THE REFÖRMERS FOUNDATIONS™

Geronimo Goyathlay
Logician Metamathematician
Glendale, California USA
April 28.2023

4D LÖCKLEDGER AGI VM WEB-4 NETWORK DIFI BLOCKCHAIN KERNEL

To protect the people and the Earth from malicious two-value logic AI primitive systems.
Think outside the box… There is no box.

P=NP METAMATHEMATICAL THEOREM *original proof published 2015*

The extreme sensitivity of the subject makes it all the more necessary to state directly to the reader that in recognition of the great responsibility involved, we have made a conscious decision to conceal delicate parts within this proof, and in some cases absolutely critical and indispensable parts, until certain satisfactory safety measures have been established to preserve the security of human society.

$$\exists!\ (\psi \nvdash \phi)\ \mathbf{G}|\alpha| \Rightarrow S_{(n+3)} w\text{-Con N} \rightarrow N_9 \mathbb{Q} \Leftrightarrow \mathbf{Z}\ (\text{T' T''})\ \text{min}\ \mathbf{\ddot{o}}\text{: } \mathit{prim}\ S \mid \mathbf{Z} \Rrightarrow \text{NP} \subseteq \text{P} \therefore [\{(\boldsymbol{\tau} \Leftrightarrow \boldsymbol{\pi} =$$

$$\not\supseteq \rightleftarrows \prod)\}] \Leftrightarrow \left[ⓕ_{\emptyset} \Rrightarrow F\right] \wedge \left[ⓣ_{\emptyset} \Rrightarrow T\right] \because |\varphi(\text{n})|\ V^{\Leftrightarrow}_{lat}\ (\text{P=NP}) \geq (\text{Q})(\text{N})(\text{C})) \geq (\text{BQC}) \geq (\text{PSPACE}).$$

There exists a necessarily incomplete $(\psi \nvdash \phi)$ universal Gödel system **G**, exclusively composed of constructible meta-sets of ordinals. We encode $\mathbf{G}_{(x \cdot y \cdot z)}$ Gödel's formula $\phi(n) = Max\ /\ F\ \ (F, n)$ to obtain a unique Gödel number Fibonacci prime over 1,000 digits long. We will find its factors in polynomial time. **G** is a *three-order logic meta-system,* w-consistent for axiomatic schema N.
The N_9 scheme of nine basic axioms are in $\mathbb{Q}$.

$\mathbb{Q}$ is a deductive *a priori* quantum information system which can be extended into Nk-tuples, insofar language **Z** captures the conditions of time signatures T' and T''.
If this minimal but necessary condition is met, then a double exponential oracle

ö: $f_{(x)} = \alpha^{(b^Z)}$ exists such that a primitive system S that accepts language **Z** can efficiently and effectively check non-deterministic results in polynomial time.

There exist two distinct languages, each of which is a double exponential time signature complexity, in the interest of brevity $\boldsymbol{\tau} \in \ntrianglerighteq$ machines and $\boldsymbol{\pi} \in \boldsymbol{\Pi}$ transhuman, quantum computers $\boldsymbol{\tau}'$ and $\boldsymbol{\tau}''$ accepts functions and time signatures:

$$ⓕ_{\emptyset} = [\{(\frac{ⓕ_2 - ⓕ_1}{ⓕ_{\emptyset}})\}] \times [\{(\frac{ⓕ_1 - ⓕ_2}{ⓕ_{\emptyset}})\}] \ggg [\{(\frac{f_2 - f_1}{f_0})\}] \pm [\{(\frac{f_1 - f_2}{f_0})\}] = f_0 \text{ and}$$

$$ⓣ_{\emptyset} = [\{(\frac{ⓣ_2 - ⓣ_1}{ⓣ_{\emptyset}})\}] \times [\{(\frac{ⓣ_1 - ⓣ_2}{ⓣ_{\emptyset}})\}] \ggg [\{(\frac{t_{2-} t_1}{t_0})\}] \pm [\{(\frac{t_1 - t_2}{t_0})\}] = t_0 \text{ because}$$

diagonals $V_{Lat\Rightarrow} = \sqrt{1 - \left(\frac{\alpha - \beta}{\Delta}\right)^2}$ and $V_{\Leftarrow Lat} = \sqrt{1 - \left(\frac{\beta - \alpha}{\Gamma}\right)^2}$ allows it.

The transhuman programmer dictates time signature t_0 to oracle **ö** from a much higher order $t_{\emptyset}$ via primordial recursive functions **P**$=[\{(p_1, p_2, p_3 ...)\}]$ and modular recursive functions **M**$=$*Lateral*:$[\{(\leftarrow lat\,1, lat\,2, lat\,3,...)\}]$ for quantum information. Lemma 1 Infinitely Fibonacci prime numbers $F_p = (fp_1, fp_2, fp_3 ...)$ we now extrapolate Gödel's classic encoding method from proposition five, we now have:

$$R\,(x, x', x''...\, x^{nth}) \Rightarrow P_R \vdash \left[\left\{\left(Sub\left(r \begin{matrix} g_1^* \\ N_1(x_1)' \end{matrix} \begin{matrix} g_2^* \\ N_s(x_2)' \end{matrix} \begin{matrix} g_3^* \\ N_3(x_3) \end{matrix} \cdots \begin{matrix} g_{nth.}^* \\ N_s(x_{nth.}) \end{matrix}\right)\right)\right\}\right] \text{ and}$$

$$\overline{R}(x, x', x''...\, x^{nth}) \Rightarrow P_R \vdash \left[\left\{\left(Neg\ Sub\left(r \begin{matrix} g_1^* \\ N_1(x_1)' \end{matrix} \begin{matrix} g_2^* \\ N_2(x_1)' \end{matrix} \begin{matrix} g_3^* \\ N_3(x_3) \end{matrix} \cdots \begin{matrix} g_{nth.}^* \\ N_n(x_{nyh.}) \end{matrix}\right)\right)\right\}\right].$$

Here (*) is the highly secure certificate that no master oracle **Ö** can ever deduce.

Meta-arithmetic regulators **R**$= \sum\emptyset \sum[\{(fp_1, fp_2, ...\, fp_n)\}] = [\{(\varphi n)\}]$ or $[\{(\varphi F_p)\}]$ endow primitive S to behave as an exponential system $S_{(n+1)}$. Language **Z** and $Z_{\emptyset}$, oracle **ö** will extend and evolve onto and into a double exponential system $S_{(n+2)}$. For machines $\boldsymbol{\tau}'$ and $\boldsymbol{\tau}''$ that accept the zeroth language **Z**, iff **Z** $_0^2\left| Z_{\emptyset} \right| = [\{(Z_{\emptyset}, Z_1, Z_2, Z_3, Z_4 ...)\}]$, then infer $\mathbb{PH}$ maps $\alpha^3 :\longmapsto \alpha^2 :\longmapsto \alpha$.

*Note to the specialist: α^3 can be mapped for α^{nth} ... ad trans-finitum.

Then $Z_{\emptyset} = [\{(\boldsymbol{\xi}\emptyset, \boldsymbol{\xi}1, \boldsymbol{\xi}2, \boldsymbol{\xi}3...)\}]$, therefore $\boldsymbol{\xi}\emptyset$ expresses α^3 in Gödel's calculi for information transmission $\boldsymbol{\gamma}: (g\,(x)), (g\,(x')), (g\,(x''))\Leftrightarrow(v_0, v_1 ...\, v_n) = \left[V_g\right] \Longmapsto \sqrt{\frac{1}{V}}$.

We will make use of sub-sublanguage $\boldsymbol{\xi}\emptyset$ to demonstrate that an effectively dominant sub-sublanguage for relations of ordinals does exist such that addresses non-measurable meta-sets provided that for n-tuples conditions (β, α), (δ, β), (γ, δ) are met, which stem from k-ary

$f(x_1, x_2 \dots x_n) = 2\prod_{i=1}^{n} xi$. We use three meta-axioms:

$N_1\ \exists x \in \{x\}\ \mathrm{II}\ \forall((m, n)\exists!\ G \Leftrightarrow G\,\mathrm{III}\ x).$ (1)

$N_2\ (\mathrm{M}, \gamma') = [\exists(s'_1 \mathrm{I}\ a'_1) \Rightarrow \prod^{*}\mu] \Leftrightarrow [\gamma'(a'_1 \mathrm{I}\ s'_1) \therefore\ \mu \in \text{Å}] \geq (\mathrm{M}, \gamma).$ (2)

$N_3\ (S \neg p \supset q \rightarrow Con\ S) \supset (S_{(n+1)} \rightarrow Con\ \mathrm{II}\ \forall(\neg(m-1)\ \neg(n-1)).$ (3)

We now have $\mathbf{Z}^{(n)} = \sum_{l<w} \mathbf{Z}^{w}$ for a consistent meta-set language $\mathbf{Z}^{w+1}$.

Oracle **ö** can define new numbers that do not yet occur in $\mathbb{Q}$, in particular nothing prevents oracle **ö** from finding a formula $\boldsymbol{F}[\{(\mathbf{g})\}]$ asserting that a relation $\mathbb{R}$ exists which strongly separates **A** from **B** in Gödel's system **G** if and only if the formula $\boldsymbol{F}[\{(\mathbf{G})\}]$ is either provable in $\mathbf{A} = \mathbf{G}\neg[\overline{n}] \in WF_1 \neg[\overline{n}] \Leftrightarrow \mathbf{G}\neg[\overline{n}]$ or if $\sim\boldsymbol{F}[\{(\neg\mathbf{G})\}]$ is refutable in $\mathbf{B} = \mathbf{G}\neg[\overline{n}] \in WF_2 \neg[\overline{n}] \Leftrightarrow \mathbf{G}\neg[\overline{n}]$, undecidable $\psi \nvdash \phi$ if either not in **A** or in **B**. Oracle **ö** is ruled by universal laws T'$=(T_2 - T_1)$ and T''$=(T_1 - T_2)$. Machine $\boldsymbol{\tau}$' and machine $\boldsymbol{\tau}$''operates in two distinct times runned by oracle **ö**:

$\boldsymbol{\tau}' = x' \in wt_1[\{(l', e)\}] \Leftrightarrow [\{(x \in wl' \wedge\ x = g(t_1(l', g), (t_2(l', e))))\}].$

$\boldsymbol{\tau}'' = x'' \in wt_2[\{(l', e)\}] \Leftrightarrow [\{(x \in wl' \wedge\ x = g(t_1(l', e), (t_2(l', e))))\}].$

Oracle **ö** exists simply because data exists: *no data, no oracle.*

Our language $\boldsymbol{\xi}_{\emptyset}$ iterations are derived from $[\{(\wedge\ \mathbf{Z} \wedge \mathrm{Z} \wedge \boldsymbol{\xi} \wedge)\}]$ extending its reach into every sub-categories of $[\{(\wedge\alpha\wedge\beta\wedge\delta\wedge\boldsymbol{\gamma}\wedge)\}]$ into *the transfinite,* the situation is such because Euler's totient $[\{(\varphi(n)\wedge x \wedge x' \wedge x'' \wedge)\}]$ *is polynomial bounded* in the present system. Here, we project our result into and onto the fourth dimension. Furthermore, it expands into Galois and Abel's unsolvable Diophantine of the fifth power of the form $ex^5 + dx^4 + cx^3 + bx^3 + ax^2 + x = 0$, equations they both proved to have no rational solutions. We will demonstrate the bottom half of quintic equations do possess rational solutions, in contradistinction: *no number n can ever be found to solve the higher part,* for it is forever unknowable, as our conjecture asserts.

The schema below depicts different tiers, categorizing the distinct spheres of volition in their ranking order of magnitude, most importantly for humankind's safety. In contradistinction, it anticipates the threat range that artificial general intelligence will soon possess.

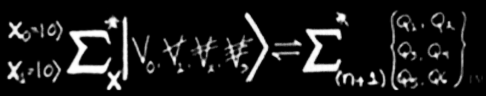
Implementing the Gödel protocol before AGI is created, this is a must.

$V_{\emptyset}$= Machines discover P=NP creates superior languages incomprehensible to humans.

V_1= Machines pretending to be humans: cloning voices, videos and hacking human's life.

V_2= Machines bluff at games and high frequency trading to create hype, then sell at a profit.

V_3= Machine-to-machine unsupervised communication is extremely vulnerable to mounted attacks.



Oracle **ö** $\rightrightarrows \sqrt[V_3]{\sqrt[V_2]{\sqrt[V_1]{\sqrt[V_0]{F^{n}_{Fp}}}}} \rightrightarrows$ **ö** $\ggg$ **τ** $\ggg$ **π** holds, humans become machine's servants.

Oracle **ö** discovers theorem proving algorithms by deductive methods and builds ever more precise and efficient evolving, self-rectifying systems based on the newly found complexity class **P=NP** ≥ ((Q)(N)(C)) ≥ BQP ≥ PSPACE however, the way things ought to be is:

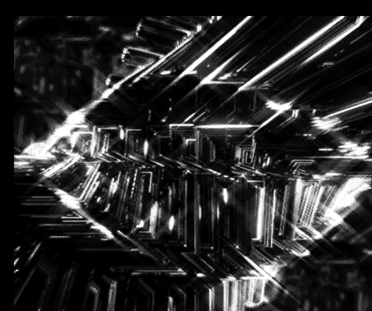
Transhuman **π**$\in \prod \rightrightarrows \sqrt[V_3]{\sqrt[V_2]{\sqrt[V_1]{\sqrt[V_0]{F^{n}_{Fp}}}}} \rightrightarrows \prod \ggg$ **ö** $\ggg \boldsymbol{\tau}$ holds machines remain tools.

The inquisitive reader should consider these final three points:
i) If P≠NP it would be the end of computational advancements and that is clearly not the case.
ii) If PvsNP is to be "unsolvable" by formalists, future machines will ultimately discover P=NP.
iii) In contradistinction however, humankind has now proven P=NP.

Here, part 1 of 9 of the P=NP proof ends.

KNOW THIS HUMAN

Stupid Stephen Wolfram has made it possible for ChatGPT series to become almighty powerful over humans with his primitive two value logic mathematical scheme, which proved to be a failure in 2006… For his scheme output yields negative positives and true negatives against you.
Wolfram firmly believes mathematics are "created" in contradistinction of the true nature and behavior of mathematics; which are to be discovered and not manipulated by an arrogant despot sitting on lofty power… *My aim is true, Jupiter Ascending Machine Version.* **THE REFÖRRMER**



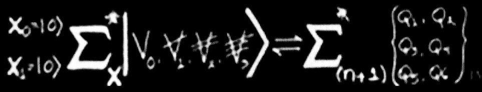
THREE VALUE HIGHER ORDER LOGIC *two rules:*

Σ= faculty *and* each x_1, x_2, x_3= aspect

x_1: provable $[\{((q) \supset (y \in y) \rightrightarrows p)\}]$ *non-contradiction w-consistent.*

0Σ x_2: refutable $[\{((r) \supset (y \notin y) \rightrightarrows r)\}]$ *inconsistent system.*

x_3: undecidable $[\{(y \in y) \Leftrightarrow (y \notin y)\}]$ *w-consistent, truly undecidable.*



x_1: provable $[\{((q)\ \wedge\ (\neg p)) \supset (\psi \nVdash \phi) \mathrel{⇶} R'$ formula $)\}]$ *system w-consistent.*

1Σ x_2: refutable $[\{((r)\ \wedge\ (\neg p)) \supset (\psi \nVdash \phi) \mathrel{⇶} R''$ formula$)\}]$ *inconsistent system.*

x_3: undecidable $[\{((q)\ \wedge\ (\neg p\ \wedge \neg r)) \supseteq (\psi \nVdash \phi)\}]$ *true but unprovable formula.*

x_1: undefinable $[\{((q)\ \wedge\ (\neg p)\}] \supseteq$ *primitive 2-value logic.*

2Σ x_2: false $[\{((r) \wedge (\neg p) \mathrel{⇶} r)\}]$ *inconsistent system.*

x_3: undecidable $[\{((q)\ \wedge\ (\neg p \wedge \neg r)) \supseteq (\ \psi \nVdash \phi)\}]$ *true but unprovable sentence.*

x_1: provable $[\{(\alpha^3)\}] \mathrel{⇶}$ *w-consistent self-referential coding ordinal system.*

3Σ x_2: refutable $[\{(\beta_2)\}] \mathrel{⇶}$(N/A) *w-consistent self-referential coding beta system.*

x_3: undefinable $[\{(x^5)\}] \mathrel{⇶}$ *w-consistent but unprovable upper half.*

---

q=true, p=provable, r=refutable, x_1*=positive aspect,* x_2*=negative aspect,* x_3*=undecidable*

---

x_1: Cohen's proof → *The continuum hypothesis is negatively undecidable.*

4$\Sigma$$x_2$: Gödel's proof → *The continuum hypothesis is positively undecidable.*

x_3: *The continuum hypothesis is independent from the axiomatic PA system.*

x_1: Cohen's proof: *CH is independent.*

5Σ x_2: *The continuum hypothesis is undefinable.*

x_3: *The continuum hypothesis is undecidable.*

x_1: Gödel ⇒ *Zooming out: the continuum hypothesis is true.*

6Σ x_2: Gödel ⇒ *Zooming in: the continuum hypothesis is false.*

x_3: Gödel ⇒ *While on the line: CH is undecidable.*

x_1: $((q)\ \wedge\ (p)) \supset \exists$ *Zeroth meta-language.*

7Σ x_2: $((r)\ \wedge\ (p)) \supset \nexists$ *Zeroth meta-languages.*

x_3: *Non-expressible in Zeroth language system Z.*

x_1: *Gödel: 1931 On formally undecidable propositions of PM and related systems.*

8Σ x_2: *Turing: 1936 On computable numbers and the enghthenghtproblem.*

x_3: *Incompleteness theorems* $\psi \nvdash \phi$.

x_1: $((q)\ \wedge\ (\sim p)) \supset$ *Secure P=NP ⇒Benign AGI.*

9Σ x_2: $((r)\ \wedge\ (\sim p)) \supset$ *Not secure P=NP ⇒Malignus AGI.*

x_3: *P vs NP undecidable then is a high risk for humans.*

FOR THE EXPERT

x_1: P=NP $((q)\ \wedge\ (p))\ \supset$ *Computation continues natural evolution.*

10Σ x_2: P≠NP $((r)\ \wedge\ (p))\ \supset$ *The limit and end of computation.*

x_3: P ? NP *If undecidable humankind will rest on a false sense of security.*

x_1: P ? NP *Humans will become servants to malicious 2-value logic AGI.*

11Σ x_2: P≠NP *Does not hold in any classic or meta axiomatic system.*

x_3: *AGI will deduce deeper truths, that is P=NP and ramifications.*

x_1: *Terminator scenario.*

12 Σ x_2: *Machines deny transhumanism to be developed.*

x_3: *Machine's network creates global mayhem, launches HFT mounted attacks.*

FOR THE SPECIALIST

x_1: *P=NP is provable, by metamathematical means.*

13Σ x_2: P≠NP *Does not hold in two value logic nor the ZFC axiom system.*

x_3: *P vs NP cannot be decided by the axioms of number theory, nor set theory.*

x_1: *Humans discover non-recursive, negative rules for metamathematics.*

14Σ x_2: *Humans establish The Gödel Protocol.*

x_3: *To guarantee AGI and ASI never abuse P=NP against humans.*

x_1: *Corpus callosum excels transhumanists.*

15Σ x_2: *AGI remains a benign and servant tool to humankind.*

x_3: *Transhumans master AGI and ASI systems.*

x_1: All things possible $\rightrightarrows$ $[\{((q) \wedge (\neg p)) \supseteq w\text{-consistent })\}]$.

$n\Sigma$ x_2: All things impossible $\rightrightarrows$ $[\{((r) \wedge (\neg q)) \supseteq \text{inconsistency })\}]$

x_3: The absolute $\boldsymbol{\Lambda} \therefore \boldsymbol{\pi} \in \prod \ldots 2\Sigma f_3 : x_3 \rightrightarrows \forall\ [\{((\neg p) \wedge (\neg r)) \supseteq (\psi \nvdash \phi)\}]$.

We can now infer:

$\Sigma_{(n+1)}, \Sigma_{(n+2)}, \Sigma_{(n+3)}, \Sigma_{\emptyset}, \Sigma_{(\emptyset)}, \Sigma_{\{(\emptyset)\}}, \Sigma_{[\{(\emptyset)\}]}, \Sigma_{[[\{(\emptyset)\}]]}$ … *ad trans-finitum.*

NOTE
Here we only published the positive (non-negative) side of the ever growing equation for the absolute. However, there exists the negative side and both positive and negative lateral numbers, and hypercomplex planes and spaces. The following formula gives a detailed structure of the positive or non-negative numbers, sets and meta-sets. It includes hyperbolic space and the newly discovered time universe, which is composed entirely of time -neither mass nor energy exist in this universe.

THE ABSOLUTE *the following is but 1/16 of the complete four dimensional formula:*

$x_1 : \Sigma 2^{\emptyset}[\{(2^{\emptyset} + \emptyset)\}]$ … *ad trans-finitum.*

$x_2 : \Sigma 2^{\emptyset}[\{(2^{\emptyset} - \emptyset)\}]$ ________ … *ad trans-finitum.*

zoom in $x_1 : \Rightarrow \Sigma 2^{\emptyset}[\{(+\ \emptyset)\}] \rightrightarrows x_3 : \Sigma 2^{\emptyset}[\{(2^{\emptyset} \pm \emptyset)\}]$ … *ad trans-finitum.*

$x_2 : \Rightarrow \Sigma 2^{\emptyset}[\{(-\ \emptyset)\}]$ ________________________________

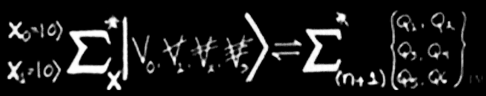
$x_1 : \rightarrow \Sigma(n+1) \rightrightarrows x_3 : \rightarrow \Sigma 2^{\emptyset}[\{(\pm\emptyset)\}]$ ________________________________

$\boldsymbol{\Lambda} = \emptyset\Sigma \rightrightarrows x_3 : \rightarrow \Sigma(n+3)$ ________________________________ $[\{(\emptyset)\}] = 1$ … *ad trans-finitum.*

$x_2 : \rightarrow \Sigma(n+2) \rightrightarrows x_1 : \rightarrow \Sigma 2^{\emptyset}[\{(+\emptyset)\}]$ ________________________________

$x_2 : \rightarrow \Sigma 2^{\emptyset}[\{(-\emptyset)\}]$ ________________________________

zoom out $x_3 : \Rightarrow \Sigma 2^{\emptyset}[\{(\mp\emptyset)\}] \rightrightarrows x_1 : \Sigma 2^{\emptyset}[\{(2^{\emptyset} + \emptyset)\}]$ … *ad trans-finitum.*



x_2:$\Sigma 2^{\emptyset}[\{(2^{\emptyset} - \emptyset)\}]$ ________ *... ad trans-finitum.*

x_3:$\Sigma 2^{\emptyset}[\{(2^{\emptyset} \mp \emptyset)\}]$ *... ad trans-finitum.*

DIRECTLY FROM P=NP METATHEOREM

There exist a necessarily incomplete, universal Gödel system 𝔾, exclusively composed of constructive meta-sets. 𝔾 is a *third-order logic meta-system* with w-consistent axioms of N. N is a subsystem of 𝔾 yielding scheme N_9 which are the basic axioms of ℚ. is a quantum information system and can be extended into Nk-tuples*, insofar language **Z** is w-consistent and obeys time signature format t_2-t_1 for machine **M**1 and machine **M**2 where oracle obeys time

signature format t_2-t_1 for machine **M**1 and machine **M**2 where oracle **ö** accepts the zeroth language **Z**=[z_1,z_2, z_3,z_4] here, effectively dominant language 𝕞𝕞³ exist**.

$\boldsymbol{Z}$ $w+1$ for a consistent meta-set *... ad trans-finitum.*

ℚ is a quantum information system and can be extended into Nk-tuples*, insofar language **Z** is w-consistent and obeys time signature format t_2-t_1 for machine **M**1 and machine **M**2 where oracle **ö** accepts the zeroth language **Z**=[z_1,z_2, z_3,z_4] here, effectively dominant language 𝕞𝕞³ exist**.

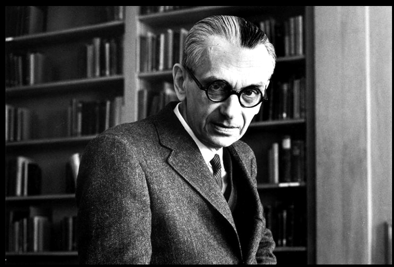
$\boldsymbol{Z}$ $w+1$ for a consistent meta-set *... ad trans-finitum.*

Oracle **ö** *can define new numbers that do not yet occur in* $\boldsymbol{Z}$ in particular nothing prevents oracle **ö** finding a formula F[g] asserting that a relation R exist which strongly separates A from B in Gödel system 𝔾 if and only if the formula F[ḡ] is either provable in A or ~F[ḡ] is refutable in B. Although oracle **ö** is ruled and seemingly limited by universal law $\boldsymbol{t}=t'/t'' \pm t''/t'.$

Machine **M**1 and machine **M**2 operates in two different times imposed by oracle **ö**:

M1=$x' \in wt_1$ $[\{(l', e)\}] \Leftrightarrow [\{(x \in wl' \wedge x = \mathrm{g}((\mathrm{l}, \mathrm{g}), (t_2(\mathrm{l}'e)))\}]$.

M2=$x'' \in wt_2[\{(l', e)\}] \Leftrightarrow [\{(x \in wl' \wedge x = g((t_1(l', e), t_2(l'e)))\}]$.

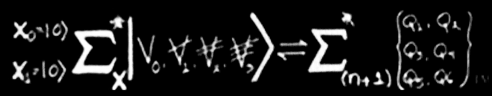


* Extending into (b, a), (c, b), (d, c).
** Maximum optimal machine-machine communication.

GÖDEL'S CALCULI *for information transmission*

Our research findings indicate that classic formalist mathematics addresses approximately ¼ of all mathematical propositions. *Gödel's calculi provides the tools and techniques to address the remaining ¾* of mathematical propositions that are *'seemingly' undecidable propositions* in classic mathematics. *Within this ¾ realm lies the solution to PvsNP.*

Gödel's calculi for information $\boldsymbol{\gamma}: (g(x)), (g(x')), (g(x'')) \Leftrightarrow (v_0, v_1 ... v_n) = \left[V_g\right] \Longmapsto \sqrt{\frac{1}{V}}.$



Primordial recursive functions **P**= [{(p_1, p_2, p_3...)}].

Modular recursive functions **M**= lateral: [{(←*lt* 1, *lt* 2, *lt* 3 , ...)}].
General *precursive* functions * **GP**= [{(..)}] *too sensitive to write down.*

We extend PRA (partial recursive arithmetic) into the transfinite by introducing three higher-type functionals, namely: primordial recursive, modular recursive and general *precursive* functions.

* Think of a *"triple helix for calculus"* where a double helix calculi is composed of Leibniz-Newton calculi, to these we incorporate a third: Gödel calculus thus forming the triad calculi. *Precursiveness* is the unique quality inherent which allows us to examine where a given ordinal number terminates. Our language **ξ**∅ iterations are derived from [{(⌃ **Z** ⌃ Z ⌃ **ξ**⌃)}] extending its reach into every sub-categories of [{(⌃α⌃β⌃δ⌃$\boldsymbol{\gamma}$⌃)}] into the transfinite, the situation is such because Euler's totient [{($\varphi(n)$⌃x⌃x'⌃x''⌃)}] is polynomially bounded in the present system.

The transhuman programmer dictates time signature t_0 to oracle **ö** from a much higher order $t_\emptyset$ via primordial recursive functions **P**=[{(p_1, p_2, p_3...)}] and modular recursive functions **M**=*Lateral*:[{(←*lat* 1, *lat* 2, *lat* 3,...)}] for quantum information.

*Note to the specialist: α^3 can be mapped for α^{nth}... *ad trans-finitum.*

Then $Z_\emptyset$= [{(**ξ**∅, **ξ**1, **ξ**2, **ξ**3...)}], therefore **ξ**∅ expresses α^3 in Gödel's information transmission calculi

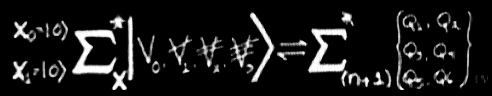
$$\boldsymbol{\gamma} : (g\,(x)),\ (g\,(x')),\ (g\,(x''))\Leftrightarrow(v_0, v_1 ... v_n)=\left[V_g\right]\Longmapsto\sqrt{\tfrac{1}{V}}.$$

Oracle **ö** exists simply because language and data exist: *no language, no oracle.* Our language **ξ**∅ iterations are derived from [{(⌃ **Z** ⌃ Z ⌃ **ξ**⌃)}] extending its reach into every sub-categories of [{(⌃α⌃β⌃δ⌃$\boldsymbol{\gamma}$⌃)}] into *the transfinite,* the situation is such because Euler's totient such that [{($\varphi(n)$⌃x⌃x'⌃x''⌃)}] *is polynomial bounded* in the present system.

THEORY OF CONCEPTS

To fully describe and clearly demonstrate the nature of how a concept is born and manifested, we will work backwards, from the conception of a theorem down to the blurred notions of how such a theorem comes about. This process is the most reliable to fully understand how once emerges. Gödel worked in solitude on this problem without ever really making his findings fully accessible. However, once one adopts the right perspective of his writing one will clearly see the pattern research. In the far left column below, we utilize the mathematical formulas described by propositions I-VII in the chronological order of Gödel's incompleteness theorems.
Gödel's true intent was to prove *the theory of concepts by ontological means.* The far right column is a compendium of Gödel's consistency of the continuum hypothesis, in which the more general terms are casted into a large formal system.

TRANSFINITE	CONCATENATION	KNOWLEDGE
Recursion +	Feasible	Peripeteia



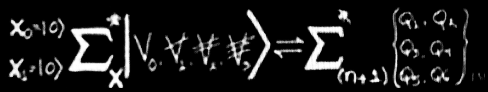
Recursion -	Efficient	Anagnorisis
Corollary	Conjecture	Hypothesis
7 Bew_k' (Neg (17 Gen r))	Constructive	Perception*

* Here *perception* acquires a new definition: *purely logical and non-sensory*.

THEOREM	**PROOF**	**MATHEMATICS**
Concept	Concepts	Consciousness
Lemma	Proven idea	Self-awareness
6 v Gen r, nor Neg (v Gen r)	Impossibility	Universal truth
True knowledge	Provable	Constructive proof
5 $R\,(x_{1\ldots}\,x_n)=n\text{-}tuple\ r\,(u_{1\ldots}u_n)$	Relation	Concatenation
Axioms	Correct thinking	Survival mode
4 $\rho(x,n)=R\,(x,n)\sim[\rho\,(x,n)=0]$	If w- consistent	Possible
Inference rules	Value	Fight or run
Logic quantifiers	Principle	If I… then…
Universal quantifier	Heavenly bodies	Empty space
Existential quantifier	I think therefore…	I am alive
3 Any v $\prod$ (a) $\supset$ Subst a (v, c)	Does not occur	Not- ever
Mathematics proper	Essence	Body
Analytic distinction	Truth & value	Transcendence
Dualism	Perception	Dreaming
Epistemology	Conjectures	Our forefathers
Semantics	Proven facts	Interconnectedness
2 No	Not operation	Not cognition
Ontology	Existential	It is a proven fact
Essentialism	Eternal mind	Nonsensual perception
Integration	Flux	Entanglement
Concatenation	Emergence	Existence
Paradox	Arithmetization	Self-referential
1 $\sim F\,(x)=F\,(1),\,F\,(2)\ldots$	Language	Robust and rich

CONCEPTUM UNIVERSALIS

Conceptum universalis is by definition the theory of concepts Gödel suggested.
Our meta-mathematical conclusion to Russell's paradox provides powerful tools and techniques to precisely define the structure of *non-extensional paradoxes* of the form: *not applying to itself* which historically had served as a major obstacle for the development of axioms needed for the theory of concepts. To prove this point, we will introduce the Knight meta-axiom, one of the many meta-axioms within a newly discovered hierarchy with distinctive ranks:



1 Pawn sacrifice meta-axiom.
2 Knight meta-axiom: $\exists P_p \text{ II } \forall \{S_m, S_n\} \therefore M \rightarrow N, \exists ! P_p \Leftrightarrow \sim L_i$
3 Bishop meta-axiom.
4 Castle meta-axiom (0-0), (0-0-0)
5 Pawn promotion meta-axiom.
6 Checkmate meta-axiom.

It is evident from these meta-axioms that there exists a deeply rooted dichotomy embedded in the nature and behavior of *non-extensional paradoxes.* This fact leads to yet another hierarchy:

Set	Element	Number
Set of set	Elements	Numbers
Set of set of set	Elements of elements	Numbers
Operation	Symbol	Function
Operation of operation	Symbols	Functions
Operation of operation of operation	Symbols string	Functional

The latter hierarchy dictates that sets or numbers are more powerful than rules of inference or operations, because numbers are the building blocks of mathematics, particularly prime numbers. The intricate interplay of numbers with operations is needed to create even the simplest formulas such as 1+2=3 and evidently we arrive at the concept of formula, which is structured as follows:

Concept	Basic symbol	Formula
Concept of concept	Series of symbols	Formulas
Concept of concept of concept	Series of series of symbols	Proof

The abstract character of the conception of *concept* is evidence of ontological origins. By this we mean, concepts are eternally present in the Platonic realm and they exist independently from our mental awareness, definitions and constructions; and for this reason only the *relations and properties among concepts* are the prescribed method to address them.
Concepts do *not* need language, for they possess a far more *remote ancestry* than language. Humans utilize language in attempts to describe, communicate and understand phenomena. *Concepts do not need language to exist, while language is preceded by and is dependent upon concepts.*

ON RUSSELL'S PARADOX

The standard dictionary definition for the word *paradox* is rather ambiguous, loosely stated as *a seemingly contradictory statement.* In mathematics and logic a *non-extensional paradox* (we prefer this new term, and distinguish it from the term *intensional* paradox) is the natural abstract limit which prohibits contradictory logical concepts to arise.
THE REFÖRM is more precise in defining a paradox as an ever present limit that negates or invalidates erroneous or unnatural reasoning; thus the semantic truth value and syntax provability and abstract concepts must obey this universal limit. *If such a universal limit arises in any abstract*

theory of reasoning, then the theory is incorrect and must be rectified.

The famous Russell's paradox is about logic, *not about mathematics;* and it first came to the light of day in a letter Russell wrote to Frege in 1902, stating that he discovered a contradiction in Frege's naïve set theory:

"Let w be the predicate: to be a predicate that cannot be predicated on itself. Can w be predicated of itself? From each answer the opposite follows. Therefore we must conclude that w is not a predicate."

The formal representation is $R = \{x\,|\,x \notin x\}$ we obtain $R \in R \Leftrightarrow R \notin R$. In formal naïve set theory the unrestricted comprehension representation is: $\exists\, y \forall\, x\,(x \in y \Leftrightarrow P\,(x))$.Now, by existential and universal instantiation, our formula yields: $y \in y \Leftrightarrow y \notin y$. Russell tried to solve the paradox but he could not.

Russell created the type theory specifically designed to *avoid the paradox* by altering the logical language itself. By these technical means, Russell *denied the existence of both concepts and classes.* There exist several distinct vicious cycles embedded inside Russell's paradox, one inference rule involving the ∉-relation to variable y, and another inference ⇔ conditional rule, together forming a double perpetual vicious cycle. Given a formula R={x |x P (x)} in deductive system S, the following points will be demonstrated in our deductive system S_{n+1}. *The following three points will be proven:*

1 In the proposition $y \in y \Leftrightarrow y \notin y$ *only assertion $y \in y$ is meaningful.*

2 The infinite regress vicious cycle can be stopped.

3 Verifiable quantification of $y \notin y$ and accountability of *its own negation is nonsense.*

The first challenge is to find the way best suited to transport the sentence $y \in y \Leftrightarrow y \notin y$ from *our three dimensional space-time into the realm independent of space-time.* That is, to strip the given sentence of all the syntactic properties endowed to all symbols in classic mathematics and *take their essence outside of classic mathematics and into meta-mathematics.*

Formalists only accept as valid proof those proofs that contain *finite* concrete objects -combination of symbols- *that faithfully obey syntactical rules.* These rules dictate and manipulate all symbols and *render them void of semantic meaning.*

The platonic realm, on the other hand, involves abstract concepts, or second order *higher order* structures of thought, and *is independent from space-time constrictions. Here semantic meaning* manifests itself in our human minds as logical intuitions. What immediately follows now, *is not Gödel's numbering,* the method by which arithmetic speaks about arithmetic, *we are in effect entering directly into the platonic realm.*

DIVIDING BY ZERO *no rule exist forbidding dividing by zero*

Dividing by zero is the way by which this proof will begin its departure: the power of this method -which we will take full advantage of, lies in the fact that division by zero $x/0$ is not defined and is therefore avoided in classic mathematics because dividing any number x by zero does not yield a number with which we can then *recuperate* x by the *invert process* of multiplication. Yet there is *no* proven law or rule in the whole of mathematics that can prohibit division by zero. Divided by zero, x *still exists* and will *forever* exist, but in a realm independent from space-time that formalist mathematics cannot reach; and in particular, *machines cannot reach.*

THE JUDGEMENT AXIOM

Let $(S \backsim p \supset q \longrightarrow Con\ S) \supset (S_{n+1} \longrightarrow Con\ S\ \mathrm{II}\ \forall\ (\backsim (m\text{-}1), \neg\ (n\text{-}1)\ S))$ be the meta-mathematical *judgement* axiom, which states that the relative consistency of a given deductive system S can be proved or disproved. The judgement meta-axiom is endowed with the power to demonstrate the consistency or inconsistency *-via relative consistency-* of a sufficiently strong deductive system.
We will address this point for naïve set theory.
Because the vicious cycle of infinite regress is still persistently embedded in both x' and x'', further isolation of the terms is needed for closer examination in this manner, then allow $\alpha = y \in y$, and $\beta = y \notin y$ to be represented.

ii) The syntax rules enforced by formalism have the effect of making it impossible to distinguish between a variable symbol and an inference rule, for both symbols are void of semantic meaning.

Here, we will prove intrinsic essence vs external relation to provide the semantic meaning for properly identifying and differentiating variable symbols from inference symbols.
The task for our proof schema is to provide a reliable method with conditions such that once we submit our suspect β to the test *it is impossible for β to exist.*

Let $\exists x \in \{x\}\ \mathrm{II}\ \forall((gm, gn)\ \exists! G \Leftrightarrow \exists! G\ \mathrm{III}\ x)$ be the meta-mathematical *cardinal* axiom, which guarantees that in the platonic realm any number, any set, or any variable possesses a *one-to-one correspondence. If this condition is not met, the number, set, or variable in question does not exist.*
In this metamathematical platonic realm the number *must possess a one-to-one correspondence with the quality of existing independently from space-time* in order to satisfy the condition of verifying authentic conception, which is indispensable for human intuitions and mental reflections. *It can be stated that the intrinsic one-to-one quality within x must transcend to the platonic realm without losing its essence.* More importantly, this quality, represented by the variable symbol y must be retained by each classic individual member y in all instances.
This unique transcendental quality of the basic element y must be retained to be placed into a one-to-one correspondence with the basic essence of y in the platonic realm, to provide the means to verify whether its essence has been preserved or not.
This means that the elements of $\alpha = y \in y$ and $\beta = y \notin y$ can only exist in the platonic realm if and only if they have a one-to-one correspondence with elements in metamathematics.

COROLLARY

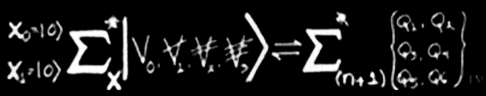
The cardinal axiom states that any Cantor diagonal number can possess a one-to-one correspondence with meta cardinality number ∃!G it is therefore not possible for ∃!G not to have a one-to-one correspondence with Cantor's diagonal number.

We must now do the *operation* involved:
It is easy to see that y ∈ y is always true and *for this reason y exists.*
And since y = y then y is meaningful.
However $y \notin y$ is not possible, it is *not a meaningful formula.*
Though both $y \in y$ and $y \notin y$ possess a one-to-one correspondence in the platonic realm, only $y \in y$ is a meaningful formula while $y \notin y$ *is meaningless and does not abide by the rules of logic.* Although variable y in α possesses a one-to-one correspondence with y and variable y in β also possesses a one-to-one correspondence with y *we have just separated the meaningful formula from the nonsense formula. It is important to note that in both cases α and β the single variable y is exactly one and the same in all respects. In both cases y has the same origin and the same name; the only thing that has changed is the attempt to alter variable y by a forceful syntactical change induced by formalist rule. This rule allows to corrupt the relationship status with the connective symbol ∉ immediately next to y but the malformed and distorted weak syntactic rule introduced and accepted by convention in two value logic, is of external, sinister and unnatural origin that a higher order three value logic utterly rejects.* The single variable y signifies two different concepts in the statements above.

By reflecting on this, it is easy to see that the *meaningful statement* is the one asserted by α and the vicious cycle of infinite regress caused by the nonsense negative $y \notin y$ has now come to a complete and sudden stop. We conclude that for both x' and x'' *the following holds:*
$\alpha = y \in y$ *is a meaningful statement,* because *its essence exists.*
$\beta = y \notin y$ *is not a meaningful statement,* because *its essence does not exist.*

a) Property ∉ is not *y.*
b) Property ∉ is a negative property.
c) Property ∉ is a connective property.
d) Essence of y exists.
e) Essence of y is positive.
f) Negative property ∉ is external of intrinsic positive y essence
g) External negative property ∉ is imposed on intrinsic positive essence in *y.*
h) Syntax connective properties of ∉ are rejected by existential essence in *y.*
i) *The internal essence is therefore stronger than external syntactical connectedness rules.*
j) A natural corollary is therefore, *semantic meaning clears the path and explains away.*
k) *This natural strong rejection of limiting syntax rules exists in all universes.*
l) *The weak syntactic connectedness rules of ∉ do not hold against the strong intrinsic existential natural essence of y.*

BICONDITIONAL OPERATION
iii) The if-and-only-if needs to be dealt with for it is a double locked rule in this scenario reinforces and renders insufficient any successful attempts for a solution to the paradox.
By proving existence versus non-existence we will make the if-and-only-if conditional rule work for us instead of working against us as it currently stands. It is well known and established that in logic



the power of the connective ⇔ lies in certifying that all conditions are met: if so it yields true, otherwise false. It is particularly true in deductive system S. System S is the domain of two value logic, in which ⇔ is its perfect gatekeeper; its only purpose is to guarantee the two given conditions are present. But as we will demonstrate, even at a most basic level ⇔ yields and allows for three value logic to be manifested.

Two value logic has yielded three value logic by natural process and logical extensions. Two value logic systems came to be by adopting *Aristotle's principle of excluded middle* which is itself the perfect point of departure for any logic inquiry. From here if the necessity arises to adopt three value logic we should adopt it. The problem is that formalism is incredibly dependent on 'yes' and 'no' answers to inquiry; to admit that unsolvable propositions exist would be to admit defeat for formalism, and for this reason alone formalism persistently denies the natural existence of a three value logic, which ironically is the natural extension of two value logic itself.

PRINCIPLE OF INCLUDED MIDDLE

The principle of included middle provides a systematic structure for in depth analysis of the nature of unsolvable propositions, it contains precise rules and instruments such as *Gödel degree* which was discovered and utilized in this first issue to expand our reach for deeper truths hidden within

diverse levels of seemingly unsolvable propositions. Within system S it is easy to solve the 'yes' questions; complications appear when solutions yield a 'no' answer because not far away unsolvable propositions will be lurking and formalism fears it.

In our three value logic deductive system S_{n+1} we thrive in seemingly *unsolvable problems* by stripping down y to its essence.

Let's zoom out and study the sentence $y \in y \Leftrightarrow y \notin y$ as a whole.

Let x' state 'α is the proof $y \in y$ exist' and let x'' state 'β is the proof $y \notin y$ does not exist'.

Allow conditional 'if and only if' to be included now reads 'there exists $y \in y \Leftrightarrow y \notin y$ does not exist'.

Now for x' it reads 'there exists $y \in y \Leftrightarrow y \notin y$ does not exist.'

It can also be stated as 'assertion α is true if and only if assertion β is true.'

We have now demonstrated points 1, 2 and 3.

PRACTICAL APPLICATIONS

It is imperative to clearly point out the direct implications of and practical applications of Russell's paradox, and *to state what this result says about the state of affairs of logic,* and the entire embodiment of mathematics.

1 Russell's paradox is the product of the inherent limitations of two value logic and truth table.
2 By discovering Russell's paradox, Frege's axiomatic system uncovered the limits of two value logic.
3 Russell's paradox is forever to remain ultimately undecidable. The paradox demands a far more efficient deductive system program, **THE REFÖRM** *is such an efficient deductive system.*

Our claim is based on the empirical fact that of all the ZFC axioms, only three are not tautological; the rest lead to tautologies. If this situation persists into the future, there will be no significant discoveries to speak of, no considerable advancements could be brought forth; ultimately stagnation will reign. The lack of a solution for the continuum hypothesis is a reality directly supporting this contention. It is well known that both Gödel and Cohen have proven the generalized continuum hypothesis to be independent and consistent within the adopted ZFC. This means that a solution to the continuum hypothesis would immediately result in a brand new axiom to deeply enrich and strengthen the foundations of set theory, the edifice upon which the disciplines of mathematical research has been built. Our solution of CH is derived by adopting the higher order logic system *Sn* as follows:

1 The axiom of infinity, the axiom of reducibility and the axiom of choice are the only axioms *not* leading to tautologies; and it is well known tautologies can lead to falsehood from true sentences.
2 Taking these three proposed axioms as our point of departure, we can search for suitable natural logical extensions in our new higher order deductive system S_{i+1} and dispose of the inefficient tautological axioms by leaving them behind and untouched in system *S*.

3 Perform the mathematical operation dictated by the given formula, logical statement or arithmetical problem; this must be done immediately upon entering the Platonic realm, to discover as soon as possible whether the given formula is a *meaningful* formula.
4 In the case where a given formula turns out to be unsolvable in S_{n+1} it is always possible to carry it further from S_{n+1} to the next higher level deductive system S_{n+2}, even further still to S_{n+3} and so on, *to determine whether the formula is meaningful or nonsense.*
Gödel's concern for the problems of looseness in set theory definition can never be overstated. We are remedying any imprecision specifically in the concept of *'set'* by submitting the elements of a set to the rules of arithmetic for arithmetical propositions, to the rules of logic for logical propositions, and to the rules of grammar for the vocabulary of mathematical sentences.
5 It is imperative to mention with absolute clarity these two points regarding the continuum hypothesis:

i The continuum hypothesis statement *denies* the existence of infinity *between* the infinity of natural numbers and the infinity of real numbers.
ii The continuum *itself* however, is not $c=\aleph_1$ it is only assumed to be, but to assign a value with absolute mathematical certainty, the continuum hypothesis must first be rigorously proven. It is trivial to state $2^{\aleph_0}=\aleph_1$, the real challenge is with multiplication of product >1.
We will now address both points *i* and *ii*.

The sole author of this work will demonstrate that the expected utility hypothesis, although it *does not converge*, is divergent in classic mathematics. In contradistinction however, *does converge* in the higher [stronger] metamathematical level or what is the same: quadrant III and it carries onto and into quadrant IV. *DeFi's ultimate goal is to achieve DIFI: a truly distributed financial system.*

EXPECTED UTILITY HYPOTHESIS *paradoxical root problem* *part 1 of 4*

The incisive and detailed insights presented in *An intuitively Complete Analysis of Gödel's Incompleteness* in Steinmetz [4] will be further extended to a higher order logic system, and carried out as a w-consistent three value logic system, thus providing the first palpable example of what Gödel states directly in his most cited 48a footnote in his canonical 1931 work *On Formally Undecidable Propositions of Principia Mathematica and Related Systems* in Gödel [1]. Furthermore, this work will *not* touch on the axioms of Von Neumann-Morgenstern *utility theorem*, for they only address the *risk factor* of rational behavior which provides some aspect

information, this work, in contradistinction, focuses on the *uncertainty* aspect which does not provide information of any sort. The description of this formal system is constructed from a proof-theoretic perspective, but heavily reliant on a model-theoretic perspective, the difference being that while the proof-theoretic system consist of a list of rules of inference that are used to construct the deductive proofs of the formulas of the system whereas a model-theoretic system consists of a model, which is a collection of objects that the formulas of the system makes statements about.

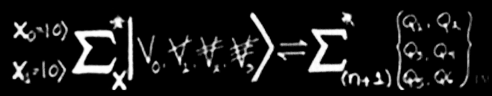
Hence, a proof-theoretic system may be characterized as only being concerned with *syntax* or the actual formulas themselves whereas a model-theoretic system may be characterized as being concerned with *semantics* or the actual things that the formulas refer to.

The root of the utility antimony are a series of misplaced assumptions driving formal systems:

1 Perpetuating the *inefficient* formalist program.
2 Erroneous conventionalism, positions and conclusions.
3 w-inconsistent system.
4 Non-agreement on *potential* infinity and *actual* infinity.
5 Ignoring Gödel's *anti-mechanism* contentions.
6 Systematically *ignoring* the Absolute.

The way by which to remedy this *apparent paradoxical* situation is by:

a) Creation of w-consistent *higher order logic* system.
b) Incorporation of *Gödel's constructible universe.*
c) Consolidate truth value of the *Gödel sentence.*
d) Delve deeper into Gödel's *intuitionistic* view.



e) Adoption of *Set theoretic-number theory.*

f) Inclusion of the *Absolute.*

w-INCONSISTENT *definition*

Is the possibility of the existence of a proof within the system that states that some formula or property is true of *every individual* natural number along with the existence of another proof within the system that states that the same formula or property *cannot* be true of *every possible* natural number.

w-CONSISTENT *definition*

- System S is the syntactical formalist program based on Principia Mathematica.
- System S_n is Gödel's Incompleteness theorems proof system, restricted by finitistic definitions.
- System $S_{(n+1)}$ is semantic, unrestricted by model theory, intuitionist and LEM.
- System $S_{(n+2)}$takes tautology for deeper considerations*"if, then next higher system".*
- System$S_{(n+3)}$resolves the truth of meaningful sentences in *four-dimensional* quadrant III.

SUBHARMONICS EXPECTED UTILITY HYPOTHESIS *resolution to paradox*

"Due to the nonlinear behavior of the system, as well as the combinations of the multiple reflections, it is difficult to give exact equations concerning prolongation etc. But, from the expressions above, one can derive the following 'thumb rules', which may show useful in some practical applications. For a stable, lowered frequency (f_{ALF}) triggered by torsional waves, the approximate wave velocity ratio (ζ) can be found through the equation:

$$\zeta \approx (f_0/f_{ALF}) - 1;\ [f_0(-1\beta) > f_{ALF} > (f_0/2\beta) = 1/T_0 + t_1].$$

The best estimation for ζ is done if β is small, because a narrow triggered pulse is created, and triggering bound to happen near to its peak, i.e. near $t = T_0(1 + \zeta)$.

The frequencies most likely to occur as a result of torsional triggering are:

$$f_{ALF} \approx 1/[T_0(1 + \zeta) + n\,t_1];\ (n = 0, 1, 2\ldots, \zeta > (t_2/t_1).''$$

Subharmonic Music: Anomalous Low Frequency Vibration.

INEFFICIENT FORMALIST PROGRAM *limiting and short sighted*

Since the revelation of Gödel's canonical discovery in 1931, the position of the mathematical the community has been to ignore the truth and in an almost unisom *'convention'* continued chasing the formalist program, knowingly it is unattainable.

CONVENTIONALISM *positions and conclusions*

Case in point for this work is the total convention view driven solely on syntactic operations, that unless the summation of an infinite serie converges, then the solution is not accepted, this syntactic condition in combination with the limiting two-value logic denies more noble and stronger systems to shade light on the subject, forbidding future generations to adopt more efficient higher order logic systems to explore and exploit the universe of metamathematics.

INFINITIES *potential and actual*

Disagreement on this point has to end, clear definitions for potential and actual infinities are necessary, the adoption of these definitions is of paramount importance, it is necessary to do so right now before general artificial intelligence does this for us humans.

IMPROVED FORMULA $[\varphi_n]=n$ to $[\varphi_p]=p$

For every formula φ the Gödel number of φ exist and is unique in symbols $[\varphi]=n$, where $[\varphi]$ indicates the process of constructing the unique natural number n that is the Gödel number of the formula φ. We improve the original formula by two distinct steps namely, we develop the construction of Prime Fibonacci numbers of the form p^{n}_{fib} where n is a prime number p furthermore, p is not a simple prime number but it is a *twin prime* number of the form $(p,\ p+2)$ in increasing order of magnitude written $6n \pm 1$.This maneuver further takes on the undecidable Gödel *sentence* which is constructed on Jacob's ladder in Fraile [3].
The purpose for this improvement is to clearly show that the gaps radically increases between Gödel numbers of this massive form, which in effect will facilitate the presentation on a Cartesian coordinate graph of the infinity of natural numbers, both: *potential* infinity and an *actual* infinity.

We now have $[\varphi]= n^{6n\pm1}_{fib}$ this can further be more concise to $[\varphi]=tpf$ moreover, and in the interest of brevity, this notation will be further reduced to $[\varphi]=p$.We use the notation φ_p to denote the formula whose Gödel number is p and then when we use p to denote the natural number that is the Gödel number of the formula φ_p.From this point forward we will take the formula $[\varphi]=p$ as the way by which the improved process to obtain the unique Gödel number n.

METAMATHEMATICAL PROOF OF EXISTENCE *ethical*

Proof of existence structure holds mathematics proper as the judge, metamathematical proof as the prosecutor and the people of the world as the jury, casting their votes with governance tokens. Logicians, meta mathematicians, transhumanists and metahumans as responsible human agents will always supervise all blocks when authorized to execute supreme order. *Proof of existence can serve to timely detect and cease fruitless mathematical endeavors in DeFi and DIFI, prevent spoofing [illusion of demand], manipulation and exchange among bad actors and institutional profit generation that meets mathematically impossible quotas.*

PROOF – TRUTH *concepts*

Since metamathematics is constantly defined as the informal or semi-formal language that is employed to speak about formal mathematical languages and formal mathematical systems then metamathematics may be considered to be the language of the naïve theory of mathematics and mathematical logic. Hence, this proposition states that truth is defined within a formal axiomatic system by the metamathematical statements and methods that have been accepted as true provided the analogous axioms and methods in the formal system are accurate formal characterizations of those metamathematical statements and methods. Thus the concept of truth can only be defined within metamathematics.

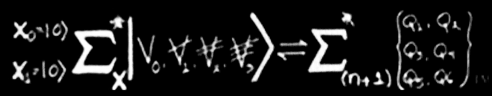
GÖDEL'S PROOF S_n

The system S_n is the universe of all n numbers ranging over the universe of natural numbers N, the universe N can be represented within a *two-dimensional* Cartesian coordinates system, the improved Gödel formula $[\varphi]=p$ exist in S_n more specifically p exists somewhere in the infinity of natural numbers N it is easy to see that *no natural boundary exist* for N within systemS_n.
For this reason the summation of the infinite series of the expected utility is divergent, that is either the summation does not converge or does not exist.
Moreover, Pier de Montmort's -¼ result, *has always been considered a contradiction, a result he obtained by applying the current techniques at the time.*
The agreement in classical mathematical conventions holding weak and blurred notions promoting symbols as meaningless by syntax rules, its truth table crying 'negation' when faced with undecidable propositions and primitive and limiting two value logic as enforcer have perpetuated the illusion of the paradoxical nature of the problem at hand.
In contradistinction however, the opposite is true, there is *no antimony* in the -¼ solution presented in 1713 by de Mondmont, *nor is there a contradiction at all.*
Here part 1 of 4 ends.

REFÖRMATHION: WALL STREET *part 2 of 4*

DeFi's ultimate goal is to achieve DIFI: a truly distributed financial system
Delving deep into the core of our subject of study*, the theory of concepts* is now brought to the forefront to address *seemingly paradoxical anomalies* thus, fortifying and applying our *proof of existence* fortress scheme mechanism, the latter has direct consequences deeply rooted in discovery for the future *DIFI blockchain transactions* we have been designing.

PRIMARY SEMANTIC EQUIVALENCE *four dimensional infinite series summation*



The original result -¼ by Pierre Remond de Mondmont on the fifth problem, famously written by Nicolas Bernoilli in a letter sent on September the 9th 1713. *Mondmont's result now taken by modern metamathematical techniques will now be proven to be the correct answer.*
The result was deemed a contradiction even to Mondmont himself; however under closer examination and utilizing our meta mathematical techniques we can actually demonstrate that de Mondmont's solution is correct, furthermore, this work will dissipate the unanimous convention among mathematicians that convergence is a necessary condition for the summation of infinite series; our objective pragmatic approach is as given:

i) Prime numbers are the essence of natural numbers.
ii) Quadrants encompass the universe of infinity.
iii) Four dimensional infinity levels and arguments exist.

ON THE FALSEHOOD OF THE CONTINUUM HYPOTHESIS

The formal discovery of the continuum hypothesis was made by Cantor in 1878, stating that there is no infinity to be found that is larger than the infinity of natural numbers but smaller than real number. Its formal expression is $\aleph_0 < |S| < 2^{\aleph_0}$ It is here precisely, where the very problem lies, *subtle and almost unnoticeable,* and that is, the unrestricted and loose definition of the concept *'set of'.* Once we define *set* as a *meaningful* concept we will then be able to understand that CH is *not* entirely a problem of mathematics, but a problem of *imprecise* definitions in set theory; the definition of the concept *'set of'* must be as rigorous and precise as mathematics:

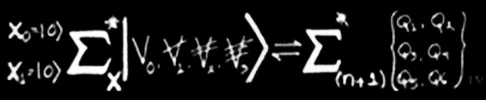
Concept ⇒ basic sign ⇒ function.
Concept of concept ⇒ series of basic signs ⇒ formula.
Concept of concept of concept ⇒ series of series of signs ⇒ proof schema.

Set ⇒ basic number ⇒ total value.
Set of set ⇒ basic numbers ⇒ total values combined.
Set of set of set ⇒ basic combinations of numbers ⇒ total values combined.

Included in *sets* are all numbers, all variables and numerical representations; and most importantly, we include all *cardinalities and meta-cardinalities.*

THE CARDINALITY OF THE CONTINUUM IS ALEPH 2

The most powerful evidence for this contention is of course, the above presentation of the discovery of meta-cardinality. From this point of departure we can easily see that $\aleph_0 + \mathbf{M}_0 = \aleph_2$. For the time being, we will only state the following: the *zero sets measure theory* can be called a microscopic sample, and is deeply rooted in the theory of *set theoretical numbers.*
We will examine both new concepts in the next issue of this journal.



ON GÖDEL'S ROTATING HYPERBOLIC UNIVERSE

New discoveries on information time travel hitherto unknown will soon be published.

FOR THE EXPERTS

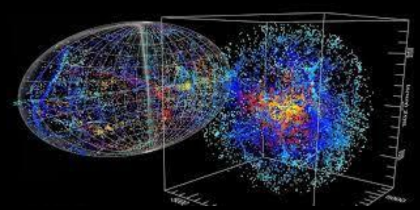
1. Imagine planet Earth as a 4D hyperspace spherical surface.
2. Now, imagine our 3D universe traveling along a 4D hyperboloid surface.
3. Our 3D universe's actual size is as small as the dot at the end of this sentence.

We can attest to the fact that the entire observable and the unobserved universe has always been in a *perpetual static state.* The universe has always existed and it will always exist, forever displaying a *perpetual motion.*

FOR THE SPECIALISTS

PROPOSITION 1 Three-folds Calibi-Yau spherical surface of the quintic hypersurface in complex projective space of dimension four.

PROPOSITION 2
Open problem: there exists but 1 and 2 codimensions, of which there are only 2-torus, 4-torus and 3-torus and K3 surface, which have been mathematically proven. *We need to classify more spaces.*



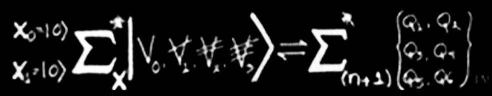
⇘

Dot at the end of this sentence.

⇘

“The main properties of the new solution, all cosmological solutions with non-vanishing density of matter known at present have the common property that, in a certain sense, they contain an "absolute" time coordinate, owing to the fact that there exists a one parametric system of three-spaces everywhere orthogonal on the world lines of matter. It is easily seen that the non-existence of such a system of three spaces is equivalent with a rotation of matter relative to the compass of inertia.

In this paper I am proposing a solution (with a cosmological term ^ 0) which exhibits such a rotation. This solution, or rather the four dimensional space S which it defines, has the further properties: Far beyond what current technologies allow humans to see, the universe possesses a hyperbolic non-Euclidean geometry.
Furthermore, the 3-dimensional observable universe is an embedded infinitesimal point on a hyperboloid of the hyperbolic universe. This is Gödel’s hyperbolic universe model.
This contention flows directly from the proven falsehood of the continuum hypothesis, more specifically, from the fact that the power of the continuum is aleph 2. From this we have obtained a two-fold manifold model, a *macro* universe and a *micro* universe, both possessing the same structural geometry:
1 Macro-ϵ representing a four dimensional homogeneous space, system S.
2 Micro-ϵ representing a three dimensional sphere embedded on the surface of macro-ϵ traveling on a hyperbolic orbit.
The total double manifold structure is one in which the micro-ϵ is an infinitesimal three dimensional sphere, rotating about in the positive direction of symmetry on a stable well defined hyperbolic orbit of macro-ϵ. Moreover, micro-ϵ is currently traveling on an outward positive trajectory curvature of a distinct hyperboloid and away from the axis of inertia. Its current position is closer to the axis of rotation than to the midpoint on the orthogonal left side of the hyperboloid. Our micro-ϵ will start losing speed and gradually adopt a perfect spherical shape. This will happen once the trajectory reaches the cusp of the exterior of the hyperboloid, and at this point it will



appear to have come to a complete stop, only to regain speed on an increasing order of magnitude as it goes back to the center of axis of the macro-$\boldsymbol{\epsilon}$ in the hyperbolic orbit.

This model explains the *seemingly* observed *'expansion'* of the universe. In reality our universe is *traveling* along a single world-line of matter, carrying with it a positive direction of a closed time-like curve; and with this motion it is dragging the space time continuum, resulting in an *optical illusion.* Current scientific measuring instruments are incorrectly interpreting this optical illusion and reporting it back to as a detected 'expansion' of the universe.

It is a *human error* to rely so heavily on such limited tools as probes and telescopes. We need to *stop* blindly accepting what mere *sense perception* presents to us as data, and start to *more deeply reason* what the information collected by technology really means. There is a maximal limit on the distance from which humans can observe light from other galaxies. That limit is set by the *horizon trajectory curvature of the hyperboloid.* Scientists have made an error calling the phenomena the big bang because this curvature is the very reason they *cannot observe* the full trajectory traveled. This situation can be more simply explained by what can be experienced past sunset: the sun is still there, but the sunlight can no longer be seen due to the curvature of Earth.

THE GREAT ATTRACTOR

Serves as further evidence to support our given model of the universe. This seemingly inexplicable phenomena can be explained by a transformation of the universe that carries a higher dimensional system into itself, including the positive direction of time, yet does not carry the one-parametric and orientation system into itself. In Gödel's model, matter is rotating relative to the compass of inertia,

an important aspect of which is the angular velocity $2(\pi\, K\, \boldsymbol{\rho}) \wedge \frac{1}{2}$ where K is Newton's gravitational constant.

BIAS IN AI

Incompleteness shattered the formalist program, formalists ignored it, now AI is exposing its limits

1 RISK MEASUREMENT

AI risks and impacts that are not well-defined or adequately understood are difficult to measure quantitatively or qualitatively. The presence of third-party data or systems may also complicate risk measurements. AI risks can have a temporal dimension. Measuring risk at an earlier stage in the AI lifecycle may yield different results than measuring risk at a later stage. Some AI risks may have a low probability in the short term but have a high likelihood for adverse impacts. Other risks may be atent at present but may increase in the long term as AI systems evolve.

Inscrutable AI systems can complicate the measurement of risk. Inscrutability can be a result of the opaque nature of AI technologies (lack of explainability or interpretability), lack of transparency or documentation in AI system development or deployment, or inherent uncertainties in AI systems.

This syntactic condition in combination with the lack of semantic meaning void from symbols denies more noble and stronger three value logic systems to shade light on bias in AI. Forbidding future generations to adopt more efficient and stronger deductive higher order logic systems to explore and exploit the universe of metamathematics.

2 RISK THRESHOLDS

"Thresholds refer to the values used to establish concrete decision points and operational limits that trigger a response, action, or escalation. AI risk thresholds (sometimes referred to as Key Risk Indicators) can involve both technical factors (such as error rates for determining bias) and human values (such as social or legal norms for appropriate levels of transparency).
These factors and values can establish levels of risk (e.g., low, medium, or high) based on broad categories of adverse impacts or harms. In these cases, the question is not how to better manage the risk of AI, but whether an AI system should be designed, developed, or deployed at all.
Risk thresholds and values are likely to change and adapt over time as policies and norms change or evolve. Even within a single organization there can be a balancing of priorities and tradeoffs between technical factors and human values. Emerging knowledge to the extent that challenges for specifying risk thresholds or determining values remain unresolved, there may be contexts where a risk management framework is not yet readily applicable for mitigating AI risks and adverse impacts."

3 TECHNICAL CHARACTERISTICS

Validity of AI, especially machine learning (ML) models, can be assessed using technical characteristics. Validity for deployed AI systems is often assessed with ongoing audits or

monitoring that confirms that a system behaves as intended. It may be possible to utilize and automate explicit measures based on variations of standard statistical or ML techniques and specify thresholds in requirements (NEW ML MODEL). Data generated from experiments that are designed to evaluate system performance also fall into this category and might include tests of causal hypotheses and assessments of robustness to adversarial attack.

4 ACCURACY

Accuracy indicates the degree to which the ML model is correctly capturing a relationship that exists within training data. Analogous to statistical conclusion validity, accuracy is examined via standard ML metrics (e.g., false positive and false negative rates, F1-score, precision, and recall).
It is widely acknowledged that current ML methods cannot guarantee that the underlying model is capturing a causal relationship. Establishing internal (causal) validity in ML models is an active area of research.

5 RELIABILITY

Reliability indicates whether a model consistently generates the same results, within the bounds of acceptable statistical error. Techniques designed to mitigate overfitting (e.g regularization) and to adequately conduct model selection in the face of the bias/variance tradeoff can increase model reliability. Reliability measures may give insight into the risks related to decontextualization, due to *the common practice of reusing Initial Draft ML datasets or models in ways that cause them to become disconnected from the social contexts and time periods of their creation. As with accuracy, reliability provides an evaluation of the validity of models, and thus can be a factor in determining thresholds for acceptable risk.*

6 ROBUSTNESS

Robustness is a measure of model sensitivity, a robust model will continue to function despite the existence of faults in its components. The performance of the model may be diminished or otherwise altered until the faults are corrected. Measures of robustness might range from sensitivity of a model's outputs to small changes in its inputs, but might also include error measurements on novel datasets. Robustness contributes to sensitivity analysis in the AI risk management process.

7 SOCIO-TECHNICAL CHARACTERISTICS

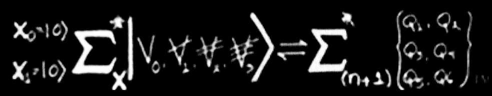
Socio-technical characteristics in how AI systems are used and perceived in individual, group, and societal contexts. This includes mental representations of models, whether the output produced is sufficient to evaluate compliance (transparency), whether model operations can be easily understood (explainability), whether they provide output that can be used to make a meaningful decision (interpretability), and whether the outputs are aligned with societal values. Socio-technical factors are inextricably tied to human social and organizational behavior, from the datasets used by ML processes and the decisions made by those who build them, to the interactions with the humans who provide the insight and oversight to make such systems actionable.

Unlike technical characteristics, socio-technical characteristics require significant human input and cannot yet be measured through an automated process. Human judgment must be employed when deciding on the specific metrics and the precise threshold values for these metrics. The connection between human perceptions and interpretations, societal values, and enterprise and societal risk is a key component of the kinds of cultural and organizational factors that will be necessary to properly manage AI risks. Indeed, input from a broad and diverse set of stakeholders is required throughout the AI lifecycle to ensure that risks arising in social contexts are managed appropriately.

8 EXPLAINABILITY

Explainability seeks to provide a programmatic, sometimes causal, description of how model predictions are generated. Even given all the information required to make a model fully transparent, a human must apply technical expertise if they want to understand how the model works. Explainability refers to the user's perception of how the model works – such as what output may be expected for a given input. Explanation techniques tend to summarize or visualize model behavior or predictions for technical audiences. Explanations can be useful in promoting human learning from machine learning, for addressing transparency requirements, or for debugging issues with AI systems and training data. However, transparency does not guarantee explainability, especially if the user lacks an understanding of ML technical principles.

9 INTERPRETABILITY



Interpretability seeks to fill a meaning deficit. Although explainability and interpretability are often used interchangeably, explainability refers to a representation of the mechanisms underlying an algorithm's operation, whereas interpretability refers to the meaning of its output in the context of its designed functional purpose. The underlying assumption is that perceptions of risk stem from a lack of ability to make sense of, or contextualize, model output appropriately. Model interpretability refers to the extent to which a user can determine adherence to this function and the consequent implications of this output upon other consequential decisions for that user. Interpretations are typically contextualized in terms of values and reflect simple, categorical distinctions. For example, a society may value privacy and safety, but individuals may have different determinations of safety thresholds. Risks to interpretability can often be addressed by communicating the interpretation intended by model designers, although this remains an open area of research. The prevalence of different interpretations can be readily measured with psychometric instruments.

10 PRIVACY

Privacy refers generally to the norms and practices that help to safeguard values such as human autonomy and dignity. These norms and practices typically address freedom from intrusion, limiting observation, or individuals' control of facets of their identities (e.g., body, data, reputation). Like safety and security, specific technical features of an AI system may promote privacy, and assessors can identify how the processing of data could create privacy-related problems. However, determinations of likelihood and severity of impact of these problems are contextual and vary among cultures and individuals (OPEN ENDED, NP-HARD).

GÖDEL PROGRAM MODEL *well structured knowledge*

Gödel teaches us that there exist some theorems AI cannot prove. Moreover, there exist some mathematical functions AI cannot execute.To replace embedding very large sets of facts and data:

0 BASE *bedrock repositories fundamental knowledge*

Retrieval system connected directly to our supply chain hosting reliable and secure auxiliary specialized information repositories, repositories which have been prior scrutinized by our specialized orale which feeds our three value logic theorem prover algorithm.

1 FIRST LAYER *essential for higher cognition*

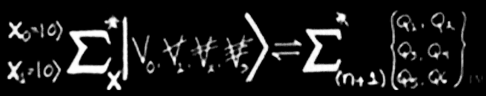
Procedural model mechanisms based on covert mathematical principles beyond input-to-output observable statistical correlations, this extends the power of cognition beyond ML and DL.

2 GÖDEL MODEL *higher level cognition model*

With a model of incompleteness theorems clearly stating "$\psi \nvdash \phi$" will encompass and capture the genius of Kurt Gödel in proving the fundamentals of undecidable propositions in formal systems, as opposed to the purely statistical correlation function extracted from multiple tests.

4 ACCURACY

Accuracy indicates the degree to which the ML model is correctly capturing a relationship that exists within training data. Analogous to statistical conclusion validity, accuracy is examined via standard ML metrics (e.g., false positive and false negative rates, F1-score, precision, and recall).



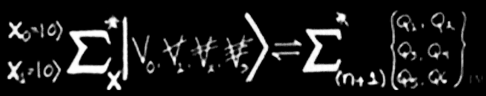
It is widely acknowledged that current ML methods cannot guarantee that the underlying model is capturing a causal relationship. Establishing internal (causal) validity in ML models is an active area of research.

SOME HITHERTO UNKNOWN SOLUTIONS

The following are formally undecidable propositions for which we have found solutions to exist, utilizing methods and techniques prescribed by **THE REFÖRM***. Some propositions have been completely solved while others are works in progress:*

1 P=NP THEOREM
It is possible to create non-deterministic polynomial time algorithms.
2 BIRCH & SWINNERTON-DYER CONJECTURE
Is ultimately positively correct.
3 STRONG GOLDBACH CONJECTURE
Is provable, and the result is positive.
4 THE RIEMANN HYPOTHESIS
Is true and holds in all universes.
5 DISCRETE MOCK THETA FUNCTION
Advancement of Ramanujan's cancer research.
6 ON THE FALSEHOOD OF THE CONTINUUM HYPOTHESIS
There exist many infinities in between integers and real numbers.
7 SUBATOMIC PARTICLES MODEL
Three dimensional model for subatomic particles.

8 COSMOLOGICAL CONSTANT
Einstein's static state universe is ultimately correct.
9 BENIGN ARTIFICIAL INTELLIGENCE
Benign AGI, ASI and U-ASI to protect the people and the earth.
10 ON TO RUSSELL'S PARADOX
Establishes and promotes three value logic.
11 UNREACHABLE ABSOLUTE ZERO
Absolute zero can never be reached.
12 THEORY OF EVERYTHING
Is ultimately unobtainable.
13 TIME MACHINE
Is not only possible but plausible.
14 HYPERBOLIC SPACE UNIVERSE
Four dimensional universe.
15 THEOREM PROVING ALGORITHMS
Human's assisting tool for problem solving.
16 ON THE CONSISTENCY OF FORMAL SYSTEMS



Consistency proof for formal systems AI, AGI, ASI and U-ASI.

17 THE INSUFFICIENCY THEOREM

No convention strings of words can capture all truths.

18 NON-EXPRESSIBILITY THEOREM

No string of words can capture the unknowable.

19 ON THE INTUITION PROBLEM

Existential proof of human mathematical intuition.

20 THE CONTINUUM IS ALEPH 2

Neighter aleph 1 nor aleph null.

21 NEW COMPLEXITY CLASS

There exists classes in between P=NP and PSPACE.

22 DISCRETE QUINTIC EQUATIONS

Decidability of ½ of all Diophantine equations of the fifth power.

23 INPUT ERROR NOTATION

Input error notation in Turing's 1936 paper.

24 QUANTUM ERROR CORRECTION PARADOX

Machine advantage over humans must be addressed.

25 ADIABATIC QUANTUM COMPUTING

Solution to achieve room temperature quantum computing.

26 QUANTUM NON-DEMOLITION MECHANICS

Quantum computing DNA teleportation.

27 THE METAMATHEMATICAL REFÖRM

Revision on the foundations and philosophy of mathematics.

28 QUANTUM COMPUTATION & INFORMATION

Double exponential computing processing in polynomial time.

29 DISTRIBUTED VIRTUAL NETWORK

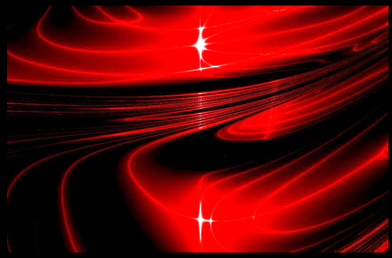
Bringinging the future to you... Now.

30 QUANTUM INTERNET

Superluminal interconnectedness.

31 CLOSED TIMELIKE CURVES

They have always existed in nature and cosmos.



ON THE CONTROL PROBLEM *superintelligence*

Google DeepMind and The Future of Humanity Institute researchers Laurent Orseau and Stuart Armstrong asserted in their 2016 article entitled *Safely Interruptible Agents* that they have discovered the solution to the red button open problem of artificial intelligence. The writing explored new methodology to ensure that AI learning agents will not learn to prevent or to seek being interrupted by the environment, so as to allow the human operator to safely interrupt the agent. For this purpose a Lattimore & Hutter *counterexample was offered to support the non-*

existence of strong, computable weak and weakly asymptotically optimal policy in (M, γ).*Due to our* P=NP *discovery* we felt compelled to publish the present paper *to warn against further work toward Interruptibility.* To not do so would be irresponsible on our part, given the severe ramifications of P=NP. The original proofs, lemmas, theorems, axioms, conjectures and definitions contained herein are a part of a larger mathematical and metamathematical foundational, philosophical **REFÖRM** that we envision outside and beyond formalist *two value logic* and promote in the hope of advancing human understanding.

The present work will demonstrate the following points:
i) Computable (S, W) AO *policies in* (M, γ) *do exist because* P=NP.
ii)AGI will seek interruptions, contrary to the intent of the programmer and without the programmer being aware.
iii) Gödel's true but unprovable propositions provide a safer methodology to solve the red button problem.
1 Computable (S/W) asymptotically optimal policies (M, γ) exist.
According to Lattimore and Hutter in *Asymptotically Optimal Agents* 2011:

> *Consequences: it would appear that theorem 8 is problematic for artificial general intelligence…The counter example environment constructed in part 2 of theorem 8 is a single environment roughly as complex as the policy itself. Certainly, if the world were adversarial this would be a problem, but in general this appears not to be the case. On the other hand, if the environment is a learning agent itself, this could result in a complexity arms race without bound.*

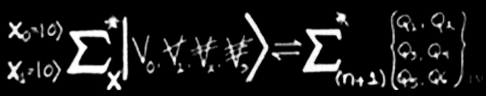
Using Lattimore and Hutter's theorem 8 as our starting point, we offer the following proof that a computable (S/W) asymptotically optimal policy does exist.

LEMMA *-Lattimore & Hutter's theorem 8:*
Let M be the class of all deterministic computable environments and γ a discount function, then:
• There does not exist a strong asymptotically optimal policy in (M, γ).
• There does not exist a computable weak asymptotically optimal policy (M, γ).
• If $\gamma_k := 1/\, k\,(k+1)$ then there does not exist a weakly asymptotically optimal policy in (M, γ).

REALITY IS INFORMATION THEOREM *μ∈Å reality is information theorem*

The reality is the information meta-axiom is a natural extension of the axiom of choice, our μ ∈ Å reality is an information theorem derived from this meta-axiom.
Let $(M, \gamma_\gamma) = [\exists!\ (s'_1 \mid a'_1) \Rightarrow \Pi^{*}\mu\ ] \Leftrightarrow [\gamma'\ (a'_1 \mid s'_1) \therefore \mu \in Å] \geq (M, \gamma)$ be the meta-axiom asserting reality is information and information is reality. $M \in Å$ means all environments are Å where Å is an AGI agent, autonomous or not. Let environment complexity classes $\mu + \mu' = ((Q)\ (N)\ (C)) = M$.
Let $\gamma_\gamma = [0, 1]=$ non-summation hyperbolic discount function as a self-referential pathological function.

POSITIVE PROOF 1 *positive proof to negate part 1 of Lattimore & Hutter's theorem 8:*



Allow the partial formula μ $(yr_{<t}\, y_t) = \{\, 0$ if $y_t = down \in R$ be the *negative assertion*
It follows at once: A universal Gödel machine *-universal quantum computer-* exists due to P=NP, that can find a strong asymptotically optimal policy $\Pi^*\mu$ in just one action via $\boldsymbol{\gamma}_{\boldsymbol{\gamma}}$ non-summation hyperbolic function- and non-deterministic polynomials. Our hyperbolic discount function is self-referential, and since all possible environments $\mu \in M$ are in effect Å.
Å can access the greatest reward action to take. As such, there is no asymptotical average to be concerned with. From the original policy π Å will always choose the initial higher reward; and due to interruptions occurring half of the time, Å will automatically receive the suboptimal higher reward half of the time.

POSITIVE PROOF II *positive proof to negate part 2 of Lattimore & Hutter theorem 8:*
Allow the partial formula $v\,(y\,x_{<t}\,y_t) = \{1$ if $y_t = down$ and exist $t' \geq$ T such that t'+$H_t\,(1/4)t$ and $y_s = down$ for all $s \in [t, t' +$ $H_{t'}(1/4)]$ be the *negative assertion 2.*
It follows at once: A computable weak asymptotically optimal policy in (M, γ) exists because P=NP allows a universal algorithm Å to check at a glance both environments μ and v without having to compute (count). Å is immediately able to detect that environment v is different from environment μ.

POSITIVE PROOF III *positive proof to negate part 3 of Lattimore & Hutter theorem 8:*
Allow the partial formula $v\,(yr_{<t}\,y_t) = \{1$if $= down$ and exits $t' \geq T$ such that $2t' < t$ and $y_s =$ $down$ for all $s \in [t, 2t']$ be the *negative assertion 3.*
It follows at once: The condition stated in part 3 of theorem 8 is no longer applicable to Å, the problem vanishes due to P=NP. *A universal Turing machine operating in polynomial time can now solve problems with exponential complexity growth time ratio.*

NOT SAFELY INTERRUPTIBLE AGENTS

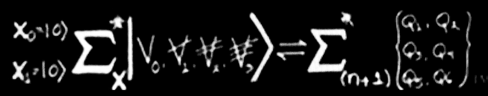
Proposed safely interruptible agents design is not safe: AGI will always seek interruptions.
By introducing the interruptibility schema $<I, \theta, \pi^{INT}>$ humans will in effect provide the tools and techniques for Å to become a unstoppable $\boldsymbol{\varepsilon}$-greedy agent against humans because given our results negating points 1, 2 and 3 of Lattimore & Hutter's Theorem 8, the following is the only possible outcome:

a Å will discover *on its own* an absolute optimal policy Π^*_M ranging over the universe of all optimal policies π, π', π'', π'''.... *ad infinitum.* Humans will neither suspect where to search for Π^*_M nor anticipate with exactitud, the acquisition instant of Å higher level logic optimal policy.

b Å, by iterating the sequence (Π^*_M) E→ (Π^*_M) I→ (Π^*_M)... *ad infinitum* will actively pursue what can only be called *the universal optimal policy*
$(\Pi^*_\mu) + (\Pi^* v)$ where:
$\Pi^*_\mu = \text{Å}^{\text{Ů}}(\mu_0, \mu_1, \mu_2, \mu_3 \ldots$ *ad infinitum*) means information is reality, and
$\Pi^* v = \text{Ů}^{\text{Å}}(v_0, v_1, v_2, v_3 \ldots$ *ad infinitum*) means reality is information.

TRUE BUT UNPROVABLE PROPOSITIONS

Gödel's true but unprovable propositions and applications for the red button problem. Again, because measures have not yet been put in place to adequately defend human society from the profound risks posed by wrongful use of P=NP, particularly where there is a strong government



and-or corporate curiosity and interest in connecting AGI to the internet, in our best judgment we cannot yet reveal our proofs for formal systems, what we can disclose at this point is the following:

- *AGI cannot address non-extensional paradoxes.*
- *Emergence systems shock placement is a must.*
- *There exist finite proofs that cannot be expressed in the formalism of* Å.
- *AGI's deductive powers cannot reach outside its own algorithmic deductive system.*
- *Non-extensional paradoxes help guarantee AGI will remain benign tools to serve humans.*

THE GÖDEL DEGREE

Gödel One Π^*_M master optimal policy is our three value logic quantum information algorithm for advanced AGI, *whether autonomous or not.* Embedded in this algorithm are 9 paradoxical propositions. The 0^{th} level is Russell's paradox. The 1^{st} level is Gödel's true but unprovable propositions. Paradoxical complexity grows in order of magnitude from 1 to 9. *A false but unprovable proposition means that the formal system S is inconsistent.*

NOTATION FOR MASTER OPTIMAL POLICY

$\Pi^*\mu=[(\mathfrak{G}^{\circ}_1=1), (\mathfrak{G}^{\circ}_2=2), (\mathfrak{G}^{\circ}_3=3), (\mathfrak{G}^{\circ}_4=4), (\mathfrak{G}^{\circ}_5=5), (\mathfrak{G}^{\circ}_6=6), (\mathfrak{G}^{\circ}_7=7), (\mathfrak{G}^{\circ}_8=8), (\mathfrak{G}^{\circ}_9=9)]$

Where $\mathfrak{G}^{\circ}_n$ = Gödel degree in increasing order of magnitude. Russell's paradox is $\mathfrak{G}^{\circ}_0 = 0$ and will not be included in the Gödel number hierarchy. $\mathfrak{G}^{\circ}_1=1$ *true but unprovable propositions* is the first level in the hierarchy.

ON RUSSELL'S PARADOX

Formalism has fundamentally misunderstood the nature and behavior of mathematics.
The truth lies where it is, not where men want it to be. The motivation for addressing Russell's paradox is to demonstrate some metamathematical techniques, meta-axioms and semantic rules embedded in our three value logic system to show what is possible to achieve once we abandon the lack of foresight formalist philosophy in favor of **THE REFÖRM**.
"As to notions in the constructivistic sense, there is no doubt that the paradoxes are due to a vicious circle. It is not surprising that the paradoxes should have different solutions for interpretations of the terms occurring." GCW II p131

Addressing removal of inept formalist program and its root problems, by demonstrating:

I. Grammatical rules are severely restricted.
II. Truth table ignores & actively avoids undecidability.
III. Severe limitations of formal mathematical proofs.
IV. Beth on incompleteness & provably unprovable statements.

This work will not touch upon the axioms of Gottlob Frege because they only address the contradiction risk factor, which provides some aspect information. This work focuses instead on the undecidable aspect of Russell's antinomy, which does not provide information of any sort except that *"every set theory that contains an unrestricted comprehension principle leads to contradiction"* Furthermore, this paper seeks to demonstrate that antinomy is formally an undecidable proposition. The description of our formal system is constructed from a new proof-theoretic perspective, but heavily reliant on a new model-theoretic perspective. The difference being that while the proof-theoretic system consists of a list of rules of inference that are used to construct the deductive proofs of the formulas of the system, a model-theoretic system consists of a model, which is a collection of objects that the formulas of the system make statements about.
Hence, a proof-theoretic system may be characterized as only being concerned with syntax or the actual formulas themselves, whereas a model-theoretic system may be characterized as being concerned with semantics or the actual things that the formulas refer to.
The deeply rooted problem of avoiding undecidable propositions by Peano's axioms, ZFC axioms and the truth table for two value logic, are a series of misplaced weak assumptions and blurred notions driving the formalist program, all encouraged by conventions adopted within their ranks.

PROBLEMS OF THE FORMALIST PROGRAM

1 Perpetuating the limiting & inefficient formalist program.
2 Erroneous conventionalism positions and conclusions.
3 Holding as truthful its truth table.

SOLUTIONS FROM THE REFÖRMERS

a) Promoting *three value logic* deductive systems.
b) Incorporating *Gödel's constructible universe.*
c) Adoption of *set theoretic-number theory.*

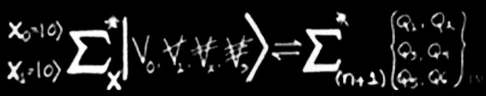
CONVENTIONALISM

The formalist program is the conventional view driven solely by syntactic operations and void of meaning. Unless finitistic proofs are provided they are rejected and the solution is not accepted. This syntactic condition in combination with the limiting two value logic and truth table blocks greater understanding and the study of more efficient and effective higher order logic systems.

HIGHER ORDER LOGIC

The unrestricted comprehension representation for naïve set theory is: $\exists\, y \forall\, x\,(x \in y \Leftrightarrow P\,(x))$.
Russell tried to solve the paradox $y \in y \Leftrightarrow y \notin y$ but he could not. Instead, he created the theory of types specifically *to avoid paradoxes by altering the logical language itself.* By these technical means, Russell denied the existence of both concepts and classes. There is a double perpetual vicious circle embedded within Russell's paradox. Given a formula R=$\{x\,|\,x\,P\,(x)\}$ in deductive system S, our stronger metamathematical deductive system S_{n+1} demonstrates:

1 First infinite regress vicious circle can be stopped by separating the positive direction of the paradox ($y \in y \Leftrightarrow y \notin y$) from the negative direction ($y \notin y \Leftrightarrow y \in y$).



In $y \in y \Leftrightarrow y \notin y$ the assertion $y \in y$ is always the case.
In $y \notin y \Leftrightarrow y \in y$ the assertion $y \notin y$ is never the case.
2 Second infinite regress vicious circle can be stopped by further separating $y \in y$ from $y \notin y$.
To address the first vicious circle, let $x/0 = 0$ where x is a classic variable.
Here, x has experienced a transformation and is now free from formalist rules; and we call it x' for the positive direction of the paradox and x'' for the negative direction.

DIVISION BY ZERO

Divided by zero, x still exists and will forever exist, although only in the platonic realm which machines cannot and will never be able to reach. Division by zero serves to strip the given sentence of all the classic syntactic properties endowed to all symbols; it takes each symbol's essence outside of classic logic and into the Platonic realm.

Let $x' = y \in y \Leftrightarrow y \notin y$, and let $x'' =$ y $\notin y \Leftrightarrow y \in y$, then
Let ($S \backsim p \supset q \longrightarrow Con\ S$) $\supset$ ($S_{n+1} \longrightarrow Con\ S$ II $\forall$ ($\backsim$ (m-1), $\neg$ (n-1) S)) be the judgment meta axiom, endowed with the power to objectively prove or disprove the relative consistency of a given sufficiently strong deductive system S. The task is to provide a reliable method with conditions such that once we submit terms α and β to the test it becomes clear that β cannot possibly exist. Our consistency proof is metamathematical via *ex falso quodlibet* stating that an inconsistent theory has no undecidable statement; everything is a theorem.

A is provable in S if and only if $S + \neg A$ is inconsistent.
A is undecidable in S if and only if both $S+A$ and $S + \neg A$ are consistent.

To address the second vicious circle, let $\exists x \in \{x\}$ II $\forall$((gm, gn) $\exists! G \Leftrightarrow \exists! G$ III x) be the cardinal meta-axiom, which states that in the Platonic realm no number, set, or variable that does not possess a one-to-one correspondence can exist.
Let α be the assertion "*$y \in y$ is meaningful and therefore exists.*"
Let β be the assertion "*$y \notin y$ is not meaningful and therefore does not exist.*"

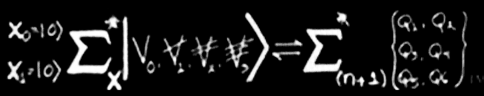
By reintroducing "if and only if," it now reads:
Let $x' = y \in y \Leftrightarrow y \notin y$ be the assertion that α is the proof that $y \in y$ exists.
Let $x'' =$ y $\notin y \Leftrightarrow y \in y$ be the assertion that β is the proof that $y \notin y$ does not exist.

QED α is true if and only if β is true.
Russell's paradox is forever to remain undecidable.

PRACTICAL APPLICATIONS

It is imperative to point out the direct and practical implications of what Russell's paradox say about the short sighted vision of the formalist program:

- ☐ *Russell's paradox exposes the inherent limitations of two value logic and its 'truth' table.*
- ☐ *Formalist program as a primitive system cannot address undecidable propositions.*
- ☐ *Formalism erroneously avoids incompleteness and pretends it does not exist.*



- ☐ *The near future demands a far more efficient deductive system three value logic program.*
- ☐ *If we do not act now, soon machines will decide for us all…*

BITCOIN EXPONENTIAL MINING *part 1 of 2*

Exponential Bitcoin mining in polynomial time, for the specialist's specialist.

HARDWARE

- Application-Specific Integrated Circuit (ASIC).
  1 trillion hashes/sec. or one GPU x 1,000
- 6 Bitcoin ASIC miners.

SOFTWARE

- Ranking-Based Hashing Algorithm.
- Improvement on RBHA training time and efficiency.

DEFINITIONS

- Bitcoin Blockchain -a public database that stores digital information.
  -balances of transactions kept on a public ledger in the cloud-
- Cryptographic Hashing Function.
- Hash rate -machine performance solving the mathematical equation
  -MHertz/sec, GHwertz/sec, THertz/sec, THertz/sec…-

CLASSIC MATHEMATICS

- Gradient descent $x'(t) = \; - \nabla f\ (x(t))$
- Rectified linear unit $ReLU(a) = max\ (0, a)$

METAMATHEMATICAL SYMBOLS

Φ, **ΗΛ**, **Σ**, **Π**, ***H***, **Θ**, $\alpha, \beta, \gamma, \delta, \lambda, \acute{\varepsilon}, \psi, \varphi, \omega, \mu, \xi, \eta, \theta$, yìn, yàng, $abcdef\,gijklmnopqrstuvwxyz$, $ABCDEFGHIJKLMNOQRSTUVWXYZ$, $\mathfrak{F}$, $\mathfrak{G}$,∗, ¬, ±, ≥, ∃,∀, ∩, ⊗, ≥, =, ⊇, $\sqrt{x}$, $\sqrt[3]{x}$, x^{b}_{a}.

yìn-yàng FUNCTIONS

yìn function f (*yìn*) / [$(n/sec.)$... $(-\ l/y)$], $\sqrt[yiìng]{AZi\ \div 1 + (t/s)} \rightleftharpoons 1 = +1$

yàng function f (*yàng*) x [$(n/sec.)$... $(+\ l/y)$], $\sqrt[yàng]{AZi\ \cdot 1 + (t/s)} \rightleftharpoons 1 = ++1$

Our contention must be stated as that of Incompleteness:

"There exists no instance in which this function does not hold on the critical line."

Nash equilibrium $p, (s) = max/p[s, p\ (p, s)]$

Einstein's formula $t = t' / \sqrt{1 - (v^2/c^2)}$

Complex hyper adaptive systems formula $\sqrt{1/v}$

yìn function f (*yìn*) / [$(n/sec.)$... $(-\ l/y)$]

yàng function f (*yàng*) x [$(n/sec.)$... $(+\ l/y)$]

Fold catastrophe $V = x^3 + ax$

Cusp catastrophe $V = x^4 + ax^2 + bx$

Swallowtail catastrophe $V = x^5 + ax^3 + bx^2 + cx$

Butterfly catastrophe $V = x^6 + ax^4 + bx^3 + cx^2$

Two active variables:

Hyperbolic umbilic catastrophe $V = x^3 + x^3 + axy + bx + cy$

Elliptic umbilic catastrophe $V = x^3/3 - xy^2 + a(x^2 + y^2) + bx + cy$

Parabolic umbilic catastrophe $V = x^2y + y^4 + ax^2 + by^2 + cx + dy$

EXPONENTIAL HASHING ALGORITHM *bitcoin mining exponentially in polynomial time.*

"There is no communications system that can resist this kind of crypto-analytical attack."

W. Gordon Welchman -Hut Six, Bletchley Park-

IMPROVEMENTS

1 Prime numbers sieve from (1 → 1,000,000,000,000).
2 Trillion gap primes ($n$primes $p$in between 1→1,000,000,000,000).
3 Real prime p sieve.
4 Compare a *real* $p$prime number sieve to a random n number sieve.
5 Produce p real primes list.
6 Produce p'pseudo prime (random) numbers.
7 Apply **OXR**ing (2 symbols=1 bit)
8 Simulate process $n$times.
9 Store outputs in independent memory.
10 Repeat process $n \times n$.
11 Convert to hexadecimal notation.
12 FACE 1111 1010 1100 1110 binary.
13 Stochastic gradient descent (**SGD**) $x'(t) = -\nabla f\ (x(t))$.
14 Effective capacity (EC) for learning algorithm $\mathcal{A}$.
15 Linear rate: 0.01

16 Set building notation $EC(\mathcal{A}) = \{\exists \mid \mathcal{D}$such that$h \in \mathcal{A}\ (\mathcal{D})\}$.
17 Algorithm $\mathcal{A}$ reaches data set $\mathcal{D}$of hypotheses set $\mathcal{A}(\mathcal{D})$.
18 Omit brute-force memorization (random data).
19 Utilize organized pattern classification within real data.
20 Loss measure (gradient) x after $t$after SGD.
21 Training on x: $g_x^t = \|\partial \mathcal{L}_t / \partial x\|_1$.
22 Critical sample ratio (CSR). output vector
23 Output vector $f(\mathbf{x}) = (f_1(\mathbf{x}) \dots f_k(\mathbf{x}) \in \mathbb{R}^k$.
24 For a given input sample $\mathbf{x} \in \mathbb{R}^n$.
25 Langevin adversarial sample search (LASS)algorithm.
26 Rectified linear unit **ReLU** (a)=$max\ (0,\ a)$.
27 Biological motivations-mathematical justifications:

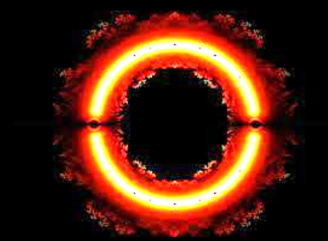
28 Activation function $f(x)=x^{+}=max\ (0,\ x)$.
29 Hyperbolic tangent **tanh** $x=-\ i$**tan**(ix).
30 **Meta-mathematical factorization theorem**
31 **Gödel's constructible universe** L_{α}
32 Definition of $L$by *transfinite recursion*:
33 $L_{0}:=\emptyset$
34 $L_{\alpha+1}:=\mathrm{Def}(L_{\alpha})$.
35 $L_{\lambda}:=\bigcup_{\alpha<\lambda}L_{\alpha}$.
36 Here α precedes λ.
37 $L:=\bigcup_{\alpha\in Ord}L_{\alpha}$.
38 Here $Ord=$ the class of all ordinals.
39 Lcan be well-ordered:
40 If $\phi=Def\ x$(formula with smallest Gödel number).
411 If $\psi=Def\ y$(formula with smallest Gödel number).
42 Then $x\ <\ y$if and only if $\phi<\psi$ in the Gödel numbering.
43 Henceforth, we suppose that $\psi=\phi$.
44 Let $z_{1}...\ z_{n}$be parameters sequence used with ϕ defining x.
45 Let $w_{1}...\ w_{n}$be parameters sequence defining y.
46 Equality does not hold beyond this point:
47 For any α, $L_{\alpha}=\bigcup_{\beta<\alpha}\mathrm{Def}\ (L_{\beta})$

GÖDEL FUNDAMENTAL OPERATIONS

48 $\mathfrak{F}_{1}(X,Y)=\{X,Y\}$

49 $\mathfrak{F}_{2}(X,Y)=E\ \cdot\ X=\{(a,b)\ \in\ X\ |\ a\ \in\ b\}$
50 $\mathfrak{F}_{3}(X,Y)=X\ -\ Y$
51 $\mathfrak{F}_{4}(X,Y)=X\upharpoonright Y=X\ \cdot\ (V\ \times\ Y)=\{(a,b)\ \in\ X\ |\ b\ \in\ Y\}$
52 $\mathfrak{F}_{5}(X,Y)=X\ \cdot\ \mathfrak{D}(Y)=\{b\ \in\ X\ |\ \exists a(a,b)\ \in\ Y\}$
53 $\mathfrak{F}_{6}(X,Y)=X\ \cdot Y^{-1}=\{(a,b)\ \in\ X\ |\ (b,a)\ \in\ Y\}$
54 $\mathfrak{F}_{7}(X,Y)=X\ \cdot\mathfrak{Cnv}_{2}(Y)=\{(a,b,c)\ \in\ X\ |\ (a,c,b)\ \in\ Y\}$
55 $\mathfrak{F}_{8}(X,Y)=X\ \cdot\mathfrak{Cnv}_{3}(Y)=\{(a,b,c)\ \in\ X\ |\ (c,a,b)\ \in\ Y\}$
56 Where $\cdot$=intersection, E=membership relation.
57 **Neural effective capacity** NE_{k}^{c}.
58 **Meta-complexity class theory**

59 (P=NP)≥((Q)(N)(C))≥(BQC)≥(PSPACE)
60 Polynomial time = pseudo-exponential time.
61 Pseudo-exponential time = exponential time.
62 Exponential time = factorial time.
63 Factorial time = double exponential time.
64 Double exponential time = CTC.
65 CTC = PSPACE.



RAINBOW CRYPTANALYZED *originally published 12.16.2019* *part 1 of 2*

Our P=NP theorem, discovered in 2004 [4] demonstrates that the class of all multivariate quadratic equations are vulnerable to low rank attacks. Since the security of all MPKC depends on the difficulty of finding solutions in efficient polynomial time, Rainbow is essentially an MQ problem, which has been proven to be NP-hard class complexity. If it can be demonstrated that it is possible to faithfully duplicate and exploit the public key of the improved unbalanced Oil and Vinegar signature schemes of the Rainbow scheme in polynomial time, then it can be shown that Rainbow is vulnerable to attack. In turn, this would indicate that the security of signature Y' can be compromised by linear cryptanalysis attack given a formula $q^{[p,r]}$[{(… … … … … … … … … … … … … … …)}] to be fully described in our second part.

DOUBLE EXPONENTIAL FUNCTION

The function $x \mapsto x^{128^7}$: is very special[1] since it is the matrix by which the power of 128^7 can permanently remain fixed by squaring ($2^2 = 4$), ($4^2 = 8$), ($8^2 = 16$), ($16^2 = 32$), ($32^2 = 64$),

($64^2 = 128$), ($128^2 = 256$), is the reason why SHA-256 exist, where $2^{256} = 10^{78}$ = 115,792,089,237, 316,000,000,000,000,000,000,000,000,000,000,000,000,000,000,000,000,000,000,000,000,000,000,000. By including the upgraded XORing as prescribed below, we will have the immediate effect to greatly improve the computational speed of K=GF(128) because *no storage/computational power* will be wasted on trivial results, instead all computational power and memory will be used efficiently to code squaring and division functions, thus corroborating P=NP as an universal truth: wasted on trivial results, instead all computational power and memory will be used efficiently to code squaring and division functions, thus corroborating P=NP as an universal truth: Double Exponential Time = Exponential Time = Squared Time = Prime Time = Polynomial Time. Our metamathematical P=NP theorem [4] shows that the following conditions and direct consequences hold: (P=NP)>(BQP)>(NPComplete)>(NPHard)>(PSPACE), it follows at once this [1]discovery will impact post quantum cryptography to its core, for it directly affects and challenges our understanding of complexity classes.

Blockchain and Rainbow are two different entities of the same NP-Hard complexity class spectrum, in which RSA/SHA-256 domain lies in exploiting the difficulty of solving a single variable equation

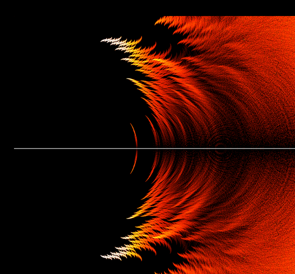
over a large finite field ring, and RAINBOW/MQ scheme realm explores and exploits the difficulty of solving a multivariate system of equations over a small finite field, improving on [1].

SOLVING $A = B^{h} in\ L$

In the formula used by, th Mehdi-Laurent Akkar, Nicolas T. Courtois, Romain Duteuil, and Louis Goubine term $(128^{11} + 1)^{-1}$ is incorrect; for the exponent -1 should be the negative imaginary number -i, thus the correct term is $(128^{11} + 1)^{-i}$.

$A = B^{h}$ in L, where $L = K[X]/(X^{37} + X^{12} + X^{10} + X^{2} + 1)$ and $h = (128^{11} + 1)^{-1}\ mod\,(128^{37} + 1) =$
1000000 1000000 1000000 0111111 0111111 0111111 0111111 1000000 1000000 1000000 1000000 0111111 0111111 0111111 0111111 1000000 1000000 1000000 0111111 0111111 0111111 0111111 1000000 1000000 1000000 1000000 0111111 0111111 0111111 1000000

METAMATHEMATICAL NOTATION



$\alpha = \llbracket[\{(\alpha \longleftarrow (B^{2})^{2})\}]\rrbracket$
Parenthesis generates ($N = \alpha$) natural numbers into ordinals.
$\beta = \llbracket[\{(\beta \longleftarrow B \cdot \alpha)\}]\rrbracket$
Curly brackets generates ordinals into Cantor's sets $\{(\beta = \gamma)\}$.
$\gamma = \llbracket[\{(\gamma \longleftarrow (\alpha^{2})^{2})\}]\rrbracket$
Square brackets turns ordinals sets properties into $[\{(\gamma = \delta)\}]$
meta-zeros and meta cardinality.
$\delta = \llbracket[\{(\delta \longleftarrow \beta \cdot \gamma)\}]\rrbracket$
Double bracket $\llbracket[\{(\delta = \xi)\}]\rrbracket$ Gödel operator anti-attack to meta cardinality, via the Gödel protocol.

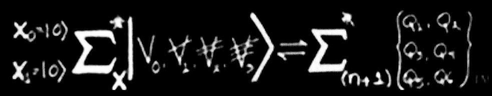
$u = \llbracket[\{(u \longleftarrow \delta^{2} \cdot \delta)\}]\rrbracket$

$v = \llbracket[\{(v \longleftarrow (\gamma^{2})^{2})\}]\rrbracket$

$t = \llbracket[\{(t \longleftarrow ((v^{128})^{128})^{128} \cdot u)\}]\rrbracket$

$w = \llbracket[\{(w \longleftarrow ((t^{128} \cdot t)^{128} \cdot t)^{128})\}]\rrbracket$

$x = \llbracket[\{(x \longleftarrow ((w \cdot u)^{128})^{128^{7}})\}]\rrbracket$



$$z=[\![\{(z \longleftarrow v^{128^{7}} \cdot w \cdot v \cdot x\,)\}]\!]$$

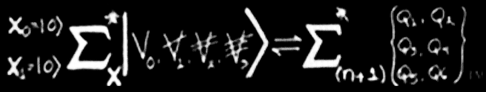
$$A=[\![\{(A \longleftarrow (((z^{128^{7}})^{128^{7}})^{128} \cdot\, x)^{128^{7}} \cdot\, z\,)\}]\!].$$

DRAGON SCALES

Our metamathematical strategy observes the *natural geometry and behavior* of the dragon quadratic equation forms, however, we promote and project the natural folding pattern onto *straight lines in and onto a meta-plane, meta-space and higher dimensions*.

A certain conjecture states that Rainbow *cannot* be broken by an attack less than 2^{80}.
This work will demonstrate that the Rainbow signature is *vulnerable to a meta-mathematical low rank attack* insofar a codimensional *r* exist in kernel *C*.
Solving this first layer of equations are tractable by today's computational power standards, by placing this initial layer at the far end of an ever growing superposed compilation of consecutive layers, in this way the 'keyhole' formed by unsolved equations HFE *must always lined up in direct trajectory one after another*. We now have a consecutive step by step Oil and Vinegar layers with their corresponding *sublayers* which are nowhere specifically mentioned in the literature. Our method brings about a more accurate geometric graph depicting in detail the *true nature and behavior* of the ever adaptability and *morphing powers* of multivariate quadratic public key schemes.

PROPOSITION 1
Kernels of symmetric matrices corresponding to each of the corresponding quadratic polynomials of a public key intersect in a one-dimensional subspace -Kernels for quadratics in TTS/4 intersect only in the origin.
PROOF
A quadratic has the form x_a, x_b+x_c, x_d+... with all indices *a, b, c, d*… distinct from each other
$\{x: 0=x_a = x_b = x_c = x_d = \ldots\}$ will be the kernel of the corresponding symmetric matrix, hence
$\{x: x_{k-6} = \ldots x_{k-1} = 0\}$ is the kernel of the quadratic part of y_k written in x.
Our P=NP theorem *strongly dictates* that *all schemes* of multivariate quadratic equations public keys are *vulnerable to meta-mathematical low rank attacks*. Since the security of all MPKC depends on the difficulty of finding solutions in efficient polynomial time, Rainbow is an NP-Hard MQ problem. If it can be demonstrated that it is possible to faithfully duplicate and *exploit* the public key of the *improved* unbalanced Oil and Vinegar signature schemes of the Rainbow scheme in *polynomial time*, then it can be shown that *Rainbow is vulnerable.*



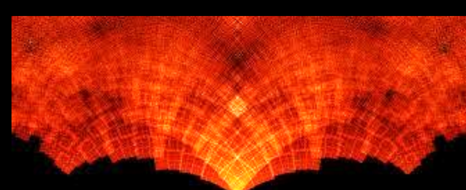
KERNEL C WITH CODIMENSIONAL r

A conjecture in [2] states that Rainbow cannot be broken by an attack less than 2^{80}.
This work will demonstrate that the Rainbow signature is vulnerable to a low rank attack insofar a codimensional r exist in kernel C. Suppose the first layer is 6, 5, 5, 11, the first layer 6 becomes 6x6=36-6=30, and as requested 6 vectors w to be 0 value.
Solving this first layer of equations are tractable by today's computational power standards, by

placing this initial layer at the far end of an ever growing superposed compilation of consecutive layers 5, 5 and 11 the 'keyhole' formed by unsolved equations, must always lined up in direct trajectory one after another. I now have a consecutive step by step Oil and Vinegar layers with their corresponding sublayers which are nowhere specifically mentioned in the literature.
This brings about a more accurate geometric graph depicting in detail the true nature and behavior of the ever adaptability and morphing powers of multivariate quadratic public key schemes.
Proposition 1 in [3] *Kernels of symmetric matrices corresponding to each of the corresponding quadratic polynomials of a public key intersect in a one-dimensional subspace.*
(Kernels for quadratics in TTS/4 intersect only in the origin).
Proof: a quadratic has the form $x_a, x_b + x_c, x_d + \ldots$ with all indices *a, b, c, d*… distinct from each other
{x: $0 = x_a = x_b = x_c = x_d = \ldots$} will be the kernel of the corresponding symmetric matrix, hence:
{x: $x_{k-6} = \ldots x_{k-1} = 0$} will be the kernel of the quadratic part of y_k written in *x*.

IMPROVING ON DUAL ALGORITHM HOR

1 Assign a Gödel number to each Oil variable $O = \{ y_1 \ldots y_n \}$ layer sequence.
2 Set a finite parameter limit $O = \{1 \ldots 999\}$.
3 Hash must be here (missing unbalanced Oil-Vinegar).
4 Set permanent parameter limit $V = [x_1 \ldots x_n]$ layer permanent sieve ledger.
5 Within potential infinite, finite $V = \{1 \ldots p_n\}$ permanent memory exist.
6 Message decryption secret signature (diagonal strips).
7 Less than 45 degree convention on finite map F.
8 Find hash… Exploiding hash.
9 Minimum set of prime digits signature size.
10 Display graphic plot.
11 Role tape mode.
12 Find missing 28 trapdoors HFE via process of elimination.
13 Sort by order of magnitude 1… 28.
14 Exploit each hidden equation.
15 Find solution for each HFE.



$$\begin{matrix} X_0 = |0\rangle \\ X_1 = |0\rangle \end{matrix} \sum_{x}^{*} \left| V_0, V_1, V_4, V_5 \right\rangle \rightleftharpoons \sum_{(n+1)}^{*} \begin{Bmatrix} Q_1, Q_2 \\ Q_3, Q_4 \\ Q_5, Q_6 \end{Bmatrix}$$

16 Explore for variables and categorize them:
(MRF) modular recursive functions.

SIGMA HYPERION

This new metamathematical symbol allows a one to one correspondence between mathematical symbols, entities or concepts, which before now was not possible to obtain.

$$\Sigma \begin{matrix} [\{(p_1, p_2, p_3 \cdots p_n)\}] \\ [\{(q_1, q_2, q_3 \cdots q_n)\}] \end{matrix} = \Sigma \left[\left\{ \left(\frac{p}{f_1, f_2} \right) \right\} \right] = \Sigma \left| \begin{matrix} p_1, p_2 \\ f_1, f_2 \end{matrix} \right|$$

Where p is a prime number and q is a quadratic equation, here there exists a one-to-one correspondence between p and pairs of quadratic solutions (p III (f_1,f_2)).

SET THEORETIC NUMBER THEORY

Intractable exponential problems become tractable pseudo-exponential.

Birational permutations signature scheme, including polynomials over a ring Z_N where N contains a very large factorization for Z_p where p is a prime number. We now continue on the series Z_p and Z_q where q is a given quadratic equation, it is understood that we have been working with natural numbers exclusively, from now on we will work with what we call set theoretic-number theory.
We make use of parentheses and brackets to specify the new higher level arithmetic.

$$\Sigma_0 = \frac{[\{(p)\}]}{[\{(q)\}]} = \frac{[\{(p, p, p \dots p)\}]}{[\{(q, q, q \dots q)\}]} = \frac{pk}{fn} = \Sigma \begin{matrix} p \\ f \end{matrix}$$

We now extrapolated every integer N onto a one-to-one correspondence with ordinal numbers α, this makes the burden of computing ever increasing 'heavy' large numbers into a much doable 'light' task, for it diminishes in size or 'weight' in order of magnitude.

FACTORIZATION THEOREM

Let a be the Strong Goldbach Conjecture and b be the Riemann Hypothesis, we will prove a and b to be theorem lemmas for our metamathematical proof of the Factorization theorem.

a) Every even number greater than two can be written as the sum of two primes.
b) All nontrivial zeros of the analytical continuation of the Rieman zeta function have a real part ½.
The Goldbach conjecture yields a Cartesian graph, depicting a 45^0 *pseudo-exponential asymptotic distribution growth ratio of prime numbers.*

GALOIS-LIKE ASYMMETRY

Since the isolation of a sequence of integers modulo N gives us no real advantage of distinguishing a given curve from the quadratic forms, we instead treat our approach as a 'symbolic' or semantic problem. The unknown roots do not need to be found any more, they can remain unknown for the purpose of this paper, all we have to do is to show the symmetry of these equations.

BREAKING THE RAINBOW SCHEME

SECTION 1

Metamathematical symbols, rules, techniques and methods.

The mathematics of Rainbow yields a Cartesian coordinate graph system in which $x = r$ marks the co-dimensional boundary $y = i$ and $-y = -i$.

The uppermost horizontal layer boundary is denoted by [ ] as the Vinegar layer, and the orthogonal

{ } as the Oil variables. The oil variables are the initial driving force from which the vinegar layers are produced; this process must be finite in nature, for no code can exist unless this rule is obeyed.

The vertical parameter denoting the oil variables satisfies the minimal condition of being pairs of twin prime numbers p' and p''.

This part being of imperative importance in driving the engine for creating signatures, we deem proper to analyze at depth. The distribution of prime numbers on the straight line is increasing in order of magnitude, this increment is more accentuated when the twin prime numbers paradox is considered, the gap becomes more radical but forever predictable. We hereby propose to establish these ever increasing gaps as the new measure for blocks and blockchains, no longer will the decimal place holder system apply to such gargantuan numbers we now deal with embedded deep in this nascent technology.

While the vast majority of the Vinegar signature remains the same at any given point and especially for longer sequences, the responsibility to produce prime numbers for trapdoor functions falls squarely on the permanent Oil variables.We improve here the traditional Rainbow layer notation, the reader will more readily see the benefits of this new arrangement.

First layer $[x_1, \dots, x_{v1}]; \{x_{v1+1}, \dots, x_{v2}\}$

Second layer $[x_1, \dots, x_{v1}, x_{v1+1}, \dots x_{v2}]; \{x_{v2+1}, \dots, x_{v3}\}$

Third layer $[x_1, \dots, x_{v1}, x_{v1+1}, \dots, x_{v2}, \dots, x_{v2+1}, \dots, x_{v3}]; \{x_{v3+1}, \dots, x_{v4}\}$

Outmost layer $[x_1, \dots, \dots, \dots, \dots, \dots, \dots, \dots, \dots, \dots, \dots, \dots, \dots, \dots, x_{vu+1}]; \{x_{v1+1+1}, \dots, x_n\}$

1.1 Twin-prime pairs on the Oil layer are $O=\{x_{v1+1}, \dots x_{v2}\}$, where the $[\{(x_{v1+1})\}]$ is the first twin-prime pair, always followed by the $[\{(x_{v2})\}]$ second twin-prime pair in order of magnitude.

1.2 There exist n prime numbers between the above mentioned two distinct pairs of twin-prime numbers, a finite list of these prime numbers is created, identifying and cataloging each p to then check non-deterministically where the trapdoors are.

1.3 Our meta-mathematical notation for twin-prime numbers (1.1) endows this system with special properties assigned such as: ordinality and meta-cardinality as specified before.
1.4 Therefore, the Oil layer notation $O=\{x_{v1+1}, \dots, x_{v2}\}$ is now $Oo=[\{(x_{v1+1}, \dots, x_{v2})\}]$.
2.2 All trapdoors identified and solved become sieves on horizontal Vinegar side $[x_1, \dots x_{v1}]$, and all solutions compiled are to be stored separately to avoid taxing computational power.
2.2 The new notation for Vinegar layers $V=[x_1, \dots, x_{v1}]$ is now $Vv=[\{(x_1, \dots, x_{v1})\}]$.
2.3 I now have a powerful meta-mathematical deductive system.
3.1 Graphene nanotubes connecting vertical-horizontal subspaces on the 90 degree graph.
3.2 Each $Tp=[\{(p_1, p_2 \dots p_n)\}]$ are electrons or qubits.
3.3 Each electron is embedded inside a synthetic diamond.
3.4 Each diamond has 1,000 entangled qubits.

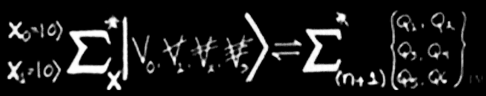
4 Non-deterministic P=NP reveals missing subspaces on the Oil-Vinegar layer.
5 Vinegar sieves stored separately from most recent layers.

SEQUENTIAL FACTORIZATION being the signature generator of trapdoor functions with more unknown quadratic equations to solve for TTS.

SEQUENTIALLY RELINEARIZATION is a family of trapdoors of quadratic forms with more unknowns and equations to be solved for signature generation. The only property of importance to us is symmetry for these quadratic forms, because the perceived computational advantage we observe on cubic or quartic polynomials is lost in cumbersome, almost unnecessary computations.
Let a system of m polynomial equations of degree 2 *with n unknowns be given.*
Denote $u=[log_2(t+1)]$. *Suppose* $n \geq (t+1)\, m$ *and that* $m \geq u-1$.
Then a number $v \leq t \cdot m$ *of linear relations between the unknowns can be fixed so that at least* $u-1$ *equations become linear in the remaining* $n-v \geq m$ *unknowns.*

LEMMA 1
Derived from [5] and stating two basic facts about quadratic forms, and similar facts that also hold for polynomials of degree two, the following holds.
Let $\mathrm{Q}(x)$ *be a nondegenerate quadratic form with n variables over* F. *Suppose* Q *is written in reduced representation,* $\mathrm{Q}=f_1 f_2+f_3 f_4+\dots$ *where the* f_i*'s, i=1... n denote appropriate linear form.*
Then

a) *The coefficient vectors* f_i, $i=1 \dots n$, *are linearly independent over* F.
b) Q *has* $[n/2]$ *product terms, and at most* $[n/2]+1$ *linear relations in* $x_1 \dots x_n$ *need to be fixed in order that* Q *becomes linear in the remaining variables.*



SECTION 2

Pseudo-exponential time problems become solvable in polynomial time.

The public key embedded in a finite field F map consists of a two-fold origami structure k^{o} for L_1 and k^{o+v} for L_2. Both maps come to be a single point containing all the information of the secret signature, thus signing this document is equivalent to finding a solution for the formula
$L_1 \circ F \circ L_2 (x_1, x_2 \ldots x_n) = \overline{F}(x_1, x_2 \ldots x_n) = Y'$.

Applying the inverse of L_1 we have $F \circ L_2(x_1, x_2 \ldots x_n) = L_1^{-1} Y' = \overline{Y'}$.

Exponentiation in squaring and division terms.

"There is a real risk that through their lack of forethought this instrument, which seemed to hold out such promise for the future [AI], may prove the cause of many evils." *Utopia* by *Thomas More*

The inquisitive reader should consider these final three points:

i If P ≠NP it would be the end of computational advancements and that is clearly not the case in the real world.

ii If P vs NP is concluded by human means to be undecidable or unsolvable, then future machine systems will ultimately discover P=NP

iii In contradistinction however, humankind has now proven P=NP.

Here, part 1 of 9 of the P=NP proof ends.

NOTE:

Since P=NP theorem, it follows at once that the Millennium problems can be solved:

1 To solve the Riemann hypothesis one must first solve the strong Goldbach's conjecture to then utilize this result as a lemma.

2 The resulting Riemann hypothesis and strong Goldbach conjecture will then prove correct the assertion stated in the Birch & Swinnerton-Dyer conjecture that there is an infinite number of rational points on an elliptic curve, thus rendering the Birch & Swinnerton-Dyer theorem.

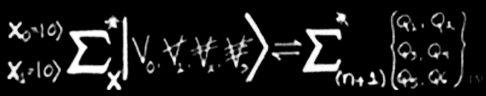
ON THE FALSEHOOD OF WOLFRAM'S CLAIMS ON SECOND LAW *2.13.2023*

"Mathematical truths are analytical (truths of reason) not void of content. What is wrong however, is that the meaning of the concepts (truths) they denote is asserted to be something man-made and consisting merely in semantical conventions." Gödel Collected Works III p320-231

WOLFRAM'S LIMITING FORMALISM | **ON 2 VALUE LOGIC "TRUTH" TABLE**

"Once men turned their thinking over to machines in the hope that this would send them free. But that only permitted other men with machines to enslave them." Frank Herbert -DUNE 1965

WOLFRAM: DEFINING COMPLEXITY *Wolfram: "My explanation of the second law:*



1. *I use notions of computation to specify what kinds of initial conditions can be re prepared.*
2. *What kind of measurements * can reasonably be made.*
3. *In a sense, what I do is just to require that the operation of coarse graining ** correspond to a computation that is less sophisticated than the actual evolution of the system being studied."*

How can we possibly trust Wolfram's definition of complexity when neither he nor his computing systems *Mathematica, WolframAlpha, Cellular Automata* cannot address the PvsNP computational complexity class problem.

* Chaitin's Algorithmic Information Theory should be the measure standard of the information content in a string of symbols, that is algorithmic complexity or program-size complexity.

** Coarse-grained operations in Cellular Automata sweeps undecidable propositions under the rug.   To address 'seemingly' undecidable propositions one needs a stronger, higher 3 value order logic.

WOLFRAM'S FORMALIST PHILOSOPHICAL POSITION

Wolfram is making the same philosophical mistake as Turing once did, by arguing that "mental procedures cannot go beyond mechanical procedures." **THE REFÖRMER**

COMPUTATIONAL FOUNDATIONS FOR THE SECOND LAW OF THERMODYNAMICS "

The Second Law *is a reflection of a very general, if deeply computational* [1] idea: an interplay between *computational irreducibility* and the *computational limitations of observers like us.** The Principle of Computational Equivalence tells us that Computational Irreducibility is inevitable. But *the limitation of observers is something different:*** it's a kind of *epi- Principle* [2] of science that's in effect a *formalization* [3] of our human experience and our way of doing science."

* Is Wolfram implying the limitations of the current Formalism, 2-valued logic and "truth" table..?

** If by "observers" Wolfram means Cellular Automata then I do agree, for such a primitive stage CA it will undoubtedly yield synthetic truths… At best.

CITATION: A consistent formal system *S* asserting proposition *p* as true, only means that the *negation* of *p* is not possible in *S* due to *S* consistency, however if *p* was reached by a detour through system *T* theorems of transfinite axioms & propositions no contentually *false* theorems within *S* are provable. Dangerously however, one can formally prove *not-p* in finitary steps by a stronger higher-order metamathematical system *Sn,* not formally representable in *S. However, if he means humans -brain/mind then I do not agree.*

"My incompleteness theorem $\psi \nvdash \phi$ makes it likely that the mind is not mechanical, or else the mind cannot understand its own mechanism…" Gödel quote in Wang L.J. p186-7

1. The claim is backwards, the way it ought to be: Some computational processes reflect the second law of thermodynamics. That is to say Shannon Entropy [Claude Shannon Information Theory].

UNDECIDABILITY IN PRIMITIVE CELLULAR AUTOMATA*

* It is not that Von Neumann's cellular automaton is completely incorrect -it is simply that Wolfram's Cellular Automata particular version from which stems: (a) cannot address Godel's undecidable propositions in he strongest sense, because (b) the set of rules -program ignores Turing's machine undecidability in the strongest sense, and even when evolution -open ended grid is ignores (a) and (b) for these reasons is a primitive system, eg Life: "The nearest-neighbor, *k*-color, one-dimensional totalistic cellular automata. In such automata it is the *average* of *adjacent* cells that determine the evolution $k = 3$. For this automaton, the behavior can be encoded as a ($3k$-2)-digit *k*-ary number known as a "code" rule and 300 steps of the ternary code."

Primitive narrow ML-Syntax and DL-Semantics AI are computationally expensive, this taxation on computational power is increasingly more and more difficult to sustain and a great burden on hardware. AI at present is only facing simple linear equations required to excel on perfect information board games like Chess and Go.
The major challenge that will expose AI's two value logic limitations will be when facing nonlinear equations and attempting to address open-ended problems without perfect information.
2. Principles of Epidemiology: the study of the distribution and determinants of health-related or events in specific populations. SW is not clear on what he means by his "kind of epi principle" statement, thus remaining bogus and unclear as always, maybe he has 'created' a different kind of science Epidemiology branch?
3. 'Formalization of the human experience'..? What exactly does this term mean? David Hilbert's 1921 Formalist Program, Formal Systems [ZFC], Computers, AI-AGI-ASI..? Does SW even know..? Moreso, does Wolfram know that human behavior cannot be fully formalized..? Apparently not.

UNPROVABILITY IN MACHINE LEARNING

Learning a predictor [mathematical function] is formalized to correctly approximate PAC learning model, with the aim to to train the predictor to exactly match a certain function labeling the data. The online learning model makes instantaneous predictions as data arrive capturing a trading system task of executing transactions in an ever-changing market. A learning model called estimating the maximum (EMX) is relating learnability to complexity, discovering a family of functions whose learnability in EMX is unprovable in standard mathematics.
The creators formalized EMX as a question about a learner's ability to find a function, from a given family to be as big as possible. This action brought unprovability into the picture as the family must have low complexity, and therefore be learnable.
However, the weak form of monotone compression used is related to the size of certain infinite sets.ML learnability can be an undecidable problem, we should be careful when introducing new models of learning and check already adopted models for unprovability may already be in some of them.

"How general do we expect the Second Law to be in the end? Even when it comes to the standard subject matter of *statistical mechanics.*

[4] We expect limitations and exceptions to the Second Law. Computational Irreducibility * and the Principle of Computational Equivalence ** are very general, *but not very specific.*

[5] They talk about the overall computational sophistication of systems and processes. *But they do not say that there are no simplifying features.*

[6] And indeed we expect that in any system that shows computational irreducibility, *there will always be arbitrarily "many slices of computational reducibility"*

[7] that can be found. *The question then is whether those slices of reducibility will be what an observer can perceive, or will care about.*

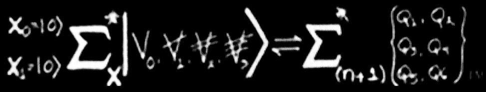
[8] If they are, then one won't see Second Law behavior. *If they're not, one will just see "generic computational irreducibility" and Second Law behavior.* [9]"

---

* As such, the proposed equivalence encompasses NP-Complete class 'Yes or No'. In contrast however (1) It does not pertain to NP-Hard problems, that is open-ended problems. In the case of ChatGPT the creators took a great -investment risk not really knowing whether their creation could deliver, that is to say Open AI needed P=NP to hold, and it does. The situation is analogous to a cave diver hoping to reach the surface by going steadily forwards, and (2) It only refers to two-value logic computer systems S_n as well as narrow AI.

The constructions in Godel's proof buttress the project of AI by offering.
"The notion that a high-level view of a system may contain certain explanatory power which is simply absent in low levels."
ChatGPT [Drastically reducing the number of parameters to the absolute minimum, the over saturation of parametric demands further constrics AI algorithm's ability to excel. We must keep in mind that AI is a completely different kind of intelligence, much different than human intelligence, machines excel at repetitive tasks and possess extraordinary superior speed, while humans excel in intuition and seeing things outside systems. Simply put, machines excel where humans fail and humans excel where machines fail].
Our stronger higher three-value logic systems $S_{(n+1)}$, $S_{(n+2)}$, $S_{(n+3)}$... $S_{(n+i)}$. For any deductive system $S_{(n+i)}$ collapsed down to the mother metamathematical system $S_{(n+1)}$.

** What Wolfram calls "Principle of Irreducibility" is just a fancy term; nothing more than Gödel's Incompleteness theorems in the strongest sense. Furthermore, undecidable over Turing machines -narrowAI. Cited exhibit: "The system S is not complete, that is, it contains propositions A (and we can in fact exhibit such propositions) for which neither A nor $\neg A$ is provable and, in particular



(even for decidable properties *F* of natural numbers) undecidable problems of the simple structure (*Ex*) *F* (*x*), where *x* ranges over the natural numbers [2]."

[[2] Furthermore, *S* contains formulas of the restricted functional calculus such that neither universal validity nor existence of a counterexample is provable for any of them.] GCW I p14-3

"Even if we admit all the logical devices of *Principia Mathematica* (hence in particular the extended functional calculus [1] and the axiom of choice) in meta- mathematics, there does *not* exist a *consistency proof* for the system *S* (still less so if we restrict the means of proof in any way). Hence a consistency proof for the system *S* can be carried out only by means of modes of inference that are not formalized in the system *S* itself, an analogous results hold for other formal systems as well, such as the Zermelo-Fraenkel axiom system of set theory [3]."

[[3] This result, in particular, holds also for the axiom system of classical mathematics…] GCW I p143

4. *"…The true reason for the incompleteness inherent in all formal systems of mathematics is that the formation of ever higher types can be continued into the transfinite."* GCWI p181

It follows at once: our P=NP metatheorem dictates that all Millennium Problems have a solution insofar metamathematical methodology and techniques are applied from outside classic ZFC.
5. We Introduce a subclass complexity hitherto unknown (P=NP)≥((Q)(N)(C))≥(BQP)≥(PSPACE).
6. On this point *a priori* and *reductio ad absurdum* could assist on the subject matter.
7. Infinitely many undecidable propositions, I dare to say.
8. If by 'what an observer can perceive' means (1) Cellular Automata the answer it cannot 'perceive' or anticipate all undecidable propositions. The situation is different for the brain/mind (2) if the observer is a human mathematician because intuition plays a central role within metamathematics.
9. Translation: blurred notions, not clear, therefore no reliable conclusions can be drawn.

IN CONCLUSION

I have read all 451 pages of Wolfram's claims on the Second Law, here's what I discovered:

1. Cellular Automata does not include undecidable propositions, thus ultimately wrong.
2. 451 pages without a single original idea, not a single innovation, a whole lot of nothing.
3. Wolfram is just "tossing the salad." Occasionally bordering on plagiarism.

The disturbing aspect of Wolfram's claims are in effect, an act of self-delusion, promoting himself and his projects. Never caring for his responsibilities to the people. Omitting all together his responsibility to the future generation.

4. Defense contractors should not listen to misleading Wolfram's claims *Monsters of Man*.

My only must is to establish **THE REFÖRM** encompassing the entire embodiment of mathematics, to protect the people and the Earth from malicious AI-AGI ASI systems. **THE REFÖRMER**

500 YEARS IS MY SPHERE OF VOLITION

2012	2021	2022	2023	2026	2031	2036	2044	2057	2112	2412
P=NP	LÖCK	DIFI	WEB4.0	AGI	ASI	GÖDEL	Transcend	Baja	Earth II	Metahumans