End of Year: Time to evaluate and time to project as 2023 turns to 2024

Two facts could change the face of 2024

by Bruce E. Camber

Abstract: Two facts, not ideas or concepts, could change the face of 2024: (1) the place and importance of 202 base-2 notations that encapsulate everything, everywhere*a* throughout all time. It is simple math based on natural units and dimensionless constants; (2) π (pi), the most-ubiquitous, most-used, oldest, largest, working equation within our arsenal of equations. It links the finite and infinite. It preconditions all things finite with the qualities of continuity-symmetry-harmony. A very different statement about the nature of the finite-infinite, most of the 27 homepages of 2023 were an attempt to define those relations. All were building on earlier work to open up the discussions about continuity-symmetry-harmony and that finite-infinite relation, and the generation of infinitesimal spheres defined by the Planck base units (or today's equivalent). Within our References & Resources (below) there are links to the 2023 homepages. We will carry forward into 2024 our biggest concepts with the deepest meaning that drove those homepages and that drive us now. We will continue to consider how concepts like truth, ethics and value give rise to freedom, justice, love, insight, integrity, and more, and how all these concepts have their origins deeply within continuity–symmetry–harmony.*

Truth, ethics, and values

The world is having a problem with the truth, ethics, and values.

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There are mathematical and logical truths whether we like them or not. These are not personal truths or "my truth." These truths are also not self-evident, but what might be called, "illusively-concrete" and these teach us about natural boundaries. We need these boundaries so we can begin to parse, grasp, and understand our universe.

202 Base-2 Notations from the Very Beginning to this Very Time, Right Now.

Take as a given, there is a starting point of the universe. We have the current end-point — today or right now. If we define that first moment of the universe with the smallest natural units — we've used the Planck base units — we can begin to parse the universe with base-2 notation whereby everything is directly related to everything, everywhere, for all time.

The simplest possible math, base-2 exponential notation, is also the unacknowledged and undeclared math of big bang cosmology. I have written many notes to the leading scholars of the Big Bang theory including Hawking, Guth, Linde, Steinhardt and more. That math is simple. The logic is simple. If the Planck base units are used to start, there are 202 base-2 notations to the current time, quite possibly for somewhere around eight billions to come. Ostensibly we get the same results if we were to use the ISO's numbers or even start with other base units. We've been told to "follow the money." We need to *follow the math*.

Writing to over 500 scholars in just ten years, no one has told us how and why we were wrong. As time has passed, I have come to believe that we haven't had our comeuppance because we are closer to the truth than those big bang stalwarts who never followed the math or even the spirit of that math.

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Those 202 base-2 exponential notations are facts no matter whose base units are involved. The very nature of base-2 exponential notation is under-analyzed and quite under-valued.

Pi's Infinitesimal Sphere to Tredecillions of Spheres per Second
3.14159265358979323846264338 3+

The second simple example is the calculation for pi (π). Here are those never-ending, never-repeating, scale invariant, irrational, and transcendental numbers of pi (π). Its very essence inculcates continuity (numbers), symmetry (geometries), and harmony (dynamics). It is the very best example of a key dimensionless constant that is underestimated and too-little studied today (although throughout the ages of scholarship, it is arguably our most studied equation).

In 2021 pi (π) was calculated to a record-breaking 62.8 trillion digits by Thomas Keller at the University of Applied Sciences of the Grisons in Switzerland.[1] That effort, headed by Prof. Dr. Heiko Rölke, is known as DAViS (Data Analysis, Visualization and Simulation project).[2] It broke the 2020 record held by an individual, Timothy Mullican of Huntsville, Alabama.[3] He had calculated 50 trillion decimal places using just a "personal" computer. Emma Haruka Iwao re-entered this unofficial competition on June 8, 2022 announcing 100 million digits of pi.[4] Of course, 314 trillion digits will be next benchmark! And like that coverage by LiveScience-News[5] and their writer, Harry Baker,[6] it will continue to be a significant story.

(continued)

More than checking the accuracy and speed of new supercomputers, this most serious science and business also assures us of the continuity of mathematics. A rather long number, this equation is constantly working,

In 2023 there were many homepages that focused on the nature of pi beginning with our January 27 article, Pi Defines the Finite and Infinite. Those numbers establish, then validate numeration. Those numbers also establish, then validate geometry. Then, those same numbers establish and validate periodicity and spin. It is not theory. It is what is — the essential nature of continuity, symmetry and harmony.

Those three concepts do even more when taken together. They become value equations. They also become ethics equations. Our circular chart tells part of that story. These qualities of life and the infinite — continuity-symmetry-harmony — inculcate justice, love, freedom, and truth. And, new and deeper insights about the nature of life and the workings of the sciences will naturally evolve.

Just how old is the universe?

There is a third equation that is also a fact, yet part of its logic is quite impossible to determine and requires the *consensus of the many* to decide just how old this universe is.

(Continued)

Our calculations for the number of seconds since the universe began were the direct result of a NASA challenge. It sounds a bit silly, perhaps impossible; it's not. These are calculations that could be done in the sixth grade of any elementary school. Also, given more and more people are involved with studies of global budgets, especially debt, more and more people can readily grasp large numbers and that gives us a sense of our finiteness and limits. The calculations below were first prepared in 2017 for a report to NASA Marshall Space Flight Center in Huntsville, Alabama for their SpaceApp Challenge.

436,117,076,600,000,000 seconds old

The universe is about 436,117,076,600,000,000 seconds old. That reads: "436 quadrillion, 117 trillion, 76 billion, 600 million seconds" old (or since the universe had its start).

For the first calculation we assumed 60 seconds in a minute, 60 minutes in an hour, and 24 hours in a day. That gave us 86,400 seconds per day (60x60x24). We've used the figure, 365.2425 days per year, to include the leap years within the calculation. But, we then used the age of the universe at 13.82 billion years, not the currently-accepted range closer to 13.79 billion years. In these days more and more scholars and experts within the field have been strongly and consistently arguing to add more years.

The calculations follow.

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One Year: 31,556,952 seconds (31.5 million seconds between Notations 168-169)
– 10 Years: 315,569,520 (s) or 315 million seconds. In our 33rd year you turn 1 billion (s) old.
1000 years: 31,556,952,000 (s) is 31.5 billion seconds between Notations 178-179.
– 10,000 years: 315,569,520,000 (s) is very close to Notation 182 (330,491,912,986 seconds).
– 100,000 years: 3,155,695,200,000 (s) is 3.155 trillion seconds and is between Notations 185-186.
One million years: 31,556,952,000,000 (s), 31.5+ trillion seconds between 188-189
– 10,000,000 years: 315,569,520,000,000 (315 trillion) near the 192nd notation.
– 100,000,000 years: 3,155,695,200,000,000 (3.1 quadrillion) between the 195th and 196th notations.
One billion years: 31,556,952,000,000,000 (s) is 31.55 quadrillion (s). See 198-199.
– Use 13.82 billion years* for 436,117,076,600,000,000 seconds old early within Notation-202.

* Margin of error: ±.059: In 2012 NASA released nine years of data from Wilkinson Microwave Anisotropy Probe (WMAP). The estimated age of the universe was 13.772×109 years ±0.059) (13.772 billion years, with an uncertainty of plus-or-minus 59 million years).

2023-to-2024

Quite possibly, this is the last article for this year. The prior article about eight Missing Keys focused on key factors that were being missed by our scholars and the academic community. It includes these factors and more.

I think simple math will always win over convoluted and difficult math. Those 202 notations are the same 202 notations that define the big bang theory, yet instead of trying to jam everything into a singularity at the start of the universe, we start with a single, infinitesimal sphere that is defined by the Planck base units or its equivalent. That concept of the big bang singularity is little understood by anybody.

Spheres are not simple. The work of Fourier, Gauss,, Poincaré, Planck, Hales, Milnor, Smale, and Strogatz, to name just a few, open gates to complexity. Notwithstanding, these spheres create an infinitesimally-small, but universal grid or matrix that connects everything, everywhere, for all time. And, throughout the earliest part of that grid are simple perfections within space-time.

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Our Conclusions and Summary

(1) The 202 base-2 notations are a most dynamic container that is our universe.
(2) An infinitesimal sphere is generated for each unit of Planck Length-and-Time.
(3) Each sphere inculcates the three faces of pi(π), continuity-symmetry-harmony.
∴ The finite is preconditioned by continuity-symmetry-harmony of the infinite.

Can these basic concepts be the starting point for our universe? Why not? Thank you. -BEC

Endnotes

These comments are often afterthoughts; that is, these are written after emails and direct messages have been sent out.

[a] Encapsulate everything, everywhere throughout all time. With all the talk about the size of the universe being beyond our imaginations, to suggest there was once a singular time and place where it all began may appear too great of a stretch for many. Yet, that is what we are asked to accept with big bang cosmology including the compression of it all into a singularity. That is such a stretch for most of us. But, then the more stridently imaginative push it all out in a virtually-instantaneous inflationary epoch. Perhaps that's what meant by the expression, "…adding insult to injury." Those two activities, uniquely defined within big bang cosmology, are never to be seen again. When scholars finally take a moment to study the numbers of base-2 exponential notation, they will see that base-2 is quite inflationary enough without an attempt at a singularity of all things and an inflation that is one-of-a-kind. *More to come…*

[b] Illusively-concrete. Sometimes referred to as a *stretched metaphor* or a *compressed conflict*, these are generally new concepts that need to be forced into a section of our brain. How can something be concrete yet at the same time be illusive? By themselves numbers can be illusive. How do all the numbers of pi create a sphere, especially one with the densities defined by the Planck base units? That is illusive concreteness. *More to come*...

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Footnotes

There may not be many because most of these points already have pages within this website.

***Retrieved, 19 December, 2023**: π (pi), https://81018.com/starts-2/
*Continuity-symmetry-harmony, https://81018.com/csh/
27 homepages of 2023, https://81018.com/pages/
Continuity, https://81018.com/continuity/
Symmetry, https://81018.com/symmetry/
Harmony, https://81018.com/harmony/
500+ scholars: https://81018.com/alphabetical/

[1] Retrieved, 12 Dec. 2023: https://www.livescience.ocom/record-number-of-pi-digits.html

[2] Retrieved, 14 December 2023: https://www.fhgr.ch/en/themenschwerpunkte/applied-future-technologies/davis-centre/

[3] Retrieved, 14 December 2023: https://blog.timothymullican.com/calculating-pi-my-attempt-breaking-pi-record by Timothy Mullican

[4] Retrieved, 17 December 2023: https://blog.google/products/google-cloud/new-digit-pi-2022/ by Emma Haruka Iwao

[5] Retrieved, 17 December 2023: https://www.livescience.com/about-live-science

[6] Retrieved, 17 December 2023: Retrieved, 17 December, 2023 https://www.livescience.com/author/harry-baker

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References & Resources

As these references are studied, key references and resources will be added within this website.

- **The twenty-seven 2023 Homepages**

1. **January** 21: **What's best for the scientific method... *de jure* or *de facto*?**
2. January 27: **Pi Defines the Finite and Infinite**.
3. **February** 4: **Infinitesimal Sphere or Inflaton?**
4. **March** 2: ***Pi Day is pointing beyond circles and spheres***.
5. March 21: **Pi (π), a key way to infinity**
6. **April** 4**: Resolution to make our community and this world a better place**
7. April 20: **Hypothetical particles beg the question, "What is fundamental?"**
8. **May** 4: **Most simple model of the universe starts with the most simple concepts**

9. May 22: **All the Firsts of Time: From the PlanckSecond to just one second to Now**
10. May 30: **If he were alive today, what would Karl Marx believe?**
11. May 31: **If the big bang falters, might pi (π) thrive?**
12. **June** 19: ***"Mitigating the risk of extinction from AI should be a global priority..."***
13. **July 1: Today's Revolution Is About the Meaning & Value of Life**
14. July 17: **Facts & Guesses about the Planck Scale Physics of Cumrun Vafa**
15. July 31: **Five steps to start and four steps to grow**
16. **August** 17: **In the beginning, a Perfect Start, a simple start.**
17. August 23: **No longer "...after the Big Bang." It's history**.
18. August 30: **James Webb Space Telescope Results Slam Big Bang —Critical Analyses Encourage More Creativity in the Search for a New Physics**.
19. **September** 14: ***Eight-minute lesson, "Your place in this universe!"***
20. September 23: **An exquisite grid or matrix of infinitesimal spheres fills our universe**
21. September 28: ***Grasp the numbers and systems that define our Universe***
22. **October 14: Between Particles and Planck's Natural Units** — Open letter to Jon Butterworth
23. Oct. 20: **Big Bang Needs A Fix. Our World Can Grasp The Universe: Open Guth's inflation...**
24. Oct.27: **For a new, far-more-simple science... Eight Basic Concepts Proposed**
25. **November 13, 2023: Continuity-Symmetry-Harmony Ground ESG & DEI**
26. Nov. 26, 2023: **Missing Keys to get Re-oriented to the Universe**
27. **December 12, 2023: Opening paths to truth, ethics, and values through continuity-symmetry-harmony** (this page)

- Other key reference pages:
  - The concept of infinity: https://81018.com/infinity-summary/
  - Cyclicity, periodicity, spin: https://81018.com/spin/
  - The other blackhole: https://81018.com/blackholes/
  - Our Open Letter to You: https://81018.com/imagination/
  - On turning the blackhole inside-out: https://81018.com/blackhole/
  - Prof. Dr. Hans Jörg Fahr: https://81018.com/2017/06/30/fahr/
- Paul Steinhardt, Big Bang blunder bursts the multiverse bubble. *Nature* **510**, 9 (2014). https://doi.org/10.1038/510009a
- Janna Levin, *Nature abhors an infinity*, Topology and the cosmic microwave background (ArXiv-PDF), DAMTP, 2001

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Emails

There have been and there will be emails to many of our scholars about key points.

- Sabine **Hossenfelder**, Munich, Germany
- Paul **Steinhardt**, Princeton, Princeton, NJ
- Janna **Levin,** Columbia, NYC
- Chanda **Prescod-Weinstein**, UNH, Durham, NH
- Thomas **Hertog**, Katholieke Universiteit Leuven, Leuven, Belgium
- Lawrence **Sklar**, emeritus, University of Michigan, Ann Arbor
- Brian **Hayes**, American Scientist, Chapel Hill
- John **Skrentny**, Univ. California-San Diego
- Lisa **Grossman**, Science News, *Society for Science*, Kettering, OH

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IM

There have been and there will also be many instant messages to thought leaders about these key points.

7:10 PM · Dec 18, 2023 Janna Levin (Columbia) Strict rules? Big bang cosmology? No. It's flawed. We know it is flawed. Let's start over at the Planck scale with its base units. Apply base-2 notation (exponential) and we have a more realistic model than the reigning theory. https://81018.com

5:53 PM · Dec 18, 2023 **@skdh** (Sabine Hossenfelder) "Are you familiar with base-2 notation from the Planck base units, especially Planck Time to the Now? https://81018.com/ If those 202 notations are all active, might it be a meaningful description of our universe? Thank you. https://81018.com/chart/

Some of our recent Instant Messages are being slowly added. -BEC, December 2023

Participate

You are always invited.

Keys to this page, *eoy-23*

- This page became a homepage on December 12, 2023.
- The last update was December 20, 2023.
- This page was initiated on November 26, 2023.
- The URL for this file is https://81018.com/eoy-23/
- The headline for this article: Two facts could change the face of 2024.
- First teaser is: End of Year: Time to assess and time to project as 2023 turns to 2024

*Or, wicket, kicker or eyebrow.

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EDIT

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