The GGU-model and GID-model Processes and Their Secular and Theological Interpretations

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Abstract: The fundamental aspects of the General Grand Unification (GGU) Model processes and their relation to the General Intelligent Design (GID) Model are illustrated. This universe generating cosmogony is interpreted using various secular schemes. It is further interpreted, in detail, via a strict Biblically verified theological scheme.

1. Introduction.

All of the recently refined fundamental aspects of the General Grand Unification Model (GGU-model) are based upon properties of the <u>finite</u> world, properties that we can easily comprehend and even performed. These properties are mathematically modeled and embedded into a special "mathematical structure." These complex technical aspects are not presented in this article.]

Please consider the following fact. Modern atheistic science is based upon "reductionism." Under this stance, the development of the universe depends upon accepted fundamental entities that simply "exist." How these entities behave simply exists. That is, physical laws simply exist. No further investigations are allowed "below" this level of existence. If you do make such investigations, then you are ignored and often called "crazy" for rejecting "what everyone knows is true." Of course, such a notion is actually a unverifiable philosophic stance and is not related to "truth."

I would like to emphasize the following facts. The GGU and General Intelligent Design (GID) models are not based upon accepting hypotheses such as the existence of higher-intelligence, the existence of higher-processes that generate a universe nor, with one minor historical exception, any theological statement. The theological or higher-intelligence conclusions are interpretations based upon <u>predictions and not upon unifiable assumptions</u>. For the theological interpretation, these predictions are Biblically interpreted, in full elsewhere, and are shown to verify the rationality of Biblical statements. The concrete behavioral or other illustrations that appear in this article were not used to obtain the basic aspects of the models. They were all discovered after the basic mathematical model was constructed from 1979 - 83. Previously, the multi-complexity approach was utilized. This is no longer the case. The single-complexity is sufficient and somewhat more easily understood.

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Recently, 2013, an important refinement was made, and the GGU-model is now associate with instruction-information and alteration-information. When appropriate, I'll mention the reference. You'll also notice that I'm making changes to my mode of presentation from the usual stilted style used in scientific discourse to that of the informal. Using "contractions" shouldn't distract from the results I present. If English is not your native language, then the meanings of the contractions used, from time-to-time, are easily learned.

Using a nonstandard model for various aspects of Mathematical Logic, three model have been constructed. They are the GID-model for an "intelligent design," the secular GGU-model, with its basic mechanisms for the substratum production of a universe, and the Complete GGU-model, which is a combination of the GID and GGU-models. The Complete GGU-model answers questions that were not answered using scientific logic until the date of its first appearance. It should be very obvious that the methods used are not those as previously applied. The answers are interpretations of entities and their behavior within a mathematical structure that did not exist, in general form, within the mathematical literature until after 1969. For these reasons, one should not assume that their previous technical background should enable them to have full comprehension.

To aid recall, throughout this article I repeat important aspects. I've attempted to simplify all non-mathematical aspects of the GGU and GID-models in the hopes that the processes and reasons for them are more fully understood. Various process schemes or interpretation schemes are displayed and the meanings fully stated. Applications of these schemes depend upon the Complete GGU interpretation employed. (I now use the term "Complete GGU-model" to indicate all aspects of this model including the specific information aspects. If I don't write "Complete," then this usually should be understood.) In this article, with one exception, single universes are discussed. The participator universe case is discussed, where the technical aspects are found, in Herrmann (2012a,b). [[These require the additional hyperfast properton selection process (Herrmann (2002).]] Material between the [[and]] is of a more technical nature and can be omitted on first reading.

Do you know what the following symbols mean for the Complete GGU-model?

$$(\text{I}) \ ((\,{}^{*}\mathbf{\Lambda}(\lambda),\,{}^{*}\mathbf{I}(a,b))\,{}^{*}\underline{\mathcal{A}}) \to (G\mathtt{St}).$$

$$(\text{I}') \ ((\,{}^{*}\mathbf{\Lambda}'(\lambda),\,{}^{*}\mathbf{I}'(a,b))\,{}^{*}\underline{\mathcal{A}}) = d.$$

In this article, each of these symbols is discussed and schemes of this sort interpreted in three different ways. [At the end of this article I list the symbols used and their applied meanings.] This article is concerned with a new approach to generate the Complete GGU and GID models. It's very distinct from that which appears in Herrmann (2002). This old approach, the **developmental paradigm** approach (as refined in [1d]), is still viable

and significant for the GID-model as well as theological interpretations. This old approach used only the notion of "pre-design" and that these designs were "transformed" by unknown means into various realities. **It yields a major characterization when GID design by an higher-intelligence is considered.** When considered restricted to a pre-designed developmental paradigm of universe-wide frozen-frames, application of the $^*\underline{\mathcal{A}}$ process, noted in Section 6 of [1d], yields the designed step-by-step development of a universe. This is an exceptionally refined form of designed "animation." The developmental paradigm approach and its relation to GID comprises the major content of Herrmann (2002).

To the developmental paradigm approach, the **instruction paradigm** approach has been added [6]. This yields the predicted substratum processes that yield the realities being described by the developmental paradigms. These processes have GID signatures.

At the end of this article, I give a brief comparison of the old and new approaches. In this article, the term "subparticle" was previously used. To prevent incorrect mental images as to models for subparticles, the term "properton" replaces the term "subparticle." Without visualizing, a properton is an entity that carries properties. By means of encoding, it carries properties individually. Propertons, whether individually or in groups, have but one property. They can be combined into specific coherent collections.

In subatomic physics there is the quark. No quark can be detected directly using any form of physical device. There is a set of written rules or instructions and diagrammatical schemes meaningful to human beings that describe quark behavior. Such rules predict how entities that can be detected by physical devices behave and experiments verify this behavior. These rules and diagrams do not appear in Nature except in these written forms. Nothing appeared prior to the rules being constructed via human mental processes. So, what is it in Nature that "forces" quarks to follow, via human mental understanding, these written rules and diagrams? Does Nature think? Does Nature understand the meanings of all the different languages in which the same behavior is described?

Diagrams can be described by a language as can perceived images. Physical descriptions or perceived images correspond directly to physical "events." (An **event** is a final and specific result of the GGU-model mechanisms.) The rules or instructions correspond directly to physical descriptions or perceived images.

The entire area of physical science would not exist unless there is "something" that relates actual physical-system behavior, via the medium of the human mind, to written rules, diagrams and mental images. This "something" is not, in general, identified by members of secular physical science communities. It is identified by other groups and I discuss this later in this article.

The physical laws we use are expressed as strings of written symbols. These laws are applied to symbolically expressed statements (hypotheses). Following what appear to be specific rules as how one combines the written statements with others, we "rationally" deduce statements that predict the behavior of gross matter. These predictions can be detected by

our physical or machine sensors. This all comes about via electro-chemical means within our brains. The "rules for rational deduction" that allow for such predictions are explicitly stated in the disciplines Philosophy of Science and Mathematical Logic.

The time-dependent step-by-step behavior of physical-systems as verified by physical law is descriptively expressible by a very simple rule for human deduction. An individual, based upon "learned" behavior, in order to perform any activity exterior to our internal physical being, displays hundreds of times a day necessary choices that can be described by this simple rule for rational deduction.

It is the time-dependent step-by-step "putting-together" of the described behavior of each developing physical-system, including our entire universe, that follows this simple rule for deduction. For physical-systems interior to our universe and from a pure secular viewpoint, this "putting-together" notion is considered as a physical process. This process is modeled within the GGU-model by an "operator." In the same accepted manner as in quantum field theory (the creation and annihilation operators [13]), no further details as to any internal structure that yields this process are considered. For a universe, this process is termed as "physical-like."

Relative to the more complex rules used for scientific deduction and this simple rule, I am not the only individual who has recognized that there is a relation between how "nature" appears to behave and human thought.

Physics Nobel Laureate Louis deBroglie stated:

The structure of the universe has something in common with the laws that govern the workings of the human mind. [4, p. 143.]

Then there is the viewpoint of C. S. Lewis.

. . . that the events in the remotest parts of space appear to obey the laws of rational thought. [1e, p. 32.]

. . . what is behind the universe is more like a mind than it is any thing else we know. [1f, p. 60].

The fundamental bases for the General Grand Unification model (GGU-model) is that, via human mental processes and images, there is a direct correlation between general descriptions and the physical entities and the physical behavior being described. A general description is, in this sense, equivalent to a mental image, which is equivalent to a physical event.

From the pure secular viewpoint, it can be argued that on planet earth our brains and strangely only our brains have developed, via unverifiable processes, so that, via languages, describable rules "model" how our brains electron-chemically "deduce" expressible conclusions.

There is a problem with presenting this material. How do I present it so that others can comprehended what has been accomplished? Below I list a few definitions for the terms and some symbols used. Unfortunately, the Complete GGU-model can

only be properly expressed when the below "hyper" language is used. Often a comprehensible statement involving <u>finite</u> processes that we can perform is informally stated. For example, for the GID-model:

"Using a finite step-by-step process, an intelligence (us in this case) can take a single written hypothesis and, over a two-minute standard time period, logically deduce a finite collection of ordered statements."

For specific collections of statements, this "mental" description is a analogue model for observed behavior resulting from perceived and described physical regulations - the physical laws. Thus, the specifically described simple rule that describes how we obtain a deduction is considered as modeling similar physical process.

The above statement is mathematically model. The model <u>predicts</u> the existence of certain sets. Then these predictions yield, via a consistent interpretation, the statement:

"Using an hyperfinite step-by-step process, an hyper-intelligence (not us in this case) can take a single written hypothesis and, over a two-minute standard time period, logically deduce a hyper-finite collection of ordered statements."

Thus, this "hyper-statement" displays a behavior that is similar to the non-hyper statement, where the standard physical behavior is observable. This "hyper" behavior is rationally predicted. Then, using another collection of terms, the two types of behavior can be compared.

Further analysis shows that this last statement can be expressed in general terms that are fully comprehensible via the notion of the "non-finite," the infinite, a notion that can now be imagined [1g]. When so translated the statement becomes:

"Using an infinite step-by-step process, an infinite-intelligence (not us in this case) can take a single written hypothesis and over a two-minute standard time period, logically deduce an infinite collection of ordered statements."

When interpreted for the GGU-model, the "hyper" sentence describes a "physical-like" substratum process that generates a two minute development for a complete universe. A GGU-model translation becomes:

"In a step-by-step manner, a physical-like process can start with a single universe-wide frozen-frame and produce, over a 'two-minute' primitive-time period, an infinite collection of ordered universe-wide frozen-frames. These entities represent step-by-step 3-dimensional slices of an entire physical universe and taken together they display its sequential development." (Note: The infinite collection may or may not be composed of only finitely many distinct members.)

Using mathematical operators that possess properties that mimic "mental" processes is a necessary requirement for how physical laws appear to govern the behavior of physical entities as such behavior is produced by describable physical laws. Operators that represent some sort of physical processes are also employed in quantum physics via

the notion of "quantum logic." The idea that "mental" like processes also describe how our material universe behaves has been stated by others.

In the GGU-model, there are other statements and symbols, not of the "hyper" type, that describe more refined behavior and also describe only physical-like behavior. Here is how I'll proceed after certain definitions are recalled.

If an illustration comes from our physical universe, then the terminology won't contain any "hyper" notation. But, for the GGU-model itself, terminology will carry the "hyper" or * symbol with the understanding that such statements or symbols can represent only standard concepts for the physical world or both physical and physical-like entities and behavior. Depending upon the discussion, these portions may be discussed individually. There are also italic fronts used that represent pure physical-like behavior.

The GGU-model is in two separate parts. The pure "design" and "thoughts" part that corresponds to the original developmental paradigm approach and the new second part that yields, via info-fields, a physical universe. Relative to the pre-design notion, many years after the GGU-model and its GID-model interpretation were first conceived and originally developed, the following quote, attributed to Hermann Weyl, was discovered. This physicist was one of the original members of the Institute for Advanced Studies at Princeton.

"Is it conceivable that immaterial factors having the nature of images, ideas, 'building plains' also intervene in the evolution of the world as a whole?" My answer to this question is, yes! Notice that "images, ideas, 'building plains' " can be generally classified as "thoughts." The facts are that comprehension of certain substratum processes and entities is only possible when appropriate "mental-like" language is employed. I may mention this fact more than once.

As illustrated above, the conclusions can be written in terms of intelligent agent terminology, secular "physical-like laws and objects" descriptions. Further, it can be interpreted in terms of theological concepts. However, the Biblical interpretation is more applicable to the single-complexity approach due to certain aspects of human participation.

Where do I put the definitions for the formal terms used throughout this article? Do I place them in an appendix or do I place them next? The most appropriate place is next, although the basic illustrations using finite construction notions do not require that any of the formal terminology be applied.

(1) The first and most important concept is that of a "model." For this article, a **model is a mental or otherwise material <u>representation</u> - a description, diagrams, images - for "things" such as entities, processes, behavior that we probably cannot otherwise comprehend.** Whether a model is real or not often depends upon a philosophic stance and is not completely dependent upon evidence. In physical science, if two or more distinct models predict the same observable evidence and there is no direct evidence that any one of the model's premises is false, then it is fact that a choice is made based upon other criteria that can include arbitrary rules

as to when one model is "better than" another or that it upholds a previously selected philosophic stance. There is no absolute requirement based upon observable science that guarantees that one model, from a list of competing models, is the only correct one.

IMPORTANT: You will find that in scientific discourse, although a model is being discussed and there may be alternatives, the language used is a **positive language**, where qualifying terms such as "may be, might, probably" are not used. What is used are phrases like "something is . . . . ," "Things are . . . " "It does . . . ." The use of such a positive language often gives the false impression that a model is "beyond any doubt" a factual depiction. If I use a positive language for the GGU-model, then please understand that it should be considered as a model as here defined. Linguistically, continually qualifying the terms used is a bit tedious.

(2) The term **physical** refers to observable or assumed constituents or processes within a universe and that are accepted by science-communities as "physical" in that they are assumed to occur only within a defined universe or are relative to producing a physical universe. The term, being so dependent, can vary with science-communities and the definition may be consider rather "intuitive" in character.

(3) A defined **physical-system** is a collection of named physical objects, the constituents, which are so related as to form an identifiable whole. Specific relations between the constituents and other general characteristics are the basis for establishing the behavior of the entire structure. The behavior of the system and its constituents follow physical regulations that are consistent in how they affect physical entities as single objects or collections of such entities. These physical-systems need not be those defined by a physical-science community.

From the mathematical viewpoint, definition (1) can apply to a single physical-system as a whole, where the constituents are ignored.

A **physical-like system** contains a collection of substratum entities that <u>may be</u> partially displayed as physical entities. It is related to a physical universe. The collection has properties similar to those of a physical-system as well as properties distinct from those of a physical-system. A few examples are a "mist" that is neither affected by gravity nor wind and the like. Balls of "light" that seem not to be effected by significant physical processes. Any observed singular event that contradicts established physical regulations, regulations governing events in very close proximity to the singular event. Various constituents of the "substratum" [1, pp. 106, 170] that affect a physical universe are often considered to be physical-like. These substratum members behave in a general way like physical entities or processes. As with the physical, they have describable characteristics that are similar to physical behavior but a more in-depth description requires an higher-language. [For other applications, the substratum might be considered as physical.]

(4) An **event** corresponds to a real or ultranatural occurrence of an entity or behavior that is being described by a string of standard or nonstandard members of a hyper-language. For this article, it is a final and specific result of the GGU-model mechanisms. A **physical event** is a real event, not a substratum occurrence, within a defined physical universe. A **physical-like event** is a substratum occurrence, usually assumed real, that has properties similar to a physical event. An **ultranatural event**, when the term is used in this article, is a predicted occurrence that is neither a physical event nor a physical-like event.

(5) The term **other-system** refers to any collection of substratum entities that affects a universe but is neither physical nor physical-like.

(6) Now and then, the term **preternatural** may be used. This term is used for any of the non-physical GGU-model entities or processes that, when the term is applied, neither carry the intelligent design nor theological interpretation. It is secular in its use.

(7) A **(standard) description**, in the general GGU-model sense, is a generalized string of symbols that corresponds to human sensory-impressions. The descriptions include actual words and any finite combination taken from a known language. All other sensory-impressions are coded collections that through application of virtual reality processes can be converted into specific sensory-impressions. Each description is a member of a general language **L** . These impressions include observable machine sensory-information. The term "description" is often considered synonymous with specific information, where descriptions are used as but representations for specific information. Specific information can be defined as a coded symbolic representation, a message, that conveys specific actions.

Descriptions most often invoke mental images. Aspects of the GGU-model are most easily comprehended by considering descriptions as equivalent to mental images, which are additionally transformed into physical events. They may correspond to substratum physical-like entities in a manner similar to how human mental images correspond to brain activity.

(8) A **developmental paradigm d** is a sequence of general language descriptions that depicts the sequential development of various systems that comprise a universe. (It is contained in a hyperfinite developmental paradigm.) These descriptions correspond to a sequence of **events**. An **instruction paradigm**, $\hat{I}$, is composed of ordered instruction-information. Each member of an instruction paradigm correspond to each member of a developmental paradigm. Both of these concepts, represent "order" via the sequence notion. An instruction paradigm is the restriction (an ordered portion) of an hyperfinite instruction paradigm. See (11).

(9) **Observer-time** For our universe, this is usually considered as members of a physical event sequence that allow defined measurements of "time." It is a portion of the more general primitive-time. However, due to its theory dependent nature, there

can be physical events that sequentially do not correspond to observer-time.

(10) **Primitive-time** is a term used to identify members of a developmental paradigm **sequence** as well as a corresponding instruction paradigm. *The term is equivalent to the more recently defined terms "primitive-sequence" and "primitive-time sequence" used throughout GGU-model discussions.* It is a sequence and many members do not correspond to moments in observer-time. It is considered as representing a sequence of physical or physical-like or otherwise defined events. (Non-physical events are predicted by the mathematics.) Observer-time instances are also primitive-time instances. There can be primitive-time physical events that are not observer-time events.

(11) A **physical universe** means any cosmology composed of the entities and processes that are listed by a science-community as physical. In general, a **universe-wide frozen-frame** is a complete 3-dimensional slice of universe composed of its entities as the slice is identified by a primitive-time sequence element (i, j).

(12) Consider a term T that has a definition, which includes a set of properties P.

The *T (read as "star" T, or "hyper-T" or "hyperT") has a similar set of properties P' when discussed in a special way.

For the GGU-model, certain of the *T objects also carry the prefix "ultra." But, when the sets of properties are compared, then there can be significant differences between the P and P' properties. **Pure** objects are neither the * (hyper notation) of any entity nor a standard physical object. (Names for certain pure objects can also carry the prefix "ultra.")

(Note: The bold used for such mathematical objects as the natural numbers is only used in this article for comprehension.) For example, suppose that $\mathbf{N} = 0,1,2,3,4, . . .$ represents the natural numbers and they have the usual ordering $<$ (i.e. $0 < 1 < 2 < 3 < 4 < . . .$). (Notice that these are but symbols written left-to-right. They need have no interpretation such as for counting.) Then we know that if a is in $\mathbf{N}$ (i.e $a \in \mathbf{N}$), then there exists a $b \in \mathbf{N}$ such that $a < b$.

The set $^*\mathbf{N}$ has the same properties relative to $<$ as they are expressed by a formal language for $\mathbf{N}$. But, when $\mathbf{N}$ and $^*\mathbf{N}$ are compared, the set $\mathbf{N}$ can be considered a subset of $^*\mathbf{N}$ (i.e. $\mathbf{N} \subset {}^*\mathbf{N}$) and $^*\mathbf{N}$ is not equal to $\mathbf{N}$. It can then be shown that there exists $c \in {}^*\mathbf{N}$ such that for each $a \in \mathbf{N}$, $a < c$. No member of $\mathbf{N}$ has this property. Intuitively, this means that "c" is greater than each natural number. Such c are called <u>infinite numbers</u>. The term "infinite" has different definitions. The word "numbers" most be stated or understood in this discussion. They solve the 300 years old problem of Newton and Leibniz, where these founders of the Calculus used such "numbers" but were unable to obtain consistent properties.

An important property for $\mathbf{N}$ is that for any nonempty subset $\mathbf{K}$ of $\mathbf{N}$, with two or more members, $\mathbf{K}$ has a "first member" or "smallest member" in terms of $<$. More

formally, this means that there is a $k \in \mathbf{K}$ such that if $a \in \mathbf{K}$, and k not equal to a (i.e. $k \neq a$), then $k < a$. (Mathematically, all we have here is a collection of symbols, where the conclusion is a collection of symbols. This can be written formally to show the rules for the manipulation of these symbols.)

Let $\mathbf{N}_\infty$ be the set of all ${}^*\mathbf{N}$ that are not members of the natural numbers $\mathbf{N}$. This is the set of all infinite numbers. Then, there does not exist a $w \in \mathbf{N}_\infty$ such that w is smaller than every other member $z \in \mathbf{N}_\infty$. The set of all members of ${}^*\mathbf{N}$ less than or equal to any $z \in {}^*\mathbf{N}$ is called an **hyperfinite set** .

The Hyperfinite.

(13) The term **hyperfinite** is used many times in this article. These are very significant entities. The have all the formal properties of a "finite" set. That is, a set where its members can be counted although this number may be gigantic. The standard language used, for the mathematical model, generates an internal language. Hyperfinite properties are properties that are restricted to the internal language. There are many hyperfinite sets that are not finite, when compared via the general mathematics used.

In all that follows, the term hyperfinite is abbreviated by HF

(14) An **operator** P represents a set of processes. These processes can take place in various domains or regions. The properties that P satisfies, usually, represent properties that the processes possess. When P is applied to an object then, usually, the result is another object. Notionally, $P(A) = B$ means that "P is applied to the object (represented by) A and the result is the object (represented by) B." The notion of "represent" or "representation" is rather important. With specific exceptions, different symbols "represent" different objects and they need not be considered as the actual objects. When they do correspond to non-mathematical objects, then relations between such representations are used to model behavior of the objects being represented.

(15) Rather than descriptions, an **instruction-entity**, in general, is a nonempty subset of the general hyper-language *$\mathbf{L}$. The term HF instruction-information refers the notion of a higher form of "instructions" that include a higher-form of counting. This is a requirement for application of the GGU-model mechanisms. [See reference [5].) For the physical-systems that yield a universe-wide frozen-frame, members of this set are statements that describe, in a direct manner, how propertons are combined to produce a finished product.

For the GGU-model processes, HF instruction-entities describe the properties of an "info-field," a substratum medium that yields properton combinations that produce physical-systems. Each universe-wide frozen-frame is obtained from an HF instruction-entity member of the HF instruction paradigm. However, there is a second type of HF instruction paradigm $\hat{I}$, for each member of an HF instruction paradigm. This HF instruction paradigm yields, in the proper order, each physical or physical-like system contained in a universe-wide frozen-frame and each such frozen-frame as well.

The HF instruction paradigm for a particular HF instruction-entity member of an HF instruction paradigm, contains HF instruction-entities that yield physical or physical-like events. Each HF instructions-entity, contains HF instructions that yield material physical or physical-like events. However, the physical-like events can be "empty" events, in which case, only a physical-system is produced. The term "physical-system" refers to such an occurrence. The $\hat{I}$ is more fully discussed below. The HF instruction-entity for each member of an HF instruction paradigm is composed of the complete collection of all of the HF instructions. These are, of course, also HF instructions and only need to be identified as HF instructions for special purposes.

Each physical-like event produced by an info-field corresponds to higher-language instruction in the HF instruction-entity. As yet, the properties of an info-field that determine physical-like events have not been determined. The method used to "design" each universe-wide frozen-frame as it relates to each of the postulated cosmologies contains a vast collection of physical-systems, in some cases, infinitely many physical-systems as well as physical-like systems. For any cosmology, there is a vast collection HF universe-wide frozen-frames each of which is a physical-like system. The major portion of each info-field directly corresponds to predictions made by members of the HF instruction-entity and these yield physical reality. The remaining portion of an info-field is <u>predicted</u> by other members of the HF instruction-entity. As mentioned, members of an HF instruction-entity can yield a physical-system or a physical-like system.

A developmental paradigm directly corresponds to a sequence of instruction-entities and yield an instruction paradigm. This idea is patterned after the notion used in biology. *Members of an HF instruction-entity behave in a manner that is similar to physical theories and physical laws that can be categorized as instructions for combining constituents in order to produce physical entities.* **For the theological interpretation, info-fields are intuitively distinct from the secular field notion.**

As examples, consider quantum particle theories and the many descriptions in biology and chemistry that satisfy the same notion of combining constituents to produce more complex physical entities. Physical science attempts to use the gleaned physical laws or instructions (rules) to show how, when they are applied, physical entities are produced. Obviously, the human mind has been used to construct and state specific physical laws or theories that when combined yield the instructions.

Of great importance to comprehension is the fact that, for a specific physical law, predicted physical behavior requires application of human mental process in order to make such a prediction. This is what the physical scientist does. Assuming that physical laws represent relations between physical entities and that the entities and laws exist, then this corresponds to "something" in the physical world that mimics such mental processes.

There are three GGU-model interpretations, secular, intelligent design, and pure theological. Relative to information, these correspond, respectively, to info-fields, HF instruction-entities (with info-fields variations), and thoughts.

So as not to confuse general universe creating rules with the physical laws, as indicated, GGU-model universe creating rules are members of HF instruction-entity. Members of an HF instruction-entity first state how many ultra-propertons are to be combined to produce physical entities that combine to form a physical-system at each moment in its development. Then they describe combinations of propertons at various levels of complexity. Finally, they describe the behavior associated with other unknown constituents that yield physical-like events and physical-like behavior. Once the physical entities are produced, their behavior, with exceptions, satisfies physical laws. Each ultra-properton, at the least, carries each defined physical measurement or coded physical description as an individually infinitesimal. The "numbers" termed **infinitesimals** are the mathematical objects that solve the 300 year old problem of Newton and Leibniz. Although the "infinitely small" was the basis for the calculus through much of the ninth-century, its "algebra" was shown in about 1826 to yield contradictions. These new "numbers" eliminate this problem.

(16) **Ultrawords** (http://www.raherrmann.com/ultraword.htm) are, most often, substratum objects that behave like super-compressed collections of information in various forms. For certain applications, they can represent super-compressed general descriptions. Various collections of objects although constructed from objects that are members of an language $^*\mathbf{L}$ are not, usually, considered as an ultraword in $^*\mathbf{L}$. Such collections are called **ultra-word-like** objects. Some of these can be modified so as to be equivalent to ultrawords.

Of significance is that "logical processes" are performable on sets of words or sets of sets of words. The deduction is simply other sets of words. This is done when one, via deduction, selects pages in a book. What is written or displayed on each page is a word. One must apply mental processes to open a book and read it page-by-page. For this model, such a book is an important illustration for the intuitive meaning of the term ultraword. An entire book can be such an ultraword. Ordered reading or ordered speaking is equivalent to an ultraword coupled with specific mental-like processes. The HF speaking or HF reading "order" satisfies the ordered *instruction paradigm.

(17) In general, let XXXXX be a name for a object or concept that is characterized by a set of properties including any describable behavior. The term **XXXXX-like** refers to an object or concept that is characterized by various properties similar to those of XXXXX and, often, has additional describable properties or behavior that differentiates it from XXXXX.

(18) A **logic-system** is a symbolic way to represent **rules of inference** . In the cases used in this article, rules of inference "represent" the input and output results of

mental deduction. The actual way the brain may physically produce the results is not investigated.

(19) The logic-system **algorithm** , as illustrated in this article, is a fixed rule for using an hypothesis (premise) to rationally deduce specific entities. The actual defined rules of inference are incorporated within each member of a logic-system . In this article, only one rule of inference is used for universe generation and it is completely illustrated. It is based upon classical (scientific) logic.

(20) In some cases, the generic expression **mode of thought** is used for a logic-system.

(21) A **finite consequence operator** is defined on sets of words taken from a language and, in this case, various sets of sets of words or even sets of sets of sets of words. Such operators are produced by logic-systems and conversely. Finite consequence operators have a few properties that mimic the very basic processes used in general modes of deduction. Other properties emerge when they are investigated via abstract algebra. Their close relation to logic-systems was shown in 2001 and 2005. The logic-systems used to generate a universe are extensions of such systems as they are displayed within this article.

(22) The Complete GGU-model uses the notion of **pre-design** . (However, this is not needed for the secular interpretation of the GGU-model.) In general, it is a **model for described behavior** and as such the entities used that reveal the behavior are not necessarily the actual processes nor entities that yield such behavior. The concepts of the temporal, non-temporal sequential and neither of these - the atemporal - are discussed more fully elsewhere. The problem is that human behavior and its comprehension is sequential. Biblically, the temporal is often used as a means of describing God's behavior that is actually atemporal.

The view from the created as to the behavior of the creator is thus colored by the internal view of external higher-intelligence behavior. The model is an attempt to describe behavior in a comprehensible rational manner. The notion of **pre-design** can be more easily comprehended by considering the concept of **potential** or **perspective** behavior that is comprehensible to His created. Thus, one can state that God rationally and in an atemporal manner conceives of designs that purposely yield, from the view of His created, temporal and non-temporal but sequential processes that yield His created physical and physical-like events. This is what "pre-design" means. **The "pre" signifies an atemporal (mental-like) conception.**

A mathematical model investigated elsewhere directly verifies the Genesis method for creation. **It is false to state that the Bible does not yield an implied description for "how" God creates and sustains His creation.** The following is a brief description for the most basic notions involved.

When I read instructions that lead to my constructing a physical object, they

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appear to me as "spoken" mental words and images. I then can mentally apply the instructions and mentally construct the object. It is not in the physical reality outside of my brain until I duplicate this object in the physical world. The Complete GGU-model <u>as theologically applied</u> states that God applies such mental-like processes in a similar but higher-intelligence manner. I emphasize that higher mental-like processes are NOT hypothesized, they are predicted. All of this is considered as "immaterial" in that it does not occur within a physical universe. He then applies a single process to change such mental constructions into physical reality. In brief, God "thinks" physical reality into existence. This may be the only way we, at present, can comprehend how God has created a physical universe and sustains His creation. The remainder of this article, among many other things, presents mathematically based rational descriptions that, when theologically interpreted, lead to this basic conclusion.

In [1] section 3.9, I give some ideas that are relative to "ultimate ultrawords," in general. (The ultraword concept is described below.) Ultimate ultrawords are employed to satisfy the philosophy of reductionism, which is an evolutionary notion where the "large" develops from combinations of fundamental primitive entities. **Reductionism is generalized and restricted to mean that a universe is composed of a vast collection of less complex physical-systems**. The most recent approach in [1a,6] that is now employed for the GGU-model does not explicitly apply ultrawords. However, as shown in [1a], certain basic processes such as that employ for the development paradigm [1d] and instruction paradigm [6] can be recast in terms of equivalent ultrawords. The only difference is that, for ultrawords, the "algorithm" employed is slightly different and would need to be characterized by different statements.

In this article, an equivalent ultraword approach, for the refined Complete GGU-model, uses a single ultraword, which can be considered as partitioned into other ultrawords in order to produce a specific universe's development. This eliminates the ultimate ultraword used to "combine" physical-systems as defined by science-communities. If not viewed via the refined approach, a single ultraword for universe generation is sufficient.

This article was originally written for both types of ultrawords and has been modified. It does not necessarily eliminate the ultimate ultraword approach. Ultimate ultrawords can be used to generate a "library" of universes. Using appropriate symbolism, the "finite consequence operator" used to obtain other universes can be replaced with operators obtained from logic-systems as they are defined in this article. (The notion of what operators represent for the GGU-model is described below. Operators represent "processes.") But, once a universe is obtained by application of material in Chapter 7 of [1a], then the simple ideas presented here for the generation of one universe are applied where the "consequence operator" reverts to its "logic-system" representation.

A few simple mathematical forms are utilized. The mathematical symbols are abbreviations for named applied objects and processes. Before the References is a list of the major ones employed. Various aspects of this article are re-expressed in terms of "information." For

applications to physical or physical-like processes, <u>hyperfinite instruction-information</u> is the operational content for hyperfinite specific information. Instruction-information and hyperfinite instruction-information are subsets of the general language *$\mathbf{L}$. The same holds for hyperfinite alteration-information. This "information" is the direct result of my unification for all physical laws.

In this article and <u>for the GGU-model</u>, the term "instruction-entity" [resp. the hyperfinite instruction-entity] also includes the notion of instruction-information [resp. hyperfinite instruction-information.] Instructions [resp. hyperfinite instructions and others] are members of an instruction-entity [resp. hyperfinite instruction-entity]. Substratum instructions directly related to the primitive info-fields and describe certain of their properties. (See http://www.raherrmann.com/specificinfo.htm) Then again you can wait until you have read this entire article. Then see the reference [5] link.) Relative to the GGU-model, using the notation of "information" was first proposed, using a different but equivalent term, when the model was first conceived. I quote briefly from a published paper, where I show that "logic-systems" preserve the properties of information.

> [F]rom the view point of how natural law is expressed today, information theory would only represent a *model* that mirrors certain aspects of natural system behavior that we seem unable to comprehend without its use. . . . (the deBroglie statement follows).

> This stated and rather obvious fact refers to human comprehension of physical (natural) system behavior. In order for us to comprehend and predict physical-system behavior, human mental activity is used. General patterns associated with such mental activity would need to mirror the perceived general patterns associated with physical-system behavior in order for us to predict by such mental activity specific physical-system behavior. Being able to predict physical-system behavior is the major application of physical law. Thus every reasonable prediction made and that is verified yields evidence that patterns of mental activity mirror patterns associated with physical-system behavior whether the system be animate or inanimate. [1.5, p. 130-131]

The "patterns" being referred to, in this quotation, are the patterns modeled by "logic-systems" and deduction. In [1], the term "specific information" is used. This has the basic properties of information but it refers to information that has a definable purpose relative to specific physical entities and physical processes. From a secular viewpoint, the notion of purpose is an unscientific addition that is not considered. The term "information" used in the article from which this quotation is taken is not specific information, but a more general notion. As I mention in [1], forms of specific information can be considered as a physical or physical-like primitive.

On page 243 of [1], I ask readers to consult this website for additional information. Many new results have been obtained since [1] was written. In [1], I have neither given all the processes that generate a universe nor the order in which they are applied and other details.

Since the publication of [1], research has continued and new and more significant processes have been investigated. There are different sets of processes that lead to the same results. Only one collection is necessary and I present the most significant collection that has yet been found.

Specific objects and their applications described below replace all others described in any other article that appears on this website. This present article also describes the intelligent agent interpretation and the new process-language behavioral descriptions that eliminate various technical terms. As usual, what is presented are interpretations for the terms and symbols taken from a mathematical theory. It should be self-evident that such interpretations need not be made.

2. The Scientific Method Employed.

The method used differs from the Baconian method of pure experimental science and the pure assumed hypothesis-deduction approach of theoretic science. It incorporates the best of both approaches.

The (Herrmann) method. [[Although not first presented in this form, intuitively, this is how the method was conceived. The mathematics used is a combination of the standard methods of analysis and methods from mathematical logic. The in-depth development of the mathematics began in 1966.]] Actual observed behavior (the data) is mathematically modeled. This behavior corresponds to actual physical entities. All of this real behavior and the actual observable physical entities that yield this behavioral can be considered, in a <u>technical</u> sense, the physical axioms (hypotheses) used for the model. Replication is used to verify that such behavior remains valid. [[A mathematical model has two sets of axioms the mathematical ones and the non-mathematical, which can be the ones describing behavior.]]

Via deduction, other entities are predicted. These predictions correspond to sets of observed and unobserved behavior (data). The predicted sets of observed behavior are related to the original physical behavior and the predicted behavior is verified. For general intelligent design, the unobserved behavior is shown to verify philosophic or theological descriptions. [The Herrmann method includes how the mathematical model is constructed so as to reveal more unobserved behavior and the rational methods used to make comparisons between observed and unobserved behavior.]

Early history cosmology and quantum physics **assumes** that there are entities and processes that cannot be directly observed. There are numerously many examples of this. The entities and processes are used to predict behavior that is physically observed and the assumed entities and processes are accepted as physically "real" based only upon this indirect evidence. For the method I use, the **predicted** entities and processes predict directly observable data. Hence, in a much stronger fashion than early history cosmology and quantum physics, the entities and processes predicted by the GGU-model method can be more readily accepted.

An example of my method. By comparison with real observations for human behavior, unobserved behavior of an higher-intelligence is predicted and then described. If we exist,

then mathematically such an entity that, at last has these properties, is predicted to exist. Of course, such comparisons are only for those attributes that can be compared. The higher-intelligence has many attributes that are not so comparable. For the secular GGU-model approach, the new entities and unobserved behavior correspond to physical-like entities and behavior that produce and sustain the development of any known purely physical cosmology.

Empirical science is based upon reflective guesses. Data-sets are recorded from observation and they are related to physical behavior via educated guesses. The first guesses are usually wrong. After trying varies ones, in some cases over many years, a guess is obtained that satisfies the data-set. The guessed at relations are often used to predict other associated behavior. Kepler used empirically obtained data for the behavior of Mars and, after much effort, guessed at a few laws of planetary motion. (His third law is in slight error.) He then, via induction, extended them to the other planets. From these laws, the Newtonian Law of gravity for circular motion can be deduced. Then Newton generalized this to all motion that involves two or more, where each possesses mass. Thus, a predicted result leads to a significant generalization. I note that in modern particle physics the entity that is claimed to carry the actual force of gravity, the graviton, is not observable.

My approach is not actually a guess. I knew some-how-or-other from my experience that if I model the data-sets using a new mathematical approach, then it is most likely that I would be able to solve the General Grand Unification Problem and secure the GID-interpretation. I have developed elsewhere a model the shows rationally that immaterial entities can influence human thought.

3. The Mathematical Languages Used and the Worlds They Describe.

As the mathematics is applied, six meaningful languages are developed, where one mostly has meaning only to an higher-intelligence. Three of these languages can describe different properties. Besides the mathematicians **meta-language**, which is a native language, such as English, German, etc. combined with symbols and used to describe the **meta-world** , the other five are the "**standard, internal, external, sigma and higher**" languages, and "worlds" as described by these five languages. The standard, internal and sigma languages have the same properties when viewed within their respective worlds. It is the view taken from the meta-world that is the most significant. (The sigma language is not displayed within this article.)

The meaning for the term "world" is contextually controlled. **It can include imagery, diagrams and even other sensory information.** The meta-world includes the standard, internal, external-worlds and does not entirely include the higher-language, but it describes various higher-language properties. Except as one might illustrate behavior, one should not imagine as a reality any of the special GGU-model properton entities in any visual form other than their symbolic representation. One can state that there "may be things" that behave in the stated manners or that "something" behaviors in a specific manner. These things can be either material or immaterial, when described. But, the GID-model is just that a "model" for

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behavior. This always needs to be understood.

For example, the informal symbols A, B, C are standard language symbol used to describe things in a standard world. In a standard language, you only describe standard objects. These are mathematically formalized and when this is done they are written as $\mathbf{A}$, $\mathbf{B}$, $\mathbf{C}$. In this article, the symbol hyper-$\mathbf{A}$ ($^*\mathbf{A}$) represents an "extended standard" internal-world alphabet symbol. If I continued discussing the other languages in detail, then one might find the subject additionally complex. It is due to these different languages that apparent contradictions are eliminated. This is especially so for the theological concepts of the "temporal," "non-temporal sequential," and "atemporal."

Logical contradictions depend upon the particular language being used AND, for applications, the additional "world" or "meanings" applied to the terms. Mike uses a standard world language and states, relative to standard world measurements, "The frequency of a photon cannot be both 17865 and not 17865. I observe it as 17865." But, consider an individual, Joe, using the "internal" language and view. In this language, there is a number λ that is not in the standard language. Joe states, "I perceive that the photon has the frequency 17865λ and not 17865." But, for the same photon, Mike still claims its frequency is 17865. Joe communicates with Mike and hears, "Its frequency is 17865 ." The standard person doesn't hear the small pause the written statement indicates and states, "That's what I said, it's 17865." Joe replies, "No, Mike your wrong, its 17865λ and not 17865." What does Mike hear, "No, Mike your wrong, it's 17865 and not 17865." Mike believes that Joe has stated a contradiction.

Clearly, the problem is that Mike has no comprehension that a number is missing since he cannot perceive the λ portion of the measurement. Notice this is all described from the meta-world using the meta-language. If this could not have been so described, an explanation as to why these statements are not actually contradictory is not easily produced, if at all. The fact is that only the meta-world yields the overall truth.

Consider the meta-language string of symbols, hyper-N - N = N'. From the standard world, this reads "- N = ." From the internal world, this reads "hyper-N = ." From the external world, this reads "- N = N'." But the meta-world tells us that from the standard and internal worlds the symbol strings have no meaning whenever interpreted. Then the external world statement is a contradiction for both the external and meta-worlds. These language facts can extend to descriptions of our physical world and other descriptions. In these cases, an explanation or a meaning can result from additional terms that allow for a more refined and meaningful description. Without this, someone within a world may use the intimating word "nonsense" to restrain any further investigation. For the Complete GGU-model, it is only from the meta-world that significant Complete GGU-model "truth" is obtained.

[[I have shown in http://arxiv.org/abs/physics/9905040 on General Relativity and elsewhere that the physical notions are considered first and the mathematical interpretations and predictions are further developed after this. To avoid contradictions, mathematical predictions associated with an interpretation may need to be rejected as "extraneous" or "pathological"

in that they do not actually present physical fact.]]

In scientific experiments, certain observed behavior within the standard world has no temporal explanation. It is simply accepted without any explanation. But, this behavior does have an explanation when viewed from the meta-world. In one room, an experiment has been proceeding for many weeks. Mike starts days after the experiment has started and begins observing counters on a panel, where he first sets the counters to zero. He has no idea whether the experiment is being used to verify a prediction or to obtain empirical information. He than makes a list of the counter results. Counter G proceeds one step each time a certain type of photon pulse-gun fires. The second counter S proceeds one step each time the photons hit a target (a success). The absolute assumption is that there is no knowable relation that guides where the photon pulse gun points and fires based upon the specific fact of whether the previous photon hits the target or not.

Mike lists the ratios S/G. After working for three hours, Mike's list is 0/1, 0/2, 1/3, 2/4, 3/4, 3/5, 3/6, . . . , 245/327, 245/328, 245/329, 246/330, 247/331, 248/332, 249/333, 250/334. Mike notices that the first ratios, in decimal form, vary a lot, 0.0, 0.0, 0.333, 0.5, 0.75, but the last ones are very near to 0.75 and they look like they are staying "near" or getting "nearer" to 0.75.

In a different room, Bob has an identical set of counters. Bob has the same lack of knowledge as Mike and he also makes a list. He starts with his counters set at zero two hours after Joe started. After a few minutes Bob's S/G ratio is $1/4 = 0.35$. A the moment Bob gets his first target hit, Mike's ratio is $245/327 = 0.749$. Of course, the counters that Joe and Bob use register the same unit change for the same firings or hits. Also, the first ratios are not the same as Mike's and, indeed, even after Bob has counted 327 firings the ratio of success to the number of photon pulses fired is definitely not as near to 0.75 as those that Mike counted. Notice that in both cases, neither Mike nor Bob have any idea if this makes sense or not.

But, Bob continues until the G counter says 1,100. At that moment, the S counter states 823. He notices that the ratio is 0.748. Mike and Bob don't know that a physical theory has predicted that these ratios will continue to group more and more closely about 0.75. Indeed, this experiment verifies this prediction. Why does a large number of photon pulses, as compared to "hits," "converge" to a specific number and this is not dependent upon when you begin counting? And, how is this all possible unless in some way the photon pulse-gun is being directed or a photon pulse striking the target does influence the path of the other projectiles, or . . . ?

As noted previously, this behavior is explained when viewed from the non-temporal meta-world. This behavior satisfies the predictions of non-temporal meta-world behavior as modeled by "hyperlogics." Any detailed description as to why this yields the results appears to require a higher-language. Properties of these processes display a signature that states that the pre-designed behavior satisfies an higher-intelligence process and we neither have the language nor intelligence to comprehend exactly why this experiment behaves this way. But, we have been

allowed to predict, with great precession, the ratios IF enough photon pulses are fired.

In summary, for the Complete GGU-model, the "standard" language has two forms - the informal and formal. The informal is from glossaries and the standard dictionaries one commonly finds in books detailing defined physical behavior or philosophic concepts. The formal is the mathematical representation for the informal. The "internal" language describes behavior in the "internal" world. The "external" language describes behavior in an "external" world. It is not necessary for the reader to have any great comprehension as to these differences. That's my job. When possible, I use the meta-language to give meaningful "comparisons" relative to observable standard behavior.

4. The Single-Complexity Approach

4.1 A GGU-model secular scenario and basic concepts.

The GGU-model was first conceived in 1979 under a different name, the MA-model. It was not until 1995, that an entity was created that now leads to a rather simple analogue model the mimics the GGU-model universe creating processes. The entity is the DVD. (The term "instructions" is also used for GGU-model purposes.) One can consider the DVD as a device that, via software, contains coded instructions that instruct the hardware of a DVD player to construct a video signal that leads to a reproduction of images that originally are coded and represented by the variations (pits, lands, etc.) on the surface of the DVD. **All that follows was originally and can still be re-phrased only in terms of general descriptions. I present only the newest version.**

The basic operator employed in [1] is the "finite consequence operator." Properties of a collection of such operators are determined by "lattice theory" and, in some cases, this requires considerable abstract mathematics. In 2001, the notion of the "logic-system" was discovered and shown to generate a finite consequence operator. (See http://arxiv.org/abs/physics/0105012) Then in 2005, it was shown that a finite consequence operator determines a logic-system such that when the logic-system is used to generate a finite consequence operator the result is the same operator that determined the logic-system. (See http://arxiv.org/abs/math/0512559)

As demonstrated below, logic-systems and their properties are easily described in pictorial form. To obtain a deduction, a rule is employed that is so simple that, as experiments show, it can be applied by eight-year old children. The consequence operator methods as they appear in [1] and [1a] are still viable, especially if reductionism is assumed. Also, such operators can be used when "covirtual universes" are used to satisfy the "participator" requirements. Once the appropriate entities are obtained, one can switch to an equivalent logic-system.

> **All of the basic GGU-model processes are modeled in specific and significant ways. The mathematics directly <u>predicts</u> other fundamental objects. Each process used can now be directly related to real human mental and physical processes.** Of considerable importance is that the General Intelligent Design

interpretation (GID-model) <u>predicts</u> the existence an higher-intelligence, where such an intelligence is compared to human intelligence relative to deductive thought. Such an higher-intelligence is not postulated, it is <u>predicted</u> from how humans behave. Its relation to various defined creationary operators is inductive in character.

The following scheme (0) relates directly to many human forms of behavior. These are described via the "H" statements following this scheme. [[Usually, but not always, mathematicians write the members of this (0) scheme, as it relates to operator application, from left-to-right (i.e. C(X) "C applies to or operators on X). All schemes of this type that appear in this article are written in an application mode from right-to-left. The symbol Λ is a capital lambda.]]

$$(0) \quad \begin{array}{cccc} H_1 & H_2 & H_3 & H_4 \\ \end{array}$$
$$((\Lambda(n), I(a,b))\ \mathcal{A}) \rightarrow (\mathtt{GSt})$$

Bob works for "The World Construction Company," a company that constructs detailed globes that depict our "world.'" The instructions Bob will use are contained in a book. This book contain instruction-entities for building, in a step-by-step manner, via laminations, a large wooden globe. The laminates are to be made from very thin wooden disc-like sections. The measurements for the laminates must be very accurate so as to have the usual slight "flatness" at the poles and "bulging" in the middle. The laminates are to be ordered from the south-pole to the north-pole. Relative to the poles and equator, there are ten different globe designs from which to choose. The number of laminates used to construct the globe is the complexity used for this particular construction.

H_1 The complexity number n = 96. Since each laminate is to be constructed from two pieces, then there are actually 48 laminates. This is indicated in (0) by writing $\Lambda(96)$. Page one has the title, '"Instructions for a Laminate Construction for a size 96 Laminated Globe."

H_2 As a safeguard, a book B is constructed in such a manner that duplicate instructions appear on two pages. One should appear on the left-hand even numbered page and there should be a duplicate on the very next odd numbered page. If this does not occur, then Bob knows that the book was compiled incorrectly and he should not proceed. The reason for this special book construction is to make sure that the two sections and the laminates are fastened together in the correct order.

The instruction-entity for the first piece of a laminate to be constructed is contained on page 2 of a book. It has a code name I(1,1) that's written on the laminate piece when it's completed. The page itself is considered as a "set." So, I(1,1) can also be considered as a code name for an instruction-entity although it may contain but one member. The instructions-set for the second piece appears on page 4 and the coding is I(1,2). So, obviously, I(1,1) and I(1,2) are members of the book B. The first laminate is constructed from the pieces. [The actual coding used for the GGU-model is different than this in that the numbers used begin at 0.]

H_3 Bob begins his laminate construction by first mentally determining, via A, that there is an instruction-entity I(1,1) on page 2 of the book and, if so, he will use I(1,1) to construct the first piece of the first laminate. In this case, I(1,1) exists as page 2. As discussed below, this is the beginning of a repeated procedure Bob employs.

H_4 Bob considers the elemental material and the instructions on page 2. Using his brain and without considering how his brain is translating the instructions into his physical actions, he constructs the piece of the laminate. He gathers his tools together, including a jigsaw, strong glue and selects a rectangular piece of wood. This corresponds to the G as an operator. He first marks the portions to be cut out from a rectangular piece of the material for a semicircular-disc, a half-disc. He uses the jigsaw to give the outer edge of a half-disc little peaks and indentations as required by the instructions. This is done so that, when the globe is finished, it has high and low places for land features, rivers, lakes, bays, and oceans, where artists will complete the final appearance. Thus Bob has produced the piece I(1,1). He marks the piece as I(1,1).

Bob repeats all that he has done for the second I(1,2) piece. He now glues the two pieces together. [This gives him a complete laminate with two codes I(1,1) and I(1,2).]

Steps H_3 and H_4 are repeated to construct each of the other complete laminates. Thus, Bob next goes to page 6 and 8 for the instruction-entities I(2,1), I(2,2). In this notation the first number written left-to-right is the laminate number and the second is the number for the half-disc.

But Bob stops after each of the two steps that yield a laminate and makes a final check. (I note that the instruction-entities that appear on the even numbered pages yield an instruction paradigm.)

What is the final check? There is another scheme that looks this:

$$(0')\quad \begin{array}{ccc} H'_1 & H'_2 & H'_3 \\ ((\Lambda'(\text{n}),\,\text{f}(a,b))\,\mathcal{A}) \end{array}$$

Bob goes through the same procedures as before and here marked as the H'_i as i varies from 1 to 3 except that the pages on the similar marked book B' do not contain instruction-entities for each constructed object. They contain a description in words or a drawing or an image of how his constructions should appear. In this case, before continuing to the next step in his constructions, Bob compares his finished result with the corresponding drawing. These drawings are made by the designer of the globe and the instructions are written by a technical writer. These are the exact procedures used throughout our world. In this case, what appears on the even numbered pages yields the corresponding development paradigm d.

The World Construction Company does not consider these laminates as existing in "physical reality" until they are inspected. An inspector views each complete laminate via an electronically transmitted image as it quickly passes under a camera lens. Perceiving this image is modeled by the standard part operator, St. But, it's at this point

where this illustration does not exactly depict the final step. There is, however, an aspect of human physical behavior that does. This is our "persistence of vision." That is, we do not visually perceive a continuous display of visual images. The image is maintained in one area of our iconic memory for a very brief period of time.

For the older motion pictures that use film-stock, as an object moves rapidly, the disjointed motion picture images and brain functions give us an illusion of movement although we actually are being presented with this movement in small steps. That is, some of the movement is actually missing from the film. The same is true when we are presented with TV images.

What is important is that each visual image is momentary held as a fast decaying store of visual information. For this aspect of our iconic memory, each step is "erased" and replaced with the next step in the progression. Other aspects of our iconic memory retain this information for longer periods of time. When I recall previous visual images, they have a different character. They do not carry the same texture that they would have if I were actually viewing them via my eyes. I "know" that I am not actually "seeing" them.

So, the inspector okays a Bob constructed laminate, and then views the next laminate, if any. Although the previous one still exists, **it is no longer physically real as far as the inspector's vision is concerned**. **Visionally, they are only momentarily physically real.** [[For the GGU-model not only is the previous universe-wide frozen-frame not consider as physically real but the previous info-field may not exist or it may exist in a covirtual form. If the info-fields only exist momentary, then, using the DVD illustration for coded information, instruction-entities exist.]]

After the entire set of 48 coded wooden laminates pass the inspections, they are sent to another department for final assembly.

The above illustration describes similar but weak standard physical processes that model most processes for GGU-model universe creation. So, how do these notions generate a universe, even one of infinite extent or one that has no beginning or no ending in observer-time? The following is one of the complete ways this can be accomplished.

[[In all cases for the applications, such "standard" schemes are not written in the customary mathematics "composition" form.]]

The mental processes that Bob used to obtain each correct page of the book have been described. This description is call an **algorithm** . For universe generation, this algorithm can be mathematically characterized. When this is done, the mathematics predicts the properties of another algorithm $^*\underline{\mathcal{A}}$ that selects the correct "page," so to speak, from a much, much larger book. This algorithm $^*\underline{\mathcal{A}}$ is applied to ($^*\mathbf{\Lambda}(\lambda)$, $^*\mathbf{I}(a,b)$) and produces, in order, instruction-entities to which the "properton gathering" operator G is applied. This unites a collection of ultra-propertons, called an intermediate properton. These are bound into collections that yield the elementary particles and these collections are gathered into other bound collections. This process continues until a universe-wide info-field $IF(i,j)$ is obtained. [This info-field

corresponds to the set of half-discs that comprise a laminate in the above illustration. The $^*\underline{\mathcal{A}}$ applies even if this refined approach is not employed.] The gathering operator is applied to each appropriate collection of instruction-entities in the (i,j) order.

Relative to intelligent design, the ability to follow specific instructions and, using specific building material, produce results that exactly satisfy the instructions is a measure of intelligence. Such intelligence is further enhanced in that the results satisfy intelligently designed and expressed physical laws that satisfy the final realized results. Further, in certain cases, we can describe specific purposes for the designed gatherings. However, our inability to describe such purposes does not affect the other intelligent design signatures. The gatherings, when realized, continue to satisfy behavioral aspects of such laws via the sequence of info-fields. The gathering operator G represents such intelligent agency. In comparison, the intelligence being displayed is that of a higher-intelligence.

When the realization operator St is applied it is "coupled with" the gathering operator that produce each $IF(i,j)$, the collection of "bound" entities. Realization only refers to "certain" bound collections. [Their are other collections that can be bound together. But, they represent substratum systems of which we can have little or no knowledge.] The previous coupling is broken as the realization ceases to exist and the previous gatherings need no longer be composed of specific bound collections. Then again, for some schemes, the unrealized info-fields can be retained. Of course, the instruction-entities and descriptive developmental paradigm can still be retained as they would if they were mere positions as coded on a DVDs. The information coded on a designed DVD has not been erased, so to speak. It models a type of higher form of memory.

What is discussed in the "H_k" statements is an "interpretation" for the symbols displayed. This interpretation has associated human mental and physical procedures with mathematical symbols from a specific mathematical theory. Although not first constructed to conform to this type of configuration, one can model the intuitive concepts displayed by schemes (0) and $(0')$ via mathematics. This yields a "mathematical model."

Nonstandard analysis began its development in 1961. A very general formal approach appeared in 1966. At the suggestion of Abraham Robinson and James Abbott, I began my studies in 1969. In 1979, I applied this method to an area of mathematical logic and languages known today as universal logic. The results predict behavior for objects that are not part of standard mathematics as it existed prior to 1961. These new mathematical entities can be compared with the original standard ones. When this is done, the new entities can be symbolically displayed as schemes such as (I) at the beginning of this article. In order to consistently interpret the new symbols, new terms are necessary. [This is where the internal, external and meta-langrage terms are employed.]

A universe can be considered as a physical-system composed of numerously many other physical-systems. Using the new terms and the properties they display, the GGU-model states

specifically that, due to the presence of physical-like or "ultranatural" events, the fine-details for universe generation need not be describable via any language we can comprehend. But, there are predictions that descriptions do exist using a higher-language. These special events can indirectly affect physical events. I have speculated that such influences will be observed for large configurations. Thus the recently discovered acceleration of our universe's expansion does not require "dark energy." This can be caused by additive miniscule influences of ultranatural events. The GGU-model gives other possibilities as well.

Recall that (general) instruction-entities [resp. descriptions] are for moments in primitive-time, while pure-instructions [resp. pure-descriptions] are for *primitive-time. The term "primitive-time" only means that there is a sequence of instructions [resp. descriptions], an **instruction paradigm** [resp. developmental paradigm] that leads to an event sequence. For moments in observer (i.e. measurable) time, an event sequence corresponds to actual physical events.

In scheme (I), the $^*\mathbf{\Lambda}(\lambda)$ is a model for an actual ultraword [6] that is a member of a higher-language $^*\mathbf{L}$. This ultraword has all of the formal properties of an ordinary word taken from a standard language that we might us. Using such terms as "ultraword," the rational predictions made by the formal mathematical model are translated into statements that yield meaningfully described properties of a higher-language and higher-deduction and similar informal concepts.

Consider the 96 developmental paradigm descriptions employed by Bob. These descriptions appear on even numbered pages. Let's denote these by members of the set of symbols $\{d(1), d(2), d(3), \ldots, d(96)\}$. (The $\{x\ x\ x\}$ indicates a "set" or "collection" of the "stuff" x x x between the { and }. An x is called an element or member of the set. The $,\ldots,$ means that from the members illustrated you should be able to follow the indicated rule and fill in the missing members.) Call these technical drawings.

Let's model the pages of the book B'. Except for page 2, page 3 might be modeled by a left-to-right ordering represented by the pair $(d(1), d(2))$. (Reading left-to-right, the "first coordinate" is $d(1)$ and he "second coordinate" is $d(2)$.) Thus, what we get if we continue this process and include $d(1)$, is the set $\{d(1), (d(1), d(2)), (d(2), d(3)), (d(3), d(4)), \ldots, (d(95), d(96))\}$. This is actually the proper notation for a "logic-system." Then you have the corresponding instruction-entities system $\{I(1), (I(1), I(2)), (I(2), I(3)), (I(3), I(4)), \ldots, (I(95), I(96))\}$.

For the two schemes (0) and (0′), the $I(1) = I(a, b)$ and $d(1) = f(a, b)$. Although GGU-modeled instructions deal with substratum processes, they use physical laws as a model and also relate directly to human behavior and mental processes. The instructions and corresponding $d(i)$ are directly related to the physical event, to a specific laminate. There is a simpler approach to the ordered pair form and this is used in this article and the mathematics paper [6] on ultra-logic-systems.

Suppose you know that "If Bob goes to the store, then he will buy a new coat." So,

Bob goes to the store. Hence, "he will buy a new coat." The physical mental processes that lead to this conclusion do not concern us. The processes are "modeled" via what is put into a brain, and what conclusion the brain states. This same logical pattern holds for any such conditional statement. So, it can be written in a general form as (1) If P, then Q, (2) P, (3) (therefore) Q, where P and Q are any meaningful expressions. To remember this, one "sees" that given (1) and (2), then Q is detached and is the logical conclusion, a deduction. This is the rule of detachment or more formally "modus ponens."

In the subject of "formal logic," symbols such as $\rightarrow$, $\leftrightarrow$, $\neg$, $\wedge$, $\vee$, $\exists$, $\forall$ and others are used as abbreviations for statements such as (1) and others that constitute a fixed specific form of discourse. However, these symbols all have informal meanings IF translated. For (1), one writes P $\rightarrow$ Q. Logic is not dependent upon any "meanings" accorded the P, Q or any other symbols such as P(x,y). Hence, logical deduction is not dependent upon meanings accorded the P, Q, etc. Abstract mathematics, where symbols are manipulated under specific rules, is the primary science where meanings are neither assigned to the A, B, a, b, . . , nor to the variables x, y. (However, motivation may have come from meaningful assignments.) This is why mathematics is used throughout other disciplines since one can substitute different meanings for the symbols used and the results satisfy strict rules for logical discourse.

In general, logic-systems are defined via the notion of "ordered n-tuples" like the ordered pairs displayed above. These are the rules of inference. The actual model for the mental processes that yield a deduction is the **algorithm** . As used by the mathematician, this can be a rather difficult procedure since it often involves selection from a potentially infinite collection of symbol strings. But, for this model, this is a simple procedure that can even be duplicated by a machine. The algorithm is written informally and gives a rule for dealing with symbols. It's to be repeated the exact same way whenever applied.

The ordered pair approach is not used <u>for this special case</u>. One only needs to consider the P and Q as distinct objects in a two member set $\{P, Q\}$. Then given a single object, an hypothesis or deduced object P, the **deduction algorithm** states that *if a complete symbolic form* X *is a member of a two element set, then you deduce the other member.* If you obtain a deduction from a two element set, then that set is not used again. This deduced object is also termed a "conclusion." For the GGU-model, they are always distinct. [[Each contains a *primitive-time identifier as described in [1a] or by simply considering (i, d) or (i, I).]]

In all that follows within the text portion of this article, the deduction algorithm is denoted by A. How would one apply the (repeated) "deduction algorithm," A, to more than one "If P, then Q" statement? Suppose you're given the phrase A(1) and the following "binary" logic-system. Due to how a formal alphabet is constructed, it's useful in the following illustrations to use symbols such as, A(1), A(2), A(3), etc. as alphabet symbols. The number symbols that appear are those of the usual counting numbers.

Let set X(6) denote the following 6 piece logic-system.

$$A(1),$$
$$\{A(1), A(2)\},$$
$$\{A(4), A(5)\},$$
$$\{A(2), A(3)\},$$
$$\{A(10), A(12)\},$$
$$\{A(3), A(4)\}.$$

Your first step is A(1). ("A(1)" is an hypotheses or premise.) Now the rule, the algorithm, for two member sets is used. The symbol A(1) appears in $\{A(1), A(2)\}$. Deduction step (2) is A(2). Now **repeat** the rule with any deduction previously obtained. You do not us the set $\{A(1), A(2)\}$ again since if you did you would deduce nothing new. The A(2) appears in $\{A(2), A(3)\}$. Hence, step (3) is A(3). Repeating, we have A(3) is a member of $\{A(3), A(4)\}$. Thus, step (4) is A(4). Finally, using A(4) we have that deduced step 5 is A(5). However, neither A(10) nor A(12) is a conclusion. So, not all of the "symbols" that appear in logic-system X(6) are deducible. Some of the terms that are used to indicate that a deduction has occurred are "Hence, So, Thus, Therefore, Consequently." Notice that the 5 piece logic-system you get by removing $\{A(10), A(12)\}$ yields the set of all the logic-system symbols used. That is, $\{A(1), A(2), A(3), A(4), A(5)\}$.

This logic-system is a special form that yields the exact same results, in the exact same order, if you informally applied modus ponens to the set of hypotheses, $\{A(1), A(1) \rightarrow A(2), A(4) \rightarrow A(5), A(2) \rightarrow A(3), A(10) \rightarrow A(12); A(3) \rightarrow A(4)\}$. Note that the order in which the hypotheses are presented has no affect on the result.

In formal deduction, the hypothesis A(1) or any other deduced object can be used repeatedly. But, for this case, no new conclusions are obtained. In such deduction, the human mind is assumed to be the controlling factor. We mentally decide upon what portions of the logic-system to use or not to use. Thus, adding the requirement that such doubleton sets only be used once is an allowable part of the general algorithm for logic-system deduction.

I'm sure you can construct logic systems X(5), X(7), X(8), indeed, X (any size) such that a step-by-step deduction will yield each of the symbols used. Just use the above example without a set like $\{A(10), A(12)\}$ that has nothing in common with any of the other two member sets.

The method demonstrated in the paragraph above and one with a slight variation are the <u>only</u> deduction algorithms needed for the entire GGU and GID model. [[Logic-systems determine finite consequence operators and conversely. To obtain the operator that relates sets of objects constructed from a language L to sets of objects constructed from L, take a subset W of L. Then completely apply the logic-system and algorithm to W. This yields a set of objects. So, if I denote the relation by C, what we have is that this process takes W and yields C(W). Such a finite consequence operator C has various properties. For the logic-system just described, suppose that your set of hypotheses is $\{A(1), A(10)\}$. Then

$C(\{A(1)\}) = \{A(1), A(2), A(3), A(4), A(5)\}$. (Unless otherwise stated, the deduced results always include the hypotheses,) But, $C(\{A(10)\}) = \{A(10), A(12)\}$. Consequence operator notation is not used in this article.]]

As described above, as of the date of this article, the definition of various processes can be directly related to human mental processes or behavior. Is this a legitimate procedure? Yes, and as an example consider the definitions as used within basic set-theory, where the motivation is based upon various human processes such as making choices, writing done strings of symbols, and using our imagination to form sets. Clearly, these processes require purposeful mental activity. Basic mathematical processes can start with intuitive human behavior. There are mathematical objects formed where you must know your left from your right, the concept of a top as related to a bottom and even the back from the front. I have an advanced textbook the defines a left-hand orientation in a diagramed 3-D space by drawing a left-hand with its fingers pointing along the pictured coordinate lines.

[[The following example indicates what I have stated many times relative to mathematics and human behavior.]] "A set x is formed by choosing the sets which are to be members of x [2, p. 322]. . . . there is a stage after all the stages in S provided we can image a situation in which all the stages in S have been completed" [2, p. 323-324]. (The S here is not the one used elsewhere in this article.) To "form" means to either place sets defined as symbols between the symbols $\{$ and $\}$ or imagine that the choosing process can be continued in a specific manner. For example, consider the $\emptyset$ as the "empty set." This is defined as a set, where there are no sets used to form $\emptyset$. That is, $\emptyset$ has no members that are sets. It is the only set not formed from other sets. All other sets must be formed from previously formed sets.

Sets can be considered as formed in "stages" S. For all but the first stage of formation, for each stage upon which a set is formed there are stages that intuitively come *before* or are *previous* in our constructions. (One can think of stages as glass platforms through which one can see the other stages with the formed sets sitting on them.) Now you can form at such a stage S, sets composed of collections of sets formed on stages that are intuitively before the formation stage S.

We start with the set denoted by the symbol $\emptyset$ and considered it formed at stage zero. Now for the first formation stage S, we can form the set $\{\emptyset\}$ by choosing set $\emptyset$ and placing it between $\{$ and $\}$ symbols and write $\{\emptyset\}$, which is defined as a set. The set formed at stage zero can also be formed at stage 1 and yields a repeated set $\emptyset$. (In [2, page 323], it's mentioned in note 2 that this means that if a set is formed at a stage S it can also be formed at every "later" stage. This can be restricted to the formation of sets that are not the same as any previous ones.) For the second construction stage, we use sets formed at previous stages. Previously, we have sets $\emptyset$ and $\{\emptyset\}$. We can form at this stage $\emptyset$, or $\{\emptyset\}, \{\{\emptyset\}\}$ or $\{\emptyset, \{\emptyset\}\}$ and each is a set. The new sets formed are $\{\{\emptyset\}\}$ and $\{\emptyset, \{\emptyset\}\}$. Note that only two sets differ from the previous ones formed and that two and only two formation braces $\{\{$ and $\}\}$ are used to form these new sets. (I wonder if this is will continue to be the case?)

Notationally, we need to identify the formed sets at each stage of formation. We do this with "tick" marks. Let $\emptyset = x$. Tick marks, like $x_{|||}$, can be used as indicators for sets constructed at various stages, $S_{|||}$. Intuitively tick marks can be counted and the number of them used as an abbreviations for a finite collection of these tick marks. Except for the notion of intuitive counting, no other properties are given to these numbers. Then $\emptyset = x_0$.

Let $\emptyset = x = y$. Let set $y_1 = \{\emptyset\}$ be a stage one formation, where y_1 contains one member. Then there is a stage two formation that is composed of the members of y_1 and the stage one formation $y_1 = \{\emptyset\}$ itself. This yields the special set $y_2 = \{\emptyset, \{\emptyset\}\}$. As above, y_2 is formed from two previous sets that are formed at two previous stages, the sets are $\emptyset$ and $\{\emptyset\}$. Using ticks abbreviations, we have three special formation stages S_0, S_1 and S_2. Notice that we can get y_2 by simply stating "take the y_1 and use its members (they appear in previous sets constructed at pervious stages), write them down and the set y_1 itself between the $\{$ and $\}$." Following this simple rule and the fact that any set formed before stage three can be used, for a S_3, we get $y_3 = \{\emptyset, \{\emptyset\}, \{\emptyset, \{\emptyset\}\}$.

Clearly, we can't continue this specific symbolic "writing down" since we would not have the physical resources. But, we can do it mentally. Thus, we employ an induction definition. Let y_n be formed at stage $S_{y(n)}$. Then y_{n+1} is formed at a later stage $S_{y(n+1)}$ by using the finitely many members of y_n and y_n itself (i.e. $\{y_n\}$). (We have also inductively defined the construction stages.) In general, the sets produced will satisfy the notion of the "potential" infinite.

We now come to the conceptual part of set theory as discussed by Shoenfield and our imagination.[2. p. 323-324]. Each of the constructed sets is intuitively finite and each is specifically defined. But our sets have an additional property, they are formed at some stage. We now need to consider a question. You have the stages at which sets are formed. These stages are not defined as sets. Does there exist a stage S, a construction platform, where each of the stages used to construct sets is before S? A stage is not a set, but a method for construction. So, Shoenfield simply states that maybe we can image that such a stage S exists for the collection of all inductively defined special construction stages. He doesn't indicate that this is actually possible, however, and this "maybe we can" is what is rejected by some. Thus, assuming we can so imagine S, then there is a set $\mathbf{N}$ of all of the inductively constructed sets y_n produced via S. The set $\mathbf{N}$ is a completed infinite set. There are many other sets that are not members of $\mathbf{N}$. Can the S stage actually be imagined? Yes, and I describe it below.

It has been said the people cannot imagine the "infinite." The individuals who state this can't imagine it. But, I can and here is how.

How do I mentally image the completed infinite set $\mathbf{N}$ via a stage S? That is, something that is beyond the above illustration of the potential infinite stage method for set construction; something that many claim cannot be done. Sorry, all that claim this are wrong. But, I cannot successfully draw this mental image. Close your eyes or go into a "completely" dark room. That is, in some way, remove the visible light from your view.

Now imagine a collection of square panes of glass. They are vertical and placed one behind the other but with the space between them. The space between them is slowly dwindling as they get smaller and smaller in size until they appear to be just one single dot. From your mental view, they appear in a row that extends towards the "upper right." They extend towards a "vanishing point."

The fact that the background has no boundary and the black surrounds this row of glass panes is what, as described below, yields a meaningful vanishing point. (You might have to color the panes to imagine this successfully.) Although this black background has no "visible" boundary, you still have a direction relative to your mode of viewing.

As you start from the closest pane and move mentally to the smaller and smaller panes, you mentally enlarge the one you stop at and notice that there is another pane "after" the one you stopped at. This is the notion of the potential infinite.

Unfortunately, there is one aspect of the image I cannot draw. This is the actual aspect that, for me, yields a model for a completed infinite via a model for the stage S. In my mental image, there is no edge to this black background. Nothing is there that seems to stop the panes. There is such an edge controlled by an individual's field of vision when physically "seeing" any collection of objects moving off in the same visual direction. Further, any finite drawing must have an edge. So, what part of this description is the stage that includes all the other stages?

It is you and the entire conceptual mental image you have. It's within this "view" that each of the other stages exist, with their constructed sets. It's within this "view" that these images occur. An actual construction stage can be anything from which a construction notion can be initiated. All other stages mentally exist within this view and this "complete" view can be defined as "something" that comes after the other stages. So, what do you have? Your mental view is a stage for construction where you "place" all of the previously constructed sets. If this "view" did not mentally exist, then what are you conceptually imagining? Using this view, I obtain a mental view of a completed infinite, the objects that are sitting on the glass panes or formed as if viewing through the glass panes.

Notice that in such cases, you can't rationally view yourself as part of the image. For if you could, then there is an argument that leads to a logical regress and your brain would close down.

So, it seems that there is, at least for me, a mental model for a completed infinite. Of course, since modern mathematics is based upon axioms that need have no relation to physical reality, then this model may be considered unnecessary by a "purest." (There is another similar approach using a "white road" that can generate a view of the completed set of natural numbers. See http://raherrmann.com/infinite.htm)

[The logical regress occurs this way. If I can image myself viewing this scene, then I can image myself imaging myself viewing this scene. Then I can image my myself imaging myself imaging myself viewing this scene. Etc.]

I now show why the pages in the book B for the above H_k statements have their special form. *The human mental process of choosing a specific collection of objects so as to <u>order</u> them in a definable way that is different from other modes of <u>order</u> is modeled.* For example, ordering a set of rational numbers uses different mental processes than how one might order the set of clubs as they appear in their standard playing-card order.

Now comes a somewhat more difficult part. I use the Bob illustration as an example. The laminates are given numbers in the order they are finished. But, each laminate is composed of two pieces. So, as done above, we use the "ordered" I(n,m) to indicate that the instruction-entity for laminate n is composed of an instruction-entity for each of the m pieces. I use the previous notation for this.

Consider twenty ordered instruction-entities. First, simplify notation and let $\{I(1,1)\}$ = $W(0)$. Then let $\{I(1,1), \{I(1,1), I(1,2)\}\}$ = $W(1)$, then let $\{I(1,1), \{I(1,1), I(1,2)\}, \{I(1,2), I(2,1)\}, \{I(2,1), I(2,2)\}\}$ = $W(2)$, then let $\{\ldots\}$ = $W(10)$. You use all 10 of the "i" pairs. Then $W(10) = \{I(1,1), \{I(1,1), I(1,2)\}, \ldots, \{I(10,1), I(10,2)\}\}$. Now we have the "set of logic-systems" $\{W(1), \ldots, W(10)\}$. Note what happens If you select $W(2)$ and apply the deduction algorithm. You have for step one I(1,1), then for step two I(1,2) and then for step three I(2,1) and then step four I(2,2).

The set of logic-systems $\{W(1), \ldots, W(10)\}$ is used to construct a logic-system made up of these logic-systems. This gives $\Lambda(10) = \{W(0), \{W(0), W(1)\}, \ldots, \{W(9), W(10)\}\}$. What happens when the deduction algorithm is applied to $\Lambda(n)$ AND as each $W(i)$ is deduced you apply it to that $W(i)$?

For major step 1, you get $W(0) = \{I(1,1)\}$. And from this, you get the step I(1,1) by application of the deduction algorithm A that is applied to obtain each deductive step. Then, for major step 2, you get $W(1)$. And from this step, I(1,1), I(1,2). Continuing, you get as the last major step $W(10)$. And from this step you get (in order) I(1,1), I(1,2), I(2,1), I(2,2), . . . , I(10,1), I(10,2).

For $n = 10$, $a = 1$, $b = 1$, this is exactly what the general symbol $(\lambda(n), I(a,b))\underline{\mathcal{A}}$ indicates. As mentioned there is a "word" from the language L that can be used in place of $W(10)$. And, this single word is composed of ten other words, one for each laminate. The process mimics the same modus ponens type of deduction as it is applied to such a "single" word and it is composed of words. [In the case of an ultraword, it is a lot "bigger" and hyperfinitely many conclusions are obtained.]

So, your deduction produces the instruction-entities in the exact order that they are needed. (This was originally obtained by the "ordering operator," but, now such an operator is no longer applied.) These ideas are mathematically model in a very special and rather new way. All of these human-type processes are finite in character. But even in the case that a universe has a beginning and ending in finite observer-time, there is an unlimited "amount" of primitive-time and each section of a universe, a universe-wide frozen-frame, is associated with such a primitive-time.

[[Note: For the modeling process, the first step is to express all definitions and the like in terms of an informal language. Then these objects are embedded into a standard mathematical (super)structure. This embedding allows us, at this stage, to go back-and-forth between the informal and the formal standard languages. The third step is to consider the expressions as embedded into a nonstandard model. The actual investigation of L and all of these embedded objects uses the different previously mentioned languages. Rational numbers and even real numbers are used informally and then formally. There is no circular reasoning since such informal mathematical objects can be written in a different font and even a different color.]]

I use bold fonts to identify objects in the mathematics that <u>behave like</u> those in the informal world. For example, a phrase like "It moves" = b is equivalent to the coded mathematical object denoted by $[f]$, which is further denoted as **b** so as to indicate its origin. If I find a $[g]$ in the model, then it may be possible to completely decode the $[g]$ and get "God loves you." In some cases, the formal statement can only be partially decoded. For example, using a specific mathematical process one gets "The energy is ." It can have missing symbols. In many cases, expressions cannot be decode at all. But, the objects still behave like grammatical "words" taken from a predicted language $^*\mathbf{L}$ and are often interpreted as such.

When the informal algorithm $\mathcal{A}$ is embedded into our standard mathematical structure, it yields the mathematical object $\underline{\mathcal{A}}$. The processes that are done by this algorithm can be broken down into pieces and expressed in a "formal" language. However, what is significant are the deductions, the conclusions.

For the GGU-model, there is a one-to-one relation Λ on a set of natural numbers greater than 0 that yields each of the logic-systems used to generate the universe-wide slices. What the term "one-to-one" means is that each logic-system is distinct and it is associated with but one natural number. For this article and the Bob example, the 48 laminates yields the logic-system $\Lambda(48)$ that yields Bob's 96 instruction-entities. For the GGU-model and universe construction, the instruction-entity concept is made more specific and becomes an HF instruction-entity and the notation is more expressive.

Due to how a universe is constructed, there is a different collection $\hat{I}(n)$ for each natural number denote here by "n." Hence, there is a one-to-one relation Λ on the set of all natural numbers greater than 0, that yields various logic-systems $\Lambda(n)$ from which $\hat{I}(n)$ is obtained. This relation is "onto" the set $\{\Lambda\}$ of all such logic-systems. "Onto" means that the correspondence assigns each member of a set of natural numbers greater than 0 to a single member of $\{\Lambda\}$ and there is no member of $\{\Lambda\}$ that is not so assigned a natural number. This relation has a special property. If you have two natural numbers m and n, both greater than 0, and $m < n$, then, when the ordered contents are obtained, those in $\Lambda(m)$ form an ordered subset of those in $\Lambda(n)$.

[[In the two technical papers, a notationally refined approach is used to obtained the $\Lambda(i)$ and the results are generalized to all intervals that comprise a universe's primitive-time development. Moments in primitive-time can also be moments in (measurable) observer-time.

Primitive-time is the same as considering a "sequence" of events. The usual order on a set of rational numbers as its relates to a lexicographic order and the subset statement still holds.]]

In the following display, the symbols in (I) denote **predicted** entities and processes. The double errors show how these predicted objects correspond to those represented by (0). What follows this display are further explanations as to what the interpretation means for this (I) scheme.

$$(0) \quad ((\Lambda(n), \mathrm{I}(a,b))\underline{\mathcal{A}}) \to (\texttt{GSt})$$
$$\downarrow \quad \uparrow$$
$$(I) \quad ((\,{}^*\boldsymbol{\Lambda}(n),\, {}^*\mathbf{I}(a,b))\,{}^*\underline{\mathcal{A}} \to (G\texttt{St})$$

Although the "meaningful thoughts" phrase as used in the following, it is not as usually defined. This is a simple scheme that illustrates how HF instruction-information behaves.

Logical Patterns for Descriptions, $\mathrm{M}'' \leftrightarrow$ Logical Patterns for Meaningful thoughts,
$\mathrm{M}''' \to$ Logical Patterns for Events.

The substratum Logical Patterns for Descriptions, M" need not exist in any physical reality. The existence of "Descriptions" or "Logical Patterns for Descriptions" is interpretation dependent. I don't follow the methods used by others who attempt to force upon individuals the reality of "code" notations.

Scheme (I) also correspond to scheme (I') for the HF developmental paradigm information and, for the PGU model presented later in this article, the HF alteration-information scheme.

Let $\hat{I}(n,m)$ denote the collection of instruction-entities obtained for each (n,m). For Bob in the H_i illustration, the $n = 48$, $m = 2$, but for a universe, n corresponds to the "number" of universe-wide frozen-frames that comprise a particular universe and m the number of systems that comprise a particular universe-wide frozen-frame.

For the GGU-model, the number of frozen-frames in each interval is actually arbitrary since you can reduce the number by simply reducing the interval size. Hence, what is needed is an approach that satisfies this arbitrary choice but uses one fixed quantity. Using the equivalent two-member set form, the m selected is a fixed hyper-natural number λ. How the n varies depends upon the type of universe generated. For a specific n, the mathematics predicts that when λ is selected, then there is an HF logic-system that looks like, $\{\,{}^*\mathbf{I}(n,1)\}, \{\,{}^*\mathbf{I}(n,1),\, {}^*\mathbf{I}(n,2)\}, \ldots, \{\,{}^*\mathbf{I}(n,\lambda-1),\, {}^*\mathbf{I}(n,\lambda)\}$. (Logically the "comma" that appears between any two sets can be thought of as the conjunction "and.") The universe-wide frozen-frame denoted by the integer n has λ of these two member sets. Intuitively, this means that given any counting number m, the set has "more" than m members. Intuitively, each universe-wide frozen-frame contains Λ systems of various types. Indeed, many can be empty-systems.

A little more complexity is necessary and a notational change is necessary. The set of universe-wide frozen-frames are actually identified by two numbers not just a single "n." The primitive-time sequence is decomposed into intervals and each interval is further decomposed. Hence, in place of the above "n" is a form (i,j). The "i" is the interval number in terms of

integers (i.e. $\{\ldots, -3, -2, -1, 0, 1, 2, 3, \ldots\}$) and the "$j$" the primitive-time moment within the i interval. Consider the above example expressed in this form for a specific (i, j).

$$\text{(II)} \ \mathbf{\Lambda}(i, j) = \{ \, ^*\mathbf{I}((i, j), 1)\}, \{ \, ^*\mathbf{I}((i, j), 1), \, ^*\mathbf{I}(i, j), 2)\}, \ldots,$$

$$\{ \, ^*\mathbf{I}(i, j), \lambda - 1), \, ^*\mathbf{I}((i, j), m)\}$$

For the basic four types of universes, the i varies over various sets of integers. But the j always varies from 0 to the selected complexity number λ. There is a complexity number λ for each system that comprises a universe-wide frozen frame. How the "m" varies depends upon which type of universe-wide frozen-frame is being discussed. The partitioning of each universe-wide frozen-frame is not considered as a primitive-time partitioning although, in general, it has the same form. What this means is that instead of primitive-time, the partitioning is into systems, either physical, or of other types. They are designed and produced via an extended idea of the general order employed.

The same type of logic-system is used to find the particular member of $\{\Lambda\}$ and to deduce (generate) each frozen-frame. This same type of logic-system is behaviorally used by humankind billions and billions of time a day. The logic-system as displayed in (II) is actually denoted by $^*\mathbf{\Lambda}^{(q,r)}(x, \lambda)$, where the x gives the appropriate bounds to the primitive-time sequence for a particular universe being generated. As another example of how algorithm $\underline{\mathcal{A}}$ works (the * is not necessary for a simple finite case), suppose that you have one interval and it is decomposed of but two universe-wide frozen-frames, where each is composed of three physical-systems. Then

$$\text{(III)} \ ^*\mathbf{\Lambda}^{(q,r)}(x, \lambda) = \{\{\Lambda(1, 1)\}, \{\Lambda(1, 1), \Lambda(1, 2))\}.$$

Now apply the algorithm $\mathcal{A}$. This yields $\Lambda(1, 1)$. Then next, $\mathcal{A}$ is applied to $\Lambda(1, 1)$ and the result is

$$\{\mathrm{I}((1, 1), 1), \mathrm{I}((1, 1), 2), \mathrm{I}((1, 1), 3)\} \text{ in 1, 2, 3 order}$$

Then continuing application of operator $\mathcal{A}$ yields $\Lambda(1, 2)$ and from this we have

$$\{\mathrm{I}((1, 2), 1), \mathrm{I}((1, 2), 2), \mathrm{I}((1, 2), 3)\} \text{ in 1, 2, 3 order}.$$

If you have more universe-wide frozen-frame in (III) the process, obviously, continues. (It is still a little more complex than this but this is enough illustrate the idea.)

In general, the algorithm $^*\underline{\mathcal{A}}$, which is mathematically predicted, yields a predicted collection of higher-intelligence instruction-entities $\hat{I}^{(q,r)}$, where q and r depend upon the type of universe being generated. This is the HF instruction paradigm. The originally described instruction paradigm is contained in $\hat{I}^{(q,r)}$. This is an important fact. [[Also $\hat{I}^{(q,r)}$ is an HF set. Further, at least, the HF deduced results all differ relative to their identifying numbers although, in some cases, all other features can be identical.]]

Remember, if physical laws and physical theories (i.e. physical instructions) did not exist, at least in the mind of human beings, then there would be no physical science. Each time a scientist applies a set of instructions, a (physical) event might occur. At least, this is what is desired, the occurrence or non-occurrence of a physical event. When scientists describe objects and physical behavior in papers and books, they do so with a general language. Thus, they have associated an event with a description. The reader of such papers or books also makes the correlation.

In these papers or books, we have a set of descriptions "d" for the step-by-step development of a physical (natural)-system and each description represents actual physical events in $\{\mathbf{E}\}$. In our physical world, this means that there is a one-to-one onto correspondence between instruction-entities, the physical descriptions and the actual physical events being described. Only these objects are related by these two one-to-one onto correspondences. An entire universe is a physical-system. These correspondences also satisfy the basic mode of deduction.

Now all that is needed is to go from the HF instruction-entities to the physical events. This is slightly more complex at this stage. The mathematics used implies that there exist objects I call "ultra-propertons." As mentioned, each ultra-properton, at the least, carries each individually defined physical measure for the appropriate properties and coded non-numerical characteristics as one of two different infinitesimals.

The GGU-model is a cosmogony and, hence, a theory for creation of universes not just the one that surrounds us. *The GGU-model mechanisms most, therefore, be independent from what are considered as the physical laws we employ to predict future physical events.* Thus, It should be expected that the objects that yield various universes would not be part of a specific universe but exterior to it, in the intuitive sense. It should be expected that if standard mathematics is used to investigate the interior behavior of a physical universe, then even the mathematics used might need to be changed to a more inclusive form. It should be expected that the physical-like laws would also be somewhat different in the substratum world than in the physical world. Indeed, this is so and they are even easier to apply if you learn how to use a nonstandard model.

It turns out that, due to a remarkable theorem, every physical entity is produced just by grouping together collections of ultra-propertons, and collections of these collections and collection of these collections and . . . and then apply but one other process - the realization process as denoted by St - to a finite-like set of such groupings. [[The restriction of St to the portion of the info-field that yields the physical-world is the "intersection" of a collection of limited numbers with the real or, depending upon application, the rational numbers. The St need not apply to coded non-numerical characteristics, where it is considered as the identity.]] None of these processes is some sort of random process. Intuitively, the St operator can be illustrated by the purposeful human process of selecting the single white ball from a finite collection of many surrounding black balls that are all resting on the top of a pool table.

The info-field partially corresponds to the way we group necessary collections of items so that, following an instruction-entity, we can construct some physical object like the laminates. How we do this yields a finite set of groupings.

The gathering properties that yield portions of an info-field can be formally described and the info-field depends upon HF instruction-entities. The mathematics states that if combinations of subatomic particles yield more complex entities, then the properties of an info-field yield the appropriate combinations of propertons. This, at the least, yields physical events. An info-field does things. Portions of these info-fields can yield physical-like events. Such a system can be the immaterial medium proposed by Eccles and Robinson. (Eccles, J. and D. N. Robinson. 1984. The Wonder of Being Human: Our Brain and Our Mind. The Free Press, NY.)

> The observed numerical measures for various reasons vary. The non-numerically characterized events can also vary in their descriptive form. Quantum physical models give probabilistic predictions as to he number of entities that exhibit a specific numerical value. Then over observer-time, these varying measures form a well established mean value. The GGU-model easily satisfies these result via ultralogics. The varying values are trivial alterations, to various degree, of the info-field combinations for each universe-wise frozen-field.

For this approach, the St operator is applied sequentially after the info-field generator G is applied. It is this close relation that is denoted by $(G\,\text{St})$. It is important to know that G is a function defined on sets of HF instruction-entities ${}^{*}\mathbf{I}(i,j)$ into the "extended" appropriate collections of propertons. (In what follows, certain notation is suppressed.)

The results of the HF instruction-entities ${}^{*}\mathbf{I}(i,j)$ can all be physical-systems. Members of ${}^{*}\mathbf{I}(i,j)$ can also yield physical-like events or other events. There can be a vast number of these. The produced physical-like events can be interpreted as preternatural, but they appear to be directly associated with physical events.

> Is there a reason why, in all cases that follow, that it is necessary that a simple ultralogic-system of the type $\{A\}, \{A, B\}$ occurs and then ${}^{*}\underline{\mathcal{A}}$ is applied? It is necessary since this is how our universe must develop to correspond to how are brains behave. We must apply the "if P, then Q" form thousands a times a day. We are simply not aware we are doing it. The sequence of universe-wide frozen-frames, at the least, follows this simple pattern.

> You have gone in-and-out of a particlar door hundreds of times. You have learned what to do if it appears locked. You wish to go out. So, you try to turn the door knob. It doesn't turn. Somewhere in your brain there is a statement or images or something that can be model by "If the door knob doesn't turn, then turn the little device in the middle of the knob and try again." So, without actually pondering the matter, you turn the little device and try again. If it opens you have satisfied the logical statement. But, if not, then you stop and start contemplating the matter. "What could be wrong with

the knob?" One can get in such a mental state where they actually "forget" what to do if the knob doesn't turn.

These actions are allowed by a collection of universe-wide frozen-frames that necessarily should be consistent with how brains respond to such a situation. Not only does an HF developmental paradigm require that this basic logical pattern be persevered but the additional notion of sequences of HF instruction-entities must also mimic this same pattern due to the results produced by such HF instruction-entities. Logic-systems determine consequence operators and conversely. In general, if there should ever be physical behavior that does not follow a logical pattern dictated by a restricted internal consequence operator, then this would (falsify) the GGU-model. That is, the model would no longer be completely verified.

[Note: If not done so, it is important that the difference between observer-time and primitive-time be clearly understood for any further comprehension. These terms are fully defined in the article http://www.raherrmann.com/glossary.htm]

In Herrmann (2002, pp. 160 - 164), covirtual universes are employed to satisfy participator alterations and they are illustrated via a collection of DVDs of HF instruction-entities. This remains a significance illustration. (However, another possibly more significant electronic device illustration is described [9] and [11].) Mathematically, due to the participator requirements, the covirtual scheme is represented by a collection of instruction paradigms. To locate a particular altered covirtual universe all that is required is to recognize the alteration within a covirtual universe at the same moment in primitive-time.

Such a selection process, from what is actually an infinite set, has been a mainstay in the subject of mathematical logic and is relative to a level of human intelligence when one seeks a particular symbolic form. Such a choice process is consider by many as an additional measure for intelligence. Thus "finding such a location" is an intelligent action. The same holds for an higher-intelligence. If a pure secular model with its automatic hyperfast properton method for selection is not considered, then this shows that an higher-intelligence continues to sustain the development of our universe even in the participator case.

For this specific general approach, the participator aspect does not alter a universe's complexity.

In applications of the GGU-model processes, the basic entities, the ultra-propertons, must in grouped behavior satisfy the HF instruction-entities, just as if this information is a physical law, and this yields the properton combinations and other possible constituents. Hence, in a step-by-step manner, the info-field generator G activates various $^*\mathbf{I}(t')$ of $\hat{I}(\lambda)$ and the St process is applied. (This immediate aspect can be removed. The info-field generator is extended to include the generation of the physical-like events, where St has no meaning.)

The necessary info-field properties are modeled as follows: for $n > 0$, n physical entities $\{a(1), \ldots, a(n)\}$ form a set A(1). For "m" various n, these are "gathered" or "grouped" into a finite set of sets $\{A(1), \ldots, A(m)\}$. Such gatherings are continued to obtain finite

collections of sets, sets of sets , ... The result is a finite collection of sets constructed from finite collections of sets. There is a set K of all such gatherings. Although tedious, this type of construction and the members of such a set K of gatherings can be formally expressed, in general, and extended to HF collections of sets contained in $^*\mathbf{K}$. The info-field with its gathering properties and other processes of which we as yet can have no knowledge is obtained by application of G, where the "gathering" part is a member of $^*\mathbf{K}$. The G is an operator defined on each of the HF instruction-entities and here simplified notation is employed.

In more detail, each characterizing numerical code or descriptive characteristic for a fundament physical entity corresponds to an HF collection $\{a(1), \ldots, a(w)\}$ of ultra-propertons. By means of repeated application of certain processes [[mathematically modeled after the special mathematical notions of the http://arxiv.org/abs/quant-ph/9909078 "affine" and "linear" transformations.]] $\{a(1), \ldots, a(w)\}$ is replaced by a properton $\{a\}$ that has a "value" that will yield a physical value or an other describable property when the operator St is applied. Various propertons a, b, c, . . . of this type form an HF set $\{a, b, c, ...\}$. This corresponds to a fundamental particle.

Finitely or non-finite hyperfinitely many of these are grouped into other sets like

$$\{\{a, b, c, \ldots\}, \{d, e, f, \ldots\}, \{g, h, i, \ldots\}\},$$

when necessary, and these sets are grouped into another set

$$\{\{\{a, b, c, \ldots\}, \{d, e, f, \ldots\},$$

$$\{g, h, i, \ldots\}\}, \{\{j, k, l, \ldots\}, \{m, n, o, \ldots\}, \{p, q, r, \ldots\}\}, ...\}.$$

This corresponds to the next more complex combinations. This form of re-grouping continues until one has a collection of these collections, of collections, etc. that actually forms an entire universe-wide frozen-frame as represented by hyperfinitely many such collections. This illustrates how the physical-world generating portion of the info-field G behaves. Then St is applied to G. The result is a universe-wide frozen-frame $E(t')$, with possible physical-like features, and it is understood that $(G\text{St})$ is step-wise applied. If t' is observer-time, then what results, at the least, is a physically real universe-wide frozen-frame. Using such sets to represent intermediate propertons and physical-systems is similar to using sets to represent natural numbers, as previous discussed, for a model via stages for the set $\mathbf{N}$.

Where the displayed (a, b) depends upon the type of universe, these understandings are represented by the scheme

$$(\text{I}) \ ((\,^*\mathbf{\Lambda}(\lambda), \,^*\mathbf{I}(a, b))\,^*\underline{\mathcal{A}}) \to (G\text{St})$$

The ultra-logic-system $^*\mathbf{\Lambda}(\lambda)$ corresponds directly to an ultra-logic-system $\Gamma(\lambda)$, where each member is an info-field. Assuming the existence of propertons, this scheme is altered for a secular model, where $^*\mathbf{\Lambda}(\lambda)$ and the $\Gamma(v)$ are to be "randomly" obtained. When used for the secular case, this is marked with the "s." The minimal info-field case is marked "m."

$$(\mathrm{I}_s)\ ((\,{}^*\boldsymbol{\Lambda}(\lambda),\ {}^*\mathbf{I}(a,b))\,{}^*\underline{\mathcal{A}}) \to (G\mathtt{St})$$

$$(\mathrm{I}_{ms})\ ((\Gamma(\lambda), G(a,b))A) \to (\mathtt{St}).$$

The A is not applied to ultrawords, but it has similar formal properties as ${}^*\underline{\mathcal{A}}$. The (I_s) and (I_{ms}) processes do display higher-intelligence signatures, however. Scheme (I) displays **operational aspects** of the GGU-model. These aspects can be considered as designed, as is each individual set termed as an HF instruction-entity. This need not be mentioned for pure secular GGU-model (I_s).

4.2 A Pure Physical, Physical-like and Object Description

$$(\mathrm{I}_s)\ ((\,{}^*\boldsymbol{\Lambda}(\lambda),\ {}^*\mathbf{I}(a,b))\,{}^*\underline{\mathcal{A}}) \to (G\mathtt{St})$$

Notice that, as it appears in [1] and in all but one case, how $\mathtt{St}$ is applied is changed. Except for (I_m), it now requires that $(G\mathtt{St})$ be coupled. These are illustrated by the collection of DVDs in Herrmann (2002). Then the $(G\mathtt{St})$ is simply restricted to a particular one. For the secular model, this application is directed by hyperfast propertons. Scheme (I) [resp. (I′) for the corresponding HF developmental paradigm case] has an important restriction (IV) [resp. (IV′)] that formally generates a special instruction paradigm [resp. developmental paradigm].

$$(\mathrm{IV})\ ((\,{}^*\boldsymbol{\Lambda}(\lambda),\ {}^*\mathbf{I}(a,b))\,{}^*\underline{\mathcal{A}}) = \hat{I}(\lambda).$$

$$(\mathrm{IV}')\ ((\,{}^*\boldsymbol{\Lambda}'(\lambda),\ {}^*\mathbf{I}'(a,b))\,{}^*\underline{\mathcal{A}}) = d.$$

The following illustration is presented in various articles. Consider a DVD that, when played, depicts a rubber ball dropped from a tall table to the ground. There is a measuring rod affixed to the table that "measures" the balls distance from the top of the table to the ground as it falls under the influence of gravity. As it begins its fall, pause the DVD player. The image displayed on the monitor appears fixed. Now forward the display one frame at a time. From our observation, that ball appears in slightly different places in each frame. Correspond the lapsed "time" to the number of frames observed. There is no law of gravity, there is no gravitational force "pulling down" on the ball. But for this locally observed experiment, we know that the distance moved, s, is proportional to the lapsed time squared. So, this allows us to calculate the distance, s, if we only know the frame number. This calculation is in good agreement with the numbers on the measuring rod. (Of course, the law is actually rather more complex than this.)

This illustration implies that this behavior is intelligently designed so as to allow us to make such a calculation. For a small "time" interval, the number of frames is so vast that even if one assumes the behavior is "continuous," the values for any comprehensible measure can not detect that the behavior is actually sequential.

This illustration indicates that, for our universe, there is a special relation that exists between the successive members of each step in (I). (For a secular scenario, the relation must be considered as produced in an uncontrolled "random" manner.) *However, the production of all defined physical-systems and alterations in their behavior is consistent with a collection of comprehensible physical laws and physical theories.*

It is obvious that, in a step-by-step manner, successive members produced by (0) are satisfied by the unification U for all physical laws and theories as established in (http://arxiv.org/abs/physics/0306147) The Best Possible Unification for any Collection of Physical Theories. This shows, in a remarkable way, how successive members of (I) are correlated and display higher-intelligent design signatures via the hyper-unification $^*\mathbf{U}$. [[Result 3.8, where $^*\mathbf{U}$ is the usual hyper-extension. In [1 p. 168], the $^*\mathbf{U}$ is one part of the composed Ω and all restrictions placed upon a unification as used in [1] have been removed.]]

> Many of the proposed secular-science physical entities and processes defined within physical theories need not exist in physical reality. They can be purely imaginary since many scientists may otherwise neither be able to comprehend nor predict behaviors. For the GGU-model, there are no "cause and effect" aspects of these physical laws and theories. The notion of cause and effect is mentally useful in order for us to make verifiable predictions.

As stated, certain assumed laws and theories, as mathematically presented, claim to require the basic mathematical notion of continuity and this may seem to contradict the "step-by-step" event sequence idea. The event sequence requirement is but a mathematical model for behavior. Of course, we cannot visually observe any absolutely continuous behavior and continuity can be a mere mathematical tool that does not correspond to actual physical reality.

If one insists that there is a physical notion that corresponds to the elementary conceptual idea of continuity, then the sequence represents miniscule step-by-step primitive-time universe-wide frozen-frames. The event sequence can be considered as an exceptional form of approximation. Indeed, <u>theoretically</u>, a numerical measure that suddenly varies in a manner that is within this approximation can be considered as actually being altered by an hyper-continuous process [1b]. (Even in quantum dynamics, the basic continuity notion is applied to paths of motion. However, there are other ways to achieve continuity properties, where "space" is not a region where the standard continuity notion holds. This comes from changing the "topology.")

Due to the construction of physical laws and theories, there are other physical-like laws and theories that are part of the hyper-unification $^*\mathbf{U}$. Coupled with $^*\mathbf{U}$ are "pure" ultralogic operators Pi [1, p. 150] that correspond to physical events that satisfy various (http://arxiv.org/abs/quant-ph/0112037) probability models such as distributions [1, p. 150]. The operator Pi is modeled after a very simple but progressive mode of human logical discourse. However, it is not an hyper-process of a completely describable human mental process.

The Pi operator is the one that yields a basic probabilistic property that has been a stumbling block for physical science in that, usually, such behavior does not reveal itself until many events occur. [[In this article the symbol Pi signifies probabilities generated by elementary Bernoulli trials [1, p. 147]. Further, in [1], distributions are obtained using this elementary Bernoulli trials approach.]] The Pi is termed an operator but this is only in the mathematical sense.

Due to participator alterations, there is a collection of Pi operators one for each selected universe-producing ultraword, if ultrawords are employed, where $(Pi\,^*\mathbf{U})$ represents any member of this collection. Intuitively, what this symbol means is that $^*\mathbf{U}$ and Pi are simultaneously satisfied. In modern physical science, it is claimed that all physical behavior is probabilistic in character and, in all cases, this is consistent with Pi. However, Pi can also be utilized if a specific science-community requires that specific physical behavior be certain (i.e. 100% probable). For this case, let $\mathbf{E}(t)$ denote an event for observer or non-observer primitive-time t. The unification $^*\mathbf{U}$, <u>in restricted form</u>, satisfies the expression $^*\mathbf{U}(\mathbf{E}(t)) = \mathbf{E}(t+1)$. The event $\mathbf{E}(t+1)$ is the very "next" event as displayed within the universe-wide frozen-frame denoted as the "$t+1$" member of the sequence. Although not generally the case for the GGU-model, this last equation can be described as the logical generation of a universe via physical laws.

If the behavior of an individual physical-system event $\mathbf{E}(t)$ is not 100% certain, then $(Pi\,^*\mathbf{U})$ has been applied and this corresponds to alterations in those physical-system as predicted by Pi. [[If one considers a universe formed from an ultimate ultraword [1, p. 106], then the unification applies in this case since it can be applied to each physical-system separately. These are the "portions" if a single top-down ultraword is employed. When $^*\mathbf{U}$ operates on $\mathbf{E}(t)$, then $^*\mathbf{U}(\mathbf{E}(t) = \mathbf{U}(\mathbf{E}(t))$. On the other hand, if $E(t)$ is a substratum event, then $^*\mathbf{U}(E(t))$ is a substratum event.]] If it is assumed that our universe "began" with an event E(0), then, for each moment in primitive-time i and $\mathbf{E}(i)$, there is the hidden pattern

$$(1)(Pi\,^*\mathbf{U}(\mathbf{E}(0)),\ldots,(Pi\,^*\mathbf{U})(\mathbf{E}(i)) = \mathbf{E}(i+1),$$

$$(Pi\,^*\mathbf{U})(\mathbf{E}(i+1)) = \mathbf{E}(i+2).$$

[Note: For (1), there are also *-primitive moments of time k, where $^*\mathbf{U}$ applies to $E'(k)$, "between" certain primitive-times.] If it is assumed that there is no standard "beginning" relative to the standard notion of a sequence of physical events, then it is shown in http://arxiv.org/abs/math/0605120 that there is a "nonstandard" beginning, denoted by ν, to the sequence that yields the physical events. In this case, there exists pure-events $E'(\nu)$ that "begin" at ν. This yields the pattern

$$(2)(Pi\,^*\mathbf{U}(E'(\nu)),\ldots,(Pi\,^*\mathbf{U})(\mathbf{E}(i)) = \mathbf{E}(i+1),$$

$$(Pi\,^*\mathbf{U})\mathbf{E}(i+1) = \mathbf{E}(i+2),$$

where i is observer-time. (As with case (1), for case (2), there are also *-primitive moments of time k, where $^*\mathbf{U}$ applies to $E'(k)$, "between" or "before" or "after" certain moments of observer-time. These two displays are not written in consequence operator form. If $^*\mathbf{U}$ is in consequence operator form, then $^*\mathbf{U}$ applied to $E'(k)$ yields, at the least, the entire hyperfinite event sequence.)

When $\mathbf{U}$ or $^*\mathbf{U}$ are restricted to defined physical-systems, then patterns such as (1) and (2) are often termed by secular science as causal statements if the restriction includes processes that produce or alter entities. As mentioned, there are no physical causes for the GGU-model. These patterns do not represent the ultimate cause $\mathbf{H}$. [[However, for another model, they can be used as universe generating schemes, where a universe is generated by application of the operator $(Pi\mathbf{U})$.]]

Significantly, $^*\mathbf{U}$ is a remarkably consistent set of ultranatural laws. (These include the physical laws and theories.) This consistency is a direct result of viewing $^*\mathbf{U}$ in its equivalent ultra-logic-system form. This allows for a deeper analysis. There is an equivalent ultra-logic-system for Pi but it cannot be significantly analyzed. Thus, it still remains the practice of retaining Pi in its original form.

For the constructed GGU-model, the $(Pi\,^*\mathbf{U})$ operator is NOT a physical operator in the sense that its physical-like application to a specific frozen-frame yields the next successive frozen frame. **The (1) and (2) patterns merely show how pre-designed event sequences satisfy the observed predictions of physical laws and probabilistic behavior. They only indirectly relate to unobservable physical hypotheses.** There is a reason for the existence of physical laws. It is shown in [9] and [11] that this reason has a Biblical basis.

If the GGU-model is not employed, then $(Pi\,^*\mathbf{U})$ can be considered as a physical operator and patterns (1) and (2) show the step-by-step generation of a universe. Unless otherwise indicated, all of the following statements assume the GGU-model hypothesis.

Of particular significance is how the pure ultralogic Pi is interpreted. As with ultralogics in general, for each applicable object, Pi represents virtual (or unobservable) processes. This is similar to processes used in subatomic physics. For the secular viewpoint, each Pi process is considered as a specific cause for the probabilistic occurrence of an event. But, this cause is not part of the language or mechanisms of the physical world as modeled by standard mathematics.

Also, of particular significance is how quantum theory, as incorporated within $(Pi\,^*\mathbf{U})$, should be viewed. The secular GGU-model approach can be termed as a subquantum approach in the sense of Bohm (1957, pp. 94-103). (See http://www.raherrmann.com/quantum.htm for a more detailed description of how these results alter a basic philosophy of quantum mechanics. However, as mentioned, propertons are not particles in the usual sense and much in quantum physics need not be physically real.)

For the GID-model, humanly comprehensible regulations are built into the development of our universe for a definite purpose. There is vast number of necessary relations that exist between adjacent frozen-frames, a vast number of frozen-frames, a vast number of physical-systems, and there is the fact that human beings are the only earthly entities that seem able to describe and comprehend physical law. Claiming that this has all occurred via evolutionary processes for the development of the human brain, a development that has not occurred for any other known biological form, is a rather unsatisfactory explanation. Further, since many physical laws and accepted scientific theories require abstraction, then these considerations imply that it is highly improbable that such laws are produced by unguided chance. **Note that each physical law and accepted physical theory is intelligently designed, at the least, on the human level of intelligence.**

[**4.3 The Multi-Complexity Model.**

In [6], the multi-complexity model is the one first described. This model adds an additional feature. It HF rationally generates a collection $\{\,^*\mathbf{\Lambda}(\lambda)\}$ as λ varies. Then from these modes a specific λ is chosen for the continued generation of a specific single-complexity universe. This added feature may or may not be a significant feature. It is not significant for the actual generation of a particular universe and, for this reason, has not been included in this article.]

5. An intelligently designed interpretation and the restricted GID-model.

From where do the members of $\hat{I}(\lambda)$ originate? The results in [1] incorporate the source for $\hat{I}(\lambda)$. The material there is based upon general descriptions d and d that represent events. As illustrated in this article, the GID-model begins with two books. Only a few operators are mentioned in [1] and I no longer use the one denoted by $^*\mathbf{S}$. Further, I don't use the reductionist approach as outlined in [1]. Of course, a reductionist can retain the approach in [1]. The obvious reason for this article is to present this new simplified approach.

Clearly, the hyper-algorithm mode of deduction $^*\underline{\mathcal{A}}$ as applied to $^*\mathbf{\Lambda}'(\lambda)$ is a very strong signature for an higher-intelligence design of the step-by-step development of an HF developmental paradigm d. Algorithm $^*\underline{\mathcal{A}}$ applied to the ultraword that generates d is another signature as are the designs themselves. In the generalized formal paper http://vixra.org/abs/1309.0004 on HF development paradigms, members of a developmental paradigm d and HF d are formally deduced via (IV'). The formal paper http://vixra.org/abs/1308.0125 on ultra-logic-systems yields all of the above results for internal instruction-entities and the HF instruction paradigm $\hat{I}(\lambda)$.

> Any result that appears in any of my archived, published papers or on my website and that is written in terms of the developmental paradigm notation also holds for the instruction paradigm notion. A simple change in notation or terminology yields the instruction paradigm result.

It is important to realize that general descriptions form a model for what we may not be able to further comprehend. One thinks of internal descriptions as equivalent to "mental

images" in the same manner as descriptions correspond to human mental images. There is a one-to-one onto correspondence between d and $\hat{I}(\lambda)$. This means that each HF instruction-entity corresponds to one and only one internal description and each HF instruction-entity and each internal descriptions is so related by this correspondence.

When a member in d is transformed into physical or physical-like reality, then the member can be retained in a type of memory (a file) via this correspondence. Hence, the internal instruction-entity $^*\mathbf{I}(t')$ is considered as coupled with a member of d. This correspondence or pairing can easily be retained. Depending upon how the primitive-time intervals are partitioned, certain physical theories require that members of d be repeated. However, they do differ in their primitive-time identifiers.

In summary, the secular scheme $(\mathrm{I_s})$ is describable using "mental" terminology that reveals higher-intelligence signatures. The selection of the starting internal instruction-entity is random. Then application of process $^*\underline{\mathcal{A}}$ to the primitive $^*\mathbf{\Lambda}(\lambda)$ is a strong higher-intelligence signature. The logic-system associated with the $\mathtt{St}$ operator is a signature. Also the step-by-step development satisfying $(Pi\,^*\mathbf{U})$ is a very strong signature for intelligent design by a higher-intelligence. **However, all such signatures can be ignored as is done in Quantum Logic.** For our cosmology, we need a "library" of universes due to participator alterations. The selection of the appropriate one can be accomplished automatically by hyperfast propertons.

As modeled via mental terminology, the above schemes reveal higher-intelligence signatures for mentally conceived images for the HF developmental paradigm d as HF deduction yields them in the proper primitive-time order. This indicates higher-intelligence signatures and the one-to-one onto correspondence between the hyperfinite developmental and the HF instruction paradigm. Obviously, the above schemes as restricted and interpreted as human activities, correspond, in a general way, to the standard procedures followed, from conception to realization, when constructing complex physical entities. Theologically, there is another valid reason for having d available.

In general, this model must apply to any cosmology and each HF instruction-entity is designed for each step in d. The higher-intelligence $\mathbf{H}$ is identified in [1]. The restriction $\mathbf{H}'$ mimics what humans mentally do.

One can use the schemes as describing the mental-like processes that transform thoughts into physical reality or just use (I) and the fact that a restriction such as $\mathbf{H}'$ exists. One reason for d is that it is an ordered "history" type file. This is significant for certain applications, such as a theological one. Further, "participator alterations" (see below) most be included within any such file. There is also complete symmetry. The higher-intelligence mental processes used to design each member of d, the HF instruction paradigm and the ordered d are exactly the same.

The schemes display an higher-form of human-like activity, where we first consider linguistic information, drawings and the like prior to considering the physical laws or instruction-

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entities that reproduce physical events. This is illustrated in [1] by the DVDs. A DVD as a collection of instructions that corresponds to (I) and how the instructions are obtained corresponds to the **H** function that carries the higher-intelligence signature that corresponds, in restriction, to that applied by technical writers. The restriction of these schemes to the physical world is how physical science is presented.

In more detail for (IV′), the following illustrates the relation between human activities that yields appropriate designs and similar predicted higher-intelligence activities.

Although, in all but one case, the corresponding modes of human experiences were not the motivating factors, all aspects of both the secular GGU and GID models mimic human procedures similar to building the set of laminates.

In summary, for a universe, the following is the complete GID-model as it is can be modeled by human experiences, descriptions and their relation to "thoughts." That is, **using a mental realization for the descriptions** . In all cases, the processes are those applied by an higher-intelligence. The following example should not be considered as the "actual" way an higher-intelligence creates a universe. It is but an experiential model. The significance develops when the terminology is changed to emphasize certain behavior. Further, certain aspects of what comes next are not necessary. They are included in order to correspond to a particular theological interpretation. Now-and-then, I insert how these physical objects correspond to the higher-intelligence objects.

Notice that previously the book B concept did not use collections of pages in the usual manner. That is, that the notion of the "chapter" was not introduced. What follows uses this additional terminology.

(1) (I now use the term "'image" to indicate a type of mental image that corresponds to a general description.) One begins with a rationally obtained mental image for each primitive-time identified universe-wide frozen-frame. *This is like what the laminate master designer produces.* (Of course, the universe as an ordinary human being imagines it need not have all of the actual details in each cross-section.) From my experience, mentally producing such images can be done. (An higher-intelligence can do this is in complete detail.) There are actual *words that when HF deduction is applied yield the general language design of each physical-system. These images can be considered as members of a generalized language. Restricted to human behavior, the images are those you use.

(2) These images are displayed in sequential form and the number of images depends upon how "many" are used to produce an entire universe. For a specific number n, the images are grouped together in a special way $\Lambda'(n)$. All but the "first" image is repeated within this grouping. This grouping is exactly equivalent to how you have placed them in a book $B'(n)$. (Each carries the "n" identifier, the required complexity number.) For the participator alterations, there needs to be many such $B'(n)$ books

(3) The book $B'(n)$ is divided into chapters identified by the appropriate (i, j).

Each chapter follows the pervious construction. Recall that the first front page of the selected chapter is blank. The back of first page has a single "starting" image for an physical-system described as a portion of the (i, j) universes-wide frozen-frame.

The front of the next page of the chapter has the image repeated. The back of that page has the next ordered image. You build the remaining pages of the chapter this way. The algorithm states that to mentally deduce each sequential step of the developmental paradigm, page 2 is the first considered. This is to become the "first" portion of a specific universe-wide frozen-frame. The same image appears on page 3. This indicates that the page is to be turned over to the image for the next section, which then appears on the back. If you don't see such a repeated image, assuming no error has been made, then you know that you are at the end of a chapter. As the "mental" process continues, all of the portions are obtained by this "trivial" form of deduction in the same order as the even page numbers. When you turn over the blank page, the image on the next even page is the "first" portion of the next chapter, the next universe-wide frozen-frame.

The exact same procedure holds for the B(n) book (and the corresponding instruction-entities.) It is the corresponding scheme (I) that yields step-by-step physical or physical-like reality. This can be expressed in terms of intelligently designed processes and the each physical-system is generated via intelligent agency.

Are all of these procedures necessary? Obviously, for the secular world the answer is no, they are not required. But, the basic notion of indirect evidence is being applied. The question "from where did the instructions come?" is being answered and modeled by **H** . The GID-model is an analogue model and, from a behavioral aspect, may be the only way we have to comprehend how God's mode of creation always displays comprehensible physical entities and physical behavior that carry higher-intelligence signatures.

6. Higher-Intelligence Description.

In the "A Pure Physical, Physical-like and Object Description" described below, each step displays an higher-intelligent design signature. This means that the behavior of each physical entity within our universe displays an higher-intelligent design signature. In the "A Pure Minimal Physical, Physical-like and Object Description" described below, it is noted how the processes described display higher-intelligent design signatures and, in that case, the behavior of each physical entity within our universe displays an higher-intelligent design signature.

The following statements are obtained rationally via an interpretation of the mathematical model. No mathematics abbreviations appear.

1. Our universe as a whole is designed and produced by actions taken by an higher-intelligence. Each object used for universe generation is the product of the actions of an higher-intelligence. Each universe-wide frozen-frame is designed by an higher-intelligence. Hence, each physical entity and each configuration of physical entities is designed by an higher-intelligence. Each such physical entity and configuration displays an higher-intelligence signature.

2. A higher-intelligence has selected a specific mode of thought that, in restricted form, corresponds to the most basic one used for human deductive thought. The production of the universe-wide frozen-frames follows from this higher-intelligence mode of deduction and is an higher-intelligence signature.

I repeat, the higher-intelligence selects a specific mode of thought that yields the development of our physical universe. When restricted to our physical universe, this mode is the most basic required by humankind in order to perform everyday tasks and is used to predict physical-system behavior from physical laws or theories.

3. As physical-science examples, every defined elementary object, if such exists (a neutrino and the like), is designed and produced by the same higher-intelligence. The probabilistic behavior of any such entity is designed by an higher-intelligence and yields an higher-intelligence signature.

4. Every combination of elementary objects, if any exist, used to form any other physical object is designed and produced by the same higher-intelligence. Examples: an hydrogen atom, water, an ocean, the world, the solar system, our galaxy, etc.

5. Event sequences are constructed in a very special way. They satisfy comprehensible physical laws and theories and are purposely designed, in this manner, by an higher-intelligence. The design allows intelligent beings to construct additional physical-systems.

6. Every physical change in the behavior of every physical-system is sustained by the same higher-intelligence. (Sustained does not mean personal choice is removed. The GGU-model has previsions for participator alterations in physical-systems, which are upheld by the same higher-intelligence.) This higher-intelligence sustains the development of any physical-system in accordance with ID-signatures. Each step in the development of a physical-system satisfies higher-intelligence deductive processes and, if necessary, the selection of appropriate altered universes and application of the gathering and realization processes reveal the existence of an higher-intelligence.

Over a small time period the higher-intelligence can perform infinitely many deductions that yield as the final deductive conclusion a specific and complete physical-system. Physical agents can only perform finitely many deductions and, in various cases, cannot deduce the exact and complete composition of a specific and complete physical system. If certain conditions are maintained, then physical agents can approximate the composition. (This is a model for behavior and only yields indirect evidence for the existence of the <u>predicted</u> higher-intelligence.) Examples: objects move from one position to another, water temperature changes, indeed, anything that changes its known physical characteristics, appearance, etc.

7. The production of an event, whether physical or a physical-like, and alterations in the behavior of each such event, displays yet another higher-intelligence signature in that the production of or alteration in a physical-system or physical-like system is

<u>equivalent</u> to generating an event sequence by repeated application of the unification of all physical and physical-like laws and theories operator. This application represents processes that are equivalent to application of HF logic-systems. This shows, in a more specific manner, how each member of an event sequence is rationally designed by an higher-intelligence so as to correspond, at least, to the physical laws and theories deduced by some biological entities. Hence, in contrast to the secular scenario, there is a specific Biblical "reason" that such laws and theories exist. Also, they give yet more indirect evidence for the existence of an higher-intelligence.

The following is the GID-model interpretation for the higher-intelligence language $^*\mathbf{L}$. (i) Each member of $^*\mathbf{L}$ that is not a member of $\mathbf{L}$ and (ii) each *term and each word with the "ultra" prefix (ultraterm) in $^*\mathbf{L}$ can have additional properties than those characterized by the object designated by the original meaning or "term," respectively. Further, these *terms are members of the higher-language.

7. Our Universe and the Participator GGU and GID-model.

For the GID-model in [1], the library of participator altered universes is pre-designed. Such libraries also have a significant theological interpretation - foreknowledge. They were not originally considered as associated with any theological interpretation. The complete GGU and GID-model need not include participators. However, for our universe, a participator model must be employed. The refined instruction paradigm approach is now being displayed. It is rather trivial to transfer the following to developmental paradigm notation.

For the GGU-model, one of the most difficult requirements is to include the concept of the "participator" universe. As stated at the May 1974 Oxford Symposium in Quantum Gravity, Patton and Wheeler describe how the existence of human beings alters the universe to various degrees. "To that degree the future of the universe is changed. We change it. We have to cross out that old term 'observed' and replace it with the new term 'participator.' In some strange sense the quantum principle tells us that we are dealing with a participator universe." (Patton and Wheeler (12, p. 562).) This aspect of the GGU-model is only descriptively displayed in section 4.8 in Herrmann (2002). However, this book section is, usually, necessary for complete comprehension. It is now possible to obtain formally the collection of pre-designed universes that satisfies this participator requirement. The universe in which we dwell is one that needs to satisfy the notion of participator alterations.

In what follows, "just for the fun of it," I've taken the previous simplified notation and will, from this point on, mostly write in the more detailed form that appears in [6].

(For the following discussion on ultrawords, each statement that refers to members of an instruction paradigm [6] also applies to members of a developmental paradigm.) For this article and the most recent refinements, the informal construction for a finitely generated set of instruction-entities, as defined in [1d, p. 6], yields finitely long words of a special form $W^{(q,r)}(n) = \text{P.}|||\text{P} \to \text{Q.}|||\text{Q} \to \text{R.}|||\text{R} \to \text{S.}|||...|||\text{X} \to \text{Y}$ [6, p. 28]. (Note: the symbol r,

when employed in these symbolic forms, is relative to the refinement. It has been retained so as to correspond to the symbols in the reference [6].)

For each $(i, j) \in \mathbf{Z}_q \times \mathbb{N}$, let $\mathrm{f}^{(q,r)}(i, j) = \bigcup \{\mathrm{h}^{(q,r)}(i, j, k) \mid k \in \mathbf{Z}_r\}$, where $\mathrm{f} = \mathrm{I}$ [6, p. 23]. Via the Definitions 2.1, 3.1, 4.1, (assumed 5.1) [6, p. 15], the P, Q, R, S, ..., X, Y are in one-to-one correspondence with members $\mathrm{I}^{(q,r)}(i, j)$ of $\Lambda^q(m, n)$. For any instruction paradigm $\mathcal{I}_q$, each (i, j) corresponds to a member of an ordered set R_q of rational numbers, $\mathbf{Q}$ [6, p. 14]. After coding, this yields the equivalence classes $\mathbf{I}^{(q,r)}(i, j)$. Then, relative to adjacent $\mathbf{I}^{(q,r)}(i, j)$ and $\mathbf{I}^{(q,r)}(i', j')$ the Markov informal join operator $|||$ determines a semigroup operator $\circ$ such that $\mathbf{I}^{(q,r)}(i, j) \circ \mathbf{I}^{(q,r)}(i', j') = [h] \in \mathbf{L}$. By finite application of this operator, it follows that $\mathrm{W}^{(q,r)}(n)$ corresponds to an equivalence class $\mathbf{W}^{(q,r)}(n) \in \mathbf{L}$.

Embedding into the nonstandard structure, then for each of the four q cases, each of the $^*\Lambda^q(x, \lambda)$ corresponds to a formal HF ultraword $W^q(x, \lambda) \in {}^*\mathbf{L}$. The Modus Ponens deduction process that is informally applied to $\mathrm{W}^{(q,r)}(n)$ is modeled by the characterizable $\mathcal{A}$ operator [6, p. 29-30] in the standard case. Then $W^q(x, \lambda)$ is modeled by the *-transfer of these characterizations.

Members of the language $^*\mathbf{L}$ are used to describe the HF instruction-entities $^*\mathbf{I}_{\nu\gamma\lambda}^{(q,r)}(i, j)[p]$, where, for universe-wide frozen-frames, each is composed of physical or physical-like or other types of systems. The p identifies a specific pre-design allowed participator altered universe. These <u>represent</u> substratum processes that yield info-fields. For a specific universe p, there is a specific instruction paradigm $\hat{I}_{\nu\gamma\lambda}^{(q,r)}[p]$ that determines the step-by-step HF development.

Relative to alterations, notice that even a concrete thought, one composed of electro-chemical activity, can be considered as an alteration. From the ideal standard case, $\hat{I}^{(q,r)}$, there are but finitely many of these pre-designed altered universes $\hat{I}^{(q,r)}[p]$. Following a standard practice, no actual alteration needs to be considered at a specific step. These are the null alterations. There is a finite number of alterations for each of the finitely many altered universes. Each altered universes preserves the same primitive-time sequence order. Hence, upon selection this order is maintained.

All of these informal results are embedded, in the usual manner, into our formal mathematical structure. This yields an HF collection $\{\hat{I}_{\nu\gamma\lambda}^{(q,r)}[p] \mid 1 \leq k \leq \sigma\}$ of HF instruction paradigms. Each member of this HF sequence of HF instruction paradigms satisfies its HF requirements relative to the generation of physical-systems. Thus, from one viewpoint, they behave as if they are finite sets.

An original alteration can be miniscule and made in one or more of the necessary parameters that are satisfied by a specific physical-system. This can be done in such a way that only miniscule alterations in physical-systems satisfy the alterations. On the other hand, a highly altered cosmology can also occur. Alterations are considered as those initiated by human activity and is local prior to it being propagated during a universe's development. Each HF instruction paradigm is consider as the result of the corresponding pre-designed HF develop-

mental paradigm. But, for physical universe generation only an HF collection of a specific HF instruction paradigm is employed. First, ultrawords are employed in order to correspond to the approach in [1]. If the ultrawords are considered, then simply consider, for a single-complexity universe, the previously mentioned Theorems 2.1, 3.1, 4.1, 5.1 [6] as modeling the ultraword behavior. Hence, consider

$$W_p^q(x, \lambda) \leftrightarrow {}^*\boldsymbol{\Lambda}_{(x,\lambda)}^{(q,r)}[p],$$

$$({}^*\boldsymbol{\Lambda}_{(x,\lambda)}^{(q,r)}[p], {}^*\mathbf{F}_{\nu\gamma\lambda}^{(q,r)}(a,b)) \, {}^*\underline{\mathcal{A}}) \rightarrow (G_\lambda^{(q,r)}\mathtt{St}),$$

where the x values depend upon the choice of q. Notice that ${}^*\underline{\mathcal{A}}$ is applied to each member of ${}^*\boldsymbol{\Lambda}^{(q,r)}(x, \lambda;)[p]$. Then at each moment (i, j) in primitive-time an entire collection of info-fields $\{INF_{\nu\gamma\lambda}^{(q,r)}[p]\}$ can be produced.

In Herrmann (2002), via the Eccles and Robinson concept of "immaterial mental intentions," hyperfast propertons are mentioned as possible mediators for the automatic selection of a particular member of the set

$$\{ {}^*\boldsymbol{\Lambda}_{(x,\lambda)}^{(q,r)}[p] | 0 \le p \le \sigma\} = \hat{U}$$

As before, this notation means that each member of this set is a p, where p varies over a set of HF "natural" numbers. The σ is the "largest" p. Notice that there are, at least, two viewpoints as to how $\hat{U}$ can be viewed. Theologically, each member of $\hat{U}$ can be assumed to be the result of pre-design by a higher-intelligence. That is, each can exist in some substratum form. Or, the members of $\hat{U}$ can be but "possibilities" the existence of which occurs as needed via the "general substratum physical-like laws."

I have selected the first case. Then at any moment (i, j), in primitive-time, the entire $\{INF_{\nu\gamma\lambda}^{(q,r}[p]\}$ is produced. And, one is selected that corresponds to the combined mental intentions of all of humanity. This selection process is repeated, if necessary, at various moments in primitive-time. Depending upon the interpretation employed, each member of $\hat{U}$ can be consider as obtained from a pre-designed HF developmental paradigm. Notice that, for each type of cosmology, there is a "last" step in the development of each member of $\hat{U}$. If employed, this corresponds to a "last" member for a HF developmental paradigm. Hence, realized alterations determine a unique member of $\hat{U}$ and, if employed, a complete pre-designed HF developmental paradigm that descriptively details the specific members of a realized universe that leads to the realized alterations.

A non-ultrawords approach to the participator model appears in [6, Section 9]. Moreover, the algebraic properties of the generation of the participator model developmental paradigms [resp. instruction paradigms] appear in [6a].

For the theological interpretation, the "miracle" event concept needs to be included within this pre-design notion. Since God is infinitely more intelligent than His created, how this is

accomplished may be beyond human description. However, one possibility is that all allowable miracle events are also incorporated within the collection of all pre-designed universes.

8. A Pure Physical, Physical-like and Object Description.

Unless so specifically applied, each of the following designated statements can be easily rephrased and notation appropriately modified so as to be stated in terms of the participator universe.

Relative to physical-like primitives, in quantum field theory, the physical **primitive** entities -the quantum fields - are assumed to exist. These objects have various properties as they are mathematically modeled. But, they also contain (satisfy) each physical characteristic that identifies a particle. In order to have a real physical basis, those that propose this theory as fact accept as fact the existence of such "fields" as physical entities. Although one may attempt to replace such primitives with another collection of primitives, the facts are that today's secular physicists accept that "something" is a primitive. This means that the "something" cannot be further dissected into more foundational or other primitive objects. Not assuming a fundamental change in primitives, quantum fields are considered as immaterial objects, where material objects are formed via random "excitation" of a field since Planck's constant times a frequency is energy. Primitives are only comprehended relative to their behavioral properties.

There are general physical-like law(s) (PLL) that apply in the substratum. The "HF instruction-entities" contain specialized substratum laws. Further, there are various primitive objects such as ultra-propertons and info-fields, etc. I include in what follows the symbols from (I) that correspond to objects and processes. One can. of course, give "scientific" names to the symbols. There are other secular interpretations. *Personally, I do not accept that any such purely secular interpretation is fact. This example is only presented here, without further details, for completeness and to present different choices to the reader.* For a complete secular interpretation, only the following scheme is described, where the refining symbols in (I), such as the (q, r), are suppressed.

$$(I_s) \quad \overset{\text{P}_1 \qquad\quad \text{P}_2 \quad\ \text{P}_3 \qquad \text{P}_4}{((\ ^*\mathbf{\Lambda}(\lambda),\ ^*\mathbf{I}(a,b))\ ^*\underline{\mathcal{A}}) \to (G\mathtt{St})}$$

(0) All events take place in the substratum. A dense field of ultra-propertons as well as all of the other needed entities and processes exist as members of this substratum. For this application, the scheme represents a sequential process. That is, as each info-field is produced the realization operator is applied. Any previous info-field is decomposed at that moment and returns to its unbounded ultra-properton state.

P_1 For this scheme, the $^*\mathbf{\Lambda}(\lambda)$ can be considered a randomly selected member of a collection of such objects or simply existing as a single object in the substratum. If selected, this is accomplished by application of PLL and objects (ultrafast propertons)

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that select the λ valued ${}^*\mathbf{\Lambda}(\lambda)$. The ${}^*\mathbf{\Lambda}(\lambda)$ <u>represents</u> the yet to be applied ordered applications of PLL, the PLL that construct the info-fields.

P$_2$ The ${}^*\mathbf{\Lambda}(\lambda)$ contains a set of HF instruction-entities (PPL laws) ${}^*\mathbf{I}(a, b)$.

P$_3$ Via the PLL, ${}^*\underline{\mathcal{A}}$ applied to ${}^*\mathbf{\Lambda}(\lambda)$ produces an ordered sequence of PPL. That is, conceptually ${}^*\underline{\mathcal{A}}$ produces, at each step, the PLL that govern the construction of the info-fields, one for each (i, j). The * operator is a model for the proper PLL that do this in such a manner that the obtained constructing PLL progressively yield physical behavior that yields observed rationally produced physical-systems that are rationally related one to another.

P$_4$ Therefore, the PLL rationally yields each info-field $INF_{\nu\gamma\lambda}^{(q,r)}(i, j)$ and St activates the info-field. This, at the least, yields physical events that comprise a universe-wide frozen-frame along with the closely associated physical-like events. There are various interactions between physical events and corresponding physical-like events. This rational progression for info-field construction and realization is progressively and rationally continued.

9. A Pure Minimal Secular Physical-like and Object Description.

$$(\mathrm{I}_{ms}^{(q,r)}) \; ((\Gamma^{(q,r)}(x, \lambda), INF_{\nu\gamma\lambda}^{(q,r)}(a, b))A) \to (\texttt{St}).$$

(1) All events take place in the substratum, a collection of ultra-propertons, and all of the other needed entities exist as members of this substratum. The info-fields all exist. Much like the notion that quantum fields simply exist.

(2) For only one cosmology, which can include multi-universes, $((\Gamma^{(q,r)}(x, \lambda),$ $INF_{\nu\gamma\lambda}^{(q,r)}(a, b))A)$ represents a rationally coherent collection, an ultra-logic-system, of info-fields that contains the specific $INF_{\nu\gamma\lambda}^{(q,r)}(a, b)$ info-field.

As a model, the collection $\Gamma^{(q,r)}(x, \lambda)$ of info-fields is considered as composed of the same type of set formations as the set formations employed for ${}^*\mathbf{\Lambda}^{(q,r)}(x, \lambda)$. However, there is a choice since $\Gamma^{(q,r)}(x, \lambda)$ need not be formed this way. Each info-field is, via PLL, coded relative to the sequential (i, j). Then, in this second case, A is not the usual form of deduction but is a form of dialectic thought. This mode of thought employs processes that are modeled by the definition for "lexicographic" ordering. This ordering $\prec$ is defined as follows: $(i, j) \prec (r, s)$ if and only if $i < r$. If $i = r$, then $(i, j) \prec (r, s)$ if and only if $j < s$. Then $(i, j) = (r, s)$ if and only if $i = r$ and $j = s$.

(3) As the PLL that govern either of the A choices yield a specific $INF_{\nu\gamma\lambda}^{(q,r)}(i, j)$, then the realization procedure St is applied to each. The previous, if any, info-field either retains its unrealized form or the bounded properton formations simply randomly disperse. For the participator model, the collection $\{\Gamma^{(q,r)}(x, \lambda)[p]\}$ exists and the A is applied to the entire collection. This yields a collection of info-fields $\{INF_{\nu\gamma\lambda}^{(q,r)}(i, j)[p]\}$.

Via the collective notion of "mental intentions," hyperfast propertons as directed by the PLL to select the appropriate coded member of $\{INF_{\nu\gamma\lambda}^{(q,r)}(i,j)[p]\}$ that is "next" in terms of the lexicographic order. The realization operator St is applied to this specific info-field. For this participator case, the simplest approach is to assume that the info-fields are a permanent feature of the substratum.

Notice that for this minimal case, $\Gamma^{(q,r)}(x,\lambda)$, via A, and St separately display higher-intelligent design signatures. Further, the behavior of each info-field displays an higher-intelligent design signature. The "coherence" follows a pattern that corresponds to higher-intelligence deduction. Obviously, for a secular interpretation, the indirectly verified intelligently designed patterns are ignored.

In [1], I use $\mathbf{H}$ to denote an ultimate cause. This comes from an extension of H, who is the creator of the GGU-model, the restricted GID-model and the full GID-model interpretations. The basic goal of the GID-model is to guarantee that statements that describe the higher-intelligence are rationally obtained. Although certain behavior of $\mathbf{H}$ can now be predicted from observed human behavior, does such an $\mathbf{H}$ actually exist and if it does to what does it correspond?

10. The Important Specific-Information Concept and the PGU-model.

Of great importance for the Complete GGU-model are the three subcategories of specific-information, developmental paradigm-information, instruction-information and alteration-information. The Physical Grand Unification Model (PGU-model), yields a universe that complies with each of these notions, but only presents the view of universe generation relative to how we perceive physical laws. These features of the Complete GGU-model are discussed in reference [5].

[However, I present here what may be the least complex purely "Physical World Model" (PWM). The GGU-model applies various concepts and observable human behavior to the generation of universes. However, the processes also can be employed to obtain other secular models not as yet discussed. One of these is the "Physical World Model" (PWM). In quantum field theory, it is assumed that entities termed as "quantum fields" exist. If this theory is not augmented for other purposes, this is all that exists as the foundations for our universe. This same approach can be applied and is the foundation of the substratum PWM.

For a particular type of universe q, $q = 1, 2, 3, 4$, and a particular type of info-field r, $r = 1, 2, 3, 4$, one simply assumes that there is a set of info-fields $\{INF_{\nu\gamma\lambda}^{(q,r)}(i,j)\}$. They are coded as here denoted by the (i,j). Then the realization operator St is defined on this set and also is coded by the same (i,j). Hence, the universe-wide frozen-frames $E(i,j)$ are obtained as follows:

$$\text{St}(i,j)(INF_{\nu\gamma\lambda}^{(q,r)}(i,j)) = E(i,j),$$

where the previously realized $E(i,j)$, if any, returns to its info-field state or its properton formations randomly disperse.

For the participator universe, there are p collections of the collections of info-fields and $\texttt{St}((i,j)$ is also guided by the particular p chosen by the hyperfast propertons.

Relative to intelligent design, the GGU-model pre-design notion for each info-field still remains in effect. This design is then physically observable for certain physical-systems. The fact that the progression of universe-wide frozen-frame satisfies physical laws, where each law displays an intelligent design, enhances the intelligent design for a universe. The operator St also displays a signature of a higher-intelligence.]

In this article and elsewhere, various GID descriptions are given in the hopes that one or more yields sufficient comprehension. This is the reason for the obvious repetitions. The following is presented for this purpose. Using the previously defined GID-model somewhat formal language, a general description can be given that seems to capture the idea of how the "intelligence" aspect of the model can be more intuitively comprehended.

> For each universe-wide frozen frame, higher-intelligence mentally perceived (hyper) instruction-entities are presented via a (higher) mode of rational deduction. This yields an ordered collection of ever increasing complex physical and physical-like systems via a (hyper) designed info-field. Application of the (higher) form of deduction and application of the (hyper) instructions-entities are signatures for intelligent design by a higher-intelligence. Then the (higher) deductive processes that yield the ordering displayed by the step-by-step time-dependent development of a universe is also a signature for intelligent design by a higher-intelligence. As mentioned above, this form of intelligent design satisfies the perceived physical laws. Every physical-system and its behavior is indirect evidence for the existence of this higher-intelligence.

11. A Theological Interpretation and its Biblical Correspondences.

> I would like again to emphasize the following facts. The GGU and GID models are NOT based upon accepting any hypothesis that an higher-intelligence exists, that the higher-processes that generate a universe exist and that, with one minor exception, the models relate in any manner to the Bible. The theological or higher-intelligence conclusions are ALL predicted. For the theological interpretation, these predictions are Biblically interpreted and shown to verify the rationality of Biblical statements. The many concrete behavioral or other illustrations that appear in this article were not used to obtain the basic aspects of the models. They were all discovered after the basic mathematical model was constructed.

> **The Complete GGU-model models behavior. The predicted operators and the processes they represent need not be actual method nor processes employed. They do yield a rational description for such behavior that we may not be able to otherwise comprehend.**

It's obvious that substituting the word God for the appropriate phrase "an higher-intelligence" or "higher-intelligence" that appears in the above universe creating statements,

yields mathematically verified rational statements. That is, each of the GID-model statements becomes theological in character. The model predicts the existence of numerous (hyperfinite) universe-wide frozen-frames. The set of all (hyperfinite) universe-wide frozen-frames contains the standard ones that represent a physical universe at any moment in primitive-time. These can be compose only of physical events, only physical-like events or, in the more usual case, both physical-like events and physical events. Assuming that only "material" physical events are observable via human sensors, then physical-like events are immaterial.

As discussed in [5], instruction-entities represent instruction-information which corresponds to meaningful thoughts. The pure intermediate schemes such as

$$(\text{I}'_s) \; (((\,{}^*\mathbf{\Lambda}(\lambda), \,{}^*\mathbf{I}(a,b)))\,{}^*\underline{\mathcal{A}}) \to (G\texttt{St}),$$

can be theologically translated into a very brief form by using hyper-mental activity terminology. This, of course, corresponds to the higher-intelligence aspects. Theological variations can be made relative to the presently known Genesis Flood models. For example, each hyper-instruction-set that yields an hyper-universe-wide frozen-frame, contains a portion that corresponds to the pre-Flood Earth and local environment and a portion that is for a corresponding development of an ancient earth and its local environment. By definition, the G gathering operator does not apply to the ancient earth and its local environment via an info-field prior to the Flood. After the Flood, G applies to the complete info-fields for the *universe-wide frozen-frames that have been designed for the further development of our universe. On the other hand, one can allow the original pre-Flood Earth and local environment to be highly altered by the Flood with their being no actual ancient earth evidence.

As an example of a theological interpretation one has the following:

(1) God has mentally pre-designed various hyper-developmental paradigms. These He transforms into various realities.

(2) God mentally supplies the hyper-instructions (entities contained in members of ${}^*\mathbf{\Lambda}(\lambda)$) for each hyper-universe-wide frozen-frame (entities contained in members of ${}^*\mathbf{\Lambda}'(\lambda)$.)

(3) He (mentally) selects the first member of the sequence (the ${}^*\mathbf{I}(a,b)$).

(4) He hyper-rationally sustains the primitive-time ordering of the sequence of hyper-instruction-entities as modeled by ${}^*\mathbf{\Lambda}(\lambda)$ and, at each step, He changes His thoughts via a medium and mentally constructed info-fields, $INF(i,j)$, into a material reality as modeled by $\texttt{St}$ and into physical-like or other types of realities using the extended form of both the gathering G and $\texttt{St}$ processes.

Then we have a translation for the minimal case

$$(I_{ms}) \; (((\Gamma(\lambda), INF(a,b)))A) \to (\texttt{St}).$$

In this case, the hyper-instruction-entities in ${}^*\mathbf{\Lambda}(\lambda)$ are replaced by an info-field $INF(i,j)$ for each of the hyper-universe-wide frozen-frames as denoted by (i,j). Then the

exact same form of deduction A is applied. As each is "deduced" in the proper order, then realization operator St is applied. I point out that the "physical" universe-wide frozen-frames are members of the entire set of all hyper-universe-wide frozen-frames.

This yields another theological interpretation.

(1) God has in his mind all of the details for each hyper-universe-wide frozen-frame and the info-fields in $\Gamma(\lambda)$ He intends to use. (Technically, $\Gamma(\lambda)$ is an ultra-logic-system from which the hyper-universe-wide frozen-frames are obtained via ordered hyper-deduction.)

(2) He mentally selects the first info-field $INF(a, b)$ to employ.

(3) He hyper-rationally sustains the primitive-time ordering of the sequence of mentally conceived info-fields as modeled by the operator A applied to $\Gamma(\lambda)$. At each step, He changes His thoughts into a material reality, as modeled by St, and into physical-like or other types of realities using portions of various info-fields.

In both of these cases, since what constitutes propertons is describable, then even ultra-propertons, intermediate propertons and all of the collections of such entities can be considered as mental constructs for a theological interpretation. (I note that, if necessary, there can be infinitely many higher-intelligence actions "simultaneously" applied.)

Of great significance is that there is a vast amount of direct and indirect physical evidence that verifies these translated theological statements. I accept this as a preponderance of evidence under my definition of what constitutes fact. But to what "God" do they apply? *The translated higher-intelligence statements model numerous Biblical statements relative to human behavior.*

How do I interpret the words used in Biblical statements? In general, I attempt to find their meanings as understood by the majority of individuals when first transcribed. *Under no condition do I accept that certain words have hidden meanings that were only known when first presented or anytime there after by just a chosen few.* If this were the case, the Bible would be worthless as a guide for all of humanity from the time the Scriptural statements were first presented to this very moment. The Bible "plainly" states that God's concepts do not change. Once stated there are fixed in meaning.

One of the modes for GGU-model universe creation, models a strict interpretation for the Genesis 1 scenario. The GGU-model also rationally models other theological concepts.

Among other concepts, relative to the "time" notion, the GGU-model relates the "temporal," "non-temporal" and the "atemporal." "Temporal" is but another term for "observer-time." (Intuitively, **Observer-time** corresponds to our notion of the physical "passage of time" as we might sense it by counting our heartbeats. Generally one can considered it as how we "measure" this intuitive notion.) The "non-temporal" means that portion of primitive-time (merely a sequence notion) that is not observer-time. "Atemporal" means neither temporal nor non-temporal. God is not completely outside, so to speak, of the temporal and the non-temporal. He has created all aspects of these time notions. But, He is also atemporal. Such

statements like "God exists" are atemporal. Statements such as God is "eternal," "for ever and ever," and the like are merely used in a comparative sense. No matter how we comprehend time, God is, <u>in general</u>, outside of the temporal and non-temporal in that He creates them in all of their manifestations.

Unless medically prohibited from doing so, human beings can comprehend the temporal and the sequential non-temporal. An higher-intelligence can use an higher-language to describe the atemporal as being "rational," but we most likely cannot. Many, many arguments used by atheists assign the temporal or non-temporal to God in a general way. This leads to logical contradictions such as a logical regress. The regress has been known for thousands of years. **It is obvious that God's view includes, at the least, these three "time" motions.**

> "Beware lest any man spoil you through philosophy and vain deceit after the tradition of men, after the rudiments of the world, and not after Christ."(Colossians 2:8. KJV.)

One of the basic methods of the world of philosophy is a form of logical argument called the "dialectic." I have not used any dialectic arguments during my investigations. I have used the common logic of everyday thought, the logical methods employed by physical science. It has been shown, in the paper http://arxiv.org/abs/0810.0768 on modeling the Dialectic, that relative to a human time-frame many dialectic arguments contradict scientific logic.

> Relative to God, what does the term "knowledge" mean? *In all cases, knowledge refers to God's <u>meaningful thoughts</u>, thoughts that have meaning to God.*

The GGU-model aids in our comprehension of the **will of God** . It removes confusion that some individuals apparently intend to foster. The false idea is that one needs to accept "specially selected" individuals as having superior knowledge and accept their pronouncements as emanating from "secret" understandings to which they are only accorded. But, the usual and common meaning of this term is that it indicates that something is a "decision" or a "choice." However, the GGU-model states that all of the material and immaterial has been pre-designed, in a mental sense. The material is not realized until God specifically "commands" (thinks) it into physical existence. For our comprehension, He is, at present, "continually choosing" to do so. This is a way to comprehend His sustaining power.

For the necessary participator universe, God has pre-designed a vast number of "other" universes. Not only does human behavior lead to His realizing a specific universe, but He can choose any one for His own desires. All of these are the "choices" of God - the will of God. The phrase "will of God" either refers to His created choices, in general, or choices for other specific purposes.

The Biblical concept of God's **purposes** is also a trivial GGU-model implication. A purpose, in this sense, is a "goal kept before the mind." Since all of creation can be comprehend, in general, as God changing His thoughts into various realities, it is a trivial implication that these thoughts are not random but God has goals in mind. Further, His purposes for creating all of reality are partially described in the Bible. Note that this is but a partial human under-

standing. Trivially, what He "chooses" serves His goals - His purposes - whether His choice is simply the continual sustaining of human choice or to yield His church or for other reasons we can not comprehend.

The original GGU-model processes had only one aspect guided by a Biblical statement. This is Hebrews 1:3, quoted below. In the Fall of 1979, I wondered whether some type of "word" could be used to construct a cosmogony and solve the General Grand Unification Problem. Nonstandard "words" were predicted and analyzed in the original six sections of my Theory of Ultralogic. Thus, I began constructing the remaining portions of this book with but a strong "feeling" that the necessary results will present themselves.

The model verifies, via predictions, other Biblical statements. As mentioned, I attempt to find their meanings as understood by the majority of individuals when first transcribed. **Under no circumstances do I accept that certain words have hidden meanings that were known, when first presented or anytime there after, by just a chosen few.** If this were the case, the Bible would be worthless as a guide for all of humanity. The Bible "plainly" states that God's concepts do not change. Once stated there are fixed in meaning.

First, when did God create all of the entities and processes that lead to a developing universe? In the paper http://www.raherrmann.com/zerotime.pdf, it is shown that, at least, all of the GGU-model processes are created over a "zero" time interval. This is indicated by the Genesis 1:2 preparation statement.

[Some of the mathematics that yields a strict Genesis 1 creationary development appears in http://arxiv.org/abs/math/0605120 or a later version http://vixra.org/abs/1308.0145. Further, consider any of the four developmental paradigms used to generate any of the proposed cosmologies and the paper http://vixra.org/1308.0125 on ultra-logic-systems or the paper on developmental paradigms http://vixra.org/abs/1308.0145 These papers also formally model the "participator universe."]

Prior, in primitive-time, to the primitive-time start of the rapid formation of a physical cosmology, there is a collection of universe-wide frozen-frames containing the development of the entities described in Genesis 1 and for each creation-day through the formation of the Sun and Moon. (http://www.raherrmann.com/rfm.htm) Then rapid-formation completes the day-four activities. The next creation-days, as literally described, follow from applications of the (GSt) to pre-designed covirtual universes via specific instructions. As mentioned, the creation of all processes, these covirtual universes and all other aspects of God's creation occur over a zero observer-time period. The model predicts that there are creation events not associated with observer-time.

Note that it is not necessary that the original Earth and its local environment verify the same physical laws as those of the universe external to this environment. Indeed, the Bible indicates that prior to the Fall and even before the Flood that local physical regularities are not the same as those we observe today.

What is the connection between physical behavior, the human mind and written rules

and diagrams? Indeed, there is even a Templeton Prize winner who is trying to answer the question "Why are there physical laws that we understand?" It is hard to believe that he doesn't know what Genesis 1:28 states

". . . fill the earth and subdue it. Rule over the fish of the sea and the birds of the air and over every living creature that moves on the ground." (NIV, 1978. The Samaritan Pentateuch and Syriac read, "all land life" and this does not indicate that, at that time, humankind had the knowledge to "subdue" the earth.)

In order to follow the "subdue" and "rule over" directives, God has set up the correspondence between comprehensible physical law, the human mind, and general descriptions. He has not done this for any other known biological entity. But, how human beings perform such duties depends upon the circumstances and the actual knowledge they are allowed.

The Bible describes God's creationary processes linguistically. There is a predicted object that behaves just like a higher-form of a "word" that is employed to generate a universe. It is a complex collection of members of $^*\mathbf{L}$. It yields our universe's sustaining *deductively ordered (hyperfinite) instructions-entities $^*\mathbf{\Lambda}(\lambda)$. It is the $^*\mathbf{\Lambda}(\lambda)$ viewed, as shown below, as a single "ultraword." It models exactly the Greek rhê'ma as used in Hebrews 1:3. This Biblical rhê'ma, a linguistic (spoken) word, is consider as a thought.

". . . sustaining all things by His powerful word (rhê'ma)," (Hebrews 1:3. NIV).

As illustrated, the $^*\mathbf{\Lambda}(\lambda)$ can be considered as a type of higher-intelligence "book." Indeed, there is an ultraword in $^*\mathbf{L}$ that is equivalent to such a book. Is this Biblical? Plato used the Greek rh$\hat{}$ma as signifying a single "spoken" or "written" word-form. However, he also used it for a sentence. The Greek employed for a particular "book" in the Bible is actually written as one long collection of symbols. There are no punctuation or paragraphs indicated. The entire Bible can be consider as written as one very long string of symbols, even in terms of modern forms by use of the spacing and paragraph symbols. We are told that rhê'ma, as a collection of symbols referring to God's prophecy, includes the characteristic aspect of fulfillment [10]. Thus, $^*\mathbf{\Lambda}(\lambda)$ is just such a rhê'ma (word) since all of His creation is pre-designed.

The "page-turning" for the (hyperfinite) deduction can be replaced with the ordered repetition notion. Such a "single" word containing the (hyperfinite) instruction-entities would symbolically look like

$$^*\mathbf{I}(a,b)|||\,^*\mathbf{I}(a,b) \to \,^*\mathbf{I}(a,(b+1))|||\,^*\mathbf{I}(a,(b+1)) \to ... \to \,^*\mathbf{I}(\alpha,\lambda).$$

At the time when specific Biblical creationary statements were originally presented, how could this linguistic model for creation be understood? Depending upon the circumstances, the Biblical word used for "to speak" can be interpreted as "to think." Thus, under this interpretation, **God's thoughts are transformed into a physical and other realities.** The St operator models the notion that God "thinks" specific entities into existence. That is,

it is at this stage that He completes the transformation of His thoughts into physical or other realities.

"And God **said** , Let there be . . . ." (Genesis 1.) The Bible also translates the word here written as "said" by the term "thought" and this is how it should be understood in these verses. (See reference [7] for complete details as to a viable and complete GGU-model verified Genesis 1 creationary scenario.) It's unfortunate that the Bible translators did not use the correct notion of "thinking." This might have prevented the thousands and thousands of "magicians," claimed "witches," and the like from attempting to find the specific spoken words that might lead to physical creation or alterations in physical-behavior.

Relative to the universe in general and the "command" term, there is

". . . for he **commanded** (via **thoughts**), and they were created." (Psalm 148:5 NIV.)

Rather than use a words Biblical meaning when first presented, many individuals attempt to justify their faulty models via inappropriate interpretations. One such attempt is when the Hebrew word tôb, which has the very contextual and broad meaning of "good," is interpreted as having a moral meaning in the Genesis 1 scenario. When an individual has completed a drawing, design or many other physical acts you often hear the phrase mentally or otherwise,"That's really good." The individual is pleased with the results obtained. They have met the exact purpose for which the actions were preformed. This is what the phrase "It was good" means in Genesis 1. Or, as the Living Bible states it in each case, "God was pleased." It has no direct moral connotation to what has been created. It does in Genesis 2, where the tree of "knowledge of good and evil" is mentioned - knowledge that there are behavioral pathways God morally classifies as either good or evil, but not both.

The Hebrew that is interpreted as "good" has many different connotations. In all cases, the correct one must be related to the context.

Except for the one verse Heb. 1:3, the pre-design aspects of the GGU-model were not originally constructed so as to verify any Biblical statement. Indeed, this author only had a very superficial knowledge of Scripture. The pre-design concept is theologically associated with the Foreknowledge concept. It also strongly verifies Acts 15:18 and Isaiah 44:7

"Known unto God are all His works from the beginning of the world." (KJV) ("known from eternity." (DBY) "All His works are know from eternity." (HNV) "Known from the eon to the Lord is His work." (Concordant Literal).

Then there is

". . . let him lay out [set them in order] before me what has happened since I established my ancient people and what is yet to come, yes, let him foretell what will come." (Isaiah 44:7 (NIV)). "And who, as I, shall call, and shall declare it, and set it in order for, since I appointed the ancient people? and the things that are coming, and shall come, let them shew unto them. "(KJV) Trivially, this and Acts 15:18 imply that God knows all of His works from the beginning of the world and has set these events in order throughout all of physical time, at least.

There is

"He set them in place for ever and ever; he gave a decree that they never pass away." (Psalm 148:6 NIV.)

Such verses do not contradict Revelations 21 since from the Hebrew viewpoint "ever and ever" means the greatest physical time. Most accept that "never" also is relative to physical time, although there is a record kept of the entities mentioned in this Psalm.

Below, I take from the article [9] a physical illustration of a foreknowledge model. Notice the mathematical models for physical behavior often go back-and-forth from the mathematics and a purely rationally described language model for physical-behavior.

Each universe-wide frozen-frame, including those that produce the creation-days, requires that mental-like higher-intelligence deduction be performed. This model for higher-intelligence modes of step-by-step deductive thought not only satisfies Hebrews 1:3 but also

". . . in him all things hold together." (Colossians 1:17. NIV.)

Further, the Old Testament notion that God maintains both physical and human behavior, which is modeled by this theological interpretation, is described in various verses of Psalm 147. Indeed, the fact that the properton approach allows each elementary particle and each combination there of, as well as each physical-system, to have a unique identifier specifically models

"He determines the number of stars and calls them each by name." (Psalm 147:4 NIV.)

Then Paul writes,

". . . For since the creation of the world God's invisible qualities - his eternal power and divine nature - have been clearly see, understood from what has been made, so that men are without excuse." (Romans 1:20 NIV.)

Is not a description for how God's "thoughts" produce a universe part of His invisible qualities? This appears to be a reason that the ultra-logic-systems are employed. An increase in knowledge is predicted (Dan 12:4). The higher-intelligence model for God's activities is such an "increase" and God's creationary activities are now more "obvious." The reason for this is that, of all of the modes of thought that are possible, God has created a special mode that is displayed through His creation activities. He has created humanity so that, in general, this mode of thought corresponds to the most basic one that we employ.

> The Complete GID model as theologically interpreted and the processes and entities necessary for this interpretation would be a significant way to display indirectly His invisible creationary attributes. This does not simply follow from the fact that they correspond, in a higher-form, to a specific sequence of human actives employed by many to construct man made entities. The significance lies in the phrase "so that men are without excuse." His infinite power and divine nature is partially exhibited by (I'_s).

12. A Semi-Technical Description.

God pre-designs hyperfinitely many covirtual universes. This means finitely and, if necessary, infinitely many. These pre-designed universes are represented by HF instructional paradigms that correspond to HF developmental paradigms, where certain HF developmental paradigms contain standard descriptions for each cosmology - the standard developmental paradigms.

Each universe develops relative to primitive-time. Portions of this sequence is (temporal) observer-time. God keeps these ordered HF instruction paradigms and corresponding HF development paradigms in mental-like files that have special properties. These properties are especially designed so as to display His higher-intelligence. This is evidence that God designs each entity within our universe as well as its behavior over both primitive and observer-time.

God associates each of His created HF developmental paradigms with HF instruction-entities that correspond to properton formations that yields specific members of a hyper-event sequence, where each hyper-event corresponds to a member of the corresponding HF developmental paradigm. Specific hyper-events correspond to physical events while other hyper-events correspond to physical-like events. The created ultra-propertons are especially designed to represent the entire collection of all necessary physical and physical-like parameters.

God designs a mode of thought that is the major aspect of the ultra-logic-system operator ${}^*\underline{\mathcal{A}}$. This mode of deductive thought, when restricted to the physical world, corresponds to a basic form of deduction, which God includes in the structure of the human brain. For a selected complexity, He designs ultra-logic-systems.

[In order to have any comprehension of substratum behavior, an HF instruction-entity represents substratum processes that are activated. As noted this activation is denoted by $(G_\lambda^{(q,r)} \mathtt{St})$. It is assumed that there is "something," as modeled by the PLL, that "forces," as directed by the HF instruction-entity, the propertons to form into the appropriate combinations and also produces the physical-like events as well.]

To form each step in the development of a universe, God gathers specific numbers of the created ultra-propertons into collections and these collections into collections and continues this gathering process until the final gathering corresponds to an entire physical universe at a moment in its development. These are the info-fields, $INF_{x,\lambda}^{(q,r)}(i,j)$. Propertons and these gatherings can either be thought of as actual physical-like entities or as "thought-like." These gatherings follow from a designed HF instruction-entity. This concept of constructing and using HF instruction-entities He incorporates within the human brain so that humankind can recognize certain physical regularities termed physical laws.

The application of the coupled process $(G_\lambda^{(q,r)} \mathtt{St})$, at the least, yields the physical universe at a specific moment. The $(G_\lambda^{(q,r)} \mathtt{St})$ models the requirement that God is directly responsible for every physical aspect of a universe's development since the physical world only exists if $(G_\lambda^{(q,r)} \mathtt{St})$ is applied.

As with physical laws, God associates each of His created HF developmental paradigms with HF instruction-entities that correspond to properton formations that yield specific members of a hyper-event sequence, where each hyper-event corresponds to a member of the corresponding HF developmental paradigm. Specific hyper-events correspond to physical events while other hyper-events correspond to physical-like events. GID and GGU **mostly model behavior** and, hence, exactly how God obtains the results produced by $(G_\lambda^{(q,r)}\mathtt{St})$ remains a secret to us while we are in this physical universe. This models Deuteronomy 29:29. "There are secret things that belong to the LORD our God."

The Bible only states that God does not create from what is "visible." By implication, this seems to mean the He doesn't create physical entities from anything that appears or that is assumed as physical. The GGU-model does not contradict actual Biblical implications. God also creates, at least, the second and third heavens. Nothing that actually exists in the second heaven is physical. This is the realm of the GGU-model processes, which is termed as a preternatural world in the theological interpretation. Unless one states that God's thoughts are composed of "nothing," then He has not actually created from nothing as this term is generalized. When all of God's activities are considered as mental-like processes, then a general description for all of God's endeavors is that **He changes His thoughts into physical reality** . This general characterization also holds when HF instruction-entities yield physical-like events.

The GID-model higher-intelligence can design and produce our universe in a manner that follows a strict (literal) interpretation of the creation statements made in Genesis 1. Example: things appear in mature and functional form, water, light, dry land, or objects formed during but one 24-hour day, even without sunlight. This higher-intelligence can also design our universe so as to correspond to any of the proposed cosmologies. Biblical events that occur sequentially prior to a rapidly forming cosmology do so via the primitive-time sequence. This even holds if an "eternal" (no beginning and/or no ending in primitive-time) cosmology is selected. There are probably many ultranatural events and ultranatural laws about which we can have no knowledge. This is a strong verification of 1 Corinthians 13:12 and, as mentioned, Daniel 29:24.

The word "upholding" in Hebrews 1:3 as used in the KJV is better understood as "sustaining." The term "word" is usually interpreted as a "spoken or mental word." It is the same term used in John 3:34 for speaking a word given by God, which for comprehension should follow a logical pattern. Can we get any additional comprehension as to how He might sustain our physical universe?

Consider that prior to application of $(G_\lambda^{(q,r)}\mathtt{St})$ that there are covirtual universes described previously and illustrated in Herrmann (2002). Rather than as illustrated in Herrmann (2002), one DVD is all that is necessary, where the "chapter" notion is utilized. Notice that without participator alterations only one covirtual universe is necessary. All of the primitive-time "slices" exist. For the DVD model, this means that the variations in the surface of the DVD that lead to the images, for a chapter as viewed on a monitor, exist in the proper

order. The combined operator $(G_\lambda^{(q,r)}\texttt{St})$ is the last step and it preservers the step-by-step HF logic-system and the internal algorithm, which, in restricted form, is the simplest form of propositional deduction. That is, one slice follows another in a logical way as displayed by an ID-signature.

The $(G\texttt{St})$ processes model the "sustain" notion in that this is a general activity that God applies to each "slice" so that it become a physical reality. If He does not continue this activity, the physical universe would cease to develop physically. Indeed, if this occurred, removal of the "last" application of the $(G\texttt{St})$ operators returns the universe to covirtual form and it ceases to exist physically. It has not been erased from the DVD. Another process directly applied by God also yields every miracle event. This higher-intelligence choice process can be applied at any moment in primitive-time to replace completely any portion of an entire universe with another portion God deems as necessary.

Of significance is that there are HF words in $^*\mathbf{L}$ that correspond to the HF logic-systems, HF instruction-entities, HF universe-wide frozen-frames, HF designs, and the like. This verifies that He is "sustaining all things by His powerful word." These are infinite HF words of immense power.

The fact that there is more than one process used strengthens the intelligent-design conclusions. Further, they indicate how God has constructed humans so that if they have the requisite knowledge or experiences, they can mentally deduce the most likely physical events to occur during the development of the physical world about them. On the other hand, one can simply state that "God created all there was, all there is, and all there ever will be" and nothing more needs to be stated about His creationary activities. However, I accept that any effort to enhance Romans 1:20 and establish the rationality of the Biblical creationary statements in Genesis is a worthwhile endeavor.

[[The operator $\mathbf{U}$ unifies not only the physical laws we observe today, but those that existed relative to the original Earth and its local environment. Recall that $Pi\,^*\mathbf{U}$ has meaning in the restricted physical sense. This means that, when the unification is restricted to the original Earth and its local environment, the results can differ from its restriction to other regions of an exterior universe. Indeed, each physical-system can have a special identifier [1a, section 11.3] and these identifiers can guide this restriction. However, recall that U is not used to generate a universe, but rather it is satisfied by the development.]]

13. Scientific Criteria

There are various criteria that need to be satisfied before a collection of statements is considered as scientific in character. Depending upon who states them, they can differ. I have previously shown how the GGU-model, being a cosmogony, satisfies the basic requirements. The following statements are taken from a website "Encyclopedia of American Loons," where the contributers criticize individuals, organizations, ideas and the like. They mostly reveal their true intent for doing so. Relative to creationary science the remarks are based upon the

contributors lack of knowledge. Relative to GID, they might think that they have eliminated their foes, when this is far from the truth.

Thus, to be a contender the ID movement has to have a falsifiable theory that yields testable hypotheses - and the theory has to explain the data (all the data, not just some of it) better than its alternatives. "It's designed" is not an explanation unless followed by an explanation of the exact mechanism of design (which would require identifying the intentions of the designer, as well as the purpose and methods of the designer, as well as why certain features were chosen rather than other ones). Provide a well-developed alternative, then you can play.

As detailed elsewhere, the GID-model satisfies all the necessary scientific criteria for a properly constructed scientific theory. The GID-model is falsifiable and, in restricted form, testable. The notion of "better than" can be defined technically. But, it is most often science-community dependent. However, the GGU-model and interpretations satisfy all of these requirements since there is no other scientific cosmogony. And, the "certain features where chosen rather than other ones" is satisfied. The "certain features" comprise the entire physical universe (this, of course, includes the notion of multiple-universes that are but subsections of a cosmology) and there are no physical "other ones."

These requirements might be altered by this contributor to "Loons" in a rather obvious but arbitrary way in an attempt to eliminate the GID-interpretation. He could simply require the designer to be a physical entity, which requires it to be "self-generating." Such an after-the-fact alteration would surely indicate the author's intent in writing the requirements in the first place. However, the self-generation of an entity that creates all there was, all there is and all there ever will be leads to an incomplete infinite logical regress. (See the end of this article.)

14. Reductionism and Emergent Properties

One major form of reductionism is the claim that every physical event that exists is produced by a collection of basic objects, where each behaves in a describable way. Further, such describable behavior leads directly to the behavior of each physical event. A major claim comes from the particle-physics community and it may be false. The claim states that particle-physics interactions lead to the behavior of each physical-system. Various philosophers of science reject this statement. Rather, it is believed that many physical properties "emerge" in that they may not simply be the "sum" of all of the parts and their interactions. In http://en.wikipedia.org/wiki/Emergent_properties these emergent properties cannot be produced through application of the properties that regulate a more fundamental level. Can propertons produced entities that display emergent properties?

I have emphatically stated that propertons are typically considered as only operational in content. Within physical science, a physical object, whether it exists on a fundamental level or as a more inclusive physical-system, differs from another such object in that it has different physical characteristics. *These differences are based upon physical measurements,*

descriptions, images, and human or machine sensory-impressions. The term properton, refers to characteristics represented by measured quantities using human or machine sensory-impressions or descriptive characteristics. These impressions include other descriptions for physical behavior not related to measured quantities. The "ultra-properton" is a mathematical way to represent, in a distinctive way, each of the basic characteristics that will operationally yield the characteristics for a specific physical-system.

What does the phrase "operationally yield" mean? *Propertons may be deemed as but one of the fundamental steps for the universe-generating process.* This means that the rules that direct properton formation, although related to real procedures, are described mathematically in such a way that the objects to which the rules apply are not detailed in physical terms. I have presented [1, p. 127, the straws] an "illustration" for properton formation that is not intended to be an actual physical description. How a universe is generated depends upon the scenario selected. Propertons are used for all of the scenarios. Due to the notion of the ultranatural laws [1, pp. 127, 141] (part of the lack of knowledge model), descriptions for certain of the scenarios must remain somewhat vague.

The properties that govern properton formation of physical-systems are **not** *dependent upon the atomic-world.* They represent actual universe-generating substratum objects and this does not contradict the philosophy of emergent properties. Depending upon the theory used, their combinations represent physical objects at various levels. The combinations represent directly observable physical-systems. The atomic realm need only be a portion of a physical-system.

The GGU-model unifies all physical laws, theories and describable properties. Physical emergent properties are, at the least, describable properties for physical behavior. Hence, there are rules that satisfy these emergent property descriptions. Further, prior in a sequence sense to application of the $\mathtt{St}$ the properton combinations formed by G are part of the substratum that is not part of physical-world. Emergent property behavior is reproduced during the development of the sequence of universe-wide frozen-frames for the various physical-systems and is incorporated within the (i, j) info-fields.

Properton "coordinates" are related in various ways and these relations are what produces variations in physical-systems. These relations, including the descriptions for emergent properties, are classified as physical laws. These can be described by instructions relative to any physical-system that is composed of more elementary entities. Hence, the unification operator $^{*}\mathbf{U}$, along with Pi, satisfies these emergent properties. Significantly, every combination of propertons has a unique "name." The emergent properties are simply parts of each HF instruction-entity for each info-field.

For the secular interpretation, one could follow the philosophy of Feynman.

> [W]hile I am describing to you how Nature works, you won't understand why Nature works that way. But, you see nobody understands that [1, p. 99].

Thus, from his viewpoint, among the many (even infinitely many) collections of possible

physical laws, humankind, by chance, has been able to deduce the physical laws that generate $\mathbf{U}$. Thus, such describable behavior, including any emerging properties, simply exists. But, these humanly comprehensible and applicable laws cannot include the Pi, which, as mentioned, has been the major stumbling block for secular science. The Pi operator is the one that yields a basic emerging probabilistic-property - that such behavior, usually, does not reveal itself until many events occur. And, the Pi "law" cannot be a member of $\mathbf{U}$, since it represents "ultralogic" behavior, processes that cannot be mimicked by humankind.

Moreover, Feynman's statement is <u>wrong</u> in its major implication. Since, as stated in Genesis 1:28, multitudes of Bible believers know "why" Nature behaves as modeled by $\mathbf{U}$ and Pi and why we are able to describe physical regulations. Moreover, as Einstein wrote [1, p. 186], many such laws cannot be the result of our sensory experiences that evolutionists claim lead to the necessary deductions. But, if such physical behavior were originally incorporated into an event sequence, is there "something else" that "forces" all physical objects to follow these laws and emergent properties? Are there entities that are used to guide behavior so that it "must" follow the original event sequence patterns? One can simply state that $\mathbf{H}$ is the "something" that forces entities to behavior in these designed ways. But, is there actually a completely comprehensible "how"?

From what has been established here, humankind cannot comprehend this complete "how" while we exist in our present form. As pointed out many times, there are ultranatural laws and, hence, ultranatural rules and *events of which no entity within a (physical) universe can have any descriptive knowledge. One can conjecture that such presently incomprehensible items are required to produce and sustain all physical-systems within any such universe. And, they do answer such ultimate questions.

15. A Comparison of Approaches

In the original approach to the GGU-model as it appears in [1,1a] and elsewhere, the theory of finite consequence operators is employed. In particular, one operator, which I denote here by $\mathbf{S}''$, is employed. A developmental paradigm, d, (or now an instruction paradigm) is used. Mathematically, an ultimate ultraword W is predicted as is the one that represents ordered reading and speaking. Such ultraword mathematical objects behave, in general, like a written or spoken word (a finite list of symbols, drawings or images). When $\mathbf{S}''$ is applied to $\{W\}$, ultrawords for each physical-system are hyperfinitely deduced.

Consider the finite set of rational numbers $\{1.23, 6.78, 5.345, 1.22\}$. We have learned how to apply some unknown mental process and place these numbers in the order, $1.22 < 1.23 < 5.345 < 6.78$. The original approach does not have this refined ordering, which was not developed until 2006. Further, there is no prevision made in the original 2002 approach for the intelligent design of each physical-system within a universe-wide frozen-frame. Of course, this is but a model for behavior, a model for some process that selects the appropriate members of the developmental paradigm. This new approach supplies these missing ingredients. The ultraword approach requires a different ultraword for each type of universe. In the new

approach, only one choice is made and this yields a specific type of universe via application of $^*\underline{\mathcal{A}}$.

One significant difference is that in the original approach the operator $\mathbf{S}''$, when applied, does not generate, via "deduction," the step-by-step primitive sequence of universe-wide frozen-frames. The construction of the now employed GGU-model does, via the operator $^*\underline{\mathcal{A}}$, satisfy this requirement. This it accomplishes for both the *developmental paradigm and *instruction paradigm. Both approaches require the same rationally describable collection of propertons and the rational application of $(G\mathrm{St})$ to yield physical reality. In the new approach, this coupled operator is only applied in the HF instruction paradigm case. Although not mentioned in [1, 1a], the exact same original processes can be applied to an HF instruction paradigm and it is these results to which $(G\mathrm{St})$ can be applied.

One advantage for the original approach is that for participator alterations in physical behavior distinct universes are designed. These can all be incorporate within one ultimate ultraword and the operator $\mathbf{S}''$ rationally yields each ultraword from which specific altered universes are obtained by another application of $\mathbf{S}''$. This ultimate ultraword method is being applied to this new method in order to hyper-rationally design and obtain each required participator universe. There is an additional mathematical representation for the collection of all such HF instruction-entities or the HF developmental paradigms. They can be represented by "HF matrices."

[Self-generation. Let C be the class of all symbolized objects created by an intelligence. Let $P(|, ||)$ be a predicate interpreted as "| creates ||," where "||" is a member in C. The relation symbolized by P is created by H and P is in C. Suppose that H is self-created. Hence, H is in C and P(H,H). One also has the relations $P(|, P(||, |||)), P(|, P(||, P(|||, ||||)))$, etc., using Kleeny tick notation as variables, are in C. Again P(H,P(H,P(H,H))) . . . . etc. What this means is that using a trivial step in formalizable scientific (i.e. classical) logic, no conclusion to this "human deduction" can be formally expressed if we assume the usual induction notion. Since the class C exists, and inductive thought is a basis of mathematics and physics, one has no resolution. This is a type of infinite (logical) regress. But, this does not make the God concept "irrational." This is resolved by stating that God is not self-created. If this is not satisfactory to some, then, for them, this indicates that their comprehension, via a language, is limited.

Symbols and their Applied Meanings.

(0) Note: The term "hyper," where appropriate, corresponds to the term "high."

(1) $\mathcal{A}, \underline{\mathcal{A}}$ . . . .   Standard, Embedded Standard Logic-System Algorithm.

(2) $^*\underline{\mathcal{A}}$ . . . .   Higher-Intelligence Algorithm.

(3) d, d, $^*\mathbf{d}$ . . . .   Standard, hyperfinite, higher-developmental paradigms.

(4) $\mathbf{E}$, E . . . .   Physical, Physical-like Events.

(5) f(a, b), $\mathbf{f}(a, b)$, $f(a, b)$ . . .   Standard, Embedded Standard, Hyperfinite-designed

Description.

(6) G, G, $G_\lambda^{(q,r)}$ Standard, Substratum Gathering Operator, Refined Gathering Operator

(7) $\Gamma(\lambda)$, $\Gamma^{(q,r)}(x,\lambda)$ . .   Info-field Ultra-logic-system, Refined Info-field Ultra-Logic-System.

(8) I(a,b), ${}^*\mathbf{I}(a,b)$, ${}^*\mathbf{I}_{\nu\gamma\lambda}^{(q,r)}(a,b)$ First standard, First Hyperfinite, Refined Hyperfinite Instruction-Entity.

(9) I(i,j) . . . . A Member of an Instruction Paradigm.

(10) ${}^*\mathbf{I}_{\nu\gamma\lambda'}^{(q,r)}(i,j)$ . . . . . Refined Hyper Instruction-Entity at Primitive-Time (i,j).

(11) $\hat{I}$, $\hat{I}_{\nu\gamma\lambda}^{(q,r)}$, $\hat{I}_{\nu\gamma\lambda}^{(q,r)}[p]$ . . . A Hyperfinite, Refined Hyperfinite, Sequence of Refined Hyperfinite Instruction Paradigms.

(12) $INF_{\nu\gamma\lambda}^{(q,r)}(i,j)$ . . . . Refined Info-field.

(13) L, $\mathbf{L}$, ${}^*\mathbf{L}$ . . . . The General, Embedded, Higher-Language.

(14) ${}^*\mathbf{\Lambda}(\lambda)$, ${}^*\mathbf{\Lambda}^{(q,r)}(x,\lambda)$, ${}^*\mathbf{\Lambda}^{(q,r)}(x,\lambda)[p]$Hyperfinite Instruction Paradigm Ultra-Logic-System of Complexity λ, Refined Hyperfinite Instruction Paradigm Ultra-Logic-System of Complexity λ, The Same for the Participator Universe. (There are corresponding "primed" developmental paradigm symbols.)

(15) $\Lambda(n)$, $\Lambda(i,j)$. Standard Instruction Paradigm of Complexity n, Special Form of Standard Instruction Paradigm of Complexity n.

(16) Pi . . . . The Ultralogic that Duplicates Probabilistic Behavior.

(17) St . . . . Realization Operator.

(18) U, ${}^*\mathbf{U}$ . . . Unification, Hyper-Unification for all Physical Laws and Theories.

(19) $\hat{U}$ The Set of all Hyperfinite Instruction Paradigms for the Participator Universe.

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End Note

(1) For the actual mathematical statements that lead to the above two displayed sequences, (1) and (2) see http://www.raherrmann.com/processes.pdf this PDF file.