Exploration

A Revelatory Eschatology & Genesis: X. Multiverses in the Omniverse, Quantum Tunneling and Conformal Cyclic Cosmology

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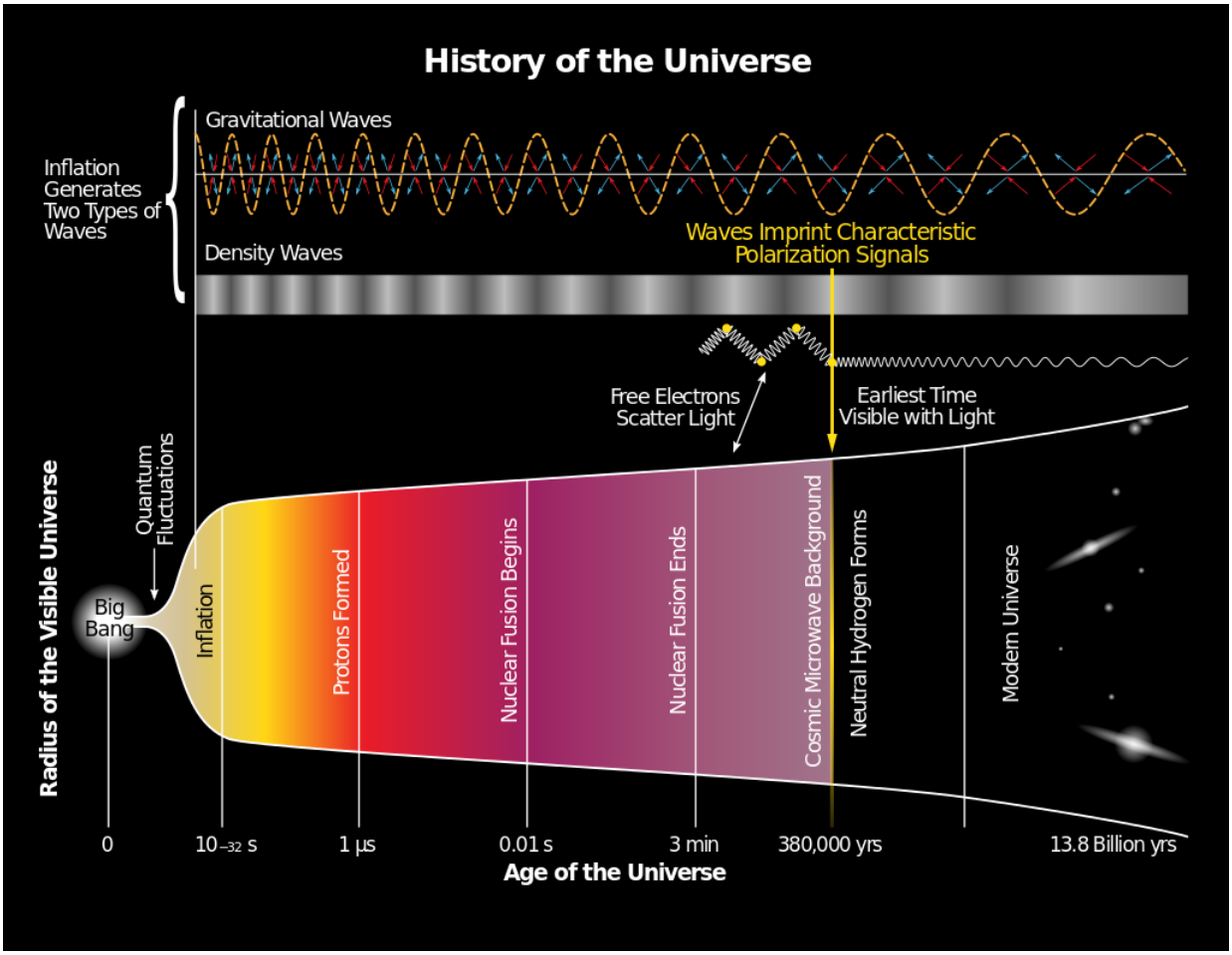
Abstract

In this article, the author partly uses metaphors to explore multiverses in the omniverse, quantum tunneling & conformal cyclic cosmology in a revelatory eschatology and genesis.

Keywords: Revelation, eschatology, genesis, multiverses, omniverse, quantum tunnelling, conformal cyclic cosmology.



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Introduction

The expansion of the universe can be revisited in a reformulation of the standard cosmology model Lambda-Cold-Dark-Matter or ΛCDM in terms of a parametrization of the standard expansion parameters derived from the Friedmann equation, itself a solution for the Einstein Field Equations (EFE) applied to the universe itself. A measured and observed flat universe in de Sitter (dS) 4D-spacetime with curvature k=0, emerges as the result of a topological mirror symmetry between two Calabi Yau manifolds encompassing the de Sitter spacetime in a multi-timed connector dimension. The resulting multiverse or brane world so defines a singular universe with varying but interdependent time cyclicities.

It is proposed, that the multiverse initiates cyclic periods of hyper acceleration or inflation to correlate and reset particular initial and boundary conditions related to a baryonic mass seedling proportional to a closure or Hubble mass to ensure an overall flatness of zero curvature for every such universe parallel in a membrane time space but collocal in its lower dimensional Minkowski spacetime.

On completion of a 'matter evolved' Hubble cycle, defined in characteristic Hubble parameters; the older or first universal configuration quantum tunnels from its asymptotic Hubble Event horizon into its new inflaton defined universal configuration bounded by a new Hubble node. The multidimensional dynamics of this quantum tunneling derives from the mirror symmetry and topological duality of the 11-dimensional membrane space connecting two Calabi Yau manifolds as the respective Hubble nodes for the first and the second universal configurations.

Parallel universes synchronize in a quantized protoverse as a function of the original light path of the Instanton, following not preceding a common boundary condition, defined as the Inflaton. The initial conditions of the Inflaton so change as a function of the imposed cyclicity by the boundary conditions of the paired Calabi Yau mirror duality; where the end of a Instanton cycle assumes the new initial conditions for the next cycle of the Instanton in a sequence of Quantum Big Bangs.

The outer boundary of the second Calabi Yau manifold forms an open AdS spacetime in 12-dimensional brane space (F-Vafa 'bulk' Omni space) with negative curvature k=-1 and cancels with its inner boundary as a positively curved k=+1 spheroidal dS spacetime in 11 dimensions to form the observed 4D/10-dimensional zero curvature dS spacetime, encompassed by the first Calabi Yau manifold.

A bounded (sub) 4D/10D dS spacetime then is embedded in a Anti de Sitter (AdS) 11D-spacetime of curvature k=-1 and where 4D dS spacetime is compactified by a 6D Calabi Yau manifold as a 3-torus and parametrized as a 3-sphere or Riemann hypersphere. The outer boundary of the 6D Calabi Yau manifold then forms a mirror duality with the inner boundary of the 11D Calabi Yau event horizon.

Every Inflaton defines three Hubble nodes or time space mirrors; the first being the 'singularity - wormhole' configuration; the second the nodal boundary for the 4D/10D dS spacetime and the

third the dynamic light path bound for the Hubble Event horizon in 5D/11D AdS time space. The completion of a 'de Broglie wave matter' evolution cycle triggers the Hubble Event Horizon as the inner boundary of the time space mirrored Calabi Yau manifold to quantum tunnel onto the outer boundary of the spacetime mirrored Calabi Yau manifold in a second universe; whose inflaton was initiated when the light path in the first universe reached its second Hubble node.

For the first universe, the three nodes are set in time space as {3.3x10-31 s; 16.88 Gy; 3.96 Ty} and the second universe, time shifted in t1=to+t with to=1/Ho has a nodal configuration {to+1.4x10-33; to+3,957 Gy; to+972.7 Ty}; the latter emerging from the time space as the instanton at time marker to. A third universe would initiate at a time coordinate t2=to+t1+t as {1/Ho+234.472/Ho +5.8x10-36 s; to+t1+972.7 Ty; to+t1+250,223 Ty}; but as the second node in the second universe cannot be activated by the light path until the first universe has reached its 3.96 trillion year marker (and at a time for a supposed 'heat death' of the first universe due to exhaustion of the nuclear matter sources); the third and following nested universes cannot be activated until the first universe reaches its n=1+234.472=235.472 time space coordinate at 3,974.8 billion years from the time instanton aka the Quantum Big Bang.

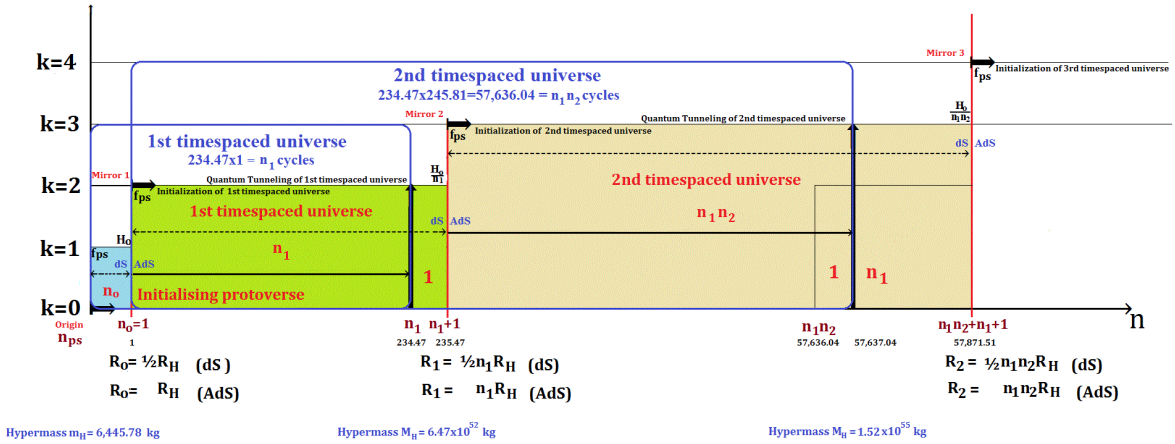
For a present time space coordinate of $n_{present}$=1.132711 however; all information in the first universe is being mirrored by the time space of the AdS spacetime into the dS spacetime of the second universe at a time frame of $t = t_1-t_o$ = 19.12 - 16.88 = 2.24 billion years and a multidimensional time interval characterizing the apparent acceleration observed and measured in the first universe of the Calabi Yau manifold compressed or compactified flat dS Minkowski cosmology.

A higher dimensional AdS spacetime so encompasses a lower dimensional dS spacetime and where the enclosing spacetime defines a multiverse, which is 2x2.24 = 4.48 Gy older, than the nested spacetime. The electromagnetic c-invariant expansion of the 11-dimensional cosmology so calculates a Hubble 'constant' of 66.92 Hubble units as a change from its nodal constant of 58.04 Hubble units in $H(n_{present}) = H_o/(2-n_{present})$ for an age of 19.12 Gy in 11D mirrored or projected to 19.12-4.48=14.64 Gy in 10D.

The 'compressed' or conifold 10-dimensional dS spacetime synchronizes with the light path created and c-invariant 11-dimensional AdS spacetime in cycle coordinate n=½ in dS calibrating with n=1 in AdS.

It is this calibration of multiverse relative cycle time coordinates, which introduce the Dark Energy into the overall cosmology for the omniverse.

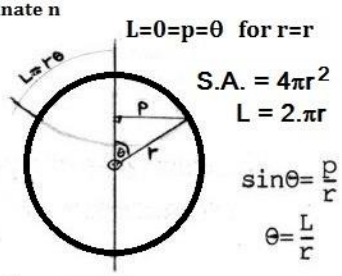
The solution to the Dark Energy and Dark Matter question of a 'missing mass' cosmology then becomes described in the evolution of a multiverse in matter and in energy.



View: https://youtu.be/RF7dDt3tVmI

Radius of Curvature r(n) with Salefactor 1/a=1+1/n in dS as a function of cycletime coordinate n

$$r(n) = r_{max}\left(\frac{n}{n+1}\right) m^* \quad \text{and} \quad n = H_o t$$



The volume of the 4-D spacetime can however be found by integrating the surface area S.A. via arclength L, with L being an intrinsic parameter of the 3-D surface. dL=r.dθ

$$V_{Universe} = \int_0^{r\pi} 4\pi p^2\, dL = 2\pi^2 r(n)^3 \quad \text{for a local spheroidicity}$$

$$4\pi\int_0^{\pi} r^3\sin^2\theta\, d\theta = 4\pi r^3\int_0^{\pi} \tfrac{1}{2}\{1-\cos 2\theta\}d\theta = 2\pi^2 r(n)^3$$ for the asymptotic 4/10D dS 'flatness' cosmology within the nodal Hubble 5/11D AdS Universe

This classical macrovolumar is quantized in the microvolumar quantum of the Unified Field in 8π radians or 840°-(-600°)=1440°

$$\tfrac{1}{4}\pi\int_{-600°}^{840°}\{\sin(\tfrac{1}{2}[3x])-\cos(\tfrac{1}{4}[3x])\}^2\,dx = \tfrac{1}{4}\pi\int_{-10\pi/3}^{14\pi/3}\{\sin^2(3x/2)+\cos^2(3x/4)-2\sin(3x/2)\cos(3x/4)\}\,dx$$

$$= \tfrac{1}{4}\pi\int_{-600°}^{840°}\{\tfrac{1}{2}(1-\cos[3x])+\tfrac{1}{2}(1+\cos\tfrac{1}{2}[3x] - \sin\tfrac{1}{2}[9x] - \sin\tfrac{1}{4}[3x]\}\,dx$$

$$= \tfrac{1}{4}\pi\left[\theta - \sin[3x]/6 + \sin\tfrac{1}{2}[3x]/3 - 2\cos\tfrac{1}{2}[9x]/9 - 2\cos\tfrac{1}{2}[3x]/3\right]_{-10\pi/3}^{14\pi/3} = \tfrac{1}{4}\pi(8\pi) = 2\pi^2$$

{ by classical volumar of revolution (vor) $V_{vor} = \int \pi y^2\,dx$ for y=r }

The amplitude for the universal wavefunction becomes proportional to the quantum count of the space occupancy of a single spacetime quantum and as source energy (VPE or Vortex Potential Energy) quantum and as a consequence of the preinflationary supersymmetry of the F(x)=sinx +sin(-x) = 0 wavefunction defining this singularity (symbolised as the symbol for infinity).

A higher dimensional surface is Moebian connected to differentiate the quantum mechanical 'boundary' for the quantum tunneling of the macrocosmos as a magnified holofractal of the well understood microquantumization.

It then is the experienced and measured relativity of time itself, which becomes the quantum wall, with the 'reducing thickness' of the quantum boundary correlating with the evolution of the multiversal structure in the phase shifted time intervals defining the individual universes.

Conformal Cyclic Cosmology (CCC) and the Weyl Curvature Hypothesis of Roger Penrose

The pre-Big Bang 'bounce' of many models in cosmology can be found in a direct link to the Planck-Stoney scale of the 'Grand-Unification-Theories'.

In particular it can be shown, that the Square root of Alpha, the electromagnetic fine structure constant, multiplied by the Planck-length results in a Stoney-transformation factor $L_P\sqrt{\alpha} = e/c^2$ in a unitary coupling between the quantum gravitational and electromagnetic fine structures {$G_ok=1$ and representing a conformal mapping of the Planck length onto the scale of the 'classical electron' in superposing the lower dimensional inertia coupled electric charge quantum 'e' onto a higher dimensional quantum gravitational-D-brane magnetopole coupled magnetic charge quantum 'e*' = $2R_e.c^2 = 1/hf_{ps} = 1/E_{Weyl\ wormhole}$ by the application of the mirror/T duality of the super membrane $E_{ps}E_{ss}$ of heterotic string class HE(8x8)}.

The standard model postulates the Big Bang singularity to become a 'smeared out' minimum space time configuration (also expressible as quantum foam or in vertex adjacency of Smolin's quantum loops). This 'smearing out' of the singularity then triggers the (extended) Guth-Inflation, supposedly ending at a time coordinate of so 10^{-32} seconds after the Big Bang.

If the Guth-Inflation ended at a time coordinate of $3.33x10^{-31}$ seconds coordinate, the Big Bang became manifest in the emergence of space time metrics in the continuity of classical general relativity and the quantum gravitational manifesto and say from a Higgs 'False Vacuum' at the 'bounce-time' reduced in a factor of so 11.7.

This means, that whilst the Temperature background remains classically valid, the distance scales for the Big Bang will become distorted in the standard model in postulating a universe the scale of a 'grapefruit' at the end of the inflation.

The true size (in Quantum Relativity) of the universe at the end of the inflation was the size of a wormhole, namely at a Compton-Wavelength (Lambda) of 10^{-22} meters and so significantly smaller, than a grapefruit.

Needless to say, and in view of the CMBR background of the temperatures, the displacement scales of the standard model will become 'magnified' in the Big Bang Cosmology of the very early universe in the scale ratio of say 10 cm/10^{-20} cm = 10^{21} i.e. the galactic scales in meter units.

A result of this is that the 'wormhole' of the Big Bang must be quantum entangled (or coupled) to the Hubble Horizon.

And from this emerges the modular duality of the fifth class of the superstrings in the Weyl-String of the 64-group heterosis.

The Big Bang wormhole becomes a hologram of the Hubble Horizon and is dimensionally

separated by the Scale-parameter between a 3-dimensional space and a 4-dimensional space.

Then the 5-dimensional spacetime of Kaluza-Klein-Maldacena in de Sitter space forms a boundary for the 4D-Minkowski-Riemann-Einstein metrics of the classical geometric cosmology. This can be revisited in the multi-dimensional membrane cosmologies.

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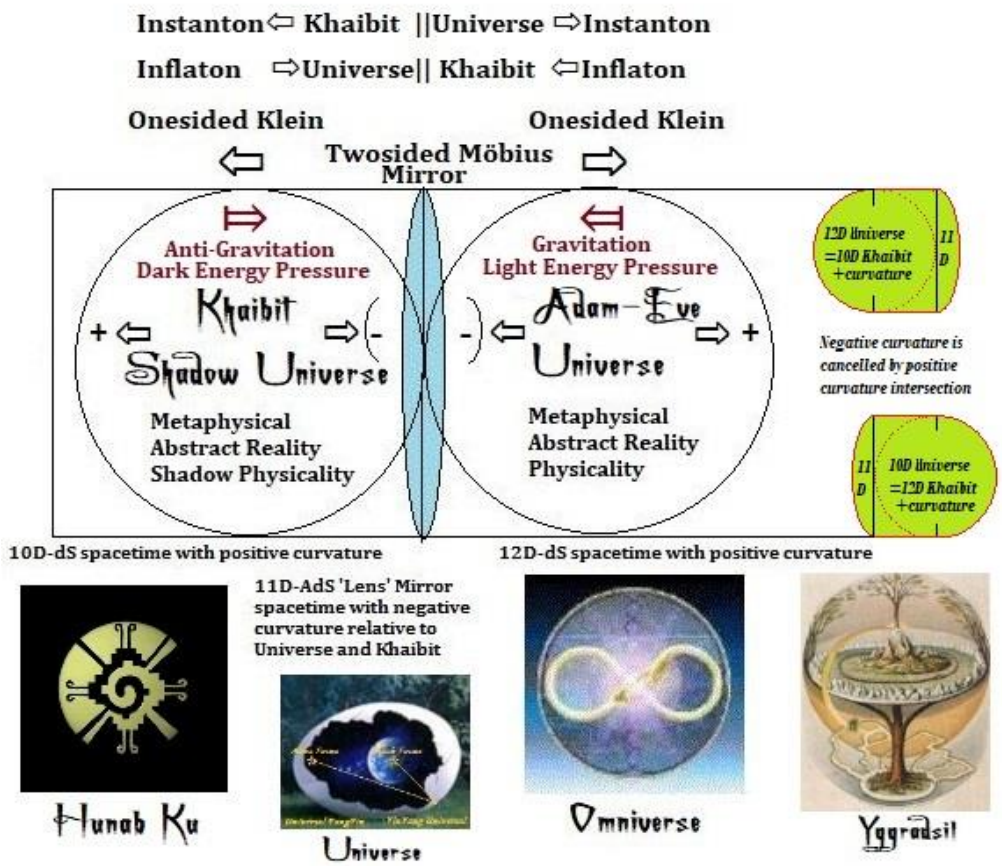


A general dark energy equation for the kth universe (k=0,1,2,3,...) in terms of the parametrized Milgröm acceleration A(n); comoving recession speed V(n) and scalefactored curvature radius R(n):

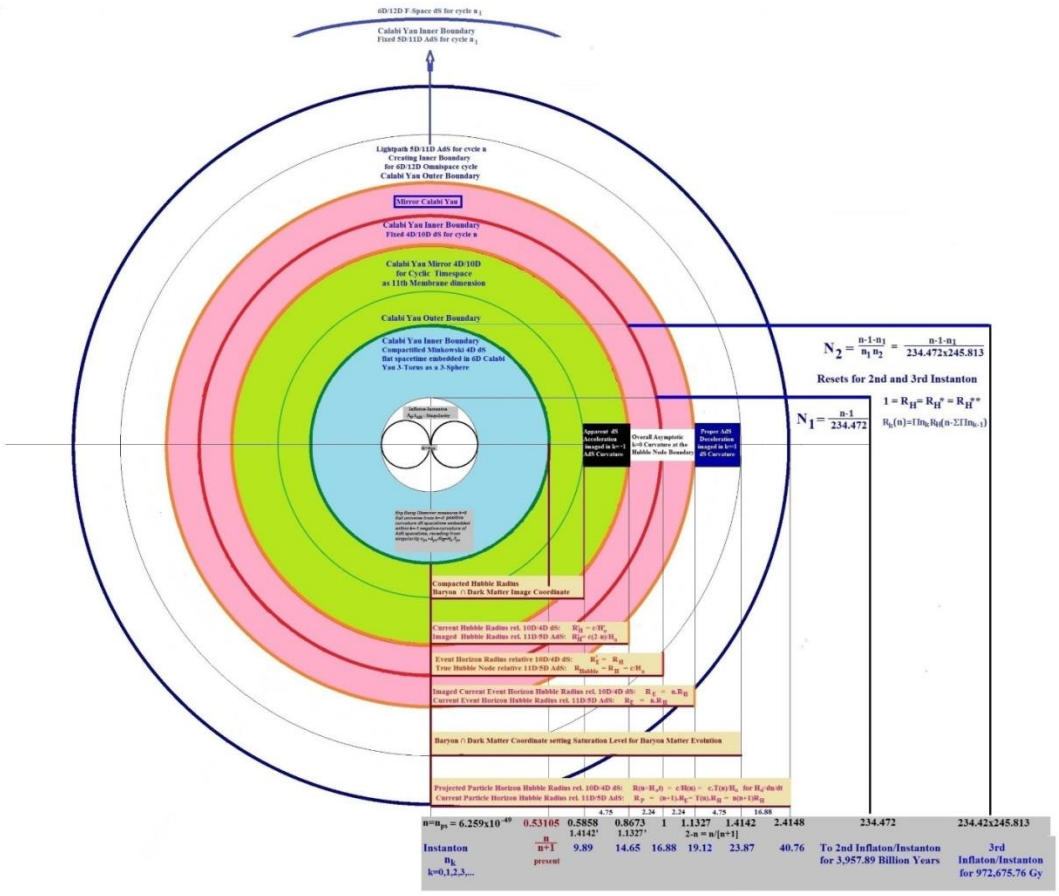
G_oM_o is the Gravitational Parameter for the Baryon mass seed; $M_o=2M_HA_o/A_o$; $R_H=c/H_o$ is the Hubble Horizon ; Λ_o the dark energy and c is the speed of light

$$\Lambda_k(n) = G_oM_o/R_k(n)^2 - 2cH_o(\Pi n_k)^2/\{n-\Sigma\Pi n_{k-1}+\Pi n_k)\}^3 \quad \text{and where } \Pi n_k = 1 = n_o \text{ for k=0} \quad N_k = \frac{H_o t_k}{\Pi n_k} = \frac{n - \Sigma\Pi n_{k-1}}{\Pi n_k}$$

$$R_k(n) = \Pi n_k R_H(n-\Sigma\Pi n_{k-1})/\{n-\Sigma\Pi n_{k-1}+\Pi n_k\} = R_H(n/[n+1]) = n_1R_H(N_1/[N_1+1]) = n_1n_2R_H(N_2/[N_2+1]) = ...$$

$$V_k(n) = dR_k(n)/dt ..... = c\{\Pi n_k\}^2/\{n-\Sigma\Pi n_{k-1}+\Pi n_k\}^2 = c/(n+1)^2 = c/(N_1+1)^2 = c/(N_2+1)^2 = ...$$

$$A_k(n) = d^2R_k(n)/dt^2 ..... = -2cH_o(\Pi n_k)^2/(n-\Sigma\Pi n_{k-1}+\Pi n_k)^3 = -2cH_o/(n+1)^3 = -2cH_o/n_1(N_1+1)^3 = -2cH_o/n_1n_2(N_2+1)^3 = ...$$



The Holographic Universe of Susskind, Hawking, Bekenstein and Maldacena plays a crucial part in this, especially as M-Theory has shown the entropic equivalence of the thermodynamics of Black Holes in the quantum eigenstates of the classical Boltzmann-Shannon entropy mathematically.

The trouble with the Susskind googolplex solutions is that the 'bulk landscape solutions' fail to take into account the super string self-transformations of the duality coupled five classes. The mainstream premise proposes, that that all five classes manifest at the Planck-scale (therefore the zillions of solutions), eschewing the factual possibility for the five classes to transform into each other to manifest the Big Bang in a minimum space time configuration at the Weylian wormhole of class HE(8x8).

Nevertheless, mainstream membrane physics engages a synthesis for the five superstring classes in a supersymmetry connected in a number of modular dualities.

Roger Penrose has elegantly described the link of this to classical General Relativity in his "Weyl Curvature Hypothesis".

Quote from: ‘The large, the Small and the Human Mind"-Cambridge University Press-1997 from Tanner Lectures 1995"; page 45-46; 48 (Cartoon):

> I want to introduce a hypothesis which I call the 'Weyl Curvature Hypothesis'. This is not an implication of any known theory. As I have said, we do not know what the theory is, because we do not know how to combine the physics of the very large and the very small. When we do discover that theory, it should have as one of its consequences this feature which I have called the Weyl Curvature Hypothesis. Remember that the Weyl curvature is that bit of the Riemann tensor which causes distortions and tidal effects. For some reason we do not yet understand, in the neighborhood of the Big Bang, the appropriate combination of theories must result in the Weyl tensor being essentially zero, or rather being constrained to be very small indeed.
>
> The Weyl Curvature Hypothesis is time-asymmetrical, and it applies only to the past type singularities and not to the future singularities. If the same flexibility of allowing the Weyl tensor to be 'general' that I have applied in the future also applied to the past of the universe, in the closed model, you would end up with a dreadful looking universe with as much mess in the past as in the future. This looks nothing like the universe we live in. What is the probability that, purely by chance, the universe had an initial singularity looking even remotely as it does?
>
> The probability is less than one part in $(10^{10})^{123}$. Where does this estimate come from? It is derived from a formula by Jacob Bekenstein and Stephen Hawking concerning Black Hole entropy and, if you apply it in this particular context, you obtain this enormous answer. It depends how big the universe is and, if you adopt my own favorite universe, the number is, in fact, infinite.
>
> What does this say about the precision that must be involved in setting up the Big Bang? It is really very, very extraordinary, I have illustrated the probability in a cartoon of the Creator, finding a very tiny point in that phase space which represents the initial conditions from which our universe must have evolved if it is to resemble remotely the one we live in. To find it, the Creator has to locate that point in phase space to an accuracy of one part in $(10^{10})^{123}$. If I were to put one zero on each elementary particle in the universe, I still could not write the number down in full. It is a stupendous number.

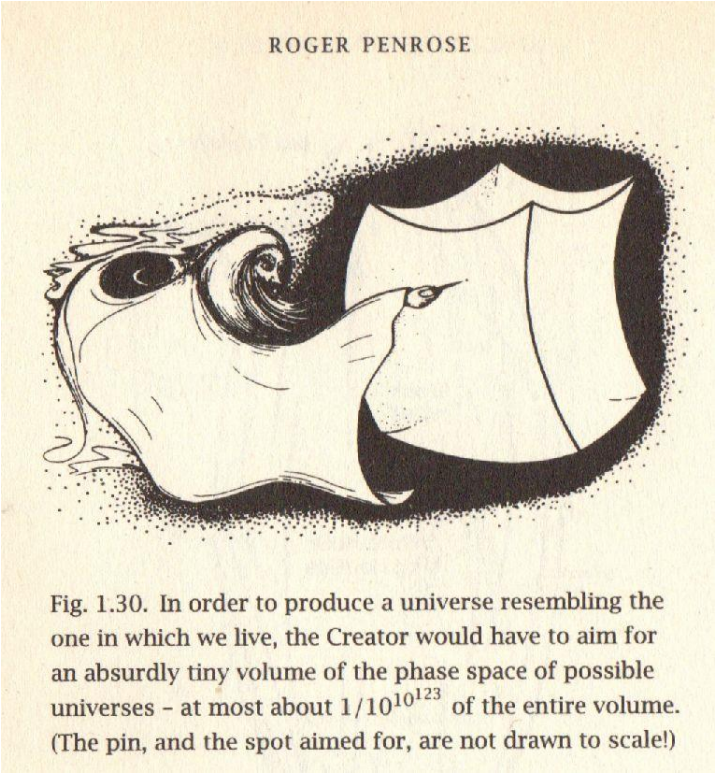


Fig. 1.30. In order to produce a universe resembling the one in which we live, the Creator would have to aim for an absurdly tiny volume of the phase space of possible universes – at most about $1/10^{10^{123}}$ of the entire volume. (The pin, and the spot aimed for, are not drawn to scale!)

Then the 'phase spaced' de Broglie inflation is in modular quantum entanglement with the Weyl-Wormhole of the Zero Curvature of Roger Penrose's hypothesis.

The Hubble-Universe consists of 'adjacent' Weyl-wormholes, discretizing all physical parameters in holofractal self similarity. This demands the discretization of spacetime and is in harmony with Loop-Quantum-Theory or LQT, proposed by Smolin and co.

Penrose's Weyl-tensor is zero as the quasi-reciprocal of the infinite curvature of the Hubble Event Horizon - quasi because the two scales (of the wormhole and Hubble Universe) are dimensionally separated in the modular coupling of the 11D super membrane boundary to the 10D superstring classical cosmology of the underpinning Einstein-Riemann-Weyl tensor of the Minkowski (flat) metric.

The CCC Penrose model becomes compatible with the inflation scenarios; should the multiverse cosmology become defined as occurring parallel in time-continuity and not as parallel in space in a manner envisaged by Roger Penrose.