Introduction

I am R. Narayanan [Narayanan Raghunathan] from Kerala, India. I will come to the crux of this book without meandering into the peripheral details. These are a collection of four papers on the Foundations of the Axiomatic Set Theory of Infinite Sets. They question the whole Cantorian ignorant edifice magnified by Hilbert's and others' ignorances ∼ The Zermelo-Fraenkel ∼ Gödel-Bernays Axiomatic Systems are based on morbid Eternally False Axioms.

There Exists No Uncountable Infinite Sets. So the Axiom of Infinity [equivalently that there exists a limit ordinal] Is A Lie. There Exists No Largest Natural Number. There Exists No Limit Ordinal.

The Axiom of Powers Is also a Lie. The Power Set of Every Infinite Countable Set Is Countable.

The whole Bourbaki episode of twentieth century Mathematics is mostly an array of satanic Lies.

The four papers are
1] On the Cardinality of The Infinite Continuum, There Exists One and Only One Infinite. All Irrationals, Reals are Countable.
2] The Power Set of Every Countable Infinite Set Is Countable.
3] All Irrationals and [hence All Reals] are Countable-2
4] The Power Set of Every Countable Infinite Set
Is Countable-2

The first two were written around 1993–1994. The other two in 1995.

I had sent the first two papers and later the other two papers to various journals all around the world. The List of letters I sent, and the addresses to which I sent them, are included in this book. These correspondences took place

in 1995 and early 1996. On the whole it was a painful
experience.

Most did not respond. Others who responded were shoddy
and jealous and crooked. Some of these responses are photo-
copied in this book.

I approached various local friends and acquaintances.

But accepting the Truth in these papers would have made
their M.Sc.'s and Ph.d's Invalidated. Obviously they did
not want that to happen!

In short, these papers must be in the possession of various
people on the earth.

I was deeply disillusioned.
I wrote a complete analysis of Set theory, taking Cohen's
" Set Theory and Continuum Hypothesis" and thoroughly
questioning the Foundations of Zeremelo-Frankel and Godel-
Bernays Axiomatic Schemes. This work completed around
1995, will be published soon. I was writing an Appendix
on "Irrational Numbers" for this book $\sim$ As I pursued this,
God revealed to me Innumerable Rhythms and Transcen-
dental Numbers. This work took place between 1995–1999.
I collected these formulas for formulas in the book "The
Infinite Algorithms for Infinite Transcendental Numbers".

This was sent to various places [Including the Annals and
LMS]. The details of that episode is being published in an-
other book. After a tremendous struggle for four years,
the kindness of Prof. Thrivikraman gave me a chance to
present the synopsis of my 47 papers [actually chapters]
during the National Seminar on Graph Theory and Fuzzy
Mathematics held at Catholicate College, Pathanamthitta,
Kerala, India. These are published in the proceedings of
the National Seminar on Graph Theory and Fuzzy Mathe-
matics [August 28–30, 2003].

Fraudulent/ignorant mathematicians of the Cantor obsession talk about Uncountable Infinite Set of Reals, without knowing what the elements of The Set of All Reals Are. Here in this seamless Library of Babel "The Infinite Algorithms for Infinite Transcendental Numbers". All The Transcendentals [and hence All Reals] are listed algorithmically.

Curiously, in the first paper presented here in this book we also have the single formula which defines the set of all decimal expansions including the set of All Transcendentals.

I thank my sister Prema for her meticulous proof-reading. I am grateful to my brother Anand, Arun, Shyam, Adrian and Prof. Nadkarni USA, for their special encouragement.

General Comments

If a number has an identity, if it is identifiable [say as a decimal expansion/a power series/ a fraction/ a continued fraction], It is clearly Countable. Hence All Numbers Are Countable.

There Exists No Limit Ordinal.

This clearly clarifies why the Axiom Of Infinity of Zermelo-Fraenkel Gödel-Bernays Axiomatic Formal Set Theory is an Ugly Lie.

There Exists No Uncountable Infinite Set.
Let's note that "Uncountable Infinite Set" has a definition, "that which is not Countable Infinite Set".
It has no positive definition.
This is absurd and foolish and fraudulent.
All Sets Are Countable.
[Including The Set of All Reals Including the Infinite Transcendentals]

The Set Of All Transcendental Numbers Are getting Published in two Infinite Volumed Books.
[Actually Seamless Libraries Of Babel.]
"Infinite Algorithms For Infinite Transcendental Numbers" (This book has been seen by many) and "Infinite Rhythmic Continued Fractions".

The Power Set Of Every Infinite Set Is Countable.

The Continuum Hypothesis is a fraudulent Equality.
($\aleph_0 = 2^{\aleph_0}$) Aleph Nought=Two raised to Aleph Nought, since the power set of An infinite set is clearly countable. There Exists One and Only Infinite which can always be counted.

The Whole Axiomatic Infinite Set Theory Is Telling grandiloquent Lies in the Name of Mathematics. It is strange it survived so long. It will soon be exterminated. The final end of fraudulent Infinities in Mathematics.

About roughly 80% of twentieth century Mathematics is horrible Cheating and evil lying [i.e. excluding the tentative lying of statistics including stochastic processes]

All Portions of Bourbaki dealing with uncountability must be destroyed or kept as tokens of ignorance in libraries, in a special section of the history of Mathematics.

We tentatively close here.

OM SHRI MAHA GANAPATHAYE NAMA:

OM POORNAMADA: POORNAMIDAM
POORNAT POORNAMUDACHYATE
POORNASYA POORNAMADAYA
POORNAMEVAVASHISHYATE

OM SHOONYAMADA: SHOONYAMIDAM
SHOONYAT SHOONYAMUDACHYATE
SHOONYASYA SHOONYAMADAYA
SHOONYAMEVAVAVASHISHYATE

– ON THE CARDINALITY
OF THE INFINITE CONTINUUM –

THERE EXISTS ONE AND ONLY ONE INFINITE !

ALL IRRATIONALS, REALS ARE COUNTABLE !

[Dedicated to my parents who tolerated me doing *nothing*]

Narayanan Raghunathan

Abstract:– After an initial Philosophical discussion we proceed to prove that the set of ALL *IRRATIONALS* and hence the set of ALL *REALS* is Countable. For clarification we meditate on the idea of INFINITE SPACE and more essentially on INFINITE TIME. Without these invocations the Mathematical INFINITE is an absurd idea. A General Summation Formula for the set of ALL *IRRATIONALS* is stated, once again proving that the set of ALL *IRRATIONALS* and hence the set of ALL *REALS* is Countable; further the idea of uncountable INFINITE sets "*more INFINITE than*" countable INFINITE sets is a False idea. We conclude with a Philosophical-Metaphysical

discussion stating once and for ALL, FOR EVER that the Zermelo-Fraenkel, Gödel-Bernays and other such ambitious Axiomatic Schemes which assume the "Axiom of Infinity", the "Axiom of Replacement" and the "Axiom of the Power Set" are exercises in Eternal Futility.

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Acknowledgements

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Note:

The mis-spellings "Allways", "Allmost", "Truthfull" etc. are intended for the stress and pun. The "–" in "Re-cognize" is to stress the etymological and philosophical implications.

∞∞∞∞∞∞∞∞∞∞∞∞∞∞

A PARABLE

This one is a parable on the "INFINITE" in *Mathematics*. Three mathematicians who were very proud of their *Knowledge* of the "INFINITE" in *Mathematics* passed out of this *earthy-abode* and reached the abode of GOD, THE VERY INFINITE ITSELF. They were instantly granted *IMMORTALITY*. Since they carried the burden of the *earthy-ego* even into that land of the INFINITE, they were asked to perform a Cosmic Deed, in order that they may determine for themselves who among them was the greatest in the *Knowledge* of the "INFINITE" in *Mathematics*.

Mathematician1 [M1], was asked to write the *LARGEST NATURAL NUMBER*. Mathematician2 [M2], was asked to write the *SMALLEST POSITIVE RATIONAL NUMBER*. Mathematician3 [M3], was asked to write the *SMALLEST POSITIVE IRRATIONAL NUMBER. NEVER ENDING* sheets of paper arrived from thin air and *NEVER ENDING* oceans of ink and quality pens too. Free from hunger, free from every other desire, M1, M2, and M3, began their *ETERNAL-DEED* simultaneously FOR EVER FOR EVER !!

M1 being a binary-man simply started and went on thus. 111111111111111111111111111111111111111111111

M2 and M3 put the sacred decimal dot and went on with their zeroes. .000000000000000000000000000000000000000000000

Some aeons later M2 and M3 changed their notation for zero and simply dotted on thus ....

M1 followed similarly and simply said, "Each dot represents billion raised to billion for billions of years in my notation" and went on with his dots.

M2 and M3 said, "If that is so, each of our dot is as many zeroes as your *fat number* in our notation."

Billions of *BIG-BANG-LIGHT-YEAR*-volumes of papers

were dotted by M1, M2, and M3 and myriad oceans of ink were used. Milleniums passed on, without much humour.

Suddenly one day, all of them realized, re-cognized together that GOD had played the fool on them. They re-cognized that they were exactly where they had *BEGUN, at THE VERY BEGINNING.*

Then GOD appeared again before them and asked rather innocently, "Have you decided as to who among you is the *greatest* in the *KNOWLEDGE* of the *mathematical* INFI-NITE. I am also rather eager to know the result of the *cosmic-competition.*"

"THE INFINITE ALLWAYS BEGINS !!! THE INFINITE NEVER EVER ENDS !!! THE INFINITE NEVER EVER CAN END !!! If you say you know the "INFINITE", you don't know IT !!!", the three great mathematicians confidently *incanted* in one voice.

"So let us BEGIN AS EVER AND TEND *OUR ETERNAL GARDEN.*" THE GOD SAID. Then they *became like little children* and joined their GOD TO TEND *THEIR ETERNAL GARDEN* that GOD had ALLREADY *PREPARED for them.*

∞∞∞∞∞∞∞∞∞∞∞∞∞∞

PROLOGUE

Irrational Numbers and *Real Numbers* are Countable or Denumerable. In more formal language, the set of all rationals and irrationals is Countable. This essentially proves once and for all, that ALL SETS ARE COUNTABLE.[1] Now when I make a grandiose statement like this one, questioning *the faith* and the very foundation of post-Cantorian *Formal Mathematics of INFINITE sets*, I must surely have found a method to prove that the set of *All Real Numbers* is Countable. Otherwise, I must be an amateur idiot who has got himself lost in the *Labyrinth Jungle of Infinite Irrational Numbers.* But I am INFINITELY sure that the set of *All Rationals* and *Irrationals* is Countable or equivalently that the set of *All Real Numbers* is countable. ie. This set can be very easily set into a one-one correspondence with the set of *All Natural Numbers* as we Decisively Definitely Prove Once And For All FOR EVER FOR EVER in the following pages.

Ever since my student days I had looked upon the concept of uncountable INFINITE sets with much suspicion. For the last few years I was insisting that there *exist NO* uncountable INFINITE sets, that every set is Countable to Begin with and that the *activity* of this *counting* can go on FOR EVER FOR EVER. ie. It can NEVER EVER END !![3]. My friends Surendran, Krishnan and Rameshan gave me rather patient hearings. But I wonder whether any of them was convinced with my desperate rhetoric.

But a simple *Revelation Reveals* and convinces far better than all rhetoric. A few days ago the whole thing came to me in a moment of *Revelation. LAUS DEO! OM NAMA SHIVAYA!* Although I could have written the whole thing in less than two pages, I have adopted a different method.

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[1]In the latter paper in this collection, we also prove that the Power Set of Every Countable INFINITE Set is Countable.

We begin with a diagram: *The Labyrinth Diagram* or *The Cosmic-Labyrinth Diagram* which is the essence of the whole proof. If you understand, re-cognize the diagram, the proof is obvious. Now we play an *intuitive game*. We follow this *Labyrinth Diagram* with a family of mathematical *Koans* which lead us more into the secret of the *Labyrinth*. Depending upon one's preparedness, one would re-cognize the proof after one or many of the aphoristic *Koans*.

A simple elucidatory and formal proof follows this. [2]

I request you not to hurry, if you want to experience the delight and wonder of re-cognition. Turn the pages slowly. Best wishes for the delight of discovering an INFINITE TRUTH. HAIL INFINITY !!

<div style="text-align:center">

OM NAMA SHIVAYA

∞∞∞∞∞∞∞∞∞∞∞∞∞∞∞∞∞∞∞∞∞∞∞∞∞

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[2] My friend Surendran who was the first person to see all this, told me to present the proof without all the vicious though playful meandering. I have refused to listen to his advice. The proof of this assertion is so simple, almost trivial. Yet I had to go through an enormous amount of *pain* and vicious meandering before I saw the simple proof. I re-cognize that the *pain* is my personal privilege. But at least a portion of the vicious meandering could be indulgently re-constructed and shared with my readers. I may be pardoned.

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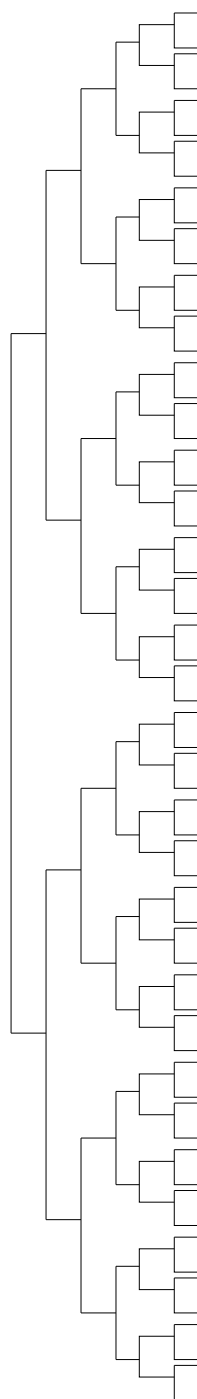
- - - - - - $\infty\infty$ FOR EVER ∞

- - - - - - $\infty\infty$ FOR EVER ∞

- - - - - - $\infty\infty$ FOR EVER ∞

1	Finite allways Ends. INFINITE ALLWAYS BEGINS.
2	When does the finite Become INFINITE ?
3	The Labyrinth Irrational Beginning Begins.
4	The INFINITE Labyrinth Counts itself FOR EVER FOR EVER.
5	Beginnings Merge with the Ends. HAIL INFINITY !! ∞
6	There Exists One and Only One INFINITE.
7	All INFINITE sets are Countable to Begin With and Uncountable to End With.
8	Ultimately You can Only Start Counting.
9	Even if You go on FOR EVER, You can Only Start Counting FOR EVER.
10	The INFINITE is Actually a COSMIC JOKE. GOD'S OWN. LAUS DEO !
11	Count the Beginnings. The Ends are ETERNALLY unreachable !
12	Ah ! These Limited Beginnings Becoming LIMITLESS.
13	Endless Beginnings ! Endless Ends ! Seamless INFINITY !
14	Count ALL the IRRATIONALS FOR EVER FOR EVER ALL OVER ALL OVER !
15	The finites and the INFINITE GO ON FOR EVER FOR EVER !
16	Draw EVERY rational and irrational along these LABYRINTHS !
17	You can count the INFINITE *rationals* with a *point* and a line. For the INFINITE IRRATIONALS You need this LABYRINTH !

18	INFINITE ALLWAYS BEGINS. IT NEVER ENDS. IT CAN NEVER END !
19	ONE BECAME MANY ! HAIL INFINITY !
20	For EVERY RATIONAL AND IRRATIONAL YOU CAN EXTRACT A UNIQUE REPRESENTATION FROM THIS LABYRINTH
21	Ah ! This INFINITE Binary LABYRINTH ! BEHOLD !
22	Ah ! The PRIMORDIAL INDUCTION. $1, 2, 3, \text{---}\infty$ FOR EVER ∞ ! BEHOLD !
23	$1, 10, 11, \text{---}\infty\infty$ FOR EVER ∞ ! BEHOLD !
24	$1, 2, 3, \text{---}\infty\infty$ FOR EVER ∞ ! BEHOLD !
25	Binary, Decimal or ∇-ary $\{\nabla = 2, 3, \text{---}\infty\infty$ FOR EVER $\infty\}$. This is TRUE for ALL RATIONALS AND IRRATIONALS.
26	Even if You make a ∇-pronged attack $\{\nabla = 2, 3, \text{---}\infty\infty$ FOR EVER $\infty\}$. It is ALL the same !
27	Why didn't we start from ZERO in 23 and 24 ?
28	What is an IRRATIONAL NUMBER ?
29	It is a NEVER-ENDING DECIMAL EXPANSION whose terms NEVER RECUR.
30	Is there any IRRATIONAL NUMBER that is not a DECIMAL EXPANSION ?
31	Clearly NO !
32	But there are NEVER-ENDING RATIONAL DECIMAL EXPANSIONS. Say $\dfrac{1}{3}$

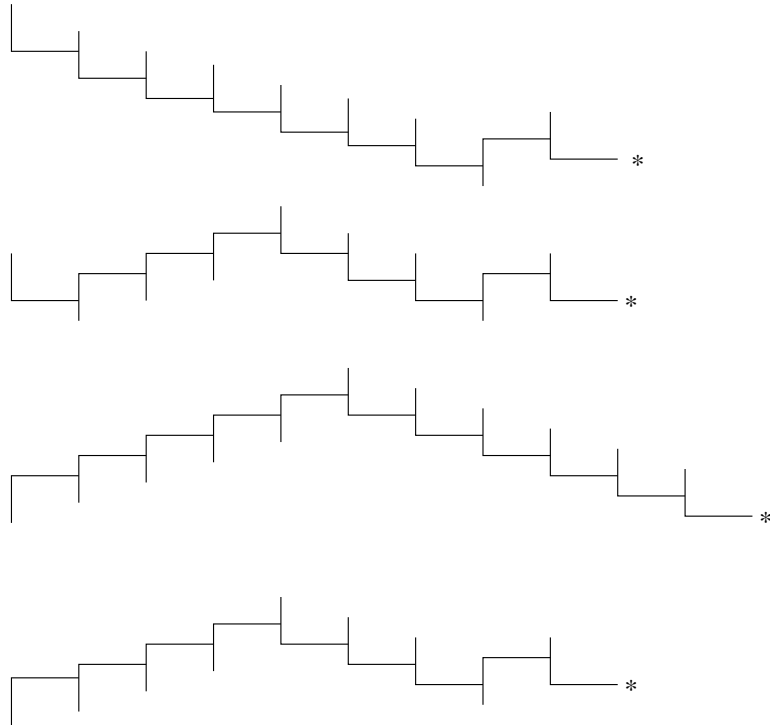| 33 | If the LABYRINTH *TERMINATES*, then it is a finite *RATIONAL* ! |
34	Don't *diagonalize.* Spread INFINITELY INDEFINITELY FOR EVER !
35	For INFINITE NEVER-ENDING RATIONALS, the LABYRINTH grows on in *rhythmic regularity*
36	INFINITE IRRATIONALS GROW ALONG THESE LABYRINTHS IN RANDOM ABANDON !
37	There are *irrational rhythms.* But that is another story.

| 38 | |

These are finite RATIONALS in our notation

* indicates the closure of a *Labyrinth.*

39

- - - - - - ∞∞ FOR EVER ∞

- - - - - - ∞∞ FOR EVER ∞

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- - - - - - ∞∞ FOR EVER ∞
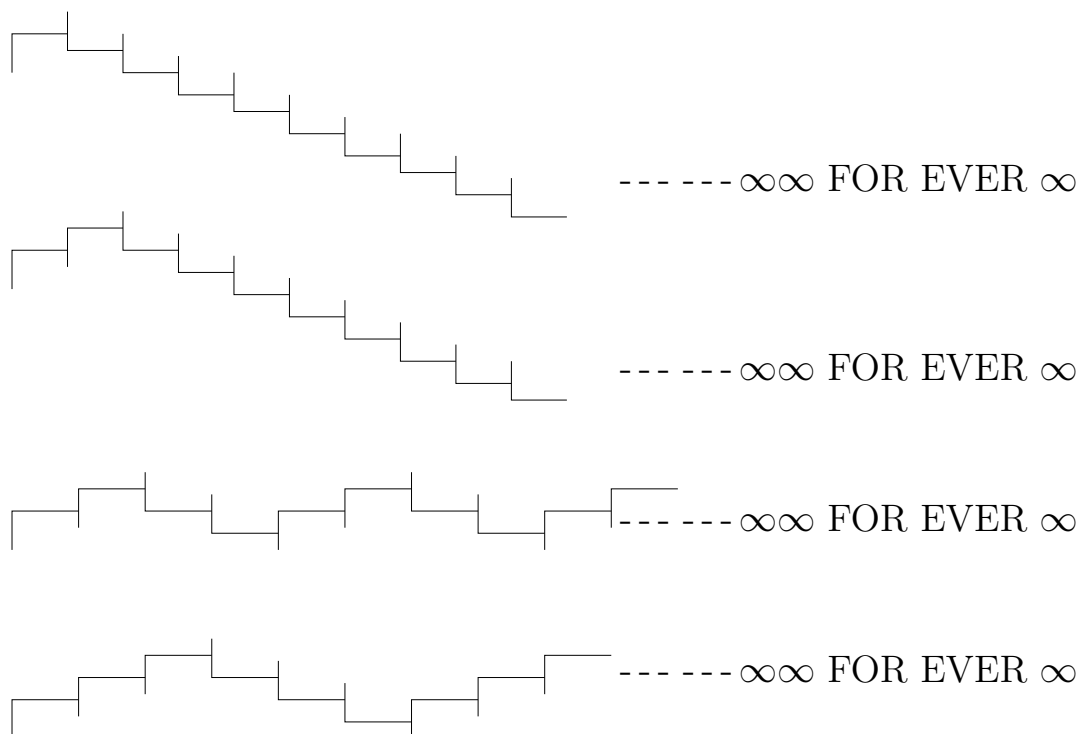
These notate the growth of some INFINITE NEVER-ENDING
RATIONALS.

40   Count THE INFINITE DECIMAL SYSTEM !

$\boxed{41}$
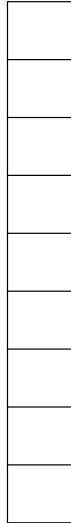
If You use the *Decimal-System*, this diagram indicates. BE-HOLD!

$\boxed{42}$	Write any decimal number and SEE !
$\boxed{43}$	Ah ! These IRRATIONAL BEGINNINGS ! BEHOLD !
$\boxed{44}$	What is the rationale behind These IRRATIONAL BE-GINNINGS ?
$\boxed{45}$	ONE CREATED MANY ! BEHOLD !
$\boxed{46}$	One Created Two and Two Created Many !
$\boxed{47}$	Start Counting in Twos instead of Ones !
$\boxed{48}$	The Choice Function Grows on in random abandon !
$\boxed{49}$	THE INFINITE CHOICE !
$\boxed{50}$	THE INFINITE FREEDOM !
$\boxed{51}$	But Ah ! The Beautiful Limitation !
$\boxed{52}$	A Choiceless Beginning !! The Choosing NEVER ENDS !!

| 53 | You are setting the set of all RATIONALS and IRRA-TIONALS into a 1–1 Correspondence with the set of ALL *NATURAL NUMBERS*.
But now the setting itself takes up INFINITE TIME AND SPACE ! |

| 54 | Where do you Begin *trans-finite induction ?* When do you Begin *trans-finite induction ?* |

| 55 | 2^n. { $n = 1, 2, 3, \text{---} \infty\infty$ FOR EVER ∞ } ! BEHOLD ! |

| 56 | 10^n. { $n = 1, 2, 3, \text{---} \infty\infty$ FOR EVER ∞ } ! BEHOLD ! |

| 57 | ∇^n. { $\nabla = 2, 3, 4, \text{---} \infty\infty$ FOR EVER ∞ } !
{ $n = 1, 2, 3, \text{---} \infty\infty$ FOR EVER ∞ } ! BEHOLD ! |

| 58 | What is 2^n ? |

| 59 | What is 10^n ? |

| 60 | What is ∇^n ? |

| 61 | If ∇^n, { $\nabla = 2, 3, 4, \text{---} \infty\infty$ FOR EVER ∞ }
{ $n = 1, 2, 3, \text{---} \infty\infty$ FOR EVER ∞ }, is countable, then the set of All Real Numbers is Countable. |

| 62 | If $\Sigma \nabla^n$, { $\nabla = 2, 3, 4, \text{---} \infty\infty$ FOR EVER ∞ }
{ $n = 1, 2, 3, \text{---} \infty\infty$ FOR EVER ∞ }, is countable, then the set of All the digits of All Real Numbers is Countable. |

| 63 | If the Choice Ceases, it is a RATIONAL NUMBER.
If the Choice grows on ETERNALLY, it is an IRRA-TIONAL NUMBER. |

| 64 | In the INFINITY OF IRRATIONALS AND RATIO-NALS, how many options are there for the first DECIMAL PLACE ? THINK ! Ah ! BEHOLD ! |

65	In the INFINITY OF IRRATIONALS AND RATIONALS, how many options are there for the second DECIMAL PLACE ? THINK ! Ah ! BEHOLD !
66	In the INFINITY OF IRRATIONALS AND RATIONALS, how many options are there for the third DECIMAL PLACE ? THINK ! Ah ! BEHOLD !
67	In the INFINITY OF IRRATIONALS AND RATIONALS, how many options are there for the nth DECIMAL PLACE ? THINK ! Ah ! BEHOLD !
68	GO ON FOR EVER FOR EVER ! THINK ! Ah ! BEHOLD !
69	THE PROOF ENDS HERE !!!! $\infty\infty$ FOR EVER ∞ !!!! Ah ! BEHOLD

∞

Theorem
The set of all Irrational Numbers is countable.
The set of all Real Numbers is countable.

 Proof:
Every Irrational Number is an INFINITE NEVER-ENDING DECIMAL EXPANSION. There Exists NO Irrational Number that is not an INFINITE NEVER-ENDING DECIMAL EXPANSION. There also Exist INFINITE Rational Numbers that are also INFINITE NEVER-ENDING DECIMAL EXPANSIONS. If we shift to the binary-system from the decimal system, we can clearly re-cognize that each of these INFINITE EXPANSIONS can either have "0" or "1" for each position from the first position to the LAST FOR EVER FOR EVER.
0101101111010101000001111110000000000000010101011010
0000101101010101010101010000010101001000000011111111
111111111111110000000111111111110000 $- - - \infty\infty$ FOR EVER ∞

Therefore, we can see with our intuition or through the diagramatic representation that the first position in the INFINITE EXPANSION has exactly 2 options. Clearly, for the second position the options become 2^2. For the third position there are 2^3 number of options. This process clearly goes on FOR EVER and we can assert that for the nth position there are 2^n options: $\{\ n = 1, 2, 3, - - - \infty\infty$ FOR EVER $\infty\ \}$. Hence the set of all INFINITE Irrational Numbers (and hence Real Numbers) is in one-one correspondence with the set $\{\ 2^n\ \}$.

But then, $\{\ 2^n\ \}\ \{\ n = 1, 2, 3, - - - \infty\infty$ FOR EVER $\infty\ \}$ is clearly countable or denumerable. Therefore THE SET OF ALL INFINITE DECIMAL EXPANSIONS IS COUNTABLE OR DENUMERABLE. EVERY IRRATIONAL NUMBER IS AN INFINITE DECIMAL EXPANSION.

THEREFORE THE SET OF ALL IRRATIONAL NUM-
BERS IS COUNTABLE and also THE SETS OF ALL
REAL NUMBERS AND COMPLEX NUMBERS ARE
COUNTABLE.

In conclusion we can asseverate that ALL SETS ARE
COUNTABLE and that the classification of INFINITE sets
into countable and uncountable sets is IGNORANCE. ALL
SETS ARE COUNTABLE TO BEGIN WITH AND THE
COUNTING IS A NEVER-ENDING GAME. IT IS ALL-
WAYS AS IF WE HAVE JUST BEGUN !!

[If we use the decimal system, the number of options
for each decimal place for all the decimal expansions would
become 10^n.
{ $n = 1, 2, 3, ---\infty\infty$ FOR EVER ∞ }
If we use a ∇-ary system { $\nabla = 2, 3, ---\infty\infty$ FOR EVER
∞ }, the number of options for each place for all the ∇-ary
expansions would become ∇^n.
{ $n = 1, 2, 3, ---\infty\infty$ FOR EVER ∞ }
But 2^n or 10^n or ∇^n it is all the same. The set of
ALL IRRATIONAL NUMBERS AND REAL NUMBERS
IS COUNTABLE.]

[Since $\Sigma 2^n$, $\Sigma 10^n$, or $\Sigma \nabla^n$ { $n = 1, 2, 3, ---\infty\infty$ FOR
EVER ∞ }, is clearly countable, the set of All digits that
constitute the set of All Irrational Numbers and Real Num-
bers is also countable !!]

$$\infty$$

THE PROOF IN A NUTSHELL

The set of All Real Numbers is the set of All sequences of Zeroes and Ones. For every element of the "set of All sequences of Zeroes and Ones", there are exactly 2^n ways of Choosing the nth position where { $n = 1, 2, 3,$ --- $\infty\infty$ FOR EVER ∞ }. Since 2^n is countable, the set of All Real Numbers is clearly countable. As a consequence the set of All Numbers, rational, irrational, complex, quaternions, octonions, is countable.

SPECIAL NOTE

To completely write the decimal expansion of any INFINITE *Rational or Irrational Number* we need INFINITE TIME AND SPACE. The task is clearly ETERNALLY IMPOSSIBLE.

The following elucidation may clarify the essentials even more. Consider the following set I which defines the set of ALL IRRATIONAL NUMBERS in their INFINITE decimal expansions.

$$\mathbf{I} = \sum_{i=1}^{\infty} \frac{n_i}{10^{(\sum z_i + \sum \phi_i)}}$$

ϕ_i = Number of digits of n_i
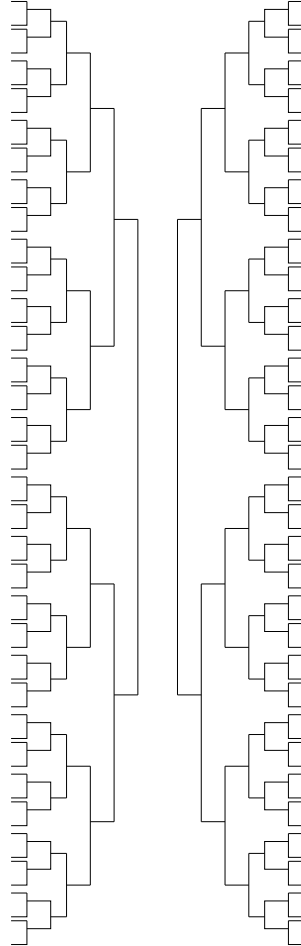z_i = Number of zeroes preceeding n_i and succeeding n_{i-1} in the INFINITE decimal expansions.
{ $n_i = 1, 2, 3,$ --- $\infty\infty$ FOR EVER ∞ }
{ $z_i = 0, 1, 2, 3,$ --- $\infty\infty$ FOR EVER ∞ }
{ $\phi_i = 1, 2, 3,$ --- $\infty\infty$ FOR EVER ∞ }

Now, $\mathbf{I} = \displaystyle\sum_{i=1}^{\infty} \dfrac{n_i}{10^{\left(\sum z_i + \sum \phi_i\right)}}$ is a countable INFI-
NITE set by natural definition. Therefore the set of ALL
IRRATIONAL NUMBERS is countable. Let us merely
note that there exists no irrational number that does not
come under the purview of this definition of ALL IRRA-
TIONAL NUMBERS.

$$\infty$$

APPENDIX - 1

∞ FOR EVER ∞∞ - - - - - -   - - - - - - ∞∞ FOR EVER ∞
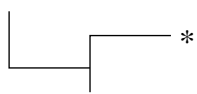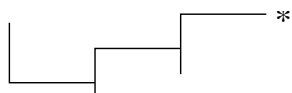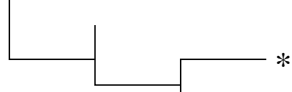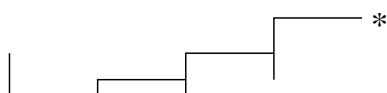
To include the INFINITE *Negative rational and irrational numbers*, let the *Labyrinth* grow towards the left too.

- - - - - - ∞∞ FOR EVER ∞

- - - - - - ∞∞ FOR EVER ∞
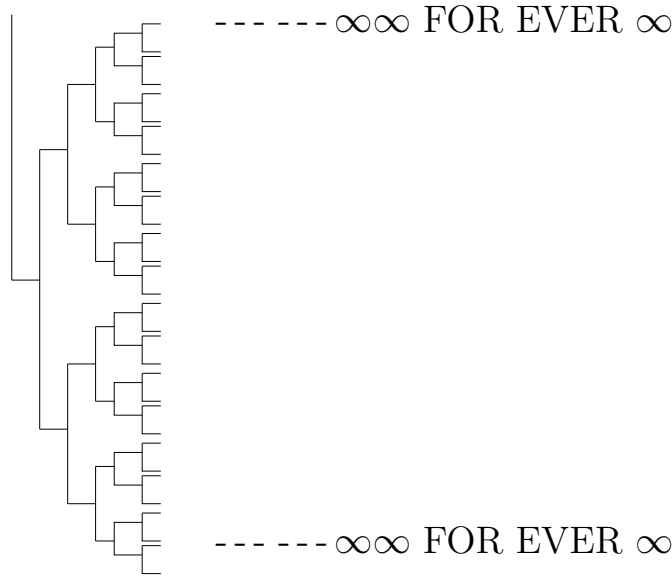
It is generally assumed that the set of all *Natural Numbers* is countable. But the above section of the *Labyrinth Diagram* indicates the proof for the fact that the set of All *Natural Numbers* is countable. Every *Natural Number* finite or INFINITE can be expressed as a finite or NEVER-ENDING sequence of 0's and 1's. But for the first position we can allways have only "one", since INFINITE number of zeroes before a *Natural Number* have no value. For the second position we have exactly 2 options. Proceeding inductively thus, we can see that the options we have for the nth position are clearly $2^{(n-1)}$: { $n = 1, 2, 3, - - - \infty\infty$ FOR EVER ∞ }. Hence the set of All *Natural Numbers* is in one-one correspondence with the set { $2^{(n-1)}$ }: { $n = 1, 2, 3, - - - \infty\infty$ FOR EVER ∞ }. But then { $2^{(n-1)}$ }, { $n = 1, 2, 3, - - - \infty\infty$ FOR EVER ∞ } is a countable set.
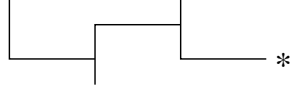
So the set of All *Natural Numbers* is countable. Since $\{\Sigma 2^{(n-1)}\}$, { $n = 1, 2, 3, - - - \infty\infty$ FOR EVER ∞ } is countable, the set of All digits of All *Natural Numbers* is also countable.

∞∞∞∞∞∞∞∞∞∞∞∞∞∞∞∞∞∞∞∞∞∞∞∞∞∞
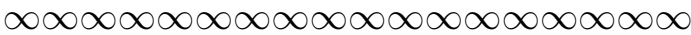
Labyrinth Notation	Binary Notation	Decimal Notation
*	= 0	= 0
*	= 1	= 1
*	= 10	= 2
*	= 11	= 3
*	= 100	= 4
*	= 101	= 5
*	= 110	= 6
*	= 111	= 7
*	= 1000	= 8

* indicates the closure of the *Labyrinth*.

APPENDIX - 2

Extracts from "INFINITY --- SET THEORY, CANTOR'S DIAGONALIZATION AND THE CONTINUUM HYPOTHESIS. A META-LOGICAL DISCOURSE."

Let us once again look at our two representative diagrams.

$A_1 = \{$ 1 1 1 1 1 1 1 1 ············ ∞ ∞ FOR EVER ∞ $\}$
$A_2 = \{$ 1 1 1 1 1 1 1 1 ············ ∞ ∞ FOR EVER ∞ $\}$
$A_3 = \{$ 1 1 1 1 1 1 1 1 ············ ∞ ∞ FOR EVER ∞ $\}$
$A_4 = \{$ 1 1 1 1 1 1 1 1 ············ ∞ ∞ FOR EVER ∞ $\}$
$A_5 = \{$ 1 1 1 1 1 1 1 1 ············ ∞ ∞ FOR EVER ∞ $\}$

··
··

$A_n \ = \{$ 1 1 1 1 1 1 1 1 ············ ∞ ∞ FOR EVER ∞ $\}$
$A_{n+1} = \{$ 1 1 1 1 1 1 1 1 ············ ∞ ∞ FOR EVER ∞ $\}$

------ ∞∞ FOR EVER FOR EVER ∞ --------≫≫≫

Fig : 1

$B_1 = \{$ 1 1 0 0 1 0 1 0 0 ············ ∞ ∞ FOR EVER ∞ $\}$
$B_2 = \{$ 0 0 1 1 1 1 0 1 1 ············ ∞ ∞ FOR EVER ∞ $\}$
$B_3 = \{$ 1 1 0 0 0 0 1 1 0 ············ ∞ ∞ FOR EVER ∞ $\}$
$B_4 = \{$ 0 1 1 1 0 1 0 0 1 ············ ∞ ∞ FOR EVER ∞ $\}$
$B_5 = \{$ 1 0 1 0 1 0 1 1 0 ············ ∞ ∞ FOR EVER ∞ $\}$
$B_6 = \{$ 0 0 1 0 1 0 0 1 0 ············ ∞ ∞ FOR EVER ∞ $\}$

··
··

$B_n \ = \{$ 0 0 0 0 0 0 0 ············ ∞ ∞ FOR EVER ∞ $\}$
$B_{n+1} = \{$ 1 1 1 1 0 0 0 ············ ∞ ∞ FOR EVER ∞ $\}$

··
··

------ ∞∞ FOR EVER FOR EVER ∞ --------≫≫≫

Fig : 2

Fig : 1 is the diagramatic arrangement to *indicate* the proof that the *union* of a *countable* INFINITE *NUMBER(!)* of *countable* INFINITE *sets* is a *countable* INFINITE *set*, or more specifically, that the set of ALL RATIONALS is a *countable* INFINITE set.

Fig : 2 is the diagramatic arrangement to *indicate* the proof that the set of ALL sequences of 0's and 1's is an *uncountable* INFINITE *set*, or more specifically, that the set of ALL *REALS [RATIONALS AND IRRATIONALS]* is an *uncountable* INFINITE set.

An *uncountable* INFINITE *set* is *defined* as a set that *IS NOT* a *countable* INFINITE *set*. We ask the very pertinent question whether the *uncountable* INFINITE *set* is *uncountable* to BEGIN WITH or to END WITH. WE ASSERT THAT IT IS ALLWAYS *countable* to BEGIN WITH AND ETERNALLY *uncountable* FOR EVER ie. IT NEVER ENDS !!!!!!

Let us look at these two diagramatic arrangements more *thoughtfully* - ie. Let us *intuit* two different thought-experiments on the *idea* of INFINITE sets.

First, the thought-experiment on the *idea* of INFINITE sets in the diagramatic arrangement of Fig: 1.

Let { A_1, A_2, A_3, --- A_n, A_{n+1}, --- FOR EVER FOR EVER } be a *NEVER-ENDING set* of *human-beings who are* all IMMORTAL. Now *IMAGINE IN YOUR* INFINITE-MIND each of these IMMORTAL *human-beings* A_1, A_2, A_3, --- A_n, A_{n+1}, --- FOR EVER FOR EVER, *LINEARLY ARRANGING* pens or oranges or apples or --- FOR EVER FOR EVER, or merely drawing ONES FOR EVER FOR EVER. We have assumed a *NEVER-ENDING SUPPLY* of pens or oranges or apples or --- or sufficient quantity [INFINITE QUANTITY] of ink to draw ONES,

FOR ALL *ETERNITY*, for each of the INFINITE IM-MORTAL *human-beings* A_1, A_2, A_3, - - - A_n, A_{n+1}, - - - FOR EVER FOR EVER.

Now, the thought-experiment on the *idea* of INFINITE sets in the diagramatic arrangement of Fig: 2.

Let { B_1, B_2, B_3, - - - B_n, B_{n+1}, - - - FOR EVER FOR EVER } be a *NEVER-ENDING set* of *human-beings who are* all IMMORTAL. Let us also assume that each of these *NEVER-ENDING set* of *human-beings who are* all IMMORTAL are provided with an INFINITE *NEVER-ENDING set* of switches *[on\off-systems]* on an INFINITE switch-board. Now *IMAGINE IN YOUR* INFINITE-MIND each of these IMMORTAL *human-beings* B_1, B_2, B_3, - - - B_n, B_{n+1}, - - - FOR EVER FOR EVER *ETERNALLY*, engaged in 'putting on' or 'putting off' the *NEVER-END-ING set* of switches *[on\off-systems]* on his\her personal INFINITE switch-board FOR EVER FOR EVER. Here 'putting on' is represented by 1 and 'putting off' is represented by 0. More mathematically speaking we are dealing with an INFINITE set of *NEVER-ENDING Boolean-Logical decisions* for each of these IMMORTAL *human-beings* B_1, B_2, B_3, - - - B_n, B_{n+1}, - - - FOR EVER FOR EVER *ETERNALLY*.

Now I request you to *dream* these two thought-experiments again and again FOR EVER FOR EVER *ETER-NALLY*, desperately, so that you may be filled with the INFINITE FOR EVER FOR EVER *ETERNALLY*.

Returning to the *ideas* of *countable*-INFINITE *sets* and *uncountable*-INFINITE *sets*, the most *fundamental question* is that if *uncountable*-INFINITE *sets* are defined as those sets which *ARE NOT countable*-INFINITE *sets*, *WHAT DO YOU MEAN BY THIS idea of uncountability?*

Do you say that the *uncountable*-INFINITE *sets* are *uncountable (!)* <u>TO</u> <u>BEGIN</u> <u>WITH</u> <u>OR</u> <u>TO</u> <u>END</u> <u>WITH</u> ? TO BEGIN WITH, ALL INFINITE SETS ARE COUNTABLE AND TO END WITH, NONE OF THEM ARE COUNTABLE FOR EVER FOR EVER. INFINITE IS NEVERENDING. OTHERWISE, BY DEFINITION IT IS NOT THE INFINITE.

To *indicate* the proof that the *set* of ALL sequences of 0's and 1's is an *uncountable* INFINITE *set* or more specifically that the *set* of ALL *REALS [RATIONALS AND IRRATIONALS]* is an *uncountable* INFINITE *set, Cantor's Diagonalization Activity [Process]* is invoked. This *only* proves that we can start a *one-one-correspondence* of the set of *ALL NATURAL NUMBERS* to the set of ALL sequences of 0's and 1's, but we can NEVER EVER *complete the one-one-correspondence*. THIS IS JUST LIKE ASSERTING THAT THERE EXISTS NO LARGEST NATURAL NUMBER. WHENEVER WE COUNT, IT IS ALLWAYS AS IF WE HAVE MERELY SAID 'ONE'. WE ARE ALLWAYS AT THE VERY BEGINNING. EVERY NATURAL NUMBER IS A SELF CREATED INFINITY, A PRIMORDIAL INDUCTIVE-ELEMENT FOR EVER FOR EVER. LAUS DEO !!!!

Now the *Cantorian argument* says that the INFINITE in the second thought-experiment of INFINITE switches and INFINITE *IMMORTAL* switch-board-operators, is more INFINITE than the thought-experiment of INFINITE pens and pen-arrangers! But this is either nonsense, ignorance or both together FOR EVER FOR EVER. Let us *affirm once again* TO BEGIN WITH, ALL INFINITE SETS ARE COUNTABLE AND TO END WITH, NONE OF THEM ARE COUNTABLE FOR EVER FOR EVER. INFINITE

IS NEVER-ENDING. OTHERWISE, BY DEFINITION IT IS NOT THE INFINITE.

WHEN DOES THE FINITE BECOME INFINITE *IN ITS* INFINITE *NEVER-ENDING GOING?* FINITE ITSELF IS NEVER-ENDING; INFINITE NEVER BEGINS !
We also assert that there exists no *partial-ordering* in the *NEVER-ENDING* regions of the INFINITE.

<div align="center">

OM POORNAMADA: POORNAMIDAM
POORNAT POORNAMUDACHYATE
POORNASYA POORNAMADAYA
POORNAMEVAVASHISHYATE

</div>

Let us also specifically note that every *first-element* of the newly constructed [mentally arranged] *countable set* of *ALL* the *Diagonal-elements* conjured up to *prove* the *uncountability* of the *set of ALL SEQUENCES* of 0's and 1's, *BEGINS ALLWAYS* with the *first-element* of our *imaginary* INFINITE arrangement [Fig:2]. ONE {1} is simply a *self-generating* INFINITY. We can also clearly *intuitively* sense that every *NATURAL NUMBER* is a *self-generating* INFINITY. *Cantor's Diagonalization* merely tells us that we can start constructing an arbitrary *denumerable (countable)* set from those already constructed and go on doing this FOR EVER FOR EVER. But we have already seen that even every *denumerable* set can generate INFINITE *denumerable* sets as a consequent property of its INFINITE *NEVER-ENDING linear-arrangement* of INFINITE (!) symbols.
Let us *affirm once again:* TO BEGIN WITH, ALL INFINITE SETS ARE COUNTABLE AND TO END WITH, NONE OF THEM ARE COUNTABLE FOR EVER FOR EVER. INFINITE IS NEVER-ENDING. OTHERWISE, BY DEFINITION IT IS NOT THE INFINITE.

<div align="center">

∞∞∞∞∞∞∞∞∞∞∞∞∞∞∞∞∞∞∞∞∞∞∞∞∞

</div>

It was *natural-intuitive-wisdom* for mathematicians to re-
alize (*re-cognize*) that the set of *ALL RATIONAL-NUM-
BERS* is not in any way more INFINITE than the set of
ALL NATURAL-NUMBERS, despite the fact that between
any two *RATIONALS* there *allways exist* INFINITE *RA-
TIONALS* and between any two *NATURAL-NUMBERS*
there *allways exist only a FINITE* number of *NATURAL-
NUMBERS*. [Further, between any two successive *NATU-
RAL-NUMBERS* there *never exists* any *NATURAL-
NUMBER*.] But when mathematicians *prove (!)* and insist
that the set of *ALL IRRATIONAL-NUMBERS(!)* is *more
(!)* INFINITE [*uncountable* INFINITE] than the set of
ALL RATIONAL-NUMBERS which is *mere (!) countable*
INFINITE, they went tangentially away from the *TRUTH*
of the INFINITE FOR EVER FOR EVER.

Let us *affirm once again:* TO BEGIN WITH, ALL INFI-
NITE SETS ARE COUNTABLE AND TO END WITH,
NONE OF THEM ARE COUNTABLE FOR EVER FOR
EVER. INFINITE IS NEVER-ENDING. OTHERWISE,
BY DEFINITION IT IS NOT THE INFINITE.

To mathematicians who have followed me up till now,
I must clarify a certain fundamental *intuitive* conceptual
point. Here we have questioned the validity of the *Cantor's
Diagonalization* argument used as a method for *creating* a
new (!) type of INFINITE set, *more (!)* INFINITE than
the existent *countable* INFINITE set. But the *Diagonaliza-
tion* used by Gödel in his *Incompletness-theorem* to prove
that every *Formal mathematical-system* [eg. Z_1] generates
its own INFINITE system of *undecidable propositions* is not
invalidated. *Diagonalization* as used in Turing's argument
that there is no *universal algorithm* for deciding whether or
not a Turing-machine is going to stop or implicatively that
Hilbert's *Entscheidungs Problem* has no solution is also not

invalidated. This is to clarify that *Diagonalization* as a process indicating a *NEVER-ENDING INDECISION* is not questioned because that is the *inherent intuitive* property of every INFINITE *inductive* set.

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EPILOGUE

I certainly re-cognize that I am pointing out a *fundamental misconception and error* in the by now well-accepted post-Cantorian formal Mathematics of INFINITE sets, as formalized in the Zermelo-Fraenkel Axiomatic-Scheme and the extended Gödel-Bernays Axiomatic-Scheme etc. If uncountable INFINITE sets different from countable INFINITE sets don't exist ie. If every set can be set into a one-one correspondence with the set of All *Natural Numbers*, an enormous amount of accepted formal mathematics looses its formal value and anything of value in this debris of verbosity has to be re-stated. [Ref-3]. GCH is a non-existent problem equating non-existent *infinites(!!!)*. Gödel's theorems on the consistency of the GCH and the AC are sheer absurd exercises in ETERNAL FUTILITY to put it mildly ! AC is not needed if *uncountable infinite sets* Don't Exist. All countable INFINITE sets are well-ordered. So it is not necessary to assume the AC, because AC is implied in the idea of set with elements.
[For more details see Ref–3].

Such general clarifications have happened earlier in the history of Mathematics. For centuries, people were trying to trisect an angle and square the circle, before Galois proved that it is not possible to do these things. Similarly, Abel had to demonstrate that there exist no analytical solutions for the quintic and above.

I pray that my fate is not Abel's!! Whatever it is, I am INFINITELY sure that *Vincit omnia veritas* Allways!! *OM NAMA SHIVAYA !*

∞∞∞∞∞∞∞∞∞∞∞∞∞∞∞∞∞∞∞∞∞∞

Bibliography

1) The ancient Sages and Seers of India:
For ZERO and THE DECIMAL SYSTEM.

Zero

One became many
And
Counting came to Be.
Before one, Zero?
God! Zero, Zero, Zero --- --- --- !

Somewhere in
The Primordial Point of no-reference
Infinite Primordial Points of pervasive reference
The Magic Zero
Became Revealed.

Apparent history
(All history is apparent!)
Asserts that
Zero came from India
From the Indian mind
From some unknown Indian mind,
Making a tiny circle
Bestowing on it
Power, potential, value
Calling it
Shoonyam, Poojyam
Conjuring
The Primal Magic of
The Decimal system.

Inscribe
Ten zeroes

Hundred zeroes
Thousand zeroes
Million zeroes
Billion zeroes
Million, million, million --- --- --- zeroes
Billion, billion, billion --- --- --- zeroes
After a solitary "One"
Define
The infinity of numbers.
For the sake
Of future historians
May I hail
This unknown creator
Discoverer De-coverer
Of Zero
As the God-father
Of Mathematical Analysis
Of Theoretical Physics
Of All measures
Of Binary system and Boolean logic
Of All Computers
(For instance imagine
a computer without zero)
Of Prime-Number Problem and Goldbach
Of Riemann Gödel Einstein Ramanujan --- --- ---
Of Nuclear Fission and Fusion
Of Genetic Codes and Planck's constant
Of Big-Bangs and Many-worlds
Of Bell's Theorem and Carbon dating --- --- ---

Should I say more?
Could I say more?
How could I say more?
More More More --- --- ---
Zero Zero Zero --- --- ---

All posterity is
Perpetually doomed
To say zero zero zero
Here there everywhere.
Glorify
The Primal Seer-mind
And the unknown body
Centering the Magic mind.

One Became Many
And
Counting came to Be.
Before one, Zero?
God! Zero Zero Zero --- --- --- !
Zero by Zero is Maya
God! Zero Zero Zero --- --- --- !

$$\infty\infty\infty\infty\infty\infty\infty\infty\infty\infty\infty\infty\infty\infty\infty$$

2) Borges Jorge Luis:

I share with Borges an intense obsession for the INFI-NITE and NEVER-ENDING *LABYRINTHS*. The following poem affirms my *infinite* gratitude.

A HOMAGE TO BORGES

(To Pramod)

From the solitary Library of Babel
Where the infinite libraries fuse together
Radiating into a primordial architecture
I unearthed your rare treasures.
Now that I have
They turn our common heritage
Our ageless pages of The Book of Sand.

Achilles and tortoises tentatively resolve
Zeno's paradoxes breezing through
The stormy spider mizmazes
In the mystery universes of infinitesimals
Concealed in the magic of point references
Concealed in the linear nature of terruvial time.
Certan's Paradox of self-reference
Retains its primal paradoxical nature
Parodying itself:
The primal semantics is inevitably
A Self-evident self-parody: a sacred tautological Silence.

We will evade infinitely regressing arguments
Of the dream within a dream within a dream within a
dream
From the Ramayana and the Arabian Nights
And the two ageless mirrors facing each other for ever
Proceed in the timeless faith
Of the key sound-word-cadence
That knows it All
Resolves it All.

Sometimes
Wandering through these Circular Ruins
Through the Garden of infinite Forking Paths
I suffer Fumes's agonizing memory -
Protean Golem drifts from tale to tale

Freshly disguised every new day.
All the mythologies, parables, cosmologies, fables are
This moment of no-reference -
God bless the point of infinite imaginings.

I may never see Buenos Aires,
Yet Buenos Aires now is part of my fable.
I have re-cognized strange Labyrinths of Tlön
Through your non-seeing eyes
Discovering the stars, mirrors and roses anew
Discovering the dubious topology of a one-sided coin
Discovering the arithmetic irony of the Babylonian Lottery
Sensing a rare geometric smell of the word
Through your chaste etymological meanderings!

Before I move away
Into another Cosmic Envelope
Into another primeval ecological niche
Become another Imaginary Being
In the book of infinite beings of imaginations
(which I am sure All Beings Do)
I must thank my friend
For leading me to your quiet shelf
In The infinite Library of Babel.

Honestly I don't possess
A copy of The Book of Sand:
If I really did
why should I wander through
These never ending corridors
Of The Library of Babel.

Here lies completed
Another inevitable page
In the Book of Sand.
I wonder where it rests
Safely in The Library of Babel -
Here! ?

∞∞∞∞∞∞∞∞∞∞∞∞∞∞∞∞∞

3)   Narayanan Raghunathan

INFINITY --- --- SET THEORY, CANTOR'S DIAGO-
NALIZATION AND THE CONTINUUM HYPOTHESIS.
A META-LOGICAL DISCOURSE.   *(unpublished)*
The prologue of this book is given below.

PROLOGUE

This is a monograph on the foundations of Set theory
of INFINITE Sets. It is by now one of the fundamen-
tally accepted conventions of this rather vociferous the-
ory that there exist *countable(denumerable)* and *uncount-
able(undenumerable)* types of INFINITE sets. The proof
for the existence of *uncountable* INFINITE sets { for ex-
ample the theorem that the set of ALL REAL NUMBERS
is *uncountable* or that, the set of ALL REAL NUMBERS
between any two Real Numbers is *uncountable* (whereas
the set of ALL RATIONAL NUMBERS IS *countable*)},
uses the by now legendary Cantor's Diagonalization Pro-
cess or the Diagonal Slash method to arrive at a contradic-
tion! But this *reductio ad absurdum mode of proof* using
diagonalization or a similar INFINITELY time-consuming
inductive-imagination proves NOTHING. The method of
Diagonalization merely says that we can *count* along the
diagonal now. Ah! the INFINITE *COUNTABLE DIAG-
ONAL !* That is to asseverate once and for ALL FOR
EVER that there exists no uncountable set such that it
is greater than {>}, more INFINITE than, a countable
INFINITE set. Every INFINITE set IS COUNTABLE TO
BEGIN WITH AND ETERNALLY INEXHAUSTIBLE; IT
NEVER ENDS; IT CAN NEVER END. EVEN IF WE
ARE IMMORTAL WE CAN NEVER NEVER EVER EX-
HAUST COUNTING A COUNTABLE INFINITE SET.

THE SET OF ALL NATURAL NUMBERS IS ETERNAL-
LY INEXHAUSTIBLE; EVERY ELEMENT {NATURAL
NUMBER} IS A SELF-GENERATIVE-INDUCTIVE EL-
EMENT. CLEARLY THERE EXISTS NO LARGEST
NATURAL NUMBER; THERE CAN NEVER EXIST A
LARGEST NATURAL NUMBER. It is this most self-evi-
dent fact that the first discourse dwells upon. This dis-
course [Discourse-1] is simple and allmost a childlike mean-
dering that can be read and understood by anybody who
can count on FOR EVER. I thought that I had said allmost
everything essential. Yet, I felt that I may be mistaken to
be an amateur idiot making noise for attention. But hon-
estly, that is not the intention at all.

Discourse-2 is meant for students of mathematics. It
takes out the essentials of 'Chapter –2: Set Theory' from
the "*Principles of Mathematical Analysis*" by *Walter Rudin*
and submits it to a further analysis in the light of Discourse-
1. Once again we reassert the intuitive meta-logical asser-
tions more formally now, or apparently more formally.

By now I had disturbed a *Hornet's Nest.* I had to be more
formal and reaffirm the simple Truth for which I stand.
Discourse-3 is the final indulgence. Here, *Paul J. Cohen's*
"*Set Theory and the Continuum Hypothesis*" *is* presented
in full with the author's inter-fusing but interfering dis-
course. We Re-Cognize that the *Zermelo-Fraenkel* Axiom
Structure is totally ill-founded. We realize that the *Ax-*
iom of Infinity is a lie. The *Axiom of Replacement* is an
INFINITE *ETERNALLY UNCOUNTABLE* family of ax-
ioms. The *Axiom of the Power Set* is a lie because $P(N)$
is *Countable*, or the Power Set of any set is *Countable*. The
Axiom of Choice is Implicit in the idea of an INFINITE set
because every set is *Well-Ordered*. We continue to wander
and destroy the whole *Zermelo-Fraenkel* architectures of

absurdity. We further wander through the *Gödel-Bernays* indulgences and the rest of the book destroying merrily inevitably. We also Re-Cognize that the Generalized Continuum Hypothesis (GCH) is a false equality, clearly because the idea of the INFINITE transcends ALL measures. That is, *Gödel's Meta-Mathematical Theorem* that states that a *Logical-Contradiction* obtained by the application of GCH may be obtained without the application of GCH, is like saying that, "Assuming the equality *"Fire = Water"* does not change the *Natural Laws of Natural Numbers.*" The *Axiom of Choice* is implicit in the idea of INFINITE sets. Naturally, whether you assume the *Axiom of Choice* formally or not, every INFINITE set is Well-Ordered implicitly in the *intuitive idea of a set. Gödel's Incompleteness theorem* had Revealed the essentials, telling Mathematicians *what not to do.* I still wonder why Gödel himself didn't see the utter futility of *Zermelo-Fraenkel, Gödel-Bernays* and such *pseudo*-axiomatic structures.

One fundamental but trivial TRUTH is enhanced by these discourses "Every irrational number however long you may write it in any notation (binary, decimal, N-ary), is allways a rational number." This LAW is ETERNALLY valid, even if you have INFINITE TIME, EVEN IF YOU ARE IMMORTAL.

It is with great pain that I close this Prologue. *Cantor's Diagonalization* method to prove the existence of *Uncountable* INFINITE sets was actually an idea that had impressed me for its genius. *Gödel's Incompleteness-Theorem* had really changed my life. Now in my discoursing against their teaching there is a tragic element of *meta-physical-*multi-dimensional patricide which is deeply regretted.

There is an imminence about the *genesis* of this book, about it ALL. Refer Appendix–5 for further details. I request your TIME for wandering with me. All the Appendices may be read before and along with the text. They are also essential to the discourses that follow.

Yours Most Sincerely,
In search of the INFINITE,
In the name of the one and only one INFINITE,
NARAYANAN RAGHUNATHAN

127, NEHRU NAGAR,
THRISSUR-6.
680006.
KERALA STATE.
INDIA.
EARTH - COSMOS

OM NAMA SHIVAYA

∞∞∞∞∞∞∞∞∞∞∞∞∞∞∞∞∞∞∞∞∞∞∞∞∞∞∞∞

OM SHRI MAHA GANAPATHAYE NAMA:

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OM POORNAMADA: POORNAMIDAM
POORNAT POORNAMUDACHYATE
POORNASYA POORNAMADAYA
POORNAMEVAVASHISHYATE

OM SHOONYAMADA: SHOONYAMIDAM
SHOONYAT SHOONYAMUDACHYATE
SHOONYASYA SHOONYMADAYA
SHOONYAMEVAVASHISHYATE

THE POWER SET OF
EVERY COUNTABLE INFINITE SET IS
COUNTABLE.

∞ ∞ ∞ ∞ ∞ ∞ ∞ ∞∞ ∞ ∞ ∞ ∞ ∞ ∞ ∞ ∞

Narayanan Raghunathan

<u>Abstract:-</u> First we prove that the set of ALL finite subsets of any countable INFINITE set is countable. Then we prove that the set of ALL INFINITE subsets of any countable INFINITE set is countable. Thus we prove once and for ALL, FOR EVER that THE POWER SET OF EVERY COUNTABLE INFINITE SET IS COUNTABLE. We also prove thereby that the Axiom of the power Set of the Zermelo-Fraenkel Scheme, the Gödel-Bernays Scheme etc is FALSE!!

∞ ∞ ∞ ∞ ∞ ∞ ∞ ∞ ∞

<u>Theorem</u>

The Power Set of Every Countable Infinite Set is Countable.

<u>Proof :</u> Let $X = \{x_i, x_2, x_3, x_4, x_5, ---- \infty\infty$ FOR EVER $\infty\}$ be a Countable Infinite Set.

Let $P(X)$ be the Power set of X that consists of the set of All sub-sets of X.

Let ϕ be the null set.

Let $P_1(X) = \{[x_{i_1}]$ $\{i_1 = 1, 2, 3, ---- \infty\infty$ FOR EVER $\infty\}$ be the set of All sub-sets of X with a single element each.

Let $P_2(X) = \{[x_{i_1}, x_{i_2}]\}\{i_1, i_2 = 1, 2, 3, ---- \infty\infty$ FOR EVER $\infty\}$ be the set of All sub-sets of X with two elements each.----

Let $P_n(X) = \{[x_{i_1} x_{i_2}, ---- x_{i_n}]\}$
$\{i_1, i_2, ---- i_n = 1, 2, 3, ---- \infty\infty$ FOR EVER $\infty\}$ be the set of All sub-sets of X with "n" elements each.

Now ϕ is clearly Countable, rather there is nothing to count here.

$P_1(X) = \{[x_{i_1}]\{i_1 = 1, 2, 3, ---- \infty\infty$ FOR EVER $\infty\}$ has exactly the same number of elements as X and hence $P_1(X)$ is also Countable.

Now in $P_2(X) = \{[x_{i_1}, x_{i_2}]\}$ $\{i_1, i_2 = 1, 2, 3, ---- \infty\infty$ FOR EVER $\infty\}$, every element of $P_1(X)$ creates a Countable Infinite number of elements each by conjoining with each element of X. Therefore $P_2(X)$ is Countable union of Countable infinite sets and hence Countable.

Now in $P_3(X) = \{[x_{i_1}, x_{i_2}, x_{i_3}]\}$ $\{i_1, i_2, i_3 = 1, 2, 3, ---- \infty\infty$ FOR EVER $\infty\}$, every element of $P_2(X)$ creates a Countable Infinite number of elements each by conjoining with each element of X. Therefore $P_3(X)$ is Countable union of Countable infinite sets and hence Countable.

Now let us assume that $P_n(X)$ is Countable.

Now in $P_{(n+1)}(X) = \{[x_{i_1}, x_{i_2}, x_{i_3}, ---- x_{i_{(n+1)}}]\}$

$\{i_1, i_2, i_3 \text{----} i_{(n+1)} = 1, 2, 3, \text{----}\infty\infty$ FOR EVER $\infty\}$, every element of $P_n(X)$ creates a Countable Infinite number of elements each by conjoining with each element of X. Therefore $P_{(n+1)}(X)$ is Countable union of Countable infinite sets and hence Countable.

Thus we have proved that $P_1(X)$ is Countable and that if $P_n(X)$ is Countable $P_{(n+1)}(X)$ is Countable.

But then $P(X) = \phi \cup P_1(X) \cup P_2(X)\text{----}\cup P_n (X) \text{----}\infty\infty$ FOR EVER ∞

THEREFORE P(X) is ETERNALLY COUNTABLE FOR EVER!!!

$$\infty \; \infty \; \infty \; \infty \; \infty \; \infty \; \infty \; \infty \; \infty \; \infty \; \infty \; \infty \; \infty \; \infty \; \infty \; \infty$$

Note: We have not eliminated superfluous entries like $\{x_1, x_1\}$ since it does not matter for our proof. We can easily eliminate them.

My friends Ranganath and Krishnan who read the above proof, pointed out to me that the proof holds only for ALL FINITE SUBSETS and does not include the case of INFINITE SUBSETS. So we prove the theorem for ALL INFINITE SUBSETS too.

We first consider the regularly progressing INFINITE SUBSETS of
$X = \{x_1, x_2, x_3, x_4, x_5, \text{----}\infty\infty$ FOR EVER $\infty\}$

Let $X_{c_i+nk} = \{x_{c_i}, x_{c_i+k}, x_{c_i+2k}, \text{----}x_{c_i+nk}\text{----}\infty\infty$ FOR EVER $\infty\}$

$$c_i = \{1, 2, 3\text{----}\infty\infty \text{ FOR EVER } \infty\}$$
$$k = \{1, 2, 3\text{----}\infty\infty \text{ FOR EVER } \infty\}$$
$$n = \{1, 2, 3\text{----}\infty\infty \text{ FOR EVER } \infty\}$$

Now $X_{c_i+nk} = \{x_{c_i}, x_{c_i+k}, x_{c_i+2k}, \text{----}x_{c_i+nk}, \text{----}\infty\infty$ FOR EVER $\infty\}$ is clearly a union of countable INFINITE SETS and hence countable.

Now we consider the irregularly (randomly) progressing IN-FINITE SUBSETS of X = $\{x_1, x_2, x_3, x_4, x_5, ---- \infty\infty$ FOR EVER $\infty\}$

Let $X_{\sum c_{i_j}} = \{x_{c_{i_1}}, x_{c_{i_1}+c_{i_2}}, --- x_{c_{i_1}+c_{i_2}}, --- +c_{i_j}, --- \infty\infty$ FOR EVER $\infty\}$

$$c_{i_j} = \{1, 2, 3 ---- \infty\infty \text{ FOR EVER } \infty\}$$
$$j = \{1, 2, 3 ---- \infty\infty \text{ FOR EVER } \infty\}$$

Now $X_{\sum c_{i_j}} = \{x_{c_{i_1}}, x_{c_{i_1}+c_{i_2}}, ---- x_{c_{i_1}+c_{i_2}}, ---- +c_{i_j}, ---- \infty\infty$ FOR EVER $\infty\}$

is clearly a countable union of countable INFINITE SETS and hence countable. Further $\exists$ NO INFINITE SUBSETS OF X that is excluded in this proof.

When $c_{i_2} = c_{i_3} ---- = c_{i_j} = k$, the randomly collected countable INFINITE SUBSETS become regularly collected. NOW I AM INFINITELY SURE THAT I HAVE PROVED FOR EVER, THAT POWER SET OF ANY COUNTABLE INFINITE SET, IS COUNTABLE FOR EVER.

$$\infty \; \infty \; \infty \; \infty \; \infty \; \infty \; \infty \; \infty \; \infty \; \infty \; \infty \; \infty \; \infty \; \infty \; \infty \; \infty$$

For the ETERNALLY FALSE, by now traditional proof for the *uncountability* of the Power Set of the Countable Infinite set, see page 41[1]. Also, those who are not sure that 1 is the smallest *NATURAL NUMBER*, see page 17[1], for the profound proof.

Conclusions: Since, "The Power Set of Every Countable Infinite Set is Countable", the fundamental 'Axiom of the power set' of the *Zermelo-Fraenkel* Scheme is FALSE. For more details see [2] and [3]

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UUM. *(Unpublished)*

3) Narayanan Raghunathan:
INFINITY - - - - - SET THEORY, CANTOR'S DIAGONA-
LIZATION AND THE CONTINUUM HYPOTHESIS. A
META-LOGICAL DISCOURSE. *(Unpublished)*

Narayanan Raghunathan
127, NEHRU NAGAR,
THRISSUR-6,
680006,
KERALA STATE,
INDIA,
EARTH - COSMOS

OM NAMA SHIVAYA

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OM SHRI MAHA GANAPATHAYE NAMA:

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OM POORNAMADA: POORNAMIDAM
POORNAT POORNAMUDACHYATE
POORNASYA POORNAMADAYA
POORNAMEVAVASHISHYATE

OM SHOONYAMADA: SHOONYAMIDAM
SHOONYAT SHOONYAMUDACHYATE
SHOONYASYA SHOONYMADAYA
SHOONYAMEVAVASHISHYATE

ALL IRRATIONALS [AND HENCE ALL REALS] ARE COUNTABLE - II

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NARAYANAN RAGHUNATHAN

Abstract: Another proof(!) for this ETERNAL TRUTH is elucidated here.

Theorem : -

ALL IRRATIONALS [AND HENCE ALL REALS] ARE COUNTABLE

Proof : -

Let N be the set of ALL NATURAL NUMBERS. Let N_F be the set of ALL Finite NATURAL NUMBERS and let N_I be the set of ALL INFINITE NATURAL NUMBERS ie. NATURAL NUMBERS that are NEVER-ENDING.

$$N = N_F \cup N_I$$

Since N is countable by definition, N_F and N_I being proper subsets of N are also Countable.

Now consider I the set of ALL INFINITE *DECIMAL EXPANSIONS* which include ALL THE IRRATIONAL EXPANSIONS and ALL INFINITELY LONG RATIONAL EXPANSIONS. Let us assume that the Decimal Expansions are in the binary notation. So every element of I can either Begin with 0 or 1. Let I_0 be the set of ALL elements of I that begin with 0 and let I_1 be the set of ALL elements of I that begin with 1.

$$I = I_0 \cup I_1$$

N_I and I_1 can clearly be set into a one-one correspondence with each other since they are identical expansions but for the *decimal point* before each element in I_1. But N_I is countable. Therefore I_1 is also Countable.

Let x_i be any element of I_1. Let $I_{0_{x_i}}$ be set of ALL elements of I_0 that are identical with x_i but for the Zeroes preceeding the Expansion. Each x_i could have "n" Zeroes preceeding it and $n = 1, 2, 3 \text{---} \infty$ $I_{0_{x_i}}$ is a Countable INFINITE SET for Each value of x_i.

But then $I_1 = \{x_i\}$ is countable

$I_0 = I_{0_{x_1}} \cup I_{0_{x_2}} \cup I_{0_{x_3}} \cup \text{----} \cup I_{0_{x_i}} \text{----} \infty\infty$ FOR EVER ∞

I_0 is clearly a Countable Union of Countable INFINITE sets and hence Countable.

We have proved that I_0 and I_1 are both Countable INFINITE sets.

This implies that
$P_I(X) = \{x_{i_1}, x_{i_2}, x_{i_3}\text{----}x_{i_j}\text{----}\infty\infty \text{ FOR EVER } \infty\}$ is Countable.

$\{i_j = 1, 2, 3, 4\text{----}\infty\infty \text{ FOR EVER } \infty\}$
$\{j = 1, 2, 3, 4\text{----}\infty\infty \text{ FOR EVER } \infty\}$

$P(X) = P_F(X) \cup P_I(X)$.

$P_F(X)$ is Countable and $P_I(X)$ is Countable.
Therefore $P(X)$ is Countable.

<div align="center">-END-</div>

<div align="center">$\infty \infty \infty \infty \infty \infty \infty \infty \infty \infty$</div>

An Observation :

The Set N_I could be proved to be *uncountably* INFINITE using the *"cantor's diagonalization* legerdemain"*: We may have to exclude the first digit of each INFINITE NATURAL NUMBER (in the binary notation) from the listing or *diagonalize along* $x_{(i,i+1)}$ instead of *along* $x_{(i,i)}$ which are identical. But then, that would contradict the very definition of Countable INFINITE Sets. So the *ironic* option is clear FOR EVER FOR ALL BEINGS PAST PRESENT FUTURE OTHERWISE. THE SET OF ALL IRRATIONALS IS COUNTABLY INFINITE or the set of ALL NATURAL NUMBERS is UNCOUNTABLY INFINITE, ETERNALLY contradicting the very definition of COUNTABLY INFINITE Sets!!!!! $\infty\infty$.

<div align="center">$\infty\infty\infty\infty\infty\infty\infty\infty\infty\infty\infty\infty\infty\infty\infty$</div>

OM SHRI MAHA GANAPATHAYE NAMA:

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OM POORNAMADA: POORNAMIDAM
POORNAT POORNAMUDACHYATE
POORNASYA POORNAMADAYA
POORNAMEVAVASHISHYATE

OM SHOONYAMADA: SHOONYAMIDAM
SHOONYAT SHOONYAMUDACHYATE
SHOONYASYA SHOONYMADAYA
SHOONYAMEVAVASHISHYATE

THE POWER SET OF EVERY COUNTABLE INFINITE SET IS COUNTABLE - II

∞ ∞ ∞ ∞ ∞ ∞ ∞ ∞∞ ∞ ∞ ∞ ∞ ∞ ∞ ∞ ∞

Narayanan Raghunathan

Abstract: Another proof(!) for this ETERNAL FACT is elucidated here.

<u>Theorem</u>

THE POWER SET OF EVERY COUNTABLE INFINITE SET IS COUNTABLE

<u>Proof :</u>

Let X= $\{x_1, x_2, x_3, x_4, x_5, ----\infty\infty \text{ FOR EVER } \infty\}$ be a Countable Infinite Set.

Let P(X) be the Power Set of X that consists of the Set of All sub-sets of X.

$P(X) = P_F(X) \cup P_I(X)$ where $P_F(X)$ is the set of ALL finite subsets of P(X) and $P_I(X)$ is the set of ALL INFINITE subsets of P(X). We have proved earlier that the set of ALL finite subsets of P(X) is Countable. Here we provide another argument to prove that the set of ALL INFINITE subsets of P(X) is Countable.

$P_I(X) = \{x_{i_1}, x_{i_2}, x_{i_3} ---- x_{i_j} ---- \infty\infty \text{ FOR EVER } \infty\}$
$\{i_j = 1, 2, 3, 4, ---- \infty\infty \text{ FOR EVER } \infty\}$
$\{j = 1, 2, 3, 4, ---- \infty\infty \text{ FOR EVER } \infty\}$

Let N be the set of ALL NATURAL NUMBERS. Let N_F be the set of ALL Finite NATURAL NUMBERS and let N_I be the set of ALL INFINITE NATURAL NUMBERS ie. NATURAL NUMBERS that are NEVER-ENDING.

$$N = N_F \cup N_I$$

Since N is Countable by definition, N_F and N_I being proper subsets of N are also Countable.

Consider the set

$I_J = \{i_1 i_2 i_3 ---- \infty\infty \text{ FOR EVER } \infty\}$
$\{i_j = 1, 2, 3, 4, ---- \infty\infty \text{ FOR EVER } \infty\}$
$\{j = 1, 2, 3, 4, ---- \infty\infty \text{ FOR EVER } \infty\}$

We can see that

$I_J = \{i_1 i_2 i_3 \text{----} \infty\infty \text{ FOR EVER } \infty\} = N_I$
$\{i_j = 1, 2, 3, 4, \text{----}\infty\infty \text{ FOR EVER } \infty\}$
$\{j = 1, 2, 3, 4, \text{----}\infty\infty \text{ FOR EVER } \infty\}$

But N_I is Countable. Therefore

$I_J = \{i_1 i_2 i_3 \text{----} \infty\infty \text{ FOR EVER } \infty\}$ is Countable.
$\{i_j = 1, 2, 3, 4, \text{----}\infty\infty \text{ FOR EVER } \infty\}$
$\{j = 1, 2, 3, 4, \text{----}\infty\infty \text{ FOR EVER } \infty\}$

This implies that

$P_I(X) = \{x_{i_1}, x_{i_2}, x_{i_3} \text{----} x_{i_j} \text{----} \infty\infty \text{ FOR EVER } \infty\}$ is Countable.
$\{i_j = 1, 2, 3, 4 \text{----}\infty\infty \text{ FOR EVER } \infty\}$
$\{j = 1, 2, 3, 4 \text{----}\infty\infty \text{ FOR EVER } \infty\}$

$P(X) = P_F(X) \cup P_I(X).$

$P_F(X)$ is Countable and $P_I(X)$ is Countable.
Therefore $P(X)$ is Countable.

<div align="center">-END-</div>

<div align="center">∞ ∞ ∞ ∞ ∞ ∞ ∞ ∞ ∞ ∞</div>

<u>An Observation</u>:

The Set N_I could be proved to be *uncountably* INFINITE using the *"cantor's diagonalization legerdemain"* : We may have to exclude the first digit of each INFINITE NATURAL NUMBER (in the binary notation) from the listing or *diagonalize along* $x_{(i,i+1)}$ instead of *along* $x_{(i,i)}$ which are identical . But then, that would contradict the very definition of Countable INFINITE Sets. So the *ironic* option is clear FOR EVER FOR ALL BEINGS PAST PRESENT FUTURE OTHERWISE. THE SET OF ALL IRRATIONALS IS COUNTABLY INFINITE or the set of ALL NATURAL NUMBERS is UNCOUNTABLY INFINITE, ETERNALLY contradicting the very definition of COUNTABLY INFINITE Sets!!!!! $\infty\infty$.

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Correspondences

The Editor,	The Editor,
Indian Mathematical Society,	Indian Academy of Mathematics
Department of Mathematics,	Journal,
Meerut University,	Indian Academy of Mathematics,
MEERUT - 250005,	46, Shankar-bag,
INDIA.	INDORE-452006,
	INDIA.

Sir,

Enclosed herewith are two papers on the foundations of *formal mathematics of* INFINITE sets. Kindly verify whether they are suitable for publication.

If found unsuitable, please return the manuscripts with your critical comments.

I am eager that these are published in an Indian journal.

Yours Sincerely,

R. Narayanan

The Editor,
Nature,
Porters South,
Crinan Street,
London NI 9SQ,
ENGLAND.

The Editor,
London Mathematical Society
Journal,
London Mathematical Society,
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GERMANY.

Mathematical Astronomical and
Physical Sciences Proceedings,
Royal Irish Academy,
19 Dawson St.,
Dublin 2,
IRELAND.

Sir,

Enclosed herewith are two papers on the foundations of *formal mathematics of* INFINITE sets. Kindly verify whether they are suitable for publication.

If found unsuitable, please return the manuscripts with your critical comments.

Yours Sincerely,

R. Narayanan

P.S. : Specialists in set-theory are not going to appreciate the following papers because they question their ignorant faith. So kindly consult also other mathematicians who have nothing to loose even if $2^{\aleph_0} = \aleph_0$ (Two raised to aleph-nought is equal to aleph-nought), or even if uncountable infinite sets vanish from Mathematics for ever.

The Head of the Department of Mathematics,
Dept. De Mathematique,
Universiti De Strasbourg,
1– Louis Pasteur,
7, Rue Rene Descartes,
67084 Strasbourg Cedex,
FRANCE.

Sir,

I enclosed two papers on the Set Theory of INFINITE Sets. I request the members of your faculty to go through them. Your critical comments are earnestly solicited.

Kindly respond at the earliest.

Yours Sincerely,

R. Narayanan

P.S. : Specialists in set-theory are not going to appreciate the following papers because they question their ignorant faith. So kindly consult also other mathematicians who have nothing to loose even if $2^{\aleph_0} = \aleph_0$ (Two raised to aleph-nought is equal to aleph-nought), or even if uncountable infinite sets vanish from Mathematics for ever.

Dr. C. L. Parihar,
The Secretary,
Indian Academy of Mathematics,
15 – Kaushaliyapuri, Chitawad Road,
INDORE – 452001 (M.P) INDIA.

Sir,

I enclose the application form for membership to The Indian Academy of Mathematics with a D.D for Rs. 600/- as membership subscription for Life. I request you to enroll myself as a member of the Academy.

I am also enclosing two copies each of the papers {MSS No. 730, 731}. I request you to consider them for publication in the The Indian Academy of Mathematics Journal. I also request you to consult, consider the opinions of experts in mathematical fields other than *Formal Set Theory*, since these papers legitimately question the very foundations of the *Axiomatic Set-Theory of* INFINITE *SETS*.

Yours Sincerely,

R. Narayanan

Prof. Shreeram S. Abhyankar
Mathematics Department,
Purdue University,
West Lafayette IN 47907,
U.S.A.

Sir,

I have heard about you as a legendary Mathematician from India. I have enclosed two papers on the foundations of the Mathematics of INFINITE sets. I request you to go through them and I solicit you for your comments and criticisms. I earnestly hope that you would recognize the INFINITE *HONESTY* behind the creation of these papers. I am not a professional mathematician.

Yours Sincerely,

R. Narayanan

Prof. Vladimir Igroevich Arnold DSc.
Steklov Mathematical Institute,
42, Vavilova Street,
GSP – 1 MOSCOW 117593,
RUSSIA.

Sir,

I have heard about you as a poetic Mathematician. I have enclosed two papers on the foundations of the Mathematics of INFINITE sets. I request you to go through them and I solicit you for your comments and criticisms. I earnestly hope that you would re-cognize the INFINITE *HONESTY* behind the creation of these papers. I am not a professional mathematician.

Yours Sincerely,

R. Narayanan

The Editor,
Springer Verlag London Ltd.,
8, Alexandra Road,
London SW 19 7 JZ,
ENGLAND.

Sir,

Enclosed herewith are two papers (two copies each), on the foundations of *formal mathematics of* INFINITE sets. Kindly verify whether they are suitable for publication.

I also request you to consult, consider the opinions of experts in mathematical fields other than *Formal Set Theory*, since these papers legitimately question the very foundations of the *Axiomatic Set-Theory of* INFINITE *SETS*.

Yours Sincerely,

R. Narayanan

The Editor,
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3175, Princteon Pike,
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U.S.A.

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U.S.A.

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PARIS. Cedex 05,
FRANCE.

The Editor,
Ecole Doctorole de Mathematique de Bordeaux D,
351, Cours de la liberation,
33400 TALENCE.,
FRANCE.

Sir,

   Enclosed herewith are two papers on the foundations of *formal mathematics of* INFINITE sets. Kindly verify whether they are suitable for publication.

   If found unsuitable, please return the manuscripts with your critical comments.

Yours Sincerely,

R. Narayanan

The Head of the Department of Mathematics,
TIFR Centre,
Indian Institute of Science Campus,
Bangalore - 560012.
INDIA.

Sir,

I enclose two papers on the Set Theory of INFINITE Sets. I request the members of your faculty to go through them. Your critical comments are earnestly solicited.

Kindly respond at the earliest.

Yours Sincerely,

R. Narayanan

Sir. Roger Penrose. F.R.S
Mathematical Institute,
24-29 St. Giles,
OXFORD, OX 13LB,
ENGLAND.

Sir,

Enclosed herewith are two papers on the foundations of *formal mathematics of* INFINITE sets. I request you to go through them. I am INFINITELY sure that they are TRUE. But your critical comments are solicited.

I send them to you for two reasons. Firstly, I persume that you are one who cares for TRUTH even if it requires that one has to abandon one's existing *faith* for that sake. Secondly, it is for a practical reason. As a physicist who measures and believes in measures, you loose nothing essentially even if *uncountable* INFINITE sets vanish FOR EVER FOR EVER from Mathematics. So I hope that you would re-cognize my genuine case.

But whatever be your opinion on these manuscripts, be kind to inform me. If you don't think that they are TRUE, kindly return them.

Yours Sincerely,

R. Narayanan

P. S. I am not a professional mathematician. I am an MSc (Mathematics) [*drop-out*]. I dropped out in 1974 on encountering Gödel's *Incompleteness Theorem.*

The Head of the Department of Mathematics,
School of Mathematics,
TIFR,
Homi Bhabha Road,
BOMBAY, 400085.
INDIA.

Sir,

I enclose two papers on the Set Theory of INFINITE Sets. I request the members of your faculty to go through them. Your critical comments are earnestly solicited.

I have met Prof. Mohan Kumar over twenty years ago. [We saw the cinema "*Cabaret*" with other common friends.] He may not remember me. I have also heard of Professors Kaushik, Nori, Srinivasan and even Anand Doraiswamy (who is no longer there I presume), through common friends.

Kindly respond.

Yours Sincerely,

R. Narayanan

John Rennie,
Editor in Chief,
Scientific American,
415, Madison Ave.,
New York - New York.
10017 - 1111,
U.S.A.

Sir,

Thank you for your letter dated Aug. 1, 1995. I request you to kindly return the two papers at least by sea-mail if not by air.

Yours Sincerely,

R. Narayanan

The Editor,
Annals of Mathematics,
Fine Hall,
Washington Road,
Princeton, New Jersy,
08544 - 1000,
U.S.A.

Sir,

It was very kind of you to return my two papers. But your expert (∞! ?∞) has not provided any reason for rejecting the papers and I had presumed that Mathematics is the most rational of the so called sciences. Is it inappropriate for the Annals because of its form or its content? I humbly solicit you for your expert's opinion. I earnestly hope that I am not intruding into the sacred private territories of the expert(s) concerned.

Yours Sincerely,

R. Narayanan

11th Oct. 1995

Prof. Ramaseshan
Raman Research Institute,
Bangalore - 560 080.

Dear Prof. Ramaseshan,

I am Narayanan a friend of C. Bala Gopal (Managing Director, Peninsula Polymers, Thiruvananthapuram). He has told me about you and he has even mentioned about me to you. To rejuvenate memories (and for the sake of humour), I am then one who told Balu that Dirac's "Principles of Quantum Mechanics" is the best book on Physics before you told him the same. But (between us sir) doesn't even that admirable book end sadly like all Physics books are doomed to end for ALL ETERNITY. For Example take Einstein's "Meaning of Relativity" or Dirac's other two books on Quantum Field Theory and Quantum Mechanics.

I enclose two papers which question and destroy FOR EVER the very foundations of Cantor's juvenile Theology of Transfinite Induction as formalized in the Zermelo-Fraenkel Set Theory and the more ambitious yet equally juvenile Gödel-Bernays scheme etc. I humbly request you to go through them and consider them for publication in your magazine. I invite the most virulent criticisms if any. But Professor Ramaseshan, the great moron-geniuses are not gonna like it one bit because if what I say is TRUE, (which of course it is!), lots of 20th century mathematics is "telling lies in the name of mathematics". Once upon a time sir, I thought that mathematicians seek TRUTH. But now I know that many of them are very ordinary people who lie when it is convenient. I have already despatched the papers for expert opinions all around the world. Nobody wants to draw the sword because they have lost the battle even before it has begun. Otherwise why are the TIFR fellas and the IISc fellas keeping quiet and why does the venerable Rice Ball Prof: Penrose say that he is too busy to find time to read them. I hope that you find time to go through them. I enclose three copies each of both the papers. I apologize for taking liberties with the use of language in this letter.

Yours Sincerely,

R. Narayanan

11th Oct. 1995

Prof: Alan S. Jones
The Editor,
Bulletin of the Australian Mathematical Society,
C/o Department of Mathematics,
University of Queensland,
St. Lucia, Queensland 4072,
AUSTRALIA.

Sir,

Thank you for your letters dated the 26th September 1995. Since you are the editor of the Bulletin and I am the "submitter" of the papers, you have all the powers to reject my papers. I presume that you are obliged to offer me an explanation for rejecting my papers since we are dealing with the most rational of the so called sciences. Kindly do so. Is it the form or the content that turns you off? Clearly, no idolator likes his idols to be destroyed. Please think about this.

I had requested at the time of submission that the papers should be returned if found unsuitable for publication. Kindly do so.

Incidentally, my paper # 5285 is titled "On the Cardinality of the INFINITE Continuum" and not "On the *finite* Cardinality of the INFINITE continuum" as you had referred in your letter. The differences are INFINITE please note. Did you intend it for irony or was it an editorial error? Kindly inform.

I hope that you would be kind enough to return the manuscripts with the most virulent comments. I am eagerly awaiting your *irony* !! We are making history and of course ETERNITY!!

Yours Sincerely,

R. Narayanan

90

Expositores Mathematicae,
Institute und F. A,
Brockhaus A G Postfach 100311,
D – 6800 Mannheim I,
GERMANY.

Mathematical Astronomical and
Physical Sciences Proceedings,
Royal Irish Academy,
19 Dawson St.,
Dublin 2,
IRELAND.

The Editor,
Indian Mathematical Society,
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MERRUT - 250005,
INDIA.

The Editor,
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The Editor,
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33400 TALENCE,
FRANCE.

The Head of the Department of
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Indian Institute of Science
Campus,
Bangalore - 560012,
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The Editor,
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ENGLAND.

The Editor,
London Mathematical Society
Journal,
London Mathematical Society,
Edinburgh House,
Shaffesbury Road,
Cambridge CB2 2RU,
ENGLAND.

The Editor,
American Mathematical Society
Journal,
Box. No. 1571,
Annex Sta,
Providence RI 02 940 – 9930,
U.S.A.

The Editor,
Calcutta Mathematical Society
Bulletin,
92, Acharya Prafulla Chandra
Road,
CALCUTTA 700009.

The Head of the Department of
Mathematics,
Dept. De Mathematique,
Universiti De Strasbourg,
1– Louis Pasteur,
7, Rue Rene Descartes,
67084 Strasbourg Cedex,
FRANCE.

The Editor,
Mathematical Society of Japan
Journal,
Nihan Sugakkai 25 - 9- 203,
Hongo 4 –Chome, Buukyo kn,
TOKYO 113 JAPAN.

Sir,

I had sent you two papers on the Mathematics of INFINITE sets,
namely
(1) On the Cardinality of the INFINITE Continuum, and
(2) The Power Set of Every Countable INFINITE set is Countable.

In order that my arguments are complete I have made some note-
worthy additions to the above papers. The additions are on page 12
of the first paper and on pages 3 and 4 of the latter. I enclose these
sheets for your perusal. I request you to append these sheets to the
originals already with you and consider them for publication.

In case you find them still not to your taste, I request you to send
them back to me with your critical comments.

Yours Sincerely,

R. Narayanan

The Head of the Department of Mathematics,
School of Mathematics,
TIFR,
Homi Bhabha Road,
BOMBAY – 400 085,
INDIA.

Prof. Vladimir Igroevich Arnold DSc.,
Steklov Mathematical Institute,
42, Vavilova Street,
GSP – 1 MOSCOW 117593,
RUSSIA.

Prof. Shreeram S. Abhyankar
Mathematics Department,
Purdue University,
West Lafayette IN 47907,
U.S.A.

Sir,

I had sent you two papers on the Mathematics of INFINITE sets, namely
(1) On the Cardinality of the INFINITE Continuum, and
(2) The Power Set of Every Countable INFINITE set is Countable.

In order that my arguments are complete I have made some note-worthy additions to the above papers. The additions are on page 12 of the first paper and on pages 3 and 4 of the latter. I enclose these sheets for your perusal. I request you to append these sheets to the originals already with you and consider them. I also enclose another set of the above papers in case you have misplaced them.

In case you find them still not to your taste, I request you to send them back to me with your critical comments.

Yours Sincerely,

R. Narayanan

The Editor,
Archivum Mathematicum,
Universita J E Purkyne,
Komenskeho 2, 662 43 Brno,
CZECHOSLOVAKIA.

Sir,

I had sent you two papers on the Mathematics of INFINITE sets, namely
(1) On the Cardinality of the INFINITE Continuum, and
(2) The Power Set of Every Countable INFINITE set is Countable.

In order that my arguments are complete I have made some noteworthy additions to the above papers. The additions are on page 12 of the first paper and on pages 3 and 4 of the latter. I enclose these sheets for your perusal. I request you to append these sheets to the originals already with you and consider them for publication. I also enclose a copy each of both the papers for your reference.

Yours Sincerely,

R. Narayanan

The Editor,
Cambridge Philosophical Society,
Mathematical Proceedings,
Box No. 110, Cambridge CB2 3RL.,
ENGLAND.

Ref. No. 95134 (a,b) Mathematical Proceedings.

Sir,

I had sent you two papers on the Mathematics of INFINITE sets, namely
(1) On the Cardinality of the INFINITE Continuum [95134(b)] and
(2) The Power Set of Every Countable INFINITE set is Countable. [95134(a)]
In order that my arguments are complete I have made some noteworthy additions to the above papers. The additions are on page 12 of the first paper and on pages 3 and 4 of the latter. I enclose these sheets for your perusal. I request you to append these sheets to the originals already with you and consider them for publication. I also enclose a copy each of both the papers for your reference.

Yours Sincerely,

R. Narayanan

13$^{\text{th}}$ Nov. 1995

Prof: Alan S. Jones
The Editor,
Bulletin of the Australian Mathematical Society,
C/o Department of Mathematics,
University of Queensland,
St. Lucia, Queensland 4072,
AUSTRALIA.

Sir,

Thank you for your letter dated the 7$^{\text{th}}$ Nov. 1995.

It was smart of your experts to point out that most[3] of the subsets would contain an INFINITE number [!!] of elements each. INFINITE *NUMBER* !!!!! ?????? FINITE CARRIED ON FOR EVER APPROACHES THE ONE AND ONLY INFINITE!!! That is the PRIMAL TRUTHFULL Point of view.

But still, since the same doubt was raised by two of my friends, I have considered ALL the INFINITE subsets of any Countable INFINITE set and proved that they are Countable too. [Ref: Pages 3 and 4 — "The Power Set of Every Countable INFINITE set is countable."] Further, I have written a GENERAL FORMULA for the SET OF ALL IRRATIONALS generated from three Countable INFINITE sets. [Ref: Page 12 – "On the Cardinality of the INFINITE Continuum."] I have enclosed the appended pages for easy reference and a copy each of the revised papers.

I should simply asseverate that mine is the PRIMAL INTUITIONIS-TIC-MATHEMATICO-PHILOSOPHICAL point of view which dest-roys FOR EVER the fraudulent idea of *uncountable* INFINITE sets. Uncountable INFINITE set is a set that is NOT a Countable INFINITE set !!! Uncountable to Begin with or to End with ??????? Answer me professor.

Uncountable INFINITE more INFINITE than countable INFINITE is PURE IGNORANCE. It is teaching ignorant children pompous LIES in the name of Mathematics. So is *transfinite induction* !!!! Clearly your experts are not going to like what I say. It is their ETERNALLY FLAWED expertise that I question.

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[3]"most"!! How many more than the set of ALL FINITE subsets please?

I feel thankfull for you to discourage me from submitting my papers anywhere else, yet I must confess that it is none of your philanthropic business. I hope that this statement would not deter your from the TRUTH of my papers.

Yours Sincerely,

R. Narayanan

Prof. J. Fang
The Editor,
Philosophica Mathematica,
Olo Dominion University,
Norfolk, VA 23529 - 0083,
U.S.A.

The Editor
British Journal for the
Philosophy of Science,
Oxford University Press,
Walton Street,
Oxford OX2 6DP,
ENGLAND.

The Editor,
Indian Institute of Science
Journal,
Indian Institute of Science,
BANGALORE - 560012.

The Editor,
Philosophy of Science,
Philosophy of Science Association
18 Morill Hall,
Dept. of Philosophy,
Michigan State University,
East Lansing MI 48824,
U.S.A.

The Editor,
Daedalus,
American Academy of Arts and Sciences,
Norton Woods, 136 Irving Street,
Cambridge MA 02138,
U.S.A.

Sir,

I enclose two papers on the foundations of *formal mathematics of* INFINITE sets. Kindly verify whether they are suitable for publication.

If found unsuitable, please return the manuscripts with your critical comments.

Yours Sincerely,

R. Narayanan

Prof. Irwin Kra,
Managing Editor,
Proceedings of the American Mathematical Society,
Department of Mathematics,
SUNY at Stony Brook,
Stony Brook,
NY 11794 - 3651,
U.S.A.

Sir,

I enclose two papers on the foundations of *formal mathematics of* IN-FINITE sets. Kindly verify whether they are suitable for publication. I send these papers to you since they are of a very general nature.

If found unsuitable, please return the manuscripts with your critical comments.

Yours Sincerely,

R. Narayanan

The Editor,
Indian Academy of Mathematics Journal,
Indian Academy of Mathematics,
15 – Kaushaliyapuri, Chitawad Road,
INDORE – 452001 (M.P),
INDIA.

Ref: MSS 730 and MSS 731

Sir,

I enclose three copies each of both the papers.
MSS 731 – On the Cardinality of the INFINITE Continuum.
and
MSS 730 – The Power Set of every Countable INFINITE set is Countable.

In order that my arguments are complete I have made some noteworthy additions to the above papers. The additions are on page 12 of the first paper and on pages 3 and 4 of the latter. I request you to use these copies of the papers enclosed as your reference.

I also enclose three copies each of two more papers. They are
1) ALL IRRATIONALS [AND HENCE ALL REALS] ARE COUNTABLE – II and
2) THE POWER SET OF EVERY COUNTABLE INFINITE SET IS COUNTABLE – II
I request you to acknowledge receipt of all these papers and process them for possible publication.

I specially request you to consult experts in different fields of mathematics since these papers question in no uncertain way the very foundations of the formal set theory of INFINITE sets.

Yours Sincerely,

R. Narayanan

The Editor,   Prof. J. Fang
Cambridge Philosophical Society,   The Editor,
Mathematical Proceedings,   Philosophica Mathematica,
Box No. 110, Cambridge CB2   Olo Dominion University,
3RL.,   NORFOLK, VA 23529 - 0083,
ENGLAND.   U.S.A.

Ref. No. 95134 (a,b) Mathematical Proceedings.

Sir,

   I had sent you two papers on the Mathematics of INFINITE sets, namely
(1) On the Cardinality of the INFINITE Continuum [95134(b)] and
(2) The Power Set of Every Countable INFINITE set is Countable. [95134(a)]
   I haven't heard from you regarding these papers.
   I also enclose two copies each of two more papers. They are
1) ALL IRRATIONALS [AND HENCE ALL REALS] ARE COUNT-ABLE – II and
2) THE POWER SET OF EVERY COUNTABLE INFINITE SET IS COUNTABLE – II
I request you to acknowledge receipt of all these papers and process them for possible publication.

                                        Yours Sincerely,

                                        R. Narayanan

The Head of the Department of Mathematics,
TIFR Centre,
Indian Institute of Science Campus,
Bangalore - 560012,
INDIA.

The Head of the Department of Mathematics,
School of Mathematics,
TIFR,
Homi Bhabha Road,
BOMBAY - 400085,
INDIA.

Sir,

I had sent you two papers on the Mathematics of INFINITE sets, namely
(1) On the Cardinality of the INFINITE Continuum and
(2) The Power Set of Every Countable INFINITE set is Countable.

I haven't heard from you regarding these papers.

I also enclose two copies each of two more papers. They are
1) ALL IRRATIONALS [AND HENCE ALL REALS] ARE COUNTABLE – II and
2) THE POWER SET OF EVERY COUNTABLE INFINITE SET IS COUNTABLE – II
I request you to acknowledge receipt of these papers and your valuable opinions and comments however nasty are earnestly solicited FOR EVER !!! $\infty\infty\infty\infty\infty$.

I have heard that TIFR Mathematics department is deluged with GENIUSES who know Bourbaki from cover to cover along the set of ALL *diagonals* and know the set of ALL better than ALL the rest!.

As you can see I consider that *uncountable (!!!)* INFINITE sets and the holified *transfinite (!!!)* – INDUCTION process as sanctified in the Zermelo-Fraenkel Scheme, the Gödel-Bernays Scheme etc. $\infty\infty\infty\infty$ are "telling 𝔊𝔏𝔒�𝔉𝔦𝔉𝔈𝔒 LIES in the name of Mathematics". Incidentally where are you Now (!) in the SUPER-CLASSIFICATION. Have you ALL transcended SC1, SC2, - - - - - SCN - - - - - SC $\infty\infty\infty\infty\infty$ and started on SUPER-*transfinite*- INDUCTION of the set of ALL SUPER CLASSES 1 TO ∞ and so on ad absurdum ad INFINITUM.

I have also heard that TIFR SUPER-GENIUSES WOULD MAKE A TOTAL MORON of idiots who go to question the foundations of Bourbaki-Mathematics. Please invite me and throw rotten eggs and prove that this moron does not understand the grave profundities of *transfinite*-INDUCTION. Or why don't you teach me ALL that in front

of a neutral audience? This is certainly a challenge. If there is one man in your department worthy of his name and gender, respond to this letter or have you to consult greater [>] SUPER-GENIUSES OF THE FAIRER RACE FROM ABROAD?

Yours Sincerely,

R. Narayanan

The Editor,
Indian Academy of Mathematics Journal,
Indian Academy of Mathematics,
15 – Kaushaliyapuri, Chitawad Road,
INDORE – 452001 (M.P),
INDIA.

Ref: MSS 730 and MSS 731

Sir,

I received your letter of rejection offering no reason for the gesture. I apologise for the delay in sending you the copies of the manuscripts.

As far as I surmise there are no mathematicians working in India on the so called "Foundations of Mathematics". I have enclosed two more papers reinforcing my legitimate arguments. I request you to consider them all once again.

I specially request you to consult experts in different fields of mathematics since these papers question in no uncertain way the very foundations of the formal set theory of INFINITE sets.

I also solicit for your experts' comments on these papers.

Yours Sincerely,

R. Narayanan

Prof. Shreeram S. Abhyankar
Mathematics Department,
Purdue University,
West Lafayette IN 47907,
U.S.A.

Prof. Vladimir Igroevich Arnold
DSc.,
Steklov Mathematical Institute,
42, Vavilova Street,
GSP – 1 MOSCOW 117593,
RUSSIA.

Sir,

I had sent you two papers on the Mathematics of INFINITE sets, namely
(1) On the Cardinality of the INFINITE Continuum, and
(2) The Power Set of Every Countable INFINITE set is Countable.

In order to reinforce my arguments I send you two more papers namely
1) ALL IRRATIONALS [AND HENCE ALL REALS] ARE COUNTABLE – II and
2) THE POWER SET OF EVERY COUNTABLE INFINITE SET IS COUNTABLE – II

I earnestly solicit you for your expert comments on these papers.

In case you find them still not to your taste, I request you to send them back to me with no comments!

Yours Sincerely,

R. Narayanan

Prof: Alan S. Jones
The Editor,
Bulletin of the Australian Mathematical Society,
C/o Department of Mathematics,
University of Queensland,
St. Lucia, Queensland 4072,
AUSTRALIA.

Sir,

I enclose two copies each of two more papers re-inforcing my arguments against the so called uncountable sets and the fraudulent trans-finite induction as consecrated in the delinquent Zermelo-Fraenkel Scheme, the Gödel-Bernays Scheme etc. The papers are
1) ALL IRRATIONALS [AND HENCE ALL REALS] ARE COUNT-ABLE – II and
2) THE POWER SET OF EVERY COUNTABLE INFINITE SET IS COUNTABLE – II

As you can see I consider that *uncountable (!!!)* INFINITE sets and the holified *transfinite (!!!)* – INDUCTION process as sanctified in the Zermelo-Fraenkel Scheme, the Gödel-Bernays Scheme etc. $\infty\infty\infty$ are "telling 𝔊𝔏𝔒� LIES in the name of Mathematics". Incidentally where are you Now (!) in the SUPER-CLASSIFICATION. Have you ALL transcended SC1, SC2, - - - - - SCN - - - - - SC $\infty\infty\infty\infty$ and started on SUPER-*transfinite*- INDUCTION of the set of ALL SUPER CLASSES 1 TO ∞ and so on ad absurdum ad INFINITUM.

I don't expect at ALL to be published. Please acknowledge receipt of the papers, number them and dump them into the collection of unpublished papers submitted to your esteemed magazine. Kindly honour me thus.

Yours Sincerely,

R. Narayanan

The Editor,
Archivum Mathematicum (BRNO),
J. E. Purkyne University, Faculty of Science,
Department of Mathematics,
Jana'c'kovo na'm. 2a 66295 Brno,
CZECHOSLOVAKIA.

Sir,

This letter is in reference to two papers submitted and rejected by you sometime ago. [Papers 716 and 717]

The referee concerned sent his esteemed report yet preferred to retain his anonymity. I enclose my comments on his reports. Kindly pass it on to the genius incognito!

Yours Sincerely,

R. Narayanan

Sir (Referee incognito),

Ah! Marxist *transfinite inductionist*
I Say Set of [ALL]$^\infty$ SUBSETS FOR EVER and you say Set of all FINITE subsets
Even if you are immortal YOU are a LIAR
Incidentally which is the largest finite set ?
Which is the largest Natural Number - yes the limit ordinal !
Karl Marx is midget-brained
so is your race of *transfinite inductionists*.

As you can see I consider that *uncountable (!!!)* INFINITE sets and the holified *transfinite (!!!)* – INDUCTION process as sanctified in the Zermelo-Fraenkel Scheme, the Gödel-Bernays Scheme etc. $\infty\infty\infty$ are "telling 𝔊𝔏𝔒𝔯𝔗𝔍𝔗𝔊𝔒 LIES in the name of Mathematics". Incidentally where are you Now (!) in the SUPER-CLASSIFICATION. Have you ALL transcended SC1, SC2, - - - - - SCN - - - - - SC $\infty\infty\infty\infty$ and started on SUPER-*transfinite*- INDUCTION of the set of ALL SUPER CLASSES 1 TO ∞ and so on ad absurdum ad INFINITUM.

You are a SUPER-GENIUS who WOULD MAKE A TOTAL MORON of idiots who go to question the foundations of Bourbaki-Mathematics. Please invite me and throw rotten eggs and prove that this moron does not understand the grave profundities of *transfinite*-INDUCTION. Or why don't you teach me ALL that in front of a neutral audience? This is certainly a challenge. If there is one man in your trivial *Marxist* country worthy of his name and gender, respond to this letter or have you to consult greater [>] SUPER-GENIUSES FROM THE HOLY YANKEE-LAND.

Yours Sincerely,

R. Narayanan

The Editor,
Philosophy of Science,
Philosophy of Science Association,
18 Morrill Hall,
Dept. of Philosophy,
Michigan State University,
East Lansing MI 48824,
U.S.A.

Dear Mr. Kitcher,

You write in your letter (copy enclosed) that your esteemed decision is based on the reports of the referee who prefers to adhere to his anonymous identity for no discernible reason. Further you add, enhancing your philosophical integrity that your decision is also based on the competition for space from other worthy papers. Do you mean to tell me that ALL the papers ever published (publishable) in your magazine are worthier than the ones I submitted. Posterity may think differently. I know that if I was Dick Krownekker or John Brewer [puns intended] I would have found space.

I enclose my comments on the referee's reports on my papers and I have also enclosed two more papers reinforcing my arguments.

The papers are
1) ALL IRRATIONALS [AND HENCE ALL REALS] ARE COUNTABLE – II and
2) THE POWER SET OF EVERY COUNTABLE INFINITE SET IS COUNTABLE – II

I request you to pass it on to the nameless genius incognito, the referee concerned so that I may relish his expert comments.

Yours Sincerely,

R. Narayanan