

# **Gandhi and Science**

(Gandhi nu Vigyan)

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First Kaka Saheb Kalelkar Lecture  
Given at the  
Gujarati Sahitya Parishad, Ahmedabad

18 April 2009

***Aldous Huxley*** was among the first to brand Gandhi and his movements ***`anti-science'***:

“Tolstoyan's and Gandhiites tell us to `return to nature', in other words, abandon science altogether and live like primitives....the trouble with this advise is it cannot be followed... science and technology allowed human population to double...but they advocate slaughter...compared to which Timur and Changiz Khan would look trivial...”

Nehru responded to Huxley: “It [Gandhi's] may not be a correct attitude; its logic may be faulty...”

This was followed up by Indian Science policy makers and scientists such as Meghnad Saha, who told Russians that he and his brother scientists had “as little regard” for Gandhi's economic and social theories as you 'the Russians' have for Tolstoy...

***All in all, Gandhi was branded as entirely retrograde***

They made clear divisions: He was some one who could mobilize masses, and therefore useful in that way, but he was a **`religious man'** and not a **`science man'**, and to that extent irrelevant in the modern age, with retrograde views

***Even today, these views are shared by a large section of Indian intelligentsia,***  
even when they readily acknowledge Gandhi's ability to mobilize people for freedom movement

***This is to such an extent that***  
Science policy writings in India, creating the  
***Vision of a Future India***  
thus make no mention of Gandhi

***There is in a way a 'Missing Gandhi' in the  
Science and Intellectual policies of India, and  
at the same time there is a missing 'Science'  
in the Gandhian studies.***

This is not good for a healthy intellectual and  
cultural growth of the Nation!!

Was Gandhi anti-Science?  
Was Gandhi Totally Unscientific?

**THIS IS ONE OF THE STRONGEST  
CRITICISM AGAINST  
GANDHI  
IN MODERN TIMES**

# Was Gandhi always against Machinery and Industrialization?

The sewing machine, Mahatma Gandhi declared,  
'was one of the few useful things ever invented'.





***Machines are merely tools  
and  
Not our Masters!***

***This image of his being anti-science dates  
back from the early days of his book***

***HIND-SWARAJ***

***which just completes 100 years in 2009***

***Probably he just told it too strongly  
and it appeared to many that he was plainly  
anti-Science***

*It is not realized often that he was a  
severe critic of **Modern Civilization**  
but not of **Science or Scientific  
Method***

**Gandhi did not condemn the scientific  
temper of west, but he objected to the use of  
scientific discoveries against humanity.**

# The Nature of Science

What is Science?

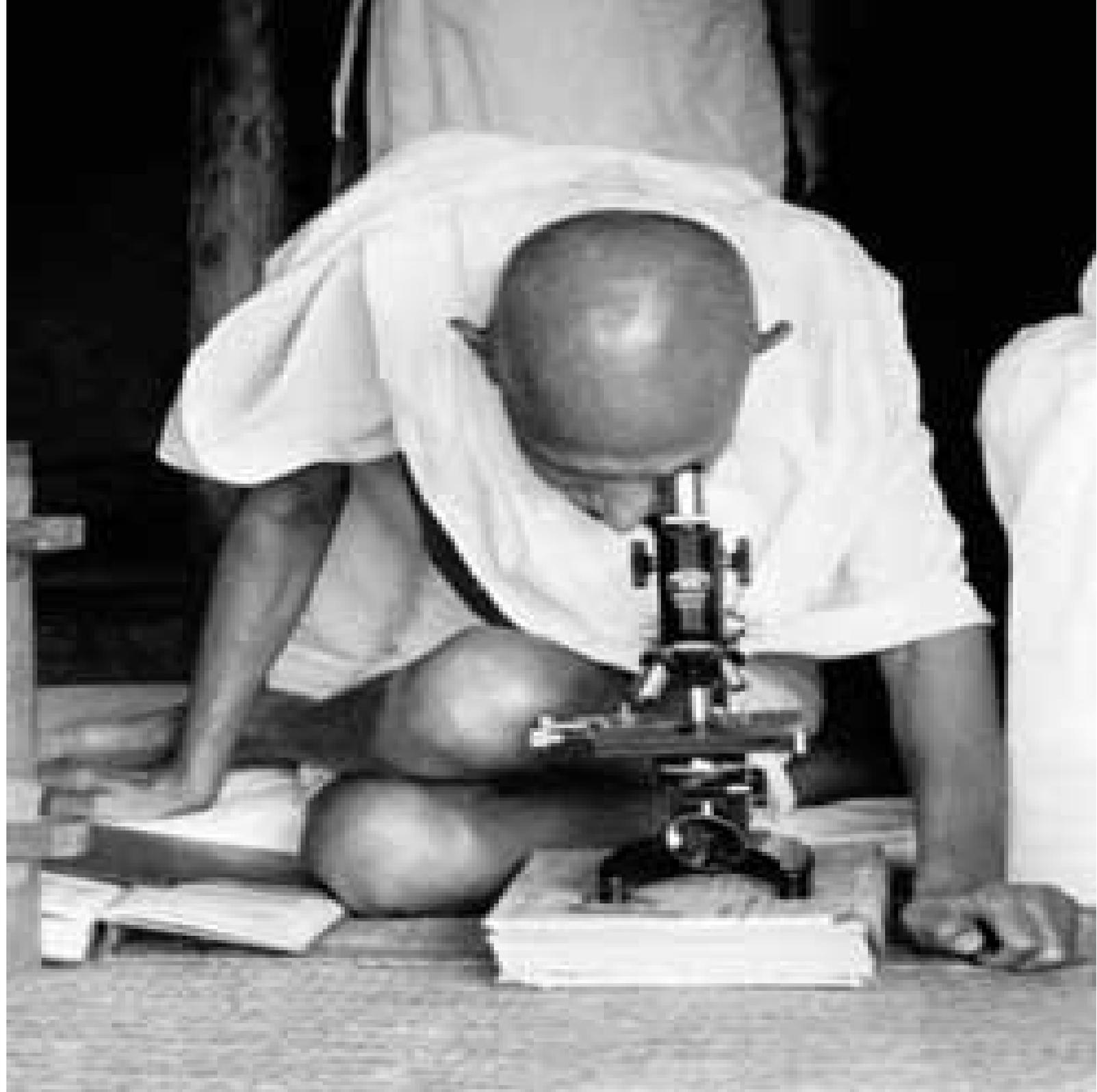
In its essence, it is the Search for Truth; the fundamental laws that govern the Universe

In that sense, Gandhi's method had its scientific basis.

As he explained clearly: "...my life consists of nothing else but numerous experiments with truth... If I can narrate them in a dispassionate and humble spirit...Far be it from me to claim any degree of perfectness

"I claim for them nothing more than does a scientist who, though he conducts his experiments with utmost accuracy, forethought and minuteness, never claims any finality on conclusions, but keeps an open mind...

"I have gone through deep self-introspection, searched myself through and through, and examined and analysed every situation."



# **Introspection and going into the Finest and Minutest Details was his key strength**

***If you study his Thoughts, Actions and Writings, you find that he analysed and investigated his own life in same microscopic manner, going to the minutest details***

***His was clearly an extremely  
Logical Mind...no question on  
that***

“Geometry was a new subject in which, I was not particularly strong...and the English medium made it still more difficult for me.

When, however, with much effort I reached thirteenth proposition of Euclid, the utter simplicity of the subject was suddenly revealed to me. A subject which only requires a pure and simple use of one's reasoning power could not be difficult. Ever since... geometry has been both easy and interesting for me.”

# On mother tongue instruction

“English became the medium of instruction in most subjects from the fourth standard.

I found myself completely at sea...

If our education were more systematic, and if children were free from the burden of having to learn subjects through a foreign medium...”

***A scientific knowledge of one language makes a knowledge of other languages comparatively easy.***

***Throughout his life, he kept telling this; an example: “...Tomorrow Dr J C Bose will be making a speech. If he speaks in Bengali I will have no quarrel with him. I will have quarrel with him if he speaks in...”***

# He was in contact with best of the Scientific authorities of his day

Sir J. C. Bose came and met him (Mum.1924)

Previously (1917), he went to Calcutta to attend  
“opening of Bose's research Institute”, and said,  
“It was spiritual affair rather than a public show.”

“Thanks to the marvellous researches of ...  
Bose...his discoveries are revolutionizing the  
accepted...”

Sir C V Raman and Lady Raman come and  
discuss with him (1936)

Important scientists such as J. C. Bose, C. V.  
Raman and P. C. Ray were put as Members  
of the Khadi Development Board

# Post-graduate Research

'Gandhi Seva Sangh' (1935) was meant for post-graduate study and thinking and research.

Gandhi suggested that other institutions, mainly busy with `Action' would not have time to do this. Gandhi Seva Sangh must study, understand and investigate the key principles and basics on `khadi', `charkha', `Ekadasha Vrata' and such other basics.

***It is obvious that Gandhi laid enormous emphasis on Study, Thinking & Research and analysing the Fundamentals***

***Was Gandhi  
aware of***

The Amazing Universe  
The Profound Puzzles that it brings  
&  
Future Directions  
and  
New Perspectives Emerging

# The Universe

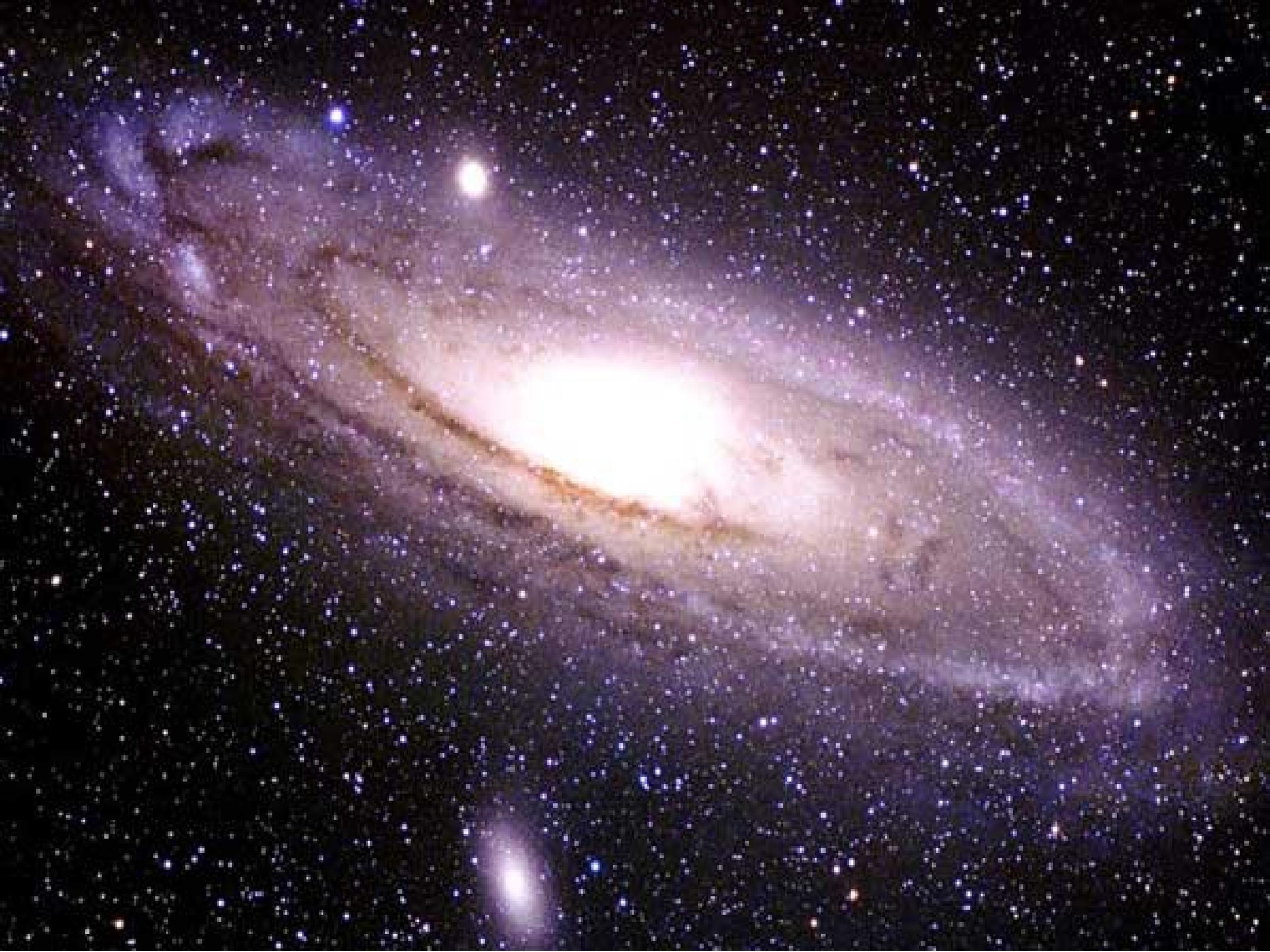
The visible Universe is made of Stars and  
Galaxies

Each Galaxy contains 400 to 500 Billion Stars

Universe has Billions of such Galaxies

Universe is Expanding

**NOW, WE FIND THAT THE UNIVERSE  
ACCELERATES!**





# Gandhi & the Universe

“...this Universe which is millions of times vaster than the earth...”

“..and what are we in this mighty Universe? We are less than...And what about the magnificent canopy of heaven...”

“if...heavenly bodies do not work like machines, the Universe would come to a standstill...”

“..like atom in this Universe..our existence as embodied beings is purely momentary...”

“..An all pervading, conscious Power fills our Universe which we call God...”

“...If we carefully observe and examine the Universe, we shall see that...”

“...As in the body so in universe. The body ever dies, yet lives. Similarly the Cosmos as expressed in the creation ever dies yet remains alive..”

“...that talent which can see the Universe in an atom...”

“..there is an orderliness in the Universe, there is an unalterable law...over the will of every man...so that none of us can wrong the Universe...”

“..would befall the universe if the sun became capricious and went in for a variety of pastimes.. there is a monotony that sustains...”

“..A man of world can as little comprehend the Universe as a fish living in the ocean can fathom its depths...”

# The Universe

*“There is an orderliness in the Universe, there is an unalterable law governing every thing and every being that exists or lives. It is no blind law; for no blind law can govern the conduct of living beings.”*

HE APPEARS TO BE AWARE OF THE  
VASTNESS AND INFINITE NATURE OF THE  
UNIVERSE

***Of course, as is well-known, Kakasaheb has written wonderful articles on Nature, Aakash-darshan, Stars, sky-watching, astronomy***



**The sun and the earth appeared  
and then disappeared forever  
in a twinkling of universal time**





**WOULD GANDHI BE INTERESTED IN  
TELESCOPE?**

**WELL, HE USED TELEPHONE**

***Probably he would also be interested in the  
Space Telescope TODAY,  
because just as he analysed his  
own life in Microscopic detail, in the same  
way, he had a Telescopic vision and always  
wanted and tried to see things faraway.***

**HIS COMMENTS ON MODERN CIVILIZATION  
EXACTLY SHOW THAT**

# The Amazing Universe

He was always interested in knowing about New Discoveries and Developments in Science

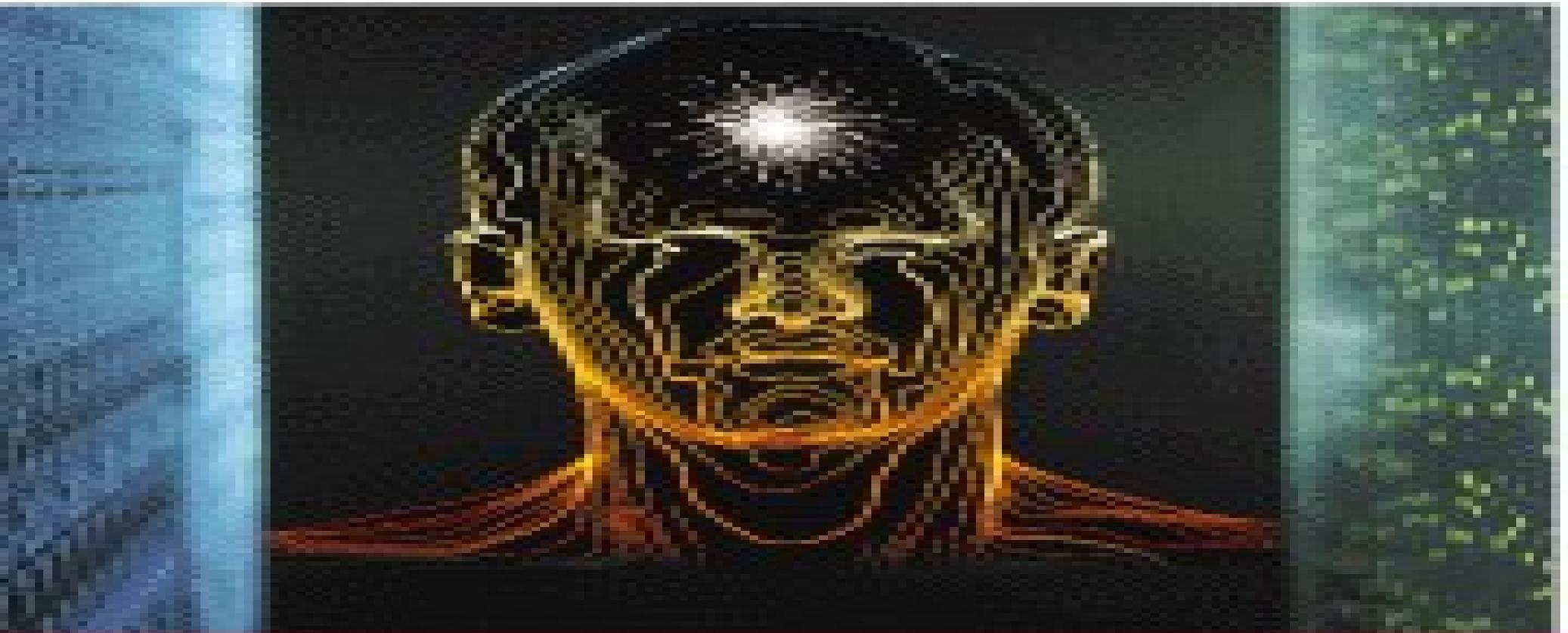
He was aware that we need  
New Eyes to See the Universe

He also looked aware on the Deep relation of  
Human Mind and the Universe

***He did not say why bother about Universe  
-Do We not have enough problems on Earth?-***

# The Large, the Small and the Human Mind

ROGER PENROSE



*Penrose*

***AT THE SAME TIME,  
Totally Against Blind Faith***

“I KNOW NOTHING OF THE SCIENCE OF  
ASTROLOGY AND I CONSIDER IT  
TO BE A SCIENCE, IF IT IS A SCIENCE, OF  
DOUBTFUL VALUE, TO BE  
SEVERELY LEFT ALONE BY THOSE  
WHO HAVE ANY FAITH IN  
PROVIDENCE.”

***He emphasized the need for  
Research and Investigations  
again and again,  
Be it Khadi, Ayurveda or any  
any other discipline***

Criticized strongly the Lack of Research  
in Ayurveda

His dialogue with Vaidyas continued for  
a while and he strongly emphasized that we must  
not just have Blind Faith in all that is “Old”  
and all that is “Traditional”

# ***International Connections with Scientists and Philosophers***

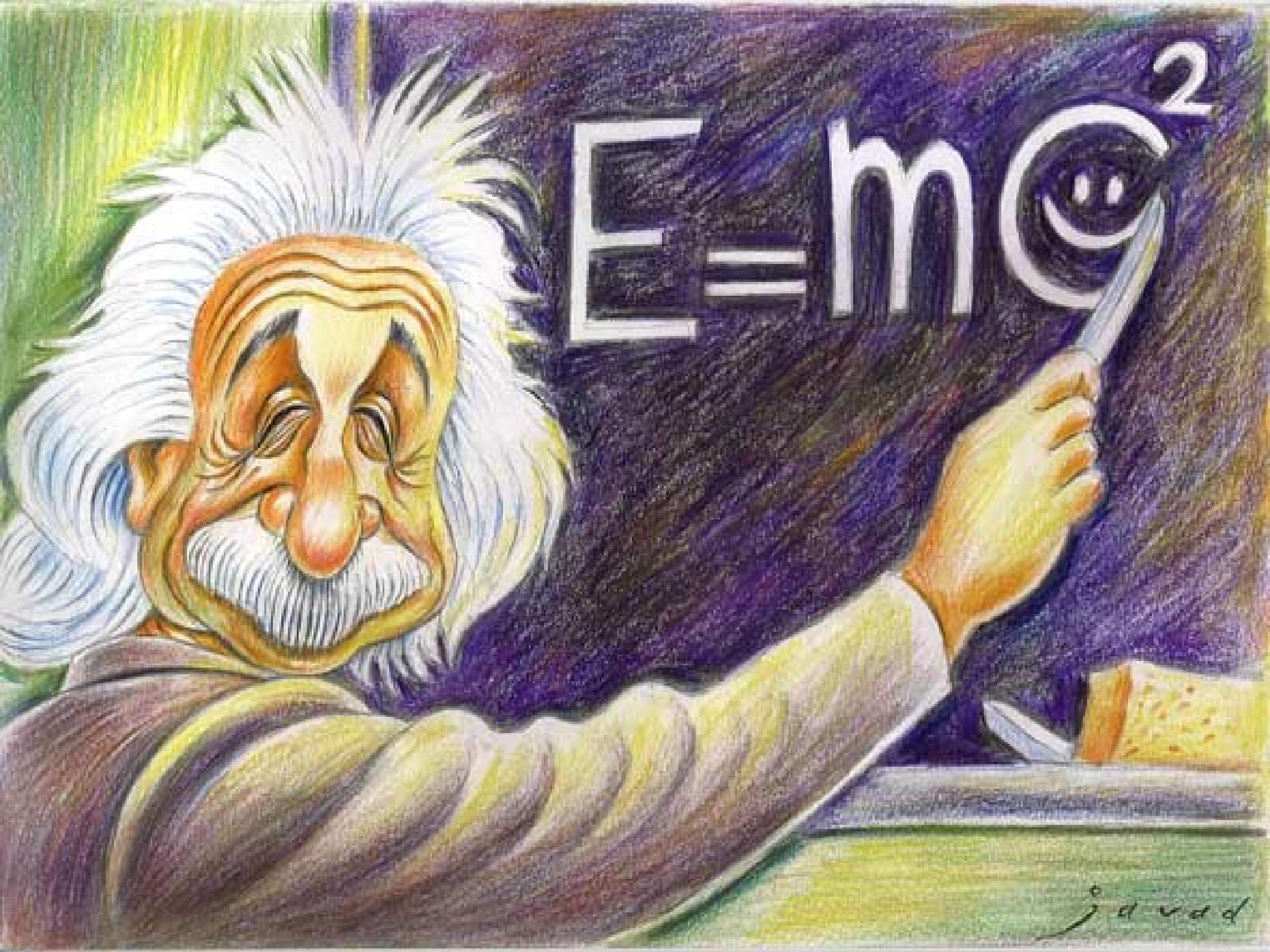
Madam Curie's daughter, Eve Curie meets Gandhi (1942), Gandhi reads the Madam Curie book, and has the following to say: “Vah to Sacchi tapaswini thi. Muze hota hai, Paris jake uska ghar dekh aau. Hamare kisi vigyani ne aisa dukh nahi bhoga...Hamane to Angrezo ki maherbani se Angrezo ke dhang se kam karana hi sikha. Shodh vibhag aadi ke Safed Hathi khade kar liye. Itana paisa kharch hota hai. Itani badi prayogshala e Tata ne, sarkar ne khadi ki, par kam vaha par kitana hota hai?”

(From Sushila Nayar, `Karavas ki Kahani')

# ***His affection to Scientists and the Scientific Method***

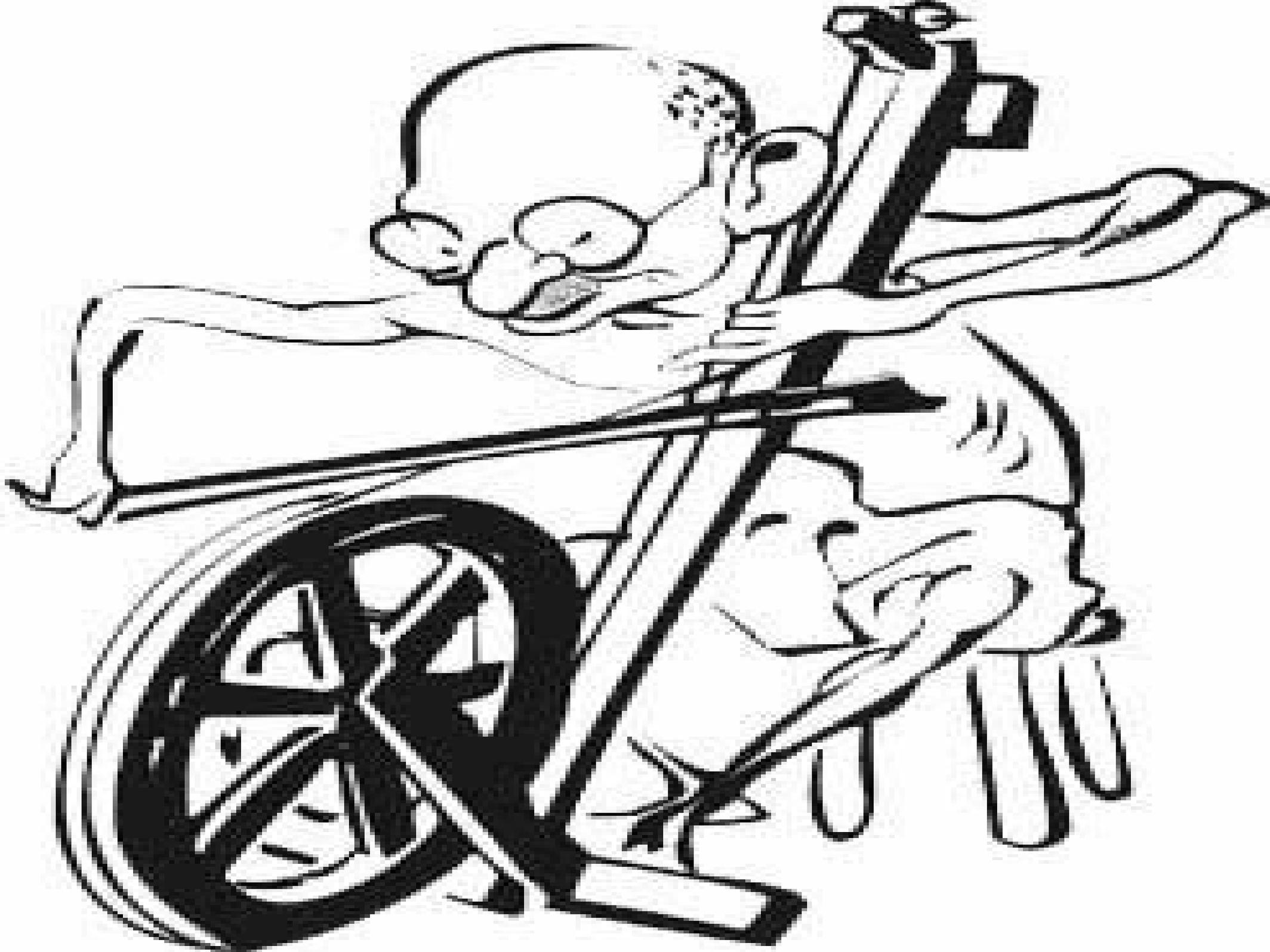
Sushila Nayar says: “Madam Curie ki kitab se to bas Bapu chipak gaye hain. Is kitab ki lekhika, unki ladaki Eve Curie Bapu se milane Delhi main aayi thi. Bole, us ladki se muze aachhi jan-pahechan karani thi...syam ko muz se bole, Tuze is kitab ka Hindi main sunder anuvad karana hoga...”





$$E=mc^2$$

Javad



# ***Gandhi-Einstein Correspondence***

These two greats never met, but have had an exchange of letters where they deeply appreciated each-other's work

***Einstein writes to Gandhi in 1931, when he was in UK, “...your work shows to the world that goal can be achieved without violence... I hope to meet you in future..”***

***Gandhi replies to him in Berlin, “...its a matter of great satisfaction that you found my work useful...look forward to meet you, that too in India, in my Ashram..”***

***THE GREAT RESPECT TO EACH OTHER  
IS OBVIOUS***



But then, Gandhi was highly unconventional, and there were major debates

--The Gandhi-Tagore Controversy--

The Bihar earthquake—A major tragedy  
Gandhi relates it to the Sin of Untouchability  
Tagore is furious—Writes a strong protest, saying

***This is highly unscientific!!***

Gandhi sticks to his guns—Owns full responsibility—“Yes, I believe so and that was what I said!”

***To top it, He then asked:***

Does your Science know All Answers?

Is it really perfect in all its Aspects?

***He also made a prophetic statement:***

“The Science of Love and that of Life is much greater than that of Matter; and much greater Discoveries will come in the former in Future.”

***We see an element of the mystic Gandhi  
in this episode!!***

***In a famous talk recorded by BBC, he suggested: "...There is a mysterious force that pervades the Universe...it can work wonders if we allow it to work through ourselves..."***

***No Question that he was a Deeply Religious Person***

# *WHY BOTHER UNIVERSE?*

- Do we already not have enough problems right here?

What is the Use?

- *Answer:* Firstly, at Some Stage or Other in your life, you cannot resist asking Questions on your Very Existence—Who You are; Where You Come from and Where You Go; What All this Universe around You is..

- Basically, we want to Understand *'How the Universe Works'*, and its *'Nature, Structure and Fundamental Laws'* ..

# *WHY BOTHER UNIVERSE?*

- *Secondly, Enormous practical benefits have resulted from the Study of Universe...And Gandhi was always interested in that...*
- *Examples: Teflon in kitchen, X-Rays, Medical Applications of Physics and more recently the Nano-technology..*
- *Trying to **Understand Atom** led to **Quantum Theory** –and that is what led to Modern Electronics, IT Industry, and the present-day Computer Revolution*

# The Unity of Nature

- Further, trying to ***Understand the Planets and Stars*** led to secrets of ***Gravitation***, and this in turn created the entire Space Technology, and Satellites, and the present day Communications Revolution
- Today, the Nano-Physics is about to create Another Revolution in Biology and Health Sciences
- UNIVERSE IS ONE, NARROW VIEWS DO NOT HELP, LIFE TO BE VIEWED IN ENTIRITY!

# Profound Puzzles

How to Explain Such Ultra-High Energy  
Happenings in Cosmos?

The Universe and The Atom

What is the Relation between the Microcosm and  
Macrocosm?

Fundamental Forces governing the Universe

Dark Energy and Dark Matter?



***THE LIST IS FAR FROM COMPLETE!!***

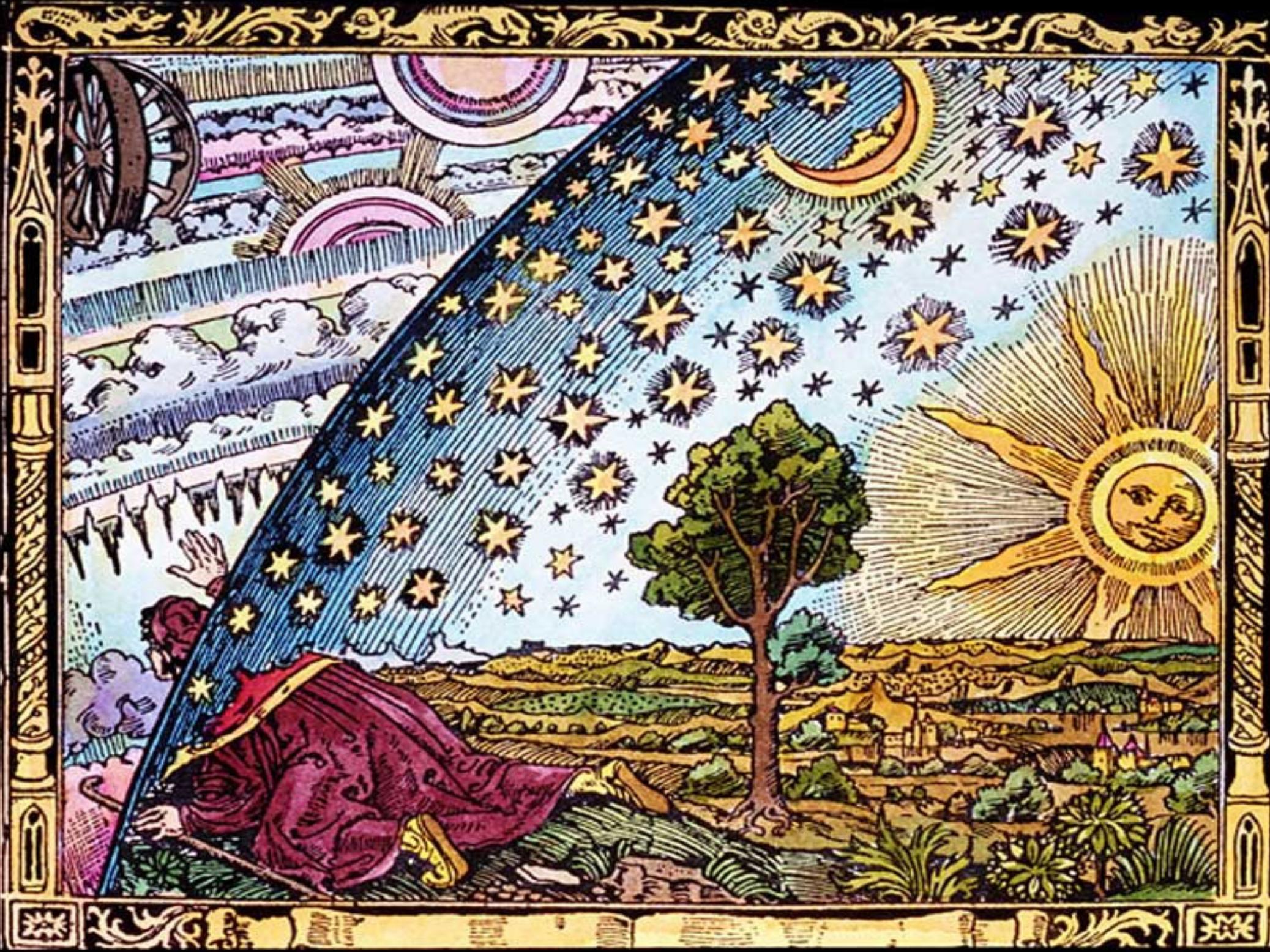
***From his statements on the Universe, his  
comments on the Scientific Method, his  
Contacts and Conversations with  
Important Scientists of his time, it appears  
that***

He was aware of this Global Perspective  
He did not want to see cosmos in a fragmented  
way

&

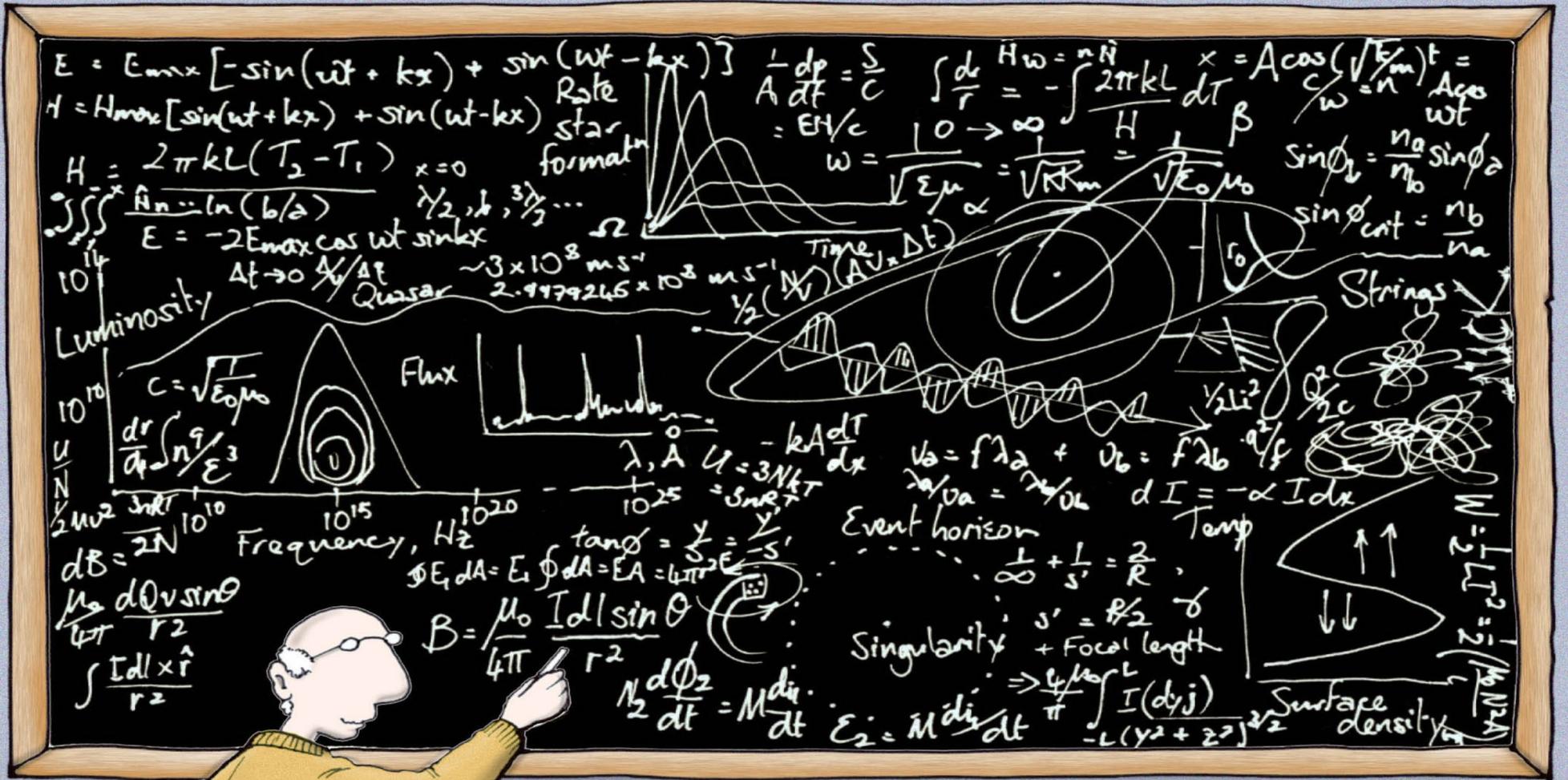
Was aware of our place in this vast Universe  
and

***Our great Ignorance on Universe and its  
Basic Laws***



# COSMOLOGY MARCHES ON





Astrophysics made simple



- **Man & the Universe**
- There is the Smallest World of Atoms from our Scale -and there is the Vast Universe around us..
- **What is our Place in the Universe?**

***These are the questions we must think about and which we cannot escape***

***In fact, we must note, Gandhi did that in an extensive manner through out his life***

***Numerous Examples: His very Initial list of Questions to Shrimad Rajchandra, Vinoba-Gandhi dialogue, Interactions with very many Scientists & Philosophers of his day, Contacts with Maa Anandmayi, Raman Mahashi, Swami Yogananda and such others***

***HE WAS DEFINITELY NOT A SINGLE TRACK PERSON—WAS VERY OPEN FOR SEARCH OF TRUTH!***

***Our discussion and analysis so far show, I hope, beyond any reasonable doubt, that Gandhi was certainly NOT anti-Science***

In fact, he always enjoyed taking interest in the the things scientific, was himself an extremely logical person who greatly respected and liked the methods and workings of science, and who always emphasized and valued the need for research, as is clear from the examples of his discussions on Ayurveda and other issues

# ***Can we fathom Gandhi's Mind, his Priorities and Actions Today?***

*We must seek help of  
respected Shri Narayan Desai and others with  
much insights on Gandhi, to that end,  
and  
Do What we can in our own Humble Ways*

# ***What Gandhi would have done Today?***

An extensive Research and Development work on Solar energy

Massive Use of Mobile and TV & Communication Technology to create a Worldwide Awareness on Global Problems of the day

Other Initiatives on Renewable Energy and Sustainable Development

***HE WAS VERY AWARE ALWAYS OF THE IMPORTANCE OF EDUCATION, SO,***

He would have Communicated and Interacted much better with Educationalists and Scientists once He got more time after the freedom struggle

*Environmental concerns featured always very strongly in his work and writings, even though he never used this word explicitly.*

*Today, he would have criticised the Modern Culture of Polluting Machines even much more strongly!!*

*He would then have launched a Major Environment Protection Movement of an absolutely International Magnitude, using all currently available Modern Communication Tools!!*

**HE WOULD HAVE PERHAPS LOVED THE IT AND NANO REVOLUTIONS, CALLING THEM `NON-VIOLENT SCIENCE' COMPARED TO ROCKETS AND NUCLEAR, AND WOULD MAKE THEIR FULL USE!!**

***The list would be long, there are many more things to say, we can go on—but the Key Point is:***

***It is a pity that this aspect of Gandhi's personality is not, and was not fully realized by thinkers, scholars, and intellectuals***

***That has been a real loss to the Humanity and Mankind as a whole!***

***SO,  
WHAT IS REALLY NEEDED TODAY IS***

# ***Gandhian Science & Gandhian Cosmology***

A deeper Dialogue  
and Thinking on the  
Gandhi's Way of Looking at the Universe

***This is the right time and ripe time to do it in  
an  
International and Global Way***

# Acknowledgements

My warm thanks to the Sahitya Academy and Shri Narayan Desai for this kind invitation that offered me this excellent opportunity to think on this wonderful and important subject

I am very grateful to many friends for Discussions and vital inputs. Shri Kanti Shah's analysis on `Hind-Swaraj' was very useful to me.

I warmly thank V.Acharya, N.Bhatt, M.Mehta, S.Shah, R.Thakkar, M.Vasavada and many other friends of Bhavnagari Group for their kind interest and encouragement.