

The Rapid-Formation Model

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Abstract: Numerous many times throughout the Bible it is stated by God and others that all that He presents is true. That He is truthful. The concept of “truth” has no meaning unless the words presented when the Biblical statements are first presented have exact meanings understood by the audience to whom they are addressed. No actual observations should contradict these understandings. Relative to the development of a physical universe, the major *Biblical* purpose for the Rapid-Formation Model is to preserve such truth. It is a concept that, depending upon a particular description for such a development, varies in application. In general, the Rapid-Formation Model satisfies Biblical statements by developing, if necessary, physical-systems over small observer time intervals.

1. Introduction.

Prior to application of the rapid-formation model (RFM), a general idea as to the development of our universe is necessary. Once this is decided upon, then, if necessary, the model can be applied. For this presentation the Eden Model (Herrmann, 2014a) is the major model considered.

The developmental paradigm (Herrmann, 1978-94+arxiv, 2006, 2013) is the descriptive pre-design aspects of the GGU-model that are produced as physical entities in a specific order by an instruction paradigm (Herrmann, 2013a). Step-by-step “slices” of a “universe,” that may be composed of pure physical entities, physical and physical-like entities, only physical-like entities, or even be empty are termed as “universe-wide frozen-frames” (UWFFs). Each UWFF is itself designed in a step-by-step manner. However, the rapid-formation model is relative to an entire UWFF.

For this article, the simplified notation $*\mathbf{f}(i, j)$ represents a specific complete UWFF identified by the pair (i, j) . The UWFF are usually produced during primitive sequence or observer time intervals, here denoted by $*[c_i, c_{i+1}]$, where i and $i + 1$ are “hyper-integers,” which contain the integers. For fixed i , this interval is composed of the UWFF primitive sequence identifiers j . As these numbers advance in a step-by-step manner (i.e. $0 < 1 < 2 < 3 < \dots$) the UWFF pre-designs $*\mathbf{f}(i, j)$ develop

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and this yields an actual physical-system development (Herrmann, 2013a). (Whether pre-designs or other GGU-model schemes are employed depends upon the application of the GGU-model processes.) Note that, for special purposes, such interval identifiers as i and $i + 1$ are members of the hyper-integers and not integers. This does not alter the RFM mechanism nor its description.

The Eden Model preserves the “no physical death” interpretation for the pre-Fall world. On the other hand, if Genesis 2:17 should be otherwise interpreted, then the RFM solves the day-four “starlight and time” problem for a non-Eden development.

2. Physical-systems.

Certain Biblically mentioned physical-systems are created during the creation-days. For a literal Genesis 1 interpretation, the Hebrew “Began to be” is translated “It was so.” This is the instruction that produces the previously described entities. The entities are being created during a particular creation-day relative to observer time.

It is suggested that Genesis 1 was first presented circa 1450 BC. The common observation at the time, as today, is that mature and fully functional plant and animal life developed from what are less complex entities. This is even the case for the observed behavior of Sunlight, Moonlight and the starlight. These observations are detailed in Herrmann (2014a). Physical-system rapid-formation or sudden appearance produces all of the mentioned created entities. Further, for creationary models that require all physical behavior to mainly satisfy the physical laws we observed today, rapid-formation of such physical-system satisfies this requirement as well as a nearly instantaneous appearance.

Since the 1995 invention of the DVD, a strict Genesis 1 interpretation is better illustrated via computer-graphics imagery rather than the previous methods presented. A DVD has a much greater capacity to reproduce since it uses much less corrective information. Via a more intense form of data compression and presentation it produces much greater clarity. The data compression employed partially models the actual objects that are a basis for the GGU-model - ultrawords. Further, one has greater control over the step-by-step presentation of the images. However, it can only partially reproduced the GGU-model’s step-by-step process. Indeed, no physical entity can fully reproduce such a process. A process that, in certain cases, cannot even be fully described via human languages; a process that cannot be experienced since it is not physical.

Consider a 3-dimensional imaging process and a large monitor screen. The screen is divided into two unmarked regions; a spherically bounded region R located at the center position, and a larger region S containing R.

In the beginning, there are no visible images in either location. Since in Genesis 1, the Sun is not formed until day-four, in this illustration, “ghost-like” images are used to indicate what occurs in the R-region prior to day-four. What is described is from a fixed viewpoint external to the R-region and the viewer uses the primitive sequence to sequentially order the step-by-step development. What follows are theological interpretations for GGU-model universe-generating scenarios. Computer-graphics are used to create a DVD. This DVD is loaded into a player and it begins to produce screen images.

As the DVD plays, specific physical-systems appear during a specific creation-day. For systems other than the “stars” of day-four, over a rather small interval $*[c_i, c_{i+1}]$, certain individual DVD images within the R-region, and, of course, the actual physical events, show rapid development *while all other physical-systems are placed in suspended animation. That is, they do not develop in any manner.* Day-four star formation depends upon whether one chooses the Eden or non-Eden models as discussed next in this article.

Thus, as the DVD plays, either by sudden appearance or rapid-formation the R-region is altered and displays the day-two through day-four non-star entities as described in Genesis 1. [Other aspects of the GGU-model applied to Genesis 1 can be found at the “beliefvd” URL listed in the references.]

3. The Application to the Eden Model.

The GGU-model is based entirely upon interpreting the symbols that appear within a mathematical theory (Herrmann, 1978-94+arxiv). Hence, it is a mathematical model. This implies that the model is highly rational in character and is constructed using the same methods employed to describe “scientific” cosmologies. Except for a few symbolic abbreviations, the mathematical methods used to verify the rationality of the RFM do not appear in this article. These methods use the only discovered mathematical processes that can compare God’s activities with those of His created. The basic set-theoretic object used is called a “nonstandard model” and, as done with all mathematical models, the results discussed here are a consistent interpretation for the mathematical symbolism employed. The formal mathematics for a specific “out-of-time-phase” form for cosmology generation that also solves the starlight and time problem appears in Herrmann (2014, Section 5.1).

Cosmologies need to be describable in terms of a physical language that does not include any mathematical expressions. The reason for this is that there are no such expressions within “Nature” itself. Nature transcribes neither the mathematical symbols nor numerical measures such as rest mass etc., upon any physical object. Nature

has not decreed that mathematical methods must be employed. To properly describe actual physical behavior, one needs to apply a language that does not include mathematical representations. The mathematics must be translated into such languages. Using modern computer-graphics, these symbolic descriptions can usually be replaced by images. This include an “ordered” presentation based solely upon a location on a DVD and the scanning laser pattern. From the standpoint of “virtual reality,” other human sensors can also be employed to aid comprehension. All of this sensory information is termed a “general” description and the basic GGU-model procedure models sequences of these general descriptions (Herrmann, 1978-94+arxiv, (Chapter 7)).

As indicated, the basic GGU-model procedure abstracts the most fundamental notion associated with the concept of a “development,” which, in this case, is defined as a step-by-step progression of physical events as described by a general language. Such progressions are abstracted in the form of mathematical sequences. Such a development has one representation, the “developmental paradigm” of modeled descriptions. These descriptions correspond directly to physical events via the “instruction paradigms.” These notions, the descriptions, the instructions and the physical event, are combined when the term “event sequence” is used. With certain qualifications discussed after display (2) in the referenced article on fundamental processes, these descriptions can be considered as exact physical science representations; exact descriptions for physical events.

To emphasize the progression notion, the numerical order that yields a development is termed as a “primitive sequence” (previously termed “primitive time”) and each denoted moment in observer time is a “moment” in the primitive sequence. Importantly, moments within a primitive sequence need not correspond to moments in observer time. Further, the physical “interval” between two adjacent representations, if compared to observer time, is exceptionally small and, with possible exceptions, well below intervals that have any observable affect upon theory verified predictions. However, due to the predicted existence of “physical-like” events that require a higher-language to describe, then, necessarily, our comprehension of event sequence construction must remain partial. The event sequence notion should be considered as a type of “slightly imprecise” approximation, but an approximation that converges to exact behavior.

If today’s assumed physical laws are considered, then, for the Eden Model, additional features would need to be adjoined to such physical laws to ensure the continued existence of the necessary physical-systems required to sustain life. Relative to day-four, the Sun and Moon appear in the R-region and the day-three entities continue to develop in the R-region relative to observer (earth-rotation) time. The RFM states that during day-four an entire universe external to the R-region is formed in S. The

Bible simply states that God “also made the stars.”

If the unknown external cosmology is one as presented today, then, due to limited speeds, light and particle propagate require observer time to expire before past events are revealed to us. This produces the day-four starlight and time problem. However, as a secondary day-four effect, the rapid-formation of the external universe eliminates this problem. This is accomplished for any Eden cosmology in the same manner as any other rapid-forming physical-system.

An entire external universe is produced physically and almost instantaneously as would be observer time measured during creation day-four. Hence, from the viewpoint of the DVD illustration this is observed via a highly refined “pause and next” process. While the external cosmology develops the pre-Fall Earth with its local environment is placed in suspended animation within a specifically identified UWFF until the development of the exterior universe reaches the appropriate moment in its development where such a suspension is not continued. No additional generation refinements need to be applied.

As implied by Genesis 3:24, for the Eden Model , there will be no evidence obtainable today as to any aspect of this Eden existence. There is no obtainable knowledge as to the methods God uses to achieve eternal life. This follows from the well known metaphorical (symbolic) use of the word “sward” such as in Heb. 4:12, Ps 57:4, Isa. 49:2. The “back and forth” phrase clearly signifies that every mankind path to such an existence is blocked. This is especially the case relative to any form of detailed knowledge that any evidence implies. The only knowledge we are given is the general knowledge that comes from the Biblical description. (Notice that the “tree” in the Garden is not the tree of life, but literally it is the “tree of the living” (Concordant Version). It refers to a “strong pillar.” In this case, it represents “eternal life.”)

If the pre-Fall Eden features are not included, then a different and more complex day-four external universe generation is necessary. Such a rapid-forming external cosmology would, generally, follow the pattern described next for the Eden Model’s alterations in the behavior of physical-systems that are necessitated by the Fall of Adam and Eve.

[[[Let C denote the physical UWFF for a specific cosmology and R the physical UWFF just containing the R-region. It is predicted that during rapid-formation a step-by-step collection of UWFFs can look like

$$C_1, C_2, \text{etc.}, C_{50}, R, C_{51}, C_{52}, \text{etc.}, C_{100}, R, C_{101}, \text{etc.}$$

Notice how the R-region repeats. In terms of an event sequence, this appears as

$$\dots, {}^*\mathbf{E}^q(\alpha, 0), {}^*\mathbf{E}^q(\alpha, 1), \dots, {}^*\mathbf{E}^q(\alpha, \lambda - 1), {}^*\mathbf{E}^q(\alpha, \lambda),$$

$${}^*\mathbf{E}^q(\alpha + 1, 0), {}^*\mathbf{E}^q(\alpha + 1, 1), \dots, {}^*\mathbf{E}^q(\alpha + 1, \lambda - 1), {}^*\mathbf{E}^q(\alpha + 1, \lambda), {}^*\mathbf{E}^q(\alpha + 2, 0), \dots,$$

where $\alpha \in {}^*\mathbf{Z}$ and ${}^*\mathbf{Z}$ are the hyper-integers. The R-region is each appropriate ${}^*\mathbf{E}^q(k, \lambda)$. In general, each ${}^*\mathbf{E}^q(i, j)$ is obtained via higher-intelligence deduction.

The event sequence method has some important features. Adjacent UWFFs can be highly distinct. Items can appear and disappear and this has no effect upon the physical laws, if any are known, that are satisfied for the following events. Further, each UWFF includes all in-transit information. For a simple example, let \mathbf{E}_1 , \mathbf{E}_2 , \mathbf{E}_3 be three successive UWFFs. Suppose that a galaxy G appears in \mathbf{E}_1 and that G no longer appears in \mathbf{E}_2 and its disappearance is not related to any other physical event. Then in \mathbf{E}_2 not only does G not appear but all in-transit information relative to G is missing. Although, \mathbf{E}_1 and \mathbf{E}_2 may not satisfy a given collection of physical laws, \mathbf{E}_2 and \mathbf{E}_3 do satisfy such a collection. One may wonder why G was their in the first place. For consistency, entities may be produced by rapid-formation, where they are no longer needed at “later” moments in the primitive sequence. Then, if necessary, entities can also appear suddenly. Whether such behavior as this occurs depends upon its necessity.]]]

4. The Fall and the Eden Model.

Continuing the Eden Model description, at the moment when God cursed the ground, rapid-formation via the application of an entire GGU-model scheme (Herrmann, 2014b) occurs. From that moment, as the our universe develops, the special UWFF “no death” feature has been removed. Further, there is the rapid-formation of a different external universe that does not contain any information relative to the pre-Fall Eden portion.

After the Fall, an external universe’s formation can display any developing cosmology that corresponds to what we perceive today and that satisfies a selected S configuration. The outer edge of S need not be the boundary for a universe. One way to form a universe requires the field external to the R-region to be activated. This “field” is a dense collection of ultra-propertons (originally termed “subparticles”) or combinations (Herrmann, 1978-94+arxiv). These do not form a quantum field but form a field in the sense that ultra-propertons and combinations exist at every spatial point. If one assumes that Nature merely requires that certain relations between adjacent members of an event sequence satisfy physical laws, then an event sequence can

be constructed as a universe progresses. This construction corresponds to the application of the best possible unification $\bigvee_w \mathcal{C}$ for the collection \mathcal{C} of all physical laws and accepted physical theories (Herrmann, 2004). However, for this theological interpretation, such a step-by-step generation is not used and the development merely verifies physical laws and tested theories.

The Eden cosmology need not have the light and particle propagation problem associated with today's physical entities. As mentioned, most present theories state that the entities that appear to give information about physical events that occur throughout the universe require observer time to prorogate. In this case, "observer time" is specifically measured time. Thus, under the physical laws as perceived today, the events scientifically observed from earth are assumed to be events that have previously occurred. Hence, ostensibly, cosmologies accepted by the atheistic and many liberal Christian communities could not have been created during a strict creation-day time-frame for they appear to violate a strict Genesis 1 interpretation, an interpretation that requires ancient starlight to appear first during day-four.

Since, at present, the usual cosmologies accepted by atheistic or liberal Christian communities do not solve the starlight and time problem, it would be rather significant if there is a mechanism that yields any known cosmology and does not violate the strict day-four requirements. For both the post-Fall environment and those creationary models requiring our present day universe to essentially be formed during creation-day four, the time dilation secondary effect of the rapid-formation process satisfies the starlight and time requirement.

At the moment the "curse" is announced, the material in the R-region is put into suspended animation. In this form of suspended animation, as the universe changes in its development, there is no change in the R-region. The realization operator for the R-region simply produces an identically designed R-region. Thus, alterations of each R-region physical-system, of any kind, cease. Since this includes photons, then, for this illustration, as the exterior-universe develops the R-region appears ghost-like. There is, in all cases, a relative position where the post-Fall Earth and its local environment is to reside.

As an illustration for this DVD formation, as a DVD plays, push the pause button. Now each time you push the "next" button another UFFF appears. The R-region portion does not change during this process. (With a few exceptions, the significant "unseen" portions of these images may require a deeper knowledge of the interpreted mathematical model since these unseen portions are compared to the "seen" portions.)

Prior to the Flood, the post-Fall Earth with its local environment retains young earth evidence. This second application of the RFM has a different feature than the first

application. To maintain God’s statements as being true relative to modern perceived physical laws, it is required that there be many types of participator and cosmology dependent pre-designed “ancient earths with their local environments” represented by the developmental paradigms. Further, we have the Earth and its local environment, where Adam and Eve will now reside, an Earth that now includes physical death. At the instant the second rapid-formation concludes the very next R-region repeats the previous one. However, all succeeding R-regions now begin to show the presence of physical death. This, of course, comes about by pre-design in the developmental paradigm case.

Thus, over one or more rather small intervals, $*[c_\alpha, c_{\alpha+1}]$, the GGU-model has moments in the primitive sequences that allow for ancient cosmology determined earths and their local environments to development. The pre-Fall Earth with its local environment, without the Eden cosmology, is in an “out of time phase” (α, λ) -UWFF relative to a developing ancient earth with its local environment that comprises an R’-region and an exterior cosmology. (The value of the α depends upon the exterior cosmology chosen.) For the Eden Model, this yields another form of rapid-formation. As indicated, the special UWFF is identified by a special predicted pair (α, λ) . If the rapid-formation processes is greatly slowed down so as to be observable, then the (α, λ) -UWFF would momentarily appear to “flash” on the monitor. In recent times, this is somewhat comparable to methods that yield a form of “subliminal perception.”

As the universe develops, the fixed realized R-region appears as well as the now developing and realized R’-region that contains a developing ancient earth with its local environment that is consistent with the exterior universe’s physical requirements. Thus, if such a rapid-formation is observed as the DVD presented view, then, as before, the changing UWFFs would indicate a changing exterior universe and non-changing R-region. In general, each member of this type of event sequence represents an entire universe at a primitive sequence moment. Relative to the succeeding UWFF, when the suspended animation ceases, the realized pre-designs have the R-region residing in the R’-region’s position. These progressing R-regions slowly display behavior that yields the now “physical death” feature. However, again for consistency, there are developmental paradigms and corresponding instruction paradigms, where the R’-region continues its development. (Note: Due to the participator mechanisms, there is actually a vast number of designed developments of both types.)

For the GGU-model, physical laws do not generate a universe. Hence, there is no inconsistency if various physical laws that are satisfied during the development of the R-region through a moment in observer time, do not entirely correspond to those that are observed after that time. This consistency is maintained if at any moment in

observer time, the R-region physical laws unite so as to display those we observe today.

Clearly, we can only observe finitely alterations in region S. Moreover, for the general GGU-model which is physical law independent, if one considers each DVD “frame” (each specific screen image) as the alterations progress, then the observer time between alterations can be much smaller than employed in quantum theory for any detailed description for behavioral changes. The fact is that such a quantum theory restriction is but a philosophic stance accepted by many who employ this theory. This quantum theory restriction and our inability to comprehend how infinitely many primitive sequence events can take place during a finite observer time period are irrelevant for a proper GGU-model interpretation. GGU-model mechanisms yield special types of “subquantum” behavior. This is further discussed in the “processes” article (GGU.pdf) as referenced below.

One aspect of the RFM is that it eliminates any unnecessary physical processes that are needed to “shield” the R-region from the hostile environment that exists during the development of a universe exterior to R. Then the process satisfies the Biblical requirement that an exterior universe be formed at a moment during day-four.

5. Non-Eden Model Starlight Generation.

A non-Eden producing exterior cosmology for star creation, a cosmology that is consistent with a “no physical death” scenario, is a possible day-four generation. This yields, via rapid-formation, any describable developing exterior cosmology. This is a cosmology consistent with the one observed today. At a moment during day-four, after the Sun and Moon appear, the thus far created Earth with its local environment, the R-region, is placed into suspended animation and the exterior universe is formed. This is done in the exact same manner as the second application of the RFM for the Eden Model. When it develops to the point that is consistent with its appearance about 6,000 - 7,500 years ago relative to the proposed physical laws, then the suspended animation ceases. Of course, relative to the physical laws and a strict Biblical interpretation, the UWFFs would indicate that the R-region physical laws relative only for the Garden of Eden are different from those of the exterior universe. Other local entities would need to follow the same regulations as those of the exterior universe.

Hence summarizing, in this case, when the developing external and hostile universe reaches a moment that corresponds to what we consider to be its condition about 6,000 - 7,500 (or possibly up to 10,000) years ago, the S region rapid-formation and the R-region suspended animation modes cease. The next members of the event sequence contain the external universe’s physical development as well as the appropriate development of R-region. There suddenly appears in R images that correspond to the “shinning

dim objects” termed stars. A Garden of Eden exists and might follow a few physical laws that are somewhat different from those of today’s theorized external cosmologies. Thus, after this, accept maybe for the Garden of Eden, the R-region is altered at each step in concert with the external universe’s physical laws.

There is a third form of non-Eden model cosmological formation that is claimed to be consistent with Genesis 1. This is where today’s physical laws apply at day-one and all follows from them. Depending upon how these are presented, God may need to specially alter the processes to achieve mature creation during various creation-days, although this is not usually mentioned. This cosmology is especially formulated to present, via its properties, a time dilation process that develops during day-four and solves the starlight and time problem.

Physical laws appear to be altered immediately after the Flood such as the now existence of rain produced in the usual manner. (Personally, I believe that when God stated that He would destroy the Earth, He meant it.) For my personal Flood Model, there are event sequences that yield the exterior universe and a combined R’-region and R-region that is composed of portions of the pre-Flood R-region and portions of the R’-region. This combined region R’’ can be the one realized after the Flood via the GGU-model participator mechanism. In this case, the physical laws for R’’ are the same as for our oresently observed universe, in general, but there is evidence that the pre-Flood Earth with its local environment R-region existed.

For the Flood-modified models, the physical laws that satisfy the modeled earth are those that satisfy exterior universe behavior. However, in general, whether some physical laws as observed today are different than those that existed prior to the Earth being Flood-modified depends upon the model chosen.

6. Multiple Universes

The mechanisms for rapid-formation are not part of the physical processes that yield any presently known cosmology. Today, other cosmologies are theorized. Depending upon the form they take, the mathematical representation for the above material becomes somewhat more complex. This particularly occurs if a “no beginning” cosmology is chosen. In this case, the rapidly forming universe as well as previously formed creation-day entities occur over intervals of the form $[c_\alpha, c_{\alpha+1}]$, where α and $\alpha + 1$ are hyper-integers and not integers. Any cosmology that has no physical beginning in observer time, such as the proposed multi-universes, is reproduced by this type of GGU-model predicted *developmental paradigm or *instruction paradigm.

An Additional Technical Discussion

For the rapid-formation and a strict creation-day interpretation, the results in Herrmann (2006, 2013, 2013a) show how the R-region can be placed into two types of suspended animation. This suspended animation part is modeled via a general developmental paradigm.

In the first Eden Model case, after the Sun and Moon are formed, the Eden cosmology “begins” at a hyper-primitive sequence moment modeled by a hyper-rational number $*t(\alpha, 0)$, where $\alpha \in *\mathbf{Z}$. Rapid-formation takes place over one or hyper-finitely many intervals beginning with $*[c_\alpha, c_{\alpha+1}]$. Each pre-designed **compositions** $*\mathbf{f}^q(i, j)$ contains all previously created pre-Fall Earth entities including its local environment in a fixed form in the R-region. As the rapid-formation progresses, each actual UWFF event $*\mathbf{E}^q(i, j)$, via unknown means, leads to the formation of a star-field the appears about the R-region pre-Fall Earth with its local environment at the conclusion of the rapid-formation. When the desired effect is obtained, R-region suspended animation as displayed within each $*\mathbf{E}^q(i, j)$ ceases and the succeeding events now all include the required variations in all physical-system behavior. This includes the allowed participator alterations.

For the second Eden and the non-Eden applications of rapid-formation, during the rapid-formation mode and for each of the intervals $*[c_\alpha, c_{\alpha+1}]$ there is a fixed hyper-rational number $*t(\alpha, \lambda)$, where $\alpha \in *\mathbf{Z}$ and $\lambda \in \mathbb{N}_\infty$ and \mathbb{N}_∞ is the set of infinite natural numbers. The composition $*\mathbf{f}^q(\alpha, \lambda)$ yields the hyper-UWFF (*UWFF) $*\mathbf{E}^q(\alpha, \lambda)$ that does not vary during rapid-formation. All other members of these intervals yield a rapidly forming universe, where for consistency, each *UWFF $*\mathbf{E}^q(i, j)$, $(i, j) \neq (\alpha, \lambda)$ may contain a rapid forming “ancient” styled earth with a corresponding local environment. This is all by pre-design. At the conclusion of rapid formation, the succeeding $*\mathbf{E}^q(i, j)$ suspended animation ceases. That is, an *UWFF $*\mathbf{E}^q(\alpha, \lambda)$, if nonempty, no longer depicts just the R-region. It now exhibits the previous Earth and its local environment as well as the exterior cosmology. The continued development of each $*\mathbf{E}^q(i, j)$ now satisfies certain physical laws, where, via piecewise definition, certain pre-Flood Earth and local environment regulations may not be exactly the same as those exhibited by the external cosmology.

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