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ENTROPY REVERSIBILITY SCENARIO – OVER PROJECTIONS AND SIMULATIONS

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ABSTRACT

Combining the 'Holographic Principles' of Leonard Susskind and 'Simulation Theory' of Nick Bostrom, a theory has been reproduced in this paper dictating the negation of the relative entropy persistent in the present, thereby forbidding their collapse as subject to increment of entropy while moving forward in time and decrement of entropy while moving backward in time, preventing a phase of state before the Big Bang or the collapse of the convergence. The universe in its own way diverges taking the simultaneous array of 'Past, Present and Future' with the 'Bread-Slice' concept of time, the reality being augmented by some future advanced civilizations to create a Spatio-Temporal 3D 'Hologram' on a 2D Canvas, projecting through a simulation, thus creating exponential channels of realistic layers with a certain percentile of errors, which are so minimal in present stage, that, the universal constants of nature, $G, c, \hbar$ remains unaltered, which may alter in future if the error fragmentation over simulation takes growth, censoring the future reality in a state of complete superposition excluding us, who are residing in the exponential shadows of simulations.

KEYWORDS: *Simulation – Glitches – Projective Reality – Clash of Entropy – Artificial Intelligence*

INTRODUCTION

Being at 0.73 of the Kardashev Scale, it is really difficult to imagine, what sort of development took place in the farfetched future, and whether the AI (Artificial Intelligence) can bypass human consciousness into their own, thereby capable of a superadvanced computer. Thanks, to the Moor's law, its possible to have an idea, that the computer power doubled after every two successive years. Therefore, just like the 'law of diminishing marginal returns', there should have been a limit for the maximal or optimum capacity of the computers in far futures. However, its not possible to say, that when this maximization along with optimization of the capacity of computing powers will reach, so, as to make a computers mind consciousness. This could happen in Type III civilizations or even greater than Type III civilizations. And, to this extent, it should be realized that, this optimization will heavily increase the computing powers, so, that the AI should be strong enough to have a working and thinking capacity of the human brain.

Taking the Einstein's concept of Time, and adding the "Bread-Slice' concept to it, it is possible to show a spark in the Spatio-Temporal Physical Reality. If Past, Present and Future runs simultaneously, then its absolutely plausible that, the timelines are locally perceivable through a large forbidden gap. This gap is huge enough as, not to intersect between, Past-Present, Present-Future, Past-Future. And this gap could be the reason, that, we failed to see the Past and Future simultaneously through Present. The Non-Local structure of the Time could be a loop, such that everything repeats with a causal link, but that loop must be large enough as to prevent the humans to adjust his time in accordance with the distant Past, or distant Future, and preventing the formation of Closed Intervals of Time in a smaller scales. If we take this concept seriously, then, there might be a way as to measure the time from the beginning of the formation of Earth, so, as to destroy the same, from a Projective way as to converge in a Point. This convergences, is certainly has

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2 points. It certainly not starts with the Big Bang and ends up in another Spatio-Temporal Convergence, provided, this convergence has no such relation to Big Rip or Big Crunch. Because we are looking everything from the perspectives of Earth, from the reference point of a very advanced civilizations in Future.

If computing power, so as to mention AI, reaches the optimum capacity, then it is highly plausible that, the advanced civilization would have access to the coding, as to put a single number in the Planks Volume, so that, still there is some remnants of the numbers flowing inside a computer chip, so, as to prevent any hang up of computer. This could be thought of, a more massive number can have an excess computing space available, even after encoding and assembling all the remnant places of the Earth. Its not possible to say, whether, AI takeover would happen or not, but it is safe to assume that, the takeover could be restricted by some advanced blockage of the computing capacity, rendered by the humans in the coding. Just as we want to know, what exactly it looks thousands of years ago, through a thorough visualization, so, as to say, the beginning of the Earth (Provided we make our theory restricted on the Earth-Scales of simulation), and to the far-fetched future, the humans from the future having access to massive computing powers could make a simulation from the beginning of the Earth to the end. The simulation has to be powerful enough, so as to provide, a nonhanged up reality which is augmented from the reference point of the future. These simulations can have layers, and they always tend to be exponentially strong rather than polynomially, because of the fact, that, each pieces of the atom needs to be simulated, which in turn has a relation to the many-atoms surrounding, that in essence computing a physical structure, which again revolves through a series of realities evolving in the timeline of the entire planet Earth.

Just as the screen of a movie-multiplex, if our Earth (or the space-time) associated with it, has been a 2D canvas, then the simulation could be a 3D providing we are 3D objects and the canvas screen itself residing in a higher dimensional reality. This presumably argues the 'Holographic Principle' to be right enough to believe that future computers could save an enormous processing powers to reduce the simulation from a real 3D to a 'Projective 3D' over a 2D Space-Time canvas.

Now, the natural question arises, as to, what are the status of those super-intelligent beings if everything from the beginning of the earth till her destruction has been simulated from a codes perspectives. Well, to say the least, those super-intelligent beings curious to know the status quo of the earth from its origin some 4.5 billion years ago, to its end after some 5 billion years later, when the Earth would be swallowed by the Sun, being as a Red-Giant exhausting its hydrogen fuels, expanding upto Mars orbit, and then settled for a White Dwarf which ultimately turns to be a Black-dwarf and humans are extinct (at least! To say from the planet earth) a few million years earlier due to heath death or the increase of entropy. Then, the advanced civilizations must be in an over lapping reality, that is, their own reality and simulated reality having null forbidden gap in the causal structure of temporal dimensions. So, those being will supersede simulation and exists as a superposition observing the whole earth just like we observe a movie in a giant screen, with us, being the projection on the screen being a shadow of the simulated reality.

To quote for the heat death of the universe, the randomness or the chaos, are in general a function of time, and the more chaos means the more moving of time in forward directions and from the 2nd law of Thermodynamics, this entropy can't be reverses. So, what if to make a projective Reality of the Past the entropy needs to be decreased which in turn violated the Thermodynamic axioms. Therefore, a clever approach needs to be obtained, as to the existent of a negative entropy only from the perspective of the future, but not from the perspective of any other time as the perspective of projection corresponds proportionally with the augmented reality of simulation.

METHODOLOGY

Here, in this section, we will try to structure the mathematics, thereby providing a concrete domain for this hypothesis one by one. We will introduce, each part with explanation, which ultimately leads to a formal equation of the 'reversibility of the entropy'.

The Minkowski ($\mathcal{M}$) metric has been an explicit definition of the Timelike, Lightlike and Spacelike intervals in a flat 4D Space time. This 4D space-time can be thought of as a BULK where the 2D Canvas for a 3D Projection takes place. This in turn helps to compute the □ parameter as the Trace of the metric. If simulation happens, then, its absolutely plausible that, the simulations be either - Timelike or Spacelike, where the Spacelike Trace is small in simulating magnitudes as compared to Timelike Trace.

$$\begin{pmatrix} -1 & 0 & 0 & 0 \\ 0 & +1 & 0 & 0 \\ 0 & 0 & +1 & 0 \\ 0 & 0 & 0 & +1 \end{pmatrix}_{Trace=+2}$$

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$$\begin{pmatrix} -1 & 0 & 0 & 0 \\ 0 & +1 & 0 & 0 \\ 0 & 0 & +1 & 0 \\ 0 & 0 & 0 & +1 \end{pmatrix}_{Trace=+2}$$

$$Such\ that\ Tr(-2) \ll Tr(+2) \quad +2, -2 \in \beta$$

In the trace, there lies a margin of errors in the simulation and that errors can be denoted by the parameter ℓ which is proportional to time, like the more the expansion of the simulated reality occurs in past and future, the more would be the accumulated errors and this errors along with trace can be represented by the equation,

$$Tr(\beta)^{\mathcal{M}}|_{\ell}$$

As discussed in introduction section, the shadow factor of the simulation is a dependable parameter on Time T provided the functional parameter must be of exponential norms as e^x where $x \in -\infty, 0, +\infty$ giving us 3 solutions as,

$$\text{In } \boldsymbol{T}f(e^x), \quad x = \begin{cases} -\infty & 0 \\ 0 & 1 \\ +\infty & \infty \end{cases}$$

This enforces, 3 parameters as $\boldsymbol{T}f(e^{-\infty})$ which marks the beginning of the simulation at a particular point in Past, $\boldsymbol{T}f(e^{0})$ which marks the present notion of the time, which is relative and flexible to move between Past and Future, as to the Present notions when the simulations could be realized with the last parameter $\boldsymbol{T}f(e^{+\infty})$ which marks an unknown end in the faraway future.

Considering the computing power of the future, as to compare with the present, we can assume the computer to be fair enough to accommodate each digit in the Planks Volume, with still an immense excess of digits, as to show, that, the computer has surplus processing power to cycle between $\boldsymbol{T}f(e^{-\infty}), \boldsymbol{T}f(e^{0}), \boldsymbol{T}f(e^{+\infty})$ in a closed loop non-local to the SpatioTemporal domain, with a parametric representation of Graham's Number, the number large enough to accommodate each digit in a plank Volume with still an excess of digits greater than the observable universe, denoting a super-caliber capabilistic processing powers to prevent a hung-up or the slowing of time in the Physical reality provided all e^x are dependent on the time factor $\boldsymbol{T}$.

$$\mathcal{V} = \left(\sqrt{\frac{\hbar G}{c^3}}\right)^3$$
$$Graham's\ Number\ g_{64}$$

These 2 implicit relations can combine to form a complicated equation as,

$$\bigvee_{k=1}^{64} \sum_{\gamma=1}^{g_k} \mathcal{V}_{\gamma} g_k$$

String Theory has not only puts a limit on the number of space-time dimensions, rather it expresses the maximum possible dimensions in the universe D to be 10 excluding the $SUPERGRAVITY$ of $11D$. The simulations being a hologram, indeed put the limit of the critical dimension D_c to be 2 as a Projective Reality of augmentation.

$$D_c = \sqrt{\frac{D-2}{2}}$$

If there are simulations then there exists layers of such simulations, with each layer overrated by a better layer that in turn overrated by another better layer, provided each layers are the more concrete and overwhelmed realistic simulations of the physical nature as opposed to the previous layers. This can be thought of, each generation of computer scientists performed, a more concrete

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simulations than their preceding generations which ultimately deposed as the exponential tower of layers as shown in the below equation.

$$a^{b^{c^{d^{\star\star}}}}$$

With a being the first layer followed by b the second layer followed by c the third layer and so on. As the particular layers are unknown, so, it's a continuation of layers, increasing by generation after generations of human coding computer performance and AI to denote as (...).

Glitches are an important aspects of the simulations and the physical reality being a product of simulations are bound to have some glitches, which can be considered as the changing or altering of the universal constants of nature like $G, c, \hbar$ but, one question may arise that, why aren't we observe the changes of the constants, this could be the reason that, the layers of simulating towers are not old enough sufficiently to produce the glitches in reality, rather, we are not old enough to observe the glitches or the glitches are so little like 1 trillionth of the numbers, that we failed to observe but the magnitudes of glitches will increase as we proceeds far enough in the future. It is complicated to compute the glitches, but in any means the glitch matrix should be presented in a nicer notational way to be understandable.

$$\bigcup_{\substack{i=1\\ j=1\\ A_{ij}\in I_{ij}\\ G_{ij}\in I_{ij}}}^{\infty} \psi_{I_{ij}}$$

Here ψ is a master matrix, where I_{ij} is the subset of ψ. i, j are rows and columns of the matrix subset I_{ij}. A_{ij} is the off-diagonal matrix and G_{ij} is the diagonal matrix where the glitches are shown as $\mathscr{g}$ in the diagonals, the matrix must be a square matrix and with each possible layer of simulations, the glitches would increase as such,

$$a = \begin{matrix} \mathscr{g} & 0 \\ 0 & \mathscr{g} \end{matrix}$$

$$b = \begin{matrix} \mathscr{g} & 0 & 0 \\ 0 & \mathscr{g} & 0 \\ 0 & 0 & \mathscr{g} \end{matrix}$$

$$c = \begin{matrix} \mathscr{g} & 0 & 0 & 0 \\ 0 & \mathscr{g} & 0 & 0 \\ 0 & 0 & \mathscr{g} & 0 \\ 0 & 0 & 0 & \mathscr{g} \end{matrix}$$

$$Tr(+4\mathscr{g}) > Tr(+3\mathscr{g}) > Tr(+2\mathscr{g})\ for\ glitches\ in\ a^{b^c}$$

The most important part is the entropic relation with the above identities, as to include the flow of time. As time progresses there is a shift of entropy to a more positive side and the decrement of entropy as time reverses. But, the second law of thermodynamics stood as a pillar that entropy can't decrease, neither the entropy can become zero, as because even in ABSOLUTE ZERO there exist a little quantum jitters, preventing entropy to move to zero. However, if we denote Δ as the relative entropy then if,

$$\Delta = \bigcup_{\substack{i=1\\ j=1\\ A_{ij}\in I_{ij}\\ G_{ij}\in I_{ij}}}^{\infty} \psi_{I_{ij}} \times T^{evolve}$$

Then the above relation cannot be complete without a time evolving parameter with the initial time be T^1 with the progress in entropy to the final time being T^2 . Therefore, the satisfactory equation looks like,

$$T^{evolve} = \left(\frac{1}{T^2} - \frac{1}{T^1}\right)$$

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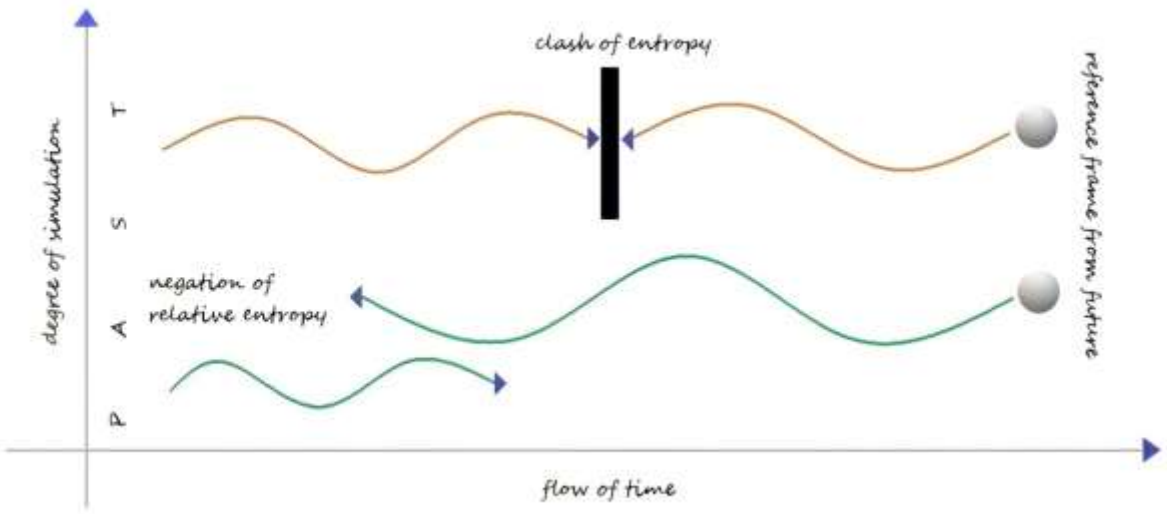
Thus arriving at,

$$\Delta= \bigcup_{\substack{i=1\\ j=1\\ A_{ij}\in I_{ij}\\ G_{ij}\in I_{ij}}}^{\infty} \psi_{I_{ij}} \times \left(\frac{1}{T^2}-\frac{1}{T^1}\right)$$

Now, assembling all the parts, the final equation looks like the following with $S_{\mathcal{R}}$ being the simulated reality parameter as,

$$S_{\mathcal{R}} = Tr(\beta)^{\mathcal{M}}|_{\ell} \times \boldsymbol{T}f(e^{x}) \times \bigvee_{k=1}^{64}\sum_{\gamma=1}^{g_k} \mathcal{V}_{\gamma} g_k \times \sqrt{\frac{D-2}{2}} \times \bigcup_{\substack{i=1\\ j=1\\ A_{ij}\in I_{ij}\\ G_{ij}\in I_{ij}}}^{\infty} \psi_{I_{ij}}^{\left[a^{b^{c^{d^{\star\star}}}}\right]} \left(\frac{1}{T^2}-\frac{1}{T^1}\right)$$



As, shown in the equation and portrayed in the diagram, there has been a reference point in the future from which the parameters of entropy are considered as a subset of the simulating reality. The above equation can only make sense if $\left|\frac{1}{T^2}\right| \ll \left|\frac{1}{T^1}\right|$ or $\left|\frac{1}{T^2}\right| \gg \left|\frac{1}{T^1}\right|$. However, the equation failed to satisfy if $\left|\frac{1}{T^2}\right| = \left|\frac{1}{T^1}\right|$ as this leads the whole equation $S_{\mathcal{R}}$ to zero. This condition of equality describes a concept called 'clash of entropy'. This needs a very detailed explanation.

Consider entropy as a wave flowing with the passage of time. This entropy from the reference frame of future, where the simulation has been computed or the origin of the simulation, moves backwards to into the Past, to project our physical reality or the Present. This projection is always related to a decrease of entropy from time T^2. On the other hand, the entropy from the Past is increasing with the progress of time to the future. This progress can be stated by a time parameter T^1 . Now, reduction through T^2 and progression through T^1 could lead to a fact, or a state, or a phase of space-time where $|T^1| = |T^2|$ which has been denoted as the zone of zero entropy as the forward and backward flow cancels each other. This phase is completely unrealistic in the physics, as because, the entropy being zero, gives us a phase or state of the universe before the Big Bang or the creation itself if we assume 'universe created from nothing'. The 'EKPYROTIC' theory is not applicable here to make any sense of this cancellation. Therefore, the arbitrary advanced civilizations are clever enough to slide the entropy backwards in course of simulation, so, that, there is no clash of entropy and the universe remains safe for the Physicists. Therefore, the entropy diminishes relative to the future, leading the state

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$\frac{1}{T^2} \ll \frac{1}{T^1}$ and this makes the $S_{\mathcal{R}}$ to be of negative value. Therefore, any form of simulation denotes that, we are living in a persistent negation of relative entropy.

CONCLUSION

It is difficult to detect whether we are living in a manmade augmented simulated reality or not. The dependable factor to detect this, is the change of the universal constants of nature like $G, c, \hbar$ to some $1/10^{12}$ of errors, and that too, is either way difficult to detect or we haven't yet progress far enough to detect the changes. But, from the mathematics, its been shown that, in no way could be the entropic mapping from the future to the past collides with past to the future, making a possible collision leading to a zero entropic state, destroying the simulation itself. So, the advanced beings made the consecutive layers of simulations and we are living under its soft shadow.

Declaration of Interest

The authors of this paper declared that they do not have any competing interests as related to this paper.

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