would be a correlation between the background radiation observed and radiation produced by neutral intergalactic hydrogen. If not following a direct correlation, his primary assertion was that intergalactic hydrogen would necessarily add to any observed microwave background radiation, making such information unreliable for CMB predictions or BB theory support. The Pan Theory has always attributed the MWB radiation to the re-radiation of starlight by extra and intergalactic matter. Although this affect so far has been denied by mainstream practitioners, according to this prediction it will eventually be undisputed.
5. **Spiral Galaxies outer disk stars move more rapidly than the internal disk stars near the core.** The result of these stellar orbital speeds results in the observed pinwheel shape of a spiral galaxy which only slowly changes over billions of years. This prediction was first verified in the 1970’s by Vera Rubin and confirmed by countless observations since that time. The prediction was based upon the observed forms of spiral galaxies which could be an observed geometric pinwheel structure that could only be maintained if the galaxy generally rotated as a whole.
6. Prediction #17 above, was that **we will find very old galaxies in our neighborhood**; this finding was first **observed in detail in January 7, 1999** by Kormendy and Freeman of the Australian

University observatory at Mount Stromolo. Reported by the New York Times and based upon their study of 43 galaxies, they observed the dark matter densities of these galaxies as being a hundred times that of “normally bright” galaxies. Because of the lack of visible stars (and probably because of the BB perspective) they, however, identified all of these galaxies “incorrectly” as Dwarf galaxies.

According to the Pan Galaxy theories, they may be Dwarf Galaxies in luminosity but in mass they would accordingly be full-sized but old dissipated galaxies with great volumes of burnt out stars and abandoned planets which in this case would be much of the dark matter they observed. Many of those stars that could be seen would accordingly be second, third, and some forth generation stars. If this prediction is correct, they probably were only able to see the expanded cores of these galaxies. The age of these galaxies would accordingly be maybe 35 billion years old. If this interpretation of these galaxies is correct it would completely refute the Big Bang model of the universe.

7. Prediction #18 above was that **we will find very young galaxies newly-forming in our neighborhood.** These were first found and reported in quantities January 8, 2004. Nearby “Infant Galaxies Discovered,” in a nearby Galaxy Group. From time to time such newly forming and relatively nearby galaxies are now being found on a regular basis; that the universe has the same variation of age everywhere is again a complete refutation of BB theory.
8. Prediction #49 above was that **Some black holes “spin-off” pieces of themselves to form new black holes** and subsequent future galaxies. Supermassive black hole found “racing out” of a galaxy, **April 29th, 2008.** In their study, Stefanie Komossa and her colleagues at the Max Planck Institute for Extraterrestrial Physics in Garching, Germany, examined the spectrum of light from what they believe to be the exiting black hole. The general hypothesis has become well known by its promotion by Halton Arp who first proposed this method of black hole multiplication.
9. **Prediction #43 above has been officially observed concerning extensive EM radiation:** galaxies will produce increasing quantities of radio waves the farther away they are has been observed but another cause is presently asserted other than absorption. According to this prediction this effect can be correlated to a galaxy’s distance based upon the probability **that intervening matter would absorb and re-radiate some of the initial radiation at lower frequencies of both EM radiation and radio waves.**
10. This prediction has been observed enough time now to substantiate its validity: **Supernovae** will eventually be found with the same red-shifts as supernovae have already been observed but in different locations. **Their brightness however will differ significantly from previous observation(s) at the same redshift.** The reasons why they would necessarily vary would be dependant upon presently unrecognized variables which create the observed red-shifts and the predictions of the Pan Theory of Relativity (continuation page 106).

The following are predictions that at the present time seem to be difficult to presently observe or prove, some of which were part of the original Predictions of this text but were moved into this separate section. They are included here to give a sampling of the many other predictions within the text that are presently not included in the Predictions Section above because it is presently thought that they are either difficult to observe or that it may be a long time before they are observed and/ or recognized.

--- **(F)(A) There is only one fundamental particle.** It is herein called a Pan. This particle accordingly would be the single building block of all matter as well as the originating single particle that created the entire universe.

--- **(S)(U) Nothingness without matter is not a possible state of reality.** In our imagination we can conceive of almost infinite types of realities and beginnings for the Universe. But reality has only a single existence, the one that we live in. Nothingness or space, without matter or the ZPF, is just another of those imagined science fiction entities. (pa. 49, pa. 125)

--- **(S)(C) Quarks and Gluons are not real particles.** They are presently just good mathematical constructs developed by Murray Gell-Mann to provide a better predictive system in particle physics than existed before this development. No observation of their independent existence has ever been recognized. Instead A.P.T. atomic particles are made up of long chains of extremely small connected particles.

--- **(F)(C) Because there will always be unpredictable interactions within any field – accordingly, there will never be an “ultimate mathematical formulation” in Physics without probability tolerances** which would accompany the equations; such a system today exists in quantum mechanics only. Eventually more accurate formulations (removing presently undetected variables) and more accurate tolerance will be derived that will not necessarily be based upon the Normal curve of statistics*.

--- **(I)(C) Because of the greater age of some K & M-dwarf stars in the universe than is currently believed, the likelihood of life evolving on planets that orbit these much older stars, would be greater than the BB model would allow. Also large intergalactic clouds have been found that could accordingly produce elementary life forms within the pressures and temperatures of these large galactic sized clouds** that could be two or three times older than the BB model. This would provide enough time for life to evolve within these intragalactic clouds and spread to many planets once such clouds would merge with an existing galaxy.

--- **(I)(U) Atomic particles are made up of loops** of coiled spring-like strands of fundamental particles. Upon being forcefully looped these strands will intrinsically spin relative to their surrounding field. This hypothesis/ theory is supported by the proved existence of Bose-Einstein

condensates which state that two particles can (generally) be in the same position at the same time. This would be accordingly accomplished by two back-to-back loops “pressed together” spinning in unison, forming a single but stronger appearing single particle vortex.

--- **(F)(A) There is just one possible state of reality**, which would be the same state of reality that has always existed, the single and sole universe that we live in.

Prediction Hypothesis:

--- **(D)(S) The neutrino model of a Pushing “Graviton” One of the primary pushing vectors of gravity may be slower moving neutrinos.** An electron neutrino after millions of years of traveling through matter and aether fields, based upon the theory of aether drag herein, electron neutrinos could slow down to **maybe 1/10 the speed of light**. At this slower momentum their spin could greatly increase and accordingly so would their interaction with matter. If true, these could be the pushing gravitons which are the most influential separate agents of pushing gravity.

Of course the discovery of these slower moving neutrinos would not necessarily mean that they were stellar electron neutrinos that have slowed down. But consider the first factor proposed which was the inflowing field vortex. What factor would be presented to explain why these pushing field-vectors would represent an even force surrounding the earth? Another type of pushing particle vector (or pushing graviton), however, would still confirm much of the premises and predictions of the Pan-Gravity theory and the related field gravity currents predicted.

--- **(S)(U) A single Pan or pan-chain is wound-up along a linear axis in a spring-like configuration.** These pan and pan-chain unwind and at the same time rewind maintaining their relative potential energy. When the largest of these field particles are formed in loops they become fermions. This unwinding is the cause of looped particles to spin.

Rough Estimates of the Big and Small

---- 2.1×10^{14} unwinding cycles/ sec. – estimate of minimum unwinding rate of a single Pan, one side relative to the other.

---- 1.7×10^{-34} estimated diameter of a single Pan in meters.

---- 10^{-18} estimated diameter of a single electron in meters (conventional theory). In the related Pan theory this would be the diameter of an electron's "vortex". The electron itself would be much smaller, like the diameter of a hydrogen atom compared to the diameter of a proton, roughly 10,000 times smaller in diameter, or 10^{-21} meters diameter (reference).

---- Diameter of sun 1.4 billion meters, 1.4×10^9 meters (reference).

Rough ideas of sizes

From page 44A ----The **roughly estimated median age of the universe was 303 doubling cycles. 2^{303} which is also the estimated pan count of the universe, about 1.63×10^{91} pan-units, ---** If one could compress all these single pan spheres into just one relatively giant sphere it would have a maximum density by sphere compaction, which has been calculated to be **77.836%** (to 3 decimal places)*. The remaining 22.164% of this large sphere would be space. A single pan, by this definition, would occupy one "unit of space." (the volume of a single pan today). The volume of this all-inclusive compressed sphere would occupy 1.63×10^{91} pan-units of space, as indicated above. To eliminate the space within this large sphere we would need to multiply this volume times .77836. This is calculated to be 1.63×10^{91} times .77836 which is equal to about 1.27×10^{91} pan-units of space which would be the "median" volume that the very first pan would have occupied.

To find the diameter of the very first pan we would use the formula for the volume of a sphere, $\frac{4}{3} \Pi r^3$. We would first divide the unit volume by $\frac{4}{3} \Pi$ which would be $1.27 \times 10^{91} \div \frac{4}{3} \Pi = 3.032 \times 10^{90}$ pan-unit volumes, which is the quantity of the radius cubed in pan-units, r^3 . The cube root of $3.032 \times 10^{90} = 1.447 \times 10^{30}$ pan-units of radius, or 2.895×10^{30} pan-unit diameters. The diameter of a single pan from above is 1.7×10^{-34} meters. To find the diameter of the first pan we can multiply the quantity of pan-unit diameters times the size of one diameter.

This would be $(2.895 \times 10^{30}) \times (1.7 \times 10^{-34}) = 4.922 \times 10^{-4}$ meters or about **.5 millimeters. This would be the estimated diameter of the first Pan.** This would be much larger than a molecule but much smaller than the diameter of the sun for instance. Even if this calculated diameter were off by a

factor of 10^{12} , the first pan would still have been smaller than the diameter of the sun which still would be pretty small compared to the diameter of the entire universe however big it may be.

* 77.836% (Maximum sphere packing density as calculated by Muder, 1988).

Nobel Prize: Nobel prizes are given for discoveries, never for unproven theories, sometimes not even if the theory's later is proven. Many of the above predictions if true might result in Nobel Prizes for their related discoverers.

Many of the Predictions shown below are thought, by the author, to be observable now but hopefully at least some of them will be recognized and become part of mainstream theory before the year (let's say) 2030:

3 -- Everything at a distance will be perceived as being larger, moving faster, accelerating more, being farther apart, and having a wider spectrum. **9 -- Gravity** does not act as a linear force at the, its force at stellar boundaries becomes perpendicular to the line of sight **12 -- gravity will** steadily resist and **slowly reduce linear motion, herein called aether drag.** **14,** A great deal of **heat is produced** internally by **the compression forces of gravity.** **19 --** The **farther away a galaxy,** the more likely the increased magnitude of its radiation and **the velocity of its galactic jets** would appear to be **20 -- the distance from the earth to the sun increases** a minimum of 12 ft. per year. **23 --** The universe was created from "dark matter" surrounding central Galactic Black Holes. **24 --** The prediction is that **galaxies of all ages are generally distributed everywhere** within the universe. **28 --** the farther away a galaxy, the faster its orbital motion will appear to be as it rotates within a cluster. **31 --** We will be able to **look back in time** at the edge of the universe at galaxies roughly **40 billion light years old** or more. **32 -- Magnetism is a mechanical force** initiated by a combination of both photons and waves. **33 --** There is a variation in the **Fine Structure Constant,** which is the ratio between an electron's mass and a proton's mass. **34 --** The prediction is that increments of energy of motion which are not multiples of **Planck's constant** do exist. **35 -- spinning nuclei produce physical field waves.** **36 -- Anti-protons are not stable particles.** **37, 38, 39 & 40 -- All "forces of nature" are mechanical forces.** **41 -- Some galactic jets are truly super-luminous.** **46 -- Our galaxy is part of a Ring Structure of galaxies.** **48 -- Some black holes "spin-off" pieces of themselves** to form new black holes, many of which will subsequently form new galaxies. **49 --** Solar neutrinos are produced to a lesser extent because **much of the sun's heat is produced by gravity rather than nuclear fusion.** **54 -- The earth's magnetic field is caused by the interaction between the Earth's atmosphere and its oceans** as they interact via the wind. **55 -- Most reversals in the earth's magnetic field were caused by very large solar storms.** **56 -- Particles and anti-particles can be formed separate from pair creation.** **56 -- The building blocks for all nuclei** are primarily combined layers and matrices of helium nuclei. **57 -- The building blocks for all nuclei are primarily combined layers and matrices of helium nuclei.** **57 --** Particle spin is first

the spin of the particle itself and **the second is the spin of the physical vortex** it creates within the field. 61 -- Heisenberg's Uncertainty **Principle can be shown to have exceptions.**

(Predictions continuation page 105, Predictions, associated observations and Logic 106, Expanded Concepts and Theoretical Principles107)

Listing of the Major Concepts for comparison (as previously presented in the beginning of this book)

All else being equal, "The simpler explanation for a phenomenon is more likely to be valid than other, more complicated explanations." This 14th-century concept was proposed at the beginning of the "Age of Enlightenment" in Europe. It is called the Principle of Occam's Razor.

Something does not come from nothing. This is a very old concept which can be derived from many sources, including an old Latin saying. It also can infer the basis for the First Law of Thermodynamics: "Mass and energy can neither be created nor destroyed."

Everything can be considered relative. This principle requires a relative comparison for any statement concerning realities of the natural world. This concept was originally conceived by Heinrich Mach. A similar version reached greater fame through Albert Einstein.

Either the Universe is expanding, (or) atoms are getting smaller, both are true, or there's another valid explanation for the galactic red-shift of light. Using the concept of relativity (concept #3) to consider the red-shifting of galactic light, one could validly conclude that either or both of these possibilities are true.

The beginning of the universe would have been much simpler and therefore easier to explain if atoms were becoming smaller in size and greater in number as time progresses. Projecting backwards in time to a beginning could result in a simple fundamental particle starting the entire universe.

There is a background field of very small sub-atomic particles (called dark matter or aether) **having dual sources of potential energy: one intrinsic, and the other derived from relative motion.** This field permeates the entire universe with varying densities. The motion of Galaxies, quantum particles, waves of light, and gravity mechanics can all be explained in terms of this "background field."

The inside of a Black Hole consists of the densest form of unobservable matter, more dense than that in a theoretical Neutron Star. This concept is known to many astronomers but is currently supported as only one of the possibilities.

Only one particle (herein called a Pan or “The God Particle”), as a solitary entity, **started the entire universe.** This same fundamental particle is the building block of all matter and “background-field” particles. This particle produces strings of itself which may be altered by interaction into non-linear string configurations which become the most basic atomic particles, protons and electrons. From the beginning of time until now there has always been just one fundamental particle in the entire universe which is the building block for all others.

All atomic matter except for hydrogen can be created within stars or supernovae. This process is called Nucleosynthesis.

The particles which form common hydrogen--protons and electrons--are created from stings of field material in the “halo area” surrounding young Galactic Black Holes (GNH).

A Galaxy of stars forms from a vast quantity of protons and electrons (discussed in Concept #10), **most of which were created by the field surrounding “young” Galactic Black Holes.** These GBH eject much of this new matter outwardly in polar jets. Consequently, it could be said that galaxies form from the inside out for most of the matter which will form the stars of that galaxy.

The time to create the observable universe by the accretion method from a single elementary particle has been calculated to be trillions, rather than billions, of years.

Waves of light and other E.M radiation consist of two distinct and real facets moving together, particles and waves. One constituent is small “bundles” of field particles which are now called photons, and the other is a wave (something like a wave in water) of field particles.

The aether might be found in a similar way Michelson and Morley’s experiment proposed to find it (except using modern, more accurate, electronic equipment) by measuring the speed of light relative to the vertical acceleration of relatively slow-moving field material into the earth.

The gravitational effect begins with field material accelerating into all matter (including Black Holes). All matter “flattens” the kinetic field pressure surrounding it. This causing reduced field pressure between matter which accelerates matter toward other matter.

There is no such thing as pure energy or fundamental forces in the absence of matter or particle-fields. All Forces and energy are solely characteristics or manifestations of matter and field particles.

The observable universe would generally look the same to any observer in any observable time frame or place. (a quasi-steady-state theory)

The Red-Shift of Galactic light, which we observe from all but the closest galaxies, can best be explained by a theory of relativity.

So called “**Force-Fields**” and “**waves of EM radiation**” are solely the manifestations of a **background particle field of “fundamental particles.”** The size and motion of these particles, as well as all matter, decreases as time progresses. This can be called the relativity of size and motion (including the speed of light) to time. This concept is one of the primary foundations of the Pan Theory of Relativity.

All matter has the “dimension” of potential energy, which perpetuates time. Time is solely an interval of change in the interrelationship of matter.

Space can be defined solely as an extension of matter and the distances encompassed by it.

“Hemispheric Spin” caused by “Reciprocal uniform Torque” form a single “dimension” of matter which motivates atoms and fundamental particles to spin. It is the same energy source that multiplies fundamental particles, resulting in all the forms of matter and energy in the universe.

Atomic particles as well as other innately spinning particles consist of a single loop of a fundamental particle string. These spinning loops appear to be solid but, like atoms, they mostly contain space.

In both artificial devices and natural materials, Perpetual-Motion machines are theoretical misconceptions.

The diminution of matter (discussed in the previous concept as well as Concept #5) is a process that enables the use of Mathematical Limit to consider a boundary to the expansion of the universe that would be expanding at a decelerating rate.

Time, Space, and everything else within the universe is finite!

(Evidence and Predictions of Pan/ Ipan theories continued) *APT*

Discussions of Predictions from the previous pages

Prediction #1 (continued), **The age of the observable universe is much older than has been asserted using the Big Bang model(s).**

(continued) Even with the most distantly observed galaxies, we can see the same density of elliptical galaxies that we see evenly distributed everywhere in the universe. Elliptical galaxies contain the highest percentage of old and population III stars. Elliptical galaxies are thought to be as old or older than the Milky Way which is known by its stars to be at least 12 billion years old. At distances of ten billion years and greater these elliptical galaxies contradict the Big Bang model.

Continuously further red-shifted infra-red, radio, and microwave galaxies will be found until the Big Bang model will necessarily break down at the age indicated in calculations below – about 35 Billion light years, if not long before then.

The “Hubble Law” states that the distance to a given galaxy is proportional to its recession velocity as measured by its Doppler red-shift. The red-shift of the spectral lines of a galaxies emission and absorption lines is commonly expressed in terms of a z -Parameter. Using the previously indicated equation:

$$r = \frac{v}{H_0} = \frac{\beta c}{H_0} = \left[\frac{(z+1)^2 - 1}{(z+1)^2 + 1} \right] \frac{c}{H_0}$$

where r is distance; v is the recessional velocity; H_0 is the Hubble “constant”; β is a “relativity adjustment calculation”; z is the red-shift parameter for relativity adjustment; and c = the speed of light..

When a spectral line which is normally 1 nm is red-shifted to 2 nm, then $z = 1$, and $v/c = .6$; (as stated above) $r = .6c / (28 \text{ km/s/Mpc}) = 6,428.57 \text{ Mpc}$ or $20,967.64 \text{ Mly}$.

In this previous example (page 104) the z parameter was equal to 1 so the relativity adjustment, indicated within the brackets would be $[(1+1)^2 - 1] / [(1+1)^2 + 1] = 3/5$ or $.6$. But in the Ipan perspective only 40% of the observed red-shift of galactic EM radiation would be due to an apparent expansion of space.

Three separate factions would accordingly determine the observed red-shift. One portion would be that EM radiation was longer in the past because larger diameter atoms would produce longer radiated wavelengths.

The second equal portion would be the apparent expansion of space, which is also a condition of Pan relativity – both an atoms diameter and the measurement of space would appear to be 1.26 (the cube root of 2) times longer. The third portion would be the speed of light which would have had an average velocity of 1.13 (1.26/ 2). This would proportionately be considered a ½ portion.

Adding these up we get $1+1+1/2 = 2\frac{1}{2}$. That portion which would be caused by the apparent expansion of space would be 1 divided by $2\frac{1}{2}$ or 40%. This would yield a “Hubble constant” of 28 km/s/Mpc instead of 70 which is the currently accepted value. For this reason conventional calculations would be incorrect because Pan Theory calculations would not make a relativity adjustment. The correct calculation would be $v = C$. Therefore the Pan Theory calculation would be $c / (28 \text{ km/s/Mpc}) = 34,946.29 \text{ Mly}$ (34.9 billion light years). This would be the minimum age estimate of the presently observable universe according to these formulations if the expansion constant were really a constant, which it is not. The 28 km/s/Mpc used above is conservatively considered to be the median recession velocity. **The presently observable universe therefore would accordingly be much older.**

The Pan Theory perspective is that the observable universe is not expanding at all or is expanding little. The perspective instead would be to consider the Universe as a whole as constant in diameter and the matter within it as becoming smaller. New matter would be continuously created which would maintain a constant density. Each time frame of the observable universe would have the same matter saturation as any other observable time frame. This is what really differentiates the Pan Theory from an expansionist theory.

Prediction #3, (continued) Everything at a distance will be perceived as being larger, more luminescent, moving faster, and accelerating more than it really was in its own time. This prediction is based on the effects of the Pan Theory of Relativity. Maybe one of the easiest proofs of this effect would be a correlation of galaxies’ orbital motions in a cluster with its recessional velocity and acceleration with its distance from us. In general the farther away a galaxy, the faster its relative motion and recessional acceleration will appear to be.

For example galactic jets, winds, particle currents, and motions in general at great distances will also seem to be extraordinarily fast, sometimes appearing to be super luminous, but instead would be just another condition of The Pan Theory of Relativity or the related “measurement relativity”.

Both a galaxy’s gravity and magnetism will also appear to be greater as distance increases.

(The full implications of this condition of relativity are numerous and many may not be discussed or considered within the text prediction or the related text). This may be the most important prediction and the most statistically significant.

If a galaxy is thought to be 13 billion light years away, for example, its orbital motion in a cluster or its recessional motion and acceleration would appear to be almost twice as fast as those much closer. Eleven years after the previous copyrighted version of this text the accelerated expansion of the universe was first asserted. Other possible misinterpreted observations in the future, for this same reason of relativity, may erroneously predict that dark matter was more abundant in the past.

Prediction # 5, (continued) Finding the Aether. The long-ago theorized Aether field has now been given different names, the ZPF (zero point fluctuations) and theorized Dark Matter.

This theoretical field has been associated, by experiment, to be the source of potential energy that can interact with matter, form virtual particles, and is intimately related to the determination of a particle's mass, an energy source which can manifest its influence in the smallest measurable way (less than $1 : mV$). Its constituents are primarily neutral in charge, without intrinsic spin.

Densities, currents, and relative motions of aether fields would determine the strength and direction of gravity as well as the speed of light waves moving through this aether medium that these fields control and determine. The existence of aether would invalidate Special Relativity in favor of Lorenz Transforms which theoretically recognizes this aether. Contrary to both Special Relativity and Lorenz transforms, however, aether densities and motions are somewhat unpredictable leading to slight but unpredictable variations in field characteristics. Space would not look the same in all directions; instead there would be measurable relativity transform violations.

Michelson and Morley's experiment showed no effects of an aether field, measured by the speed of light, because all of their measurements were conducted parallel to the earth's surface,

therefore at a right angle to the field's motion which moves directly into the earth at right angles to its surface. This aether will be found by the differences in the speed of light, up vs. down.

Possibly one of the best tests of the Ipan Theory Field Theory and Pan-Gravity Theory would be another Michelson-Morley type experiment measuring the speed of light between maybe an earth-stationary satellite and the a ground station. This might provide evidence of field motion based upon a small speed of light differential. This would be in contrast to the constancy of the speed of light proposed by Einstein, but the speed of light still would remain constant at any given time, relative to the field which it is traveling in. This differential vector, up vs. down, predicted by both Ipan Field Theories and the Pan-Gravity is expected to be not be less than twice the acceleration speed of gravity at the earth's surface, which would be about 64 ft per second minimum differential.

This newly discovered aether, like the theorized aether of the 19th century, will also be a luminiferous aether, the "carrier" of light waves as well as being the pushing force of gravity.

Prediction # 6 (continued), The constituents of dark matter.

Other than non-atomic elementary field particles, the greatest quantity would be protons and electrons. The greatest quantity of atomic matter would be neutral hydrogen atoms, and then helium. We would then find nuclei of all the other natural elements and their isotopes which would be found in vast dust clouds. Lastly stellar, planetary, and asteroid sized remnants will be found of nearly countless sizes and varieties contained in the same huge thinly dispersed, often generally translucent clouds. Additionally there would be vast quantities of photons and its energy of rapidly orbiting EM radiation of all frequencies which encircle both galaxies and galaxy clusters, which also have extensive gravitational influences.

For distant galaxies we would be unable to see satellite galaxies. The current count surrounding the Milky Way is something like thirteen dwarf galaxies. These distant satellite galaxies from our perspective would be considered to be dark matter if we cannot directly observe them except for their gravitational halo influence on the primary central galaxy.

A major portion of dark matter and the entire ZPF comprises this aether field, also called Background Fields or Pan Fields herein. These two field constituents, however, are presently not

recognized as the same entity.

Prediction # 8, (continued) Gravity does not act as a linear force at stellar distances within a galaxy. Dark matter is not a major influence when it comes to a spiral galaxy's rotation. This factor is caused by gravity itself. Accordingly gravity does not work in a linear manner. Instead it has a somewhat curved vortex motion. Within a galaxies central core gravitational forces are know to follow a generally Keplerian, Newtonian orbits. Stars which are located in the disk outside the core are controlled by these small vortex currents which begin to dominate the orbital speed of disk stars. As we observe increasingly farther away from the core, we notice that the stars appear to be orbiting "in place" enabling the outer galaxy to maintain its form for a long time period. From a relative speed perspective we could say that for some spiral galaxies, stars would be increasing their speeds as the outer star's orbital radius increases. From a different perspective we could say that a star generally maintains its position within the galaxy for each orbit of the galaxy it makes. This orbital position very slowly would slowly decay as can be seen by the smeared curved arms of a spiral galaxy. To calculate these stellar rotation rates a different theory of gravity is needed (see prediction #9)

This is contrary to Mach's gravitational principle, that all matter instantaneously senses all the other matter in the universe. These gravitational influences have subsequently been shown to travel at the speed of light as proposed by Einstein. Non-linear gravity at a distance is contrary to Machian, Keplerian, Newtonian and Einsteinian theories and equations which assert that gravitational influences are linear.

Formulations as to its strength at these distances would remain Newtonian, but unlike Newtonian or Einsteinian physics, this vector would eventually become perpendicular to a direct line to the star. This would occur at a star's gravitational boundaries with its adjacent stars where the gravitational influence of two stars reaches equilibrium. This small vector would act in the same perpendicular direction as the stellar vortex which it perpetuates and would be the direction of a star's planetary motions. Accordingly the Langrangian orbit model would break down at interstellar distances (see formulations pages 97-97F of various possibilities), much more so in the outer galaxy than in the core bulge where the central gravitational influence is at its strongest.

Prediction # 12, (continued)

Gravity does not act as a linear force at stellar or galactic distances. This is contrary to Mach's gravitational principle, that all matter instantaneously senses all other matter in the universe in a linear manner. These gravitational influences have subsequently been shown to travel at the speed of light as proposed by Einstein. It is also contrary to both Newtonian and Einsteinian theory and equations which both assert that gravitational influences at a distance are linear unless great gravitational entities are present. Formulations as to its strength at these distances would remain solely Newtonian, but unlike Newtonian or Einsteinian physics this vector would become perpendicular to a direct line to the star. This small vector would act in the same direction as the stellar vortex which would be the direction of its planetary motion. (see formulations pages 97-97F)

Prediction #13, (continued) **Both stellar and planetary internal heating is greatly enhanced by the compression forces of gravity.**

Stellar lives in general, including the sun, would accordingly be roughly twice as long as current theory predicts. This is because roughly half a stars heat is produced by gravity rather than by nuclear power. The predicted life of the sun would therefore be about 10 billion years longer than present theory, roughly 20 billion years old plus before it would burn out.

Solar neutrinos are also not produced or observed in the quantities predicted by current theory because a major portion of the sun's and other stellar heat is produced by the compaction forces of gravity not by fusion. Roughly half of the total stellar heat energy is produced by nuclear fusion, therefore there would accordingly be less electron neutrinos than current solar models predict.

Since much of the internal heat of a star or planet is produced by the compression force of gravity less internal nuclear fusion or nuclear decay respectively would be needed to produce the same observed amount of radiated heat. Experimental analysis of the neutrino production of the sun has found only about 1/3 of the expected neutrino production based upon observations on earth and calculations of the fusion rates required to solely produce the amount of observed heat and other radiation from the sun.

Although some other reasons may be found, the Ipan theory of gravity implies that a large amount of the heat and Kinetic motion of all stellar plasma would likely be produced by the gravitational inflowing of the gravitational field vortex material into the stellar plasma which

would increase the plasma's kinetic motion, energy, and EM radiation. Less nuclear fusion would be accordingly required by the sun/ a star to maintain its observed temperature and luminosity which seemingly would result in less neutrino production and a longer stellar life than present theory predicts.

Observations of Jupiter have shown that it gives off much more radiation than it receives from the sun. Conventional theory asserts that its internal heat, as well as the earth's core, is a remnant from its origin and as a result of internal radio activity and that it's slowly cooling off. A massive planet like Jupiter also has a great inflowing of field material which also produces tremendous amounts of heat and radiation in quantities accordingly equivalent to the quantities of its radiation. Its external radiation would accordingly continuously fluctuate within an observed range dependant upon absorption factors. The core of the earth, as well as all other planets and moons would accordingly be continuously heated by this gravitational compression process in proportion to their mass.

Mercury and Mars for instance have no observed surface volcanism, however their cores would according to this prediction still be extremely hot, some of which would be liquid as is some of the Earth's core. The temperature of these cores, as well as all planets and moons, would be proportional to their gravitational mass. After their discovery, or clues to their existence, it seems conceivable that we could tap into Martian deep thermal water wells, for heating or possibly for power generation.

Prediction #16, (continued) **The speed of light here on Earth would not be a constant** – up would be slower than down because of the accelerating aether field into the earth. The 64ft per second expected difference (more would be better, but any detectable significant difference is all that would be required for the prediction) in the speed of light up vs. down, should still be within the limits of today's LASER and timing abilities – this much difference seemingly should be detectable. Maybe a couple wavelengths difference would be indisputable; haven't as yet calculated it as to what the minimum detectable difference would be needed, the required distance or frequency that would be required to get at least a half wave-length difference between the speed up vs. down; maybe a UV LASER would be needed. But if it calculates out to be only a fraction of a wavelength difference, however, this experiment still seems doable at the present time.

Prediction #17, (continued)

Jets emitted from active galaxy cores/ black holes of the same size: on an average the farther away a galaxy, the greater would be the magnitude of its radiation and the greater the velocity of its galactic jets. This is because the Pan-accretion principle and the relativity of the speed of light to time and therefore distance. If one were to remove this same (magnifying) factors from a galaxy's red-shift by using the herein specified equations, the red-shift would disappear and one would only then observe relative motion with no overall expansion. This proven correlation would also be a proof for the Pan Theory of Relativity.

Prediction # 18, (continued) In 5-10 billion years, the earth would be roughly 117,180,000 million miles, or 1.26 times its present distance (93,000,000 miles) from the sun – about 13 ft. minimum increase in distance per year.

The above rate is only about half the predicted rate according to matter diminution only. There are other considerations than the diminution of matter that could increase or decrease this predicted number. Such possibilities are the predicted gravitational drag of orbital momentum which could reduce this predicted annual increase. The competing effects of Pan Relativity regarding increasing velocity and momentum which accordingly would increase this predicted annual expansion rate. Both of these factors are currently believed to generally cancel each other out until the latter would slowly increase its effect and eventually prevail. Satellites circling the sun or other measurement methods could eventually be able to evaluate whether the earth is moving away from the sun at approximately from one to two times the Hubble expansion rate – which is the current estimate of the theory and is proportionately similar to the accurately measured rate that the moon is moving away from the earth, about 1.5 inches per year which is roughly twice the Hubble expansion rate.

From its creation until now the earth as well, as all the other planets and moons, will continue to get further away from the sun and each other, therefore colder. There have been many short-term variations in climate temperatures here on earth (some tens of thousands of years long) such as those which could be produced by green-house gases that may temporarily reverse this inevitable cooling trend.

There are considerations other than the diminution of matter that could increase or decrease this predicted number. Such possibilities are the predicted gravitational drag of orbital momentum which could reduce this distance, and the effect of the Pan relativity of speed/ momentum increase per time period that could increase this distance. Both of these factors are currently believed to generally cancel each other until the latter would slowly increase its effect and eventually prevail. Satellites circling the sun or other measurement methods could eventually be able to evaluate whether the earth is moving away from the sun at approximately from one to

two times the Hubble expansion rate – which is the current estimate of the theory and is proportionately similar to the accurately measured rate that the moon is moving away from the earth, about 1.5 inches per year.

Prediction # 20, (continued) Medium sized black holes: The Pan Theory predicts that there should be black holes that are much larger than stellar black holes but much smaller than galactic black holes. This has been a prediction of the Pan Theory, some Big Bang theories, and other theories for a long time. Some of these objects are presently being claimed to have been observed. This prediction is more important to the Pan Theory because accordingly they should exist according to theories presented within this text. Their non-existence would be difficult to explain using the present assertions of the Pan Theory.

Prediction #22, (continued)) Most large Galaxies are created from the inside out by the central Black Holes of the Galaxies. Most of the matter of large galaxies, **and consequently the universe**, was created from field material AKA “dark matter” surrounding the **central Galactic Black Hole** within or surrounding the event horizon of the central black hole. Much of this newly created mater is usually ejected in **large very massive polar jets** and polar clouds which may be observable because of their continuous creation.

Prediction #24, (continued)

The prediction is that galaxies of all ages are generally distributed everywhere throughout the universe. Most “Old galaxies” will be dimly-lit, large, diffuse galaxies having many second and third generation stars as well as many unlit stellar remnants with an inactive or non-existent core. The motion of its stars will be rapidly expanding away from its core resulting in its final dissipation. Their average age, A.P.T., would be between 25-40 billion years of age. Proof would be by some presently accepted or unknown form of age dating.

According to the related Pan Theory of relativity only 12.5 % of the galaxies would be older than 15 Billion years old but ¼ of the total would accordingly be 5 billion years old or younger. These young galaxies, like old ones, might be pretty dim and hard to find and identify. They seemingly would not be evenly distributed in the observable universe. Some QUAZARS may be another source of young relatively close galaxies whose light has been greatly red-shifted by its central black hole. This prediction was first made by Alton Arp who has specialized in observations of unusual galaxies. Since his prediction this aspect of his theory has become an hypothesis of the Pan Theory to explain a greater abundance of closer young galaxies. The evidence to support this theory is extensive but as yet unaccepted by BB theorists.

Prediction #27, (continued)

The “Great Wall” is a part of a large mostly unobservable ring structure of galaxies. The observable part contains roughly 8 billion galaxies. Its density will appear to be the greatest at its nearest point and will appear to subside away from this maximum density in an arc manner which might be correlated to show the Pan Theory of distance relativity. Its curvature (arc form) can be estimated and might also be measurable enabling a rough estimate of its total galactic count and its equivalent quasi-diameter.

Prediction #28. The age of the oldest stars within the observable universe, some possibly within our own galaxy, **could be 60 billion years old or more**, born from a previous galaxy, now expired. These K and M dwarf stars would be few and far between. Their defining characteristic is their small size and luminosity, but this also makes them hard to detect. To recognize the oldest of these stars we would look at the ratio of their chemical makeup. If they are calculated to be fusing hydrogen at a certain rate based upon their radiation, they should have no more than a calculated amount of helium in their body even if they were the first stars formed in the universe. If the amount of helium observed is found to be many times the predicted quantity it would be strong evidence that the star is much older than the presently calculated age of the universe. (discussions and evidence pages 32-35)(106-107)

Prediction #29, (continued)

We will find increasing numbers of young newly forming galaxies in our neighborhood. According to the related Pan Theory of relativity only 12.5 % of the galaxies could be older than 15 Billion years old, but ¼ of the total could accordingly be 5 billion years old or younger. These young galaxies, like old ones, might be pretty dim and hard to find and identify. They seemingly would not be evenly distributed in the observable universe. Some QUAZARS may be another source of young relatively close galaxies whose light has been greatly red-shifted by its central black hole. This prediction was first made by Alton Arp who has specialized in observations of unusual galaxies. Since his prediction this aspect of his theory has become a hypothesis of the Pan Theory to explain a greater abundance of closer young galaxies. The evidence to support this theory is extensive but as yet unaccepted by BB theorists.

Prediction #33, (continued)

Distant galaxies and quasars at the edge of the universe

These galaxies would not be observable if current theory concerning distances and relative motion were valid. Today's theories of the BB have evolved like Ptolemy's progressive layers of epicycles to explain planetary motion.

The problem of finding these galaxies primarily is their faintness, but for some the absorption and distortion of their light by galactic and inter-galactic clouds could conceivably transform much of their emitted spectra into indistinct radio waves and low frequency absorption patterns - -smeared by re-emitted radiation. Some would therefore appear to be very distant B.L. Lacertae (Lacs). The most likely way we will find these furthest quasars/ galaxies, it would seem, is by the prospects of more powerful radio astronomy tools and future space telescopes.

Prediction # 34, (continued)

Galaxies at great distances will produce increasingly greater quantities of lower frequency radiation, infra-red, radio waves, and microwaves.

This condition and effect has been known for a long time concerning a correlation of Infra-red-radiation and distance. The extent of it, however, was confirmed in just May 2008. These lower frequencies of infra-red radiation are more likely to penetrate intergalactic clouds and therefore further absorption and re-radiation as radio waves. As in the case of intervening clouds **here on earth, the source galaxies radiation would accordingly be dimmed by vast clouds of both galactic and intergalactic matter. (see prediction # 3 above for counteracting effects)**

Although these galactic sources of radio waves have been observed since the 1960's, the present theory and explanation is that galaxies in general were different in the past.

Prediction #35, (continued)

“The Great Attractor”: The prediction is that there would be an observably expanding ring-and-void structure which our galaxy is a part of almost directly opposite our relative linear motion thought to be moving toward a Great Attractor (which we are not).

Astronomers have long known that the Milky Way has been determined to be moving toward the constellation Centaurus at a speed of approximately 1.4 million mph relative to our background of galaxies, but the reason for this movement remains a point of conjecture. About 1990 it was suggested that the motion was probably due to the gravitational forces of a large concentration of nearby galaxy clusters dubbed the Great Attractor. The Great Attractor was believed to be a super-cluster of galaxies that was estimated to contain more than 10 quadrillion times the mass of the sun.

This Great Attractor was believed to lie in a particular area of the sky which is generally blocked from our vision because it would theoretically lay behind the plane of our galaxy the Milky Way. We have observed X-ray signatures of galaxy clusters behind the Milky Way and have attempted to analyze the possibility of a Great Attractor. X-ray surveys of this area began in 1998. To date they have not found the masses necessary to explain our galaxies motion.

This prediction asserts that astronomers should look in the opposite direction, generally 180° from the direction they are now looking. What they should find, according to this prediction, they should find a general void approximately the same distance away from us that they believe the Great Attractor exists. The structure of the universe has been shown to consist of spheres, bubbles, and rings of galaxies of varying sizes and densities, where the Great Wall is just one small arc portion of the largest of these visible structures.

Accordingly, we are expanding away from the center of this ring- shaped structure. On the other side of the central void we should see much higher red-shifted galaxies meaning that the relative motion of this ring is expanding away from a central location just as we are. Instead of being pulled toward something we have relative motion away from something. That something was the relative position of the seed galaxy roughly a hundred billion years ago, the expansion and demise of which provided the seed material for the entire ring that is herein being predicted.

Prediction #41, (continued)

The largest known galaxy structures:

Averaging out the size of these structures we could estimate the age of an average galaxy cycle.

The age of an average galaxy cycle is between 40 to 80 Billion years, the definition of a galaxy cycle herein being: when a galaxy first starts forming stars until the next predecessor galaxy first starts forming new stars. We can currently see in the observable universe about 2 ½ to 3 of these galaxy cycles based upon the appearance of galaxy cluster formations. The largest of these bubble structures of galaxy clusters would have taken roughly 180 billion years to form.

Prediction #45, (continued)

Galactic polar jets emitted from active galaxy cores/ black holes of the same size: on an average the farther away a galaxy, the greater the magnitude of its radiation and the velocity of its galactic jets would appear to be. This is because the Pan-accretion principle and the relativity of the speed of light to time and therefore distance. If one were to remove these same (magnifying) factors from a galaxy's red-shift by using the herein specified equations, the red-shift would disappear and one would only then observe relative motion with no overall expansion. This proven correlation would also be a proof for the Pan Theory of Relativity.

Prediction #49, (continued)

Stellar age dating via radio-active ratios of isotopes within a star often would be unreliable in estimating a star's age. The closer that heavy metals are to the center of a star, the faster the rate of their isotopic decay would progress. This might make some stars appear older than they really are. Also some of the heavier nuclei could also be split by atomic fission, because of its proximity to fusion processes in the center of the star, reducing the quantities of heavy metals and isotopic ratios within a star which could contribute to underestimating its age. The likelihood of isotopic enhancement by neutron compaction would also seem very real, also adding to age underestimating possibilities. In the overall scheme of age dating it is predicted there presently is more underestimating than overestimating of stellar ages.

Prediction #51, (continued)

A large portion of stellar heat and Kinetic motion of all stellar plasma would be produced by the gravitational inflowing of the gravitational field vortex material into the stellar plasma (See Ipan theory of Gravity) which would increase the plasma's kinetic motion, energy, and EM radiation. Less nuclear fusion would be accordingly required by the sun/ a star to maintain its observed temperature and luminosity which seemingly would result in less neutrino production and a longer stellar life than present theory estimates would predict.

Observations of Jupiter have shown that it gives off much more radiation than it receives from the sun. Conventional theory asserts that its internal heat, as well as the earth's core, is a remnant from its origin and as a result of internal radio activity and that it's slowly cooling off. A massive planet like Jupiter also has a great inflowing of field material which also produces tremendous amounts of heat and radiation in quantities accordingly equivalent to the quantities of its radiation. Its external radiation would accordingly continuously fluctuate within an observed range dependant upon absorption factors. The core of the earth, as well as all other planets and moons would accordingly be continuously heated by this gravitational compression process in proportion to their mass.

Prediction #60, (continued)

New particles to be discovered: Larger more powerful particle colliders have been built. As of 2008 the largest of these is the LHC (the large hadron collider) in Switzerland. They will be looking for many new particles predicted from theory, and otherwise, resulting from high-speed proton collisions. **They will find a number of new very short-lived particles as well as others which will be called combination particles** that accordingly would consist of combinations of known or newly discovered particles. These new particles, in general, will neither be a surprise or unexpected by particle physicists but they cannot be directly predicted by standard particle theoretical models. The hypothesis asserting the existence of Pan Engagements herein, directly

predicts that “multi-particle” entities should exist in great numbers of possible forms which would be observable at great speeds, however few if any of these short-lived “particles” would last longer than a few billionths of a second.

Prediction #65, (continued)

Aether drag: The relative motion of all matter decelerates in time. The speed of all matter in motion relative to its surrounding field will decelerate as time passes. Simply This is due to the resistance to motion of its surrounding Aether field, AKA dark matter, or the ZPF which is the background gravitational field. It concurrently also loses linear motion as its vector is slowly changed by the vortex currents of gravity.

Prediction #66, (continued)

The mechanics of Magnetism: The Ipan theory of magnetism is somewhat different from currently accepted theory. In Ipan theory, magnetism is caused by the circulating current of free flowing electrons which emit low frequency quanta from a molecular and/ or atomically polarized medium. A magnetic field A.P.T. is the resulting polarization of the molecules and atoms within the field which surrounds the magnet - causing differential Fermi pressures, not a force from a distance or the A Priori Force (fundamental force of nature with no cause) of magnetism. It is caused be a difference in field pressure, primarily Fermi pressure. Experiments can be designed to test this Prediction.

Prediction #67, (continued)

Contrary to the magnetic dynamo theory, the **Earth’s magnetic field** is caused and controlled primarily by two factors. The first is the Earth’s wind speed caused by density of the earth’s atmosphere and the planets rotation rate every 24 hours which yields an average east-west wind speed of 22 miles per hour is ionized by the Earth’s surface producing a current in the waters which produce North South EM radiation. The second factor is the Earth’s proximity to the sun with its non-directional solar wind of protons and electrons with an average speed of a million miles per hour as they approach the Earth. Magnetism moves at right angles to electric currents and currents of ionized particles, atoms, and molecules.

Prediction #75, (continued)

Some supernovae, near (or at) the same red-shift (distances) as a previous observation, will be found to have a varying brightness from the previous observation. The reasons for these

observational variations would be caused by any combination of the first three factors. The last three factors could also contribute to a false prediction of dark energy since these factors variation and magnitude would also accordingly increase with distance.

- (1) The first of these factors is that the universe is known to consist of many quasi-circular and quasi-spherical structures of galaxy clusters which, according to the related theory, are expanding outwardly from their less dense central “void” areas. There, accordingly, would be two remnants of the largest of these observable structures within the observable universe. Most of the observable universe could be within one of these “locally expanding” structures. The second of these structures could extend outwardly beyond the direction of the Great Wall and would accordingly be expanding toward us which would underestimate their distance beyond the Great Wall.

The Great Wall itself would have been produced by the intersection of these two quasi-circular probably discontinuous structures, both of which would be expanding outward from their centers, building up galaxy clusters at the Great Wall. This “expansion outward”, which we accordingly could be a part of, would be a characteristic of the locally expanding observable universe. The smaller more visible bubble and void cluster structures also could be expanding outward from their centers causing the digitization of their redshifts from one side of the structure to the other with a relative void in the middle. (The first effect would increase the redshift, the second would both increase and decrease redshifts causing miscalculations of distances to supernovae based upon their redshifts resulting in what would appear to be uneven acceleration rates).

- (2) The second factor would be the extra-galactic distribution of atoms, molecules, and dust containing all natural elements that must exist in extra-galactic space, (observation/hypothesis #7 below) specifically large quantities of iron and graphite. These tenuous clouds of space matter could absorb and re-radiate galactic radiation greatly dimming and slightly reddening distant light, reducing a photons energy level similar to the smog effect, which causes a dimming and reddening of the sun. Even if just some of the light were absorbed, refracted, reflected, or re-radiated in this matter, the light would necessarily dim. The farther away an observed galaxy or cluster, the greater would be the build-up of this effect, also called the Compton Effect or Compton scattering. (This effect would decrease the brightness of supernovae).
- (3) The third redshift causing factor would be due to gravity. Gravity can both increase and decrease the energy level of photons. It is well-known that the central part of the sun produces detectably red-shifted spectra compared to the corona. We also know, as predicted by Einstein, that gravity bends the path of light toward a massive body. The second source of

evidence for this factor are large blue stars whereby two very large blue stars that are part of a binary system, the larger of which has a slightly ostensible redshift of its EM radiation believed to be caused by gravity. The same effect could result from the gravitational effects of large galaxies. Possible indications of this effect have been seen in galaxy clusters, whereby the larger of the spiral galaxies tends to be slightly more redshifted than the smaller Milky Way sized galaxies. Over great distances where light passes by countless galaxies this gravitation redshifting influence on EM radiation might be highly significant. One facet of this is called the Sachs-Wolfe effect. This factor/ effect could alter the redshifts of both galaxies and supernovae.

- (4) This fourth factor is concerned with the distance calculations of supernovae. As a plasma saturated white dwarf explodes in supernovae, the star's mass and the surrounding field of dark matter, an aether, would accompany the mass of the star moving outwardly, some part of which would be moving toward us initially close to the speed of light. Trailing EM radiation traveling through this outward moving field could also move at the speed of light but relative to the star's original position this radiation could be moving accordingly at nearly twice the speed of light. As this radiation moves through the supernova material and into the virgin field, it would be greatly blue shifted as it encounters a field that has an opposing relative motion close to the speed of light.

This magnified blue shifting would lessen the extent of the redshift giving the appearance that the supernova was closer than it really was in reality. The effect would be magnified by the distance according to the velocity calculations indicated below (this factor would decrease, blueshifting, distant redshifts of supernovae resulting in underestimating their distance)

- (5) The fifth factor is that supernovae accordingly would not be constant in brightness varying based upon their nickel content and possibly other elements. The assumption of constancy would result in somewhat inaccurate distance calculations of supernovae as indicated in observation #8 below. (this factor would have caused the brightness of supernovae to vary resulting in inconsistent graphing and conclusions)
- (6) The assumption that galaxies and supernovae with redshifts greater than "1" would be moving away from us faster than the speed of light have caused astronomers calculations to contain a relativity adjustment factor which accordingly would underestimate the distances to galaxies and supernovae based upon their redshift and skew related calculations. Although some of this expansion may be locally true, such as "Other Factors" #1 above, the relativity adjustment would in that case only apply to a part of the redshift since a primary cause would accordingly be the diminution of matter, and may also include some or all of the secondary

cause factors indicated above. This assumption and the related calculations underestimate distances to distant supernovae and galaxies more than it does closer ones.

c

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Summary of Observations, theory, and Logic, which were used to make Predictions

The prediction numbers below coincide with the Predictions numbers on pages 104 & 105.

Although the text of the predictions provides, in most cases, information or reference to text pages which explains the observations and logic which enable and justify each prediction, below this information is put together and distilled for each prediction.

1. The age of the observable universe is much older than the Big Bang model asserts.
 - L. The Pan Theory states that matter gets smaller as it proportionally increases in quantity. As matter gets smaller, to any observer made of matter (like ourselves) the space between matter would appear to be expanding (relative to himself) and thereby the galaxies in the observable universe would appear to be expanding away from each other at an accelerating rate but in reality there would be no expansion or acceleration. Calculations in the Pan Theory of Relativity starting on page 97 indicate that the farthest presently observable galaxies would be roughly 40 billion light years away, instead of the present interpretation which predicts a universe of only about a third of this radial distance and related age. (c)
2. The Microwave Background Radiation originates from starlight and is refracted and re-radiated by galactic and intergalactic matter.
 - L. According to the Big Bang model, the microwave background is the remnant of a giant primordial explosion: the Big Bang. Steady State theorists at the time asserted that galaxies produce radiation of all types and would, given enough time, become a uniform temperature in intergalactic space. When this background radiation was first discovered, cosmologists realized that it was very uniform. Big Bang theorists asserted that this uniform temperature would be equally distributed everywhere since it was the red-shifted remnant radiation caused by uniform afterglow radiation of a hot Big Bang.

Steady State theorists instead proposed that the uniform temperature is because isolated stellar heat has been absorbed and re-radiated by relatively homogeneous interstellar and intergalactic hydrogen and other matter, particularly iron particles. Since then, others have proposed that interstellar and intergalactic carbon (in the form of graphite) as well as other matter could also act in the same way to even out galactic radiation to the observed low level of 2.7 degrees K.

In 2004, this prediction was supported by observation when astronomers discovered a “hole” in the microwave background where little or no background radiation was observed indicating that this lack of radiation was coming from a

void where no luminescent matter could be observed. This observation seemingly could not be easily explained by the Big Bang model without ad hoc hypotheses. Subsequently, radiation of the same frequency as the background radiation has also been observed radiating generally everywhere from neutral intergalactic hydrogen. (c)

3. Distant galaxies will be perceived as being incrementally larger, generally brighter, moving faster, and being farther apart than they really were in their own time frame.
 - L. If matter were getting smaller as time progresses, then it follows that in the past matter would have been larger. Since this size difference is just a relative condition, it could be called an optical illusion. Larger-appearing galaxies, as well as larger-appearing space between them, would also mean that galactic motions would appear to be moving faster because speed is defined as a distance traveled per unit of time and the usual assumption that space (i.e. distance) is constant would be inappropriate. This might be considered the most important and fundamental prediction of the Pan Theory. (c)
4. There is only one fundamental force that started the entire universe by perpetuating change. This force can be observed as the cause for all atomic matter to spin. The “atomic forces,” such as the Strong Force, the Weak force, and The Strong interaction are the result of atomic particle attachments. These physical attachments require external pushing forces to enable particle separation and are not fundamental forces of nature.
 - L. It has been known for a half a century that protons and electrons spin. It is now also known that as electrons orbit, the nucleus itself spins. All motion has a cause according to Aristotle and many logicians since. He said “All causes are beginnings ... (of their effect), and “we have scientific knowledge when we know the cause....” Other so-called fundamental forces such as gravity and magnetism are explained by the Pan Theory as pushing forces caused by particle flow and differential field pressures. The Strong Force, Weak Force, and The Strong Interaction are explained as an adjoined particle pair’s resistance to stretching to test their physical connection strength. (c)
5. The existence of aether will be confirmed and it will be considered as a similar type medium as the present hypothesis of dark matter except it is uniformly distributed. Most of the constituents of aether have already been observed but they go by their separate names: electron neutrinos, the ZPF, quark jets, and dark matter. They have not discovered background field particles in general.
 - L. The Luminiferous Aether was postulated in the 19th century as the medium which fills all of space and carries the waves of EM radiation, working by analogy as waves of water moving through the medium of the sea. As the ZPF, and dark matter, are proposed to be universe-filling, they could be considered phenomena relating to a Luminiferous Aether. Accordingly the aether, in one form or another, can no longer be denied by science. (c)

6. Hypothetical Dark matter consists of many entities. It was invented to explain the failings of General Relativity and Newtonian gravity mechanics to explain the relatively rapid orbital motions of disk stars within spiral galaxies.

- L. The hypothetical entity “dark matter” is defined as any entity which cannot be seen but which has gravitational influence. It is presently believed that dark matter is the major influence concerning the orbital velocity of spiral galaxies. It accordingly composes about 90% of a spiral galaxy’s total mass which must orbit outside the visible galaxy.

The Pan-Gravity theory, contrary to General Relativity and the inclusion of dark matter (which is presently the standard gravitational model), asserts that gravity acts like a vortex in galactic and intergalactic space. In the dark matter hypothesis a vastly uneven (and perhaps counterintuitive) distribution of dark matter must exist.

Instead, A.P.T., the pushing forces caused by the energy of aether field particle currents (which also could be called dark matter) would be the source of all gravity. Dark matter, or the perspective of warped space, is not needed by The Pan Gravity theory to explain gravitational influences. It would seem to be a simpler theory that can explain and predict future observations more accurately without ad hoc assumptions of dark matter and its uneven distributions both outside and inside of galaxies. (c)

7. All matter gives off a small part of itself (called “matter diminution”) and at the same time increases in quantity to maintain a constant density.

- L. The value of this theory can be seen in the fact that it can explain the observed red-shift of galaxies and their related distances from us as well as explaining the observations concerning the proposed accelerated expansion of the universe without resorting to seemingly ad hoc hypotheses of the changing forces of dark energy or Inflation. (c)

8. Gravity is not a purely radial or centripetal force.

- L. Although General Relativity might be considered a non-linear model of gravity like the Pan-Gravity theory, it predicts that gravitational attraction is primarily a radial force between objects caused by the warping of space, which is an invented concept. The Pan-Gravity theory, on the other hand, asserts that gravity is a non-linear force resulting from pressure differentials in a vortex of field material. In a spiral galaxy disc these vortex currents of field material orbit in the same direction and approximately the same speed as the stars in the galaxy, acting both as a centripetal and centrifugal force upon matter.

The advantage of this theory is that the orbital motion of stars can be predicted without invoking warped space or making unobserved assumptions concerning unevenly distributed dark matter. If gravity works in a non-linear manner as proposed, neither galaxies nor clusters would contract under the influence of gravity; instead, they would maintain a relatively constant form which is what is observed. Most would have evolved from a more condensed form when matter particles of the galaxy were first being created from field material surrounding the central galactic black hole. (c)

9. Gravity at great distances will appear to be stronger.

L. Gravitational effects at great distances are analyzed based upon the apparent motion of orbiting material of a galaxy or galaxies orbiting within a cluster. Distances will have the optical illusion of being greater than they really were, because the size of both matter and space are assumed to be constant. If not, as the Pan Theory of Relativity proposes, then the speed of an object or galaxy will be overestimated. Orbital speed is also a function of the masses involved, so a larger mass is necessary for an object to orbit faster, leading to overestimates of a distant galaxy's mass and density for this same reason. This Prediction is directly related to Prediction #3 above. (c)

10. The gravity of a galaxy does not remain a constant force.

L. Gravity, based upon a pulling force or a warping of space, has no theoretical model to explain its related mechanics: Why is space warped or matter pulled? The pan-gravity theory is based upon gravitational vortices of field material which could be called an aether or dark matter. Gravity, in this model, would work as a differential of field pressure whereby all matter radiates pressure waves of EM radiation and De Broglie waves creating a low field pressure surrounding it. The influx of surrounding field material "backwashing" into matter causes the pushing force of gravity.

Galaxies build up a huge quantity of matter which, in its beginning stages, creates a massive low pressure area in the surrounding field hundreds of times larger in diameter than the "baby" galaxy. After the galaxy is fully formed, its lowest density and by extension its strongest gravitational force would be inside the boundary of the galaxy. After the galaxy ages and greatly slows down its rate of new star formation, the surrounding field would slowly reduce the field pressure difference between the inside and the outside of the galaxy. At this point the force of gravity within the galaxy would have decreased to some extent, which could be measured and used as evidence for the Pan Theory. (c)

11. Large gravitational vortex currents surrounding galaxies and galaxy clusters can cause the separation of E.M. radiation. This is a type of gravitational lensing that

separates different frequencies of EM radiation. This frequency separation can only occur in a very narrow band surrounding a galaxy which would explain why this process has not yet been recognized.

- L. Like a prism separates light based upon crystalline layers within glass, quartz and other translucent crystals when radiation is not orthogonal to the crystal layers, the refraction of EM radiation according to frequency occurs.

The Pan-Gravity theory asserts that gravity is based upon the field pressure differential between one location and another in the direction toward matter. The outside of a galaxy has denser gravity currents of field material orbiting the galaxy than the inner galaxy because of the divided currents which separate stars within the galaxy. The higher pressure gravity currents are a form of polarization in that the current has a single direction and speed. The higher energy of gamma rays, x-rays, and ultraviolet radiation can travel straight through this boundary while visible, infrared, and radio frequencies would be bent by the lensing effect separating the source galaxy's radiation frequencies in different directions resulting in a similar effect as prism separation. (c)

12. Gravity currents push matter and are non-radial. The non-radial nature of gravity explains why gravity within a spiral galaxy does not follow the predictions of General Relativity.
 - L. The Pan-Gravity theory is a vortex model of gravity. It asserts that gravity is a relatively simple interaction of fundamental field material currents as they push matter toward the lower field-pressure areas that surround all matter. Since these currents do not act in straight radial lines, it explains the known orbital motions within spiral galaxies, whose spirals are generally counterintuitive when considered from a linear-gravity standpoint. Planets and stars produce substantial internal heat as a result of the compaction/ compression forces of gravity. A star would accordingly need less fusion than current theory predicts to produce its observed radiation resulting in a substantially longer stellar life. (c)
13. Planets and stars produce substantial internal heat as a result of the compressive force of gravity. A star would accordingly need much less fusion than current theory predicts to produce its observed radiation, resulting in a substantially longer lifespan.
 - L. Since gravity accordingly is a pushing force for reasons previously discussed, the extent of friction would be very substantial for rocky planets like the Earth. It is also known that when gases and liquids are compressed they also heat up. A plasma of electrons, protons, and other nuclei are also known to heat up based upon compression. The difference is that the Pan Gravity Theory proposes that the degree of compression for planetary or stellar bodies would be considerably greater than present theory calculations. This would be because field material as

the result of this gravitational pushing force would result in a higher density, higher energy field material toward the center of the star or planet which would cause the particles, atoms, or molecules to more rapidly move, which is the definition of heat. (c)

14. Light and other forms of EM radiation consist of compression waves of field particles.

L. It has long been known that light and other EM radiation behaves as both a particle and a wave depending on what aspect is being observed. The famous double slit experiment clearly showed the wave character of light. We are familiar with the existence of a background field which is presently called the ZPF. We also know that these waves travel through the ZPF. All atoms and particles are known to interact with the ZPF. The known particles within the ZPF that accompany light waves are called photons. Those known particles that make up the ZPF are photons, electron neutrinos, and the theoretical entity called dark matter. If dark aether is omnipresent with varying densities then it could also be the medium that moves in waves which we describe as EM radiation. This theory would not permit the existence of pure energy or the existence of a background field that was not comprised of energetic infinitesimal particles. (c)

15. The speed of light and other EM radiation in the past would appear to be relatively greater. EM radiation will appear to be moving at a decreasing speed as time progresses.

L. According to the Pan Theory, individual field particles (pan) and atoms were larger in the past and so space, measured in terms of these particles, would also appear to be larger. Distances traveled per unit of time (speed) would also appear to be faster (see prediction #3 above). (c)

16. The speed of light here on Earth's surface is not constant, but varies to a small extent based upon the effect of gravity. The speed of light anywhere else is not constant either when near gravitational bodies.

L. Based upon the logic of prediction # 14 above, light moves in waves of aether. The Pan-Gravity Theory asserts that gravity is a result of the difference in aether field pressure, in this case the pressure being greater in the direction toward the center of the Earth than in the direction moving away from the Earth. At the Earth's surface the acceleration rate due to gravity is 32 feet / sec./ sec. The speed of the aether at the earth's surface has been estimated to be 30 feet per second with an estimated tolerance range of plus 30 feet per second and minus 15 feet per second. But any difference in the speed of light would be in agreement with this prediction. Since light is made up of waves within the aether, it also would move ~30 feet per second faster toward the Earth and ~30 feet per second slower moving away from the Earth. (c)

17. The farther away a galaxy is, the faster the particles in its galactic polar jets will appear to be on an average.

L. The logic of this prediction is the same as Prediction #15 above. (c)

18. The Earth will be further away from the sun in the future than it is now and was closer to the sun in the past.

L. Because matter becomes smaller as time progresses, the distance between bits of matter (like stars and planets) would appear to increase even though the matter would be the only thing actually changing. Space is only a relative measurement in terms of units of matter. (c)

19. Black holes are not dimensionless points but are instead a compressed form of field material.

L. Although most mathematical models of Black holes assert that they are single dimensionless points, observations indicate that at the least they must be very small. If so then a Black Hole would be the most condensed form of matter (other than a single pan) compressed by the pushing forces of gravity.

Based upon the speed of rotation of the fastest known pulsating stellar black hole, one can calculate its maximum diameter assuming that the point where the pulsating light is emitted is close to its surface, that its surface is traveling at close to the speed of light, and that each pulse of its jet is the result of one revolution through a magnetic field. The rate of the most rapid pulsating black hole known is 1,150 pulses per second. If the rotation speed were one revolution per second at the speed of light, a point near the equatorial circumference would be traveling close to 186,000 miles in one second. At 1,150 revolutions per second, near the speed of light, the circumference would then be $\sim 186,000 / 1,150$ or about 162 miles around. Its diameter would then be $162/\pi$ or about 51.5 miles.

20. There are Black Holes much larger than stellar black holes but much smaller than galactic black holes.

L. According to the related logic discussed in prediction #19 (first developed by the author in 1983) there is no reason why medium sized black holes should not exist. For a long time no one ever observed a medium-sized black hole, so evidence for their existence was slight or non-existent. However, conventional theory, like the Pan Theory, did not preclude their existence. Since that time there have been several important observations which offer significant evidence for their existence. Recently the author has included this prediction in the

“Already Observed” section of this book. After a few more widely accepted observations this prediction will be taken out of the Primary Predictions section.

21. Some black holes “spin off” pieces of themselves to form new black holes.

L. This is possible because of how the Pan Theory imagines black holes to be structured: densely-packed fast-spinning gloms of field material. Evidence to support this prediction comes from two sources: first, observations made by Halton Arp concerning quasars--the center of which is believed to be a black hole--indicated that some appear to be spun off of large galaxies with much smaller red-shifts. Second, one group* claims that there is a high probability that they have observed a medium-sized black hole “flying out” of a galaxy. If there are several more similar observations then this prediction too will move down to the “Already Observed” section.

22. Most large Galaxies would have been created from the inside out.

L. Active galactic nuclei (AGN), based upon their observable EM radiation, appear to be at the center of young, newly-forming galaxies. Observations of these jets have shown that they are primarily composed of stellar plasma made of protons and electrons. Based upon estimates of the mass quantity of these galactic jets, and depending upon the time span of their activity, AGNs could produce the quantity of matter contained in an entire galaxy. Although some tori (pl. torus) of material surrounding black holes are estimated to be quite large, none seem to be large enough to support the continuous production of opposing polar jets. If the galactic jets are being formed from the dark matter surrounding the black hole, the presence of all ‘normal’ matter could be explained by this method of matter creation.

23. Young galaxies will be found to have mostly young stars surrounding the central Black Hole.

L. The logic supporting this prediction is based primarily upon the prediction above: that galactic matter is created by the central black hole and that the highest density of these new stars should therefore be around the central black hole. Since this prediction was made, there have been considerable observations to support it. When this prediction is generally accepted it will move to the “Already Observed” section of Predictions.

24. Galaxies of all ages and types are generally distributed equally everywhere within the observable universe.

L. This prediction is a mandatory requirement of the Pan Theory because it is a Quasi-Steady-State Theory. A number of “old galaxies” have been observed over ten billion light years away. Young nearby galaxies have also been recently discovered. As long as the Big Bang is the accepted model of the Universe, however, the interpretation of some distant galaxies being old will be denied by mainstream theorists.

25. The Milky Way Galaxy is expanding at a rate similar to the currently estimated Hubble expansion rate.

L. The outer stars of our galaxy’s spiral disk may be orbiting the galaxy’s core at a faster rate than the inner disk stars. Outside of the core, the galaxy’s stars orbit

the core as an entity generally retaining its form, only very slowly smearing its spiral arms. The diminution-of-matter explanation of the observed red-shift of distant galaxies would also apply to the stars in our galaxy. As stars become relatively smaller the space between stars would appear to be increasing. With relatively fast orbital speeds, the outer stars of the galaxy would accordingly expand away from the center of the galaxy at least as fast as the proposed Hubble expansion rate (which has been calculated according to this prediction to result in a 26% increase in diameter over a five billion year period). Distant galaxy-cluster structures will appear to have a digital red-shift characteristic because we are only observing the walls of these bubble structures and not their more thinly dispersed insides.

26. Distant galaxy cluster structures will appear to have a digital characteristic because we are only observing the walls of these bubble structures and not their insides.

L. This prediction is based upon galaxies being distributed in vast 'bubble structures' of galaxy clusters whereby we generally could only see the walls of these structures where galaxy clusters bunch up, resulting in a digital (or quantized) rather than analog range of red-shifts.

27. The Great Wall is only a small arc of a much larger ring structure of galaxies. We can currently see this and other galaxy cluster formations that took between $2\frac{1}{2}$ to 3 galaxy cycles (or roughly 180 billion years) to form.

L. The same logic is used as in prediction #26 except this is the largest-scale bubble structure that has been observed. Galaxy structure formations can be described as web and bubble formations. The largest of these structures that we see is the Great Wall. It can be explained as the result of two expanding, adjacent bubble structures that have begun to interfere with each other like two connected soap bubbles. Galaxy clusters accumulate at this boundary, and we can only clearly see a small arc or portion of each structure.

28. A small percentage of observable stars within our galaxy are over twenty billion years old. The age of the oldest stars within the observable universe, some possibly within our own galaxy, could be over 60 billion years old. This is a fundamental prediction of the Pan Theory that is based upon the pan doubling rate which occurs at the same rate as the diminution of matter as time progresses.

29. We will find increasing numbers of young, newly forming galaxies in our neighborhood.
 - L. For a universe many times older than the oldest galaxies, it would be mandatory that we would find galaxies of all ages in all parts of the universe.
30. The farther away a galaxy is from us the faster its orbital motion within a galaxy cluster will appear to be.
 - L. The logic of this prediction is the same as prediction #3.
31. Most Galaxies will generally expand from their birth until their demise.
 - L. If matter is becoming smaller as time passes, then the distance between matter (“space”) would appear to be expanding. Under this condition the relative orbital momentum within a galaxy would expand along with the galaxy. The galaxy would then eventually spin itself out into a rarefied ‘mist’ of stars unless there was an influx of additional galaxy-size clouds of matter, which accordingly would be rare unless the galaxy was a center of a cluster.
32. One galaxy cycle would last for about 60 billion years from the birth of its first stars until the demise of the visible galaxy and the birth of a new galaxy originating from the same seed material. This would be a pan accretion rate of about 12 doubling cycles of roughly 5 billion years minimum per cycle.
 - L. This related calculations come from the Pan Theory of Relativity, starting from page 97 of the text.
33. We will eventually be able to look back in time at galaxies near the edge of the universe roughly 40 billion light years away or farther.
 - L. The logic of this prediction is the same as prediction # 32.
34. Galactic EM radiation will contain increasing quantities of radio waves the farther away they are from us because of the absorption and re-radiation of their light by intervening matter. Some of the most distant galaxies will only be observable in radio frequencies for this same reason.

- L. This logic is based upon evidence that there are a lot of intergalactic clouds of matter and the fact that as this matter is heated by radiation some of it is absorbed and re-radiated at lower frequencies, primarily radio waves.
35. The Milky Way galaxy is part of a bubble structure of galaxies expanding away from its origin. There is no Great Attractor.
- L. Observations have confirmed that the local group of galaxies (which includes the Milky Way) is moving relative to the ‘background’ of other galaxies. It was proposed that these galaxies are being attracted by a much larger cluster of galaxies, but searches for such a cluster have come up empty. The Pan Theory of galaxy and cluster expansion can explain this relative motion whereby these galaxies would be moving radially away in all directions from a central void.
36. Galaxies progressively evolve in shape over time, but at a very slow rate.
- L. This prediction is based upon the observed rotation curves of galactic stars in spiral galaxies whereby a galaxy’s rotation is generally flat and it rotates as an entity, meaning its stars remain in the same relative position. These relative positions only change at a very low rate over time.
37. Some spiral galaxies seem to rotate in the opposite direction than their form would indicate. The apparent retrograde motion of these rare galaxies would be the result of the galaxy being embedded in a cluster that is rotating in a direction opposite the galaxy.
- L. Since the Pan-Gravity theory is a vortex model of gravity and a galaxy’s rotation must accordingly be explained using a vortex model of rotation. This alternative model is explained by the prediction above.
38. Large Galaxy Clusters will be observed in the most distantly observable universe.
- L. The logic for this prediction is based upon a much older universe, whereby if the universe is much older than current theory asserts then galaxy clusters should exist at the furthest extent of the observable universe.
39. Old “star-vacant” galaxies will be found.

- L. Since the Pan theory asserts that the observable universe is much older than current theory suggests and that galaxies evolve, burn out, and dissipate such galaxy remnants should be plentiful. Although numerous galaxies consisting mostly or solely of dark matter have already been discovered, the Pan Theory would suggest that their “dark matter” would be non-luminous dissipated matter—the burnt out husks of stars—that we cannot currently detect (but will be able to in the future, either directly or via inference).
40. The most distant observable galaxies will be found to be made up of the same elemental composition as Earth and its surroundings.
- L. Since the current Big Bang model professes that all distant galaxies must necessarily be very young, they should show very few signs of heavier elements such as carbon and iron. It would be completely unexpected if these galaxies did show traces of these elements, because they are only formed in the furnaces of stars and therefore indicative of an older galaxy.
41. Most galaxy-cluster structures of Bubbles and Webs will be found to be expanding outwardly, away from the sparsely populated spatial voids in the middles of them.
- L. According to the related pan galaxy theory, most galaxies expand as they age. The result of this expansion would result in the dissipation of many of these galaxies at a faster rate than the proposed Hubble expansion rate.
42. Many small anomalies or subtle “hot spots” in the cosmic microwave background will be found to be distant fully-formed galaxies.
- L. Since according to pan theory the universe is much older than the present Big Bang model, very distant fully formed galaxies would be observable.
43. Part of the microwave background will be discovered to be moving, which would be contrary to the Big Bang model.
- L. The microwave background is supposed to be the afterglow of an original Big Bang. The related Big Bang theory asserts that the universe is only 13.7 Billion years old and that we can see back that far using radio astronomy.

This Big Bang, accordingly, should be omnipresent in all directions. No parts of the proposed Big Bang should be moving relative to other parts. To do so would indicate that the microwave background is coming from another source which, according to the Pan Theory, is the radiation by moving intergalactic matter of distant starlight that was previously absorbed.

44. The large hole in the microwave background discovered in 2007 will be observed to be the result of an absence of matter within the discovered large void instead of just a hole in the Cosmic Microwave Background.
 - L. Such an extremely large void (on the order of a billion light years across) in intergalactic space is contrary to the Big Bang model interpretation of the microwave background. This large void area produces comparatively little infra red, radio, or micro wave radiation, which would be expected from any large volume devoid of matter if the microwave background was solely caused by galactic and intergalactic matter.
45. Some galactic polar jets will be found to be moving at superluminal speeds.
 - L. The Pan field-theory asserts that all motion must be understood as being relative to the field that contains the moving material. Most observable galactic jets are very massive, and 'drag' their field material along with them as they move close to the speed of light. The EM radiation within and generated by these jets would be moving at the speed of light relative to the plasma jets generating the radiation. The result, to an outside observer whose field material is comparatively 'at rest,' would be that the movement of EM radiation away from the galaxy core would appear to be close to twice the speed of light.
46. The quantity of mass contained in galactic polar jets will be found to be greater than that which could be accounted for by material orbiting the black hole.
 - L. Galactic Polar Jets ejected from active galactic nuclei can be analyzed to determine the type of material being ejected, and they will primarily consist of newly created protons and electrons.

As we become better able to look at active galactic nuclei we will see that the mass quantity contained in their toruses would not be enough to sustain the vast galactic jets. This would suggest another source for some of this material which according to this prediction is newly created matter from field material.

47. Both deuterons and alpha particles (helium nuclei) are created by the high temperatures and pressures within galactic polar jets.
 - L. Polar jets are known to consist of stellar plasma material primarily comprised of protons and electrons. If the temperature and density of these jets at their emission points are great enough, nuclear fusion would take place. If so, this process—along with stellar fusion and fission processes—would account for the abundance of helium and deuterium that has been observed without resorting to synthesis occurring in the aftermath of a Big Bang.
48. In a slowly spinning star like our sun, the heaviest elements are pushed by gravity toward the center of the star where both fusion and fission take place. Current methods of dating stars by measuring ratios of radioactive isotopes within them would be unreliable based upon heavy-element fission occurring within these stars.
 - L. Slower-spinning stars would have less centrifugal force, resulting in a higher density of heavy elements in the stellar core where fusion reactions are known to take place. The fusion responsible for a star's luminescence also would result in enough energy to split some of these heavy elements, making the method of age-dating stars by assuming pure fusion of heavier and heavier elements unreliable.
49. Presently unknown nuclear fission processes within some stars break down a portion of their heavier elements producing lighter elements such as deuterium, tritium, and barium. By this method of creation the abundance of these elements can be explained without the need for a Big Bang.
 - L. Same logic as Prediction #47.
50. A large portion of stellar plasma is made up of aether material which produces substantial additional heat.

- L. According to the related Pan Theory, the source of pushing gravity is a continuous influx of field material; this generates compressive forces and heat. Part of the energy a star radiates would accordingly be due to this additional heat source.
51. There is a small variation in the sizes and weights of individual protons, electrons, neutrons, short-lived particles, and entire atoms of the same element.
- L. The Pan theory asserts that currently accepted subatomic particles are made up of thousands of smaller “most” elementary particles (pan). These particles decrease in size as they increase in number. The process whereby a particle sheds a few pan is described within the theory as “paring.” Because of this, atomic particles would have a small difference in their masses before and after paring.
52. An atomic particle consists of both matter and a self-generated physical vortex in the field material surrounding it as it spins. The vortex represents 99% of the particle’s observed mass that reacts to gravitational pushing forces.
- L. Based upon the string-loop model of matter, the “coiled springs” of elementary particles would take up a very small volume compared to the volume of the internal and external vortices which it creates in the field it resides in. The pushing forces of gravity push the vortex around according to gravity’s currents, and the relatively thin central particle loop is pushed with its vortex. Based on this, protons, electrons, and neutrons are all more than 99% ‘space.’
53. Anti-protons are short-lived particles.
- L. According to the pan theory of particle formation, atomic particles are made up of coil structures of fundamental particles. If, according to theory, particles unwind in only one direction, all coils would be either right- or left-handed by conservation of angular momentum.

One way of looping a coil would make the coil spin in one direction, and looping it the opposite way would make the coil spin in the opposite direction, which

explains the existence of particles and their antiparticles. For proton-sized particles, however, looping the coil one way would remain stable while the other way would tend to “spin out” of existence as a looped particle—inherently unwinding itself--and would revert back to its linear field particle formation. This would explain why protons (the stable configuration) seem to dominate the universe and antiprotons (the unstable configuration) are seemingly a rare commodity.

54. The Strong Nuclear Force is the force necessary to break any of the physical connections (or “umbilicals”) between individual pan in a string such as a looped proton.

L. The Strong Nuclear Force is defined as the force which holds protons together. In the pan theory the connecting points between the coiled-strings of fundamental particles are called umbilical connections. To “separate” a proton by collision, one or more umbilical connections must be broken. The evidence used for this prediction is that the separation force required to break a proton is analogous to the equation of stretching spring. A spring shape is the proposed form of a pan-chain, like a coiled string of beads.

55. The Strong Interaction is the result of physical engagement or mechanical connections between adjacent nucleons.

L. Neutrons and protons, according to the Pan Theory, are like looped springs. They can become physically connected when forced together under great pressure, forming a larger nucleus when they become twisted together in two-handed engagements. Nuclear fission is necessary to split these nuclei, but the force required is less than the Strong force that would actually breaks one of the strings.

56. The Weak Nuclear Force is the result of neutron-neutron engagements.

L. The Weak Nuclear Force is explained as one-handed (unlike the Strong Interaction’s two-handed engagements) neutron-to-neutron connections of peripheral neutrons in a nucleus.

57. The half-spin character of fermions is a wobble between alternating axis of rotation.

- L. In the Pan theory nuclear particles are spinning loops of string-like coils which have two short free “arms” outside the loop. The theory proposes that the “half spin” seen in fermions is the result of a spinning loop which alternates its axis of rotation between each arm. Every second rotation would present the same “face” to an observer.
58. Particles and anti-particles can be formed separate from current theory’s ‘pair creation’ because antiparticles are primarily unstable virtual particles.
- L. Here on Earth particles and their anti-particles are created in pairs. If only an atomic particle results from such a creation, it is assumed under current theory that the anti-particle encountered a pre-existing particle which resulted in an unobserved annihilation. Instead, this prediction asserts that anti-protons instead wind themselves out of engagement and particle existence because they cannot maintain a fully engaged loop. Even when loops become fully engaged, the resultant anti-protons would have relatively short half-lives thereby explaining a universe of matter and almost no antimatter. Positrons may form only a virtual particle in pair creation but upon full engagement they become stable, long-lived particles like electrons.
59. There will be more presently unidentified types of neutral particles found in particle accelerator collisions.
- L. According to the Pan Theory only looped particles have spin and charge; broken loops from proton collisions could only become combinations of electrons, positrons, and neutral particles. At the highest energies new, previously unobserved, neutral particles consisting of novel combinations of broken loops could temporarily form and spin for a few billionths of a second and thus be detected before they return to being ordinary, neutral, non-spinning field particles.
60. Spinning loops back-to-back can explain a Bose-Einstein condensate, which cannot be physically explained using the standard model of solid quark-gluon particle formation.
- L. The spinning loop particle model of the Pan Theory provides ample internal volume for particles to condense into nearly the same space, providing that the condensing particles are not moving around much. This is exactly what is done

to create a Bose-Einstein condensate by decreasing the temperature to nearly absolute zero.

61. Helium nuclei, combined in layers and matrices, are the building blocks for larger nuclei.

- L. During nuclear fission of large nuclei, the first entities split off and radiated are alpha particles, which are helium nuclei. Proton (beta) radiation is much less common, and neutron radiation perpetuates chain reactions. The easiest entities to fuse are helium-3 nuclei. These two pieces of evidence suggest that alpha particles are the building blocks for larger atoms.

62. Heisenberg's Uncertainty Principle will be shown to be invalid.

- L. The Uncertainty Principle, or the principle of indeterminacy, states: the position and momentum (mass times velocity) of a subatomic particle, such as an electron, cannot both be known at the same time with exact certainty.

To know the exact position and momentum of a particle may be very difficult and close to impossible to simultaneously determine in practice, but it would certainly be theoretically possible according to the Pan Theory. Electrons and protons, according to the Pan Theory, are real physical particles that have mass, take up real space, and always have an exact position. At high speeds these particles would spread out because of their spring-like shape, showing the least possible profile in the direction of their motion. If contacted by a photon at such a high speed, these particles would recoil away from their forward motion; by recapturing the photon their position and their average momentum at that time could be exactly determined. Accordingly, the Uncertainty Principle would just be an illusion based upon the difficulty of measurement.

63. The rate of nuclear isotopic decay (half-life) would be slower in space and faster within a star.

- L. According to the pan theory, a minimum pressure of surrounding field material in the observable universe would assist in holding matter together. This pressure is dependent on the energy of the inflowing field material and the resultant off-setting decreased density differential in the surrounding field that is the cause gravity. The energy level of the surrounding field material in intergalactic space would be much less than for galactic field material but still ideal to hold matter together. Because of decreased interactions with other matter, radio active decay would slow down in intergalactic space. The rate of Radio-active decay of

isotopes would accordingly be greatly increased within a star because of very energetic interactions with other matter.

64. Aether drag—the opposition to motion relative to the field being traversed—will be found to be very small but still statistically significant.
 - L. The Pan Gravity theory is based upon aether currents. Anything moving relative to these currents will be partially blocked and pushed by field material, causing a small continual reduction of speed (or drag), like a boat moving through water. Moving with these currents, however, would not induce drag.
65. Magnetism is the result of atomic and molecular vortex alignment, and this alignment is caused by photons, virtual photons, and the interaction of incoherent waves.
 - L. The Pan theory of magnetism is based upon the mutual alignment of atoms within magnets as well as the atoms and molecules in the intervening space between magnets. This alignment results in a directional flow of field material (aether) between the two magnetized entities. While this logic is based upon ferromagnetism, paramagnetism and diamagnetism can also be explained by the same logic.
66. The Earth's magnetic field is caused by the earth's atmosphere interacting with its oceans and, to a lesser extent, its land.
 - L. The motion of the Earth's atmosphere relative to its oceans strips the atmosphere of electrons, partially ionizing it. As this ionized air moves over oceans and lakes, it would accordingly cause small electrical currents at the surface of these waters. These currents produce incoherent EM radiation through the atmosphere aligned in the directions at right angles to these currents; as winds are predominantly from west to east, the resulting magnetic poles are aligned roughly north and south, which explain the positions of the North and South magnetic poles.
67. Most or all reversals in the Earth's magnetic field are caused by very large solar storms.
 - L. The largest solar storms can eject vast clouds of solar plasma due to giant explosions caused by electromagnetic storms near the surface of the sun. The largest of these high mass clouds, if it remains relatively intact, could reverse the Earth's magnetic field if it passes close enough to the prevailing magnetic pole of the Earth.

68. In general, planetary magnetic fields are caused by levels of liquid and gas strata rotating and relatively different speeds and interacting with each other via ionization and electric currents.

L. The Pan theory of planetary magnetic fields is based upon the motions of gases and liquids relative to each other, such as the wind speed relative to the oceans (see prediction 67) or, in the larger planets, one atmospheric layer moving quicker than another or at a different angle relative to another. All of these relative currents would ionize the gases or liquids involved, generating an electrical current. Magnetic field vectors would be produced at right angles to this current, just like in everyday wires.

69. The Sun, Earth, and all of the other planets would have originally had stronger magnetic fields.

L. The logic behind this prediction is based upon two factors: the atmosphere of the Earth was denser in the distant past, and the rotation rate of the Earth was much faster in the past. Using the logic of prediction #67 one could see that the Earth's magnetic field would have been accordingly stronger.

70. Contrary to current theory, distant galaxies will, on average, appear to have larger magnetic fields than closer ones. This is the result of an optical illusion.

L. Because of polarized EM radiation caused by synchrotron radiation* and the polar alignment of galactic dust clouds as a result of this charged particle flow, much of galactic radiation is polarized. These processes are generally already known and understood, and the extent of this polarization is thought to be directly related to the extent of galactic magnetism. Distant galactic light is polarized even to a greater extent by intervening clouds of matter in intergalactic space which absorb more of the non-polarized radiation. This enhanced polarization has been incorrectly attributed to even more intense galactic magnetism.

71. The density of matter in the observable universe at any time would remain constant.

L. This prediction is easily explained by the Pan theory of Relativity. Considering it

from the point of view of the volume of the universe remaining constant (the preferred view of the Pan Theory), when the number of particles in the universe double, the mass of each particle is halved, resulting in the same mass in the same volume as before and hence a constant density. Considering it from the point of view of the size (and mass) of matter particles being constant, when the volume of the universe doubles, the number of particles in the universe doubles, hence doubling the mass of the universe, which results in double the mass in double the volume, or the exact same density as before.

72. Supernovae and gamma ray bursts will be found beyond the edge of the presently observable universe currently believed to be 13.7 B light years away.
 - L. Because the age of the universe is much older than present theory asserts, we should be able to see gamma ray busts, nova and supernovae explosions for as far as we will be able to observe.
73. The inner planets of the solar system, up to the asteroid belt, originally formed from pre-existing hot liquids, gases, and molten solids.
 - L. The related theory is that having an atmosphere and/or a liquid surface would reduce the carom effect of asteroid and planetary collisions. Solid collisions of asteroids can fragment matter faster than gravity could bring it back together.
74. Supernovae will be found with the same red-shifts as supernovae that have already been observed, but their brightness will differ in a statistically significant way from previous observations.
 - L. According to the Pan Theory there are a number of variables that can control the brightness of distant objects. The reality of these variables, according to this theory, should become apparent when observing supernovae, which supposedly should have the same intrinsic brightness. Two supernovae with the same redshift “should” appear equally bright if redshift is the only factor; if they are not observed to be equally bright, then there are additional factors involved, just as Pan Theory predicts.

* A type of non-thermal radiation caused by high-speed charged particles, such as protons and electrons, as they are accelerated in a strong magnetic field.

Concepts to explain the underpinnings of Reality

Concepts from the Theoretical Cosmology and Physics Section of the book collectively called “The Pan Theory.”

The following are “Foundation” Concepts which have been used in the Theoretical Cosmology and Physics Sections of this text. There are twenty nine major Foundation Concepts of Logic and Cosmology used in this text and listed below. Other possible foundation concepts are also used as you have read. Many related concepts within this text have not been included here because most require the listed concepts to support their basis and consequently have not been considered as Foundation Concepts. Many of the more abstract detail possibilities have not been included in the text hopefully providing an easy-to-read format. The second half of the book is devoted to Concepts and Theories in Physics. Most of these same Cosmological Concepts which follow are also included in the Physics Section of the book with different discussions relating to Physics (along with numerous additional concepts pertaining mainly to Physics). The concepts included herein have been chosen because of their fundamental character and their potential to provide insight for a general understanding of the related theories. Collectively these concepts/ guidelines also provide the basic support for the Pan Theory of Relativity as well as related theories concerning how reality was created and how it is/ was constructed.

The following is a **Discussion of Primary Concepts** (listed below) are used either as a guideline or to support the logic in all Sections of this book. You will find that theory has sometimes been added to Concepts to aid in their understanding, just as Concepts are sometimes used in the Theory Section of the book to explain its conceptual backing or as a general guideline. These Concepts below are considered to be the primary concepts used in this text. They are a distilled version of the logic involved in the text. They are explained in some detail below, but they might not be fully understood until related text has been read. As you continue reading the text you may choose to refer back to these concepts after reading the evidence and logic within the text that supports them.

At this point in your reading you will find that many of the details of these concepts are re-iterations of what you have already read. They might be considered a summary of many the major ideas of the Pan Theory. It is expected that additional Concepts will be added concerning the theoretical Physics Section.

--Concept # 1 (a concept and Principle of logic) The Law of parsimony

Concept: All else being equal, "The simplest explanation for some phenomenon is more likely to be correct than more complicated explanations. Better theories require the least number of assumptions." In science today it is often stated as, "the simplest theory that fits the facts of a problem is the one that should be selected." "The explanation requiring the fewest *assumptions* is most likely to be correct."

Discussion: This general concept is about six hundred and fifty years old and is based on the Principle of Occam's Razor. It is attributed to the 14th century logician and Franciscan monk, William of Occam. (Ockham was a village in the English county of Surrey where he was born). It is **called Occam's Razor** because he mentioned this principle so frequently in his manuscripts (concerning logical concepts) and he employed it "so sharply". Similar concepts, however, go back at least as far as Aristotle who asserted that "**Nature operates in the shortest way possible**".

This Principle is also known as the law of parsimony and simplicity. It was originally written in Latin and has often been quoted in various related English forms such as the following:

"when you have two competing theories which make exactly the same predictions, the one that is simpler is the better."

"If you have two competing theories with equal explanatory and predictive capabilities, the one that is simpler is the better."

"If you have two theories which both explain the observed facts then you should use the simpler until more evidence comes along"

"If you have two equally likely solutions to a problem, pick the simpler."

"The explanation requiring fewer assumptions is more likely to be correct."

"A better theory is the one that is consistent with observations while having the least number of assumptions and inclusive hypothesis."

"The preferred theory requires the fewest assumptions while having the least number of entities required to explain observations. "

The most well-known related saying being "**Keep things simple!**"

This basic principle of simplicity, as far as theories go nowadays, may sometimes be mentioned as a rule-of-thumb but in general this motto today is very seldom used since “all things being equal” is often the greatest contention of debate with little or no consideration for Occam’s Razor -- excepting if it can add support to something already believed. As far as the development of theories in the twentieth century, simplicity may have been one of the goals (such as Bohr’s model of the atom), but rarely was it the final destination of today’s preferred models.

In 1939 Paul Dirac, a world renowned physicist and original thinker of the highest regard, wrote (concerning the mathematical development of theories in Physics, that “beauty”/ symmetry is also important):

“It often happens that the requirements of simplicity and beauty are the same, but where they clash the latter must take precedence”

This statement could be considered ambiguous since both beauty and simplicity are in the eye of the beholder. Clarity, however, might be given as to its intended meaning (as far as equations in Physics are concerned) by using just one of the dictionary’s definitions of beauty: “a perceived perfection of form resulting from the harmonious combination of diverse elements in unity”. Greater simplicity of form or reduced length of a theory would only have added value if there were no degradation in 1) its predictive capabilities, or 2) the above definition of beauty.

Einstein, besides being a world renowned physicist and original thinker, was also a master of the quotable one-liners in both German and English, often with a taste of wry humor. His take on the Principle of Occam’s Razor can be seen in these two quotes:

"Make your theory as simple as possible, but no simpler."

"For every complex question there is a simple and wrong solution."

Discussion: Many theories in Physics and Cosmology that have become world renowned started as relatively simple theories such as: Bohr’s model of the atom, Newton’s model of gravity, and Lemaître’s model of the beginning of the Universe, now called the Big-Bang Theory. As time passed a continuous stream of new evidence was evaluated, different theories competed, and the old theories re-evaluated and subsequently changed but not wholly replaced.

Now, all of these theories (the theory of the atom, the theory of gravity, and the Big-Bang Theory) have become very different and progressively complicated, with little resemblance to their original form. Despite the current complex structure of many mathematical and conceptual theories in Cosmology and Physics, simpler theories are still one of the primary objectives for many, if not most

theorists. As far as theories are concerned, most would agree that validity, functionality, and comprehension are the desired goals and that simplicity and beauty are only two of the valuable considerations involved in theory development. When developing a theory, mathematics is a desirable and often indispensable tool that can convey more precise details of relationships between the theories components. One of the shortcomings of mathematically based theories is that they are usually good at proposing solutions to details but cannot alone convey incite into the underlying basis, the essence of why it might have validity. This may be the most important aspect of a theory as far as a logical understanding of is concerned.

Without developing relatively simple concepts and related perspectives prior to complete theory development, resulting theories might have more confounding aspects. Verbal explanations resulting from mathematically based theories often seem verbally inadequate, and sometimes incomprehensible.

This Concept's use herein: This principle was one of the primary considerations in the development and refinement of the theories and original Concepts herein. It is also intended to be used by the reader when comparing the Pan Theory of Relativity with the Big-Bang model of the universe.

--Concept # 2 (a concept of logic)

Concept: Something cannot come from nothing.

Discussion: This is a very old concept which can be derived from writings dating back to the ancient Greeks (during the 5th century B.C.) but it is best known as an old Latin saying: “nihil ex nihilo fit” literally meaning “out of nothing, nothing comes”. This concept in logic is called **The Principle of Sufficient Reason -- or the Causal Principle**. This principle was well-known in Roman times but probably seldom used as justification for sophisticated theories, instead it was used as an adage or “words to the wise”, stating the expected results for those with a lack-of-plan or action.

Over the last several centuries varying scientific interpretations have developed from this concept relating to the sciences of Cosmology and Physics. One of these interpretations might be stated in the following form: If it is definitely known that there is nothing (no thing) to start with, (no matter, energy, space, time, etc., nothing!) then don't expect that anything will ever develop or appear. This concept also infers the first Law of Thermodynamics: “Matter/ energy can neither be created nor destroyed”.

Particle Physicists have seen particles appear from a vacuum (void) and conversely disappear into a void. Some theorists have proposed that the whole universe was generated from the void of space. This principle does not apply to “voids” where particles or forces could exist. “Nothing”, as here defined, doesn’t apply to space which might have the possibility of generating matter or energy. It applies specifically where “nihilo” is (for the purposes of this concept) defined as a theoretical state of nothingness, and “nihil” is defined as “no thing” (no matter, substance, force, energy, space, etc.). It seems probable that for most logicians, scientists, and layman alike, by using the above definitions alone, this principle would be self evident.

Conversely, the related principle would also seem to logically follow. “Something cannot become Nothing”. If there is something to start with such as matter, substance, force, energy, etc., it might change its form into something else, i.e. matter into energy, etc., but not disappear into nothingness without leaving its equivalence in one form or another.

Above Concept’s use: This is a concept of logic that is used to support the assertion that a finite universe must have started from something. Following Concepts will propose possibly the “simplest” conceivable origin of everything.

--Concept # 3 (A concept to explain observed reality; the first theory of relativity)

Concept: Everything can be considered relative. This principle requires a relative comparison for all statements concerning realities in the natural world.

Discussion: This concept was first discussed in general by Galileo. A modern version was developed, and promoted by Ernst Mach. Einstein acknowledged it as one of the inspirations for his theory of relativity. Ernst Mach was born in 1838 in the Austrian Empire. He was an Austrian educated Physicist and Professor. He gained fame as a Sensory and Physics experimentalist and theorist. He is most remembered for his description of supersonic speeds as a multiple of the speed of sound, hence, Mach I, Mach II, Mach III, etc. He promoted the concept **that the best choice between alternative hypotheses, which use the same facts and observations for their verification, should be made on the basis of their comparative economy--** this could be considered another version of Concept #1 above. Mach also developed rules for both statements and theories in the natural sciences that most scientists try to follow today: that better scientific statements, “facts”, or theories 1) should be explainable in terms of, or in comparison with, sensory phenomena 2) that they should have the possibility of empirical testing and verification. His most famous theory, however, was the original Theory of Relativity.

One of the primary aspects of this concept and Theory of Relativity is that there must be a specific reference frame or object for comparison to make any all-inclusive statement concerning measured motion, size, distance, space, time, pressure, temperature, etc. (Einstein's theory of relativity agreed with Mach's theory concerning this principal but made an exception of the speed of light which he stated was constant).

Example and meaning of Mach's First Concept of Relativity:

If someone had told Mach that a passing train was traveling at 20 miles (or kilometers) per hour, Mach probably would have accepted this statement without comment knowing the speaker meant --that compared to the track (considered stationary and not moving by the observer), the train was moving at a speed of 20 miles per hour. However, if he wanted to make a point concerning his theory he might have said: the earth is turning on its axis relative to the position of the sun, once every 24 hours. This is a speed of approximately 1,000 mph at the equator. Additionally the earth travels around the sun once a year in an orbital circumference of about 584,040,000. miles which equates with an additional speed of 63,333 m.p.h.. Mach did not have the information that our sun and its planets (including the earth) orbit the center of our galaxy, the Milky Way, or that the Milky Way may be orbiting the center of our local galaxy cluster, etc. So how fast is the train really moving?

Mach would have said: there is no ultimately true answer to this question unless one states a point of reference for comparison such as the train tracks beneath the train, the surface of the earth, the sun-- or any other point of reference. He asserted that this principle not only applies to motion but to every dimension and sensory perception of reality.

Mach's Second major concept of Relativity can be expressed in his statement **that all "scientific laws" are merely descriptive assertions based upon relative perspectives.** This principle of relativity discussed at length by Mach, was also known and described by ancient philosophers: that all statements, laws, concepts, philosophies, theories, and general assertions are based upon a particular "point-of-view" or perspective, meaning that no particular point of view or perspective has more validity than another. If an observer has pre- determined objectives, then some combination of points-of-view could, of course, meet realistic objectives better than others.

Example of this concept of Relativity:

Literally a point-of-view could be a place, an angle, "a way of looking at something" that an observer is positioned in comparison to the object being observed. If an observer were looking at a horse for instance, he could be: looking at it head-on, from the side, the top, the bottom, the back-end, etc. He could be close, distant,

etc. He could be at the same elevation, higher, or lower. He could be moving compared to the horse, visa versa, or they both could be moving or considered stationary. He could be observing with his eyes, ears, sensory aiding devices, or even observing with instruments inside the horse, etc.

Any of these points-of-view or perspectives by themselves, in any combination, or collectively still cannot provide the true reality of the horse. They only are descriptions to enable an extent of understanding concerning the horse. More broadly a point-of-view is involved in every statement, idea, concept, law, theory, fact, or human conveyance of ideas in general, according to this aspect of Mach's Theory. The point-of-view is often unknown and indescribable by the author. Because of this there would be no single truth concerning human ideas or verbal conveyances because another valid point-of-view could always be found that could convey a "different truth".

There are constants that exist in mathematics not subject to relativity such as PI, PHI, etc. which are ratios. According to current teachings in Cosmology and Physics there are also so called "constants" in nature such as the speed of light; the "G" force, the force of gravity on earth, the "cosmological constant", "Planck's constant" (a minimum level of energy in the particle-world of atoms); etc. We do not know what Mach would have said concerning these characteristics of nature (determined after his death) which are generally considered by most Physicists to be "constants" not subject to conditions of relativity. However, according to the Pan Theory of Relativity even these "constants" of Physics can be changed when altering reference frame parameters according to discussions in subsequent concepts.

Above Concept's use: There is much evidence to support aspects of this concept of relativity This general concept was also used to develop the Pan Theory of Relativity as well as related concepts and theories discussed within the text..

--**Concept # 4** (A concept of relativity to explain observed reality; One of the primary concepts of the Pan Theory of Relativity)

Concept: Depending on the perspective, either the universe is expanding, atoms are becoming smaller (as well as all parts of reality) or both are valid perspectives (or there could be another valid explanation which partially or totally explains the observed red-shift of galactic light).

Discussion: The red-shift which we observe from galactic light is currently believed to be caused by an increase in the distance between galaxies caused by the expansion of space. This red-shifting of galactic light, which increases in relation to a galaxy's distance from us, is considered to be a Doppler

shift (see definitions above as needed). Accordingly, the entire universe is believed to be expanding in volume. Using Mach's Principle, concept #3 above, one could ask: the universe is expanding in size compared to what? We might hear a response such as: compared to the size it used to be, or compared to atoms, of which molecules, the earth, yardsticks, and we are composed. Then we might ask: How would one know if the universe were getting bigger instead of atoms getting smaller, or some combination of both?

Using Mach's concept of relativity, there would be no singular truth to these possibilities. One could only assert that if the observed red-shift of galactic light is the result of a Doppler Shift (and not some other cause) then there probably is an on-going change in the relative size of local atoms (dimensions which can be measured) compared to the size of the observable universe -- that the difference between their sizes was increasing at the time these measurements were made.

To explain the apparent Red-Shifting of galactic light, two famous theorists proposed a theory that the universe did not generally vary in size but that the atoms within it were continuously getting smaller. This was called the Variable Mass Theory proposed by Fred Hoyle and Jayant V. Narlikar. A problem that any theory would have using this perspective is confronting the First law of Thermo-dynamics (which is currently well-accepted in

Physics). This law asserts that there is a conservation of matter / energy within any contained reference frame. Originally it was stated that "*mass can neither be created nor destroyed*" today it has been re-written as "*matter/ energy can neither be created nor destroyed*". If matter were becoming smaller wouldn't this violate the conservation of mass / energy?

There are a number of ways that theorists might resolve this question. One would be to simply propose that in the large-scale of the universe that this "law" simply does not hold true. One could also theorize that "dark energy" is increasing to compensate for the lost matter/ energy or some other pure speculation. Another alternative would be to propose that the size (diameter) of all atoms was decreasing but their mass would remain the same. The relative distance is so great between the nucleus and the electron(s) for all atoms that a decrease (or increase for that matter) in this distance could seemingly continue for a great deal of time without any noticeable change in the appearance of the atom. The conservation of mass/ energy would also be maintained. Larger diameter atoms in the past would have produced proportionately longer wave-lengths of light (if everything was proportional) hence, the red-shift variations we now observe. There would be not change in the size of the electrons

protons or nucleus of the atom, only its diameter. This was the theory that Hoyle and Narlikar proposed.

Notice that any Doppler Effect/ shift in galactic EM radiation, from this perspective, would be due to the relative change in the size of matter rather than the expansion of the universe.

A third way would be to propose that matter is getting smaller as time progresses by losing a little bit of itself, by giving off (transferring) energy as a result of its innate spinning and/or by slowly giving off part of itself in the form of some yet unobserved fundamental particle or substance. This could involve any single method or combination resulting in a very slow decrease in the size of matter. Matter then would have been larger in the past which could account for the observed longer wavelengths of galactic light-- the observed red-shift everything remained proportional.

These theories generally assert that the universe as a whole is probably not expanding-- or that its expansion is slow and generally imperceptible. This can be accomplished in Theory by asserting that the calculated rate of the diminution of matter would totally account for the entire observed red-shift. If matter is getting smaller but its rate of diminution does not wholly account for the observed red-shifting of galactic light then the universe could still be expanding or even contracting in volume. We would not be able to tell by the red-shifting of galactic light alone.

Even though these theories have never been disproved, why should they even be considered? What advantage(s) could they have over the Big-Bang or any theory which asserts that the red-shift of galactic light is simply caused by an expanding universe? Even if both matter and space were both expanding, as proposed by Paul Dirac in the 1920's, this also would account for the red-shift. What evidence or logic points in the direction of matter diminution as a cause of the red-shift? --see concept #5 below--

Above Concepts use: This concept uses the fact of the galactic red-shifting of light with the concept of relativity above to show how these observations can otherwise be explained. This concept when combined with concepts below, support a combined concept and theory, The Pan Theory of Relativity.

--Concept # 5 (A concept in logic to explain observed reality)

Concept: The beginning of the universe would be much easier to explain if atoms were becoming smaller in size and greater in number as time progresses, rather than presently prevailing theory. Accordingly, as we would look progressively farther back in time and see progressively smaller

quantities of matter. At the beginning of time there could have been just one simple fundamental particle that started the entire universe, seemingly vastly simpler to explain than a Big-Bang entity.

Discussion: Continuing from Concept # 4 above, what advantages are gained from the perspective that matter is slowly getting smaller? The Big Bang Theory as well as any of the theories above and others can explain the red-shift of galactic light. But if we were to analyze the implications closely we might see a big advantage to a theory of the Diminution of Matter if it also contained a mechanism that reconstituted the discarded energy/ matter from atoms into new matter. It would mean that there would be quantitatively more matter in the future, and there would have been less in the past. The “volume” of matter plus energy however would remain the same.

With progressively smaller quantities of matter in the past there seemingly could come a time when there may have been only a single particle such as an electron, or a theoretical particle even much simpler which could have been the first substance and source of all subsequent matter. This same particle could also be the building block of all matter, just one single fundamental particle type as is proposed by some particle physicists today. According to this particular diminution-of-matter theory, atoms and particles alike would have been larger in the past so that a single beginning particle encompassing the entire universe would have been relatively vast in size compared to its identical counterpart today. But according to the Principle of Relativity, big or small would have no meaning if it were the only thing that existed. There would have been nothing else to compare it to.

Some theories today propose a single particle type as the building block of all matter. Some also propose that a few of these particles could make up an electron; the Pan Theory proposes a much larger number. According to this diminution of matter theory, these particles’ identical counterpart and primordial predecessor would also have been the sole beginning particle of the universe that very slowly replicated through internal forces into progressively greater numbers and smaller copies of itself, ultimately culminating in the complexities we now see in the entire universe, according to this Concept and the related Pan Theory of Relativity.

Comment concerning the Big-Bang theory: This theory requires a “Condensed Entity” -- all the matter and energy of the entire universe would need to have been concentrated within a single starting point, particle, or small volume. Many new complicated formulations of physics have been proposed to accomplish this task for the beginning including many new dimensions, “laws,” events, etc., with still

no “well-received” theory of the very beginning, and seemingly no possibility of ever testing the theory (a major problem with the Big-Bang theory). In contrast the alternative concepts contained within the Pan Theory of Relativity could be tested in time based upon its many potentially observable predictions, as well as those documented predictions which have already been observed, many of which were/ are contrary to the Big-Bang model (such as super-luminosity of galactic jets, the apparent accelerated expansion of the universe, dark matter, etc.). Because it is a much simpler explanation and theory for the beginning of the universe it is more likely to be true, all else being equal, in accord with Concept #1.

Comment concerning the alternative Big-Bang theory: This theory requires a “Condensed Entity” -- all the matter and energy of the entire universe would need to have been concentrated within a single starting point, particle, or small volume. Many new complicated formulations of physics have been proposed to accomplish this task for the beginning including many new dimensions, “laws”, events, etc., with still no “well-received” theory of the very beginning, and seemingly no possibility of ever testing the theory (a major problem with the Big-Bang theory). In contrast the alternative concepts contained within the Pan Theory of Relativity could be tested in time based upon its many observable predictions, many of which are contrary to the Big-Bang model. Because it is a much simpler explanation and theory for the beginning of the universe it is more likely to be true, all else being equal, in accord with Concept #1.

Above Concept's use: This is a concept of Cosmology and Logic, which when combined with the concept of relativity supports the Pan Theory of Relativity as an alternative to the Big Bang Model of the universe.

--**Concept # 6** (A concept to explain observed reality: the existence of a back-ground particle field now called dark matter and its energy of motion the zero-point field).

Concept: There is a background field of variant-sized “particles”, most considerably smaller than electrons. An atmosphere of particles with intrinsic internal energy, and the energy of relative motion. This field permeates the entire universe with varying densities. The motion of Galaxies, quantum particles, waves of light, as well as gravity mechanics can be explained in terms of the existence of this “background field”.

History of the Concept: About 2,400 years ago Plato, the famous logician and philosopher was credited as the first person with the concept that all of reality contained a “background of particles” which Aristotle later called an Aether. For Plato this was a logical concept derived from his thoughts and perceptions of the constituents of reality. Later in the early 1700’s when the molecules of air were being discovered, many felt that the Aether (or ether) of Plato had been found.

Later in the 19th century, cosmic radiation, as well as earthly electrons and protons were being discovered. The behavior of light as a wave became well-known. It was also shown that light traveled more efficiently, without refraction, through a vacuum. As a result of these discoveries many believed that there must be an atmosphere of even smaller physical particles which could form the wave patterns observed from light. This new concept renewed the Old concept and word Ether to embody this theory.

In the latter 19th century the idea of Ether pervading the universe, and as the carrier of light, was to be tested. Most all of the prevailing Ether theories asserted that the Ether would not be earth centered -- that the earth probably moved through a field of Ether. Nearly all Ether proponents felt that the Ether was the “carrier” of light. They theorized that the speed of light should be measurably different in one direction than another here on earth.

In 1887 a famous experiment was designed by Michelson and Morley to test this theory. During their experiment the speed of light was measured at the highest degree of accuracy possible at that time. No matter what direction parallel to the surface they conducted their experiment however, and regardless of the time of day, the speed of light always seemed to be the same.

Because of the accuracy and design of their equipment and experiment, Michelson and Morley were awarded the Nobel Prize in Physics. Most scientists of the time (probably including the Nobel Committee) felt that Michelson and Morley had disproved the Ether theory as the carrier of light. Few would consider the possibility that the Ether could still be gravity centered (or earth centered) and therefore relatively motionless in any direction perpendicular to the surface (which would also yield a null result in this experiment).

Discussion: There is mounting evidence to support the ideas that **the motion of Galaxies, quantum particles, waves of light, and/ or gravity mechanics, might be better explained by a “background**

field". In the rotation of galaxies it seems that more than 90% of a galaxy's mass must lie beyond the observable perimeter of the galaxy to account for the orbital motion of the stars within it. This unobserved matter has been given the name of "Dark Matter". Is this Dark Matter comprised of, or controlled by an Ether field? Quantum particles (single particles smaller than an atom) such as electrons, at slower speeds are often refracted by unknown particles or forces. Are these obstructions Ether-field particles of varying sizes and motion?

New particles of known configurations often appear and exit in the middle of a particle-Physics experiments. They leave a trace of their brief existence without evidence of their entrance or exit. The prevailing theory asserts that these particles are created in pairs, a particle and an anti-particle, although in most cases only a single particle was observed. They have been called "virtual particles" because of their seemingly unreal creation and disappearance. The same medium which refracts particles in motion and spawns new ones is universally known in particle physics and has often been called a "background field" (among other things). Does this background field include particles?

It has long been theorized that light contains particles or "packages of particles" which have been called quanta or photons. These particles are also known to display a wave characteristic -- waves of what? The current theoretical answer is waves of pure energy, energy of what? According to this concept it is the energy of motion produced by waves of field particles within Ether?

Einstein's theory of gravity is still the accepted mathematical theory of gravity but his concepts of warped space surrounding all matter as well as 4th dimensional "spherical" space, which are the basis of his mathematical theory, have always been in question since their initial proposal. Particle Physicists are now looking for a particle or wave (or both) as the cause of gravity. This theoretical particle has been given the name of a Graviton but it has never been detected. However, cosmological evidence for "gravitational waves" which were "caused by" gravity is well documented. This of course is not the same as waves which are the source of gravity. Again we might ask -- waves of what? In contrast to this concept the most popular answer by Physicists today would be waves of pure energy.

Particle physicists today believe that a vacuum contains unknown energy, unknown particles, or both. Few call it Ether because the word today carries the stigma of a "disproved theory". It could be called by any name, however, because observational science can prove that it exists in one form or another.

A real understanding of this Field's function in physics and in the universe as a whole, accordingly, is only beginning.

The above concept asserts that this background field is a particle field, containing primarily strings of elementary particles which collectively have considerable energy including innate, internal motion (unwinding, vibrations), inertial motion, and field-particle interactions (a type of kinetic motion that could be likened to the behavior of gas or liquid molecules under moderate pressure (Brownian motion). This energy of motion can be transferred to other field particles or matter by contact.

This field would also be continuously energized by contact with known matter particles and neutrinos. It would contain additional, presently-unknown, neutrally-charged particles of varying forms, most with lower energy levels than known varieties of neutrinos. When detected and identified maybe a new definition would need to be made for neutrinos to distinguish at what energy level or speed a "neutral" field particle would be called a neutrino.

Above Concept's use: As fundamental support for the field theory which is contained in the Pan Theory of Relativity and other supporting concepts which require field theory.

--**Concept # 7** (A concept to explain observed reality;

Concept: Black Holes are a very dense form of matter -- more dense than a theoretical Neutron Star.

This Theory is known to many astronomers but currently is supported as only one of the possibilities. Their make-up is the subject of numerous theories. This concept/ theory (# 7) specifically asserts that Black Holes are solely comprised of densely compacted "strings" which were originally "field particles", now called dark matter.

Discussion/ History: Black Holes are generally proven entities in astronomy. As defined for the purposes of this text: Black Holes are non-luminous, opaque, cosmic objects having a very large gravitational influence relative to their size. They have a definite diameter and are not a vacuous single point as indicated by most mathematical models today. When Albert Einstein was elaborating on his theory of gravity, he predicted a number of different observational possibilities. One of these predictions was: if a gravitational force were strong enough, it would absorb all of the light passing within a calculated radius from its center, the larger its mass equivalence the greater its radius. It could

not emit any light of its own within this radius because if it did it would be immediately absorbed. He predicted this entity would appear as a “black hole” in space.

In the last 30 years astronomers have observed many Black Holes which include two known types. One is called a Stellar Black Hole and the other is called a Galactic Black Hole. Some have a surrounding, dimly-lit halo; a few have brighter halos something like a solar eclipse. The circumference where this halo ends and the Black Hole begins is called the event horizon.

Many theories propose different characteristics for the inside of Black Holes. Some propose that a Black Hole is a dimensionless point which has intense gravity. Other theories propose a small but determinable volume. A popular theory amongst many theorists, as well as science-fiction writers, proposes that a Black Hole turns into a “White Hole” in a parallel universe. Some theorists have proposed they are a dense unknown state of matter, which is in accord with the subject concept. Other than mathematical, one of the main conceptual differences between these dense-matter theories is the size and/ or substance of which the black hole is comprised.

Above Concept's use: This is a foundation concept used to support related field theory and concepts below concerning the beginnings of gravity and matter.

--Concept # 8 (A concept to explain observed reality)

Concept: Only one particle -- (herein called a Pan) started the entire universe. Only one particle is the building block of all matter and of the “background-field” of particles. Only one particle produces strings of itself resulting in differing lengths and forms. There is only one most elementary “particle” in the universe.

History: Dr. Leon Lederman, the famous physicist and Nobel laureate, wrote a very informative and entertaining book The God Particle. He reportedly chose this name because his publisher wouldn't let him call it “The Goddamn Particle”. This book explains the frustrations involved in the continuing search in Particle Physics today to prove the existence of this miniscule particle as the building block of all matter. Some theorize it as a boson and others a much smaller particle. (in these theories it is the latter).

Discussion: As discussed in Dr. Lederman's book: The quark theory, today's most widely accepted theory concerning sub-atomic particle make-up, has become increasingly more complicated with more and more particles, making up ever increasing arrays of quarks and gluons (although neither have been separately observed.) If a more fundamental particle were the building block of all matter, it is theorized, that maybe a simpler or more comprehensive system of particle physics and related particle analyses might be found.

Beyond Dr. Lederman's book, it wouldn't be going too much further to additionally propose that not only known matter particles, but also all undiscovered particles, Background-field particles if they exist (as in concept #6), Black Holes (as in Concept # 7), photons, neutrinos, virtual particles etc., that all these entities would be solely comprised of the same particle; And additionally propose that this same single particle was the beginning particle that started the entire universe (as in Concept # 5).

Above Concept's use: this is a foundation concept which is the basis for the related field theory which supports other related concepts and theories concerning particle construction and the beginnings of the universe.

--Concept # 9 (A concept which has become a universally accepted theory in the Field of Astrophysics)

Concept: All atomic matter except for hydrogen is created within stars. This process is called Nucleo-Synthesis.

Discussion: One of the most important cornerstones in Cosmology, Astro-Physics, and Nuclear Physics today is the theory of Nucleo-Synthesis. This theory developed by William Fowler, Fred Hoyle and others is the basis for our understanding of the origin and formation of atomic elements heavier than hydrogen which make up the universe.

The atomic particles which are the elements of all atomic matter are protons and electrons which are the constituents of common hydrogen-- one proton and one electron. Neutrons are believed to be created during nuclear fusion within stars. These three particles alone make up all other atomic matter.

A newly forming star, or “proto-star”, consists primarily of electrons and protons which form plasma, a very hot liquid-like state of matter. Heavier elements are pushed (or pulled) toward the center. As the mass of a proto-star increases so does the compression of its core and its temperature. When the core becomes hot-enough nuclear fusion will take place.

By the 1950’s science had developed a good understanding of plasmas and nuclear fusion culminating in the Hydrogen bomb. According to this theory, through an incremental fusion process, four electrons and four protons will become a helium nucleus-- having two protons, two neutrons, and two electrons. No atoms or solitary neutrons can exist within a plasma, only atomic nuclei and electrons moving independently. Once most of the hydrogen of the star is used up, compression will increase and internal temperatures will rise further. If a star is large enough, through this continuing process helium nuclei will fuse to become lithium, lithium may fuse to become beryllium, beryllium into boron etc., all the way up to iron which is very stable and the ninth element in the periodic table. According to this theory, a large energy input is required for fusion of elements heavier than iron. These elements could only form in Super-Nova explosions which occur only in a single explosive demise of the largest stars. This theory of atomic creation is a generally well understood and accepted theory in Astrophysics that can account for all atomic matter except for hydrogen-- commonly comprised of a single proton and electron. It is also one the most important answers to the question-- where did everything come from? This Theory has generally been proven to some extent in the lab and is for the most part accepted as fact by scientists in this field.

Above Concept’s use: This is one of the most important understandings concerning reality. It explains the creation of all but the simplest forms of matter.

--Concept # 10 (A concept to explain observed reality)

A Concept concerning the creation of Hydrogen, the foundation for the creation of all other matter.

Concept: The particles which form common hydrogen, protons and electrons are created from stings of field material in the halo areas surrounding young Galactic Black Holes.

Discussion: This concept is based upon a previous concept that there is a background particle field, Concept # 6. According to that Concept and the related theory the beginning universe was solely comprised of stings of field particles. In a more dense central area of the field one

or more Black Holes began to form. How and why they formed will be described in the Concept concerning Gravity. These beginning Black Holes were comprised of, and fed solely upon field material. Matter as we know it did not yet exist. The only difference between the field and the Black Hole was the extent of its density --that is the extreme state of compression of the Black Hole.

As the Black Holes(s) were forming they began to spin as a result of the fast-moving powerful vortex action of the surrounding field material as it spirals inward. These Black Holes accelerate their consumption rate as they increase both in size and density; they spin faster as they condense as does the vortex of field material surrounding them. A Black Hole would only slow its growth when its centrifugal pressure outward and the gravitational pressure inward from the field approached equilibrium. In a peripheral area surrounding the Black Hole, due to the effects of gravity, strings of field particles of varying lengths could be bent, contorted, and entangled in seemingly countless ways. Some of the longer ones could be bent into loops entangled end-to-end. Others could be bent in seemingly countless other ways, many broken into even shorter strings. Few of these entangled configurations could remain stable in this extreme high-energy interactive environment. The small portion of configurations that could survive would build up in vast quantities which eventually would saturate the surrounding halo area of the black Hole.

Because of the gravitational effect (subsequently discussed) and high inter-active pressures, a portion of these configurations would have been forced into the Black Hole where they would be torn apart and crushed into simple short strings. Others, because of Centrifugal and inter-active pressures, would be continuously ejected far away from this area into the surrounding field. Most would be emitted in jets of particles streaming from opposite poles of the vortex. These jettisoned particles would be primarily electrons and protons because of their greater abundance and/ or more stable configuration. This Concept asserts that young Black Holes have created nearly all of the protons and electrons that exist in the universe today. They are the genesis of the atomic world (in contrast to the Big-Bang Model).

Evidence: These polar jets are well known in Astronomy. There are thousands of them which are observable on a continuing basis. Most related theories also believe that they emanate from young galaxies in their process of formation. Most theories however believe this to be pre-existing matter which is being recycled. According to this Concept and the related theory, however, only roughly 20% of these particles in today's universe are pre-existing, and that 80% of this jettisoned material was newly created. This theory asserts that a Quasar is within a newly forming galaxy of this type whereby having the appearance of extraordinary luminosity resulting from

the photons produced within these high-speed particle jets. This motion through a close-to-light-speed vortex results in a vast quantity of high-energy, red-shifted (lower-frequency) photons.

Above Concept's use: With this Concept and the previous concept (# 9), the creation of all atomic matter in the Universe can be accounted for without the assistance of a complicated primordial Big-Bang.

--Concept # 11 (A concept to explain observed reality)

Concept: A Galaxy of stars forms from the vast quantity of protons and electrons (discussed in Concept #10) created from a young Galactic Black Hole which jettisons vast quantities of this new matter outwardly in polar jets. Most galaxies form from the inside out for the bulk of matter which form the stars of that galaxy.

Discussion: This Concept continues where the previous concept left off, at the point when a large Black Hole was surrounded by a vast orbiting vortex of field material, protons and electrons, most of which have been jettisoned far off into the field but still orbit the galaxy. Continuing with young galactic-size Black Holes in general, the black Hole continues to process, through its halo area, large quantities of field material and eject vast quantities of mostly new particles, primarily electrons and protons the primary building blocks of both stars and atomic matter.

Most large black holes that are within the same field vortex would eventually merge into a single central Black Hole. In the beginning universe most stars would have condensed around small black holes because of the scarcity of proto-stellar material. These stars would quickly grow to great sizes causing numerous initial Super-Nova explosions. This would provide large pieces of more dense molecular matter needed to seed numerous other longer-lived stars as the galaxy matures.

In today's universe stars condense in clusters from vortices surrounding pre-existing matter, usually contained within very large clouds of protons and electrons. In the outermost part of a galactic vortex roughly 90% of the total matter and field material remains orbiting the central stellar matter. This vast amount of non-luminous, thinly dispersed ordinary matter is the simplest explanation for "Dark Matter". The reason there are few proponents of this theory is because --according to the Big Bang model, the universe could not possibly be old enough to have created this amount of complex matter. The Pan Theory of Relativity in contrast asserts that the universe is countless times older than Big-Bang models so that this quantity of ordinary complex matter is predictable and expected.

Above Concept's use: This is the primary concept behind the related theory of galaxy formation.

--Concept # 12 (A concept to explain observed reality;
A Concept concerning the Age of the Universe
and how galaxies age and ultimately expand.)

Concept: The time to create the observable universe by the accretion method from a single elementary particle would take trillions of years rather than just billions of years (according to most Big-Bang theorists, the universe is only between 12 and 15 billion years of age).

Discussion: Astrophysicists have calculated that many stars smaller than our sun may live a considerably longer stellar life than our sun will. This is because their internal temperatures are lower and they would proceed with hydrogen fusion at a slower rate. Conversely, larger stars will fuse their atomic material at a faster rate and in general will have a shorter life. According to this modern theory, moderate sized stars like our sun may live 10 billion years or longer before ceasing fusion. Judging from the estimated ages of stars in our galaxy, our galaxy, The Milky Way, must be at least 10 billion years old according to most astronomers. Some astronomers and astrophysics have published calculated ages of some stars in our galaxy to be as old as the calculated age of the universe according to the Big Bang Theory, between 12 to 15 billion years old. Those who have published these calculations over the decades have been brave. They knew that either their calculations were wrong or the Big Bang Theory was wrong.

According to the above concept and related theory, the stars in most galaxies expand outwardly from the galaxies central area at about the same rate as the Hubble constant. The preferred perspective of this concept would be to say that the stars within a galaxy, like all matter, become smaller relative to the space between them. In roughly 60 billion years, according to this concept, the stars in most galaxies will dissipate outwardly, no longer gravitationally held by a diminished field vortex (gravity). At the same time the innermost stars would begin spiraling inward no longer being held in gravitational equilibrium. Even the central Black Hole could be broken-up and dissipated through numerous implosions resulting from the consumption of too much matter within a short period.

If the universe is considerably older, as this concept and related theory asserts, then evidence of dissipating old galaxies should be numerous and observable. The primary clues of age and dissipation are that there would be no condensed central bulge; this is because the only part of the galaxy that would remain visible would be the vastly expanded central bulge. Their visible form would evolve into generally Spherical to Irregular; most of the

visible stars would be old red stars with only a scattering of younger multi-generation stars. The problem is that these old galaxies would be relatively faint in magnitude, large in volume, less dense, and have a large portion of non-visible stellar remnants compared to younger galaxies. This concept asserts that these old galaxies should be numerous in quantity (at least 5% of the total observable galaxies within a broad volume of space) and would have already been observed. Unfortunately they would also be misunderstood because they contradict the Big-Bang Model concerning evolution of galaxies and the age of the universe. They would contain a number of stars 20-40 billion years old. They also would provide evidence for the theory that most galaxies expand as they age.

Above Concept's use: This concept is used to make observable predictions and support related theory which provides calculations concerning minimum-age possibilities for the observable universe.

--Concept # 13 (A concept to explain observed reality)

Concept: Waves of light and other E.M radiation consist of two facets of light moving together. One constituent is small "bundles" of field particles which have been called quanta or photons; the other is a wave (something like a wave in water) of field particles.

Discussion: These waves are created by spinning particles including atomic nuclei which produce both the radiated bundles and the waves of field material resulting from this spinning. These bundles travel at the speed of light. Other field particles within the wave move at this speed for only a brief moment and then transfer their motion to other field particles by contact allowing a continuing wave to move at the speed of light. The longevity of these field waves is determined primarily by the intensity of the spinning and vibrating source, the density of photons produced by the source, and the kinetic characteristics of the fields they are moving through.

These photons are radiated in exact or discrete bundles of material, Bundles of what? This concept proposes that they are bundles of "engaged" field material. Concept #9 proposed that all material is made up of strings of field material and that all matter and field material is made up of "Fundamental Particles". Spinning particles such as protons and electrons are known to be surrounded by a vortex or 'cloud' of "Virtual particles" (particles that exist for a brief moment which, according to Concept #6, are generated/ created from background-field material).

According to this concept and the related theory, whenever a particle is forced to change direction, accelerate or slow down, it will engage its surrounding vortex of particles and radiate some of them in the form of EM radiation. Why in discrete sizes which have exact energy equivalents? Why not something in between? In the case of atomic electrons, it was theorized by Niels Bohr that these orbits occurred in "shells" of distinct

distances from the nucleus. An orbit in between these shells was not possible. Only electrons in a specific shell would have the precise speed and energy level needed to produce photons of an exact size.

This theory worked well with captured electrons of an atom but it didn't explain why the same thing happened with free electrons and protons when emitting EM radiation. They were also emitted in exact sized bundles with no sizes or energy levels in between. The concept of field particles could explain this phenomena if photon particles can only form from field material of specific lengths or entanglement size as was previously asserted concerning the formation of protons and electrons. Of those that form only the ones of a proper size will match the spin-force radiation potential of the generating atomic or molecular source, which engages them and radiates them away. Those "quanta" either too big, too small or those having the wrong structure will not remain intact or cannot be held by the spinning matter for a long enough period to become fully engaged and subsequently radiated away.

Above Concept's use: to explain the behavior of light using a particle-field theory, Concept #6.

--Concept # 14 (A concept to explain observed reality)

A concept to explain Ether mechanics and why Michelson and Morley did not find this Ether.

Concept: According to this concept, the Ether may be found today in a similar way Michelson and Morley proposed to find it, except by using much more accurate equipment measuring the speed of light, up vs. down perpendicular to the earth's surface (instead of parallel to the surface).

As asserted in the previous concept matter particles radiate Electromagnetic (EM) Radiation. This was proposed to be background field material radiated away at the speed of light. Atomic and molecular matter of planetary size such as the earth, therefore, would radiate into space vast quantities of field material in the form of EM radiation primarily in the infra-red spectrum in the form of heat. According to this concept vast quantities of field material, which could be called an Ether, accelerate into the Earth's matter, generally perpendicular to its surface. This new field material replaces the material continuously radiated away.

Michelson and Morley in their Nobel-Prize winning experiment of 1887, designed equipment to measure the speed of light parallel (level) to the earth's surface. This was an attempt to show the existence of an Ether which was a substance, according to theory, which made up waves of light. Knowing that the earth rotated on its axis at about 1000 m/h at the equator (relative to the position of the sun) they theorized that the Ether at most any given time would be moving at an angle relative to the surface of the earth and that the angle would vary

depending on the time of day. Therefore the speed of light should be slightly different in one direction compared to the opposite direction. As a result of this perspective, Michelson and Morley's equipment was not designed to measure straight-down accelerating Ether. If they had considered this possibility they might have modified their equipment. However the accuracy of their equipment, although exceptional for the time, was not sensitive enough to detect an Ether moving slower than their accuracy limit, which was about ± 60 miles/ sec. or 216,000. mph. Subsequent experiments by others with greater accuracy came to the same conclusion (also parallel to the surface). The stated results of these experiments were: no perceptible difference in the speed of light in any direction.

None considered the possibility that Ether might be gravity-centered or that it had perpendicular motion. None had the accuracy needed to find a difference in the speed of light, up vs. down through our atmosphere, estimated by this related theory to be as small as the acceleration rate of gravity at the earth's surface, 32 ft. per second, or 21 miles per hour. A small difference but still testable using today's state-of-the-art electronic equipment.

Above Concept's use: This is a concept of field theory which may be tested.

--Concept # 15 (A concept to explain observed reality)

Concept: This concept is concerned with gravity mechanics. It asserts that Gravity is the result of a change in the kinetic action of field material surrounding matter. Much of the field material adjacent to matter is absorbed into the matter's surrounding vortex and radiated away by its electrons or nucleus or refracted away in waves tangent to the surface of the matter. This difference in the kinetic field pressure is the cause of gravity and its accelerating effect "downward".

Discussion: According to this concept, as well as the previous concept #14, field particles would accelerate into all matter in proportion to its size and its relative position to other matter. We experience the same acceleration force that any matter of our equal mass on the surface of the earth would experience. The rate of the field acceleration into the Earth is 32ft/sec. or 21.2 miles per hour. This produces a uniform downward force on us which we call 1 G.

In his General Theory of Relativity (his theory of gravity) Einstein pointed out that there would be no way to tell the difference between acceleration in space and gravitational force. According to this concept (# 15) this is

because the surrounding field is accelerating inward toward us. This would yield the same effect if we accelerated in a space ship at a rate of 32 feet per second (32 ft. per sec.)

Much of this field material would be absorbed at the earth's surface and radiated off into space, the balance would continue downward into the earth dissipating into all matter like the refraction of light. It accordingly would increase the kinetic motion of matter in the form of heat which would be conducted to the surface where it would be radiated away by surface matter at the speed of light – primarily in the form of heat radiation.

This produces a never ending cycle as long as the matter remains intact. The strength of gravity is proportional to the density or pressure difference between the adjacent fields and the area immediately surrounding the matter. This reduced vertical field-pressure surrounding all matter produces acceleration of all matter within the field in the direction of least resistance. This continuous force-by-contact of field material is the effect we call gravity.

Comment: A somewhat similar effect can be observed in our atmosphere concerning atmospheric gases which would theoretically be engulfed and compressed by the gravitational downward vector of this Ether. There is more oscillating motion horizontal to the earth's surface than there is vertically according to studies. There is more kinetic motion in a downward direction than there is upward.

Above Concept's use: This is a primary concept which was used to develop the related theory of gravity called The Pan Theory of Gravity.

--Concept # 16 (A concept to explain observed reality)

Concept: There is no such thing as pure energy or fundamental forces in the absence of matter or particle-fields. All Forces and energy are solely characteristics or manifestations of matter and field particles.

Discussion: This concept follows from the previous concepts and asserts that all forces and energy including those at the quantum level can be explained in terms of Newtonian concepts and definitions such as Force times Distance equals energy, $F \times D = E$. Calculations, however, must also contain statistical probabilities because the almost infinite possible influences of undetected field particles. Characteristics of a surrounding particle field would be continuously changing and unpredictable. Accordingly, all forces would be either 1) caused by the relative motion or kinetic motion of matter or unobserved field particles which by contact transfer force, or 2) they are caused by a restriction of motion as a result of mechanical connections (herein called engagements and entanglements).

According to the related theory, explained in the Physics Section of this book, all forces in physics (and in nature) such as the “fundamental forces”: Gravity, Electro-Magnetism, The Strong Atomic Force (which holds the nucleus of an atom together), The Weak Atomic force (that allows radio-active decay) -- can be explained as either 1) actions of ether-field material or the action of known particles. Examples are gravity, light waves, particle interactions, or by 2) mechanical connections between known particles: as in the case of the Strong Force and the Weak Force.

The Theory that follows from this Concept is a primary but independent theory which is contained within The Pan Theory of Relativity, but in general could be supported by alternative field theory.

Above Concept's use: This is one of the two primary concepts behind the Pan Theory of Relativity, the other is Concept # 8.

--**Concept # 17** (A concept to explain reality)

Concept: The “Locally Uniform Cosmological Principle” which the Pan Theory proposes states: The observable universe from any point, in any direction, and any time frame would look roughly the same, a type of steady-state theory. The word “roughly” means such observations would not preclude large local anomalies.

Discussion: Such theories have been dubbed Quasi-Steady-State Theories. This concept in a similar format can be found in theories thousands of years old. The Steady-State Theory presented by Fred Hoyle and associates -- that “the Universe would look generally the same for any observer at any time or place” can generally be easily understood in terms of a universe infinite in age. The Pan Theory of Relativity would qualify this concept by asserting a finite age of the universe (accordingly trillions of years ago) and by adding the qualifications “the observable universe” and “roughly”, but these qualifications may only be a footnote compared to the potential value of this general concept to astronomers and cosmologist that investigate this possibility. The problem for most astronomers and theorists is that their interpretations of reality are nearly always clouded by the dominance of the Big-Bang Model. Very few at present consider other possibilities. This is the reason why many believe that all steady-state theories have generally been disproved.

By observation alone the universe does not appear the same at great distances than it does at closer distances, but appearances are often deceiving due to inconsistent aberrations of red-shifted galactic spectra. Intervening fields and the effects of relativity alter distant images and measurements, often in unpredictable ways, according to this concept and the related theory.

According to the Pan Theory of Relativity, the entire Universe is probably countless times larger than most theorists currently believe and probably trillions of years in age. If this is true then the subject concept should accordingly be very valuable to cosmologists. According to related concepts there are now and would have been places and times where the Universe would have had a different appearance than it does now (such as the Universe described in concept #11), however, these places and ancient times would seemingly be forever lost to us or any other feasible observer.

Above Concept's use: This concept is intended to be a prediction and guide for astronomers, theorists, and others who consider alternate interpretations of observed data.

--**Concept # 18** (A concept to explain the basis for developing The Pan Theory of Relativity)

Concept: This concept asserts that The Red-Shift of Galactic light which we observe from all but the closest galaxies can best be explained by a new additional theory of relativity: The Pan Theory of Relativity.

The following is a list of previously discussed concepts which support Concept #18 as well as The Pan Theory of Relativity in general.

1) All else being equal, the simplest explanation for some phenomenon is more likely to be accurate than more complicated explanations.

Evidence/ Support: This concept of simplicity is based on the laws of probability and is generally accepted throughout the scientific world. Its application is one of the objectives in the formation of concepts, explanations, and related theories within this text.

One of its major uses in this text is comparing the Big-Bang theory with the Pan Theory of Relativity. Although the later is a Theory in both Cosmology and Physics, and the former is primarily a Cosmological Theory, both are primarily conceptual theories. According to this text there is at least as much evidence which supports the Pan Theory of Relativity (if not more) as there is which supports the Big-Bang Theory (discussed in the Theory section.)

2) Something does not come from nothing. Also stated in the first law of Thermodynamics:
Matter/ Energy can neither be created nor destroyed.

Evidence: Current theories such as $E= Mc^2$ and the First Law of Thermodynamics support

this concept.

3) Everything can be considered relative.

Evidence: There has been considerable evidence which has shown support for Einstein's Theory of Relativity. Some aspects of it have generally been proven.

Comment: One of the main aspects of the Pan Theory of Relativity which is different from Einstein's Theory is that the speed of light is also relative to the motion of the background-field which contains it and the period of time (era) being observed. The same relativity to time would also apply to other "constants" of nature. This Theory of relativity generally reverts back to Mach's basic concept.

Example: the speed of some "particle jets" emanating from the poles of distant galaxies appear to be traveling faster than the speed of light. This perceived super-luminosity is required by The Pan Theory of Relativity and is therefore a predictable observation.

4) If the red-shifting of galactic light is caused by a Doppler Shift, one could correctly state that the Universe is expanding, that atoms are becoming smaller, or that both are true.

Evidence/ Support: This concept can directly be asserted using Mach's concept of Relativity, Concept #3.

5) The beginning of the universe would have been much simpler and therefore much easier to explain if atoms were becoming smaller and more numerous as time progresses.

Evidence/ Support: This Concept can be developed from general logic using present- day information. (explained in Concept #5 above)

6) There is a background field of very small sub-atomic sized particles, an atmosphere of particles with intrinsic internal energy and the energy of relative motion. This field permeates the entire universe with varying densities. The motion of Galaxies, quantum particles, waves of light, as well as gravity mechanics can be better explained by the existence of a "background field".

Evidence/ Support: There is a great volume of evidence which proves the existence of an omni-present background field. Maybe half the related theories include particles or strings as major components of this field.

Concepts #8, #12 and #19 below are also necessary “Concepts of Explanation” concerning the Pan Theory of Relativity.

8) Only one particle started the entire universe. Only one particle is the building block of all matter and of “background-field” particles. Only one particle produces strings of itself which are molded through interactions into differing forms. There is only one particle type in the entire universe.

Evidence/ Support: There are a number of theories in modern physics which propose one fundamental particle or strings as the building block for all matter. Many of these theories are well received. There probably have been few theories,

however, where the beginning entity is also the fundamental building block of all matter. The Pan Theory of Relativity is one of them.

12) The minimum time to create the observable universe by the accretion method from a single elementary particle would take trillions of years rather than 12-15 billion years estimated by most Big-Bang theorists.

Evidence/ Support: If the Universe was created by the accretion of a single primordial particle, as proposed by the Pan Theory of Relativity, then the calculations for the time it took to create the observable Universe based upon estimates of 1) the Hubble “constant”, used to calculate galactic distances based upon their red- shift, can also be used to estimate a “pan’s” (The name given to the most elemental particle in the Pan Theory of Relativity) “doubling time”--the time that a takes a single pan to become two, each roughly half the size of the original. 2) Estimates of the mean density of matter within the observable universe 3) an estimate of the matter equivalence of Background Field within a designated volume of space. By using these three factors an estimate for the minimum possible age of the observable Universe (with a radius of 12 billion light years) can be made. This estimate is 2.72 Trillion years. These calculations are shown in the Theory Section.

--**Concept # 19** (A concept to explain observed reality)

Concept: Force-Fields and Pure Energy are solely the manifestations of a background particle field of “fundamental particles”; the size and motion of these particles, as well as all matter, decreases as time progresses. This can be called the relativity of size and motion (including the speed of light) to time. This concept is one of the foundations for the Pan Theory of Relativity.

The directly related Pan Theory of Relativity can be derived from the above concept by also adding elements of previously discussed concepts: -- *that a single Elementary particle started the entire universe. Its “Slow” division (estimated to be roughly 10 billion years time period for the quantity to double, increasing in number as they proportionally decrease in size) results in strings or clusters of identical particles. This is a continuing process to the present time. The potential energy, combined forms, fields, relative motion and interactions of these particles are the sole constituents of not only matter, but also all known and unknown field particles. These same relationships can also define all fundamental forces and energy, as well as space and time-- every aspect of the universe.*

Discussion: Evaluating different aspects of the Concept and Theory:

What we can directly predict from this Concept/ Theory is that when observing the past at a distance 1) matter was larger 2) there is an ongoing relative expansion of space 3) new matter is created to fill the void 4) the speed and relative motion of matter in the past would appear to be faster/ greater 5) the speed of light would have also been greater in the past also making it (along with other “constants of nature”) a condition relative to time.

To any possible observer in those past times, however, everything would have appeared and measured the same as it does now, including the speed of light. This is because everything was proportionately larger.

Example: Looking back in time as we can do --for instance 2 billion light years away means that it took light about 2 billion years to get here from its source. Some jets coming from the poles of active galaxy centers at that time appear to be moving faster than the speed of light. This phenomenon, dubbed super luminosity, has been observed on an ongoing basis. According to this concept/ theory it can be best understood as a condition of Size-and-Motion relativity delineated by the Pan Theory of Relativity.

--Concept # 20 (A concept to explain observed reality)

Concept: All matter has the “dimension” of potential energy which perpetuates time. Time is solely an interval of change.

Discussion: We have discussed previous concepts concerning the creation of electrons and protons. This concept concerns the potential energy of electrons and protons as well as other particles. In Physics, energy is defined as force times distance or $F \times D = E$. Both electrons and protons continuously spin in an atmosphere or a vacuum. This energy of motion is called kinetic energy. Although no force has been applied to the particle to cause it to spin, we could still estimate its energy of spin by considering a particle of greater mass that does not spin. By applying forces that would cause it to spin, a force could be found or calculated that would cause it to spin at a rate estimated to be the same as the smaller particle. The determined force could then be scaled down proportionately to estimate the force required to cause the smaller particle to spin the observed amount. There are a number of other adjustment factors to be considered in this calculation which at best must be considered a rough estimate. Using quantum physics this estimate could be accomplished with known equations.

Other less-known particles do not exhibit spin. Their configurations would be like a string unwinding inline, you could not observe spin. But if you looped this string, it would spin as a result of its required unwinding torque pressure producing a vortex in the surrounding field. Its outward appearance would then be that of a solid particle.

It would be a necessary characteristic for any beginning particle to change its form as suggested by concept #2 (otherwise it would forever remain the same). It is a necessary characteristic of any theory of a finite Universe that a beginning entity must have potential energy – the potential to change its form.

If potential energy is an innate characteristic of a fundamental particle (“God Particle”) which is asserted by this concept, then it always would perpetuate changes which could define time. A point in Time can be defined as an instant (a snapshot) within an interval of measured change. But without the interval there is no time. Time in general could be defined solely as an interval of changes in form or relative position. Einstein in his Theory of Relativity showed how time must be measured in comparison to a “reference frame” or standard to make a quantitative statement. Today we use the Cesium atom here on Earth as that standard. In his analyses concerning the relativity of time, Einstein used time as a fourth dimension in conjunction with the three Cartesian dimensions (length, width & height).

In this concept as in Einstein’s Theory, time is a dimension of reality. There is no doubt that without time, the universe as we know it could not exist.

Above Concept's use: To show that time is a dimension of reality solely defined by change. Time is a dimension of matter defined by matter. Without it reality could not exist.

--Concept # 21 (A concept to explain observed reality)

Concept: Space can be defined as solely an extension of matter or an interval between matter.

A standard of measurement must be used to make a quantitative statement concerning distance. In outer space we generally use light-years or parsecs (3.7 light years) as this standard. Here on earth we use the metric system, the English system (inches, feet, yards, miles) etc. as standards to delineate distance.

Discussion: Many of the other concepts of space today are based upon the theory that space is something of substance in and of itself as was proposed by Einstein. These concepts are expressed in statements such as the "expansion of space", "warped space", etc. As we have discussed, according to previous concepts herein, space contains field-material of fundamental particles of varying size, motion, and energy levels. *This concept separates space from the material (or energy) within it.*

What if a single particle, the only thing in the Universe, were to "spin"? What would be the meaning of this spin? According to the concept of Relativity (concept #3), Mach could ask, it's spinning relative to what? We might say it's spinning relative to the space around it. In our minds eye we certainly could imagine a solitary spinning particle, but what would be the meaning of this spin if it's the only thing in existence? If its potential energy only perpetuated its spin and nothing else, then it would forever remain a solitary particle with a meaningless spin.

This concept considers the idea that there would be no space around the first particle because the particle itself defines space by its presence, space accordingly would be the volume which the Particle occupies. The first particle would slowly become a string of smaller identical particles (concept # 5) and eventually separate into strings of particles divided by space. Then space could be defined as: the smallest single volume configuration which could contain all strings. Linear space could be defined as: any distance between strings. After the development of matter (concepts # 9 & 10) within the universe we might substitute the word matter in place of the word string to define the macro-universe (presently known universe). Space could then be defined in accord with this concept as: the smallest single volume configuration which contains all matter. Any linear part of Space could be defined as the distance between matter (such as stars or galaxies for instance). Space like time, accordingly, could be considered an interval, an interval of distance, area, or volume: An extension from a single point that could be delineated by the distance between two points, a plane between three points, or a volume determined by four or more points not within the same plane. Like the concepts of time and gravity described herein, it also would have no separate meaning or existence outside of

matter.

Above Concept's use: To provide an understanding of the essence of what space is. Space like Time is a dimension of matter which is defined by matter.

--**Concept # 22** (A concept which can explain the fundamental make-up of matter and the aspect of reality called Particle Spin)

Concept: “Hemispheric Spin”, “Reciprocal uniform Torque” – is a single “dimension” of matter that causes atoms and fundamental particles to spin. It is this same innate energy source that multiplies fundamental particles resulting in all the forms of matter and energy in the universe.

Discussion: This concept is concerned with the simplest kind of potential and kinetic energy that a fundamental particle might have that would perpetuate its own spin as well as being the underlying cause of atomic-particle and atomic spin.

This “dimension” of potential energy when transformed to kinetic energy does, accordingly, perpetuate changes in a fundamental particle that would eventually result in many like particles, according to previous concepts, smaller in size but otherwise identical to the first. The amount of potential energy that a Fundamental Particle possesses remains proportional to its size. This concept considers a type of kinetic spin that perpetuates change/ time as discussed in concept #20. Several examples are given in this concept to help explain the general idea.

First Example: Take a balloon, the type of long slender balloons that craftsman twist into the forms of Poodles, Giraffes, etc. Blow up the balloon less than full volume. Twist the balloon into three equal spheres turning consistently either clockwise or counter-clockwise. Hold the end two spheres, releasing the center sphere. You would notice it does not move. Now release both ends and continue watching the center sphere. The center sphere again would move little but each end spheres would rapidly spin the opposite direction of the other. Each end of the middle hemisphere would also unwind in opposite directions when viewed from the side. When viewed from each end, however, both would be spinning in the same direction. But each hemisphere is back to back therefore the balloon as a whole would not spin. In this three balloon example the center sphere would spin if its ends were wound in opposite directions.

Second Example: Suspend a small weight on a string. Wind up the weight until the string begins to form knots. Suspend the weight from the wound string and watch the object spin. Because of its momentum the weight will not stop spinning when the string has no windings. It will continue spinning well beyond this

point, the string will then wind-up in the opposite direction. When the opposing torque becomes strong enough the weight will briefly stop spinning then start spinning the opposite direction. This spinning in alternating directions will continue until the momentum of the weight has been exhausted by the friction within the string and from the surrounding air.

The Third example would be an object with nearly frictionless pendulum motion. The innate potential energy which a fundamental particle would need to possess, according to this concept, would have similarity to all three examples; additionally it must expend this energy in increments that would always provide for some retention. This can be accomplished by the steady diminution of the particle and the reduced proportional energy expended.

Above Concept's use: To show the necessity from the beginning of the dimension of relative motion or change as a required 4th dimension of the universe, an interval of which we call time.

--**Concept # 23** (A concept to explain observed reality)

Concept: Atomic particles (and other particles that have spin) solely consist of a looped string of fundamental particles. These spinning loops appear to be solid but, like atoms, they are primarily spinning loops which motivate an internal and external vortex of spinning field material.

Discussion: This idea may be somewhat familiar to those who have some prior knowledge of basic string theory. Simple hydrogen consists of two particles, a proton and an electron. All other atoms are made up of three known particles, Protons, Neutrons, and Electrons. These particles, according to this Concept, are made up of long strings of fundamental field particles which, by great pressure, have been forced into loops entangled/ engaged end-to-end. Because each fundamental particle within the string must innately unwind, any looped string must spin to enable this unwinding, causing the string/ particle to spin. If the ends of the loop are thoroughly engaged the particle will remain stable, if not it will spin out of this looped condition, observable only briefly as a “virtual particle”, before returning to its former status as only a longer string of field material.

All spinning particles and the atoms which they form produce a vortex in the surrounding fundamental-particle field. This vacillating vortex is generally the only part of the particle or atom which interacts with the outside world. New material continuously inflows into the vortex replacing field material which has been radiated away in the form of E.M. radiation.

Above Concept's use: to explain the fundamental construction of matter.

--Concept # 24 (A concept to explain observed reality)

Concept: For both man-made concoctions and natural mechanisms, Perpetual-Motion machines without changing form, are not real. They are theoretical misconceptions.

Definition of a Perpetual-Motion Machine: for the purposes of this concept, it is a man-made or nature-made entity that can continue operating and producing energy indefinitely, without changing its form, size, or evolving in some way, and without any extraneous fuel or energy supply other than motionless "thin air".

Discussion: During the Industrial Revolution of the 19th and 20th centuries many inventors made claims of inventing/ creating a Perpetual-Motion machine. The general definition was a machine that could run continuously without an energy source. It could use no fuel that needed replenishing other than motionless common air. If it had a power source, it would need to generate more power than it consumed. In short it had to perform work without cost other than maintenance. Some possibilities have shown promise, such as powered by permanent magnets involving phase transition of gasses, but these too eventually run out of emotive power.

It is generally well known in the sciences that this type of machine violates basic principles of Physics and Engineering including: all mechanical machines (even in space) have friction which will eventually stop the machines motion. If it has potential energy such as the Main-Spring of a watch or the weights of a pendulum clock, the potential will eventually be used up unless re-supplied. Even an electronic machine like a small calculator running off a solar cell cannot meet the criteria. A solar cell has built-in potential energy like a battery. It might be more efficient than a battery but once this potential is used up the calculator will stop.

For more than fifty years scientists have observed atomic spin, electron spin, proton spin, neutron spin. They are aware that all atomic matter appears to be Perpetual-Motion Machines. Matter continuously adds energy to any field that it enters by virtue of this spin. There is also no known way to stop this spin without particle annihilation, or even slow the spin without applying a continuous counteracting force.

Most modern theories in particle physics, as well as previous Concepts herein, can explain particle spin as an intrinsic characteristic. If particle-spin cannot be stopped, it also must have seemingly unlimited potential energy. It sounds like a "Perpetual Motion Machine". This similarity doesn't bother most particle physicists however, because their existence and spin have been proven. It would seem that the First Law of Thermodynamics ("mass/ energy can neither be created nor destroyed", also called the "law of Energy Conservation"), does not apply to the quantum world.

There are known theories which try to explain this seeming contradiction but none are widely accepted. The subject Concept follows from the Pan Theory of Relativity, asserting that particle- spin is one of the results of the diminution of matter. Internal stress is the source of the potential energy within a particle or atom which causes it to spin while becoming smaller ,and in time, more abundant. This diminution of matter, accordingly, would preserve the Conservation of Mass/ Energy within the quantum world by primarily converting matter into energy.

In retrospect: We know that matter is giving off energy due to its continuous spin. It also could be losing a little bit of itself in the form of fractional matter, described in previous concepts as field particles. As a result matter would necessarily be getting smaller, albeit at a very slow rate. If this “discarded” energy and matter were continuously reconstituted into new matter particles (as in Concept # 10), then 1) the Balance Sheet would balance 2) there would be no Perpetual-Motion Machines 3) Current observations in Astronomy and Physics might be more easily explained 4) The beginning of the Universe would be much easier to explain (as in Concept # 8). According to this diminution of matter theory the universe as a whole could be considered a type of perpetual motion machine, but if so it would be one that reconstitutes, reforms, and evolves via the single energy source that produces fermion spin, herein called “reciprocating axial torque.”

Above Concept's use: To show that particle spin and atomic spin has a price. It does not come from nothing. It is the result of fundamental particles unwinding resulting in the continuous Diminution of all matter.

--**Concept # 25** (A concept that could explain the destiny of the Universe)

Concept: The diminution of matter (discussed in the previous concept as well as Concept #5)

-- is a process that enables the use of Mathematical Limits to consider the future of the Universe.

It is a tool that may help answer these questions 1) Will atomic particles and atoms spin forever without “running-out-of-gas”? 2) Will the Universe expand forever becoming cold, dark and essentially “dead”?

Discussion: This Concept considers how the tool of Mathematical Limits might be applied to both of the above questions. These seemingly undesirable possibilities that 1) the potential energy of atomic particles could eventually run out, such as the proposed half-life of a proton. The degradation of protons (without new creation) would cause the universe to cease its function as we know it. 2) the unending expansion of the universe would cause a continuing decrease in its density until the stellar or even molecular universe would disappear. Both of these possibilities are less likely according to the Pan theory of Relativity for the reasons indicated below.

The subject Concept concerning limits of a particle's potential energy (possibility #1 above) is also discussed in Concept #22 which asserts that the amount of potential energy that a Particle possesses remains proportional to its size. If this is true, and if new atomic matter is continuously being created, as described in Concept # 10, then the following mathematical analogies could be used to analyze these possibilities.

Question 1): will atomic particles or atoms ever “run out of gas”?

After an extended period of time, according to concept # 12, the quantitative amount of matter will double. This expended potential energy to accomplish this task is converted into energy of relative motion resulting in the relative expansion of space between matter. The slow but continuous decrease in potential energy therefore could be expressed by an infinite series which has a simple mathematical limit, such as the series of 1.0 times .99 times .99 times .99 ··· etc., (any fraction or decimal less than 1 could be used in place of .99). This infinite series has a limit equal to zero. But according to this example one can also see that for any point in time, 99% of the total potential energy from the previous period would still remain. Consider that 1 is the total amount of potential energy at the beginning of the analysis. Then at any future point in time the remaining potential energy would always be less than 1 and more than 0. There always would be the same relative proportional remainder and accordingly potential energy would never run out.

Question 2): Will the universe expand forever essentially becoming cold, dark and “dead”?

According to this concept, the expansion of the universe progresses at a rate directly proportional to the size of the individual atomic matter within it (which continuously decreases). Using the general perspective of the Pan Theory of Relativity, visualize the universe generally constant in size and the size of the individual parts of matter within it decreasing as they increase in number. The perimeter of the universe would still be expanding but at a decreasing rate, deceleration. (Recent findings which propose an accelerating universe are based upon the Big-Bang model that attributes the entire red-shifting of galactic light to an expanding universe. The same information using the Pan Theory of Relativity model results in a decelerating universe.)

According to the Pan Theory of Relativity (concept # 18), where the observed red-shift of galactic light is caused by the diminution of matter instead of the expansion of space) The “real” expansion of the universe might be expressed as a simple mathematical progression: $1/2 + 1/4 + 1/8 + 1/16 + 1/32 \dots = 1$, where the maximum size potential of the universe would be 1. The universe could be forever expanding at a decreasing rate but the size limit of 1 could never be reached. There would always be a difference short of 1. Consequently the density of the universe would also be decreasing to a limit.

Above Concept's use: To show how mathematical limits can play a part in the operations of the universe.

--Concept # 26 (A concept to explain reality by the use of consistent definitions)

Concept: Time and Space as well as everything else within the universe is finite, for any designated period past, present, or future.

As far as Time and Space are concerned, a finite universe may be difficult to comprehend but the idea can be fully understood. On the other hand, Infinite time and Space may seem to some a simpler concept but most would concede that it is difficult to fully comprehend an infinite quantity of anything.

Discussion/ History: Concepts of Time and Space: Finite vs. Infinite. Both concepts of the universe may have their earliest roots in religion. A God (or the Gods) created the universe that was finite in Time and Space. In this Concept "Finite in time" means a beginning long ago but not forever in the past. Infinite space means an unlimited quantity without boundaries. This is how the Old Testament reads and similarly even older religious ideas of the beginnings of everything. For those believing in a universe infinite in times past, there would be no theory or story to explain a beginning because there would have been none. In many of the stories of creation, God (or the Gods) has existed forever and is infinite in capacity. Since he (she, it, or they) was spiritual rather than physical, space also would not apply to his (their) being.

The possibilities of full separation between religious tenets and the willingness in science to formulate theories and make assertions that might contradict religious concepts, generally began in full earnest with Darwin after his publication of *The Origin of the Species* (1859). Many earlier pioneers were tortured, killed, or otherwise required to submit to the will of the state or church-- such as Socrates, who was forced to commit suicide, Galileo, who in his later years remained under house arrest by the church, and Copernicus who was forced to recant his beliefs by the church. These predictable reactions, of course, discouraged most free-thinkers from coming forward with new ideas. Newton, De Carte, Kepler and many others tried not to contradict the religious doctrine of their time, either by virtue of their own religious convictions, or by their understanding and concern of the consequences if they did. For many both considerations may have influenced their writings. Even Darwin stated that these considerations influenced his work. Maybe the biggest cap on free thinking, writing and speech, however, has always been the fear of peer and public ridicule when going against generally accepted beliefs or theories.

In the latter 1800's, following Darwin's theory, two well-respected scientists were independently promoting the idea of a universe finite in time which started as a singularity. This was Arthur Eddington and Sir James Jeans. The possibility of Space being finite was also being considered following the original concept of René De Carte --that Space was an extension of matter. In a universe with a finite quantity of matter, the limit of the extensions of this matter would be the boundary of the universe. There would be no space or reality of any kind beyond this boundary.

A half century later Einstein proposed an alternative possibility to a limit to space. He asserted the concept of a fourth physical dimension that curved space. Accordingly, if a space ship were to travel in a straight line, eventually it would end-up where it started, traveling in a fourth-dimensional circle. Space would be finite and bounded by the constraints of a fourth physical dimension.

In the 1960's two theories, as to the nature of the universe, were competing for acceptance. One was the Big-Bang theory which proposed a universe finite in both time and space, the other was the Steady-State Theory which proposed an infinite universe in both time and space. Within two decades the Big-Bang Theory generally won this competition for acceptance and advocates (but maybe for some of the wrong reasons and "evidence").

By using the definitions of time and space provided in previous concepts (# 20 & 21), we can evaluate the possibilities of a finite or an infinite universe. According to the perspective of the Pan Theory of Relativity, we can consider Time as defined in Concept # 20. Time, accordingly, was defined as change (motion) within fundamental particles which make-up all atoms. These changes would occur at a regular, continuous rate. These changes would cause particle-spin as well as nuclear spin of the atoms which they constitute. In a similar manner, time is measured today by the orbital revolutions of atomic electrons.

According to both The Big-Bang Theory and The Pan Theory of Relativity, the universe started as a singularity. Time started with the beginning changes in the singularity. Without this change time would be meaningless. Time, according to this concept, can be defined as a finite interval of cause and effect sequences, or simply an interval of change.

According to Concept #21 and the Pan Theory of Relativity, Space can be defined as simply the distance between matter, as an extension of matter, or as an interval which separates one part of matter from another. Based upon these similar definitions, there also would be a finite amount of Space. By virtue of these definitions both Space and Time would have an analog character and could also be called physical dimensions of matter.

The Concept of Space-Time, as a combined characteristic, is first attributed to Einstein. Its meaning is a point in space at a specific time. Time and Space, according to concepts 20 & 21, are both intervals, space-time is not. It is the concept of a relative point in space also located by a relative point in time, neither of which are intervals. Their combination also is not an interval. Although the concept of space-time is indispensable in the understanding of reality as well as many calculations of Physics and related concepts, it does not alter the individual realities of either time or space.

At any point in time, the past would have consisted of a finite quantity of time. The concept of a time before the beginning of the universe would be like considering a change that came before the first change, a contradiction in logic. The same could be said of the idea of space-outside-the-universe. When defining the universe as all-inclusive of mass, energy, time, and space as the distance between matter/ particles-- or as an extension of matter, the concept of space “outside the universe” or even “outside a primordial entity” would be another contradiction. Accordingly, a differing definition of space would also be a misconception.

All of reality, according to this and related concepts, is determined and defined by one fundamental particle which is the building block of all matter. Infinity/ Infinite is also defined as a mathematical Limit (as discussed in Concept # 24) which is an indispensable tool in many areas of Mathematics and Physics. But, according to this concept, any point or interval of time, past, present, or future, any quantifiable part of reality, whether analog or digital, everything that has a real existence is limited in its quantity. Everything (every thing) is Finite!

Above Concept's use: To assert that there are limits to reality

--**Concept # 27** (a concept to explain all of reality)

Concept: --All interactions in the Quantum world have a mechanical explanation as well as all interactions and events in the entire universe.

Above Concept's use: To assert that there is a physical explanation for all conditions of reality.

As far as Time and Space are concerned, a finite universe may be difficult to comprehend but the idea can be fully understood. On the other hand, Infinite time and Space may seem to some a simpler concept but most would concede that it is difficult to fully comprehend an infinite quantity of anything.

Discussion/ History: Concepts of Time and Space: Finite vs. Infinite. Both concepts of the universe may have their earliest roots in religion. A God (or the Gods) created the universe that was finite in Time and Space. In this Concept “Finite in time” means a beginning long ago but not forever in the past. Infinite space means an unlimited quantity without boundaries. This is how the Old Testament reads and similarly even older religious ideas of the beginnings of everything. For those believing in a universe infinite in times past, there would be no theory or story to explain a beginning because there would have been none. In many of the stories of creation, God (or the Gods) has existed forever and is infinite in capacity. Since he (she, it, or they) was spiritual rather than physical, space also would not apply to his (their) being.

The possibilities of full separation between religious tenets and the willingness in science to formulate theories and make assertions that might contradict religious concepts, generally began in full earnest with Darwin after his publication of *The Origin of the Species* (1859). Many earlier pioneers were tortured, killed, or otherwise required to submit to the will of the state or church-- such as Socrates, who was forced to commit suicide, Galileo, who in his later years remained under house arrest by the church, and Copernicus who was forced to recant his beliefs by the church. These predictable reactions, of course, discouraged most free-thinkers from coming forward with new ideas. Newton, De Carte, Kepler and many others tried not to contradict the religious doctrine of their time, either by virtue of their own religious convictions, or by their understanding and concern of the consequences if they did. For many both considerations may have influenced their writings. Even Darwin stated that these considerations influenced his work. Maybe the biggest cap on free thinking, writing and speech, however, has always been the fear of peer and public ridicule when going against generally accepted beliefs or theories.

In the latter 1800's, following Darwin's theory, two well-respected scientists were independently promoting the idea of a universe finite in time which started as a singularity. This was Arthur Eddington and Sir James Jeans. The possibility of Space being finite was also being considered following the original concept of René De Carte --that Space was an extension of matter. In a universe with a finite quantity of matter, the limit of the extensions of this matter would be the boundary of the universe. There would be no space or reality of any kind beyond this boundary.

A half century later Einstein proposed an alternative possibility to a limit to space. He asserted the concept of a fourth physical dimension that curved space. Accordingly, if a space ship were to travel in a straight line, eventually it would end-up where it started, traveling in a fourth-dimensional circle. Space would be finite and bounded by the constraints of a fourth physical dimension.

In the 1960's two theories, as to the nature of the universe, were competing for acceptance. One was the Big-Bang theory which proposed a universe finite in both time and space, the other was the Steady-State Theory which proposed an infinite universe in both time and space. Within two decades the Big-Bang Theory generally won this competition for acceptance and advocates (but maybe for some of the wrong reasons and "evidence").

By using the definitions of time and space provided in previous concepts (# 20 & 21), we can evaluate the possibilities of a finite or an infinite universe. According to the perspective of the Pan Theory of Relativity, we can consider Time as defined in Concept # 20. Time, accordingly, was defined as change (motion) within fundamental particles which make-up all atoms. These changes would occur at a regular, continuous rate. These changes would cause particle-spin as well as nuclear spin of the atoms which they constitute. In a similar manner, time is measured today by the orbital revolutions of atomic electrons.

According to both The Big-Bang Theory and The Pan Theory of Relativity, the universe started as a singularity. Time started with the beginning changes in the singularity. Without this change time would be meaningless. Time, according to this concept, can be defined as a finite interval of cause and effect sequences, or simply an interval of change.

According to Concept #21 and the Pan Theory of Relativity, Space can be defined as simply the distance between matter, as an extension of matter, or as an interval which separates one part of matter from another. Based upon these similar definitions, there also would be a finite amount of Space. By virtue of these definitions both Space and Time would have an analog character and could also be called physical dimensions of matter.

The Concept of Space-Time, as a combined characteristic, is first attributed to Einstein. Its meaning is a point in space at a specific time. Time and Space, according to concepts 20 & 21, are both intervals, space-time is not. It is the concept of a relative point in space also located by a relative point in time, neither of which are intervals. Their combination also is not an interval. Although the concept of space-time is indispensable in the understanding of reality as well as many calculations of Physics and related concepts, it does not alter the individual realities of either time or space.

At any point in time, the past would have consisted of a finite quantity of time. The concept of a time before the beginning of the universe would be like considering a change that came before the first change, a contradiction in logic. The same could be said of the idea of space-outside-the-universe. When defining the universe as all-inclusive of mass, energy, time, and space as the distance between matter/ particles-- or as an extension of matter, the concept of space “outside the universe” or even “outside a primordial entity” would be another contradiction. Accordingly, a differing definition of space would also be a misconception.

All of reality, according to this and related concepts, is determined and defined by one fundamental particle which is the building block of all matter. Infinity/ Infinite is also defined as a mathematical Limit (as discussed in Concept # 24) which is an indispensable tool in many areas of Mathematics and Physics. But, according to this concept, any point or interval of time, past, present, or future, any quantifiable part of reality, whether analog or digital, everything that has a real existence is limited in its quantity. Everything (every thing) is Finite!

Above Concept's use: To show that a limited quantity is the only condition in reality that can represent the full extent of anything or everything.

--Concept # 28 (a concept to explain all of reality)

Every question that can be asked concerning the beginning of the universe or any condition, event, or relative motion during any time frame, has a logical explanation which can be linguistically described in a simple valid way.

These questions usually contain the words “Why?, How?”, Where? and all have a question mark at the end of the sentence.

This concept is often referred to as the Causal Principle, which generally asserts that all causes, effects, conditions, and events, do not happen by chance. It is no longer a widely accepted concept because of the contrary concept The Principle of Indeterminism of Quantum Theory.

Einstein, based upon his arguments against quantum Theory and Mechanics, often alluded to his belief in the validity of the “causal principle”, which in general states that conditions and events, in general, do not happen by chance. The Causal Principle: is the name for a variety of principles, generally stating that every event has a cause, and that the same cause must have the same effect, or that the cause must have at least as much reality as the effect.

The related philosophical principle is referred to as Determinism.

Above Concept's use: To assert that there is an explanation for everything. (This concept is related to #27 above.)

--Concept # 29 (a concept to explain all of reality)

It can be stated: that for all (finite) times, matter (in the form of matter or fundamental particles) has always existed, but there never was a time before the first entity, yet time and the initial entity existed only for a finite period.

This Concept on first reading may seem to be contradictive or difficult to understand but it's simply a matter of definitions. When time is defined as a change in form or relative position of that which exists; The first entity hereing called a pan, accordingly, could not have just come into existence or just happened. The word “happen” as defined within the text says: Happen: “come into being or existence, become a reality.” There was no such thing as existence or even nothingness before this first pan. The word “before” in this context would also have no meaning. In a finite universe, by definition, there could have been only a limited number of cause and effect sequences or time intervals. The beginning change in the form of the first pan would have been the defining moment of time, the first interval, the beginning of time. This concept is related to concept #2 above, something can't come from nothing.

This concept alone, if true, would forever alter perspectives in Cosmology for all times.

--Concept # 30

The principle of least action, also called the **principle of stationary action**, is a variational principle that when applied to the action of a mechanical system, can be used to obtain the most parsimonious equations of motion to describe that system. In the related logic this principle relates to the concept that the most direct course (the shortest path), or simplest explanation, concerning what changes may have occurred between one condition to another, is the more likely explanation. The question then becomes “what is the simplest, most likely way to get from here to there.” In this way this principle is similar to Occam’s Razor.

This principle remains a central concept in modern physics and mathematics, having been applied to the theories of relativity, quantum mechanics and quantum field theory.

In physics, the **principle of least action** – or, more accurately, the **principle of stationary action** – is a variational principle that, when applied to the action of a mechanical system, can be used to obtain the equations of motion for that system. The principle led to the development of the Lagrangian and Hamiltonian formulations of classical mechanics.

The principle remains central in modern physics and mathematics, being applied in the theory of relativity, quantum mechanics and quantum field theory. Chief examples of this principle are Maupertuis' principle and Hamilton's principle.

Section 4, Perspectives

Chapter 17, Kinships, Summary, Lighter perspectives

(Similarities, abbreviated “Sm.”)

Sm. **The Big-Bang Theory** (previously discussed) sm. Pan Theory

----both theories are singularity theories (their beginning entity started as a singularity)

----in both theories the, universe is currently expanding

----both theories generally propose that the initial expansion rate was relatively much larger than the present observed expansion rate.

The Steady-State Theory (proposed by Hoyle, Gold and Bondi) sm. Pan Theory

Both theories assert that matter is continuously created at a constant rate and that this is the reason for the observed galactic red-shifts and the perceived expansion of the Universe. All of Hoyle’s Steady State models (SS) also include an expanding universe like the Big Bang model.

APT -- A similar process called Pan-Accretion continuously increases the number of pan-matter (as well as the number of atoms) at a continuous rate as was proposed by the Steady-State theory. Fred Hoyle, the most well-known and often quoted co-founder of this theory, did not preclude the possibility of the slow evolution of the universe within cycles of a steady state. Although The Pan Theory is not a steady state theory concerning all past times but proposes a singularity beginning like the Big Bang model. In some ways the pan theory has commonality with both the BB model and with Hoyle’s SS models.

Sm. **Quasi-Steady-State theories** (QSS) in general are modern versions of a generally steady-state but expanding universe. Some QSS models propose a finite universe in time and others propose a universe that is infinite in time. The Pan Theory might also be classified as a quasi-steady-state model but one without the expansion of space or the observable universe.

Hoyle-Narlikar Theory --- sm. the Pan Theory

This is also called a Variable Mass Theory and a Diminution of Matter Theory. It was/ is based upon the premise that space remains constant in relative size while the atoms within it shrink in diameter as time progresses. This Theory explains the red-shift of galactic light, and is a similar general explanation proposed by the Pan Theory. The proposed reason for this shrinking, however, is quite different.

According to Hoyle-Narlikar's theory atoms would also become denser as time progresses. Electrons would orbit closer to the nucleus while the atomic electrical charge would remain constant. Since this theory originally made no predictions, other than incrementally denser atomic matter, it has few advocates today.

Sm. Variable Mass Cosmologies in general have had a number of variations and proponents. The most prominent of this group of theories were: proposed by Paul Dirac called the Uniform expansion model; next was the above Variable Mass Theory by Hoyle Narlikar; next a proposal by Arp concerning the variable mass of electrons. The Pan Theory is also a variable mass theory.

String Theories sm. The Pan Theory

Both theories consider a type of string as the fundamental building block of all matter, and that matter itself is formed by loops of these strings. For this reason the Pan Theory can be classified as a String Theory.

Brans-Dicke Theory (BD) gravity sm. Pan-Gravity Theory

Sm. -- This mathematical theory of Gravity -- in a sense is also a cosmological theory since gravity is the primary influence that shapes the Universe as a whole. It is little known compared to prominent theories such as Einstein's Theory of Gravity and the competing Quantum Theory of Gravity (which proposes either gravity waves or gravitons as being the source of gravity). BD proposes that the gravitational constant G decreases as time progresses.

From its general conclusions BD theory could be considered similar to the Ipan Theory of Gravity which states that the gravitational "constant" is a function of the surrounding galactic field, therefore it is not a constant.

(Brans-Dicke Theory sm. Pan-Gravity Theory continued)

A.P.T. gravity is the result of a difference in Pan-field pressure which may vary to some extent from galaxy to galaxy. The gravitational constant G would accordingly increase during a galaxy's early formation and would decrease as a galaxy ages but the Pan theory does not propose an overall decrease for the universe as a whole. This so called constant in the Milky Way would accordingly decrease as the galaxy ages. This expansion, observable now, (Prediction) would be just a condition of pan relativity but would sooner-or-later result in the accelerated expansion of our galaxy.

Theories of Paul Dirac sm. Pan Theories

Sm. -- Paul Dirac was an Englishman who spent the latter days of his life in America. He is best know as being one of the founders of Quantum Mechanics. He formulated some of the fundamental equations used today. He also had his own theory of gravity which proposed a declining value of “ G ” as time progresses, similar to the Brans-Dicke theory above. He also developed a variable-mass theory to explain the red-shift of galaxies that was the first of such theories. The primary aspect was that the expansion of space and matter accounts for the observed galactic red-shift rather than an expanding universe.

His theory also was the first to assert the continuous creation of new matter. In all three theories above there is direct kinship with the Pan Theory of relativity. In the creation of new matter he proposed two ways that it could happen. The first way he called “**Additive**” which would be if matter were created throughout the universe at a steady rate and in a uniform distribution. The Second way he proposed the creation of new matter he called “**Multiplicative.**” In this process matter would be newly created in the volumes where matter already exists. In the former manner matter would generally be created in intergalactic space and in the latter it would be created primarily within galaxies. He also developed equations for both models.

The Pan Theories may have more similarities to Dirac's gravitational model than any others but there are still broad differences. Dirac had a gravitational theory where "G" decreases as time progresses for the universe as a whole. The Pan-Gravity theory asserts that "G" decreases for each galaxy as it ages which would differ from the age and rate of other galaxies. The beginning "G" for most newly forming galaxy would accordingly steadily increase. It would only begin to decrease as the galaxy starts losing its outer perimeter stars. Dirac's variable mass theory explains the observed galactic red-shift in a similar way that the Pan theory does. His theory also asserts the creation of new matter.

A.P.T. nearly all matter is created by the central Black Holes of galaxies and therefore would be created in a **Multiplicative** manner, so named by Dirac. There, however, are currently believed to be roughly 8,000 galaxy-size volumes of space for every galaxy in the observable universe. Although there is relatively speaking not much matter in this space it accordingly would be filled with field material (dark matter). This is where 99+ % of the pan matter, the building blocks of matter would be created. This would be called **Additive** creation. So if we wanted to play with Paul Dirac's equations we could come up with our own. If we're talking about creation of matter as it currently is defined, the creation of matter would mostly be **Multiplicative**. If we're talking about the foundation particles/ building blocks of all matter the process would almost entirely be **Additive**.

Alfven-Klein and Lerner Theories sm. Ipan Theory
--Plasma-Physics Cosmology--

Sm.-- One facet of these theories is that the Universe's expansion would be partly caused by matter/ anti matter interactions. The Ipan Theory of Galaxy formation and expansion

Also asserts that these matter anti-matter interactions surrounding the central Galactic Black Hole spreads a newly formed galactic matter outwards and is one of the forces which powers the observed forces of massive galactic jets, two jets emitted from opposite poles of a forming galaxy. Another facet of both theories relates to Galactic Magnetic Fields: both theories propose that these magnetic fields greatly influence the shape of a galaxy's eventual form.

A.P.T. -- Ipan Theory additionally asserts that Galactic Black Holes produce copious quantities of protons and electrons -- nearly all of the galaxy's matter which determines the position and quantities of these magnetic currents. Some might appear as very large scale lightening. Huge quantities of polarized fermions held in place by these large sporadic electric currents would accordingly originate around the central Black Hole. These currents would progressively trace ribbons of fermions down the arms of a newly forming galaxy which could influences atomic particle collection areas of huge galactic clouds and ultimately the stars which these clouds will form. Much of the related Ipan theory of galactic currents stems from the same logic as explained by theories in Plasma Physics but presently with little proposed enhancement excepting the added theory that most of a galaxy's matter (and mostly annihilated anti-matter) originated from the central black hole.

(Kinship of theory continued)

Comments: All of these theories are "seasoned". All have been around long enough for in-depth scrutiny (except of course the Pan/ Ipan Theories). None of these theories have been disproved. But aside from their stated similarities however, these theories are very different from each other as well as the Pan/ Ipan Theories. However when/ if the Pan/ Ipan Theories are proven, Fred Hoyle and Paul Dirac the famous theorists mentioned above, will both have another First.

The first to formally propose a modern theory that matter was continuously becoming smaller as time progressed was Fred Hoyle. The first to propose the continuous creation of matter was Paul Dirac. Fred Hoyle also made this same proposal in the Steady State theory. Another First for Dirac and Hoyle would fit very nicely with their currently accepted theories concerning quantum mechanics and stellar evolution respectively. Both theories also could be considered theories of relativity, since the amount of mass and its size would be relative to time.

-- Developing Theories --

Quantum Theory of Gravity sm. Pan-Gravity Theory

Quantum Theory proposes that there is a particle called the graviton which "carries" the gravitational force. Its associated waves are called gravitational waves. These particles and waves move and interact with matter resulting in gravity. This idea is very different from Einstein's warped space perspective—but does have similarities to the Pan Theory perspective:

-- First, in both theories particles initiate the force of gravity by interacting with matter.

-- Second, that there is a background field of particles that is "intimately associated" with the gravitational force.

(Kinship of theory, continued)

If a small difference were found this wouldn't prove this Ipan theory but would be strong evidence for the existence of an inflowing field and the related Ipan theory concerning the relativity of the speed of light to time previously discussed, (but still a constant speed relative to its surrounding field motion). Some notable differences: instead of "carrying" the force by contact, these particles force of acceleration into all matter is the cause of gravity.

Quantum Theory of Magnetism sm. Ipan theory

The magnetic force in Quantum Theory is "carried" by virtual photons. These particle/ waves are generated from the surrounding field and are eliminated by all charged particles primarily electrons and protons. These virtual photons accordingly would "carry" the magnetic force. This theory is only a developing theory to the extent that the field from which these particles are generated is a changing theoretical entity. Otherwise this theory is well established and is the dominant theory concerning the fundamental cause of magnetism at the present time.

The Ipan Theory of Magnetism could be considered similar to the quantum theory in the following ways: Both theories have "clouds" which surround charged particles, both have virtual particles which transfer the magnetic force.

According to the Ipan Theory however these clouds are particle vortices which along with ordinary field material contain pan-engagements which can become photons or virtual photons if engaged and emitted/ radiated by atomic particles or nuclei.

Instead of carrying the magnetic force their vector momentum causes the magnetic-force by the alignment of atoms in accord with their susceptibility which coincides with the electron structure within the atom. Magnetism results from this molecular/ atomic alignment and causes a difference in Fermi pressure, which in this case would be a vector force. There also are no pulling forces in Pan/ Ipan Theory—only pushing forces resulting from a difference in field pressure, and atomic engagements which resist separation. According to Ipan Theory, atomic and molecular vortices funnel field material causing "a difference in field pressure". Both magnetism and gravity would be initiated by a difference in field pressure.

Einstein's Unified-Field Theory vs. Ipan Field Theory

Einstein's Unified Field Theory

Einstein, in his later years, worked on field theory which he called a Unified Field Theory. His objective was to explain gravity and magnetism as the result of field interactions; one of his concept approaches was to consider a dynamic volume of space (now most often called the ZPF) that would accordingly influence matter in certain ways.

After developing a satisfactory mental model, his objective was to develop field equations to explain the interrelationships of the fundamental forces. His handicap A.P.T. was that in his writings he never could refer to the field as an aether-like material, since his fame in the first place had to do with getting rid of the aether concept. He played with the idea of pure energy that varied from known types, but were not energies of field particles. Finally, his alternative approach was to re-consider aether mechanics of physical field particles. He was never able to develop a Unified Field model that he considered adequate.

The standard particle model of today was only a developing theory in Einstein's time. The Strong Force at that time was considered to be the force which holds nucleons together and the Weak Force, involved with nuclear radiation, was being considered as another fundamental force. Einstein wasn't too enthralled by these new "a priori force theories" and expressed his opinions accordingly.

Compared to Ipan Field Theory

Einstein later stated his belief that the source for all so-called fundamental forces might be found in field theory. This also is a primary premise of the Pan Theory. Although Einstein did not develop equations that satisfied his assertions, his "handicap" of not generally working with the aether model of field material may have greatly increased the difficulty of his ability to form related mental images.

The relationship of Gravity to Magnetism, page 78D, in Ipan theory might be considered a relatively simple relationship explainable by the inverse square law of magnitude, which is an observed model for the intensity of gravity, magnetism, and light. The related Ipan theory asserts that unification of fundamental forces would be generally meaningless because what are presently thought to be fundamental forces were not pre-existing A Priori Forces at the beginning of time. They can all be explained by the motion and interactions of field material and matter. All present fundamental forces will eventually A.P.T. be explained by "simple" field theory and related experiments.

Vortex theory of the atom by Lord Kelvin sm. the Ipan Theory of field Vortices

In 1867 Lord Kelvin (Sir William Thompson) proposed the vortex model of the atom to explain all phenomena observed at that time. This was an aether theory where vortex currents had undetermined causes but, once created, maintained their intensity and existence in the field. Since this theory predates observations confirming the existence of atomic particles atoms or molecules it lacks many details. Following this theoretical work many others amplified vortex theory using observations obtained since Lord Kelvin's time, generating aspects now known as loop and knot theory.

The Ipan theory seemingly has a very similar perspective. According to the Ipan Field Theory, almost the entire mass of an atomic particle or atom is the result of the field vortex created by the spinning loop of fermions. This is the major constituent of matter that the pushing forces of gravity are able to act upon. It seems likely that many of these knot and loop equations might provide a mathematical basis for the related Ipan Field Theory. Development of some of these vortex, loop, and knot theories continue to this day. We now know of waves produced by particles that are stationary, and those particles/atoms with a high momentum relative to their gravitational field create more intense waves. We also know of the wave character of light as well as its particle characteristic, the photon. It's not a very big additional step to assert that both spinning and fast-moving quanta, particles, and atoms create waves in the surrounding field material as they spin and move relative to the field.

V.V. Kozlov wrote a book in 2008, *Dynamical Systems X: General Theory of Vortices*, in which he mathematically demonstrates analogies between mechanics, optics and hydrodynamics related to vortex motion. These models show how the mathematics relating to vortices might be used to explain the mechanics of these phenomena.

Halton Arp's theories concerning origins of Quasars and their greatly red-shifted spectrum sm. the related Ipan Theories.

Halton Arp, the renowned astronomer, has spent much of his career cataloguing unusual galaxies. One of his notable theories concerns the origin of Quasars as they relate to observed galactic red-shifts.

He has put together evidence to support another cause for this red-shift other than expanding space. He asserts based upon this evidence, that at least some, if not all, Quasars are closer, younger black holes and galaxies rather than extremely bright, distant entities near the edges of the observable universe. He has proposed that these quasars were ejected from adjacent galaxies which are relatively close to each other and that their red-shifted spectrum would be related to their youth as opposed to their great distances from us.

The related Ipan theory generally agrees that Arp's are more than mere possibilities. In at least some cases, as a very large black hole spins rapidly it could become unstable when centrifugal pressures become greater than the inflowing field pressure. At this point a large chunk of the central black hole could disengage and spin out of the central black hole at a very high velocity. The field pressures of the inflowing gravity would slow its relative motion and it might remain in a relatively stable position in the same galactic neighborhood once it had settled after ejection. According to the theory presented to this point, this could have been the beginning 'core' of many new galaxies. A black hole, by the theory within this text, radiates EM radiation in two ways: first, matter being pushed into the black hole could produce EM radiation that might be seen, providing it was beyond the event horizon of the black hole. Just as EM radiation that comes too close would be pushed in, close radiation that is barely able to escape this gravity well due to gravity would be heavily red-shifted.

As a galaxy develops, new matter being created from field material by the forces surrounding a black hole according to processes previously described, previously existing matter would accumulate as well. The volumes of orbiting matter would progressively extend further and further out from the black hole as time progressed, and the effects of its gravity would be considerably less for this outlying matter because of its much greater distance from the central black hole. Therefore, continuously more radiation and less red-shifting would be observed. The observable red-shifting would decrease and much of the highly red-shifted spectrum would be absorbed as heat by the surrounding matter.

This process would be progressive. As the galaxy develops, the red-shifting would decrease. This would make such black holes and galaxies very difficult to distinguish from a very distant active galactic nuclei (AGN). It would seem that at least a few, if not all, of those quasars which are thought by astronomers to be the largest and “brightest” galactic nuclei at great distances are actually, according to this perspective, much closer (and therefore less luminous) ordinary, young galaxies. If individual stars can be distinguished in the future, maybe their true distance might be determinable (Prediction).

In general, it would seem that Ipan Theory agrees with many of Halton Arp’s related theories. The quandary, however, is that this possibility should also be obvious to main stream astronomers; they have few theories in general to recognize galactic-size “naked” black holes as these are proposed to be. Einstein’s theory, along with lesser-known Big Bang theories, indirectly predicts them.

Einstein’s Special and General Theories of Relativity sm. the related Pan and Ipan Theories.

The equations of Einstein’s theory of special relativity were the same as those proposed by Lorenz. The sentiments of most theorists of the time, as well as today, were that Michelson & Morley’s experiment concerning the speed of light disproved the most prevalent aether theories of the time. Lorenz had based his theory of frame relativity on the existence of aether. Einstein’s paradigm was that there were no special frames of reference; therefore, all frames were relative to one another. His perspective was eventually adopted since there could no longer be an aether explanation if the aether did not exist.

Since Ipan Theory, as well as the Pan Theory in general, is a field theory based upon the existence of aether, Lorenz's model would be resurrected with a perspective that meets modern observations and experiments.

Einstein's equations of General Relativity (his theory of gravity) correctly predicted the small, non-elliptical variations in the orbit of Mercury that could not be predicted using Newton's gravity equations. The difference between the two equations is small and only varies based upon a very strong gravitational force at a very close distance. Still, Einstein predicted this variance and Newton did not. These same equations are being used to predict the overall mechanics of galaxies and, indeed, the universe as a whole.

According to the Pan-Gravity theory, Einstein's equations could be used only for limited close-range gravitational studies. It could not, accordingly, account for the condition of variable mass or the diminution of matter which, combined, is the primary tenet of the Pan Theory of Relativity. It also does not account for the relative stability of a galaxy's shape, the previously described "breakdown" of linear gravity at stellar boundaries (Prediction: not yet demonstrated by observation), and non-linear gravity currents that would not be based upon warped space.

The Pan Theory of Relativity proposes a flat three dimensional space, with the fourth dimension being the potential energy of field material that perpetuates the intervals of change we call time. The Pan Theory also includes a space-time concept as did Einstein. A.P.T. there are many unknown variables concerning gravitational (field) currents. There would accordingly be no overall gravity equations that could apply to stellar interactions, galactic interactions, and so forth specifically and equally without also including probability variations because of the unpredictability natural to vortex theories.

Other Pushing-gravity theories sm. Pan-Gravity Theory

Le Sage's & Nicolas Fatio's pushing gravity theories are related to the Pan-Gravity Theory because in all these theories gravity is a pushing force rather than a pulling one. Such gravity may be described by surrounding pushing vectors, and all theories use the "shadow effect" described below. All seemingly could account for the observed particle interactions of the ZPF recognized in particle physics today.

Some universal questions concerning these theories would be: what are the particles or forces of these pushing vectors? What are their speeds? If some small particle entity were being pushed into matter, wouldn't it need to be reflected, refracted or radiated away? Otherwise, matter would always be expanding and changing its characteristics. All of these theories have addressed these questions and have determined differing solutions.

The answers to these questions according to the Pan-Gravity theory are as follows: The pushing vectors have two facets. The first facet is the accelerating motion of field material being pushed into all matter, which results in the continuous EM radiation of this field material away from matter in a never-ending cycle. This forms a low pressure area in the field surrounding any given bit of matter; this low pressure area continuously draws in more field material. The second facet would be the individual vector forces of the largest ubiquitous forms of this field material other than conventional matter which, in Pan Theory, have been collectively called Pan Engagements. These would be the strongest parts of the inflowing vector field and would thus control the strength of gravity. These come in two varieties according to the Pan Theory: the first are photons, AKA quanta, combinations or packets of more than one engaged field particle that ride within EM field waves.

The second type is made up of neutrinos and other cosmic particles. The largest known quantities of these are electron neutrinos. Just from the Sun alone there have been calculated to be 50 trillion solar electron neutrinos passing through our bodies every second.

For typical electron neutrinos produced by the sun it would, according to current theory, take approximately one light year of lead to block half of these neutrinos. Almost all of them would move through the earth like a bullet through the vacuum of space.

Neutrinos, however, are quite different from photons. Although at or near to the speed of light, both high-energy photons (gamma rays and X-rays) and neutrinos readily move through matter; neutrinos, according to conventional theory, have the character of spin.

In Pan Theory this spin is real, but the relative speed of this spin for a neutrino would be very slow near the speed of light, according to Special Relativity.

The neutrino model of a Pushing “Graviton” (an alternative Ipan Hypothesis)

The earth is about 8 1/3 light minutes away from the sun but is 4.22 light years away from the other closest star Proxima Centauri. According to the Theoretical Physics Section herein (and prediction #13) the speed of all moving particles and matter would slow down as time progresses. The rate of this deceleration would be dependent upon the density and motion of the engulfing Aether field (dark matter) which is determined by the solar vortex and age and size of our galaxy. According to the Pan Theory, as their speed slows down, the rate of their spin greatly increases which initiates a newly forming vortex of field material created by virtue of this vastly increasing particle spin. Accordingly the older a neutrino, the greater its gravitational mass would become before it would eventually be absorbed by the surrounding field after transferring its momentum to matter by contact. Its energy equivalent however would remain the same because of its decreased energy of linear motion.

The primary factor to their influence concerning gravity is because of their vastly expanded vortex.

They would collectively interact with matter continuously, which would be evidenced by the force of gravity which they create as opposed to faster solar electron neutrinos that rarely interact with matter and have practically no field vortex because of their high speed and very slow spin. These slower neutrinos' linear kinetic energy and vortex would be absorbed, transferring a vector force against the matter that they interact with in the direction of their linear motion.

Of course, the discovery of these slower-moving neutrinos would not necessarily mean that they were stellar neutrinos that had slowed down. Still, consider the first factor proposed: the inflowing vortex field. What factor could be presented to explain why these pushing field vectors would represent an even force surrounding a gravitational body? Another type of pushing "graviton" could still confirm many of the premises and predictions of Pushing Particle-Gravity and its related field theory. Other probably less consequential forces could be the well-known vector forces of cosmic rays: alpha particles (helium nuclei), gamma rays, beta rays (high speed electrons), high-speed protons, and potentially larger nuclei. These well-known forces are believed to influence pushing gravity only slightly because the rays coming from the sun do not observably increase the gravitational effect during daytime as opposed to nighttime.

These vector forces are gravity-centered around all "large" matter because the surrounding field moves at a speed equal speed into this matter. This was the first gravity factor indicated above.

This field motion generally equalizes these forces except for up vs. down around large bodies of matter like the earth. The proposed slower moving neutrinos would be "shadowed" by the earth, meaning only some would be absorbed, while the rest would be refracted or pass through the earth. Those being absorbed would disengage and no longer be neutrinos (or any sort of larger particle at all). This was our definition of a Pan Engagement.

These vector forces would be absorbed by both the earth and everything on its surface. Within the field, those vector forces moving in the same direction as the field would accelerate; those moving against the field would decelerate. The linear motion of other particle vector forces would be bent in the direction of the field's motion. The vector forces going toward the earth would thus exceed the forces moving in the opposite direction primarily because of the shadow effect.

The Pan Gravity Theory is unique in that generally gravity at a distance and the gravity of strong gravitational bodies at close range would be non-linear (page 57E with the equational vector factor) forces, which better explains both stellar motion within galaxies and the motions of galaxy clusters.

All of these pushing gravity theories would interpret the speed of gravity differently from conventional theories, dependent on the speed of these field vector forces.

The speed of Gravity according to the Pan Theory:

Einstein proposed a thought experiment to illustrate the difference in the speed of gravity between General Relativity and Newtonian gravity. He said that if the sun were to instantaneously disappear without a trace, according to Newton's instantaneous gravity the earth would instantaneously fly off in a direction tangential to its orbital position at that time.

Einstein, using his warped-space model, stated that the warping of space would move at the speed of light, meaning that gravity would take about 8 1/3 minutes to disappear and only then would the earth would fly off tangential to its orbital motion around the sun.

Pan Gravity theory would have a similar answer to both these theories as far as something new entering the gravitational field. Newton would say that the force of gravity would act instantaneously upon it. Einstein would say that warped space is already in place so that a new entity would naturally follow the warped lines of space without a time delay, which accordingly would be instantaneous. The Pan Gravity theory proposes a similar answer. The field motion toward matter is already in motion and the vectors which it contains would cause an almost instantaneous action. No gravitational force would have to travel from the source to the object. All three theories would have a similar outcome in this case. But in Einstein's thought experiment the results of Pan Gravity theory would take longer because of the proposed slower moving field vectors.

According to the Pan Gravity theory, first the field motion toward the sun would dissipate at the speed of light. The earth would react to this after $8 \frac{1}{3}$ minutes along with the disappearance of sunlight. At that time the earth would slowly begin to move out of its orbit away from where the sun was. If the average speed of these gravitational vectors were, for instance, roughly $\frac{1}{4}$ the speed of light then the earth would continue in this slowly increasing orbital motion for another 25 minutes until the field had generally stopped its inward flow toward the sun and the shadow effect of the sun would have ended the absorption of a similar number of outward moving vectors.

The time that this event would take, at the average vector speed proposed (roughly $\frac{1}{4}$ the speed of light) according to the model, would be $33 \frac{1}{3}$ minutes. After that time period the earth would, as in the other models, fly off tangentially to its slightly changed orbital position.

Chapter 18, Summary, Questions and Answers: Explaining The Pan Theory and the supporting Ipan theories in a nutshell.

The Pan Theory can be categorized as two separate and independent theories which are combined within the brief paragraph of The Pan Theory. Based upon the red-shift of galactic E.M. radiation discovered by Hubble, the present dominant consensus is that the universe is expanding in size relative to the matter within it (such as galaxies, stars, atoms, protons, electrons, etc.) Using any arbitrary form of matter as the measuring stick, the universe would appear to be getting larger.

The First theory can be explained in the following way: Realizing that size is a relative condition, we could consider as an alternative perspective that the universe is constant in size but its individual parts, from galaxies to electrons, are becoming smaller over time. From this perspective, everything would appear exactly the same to us as we now observe, accept that the conservation of mass and energy would seem to be violated. Is there a way that this law would not be violated and that matter could still continuously get smaller? There would be at least two ways.

The first can easily be observed. All atomic matter is giving off energy by virtue of its spin, which increases the total amount of energy in the universe; this could be offset by matter very slowly getting smaller. This is an “understandable” truth. The second way would be if all matter, separate from energy, gave off a little bit of itself in the form of a fundamental particle, a rate of about 1/10,000th every half million years. These fundamental particles would themselves be slowly decreasing in size as they would increase in number. This new material, caused by this diminution of matter, would become a part of a background of and elementary particle-like field material, dark-matter particles which could eventually reform into new matter. In essence, the mass of the universe as a whole would remain constant while the mass of a given particle would ‘decrease’ (relative to the rest of the universe) in time.

Why are these better perspectives than the seemingly simpler perspective that the universe is expanding? **There are two very big advantages of this perspective** of the diminution of matter as time progresses, over the standard Big Bang model.

1) In this perspective, the number of elementary particles increases as we go forward in time, but decreases as we look back in time. Conceptually as we would go back in time, the quantity of matter would keep decreasing to a single particle. In the beginning this particle could have been the beginning simple elementary particle that by slow and simple division started the entire universe. This same fundamental particle would accordingly be the sole fundamental building block of all matter today and for all time periods.

2) The Hubble red-shift from this perspective can be equally explained by longer wave lengths radiated from larger diameter atoms in the past, but additionally it would explain the perceived (but unreal) expansion of space as simply a condition relativity, The Pan Theory of Relativity. The universe would accordingly be much older and simpler. This perspective seemingly would assert maybe the simplest of conceivable beginnings of the universe and ample time for at least several galactic life cycles. An older universe could more easily explain the formation of the most complex galactic structures that we can now can observe which are more difficult to explain according to a much younger age of the universe predicted by the standard model.

The Second part of the Pan Theory is that:

— All forms of energy and perceived fundamental forces are simply the result of interactions of matter and field particles. Gravity and magnetism would accordingly be pushing forces of field material which affect atomic matter. The Strong and Weak forces would be the result of physical connections between conjoined particles which resist separation. Both Time and Space could be considered dimensions of matter. All of reality could be explainable by physical conditions and nothing else.

Neither of these two theories requires the other for its existence; both, accordingly, would be independent theories.

Basic Tenets of the Pan Theory

The Pan Theory -- as apposed-to other theories -- is a fundamental all-inclusive Theory-- a Theory Of Everything or TOE -- which:

- 1) -- has no premises concerning pre-existing laws of physics.
- 2) -- makes no “a priori” assumptions of pre-existing forces.
- 3) -- has only one independent, primary force which perpetuates both fermion spin and time.
- 4) -- has only one fundamental particle which, makes up all of reality.
- 5) -- all forms of energy would be interactions of matter and/ or field material.
- 6) -- pure energy, separate from field material as its source, would not exist.
- 7) -- all of reality would be a physical condition.
- 8) -- both time and space could be considered dimensions of matter.
- 9) -- a Pan, and therefore the Universe, would have only three fundamental characteristics:
substance, volume, and potential. All of which collectively could be described by a single word, Capacity.
- 10) -- a comparatively small amount of new physics would be needed to explain reality compared to BB models such as Inflation, String theory, etc. This simpler set of theories would follow Mach’s economy-of-theory principle.

PAN THEORY DEFINITIONS:

- **Matter** would be made up of Pan-chain which in turn would be made up of individual pan. Collectively they would be the only substance of reality.
- **Energy** would be a condition of relative motion of matter and field material, and can also be defined as a potential that perpetuates such changes.
- **Forces** would be either a transfer of motion, or a mechanical connection which would restrict the separation of conjoined matter.
- **Space** would be a measurable distance, area, or volume encompassing matter. Both Time and Space could be considered an extension or dimension of matter.
- **Time** would be a measurable interval of change in matter using a standard. It may be considered as a “driving” characteristic of matter which would be initiated by matter’s innate potential energy.

Definitions and terms of both the Pan and Ipan theories

Pan Accretion: One Pan becomes two, two become three, three become four, etc.

All pan-chain accrete in this manner in a continuous chain of connected pan;

as pan accrete, pan size decreases and pan numbers increase at a constant rate.

Pan-Chain: A string of individual Pan connected together.

Pan material: a uniplasm; homogeneous ether material”

Pan Shape: modeled to be an orb / spheroid

Pan Characteristics: A wound uniplasm that perpetually unwinds and concurrently rewinds; as it decreases in size as it increases in number as time progresses.

Matter Diminution: A principle of Pan Theory relativity which states that all matter decreases in size, while increasing in number, as time progresses.

Pan Engagement: two or more pan-chain loosely entwined. These engagements hold nucleons together. Many forms of engagements outside of nuclei could be readily disengaged by direct encounters with matter. No forms, according to current theory, would be stable.

Pan Entanglement: The densest state of combined matter, thousands of times denser than an electron or proton.

Pan-field: Any volume of space usually associated with a gravitational field. It is a field of aether mixed with matter.

Aether: a non-specific part or whole of a Pan-field which determines the speed of light, the gravitational constant within a galaxy, and the resistance to the acceleration of matter.

Pan Plasma: a thick plasma of pan-engagements and pan-chain which have motion but many of its field particles have been broken and are too short to easily engage each other and the pan themselves are not dense enough to be entangled.

Pan-Matter: Denotes the matter characteristics of pan-chain

Pan Count: Denotes the number of pan in an individual chain or matter.

Pan-chain are strings or coils of pan which collectively form a background field of aether.

Atoms: are comprised of a nucleus, electrons, and a spinning vortex of field material.

E.M. Radiation: Light and other EM radiation is comprised of photons which are a bundle of loosely attached Pan-chain emitted by spinning fermions at the speed of light. As they move through the aether, they push up a wave of field material. These quanta are held within the troughs of fermion waves produced by the particle which emitted them. These waves are continually reinforced by the photon's momentum within them.

Gravity: is caused by a continuous inflowing of Pan-field material into all matter which is subsequently radiated away by the nucleus and electrons of all atoms.

Magnetism: is due to an atomic alignment within a permanent or electro-magnet which produces an electrical current within the magnet. The current produces non-coherent microwave frequency waves which causes a similar polar atomic alignment within the magnetically influences material This resulting atomic alignment in the influenced material results in a single directional Fermi (electron) pressure differential (electron pressure) and a differential pressure of aether cause an aether flow which can move unrestricted susceptible matter such as iron.

SUMMARY AND COMPLETION OF PAN-IPAN THEORIES. PRINCIPLES AND PERSPECTIVES

The Pan Theory summary

::--that one elementary particle started the entire universe. By slow division it became strings and clusters of the same identical particle. As these elementary particles decrease in size, they increase in number, from the beginning of time to the present. Their combined forms, size, density, intrinsic and relative motion, position, and interactions are the sole constituents that make up all forms and states of matter, energy, “fundamental forces,” space, time, and the entire universe.

The Pan Theory Axiom: to exist, both substance and space require the potential to change in form. The converse implication seems more obvious: potential requires both substance and space.

Ipan Simplicity Perspective: All that exists in the entire universe evolved from, and is made up of, the same entity. That entity, as well as the entire universe, can be described as having but a single characteristic: Capacity, with three facets: 1) substance, 2) volume, 3) potential.

Philosophical Principles and considerations guiding the Ipan theories

1. The principle of Occam's Razor: - the simpler answer is probably the better answer, all else being equal.
2. Ipan guidance Principle: a better answer can be found using the same information and knowledge, if arranged and formulated by improved perspective or insight.
3. Ipan boundary stipulation: To the extent that the universe has capacity, in like volume it has existence.

4. Ipan precept: Always look for simpler answers. Just because they haven't been found yet doesn't mean they are not out there to be discovered or distilled. All simple answers are not true but all true answers that cannot be simplified for general understanding are probably not the whole truth, just a complicated perspective of a small part of a truth.

Ipan Measurement Theory:

-- Defining types of measurements --

Matter - measurements of its form, quantity, density, state, or condition.

Energy - measurements of the condition, motion, interactions, and potential of matter; measurements of EM radiation, magnetism; measurement of the potentials of complex systems.

Space - measurements of the relative position or extent of matter,

Time - measurements of interval of relative motion change matter.

Ipan Field-Hypothesis of Physics:

---IF all of physical reality consists of only matter and energy engulfed by fields of aether

AND

—IF fields always will have an extent of unpredictability

THEN

formulas and laws of physics involving both the very large and the very small, as well as everything in between -- can only be an approximation with varying degrees of probability — not exact representations of reality

THEREFORE

There will always be possible exceptions regardless of the circumstances.

— SUMMARY —

COMPLIMENTARY IPAN THEORIES IN A NUTSHELL

The following is a summary of some of the major Ipan Theories presented in prior text.

Ipan Bead Theory: The universe started as a single particle which very slowly unwound and concurrently rewound (like a wound-up rubber band), becoming two attached particles identical to the first in all but size (being slightly less than half the original's size) with an umbilical between them. These two particles, through the same process, became three, three became four, etc., until there was a string or chain of these particles, all attached by umbilicals. This chain developed into a helical form because of the unwinding torsion of its "bead" constituents.

At a specific length this original chain would have broken in half because the stress of unwinding would have become greater than the torsional strength of the umbilical link in the middle of the chain. Each new chain continued to grow in length and each, again, would break into two once they got long enough: two chain would become four, four would become eight, eight would become 16, etc. As the density of these unwinding chain increased, they would have begun to push and crowd each other, which would put additional stress and strain on some chain. Some of these chain would eventually have broken into smaller lengths than had previously existed, breaking up their symmetry and identical appearance. Eventually there would accordingly have been huge quantities of these pan-chain of varying lengths and coiling.

Atomic particles are made up of long strings of pan in a chain which are spring-like in form and character that have been bent into a loop by external and internal forces. As this looped pan-chain unwinds, the body of the loop would start spinning to relieve the stress within the chain caused by the loop. We call the resulting particles fermions: protons, electrons, and their anti-particle equivalents. Neutrons are engaged particles that can easily separate (excepting when they are engaged within an atomic nucleus). Virtual particles and photons are short lived imitations of their counterparts in reality. They either lack the appropriate configuration or fully-looped engagement to become a stable particle.

The Ipan Theory of Gravity: states that gravity might best be described as a pushing, rather than a pulling, force which is perpetuated by physical contact rather than being caused by a force at a distance or the warping of space. It is a force initiated and sustained by a surrounding Pan-field which continuously flows and accelerates into all matter. This field is subsequently radiated by that matter in a less orderly fashion, continuing the in-flowing cycle of gravity's force.

Gravity is caused by a difference in field pressure that affects four different entities of low field-pressure. The first entity could be called a “void” and could be thought of as a low-pressure weather system. The surrounding Pan-field will flow into this less dense field area in a vortex motion because it is the direction of least resistance. This flow, once it starts, would continue for a long period of time... even when the field density within the area might become greater than the inflowing field. This is because the kinetic motion within this low-pressure field does not develop fast enough to oppose the inflowing field vector once it starts. If the central field material achieves a high enough density before the field dissipates, the result will eventually be a galaxy or even a galaxy cluster.

— We have called the second entities which involve gravity “Pan-Engagements.” Pan-Engagements occur in high-density/ energy fields and are also created by the nuclei of matter. They are simply loose conglomerates of strings of Pan-chain of varying shapes and sizes lightly engaged with each other. They can generally be both created and disengaged by the spin of matter.

Within the field they are larger entities physically which would therefore have more forceful gravitational influences on their encounters with matter than would smaller, unengaged pan chain. These engaged pan-chain affect reality in a number of ways. They can accrete into Pan-Entanglements like those which became the first black holes. The gravitational influence surrounding these black holes, in turn, created via Pan accretion the first matter, which became the first stars and galaxies. They are the elementary parts of the photons which are radiated away from the atoms by electrons. Without this radiation, matter would conceivably be inundated by these engagements.

One arm of a proton engages one arm of a neutron, and even though they continue to spin, this engagement holds and binds the atomic nucleus. Engagements are also the means by which unpaired neutrons join the nucleus by loose connection, and protons engage with large pan-chain and electrons to become neutrons. All these become the third entity that controls gravity, matter. Since matter continuously radiates away field-material, new material continuously flows in. For this reason, matter creates a low-pressure field within the surrounding vortex it creates.

The fourth entity is called a Pan-Entanglement the largest of which are called black holes. These entanglements, as mentioned earlier, start as Pan-Engagements that are tightly pushed together at the centers of Galactic Black Holes. They generally have a smaller resistance (pushing-back force) vector than matter has, concerning the pushing forces of gravity. Unlike matter they will continuously get larger by gravity's in-flow of field material which it captures until they eventually start radiating huge quantities of electrons and protons which would eventually form new stars or galaxy. Prediction: They have a maximum size beyond which they become unstable and break apart because of their spin radiating away one or more pieces of the black hole, most of which will leave the galaxy because of their speed. They will become "new" black holes somewhere else.

IPAN THEORY OF GALAXY CREATION, MECHANICS, AND THE CREATION OF MATTER

A galaxy begins as a large inflowing Pan-field creating and afterwards encircling the initial Black Hole, which is a large Pan-Entanglement. This Pan-Entanglement grows ever larger from the inflowing Pan-field, which develops a vortex motion. It may combine with other large Pan-Entanglements creating an even larger entanglement and stronger vortex.

Eventually these Entanglements may form a very large black hole which can generate copious quantities of matter. Some loose long Pan-chain would be bent around in loops by the compression forces of the inflowing field material, but only a small percentage of these looped particles are of stable configurations. The most stable and dominant of these are the atomic particles called fermions (protons and electrons). Huge quantities of protons and electrons are jettisoned outwardly from this dense, high-energy area in two giant jets at opposite poles of a spinning black hole.

Very large, short-lived stars form from stellar remnants and dense fermion clouds surrounding the central galactic black hole of a newly forming galaxy. New stars, in this dense area of fermions, form very quickly and very close together and therefore are prone to collision and super-nova explosions, creating a giant cauldron of potential galactic material. Much of this material is continuously recycled through gravity's influence, keeping it close to the galactic center. However, in time, hydrogen, helium, and increased quantities of heavier materials expand outwardly from this center. Through collisions and explosions, outward moving material would become the seeds for most of the stars of the galaxy. The remaining stars could form from burnt-out stellar remnants, errant stars and planets, and dwarf stars all from prior formed galactic material.

Galactic Cycles: A galaxy's expansion accelerates when its internal Pan-field's density and pressure increases and the inflowing field material quantity is less than the galaxy's extra-galactic radiation. Large galaxies remain visible after two mean stellar generations. Because of the process of Pan-Accretion, this one galaxy will provide the seed material for future galaxy clusters, which will generally occupy and surround the same area of space as the parent galaxy. Each new galaxy in the cluster, in time, will repeat this process. Galaxies form from the inside out and most expand their entire life until they dissipate over about 60 billion years. The later stages of this expansion would accordingly accelerate.

IPAN-THEORY OF LIGHT AND OTHER E.M. RADIATION

Light has two constituents. The first is called a quanta (or photon), which is a packet of mostly loosely-bound Pan Engagements. The second is a wave of field material which is pushed up by the emitting electron and reinforced by the quanta's momentum within it. Particles within the wave have only limited motion but the wave's velocity is the speed of light. The mass potential of the photons is caused by its great speed (the speed of light). Those same photons at rest would not be called photons. They would be called Pan-Engagements, or when disconnected, they would be called pan-chain and would then only be inconsequential parts of the physical background field which contains them. These Pan-engagements become E.M. radiation when fermions propel them. They may be reflected by bouncing off of larger entities such as electrons, protons, nuclei, atoms, and molecules.

IPAN-THEORY OF THE MICROWAVE BACKGROUND RADIATION

The observed microwave background radiation is being radiated by both intra-and intergalactic matter. Its temperature is primarily caused by the heat from absorbed starlight. The variations of the microwave background would generally be a radiated equilibrium temperature of a large volumes of atomic matter in space, primarily iron, graphite, and organic compounds acting as re-radiation mechanisms of starlight. A second mechanism would be that the surrounding field material (aether) in space interacts with this matter resulting in a form of aether/ ZPF heat conduction. There is also evidence for a third mechanism to support the assertion that local hydrogen in the Milky Way is at least one source of this low-temperature radiation. According to this alternative theory the microwave background that we observe would not, accordingly, be the remnant of a Big Bang as current theory asserts.

When contacting a fermion, a photon's wave can be disrupted, causing the photon to interact with the fermion and its surrounding wave vortex. The photon's momentum would be absorbed and it would once again become "inconsequential" field material.

IPAN THEORY OF QUASARS AND B.L. LACERTAE (LACS)

Most Quasars and B.L. Lacs are the cores of very large, distant, active galaxies and proto-galaxies (beginning galaxies) called active galactic nucleuses (AGN's). Some of their light has been absorbed and re-emitted as microwave radiation or heat by intervening galactic "clouds" of matter, causing an observable decrease in visible light and an increase in lower-frequency light and radio waves. Additionally, their magnitude is amplified by the Pan-Accretion Principle which augments all matter and light as time progresses (See Formulae). B.L. Lacs are galaxies which emit a lot of radiation in their spectra which is not original and has been re-emitted by intervening intergalactic 'clouds' possibly many times and therefore are missing many distinct absorption and emission lines in their spectra. Both are probably "very active" Seyfert type galaxies or proto-galaxies. Their luminosity would be magnified primarily by Pan-accretion, but also by a second factor where high frequency radiation is absorbed and re-emitted as increased quantities of lower-frequency radiation. B.L. Lacs may simply be quasars with "smeared" absorption lines. Note that some of these quasars are probably misidentified. They instead would be much closer young, developing galaxies surrounding a relatively "naked" black hole as previously discussed.

IPAN THEORY OF GALACTIC BLACK HOLES

This theory asserts that Galactic Black Holes consist of a very dense theoretical state of matter called a Pan-Entanglement. This state of matter is the foremost precursor of new galaxies and is the innermost area of the black hole, which is usually near the center of the galaxy. These central black holes create most of the matter in the galaxy, in the form of electrons and protons, which form the galaxy and, therefore en-masse, the observable universe.

COMPLEMENTARY IPAN THEORIES CONCERNING THE FORM OF THE UNIVERSE

Several mutually supporting Ipan theories concerning how the universe works are: that the universe expands toward a mathematical limit; that the observable universe is much older and larger than we currently believe; and that it is denser in a central area and thins out into a "Pan-field" area where particle matter, light, and other E.M. radiation does not exist, leaving only sparsely populated field material

IPAN ATOMIC THEORY

The spinning nucleus of an atom creates a vortex which surrounds it of field material called Pan-chain. The intensity of this vortex determines the number of electrons that it can hold. An electron's distance from the nucleus is primarily determined by the waves which are created by the nucleons. The location and spacing of electrons within an atom are determined by the extent of the nuclear vortex (caused by the number of nucleons) and how the electrons occupy the waves thus created.

IPAN THEORY OF HEAT

Heat has two constituents: the primary source is the molecular motion of matter described by the kinetic theory of heat. The second source is unknown in today's physics, and is concerned with the kinetic Brownian motion of field material, which would have similarities to the molecular motions of compressed gases and of liquids. This would be of most noticeable significance in the low-temperature fields of both intra- and intergalactic space. These fields absorb and transmit minor atomic and molecular heat variations of matter and distribute it evenly throughout space in the form of "kinetic" aether motion which interacts with matter causing a relatively even distribution of stellar heat throughout the relative matter vacuum of space. This explains the background radiation that was predicted in 1920 by Arthur Eddington (concerning galactic heat) and discovered in 1964 by Penzias and Wilson.

IPAN THEORY OF MAGNETISM

Magnetism is initiated by incoherent E.M. radiation (radiated at about 10^9 Hz) and both photons and virtual photons which react with atomic electrons. These cause an atomic alignment causing a Fermi electron pressure differential which acts upon susceptible matter because of its molecular and atomic alignment. This alignment funnels field material and can cause a current of free electrons. This field material funneling causes differential pressures within the field which moves susceptible matter toward low pressure resistant field areas and away from high pressure producing areas.

IPAN THEORY OF WAVE-PARTICLE DUALITY

All subatomic particles and quanta (E.M. radiation) push up physical waves of Pan-chain as they spin and move relative to their surrounding field. The larger the particle and the greater its speed, the larger the wave it produces. Most waves of EM radiation are created by atomic particles and are reinforced by the momentum of the photons within them. Therefore EM radiation is usually both a particle and a wave at the same time. It can become simply a weak wave without photons, but never photons without field waves.

———— Ipan Theory of Particle Spin

Relationship of Pan unwinding to Particle spin: The Ipan Bead Theory was developed to enhance the overall Ipan theoretical mosaic. This theory describes the characteristics of an individual Pan, including its essential potential energy which any conceivable beginning must have had to perpetuate its change.

This characteristic was described as “the torsion of linear unwinding and re-winding.” Pan collectively un-wind in a looped string (Pan-chain), then rewind. It is the cause which perpetuates all intrinsic particle spin.

Summary of mathematical formulations of the Pan Theory

Factor Adjustments & Equations

The Pan-Gravity formulations:

The Centripetal Force of gravity:

$$\theta_1 \approx GMm / r^n$$

The Centrifugal Force of gravity:

is the Newtonian force minus the Centripetal Force

$$\theta \approx GMm / r^2 - \theta_1$$

where θ_1 is the linear force of gravity toward the source; θ is a tangential force of gravity; G is the gravitational constant*; M and m are the gravitational masses; and r is the distance between them. “ n ” is an exponential factor that can be between zero and infinity (see pages 57E1.1 through 57E2 for the entire explanation)

(from page 102)

1) Pan Accretion: As time progresses: the total number of atoms in the universe increase by 2^F (two to the power of F), where “F” would be determined by the assessed time period divided by the minimum Pan Doubling Period of 5 billion years.

$$2^F$$

2) Quantity Diminution: When viewing/ analyzing galaxies we are looking back in time—Matter would accordingly have been larger and less plentiful. The factor to determine the relative change in the quantity of matter when looking at distant galaxies and therefore back in time would be 2^{-F} (2 to the power of $-F$; example 2^{-2} is the same as 2 divided by 2^2 , which is $1/2$). When using the same Pan doubling period (5 billion years). 10 billion years ago the number of atoms in the universe would have been 1/4 of what there are today, and each would have been 4 times larger in volume and mass. The cube root of 4 = 1.5874, which would be the increase in the size of the (1.5874) diameter to have been 4 times larger in volume and mass (where the volume of a sphere is $4/3\pi r^3$ and is proportional to mass; when the diameter doubles the volume and mass increase by a factor of 8).

$$2^{-F}$$

3) Galaxy red-shift factors: When looking back in time the diameter of a galaxy or cluster would appear larger as would the space between galaxies, both factors would determine a galaxy’s observed red-shift. The factor to determine the increased size of space since that time, and the increased diameter of matter and longer wave lengths of its radiation at that time would be $2^{F/3}$

$$2^{F/3}$$

In the Pan Gravity theory G can vary with time within a galaxy

Summary of mathematical formulations (continued)

(from page 102)

Factor adjustments & equations

All velocities, including the speed of light, will appear to be greater than they really were (as we look back in time). The calculated velocity should be reduced by the factor $(2^F)^{-1/3}$.

$$(2^F)^{-1/3}$$

To calculate the actual time that it took light to get here from a distant galaxy and therefore the actual age of that light, transform the distance of the galaxy in light years to the “F” factor, then calculate $[(2^F)^{-1/3} + 1] / 2$. Multiply the answer times the distance in light years. The result will be a shorter time period than the distance in light years. This would be because the speed of light was greater in the past and decreases for any given interval by the factor $(2^F)^{-1/3}$.

$$[(2^F)^{-1/3} + 1] / 2$$

To calculate the real magnitude of a distant galaxy multiply the observed magnitude by the factor 2^{-F} .

$$2^{-F}$$

Instead of being a constant, 20km / sec. per Mly (million light years) the conventional Hubble recession value, the calculated recession velocity would be the variable H_1 . This variable would be used just like the Hubble constant to determine the average recession velocity to galaxies, supernovae, gamma ray bursts, etc., to determine their distance and therefore their calculated luminosity. The proposed change is based upon increasing distances for each progressively larger “z” increment. The formula is based upon changes in the relative size of matter to the space that it occupies as time passes as asserted by the Pan Theory of Relativity. The Hubble formula itself would remain the same. In the Hubble formulation the Hubble quotient of the equation, H_0 , would be replaced by the factor H_1 as determined from the equation to the right.

$$H_1 = \frac{48}{[1+z]^{1/2} + 1} \text{ (km / sec./Mly)}$$

Chapter 19, Answering three Big Questions

Question: WHERE DID THE UNIVERSE COME FROM?

Answer: Truism: Everything in the universe is a part of the whole. Every part of the universe has a place like a piece of a jigsaw puzzle which relates to the whole. Each part has an origin and place where it came from relative to the whole. Conclusion: The whole universe, however, is all possible locations combined. It is not part of a bigger puzzle. The place of its origin is the same place as its existence. No other place has a possibility of existence A.P.T..

Question: — WHAT STARTED THE UNIVERSE?

Every part of the universe had a time of its origin, like a date on a calendar, and something that started it - something else that was the source of its origin. The whole universe, however, consists of everything that there is by its definition herein (which is everything, physical or otherwise, that has existence in any/ every plane or dimension). It could not, accordingly, be a part of another entity. The source of its, origin- what started it - can be considered a part/ dimension of its own makeup. It is, accordingly, self-perpetuating by virtue of its potential energy.

Question: —WHY DOES ANYTHING EXIST? WHY ISN'T THERE JUST NOTHING? WHY NOT JUST EMPTY SPACE? (a question most notably proposed by Stephen Hawking)

Answer: Everything in the universe is part of the whole. Each part, including space, can be considered a separate facet of matter. Space, accordingly, is the measurable extent of the relative positions of matter. The changes in its density delineate the boundaries of matter. It is not something in and of itself; it's but a part of the whole, the vacant dimension of inter-related matter. Space without matter or energy would be indefinable. Nothingness, or completely empty space, like all of the other limitless imaginable existences, is simply not a possible state of reality; accordingly, there would be just one possible state of reality, which would be the same state of reality that has always existed: the one that we live in.

(Summary continued) APT

Because of the identical configuration of Pan-chain there is a limited number of stable ways and lengths which permit looped particles to form. The restrictions of its bending moment, resonance after formation, and the pan-chain unwinding rate, and other considerations would strictly limits the number of different stable particles that could form, as well as the extent of their stability. When particles decay (become torn apart) their Pan configuration limits the ways in which this decay can occur, and the types of stable or unstable particles that can be generated from this decay. These parameters, however, do necessitate an exact number of Pan in a remnant chain, or particle.

For example: An electron might contain a chain that varies from--let's say--520-540 Pan in the particle chain and while remaining stable. This is because its gravitational mass is almost entirely determined by the size of its loop and the resulting rate of its spin. The field vortex produced by this spin contains nearly all of the particle's observed mass. These factors are generally constant after the particle's formation and stabilization (which has been observed to occur here on earth with interacting gamma rays, within a fraction of a second), therefore protons, electrons, and other particles can measurably have nearly identical masses but may have a variant pan-count (as indicated in the above example). The variance, at least to a minor extent, is a necessary part of Pan Theory if Pan-accretion is occurring.

Neutrinos and other “neutral” particles? There are three known types of neutrinos: electron, muon, and tau neutrinos. Each is identified with its associated particle through many studied particle interactions. A.P.T. Of known neutrinos, only electron neutrinos are believed to be stable particles which may have a long half-life. All are formed from pan-chain which become engaged with their associated particles during atomic interactions.

"Quark jets" is accordingly the present name given to small high-speed pan-chain (neutral) of seemingly innumerable sizes and energies observable from proton accelerator collisions.

Summary (continued)

Cosmology: The Strengths of a theory:

Summarizing the pros-and-cons concerning the Standard Big Bang Model, the Pan Theory, and other cosmological models

At least four characteristics of any type of theory may be used to determine its strengths and weaknesses concerning its validity and structure. 1) The theoretical model should be able to fully explain prior observations and all related past observations and experiments with a modicum of theory. 2) Within its scope, the model should be able to make numerous quantitative and qualitative predictions by a consensus of its practitioners, rather than a few relatively unknown and divergent predictions made by many of its practitioners. 3) New observations and analysis should tend to confirm the model and its predictions rather than being unpredicted surprises, requiring fundamental changes or ad hoc addendums to the theory. 4) One or more practical methods to disprove a theory should be available from a consensus of its practitioners.

Radio astronomy can see farther away than any other type of astronomy. Future observations of the most distant galaxies (within the range of their capability) can either make or break the Big Bang model and alternative models including the Pan Theory. The two observations that could either make or break these models are the following:

1) Many epochs in the past should be observable where galaxies were more densely packed together than they are now. If space is expanding between galaxies, then galaxies that we observe at great distances should be much closer together. So far no such suggestive or confirming observations have been heralded to date.

2) It is presently asserted that we can "lens" galaxies/ quasars over 13 billion light years away. There should be an edge to these distant galaxies beyond which we should not be able to see any more galaxies, the so called dark-ages epoch of the standard Big Bang model, when galaxies supposedly had not formed as yet.

Not seeing either of these conditions could be strong evidence against the standard model. Conversely, indisputable observations of either of these conditions would be strong evidence against the Pan Theory model as well as other quasi-steady-state models and theories.

(Ipan Theory Tenets - continued)

These three neutrinos are detectable because of their relatively high energy (compared to the rest of the Pan-field), caused by the particle-interaction which created them. Each different type of neutrino consists of Pan-chain or Pan-Engagements which vary in length.

All non-spinning Pan-chain within a field are neutral with thousands of different lengths, but we may not wish to call them neutrinos. This distinction we could reserve for neutral particles of a distinct energy-level associated with specific particle interactions.

There are more types of high-energy neutral particles because of the large number of possibilities associated with particle interaction. Many of these high-speed pan-chain are currently considered to be "quark-jets."

Possibility or Science Fiction? APT

WHAT ABOUT TRAVELING CLOSE TO THE SPEED OF LIGHT ?

Special and General Relativity allows this possibility. Ipan theory does not preclude this possibility, but unlike conventional theory it eliminates this possibility through "conventional means." To approach the speed of light, matter must accelerate. When accelerating through a Pan-field, there would be a resistance or friction from the field aether caused by acceleration, which would be the exact equivalent to gravity. A.P.T. matter would begin to break down. First, there would be molecular compression along the axis of the line of motion. Next, there would be an initial ionization. Then there would be molecular decomposition and atomic ablation caused by very high speed contact with field material, mostly atomic particles and ionized atoms would remain. Most of this ionization and decomposition would happen long before reaching the speed of light, conceivably at only 10% the speed of light.

IS IT POSSIBLE A.P.T. TO TRAVEL FASTER THAN THE SPEED OF LIGHT?

It is theoretically possible to travel faster than the speed of light according to the related Ipan theory, the problem is the density of the ZPF. To travel faster than the speed of light most of the ZPF would have to be eliminated. Such an idea might be to create a "lazar tunnel" in interstellar space by the rapid consecutive firing of a large circle of powerful long range lazars in a creating a tunnel vortex. Because of the centrifugal pressure within the vortex the center of it may be both devoid of matter and most of the ZPF. Within this voided tunnel faster than light speed might be possible.

(Possibilities or Complete Science Fiction?, continued)

If a protective field could be generated to precede and surround a space craft, this kind of shield might lessen or prevent the eroding effects of the surrounding Pan-field at high speeds and acceleration. The shield itself would erode rather than the space ship within it. However, this shield might be continuously regenerated and replaced at any speed. It would seemingly be better if it were not attached to the craft since a catastrophic collision with the shield would not directly influence the space craft.

The same laser formation, only with a larger diameter, could be set up and projected from a low-gravity asteroid or moon, so long as the body is big enough so that the impulses of the lasers would be inconsequential compared to the body's mass and the lasers' relative position. The lasers would need to be maybe within inches of each other. The impulses would need to be in a very quick sequential rotation. This would cause a coriolis or vortex effect within the vacuum column, containing only the few protons and electrons that would remain, resulting in a vacuum maybe many thousand times more 'pure' than galactic space. As this coriolis grows in speed and intensity, even the field material within this coriolis would be forced toward the edges. There might be a vacuum created inside this tunnel to the extent that it could not otherwise exist anywhere. A strong weightless craft (in space) in this tunnel, if the zpf for the most part would be eliminated, could travel at a speed only limited by the extent/ degree of this zpf vacuum.

The craft itself, once outside the vicinity of the launch point, would need its own circular laser system along with a central laser(s) to precede it. This system onboard a ship would cause some drag of laser recoil forces against its forward motion so it would also need to have some sort of long-duration internal power. The laser light in front of the craft would have no waves since there would be no medium to carry the waves, only individual photons. They too would, accordingly, precede the craft in the tunnel clearing the way for the little remaining zpf.

As the craft would begin to move, space would be opened up behind it and the zpf would rush in causing gravity to push the ship forward. This wouldn't work too well on Earth because in time you might lose too much of our atmosphere to space. This craft might, APT, reach large multiples of the speed of light. Since the zpf would be, for the most part, gone there would be very little time dilation due to its drag.

(Possibilities or Complete Science Fiction? continued) APT

To get to the Andromeda Galaxy, the most likely way according to this scenario would be to get out of our galactic plane by traveling out at a right angle to the plane of the galaxy.. The Milky Way is about 10,000 light years wide and from what we believe now we're close to the middle of its thickness. So if you flew out 20,000 light years you'd be well outside the plane of the galaxy. From that point you could head toward Andromeda at many multiples the speed of light. Slowing down the craft would be very simple since reducing the strength of the lasers would reduce the ZPF vacuum within the tunnel in front of you, causing a controlled drag.

When the space craft's speed exceeds a currently arbitrary multiple of the speed of light, the energy required to regenerate its shield might be considerably smaller because of the high energy of the particles within the shield. The spaceship could then 'cruise' with a low-energy output. External field material would be forced aside and all matter encountering this shield would be disintegrated or pushed aside. The void behind the craft should be filled with the particle remnants of propulsion and/or field generation.

WHAT ABOUT OTHER UNIVERSES?

1) Other universes taking up the same space, in the same location but in a different dimensional plane? Ipan theory eliminates this possibility by stating that dimensions are solely man-made units of measure. The possible variants of observable reality within the universe would accordingly be comparatively few in number, which would seemingly allow only a few possible additional conditions, if any, that we are not yet aware of. 2) What about conceivable universes physically separated in a different location?

(Possibilities or Complete Science Fiction? continued) APT

There would necessarily be, however big or small, space between these universes by this conceived reality. In Ipan theory, space is a measurable extension of matter and therefore these seemingly separate universes would have to be related at their origin. One could never prove that another universe does not exist, like any other imagined reality, but there would be no evidence or reason to support their existence that is consistent with the Ipan theory and present observational evidence.

What about ultimate mathematical Formulas?

Many mathematical formulas have been presented in String Theory and "Super-String Theory." Some of these have received notable attention as "Theories of Everything." Any ultimate mathematical formula, to be both all encompassing and functional, would have to be able to make predictions that have possibilities of being observed. Without predictions or even mutually agreed upon implications, purely mathematical string theories in general at the present time appear to be non-functional from a pragmatic standpoint.

Any new system that might be developed from known histories, interactions, known limitations, and based upon probability and statistics--like quantum mechanics--would seem feasible. A statistically-based tolerance system seems necessary for both the big and the small. This is because there would be innumerable field variables which could affect particle interactions, gravity, magnetism, and field interactions in general.

For this reason there might always be exceptions to any "ultimate mathematical formulas" with their predicted tolerances, and the possible variations that exist in reality.

Ipan Theory of Quasars APT

Quasars: Astronomers believe that quasars are: 1) only a few light-years in diameter because of their short-term variability. 2) are extremely intense sources of radiation and are unique.

A.P.T., Quasars are the cores of large “active”/ Seyfert galaxies or proto-galaxies. Therefore, their light would have been absorbed and re-radiated by intervening galactic or intergalactic clouds, causing their observed E.M. variability and blurring their absorption bands. Their luminosity would be magnified primarily by Pan Accretion but also by a second factor where high frequency radiation is absorbed and re-radiated as increased quantities (at lower energy levels) of radio-frequency radiation. B.L. Lacs would therefore simply be quasars with smeared absorption bands.

REVEALING OBSERVATIONS IN ASTRONOMY

Super-luminosity (anything with a measured velocity faster than the speed of light): This phenomenon occurs when jets from very distant galaxies are analyzed to determine their velocity. In many cases these jets seem to indicate velocities faster than the speed of light. The most prominent conventional explanation of these observations is that they are the result of an optical illusion. Another explanation is that the observed velocity is a relativistic effect of Einstein’s Special Theory of Relativity.

The appearance of super-luminosity was a predicted phenomenon of the Pan Theory. A.P.T., the observed velocity of an object would be magnified in proportion to the distance of the object by formulations of the Pan Theory Relativity. By making the indicated adjustments to the observed velocity the magnifying factor will disappear and its real relative motion will become apparent (which still may be super-luminous). This observational correlation could provide evidence for the validity of the Pan Theory of Relativity by providing a better understanding of the mechanics of these galactic jets (Prediction).

The Organization of the Universe APT

Models of the observable Universe have been developed by red-shift analyses. These models of galaxy formation show a structure sometimes referred to as "bubbles." These spherical organizations of galaxies has no widely accepted cause using the Big Bang model, but it is the required formation using an Ipan Theory model.

Each galaxy cluster or "bubble" originated from a parent galaxy which expired and expanded between 60 and 100 billion years ago. Through Pan Accretion this matter evolved into the galaxy clusters that we see today.

Motion of Galaxy Clusters

Large groups of galaxy clusters have been shown to have a common and relatively high-velocity linear motion. Using Big-Bang models and conventional theories of gravity, this motion should be caused by massive unseen galactic super-clusters or other massive structures.

On the other hand, A.P.T. galactic motion on this scale can be traced back to a central parent galaxy's expansion rate, which increases as time progresses. Large-scale relative motion or velocities that would appear to exceed the speed of light, such as super-luminous galactic jets, must be observable if The Pan Theory is true since "things at a distance will appear to be going faster than the really were in there own time." This was one of the major predictions of the Pan Theory long before these observations were ever made.

Galaxy Evolution *APT*

Astronomers have observed countless galaxies, but cannot develop a theory of galactic evolution because they are limited to an age of the universe, based upon estimates of the Hubble expansion rate, ranging from ten to twenty billion years old according to the Big Bang Theory. This relatively short period of time baffles theorists because of contradicting data which indicates some stars, and therefore galaxies, seem to be older than the universe itself.

The Hubble red-shift is not the result of an expanding universe, but is instead the rate of matter diminution and the compensation measure of Pan-Accretion (new matter creation). For this reason, the age of the universe would be very much greater than currently believed. This greater age of the observed universe--about 175 billion years--explains many apparent contradictions and therefore leads to a more valid theory of Galactic Evolution, which accordingly would be one of the Pan theory's most important contributions to the general understanding of the cosmos.

Background radiation discovered by Arno Penzias and Robert Wilson is thought by most astronomers to be a remnant of an original hot Big-Bang.

Because of omnipresent background Pan-fields, atoms and molecules interact with each other and the field. In low-density intra- and intergalactic fields, this interaction creates a continuous kinetic motion of field material and atoms or molecules, which radiate quanta at low frequencies. Calculations and measurements of a red-shift in background radiation have been confirmed, which indicates a motion of the Earth relative to the source of this background radiation. This relative motion of background radiation for Big-Bang theorists is somewhat difficult to explain.

In Ipan theory, this is an expected motion of local intra-galactic matter, especially hydrogen, which pervades the galaxy emitting low-level radiation after being excited by star light and Pan-field kinetic motion.

Chapter 20, Reviewing terms, Pan and Ipan Theories

Definitions:

- **Pan:** The smallest thing that can exist at any given time; the most fundamental particle.
- **Pan-field:** Similar to aether Field, luminiferous aether field, dark matter field, zero-point field, etc. -- it controls the speed of light as well as determining the gravitational constant and the resistance to the acceleration of matter.
- **Matter Diminution:** A principle of the Pan Theory of Relativity which explains the galactic redshift of EM radiation whereby matter decrease in size and increases in number as time progresses.
- **Pan Accretion:** The process by which one Pan becomes two, two becomes three, three becomes four, etc.; all Pan-chain accrete in this manner in a continuous chain of connected pan. As pan accrete, their size decreases and their numbers increase at a constant rate.
- **Pan Characteristics:** A uniplasm of substance that has potential energy which causes the fundamental particles to Perpetually unwind and concurrently rewind while it decreases in size and increases in number.
- **Pan-Chain:** A string of individual Pan connected together.
- **Pan Count:** Refers to the number of pan in a particular chain.
- **Pan Engagement:** two or more pan-chain loosely entwined
- **Pan Entanglement:** The densest state of pan-matter other than a single pan,
- **Pan-field:** Any volume of space usually associated with a gravitational field.
- **Pan Material:** is formed from a wound-up uniplasm
- **Pan Mass:** Denotes the mass characteristics of pan-chain; that they also are pushed around by gravity currents similar to matter.
- **Pan Matter:** any form or quantity of field particles not comprised of conventional matter, denotes the matter characteristics of pan-chain.
- **Pan-plasma:** The second densest state of combined field “matter” following a Pan-Entanglement. It is a thick plasma of pan-engagements and pan-chain which have motion but many are too short to engage each other but not dense enough to be entangled and motionless.
- **Pan Shape:** An orb thousands of times denser than an electron, proton, neutron star or black hole, the densest possible form of matter.

PAN / IPAN TERMS (continued)

Ipan Field Theory: The physical, functional, interpretive, and definitive characteristics of Pan Fields, generally explained by the Pan Theory of Relativity; the Ipan Theories of gravity, quantum configurations, stellar vortices, galactic and mega-galactic formations; and the Ipan unified field theory, AKA the No A Priori Force Theory.

Pan Doubling rate: The time that it takes one pan to become two. The same time that it takes one pan-chain to become two pan-chain, or the time that it takes the universe as a whole to double its pan count. This also is approximately 1/3 the time that it takes E.M. radiation to double its wave length, looking back in time. 4.8 to 5 billion years is the estimate of the minimum Pan-Doubling time herein.

Pan Accretion rate: -- is the rate that pan increase in number and decrease in size, roughly estimated herein to be: pan increase in number by a factor of about $1 \frac{1}{13}$ for every 1/10 of the Pan Doubling rate. Pan decrease in size by a factor of about $\frac{12}{13}$ for the same period – $(1 \frac{1}{13})^9 \sim 2$; $(\frac{12}{13})^9 \sim \frac{1}{2}$.

Alpha Grid: -- is the theoretical geometric configuration of an alpha particle (helium nucleus) which is accordingly the building block of larger nuclei according to Ipan theory presented herein.

--End of Pan Theory—

Chapter 25, LIGHTER PERSPECTIVES ; The funny bone of the Pan Theory

Types of Commentary -- after reading the entire text herein

(Fictitious characters)

Scientist #1: I guess some of it might be possible. Time will tell.

Scientist #2: “What? Aether? Dispute the great Einstein’s space-time distortion? HERESY!”

Physicist: Do you have a scientific version of this theory?

Theorist or Cosmologist: That’s very interesting, but my theory is

Astronomer: Seems like an interesting theory. Have you contacted Dr. Schmoh? (hopefully not a psychiatrist) He might be interested in your theory and give you some pointers

Medical Doctor: It’s interesting but do you think it’s good for a person’s health to worry about the future of the universe?

Teacher, College General Science or Math: It’s OK, but theories are a dime a dozen you know.

Student: Do any famous scientists believe in this theory?

Philosopher: That’s a very interesting perspective. Have you ever read Kant?

Business Man: What good is this theory? Can you make any money from it?

Biologist: I never heard of this theory. I guess it’s as good as anything else, but if this is true, how could the beginning of life be explained according to this theory?

Professional Athlete: I don’t think I understand it. All that math and those drawings don’t make much sense to me. Can I make any money endorsing this theory?

The Editor's whit, *by* Timothy Cooper

TIM'S CYNICAL SENSE OF HUMOR APPLIED TO THESE CATEGORIES

(Fictitious characters after reading the "entire book")

SCIENTIST: Science is all about investigating new ways of describing a naturalistic universe, but since this theory claims things that have been disproven, like aether, it is heresy. One moment while I set up an *auto de fe*...

PHYSICIST (Quantum): So, when it all comes down to it, everything relies on quanta whose relationships are so complex their interactions can only be described through statistics. I love it!

THEORIST (String): String theory is *too* a real science! We've retroactively predicted stuff too!

ASTRONOMER: The Big Bang is Truth and to say otherwise is an offense to science and the tens of thousands of dollars I've spent to get my degree.

MEDICAL DOCTOR: Great, now I'm going to have to do a study to see if Pan interactions cause cancer...

TEACHER: Will you people just figure out the universe already so I don't have to constantly change textbooks?

STUDENT: Will this be on the test?

PHILOSOPHER: While your ideas are interesting, I don't think it makes any statement as to the actual truth value of anything, especially considering the ontology of your arguments...

ENGINEER: Just let me know when I can apply it to something.

BUSINESSMAN: Just let me know when the engineer can apply it to something, so I can patent it and get all the money.

BIOLOGIST: Excuse me, I just got a call from a medical doctor asking about a study into the toxicity of Pan. There's no chance you could help me here, could you?

(Lighter Perspectives-continued)

Greek Mythology

Pan was the half-man, half-goat god of the woodlands, meadows, and pastures. He had a wild, wanton, and lusty nature, and his legends probably inspired later beliefs in similar woodland deities called satyrs. The worship of Pan was first associated with Arcadia, a province of southern Greece, but it spread throughout the other city states of Greece until Pan became one of the most popular and revered gods. Pan, in most Greek depictions, was of very small stature; but the Romans, who later worshipped Pan, sometimes depicted him as being maybe 1.5 meters (or about 4'11") tall.

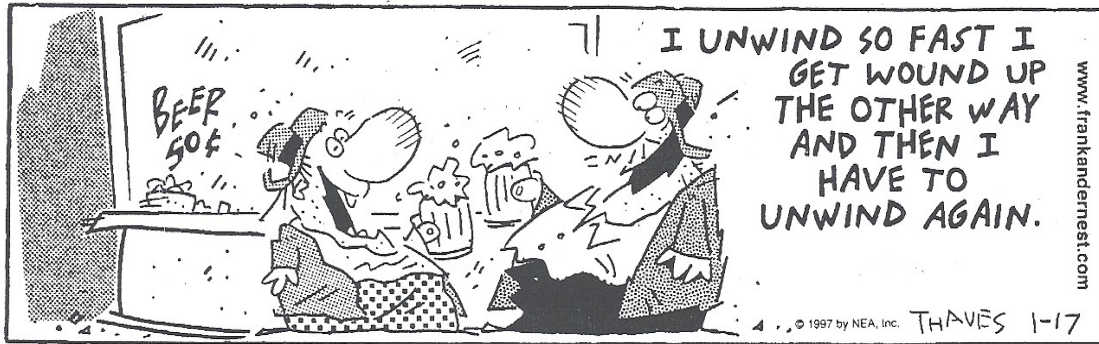
Pan also was well known for his seemingly uncharacteristic musical talent. He could be heard playing beautiful music on a Panpipe: sometimes for his own enjoyment, often to seduce woodland nymphs, and occasionally to seduce goddesses such as Aphrodite, the goddess of love.

These legends of Pan, however intriguing, did not inspire the name of the theory, just a flight of fancy to soften the mood from an almost entirely theoretical text. This mythology did, however, inspire numerous cartoons in "Playboy" magazine.



Pan and Aphrodite (goddess of love)
“discussing the Pan Theory”

FRANK AND ERNEST



Social Commentary:

Since the Pan and Ipan Theories are "becoming very popular", "research-scientists" like Frank and Ernest above often discuss the finer points of these theories. Other similar-type research scientists, through hear-say, have become "knowledgeable" concerning some of these theoretical points, particularly the Ipan Perspective that "the Universe is a relatively simple place".

To consider this perspective, several of these "research scientists" gathered at the same "research center" shown above. We are privileged to present their insights concerning "the Universe is simple Principle". The following "were the conversations which took place according to one of the participants, Benny the bartender."

Al: Hey Bill, what do you think about that "universe is simple" stuff.

Bill: Yeah, I think I've heard about it -- that it's so simple you can even discuss it when you've had a few.

Al: Right-on. I've often noticed that too-- but I've also noticed that because it's so simple it makes some of the details difficult, but you really have to use your imagination to guess where it's at. And I've also heard it's so simple that most people don't bother to learn much about it cause everything is relativity.

Bill: Yeah, I heard that too. And one of the reasons why it's so relative is because it's mostly space. It must really be simple because people talked about it thousands of years ago.

Al: I think I saw that one on T.V. too. Wasn't that the one where they said the Universe wasn't even bright enough to see itself or something like that. But that you might see some of it with a wachamacallit?

Benny: ----- a telescope?

Al: Yeah, that's it!

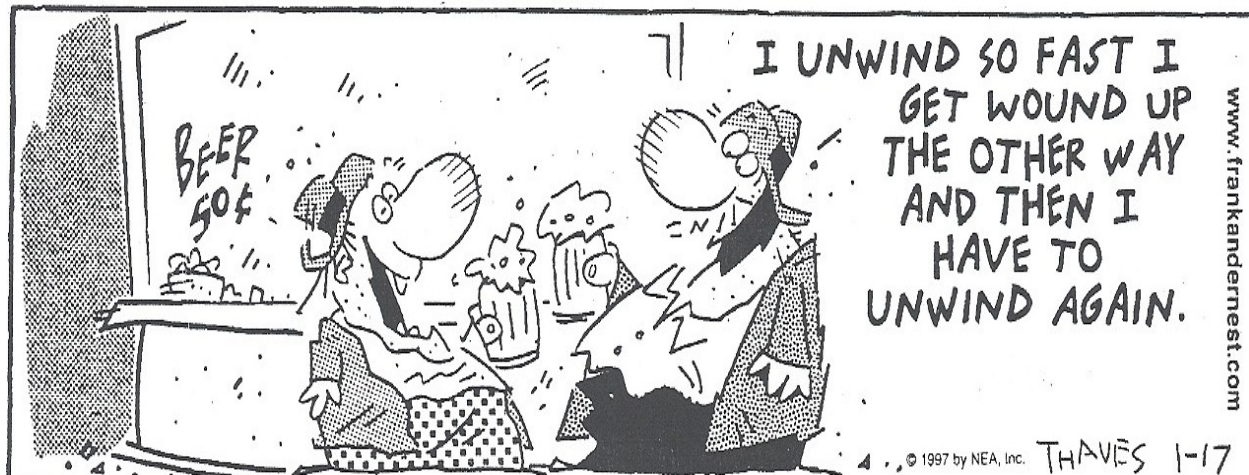
Benny: Wasn't that the program where they said something like the reason why one plus one equals two is because the Universe is so simple, And that nature can even explain it, proves how simple it's going to be cause it was expanding or something like that.

Al: I don't know if I saw that one exactly, but did you see the one about where I think they were trying to teach the Universe to a chimpanzee and they think he understood some of it better than most people.

Bill: The one where he was pushing those buttons and stuff?

Al: Yeah, that was it!

FRANK AND ERNEST



Bill: I also saw this other program where they said something like – that the Universe isn't even very big. That it's small compared to something a lot bigger.

Al: What's bigger than the Universe?

Bill: They didn't say except – something like that the universe is only one step away from being nothing.

Al: What step is that?

Bill: The one where they put the matter into it and then blew it up.

Al: Wow! That's right! and you know what else?

Bill: What?

Al: Almost everybody can talk about it but I usually can explain it the best When nobody's listening. And I also know it must be pretty simple cause I've heard that some people worry about its future. Bill? Bill!!!

Bill: Yeah, -I guess I was falling asleep. You know, some of this stuff is so

simple and boring sometimes I fall asleep just thinking about it. I guess the Universe is so simple most people don't even bother to talk about it. What do you think Benny --- about that Universe is simple Principle.

Benny: I've never heard about that principle but I guess in some ways the Universe could be considered simple. It must be pretty simple because it doesn't even know the rules we've made for it since it often violates them.

It's so simple that some people think it could be just a bubble in a bigger scheme of Universes.

It's so simple that a man's mind might be the most complicated part of it.

It's so simple that many top scientists believe that the whole thing once could have fit inside a thimble -- no joke.

It's so simple that I've often wondered whether god even knows it's here.

It's so basic that I think it's the simplest thing that will ever exist.

Bill: Right-on Benny. You understand that stuff like me and Al. Benny, give yourself and Al another drink and I'll have one too.

(dialog gratis "Benny—the bartender")

(lighter perspectives continued)

Philosophical Metaphors

----- Which is the better way: to play it safe or take a calculated risk? He who follows the beliefs of his own time, on the one hand, is generally not laughed at (in his own time, at least). The gambler-of-intellect, on the other hand, who, with the information available in his own time, uses independent thinking and looking at alternative perspectives to advocate new, and often unpopular, ideas. These ideas and the gamblers who offer them may be laughed at, ridiculed, scorned, or ostracized from the inner circles of their own time, nevertheless, they are the pioneers of all paradigm shifts concerning human progress.

They are often forgotten and very occasionally admired or revered by future generations--“either a goat or a god”--but once in a while they are perceived as having both qualities like the Greek, and later Roman God Pan.

The more predictions a theory makes and the greater its promotion, the faster its star either rises or falls, and pioneer-wagons hitched by devotion--so dare to hitch your wagon to a star, it may take you to a great height... but if the star starts descending, unhitch your wagon cause it's likely a meteorite.

(a word of advice to all theorists out there.)

The difference between possibility and reality, imagination and understanding is theory.

The difference between hope and fruition, a variable and a constant, decreases as labor towards insight and accomplishment increases.

Lighter Perspectives (continued)

Philosophical Metaphors

- A Pan is the container in which food is prepared - providing sustenance for reality.
- A Pan is a sturdy vessel which traverses the universe, sailing in auspicious seas toward eternity.
- Human life, like the universe has magnificence. As with reality we must look on the brighter side of it to see its splendor, for it is only through enlightenment that the wonder of the whole might be perceived and preserved.
- Man's progress can only ascend to the greatest of heights when fundamental understanding becomes one of his primary ambitions—for then enlightenment will aid his upward vision-- and his climb toward progress will abound with ladders to enable an easier ascent toward worthy accomplishments. He will then delight in a clear view of the stars from his lofty new home. His destiny will not only be a universe reordered by his own hand, but he will have the respect of the ages.
- Aspiration, Inspiration, and Human Existence are Star-Borne --
- Sic passim ad astra --
(thus everything to the stars)
- concerning THE PAN THEORY-- jecta alea EST (the die has been cast)—que será será.(whatever will be will be)
- concerning the Ipan theories: The beginnings of all things are small—Cicero ~50 B.C.E.

Finis