

Models of Inspiration – Making of an Einstein

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Synopsis

- Brief Life Sketch of Einstein
- Inspiration – The Key
- Mechanistic Model
- Case Histories
- Non-Mechanistic Model
- Conclusion

Human society and Animal Society

āhāra-nidrā-bhaya-maithunaṃ ca
sāmānyam etat paśubhir narāṇām
dharmo hi teṣām adhiko viśeṣo
dharmeṇa hīnāḥ paśubhiḥ samānāḥ

Mahabharat, Shantiparva, 294.29



Eating, sleeping, sex, and defense—these four principles are common to both human beings and animals. The distinction between human life and animal life is "Dharma"

Human society and Animal Society

*idaṁ hi puṁsas tapasaḥ śrutasya vā
sviṣṭasya sūktasya ca buddhi-dattayoḥ
avicyuto 'rthaḥ kavibhir nirūpito
yad-uttamaśloka-guṇānuvarṇanam*

◦ *Srimad Bhagavatam 1.5.22*

Learned circles have positively concluded that the infallible purpose of the advancement of knowledge, namely austerities, study of the Vedas, sacrifice, chanting of hymns and charity, culminates in the transcendental descriptions of the Lord, who is defined in choice poetry.

Human intellect is developed for advancement of learning in art, science, philosophy, physics, chemistry, psychology, economics, politics, etc. By culture of such knowledge the human society can attain perfection of life. This perfection of life culminates in the realization of the Supreme Being, Viṣṇu.

Life sketch of Albert Einstein

- As a child
 - Parents not genius
 - A slow starter – struggling to even speak fluently until age of 9
 - Parents feared him to be subnormal
- As a Student
 - Developed a sense of strong religiosity
 - Failed in first attempt before making it to Swiss Federal Polytechnic School
 - Relied heavily on notes taken by his friends



Einstein – The Scientist

The annus mirabilis: Papers on

- Light Quanta
- Brownian motion
- Theory of Special Relativity $E = mc^2$

Awarded Nobel Prize for his research on photoelectric effect

1905

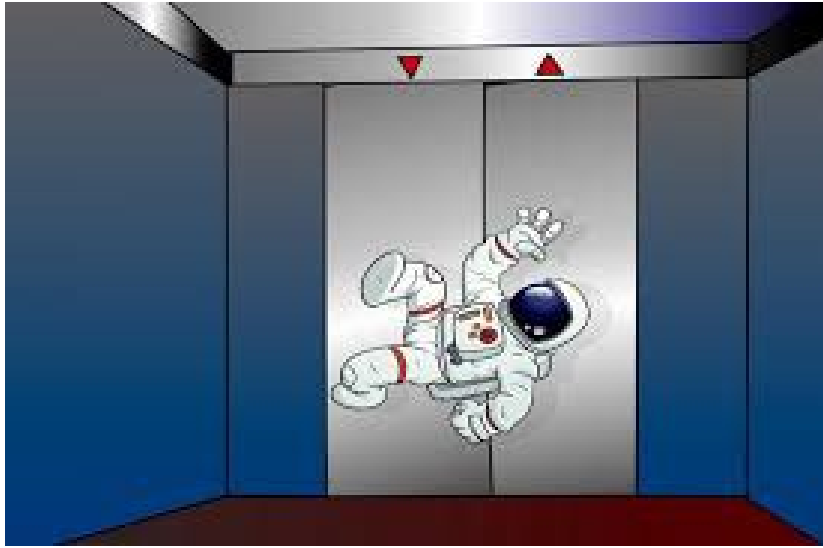
1916

1922

1939

Paper on General theory of Relativity

Proposed atomic bomb research



Inspiration is the Key



What makes an Einstein or a Newton?



Music

Mozart (1756-1791)

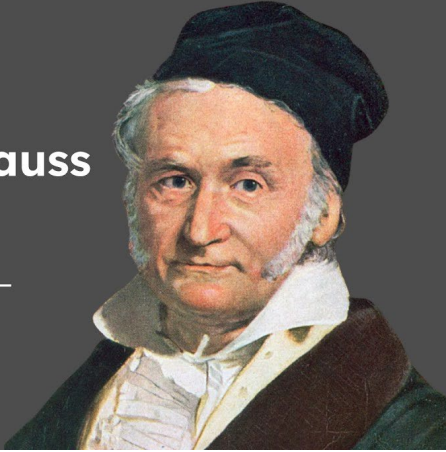
When I feel well and in good humor, or when I am taking a drive or a walk ... thoughts crowd into my mind as easily as you would wish. Whence and how do they come? I do not know and I have nothing to do with it...Once I have a theme, another melody comes, linking itself with the first one, in accordance with the needs of the composition as a whole. It does not come to me successively, with its various parts worked out in detail, as they will be later on, but it is in its entirety that my imagination lets me hear...



Carl Friedrich Gauss

1777 - 1855

The Greatest
Mathematician Since
Antiquity



Science

Carl Gauss

Finally two days ago I succeeded ...Like a sudden flash of Lightning the riddle happened to be solved. I myself cannot say what was the conducting thread which connected what I previously knew with what made my success possible.



Henry Poincaré

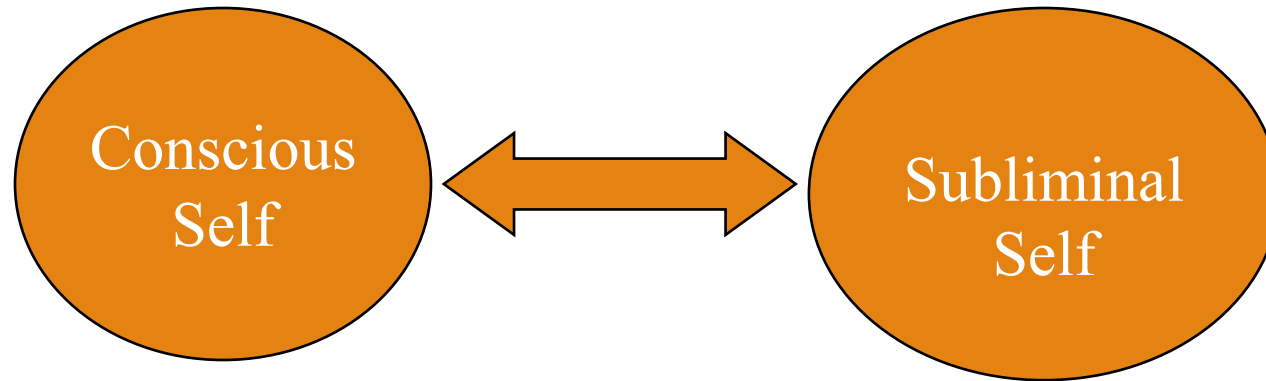
At the moment when I put my foot on the step the idea came to me, without anything in my former thoughts seeming to have paved the way for it, what the transformations I had used... were identical with those of the non-Euclidian geometry.



Inspiration has two features

- Its source lies beyond the subject's conscious perception.
- It provides the subject with information unobtainable by any conscious effort.

Subliminal Self – The Source of Inspiration?



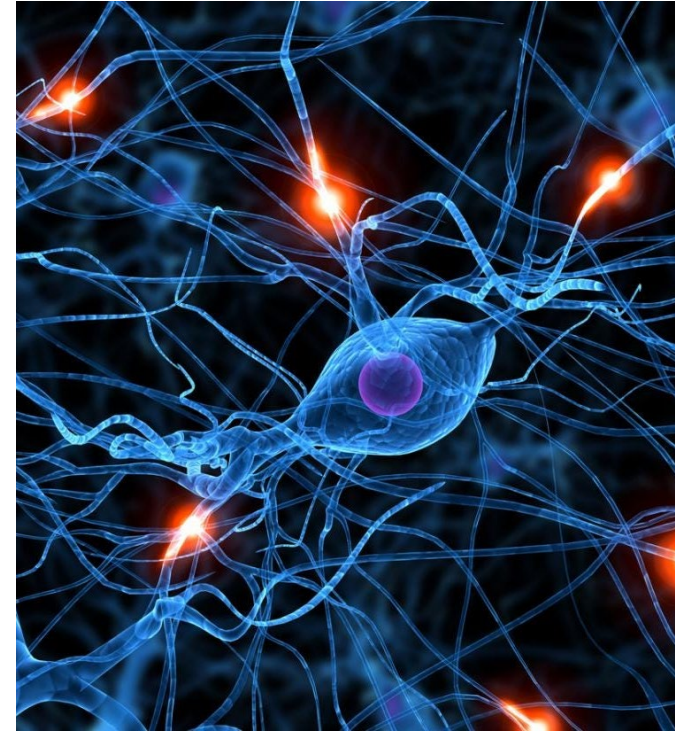
Poincare's Observation:

The subliminal self is in no way inferior to the conscious self; it is not purely automatic; it is capable of discernment; it has tact, delicacy; it knows how to choose, to divine. What do I say? It knows better how to divine than the conscious self, since it succeeds where that has failed. In a word, is it not the Subliminal self superior to the conscious self ?

Poincare's Mechanistic Model

Assumptions

- All mental phenomena are response of neural networks in the brain results simply from the interaction of macromolecules within the nerve cells according to the known laws of physics
- Consciousness is purely described by external behavior
- Disregards the individual person's subjective experience of conscious self



The Model



Conscious mind desires



Subliminal self is capable of forming enormous numbers of combinations in a short time



Subliminal self puts together many combination of mathematical symbols by chance



The conscious mind remains unaware of the many useless and illogical combinations



It immediately becomes aware of a satisfactory combination as soon as it was formed

Validity of Poincare Model

Human brain has an average size of $1300 \text{ cm}^3 = 13 \times 10^{-4} \text{ m}^3$

One Cubic Angstroms = 10^{-30} m^3

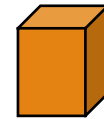
No of Cubic Angstroms in the brain = 13×10^{26}

Let one billion of combinations take place in one cubic Angstrom of brain per second

Number of operations that will take place within the brain per second = 13×10^{35}

Number of operations per year = $31 \times 10^7 \times 13 \times 10^{35} = 4 \times 10^{44}$

Number of operations in 100 years = 4×10^{46}

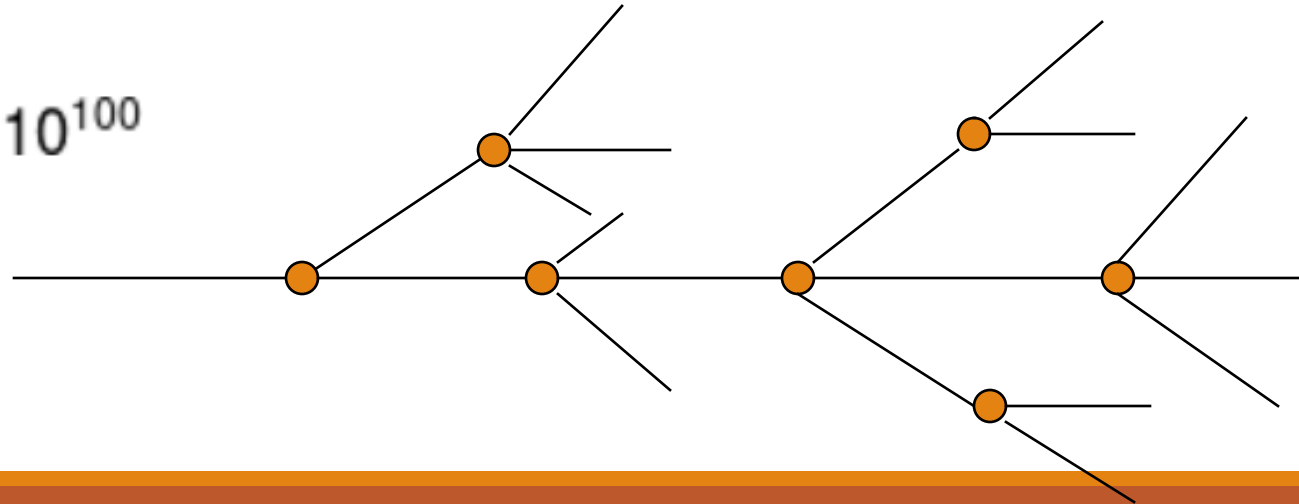


1 Cubic Angstrom

Random Combinations

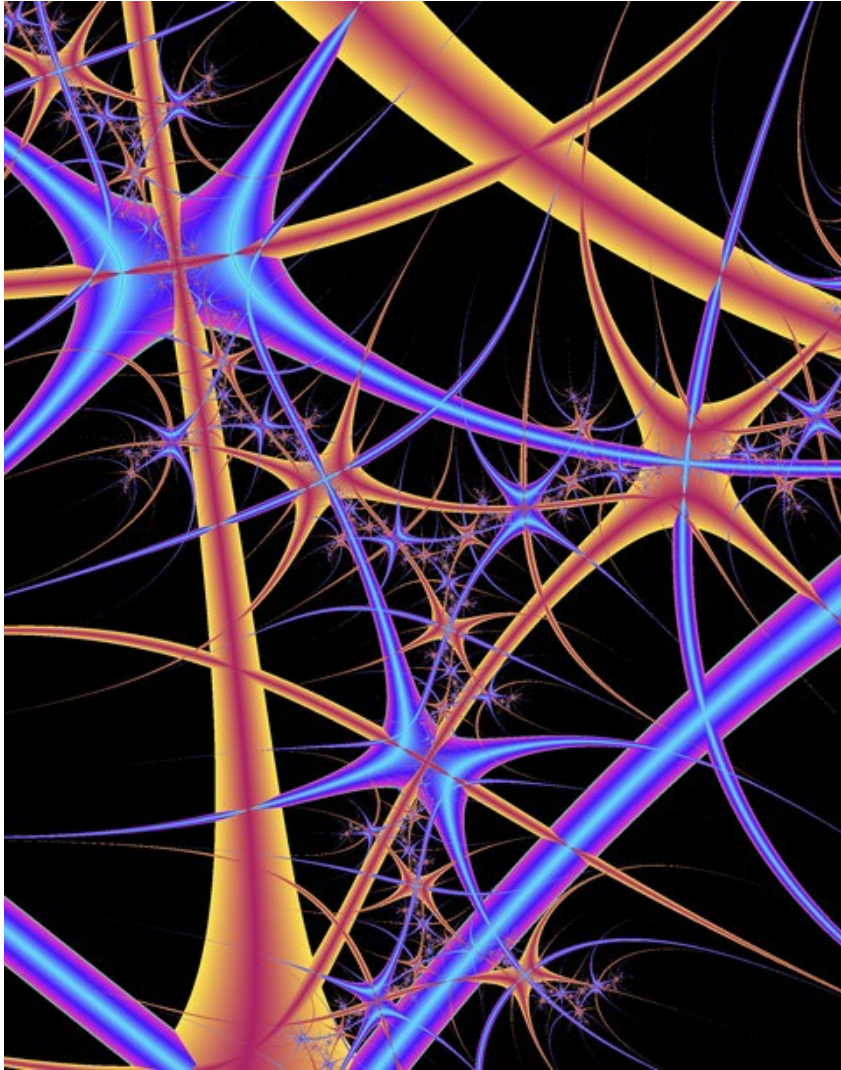
- Example: Writing sentences in some symbolic language of 333 symbols in length
- Assumptions: The rule grammar allows us an average of two choices for each successive symbols.

$$2 \times 2 \times 2 \dots = 2^{333} \approx 10^{100}$$



Randomly hitting a proof!!

- Total no. of grammatical sentences = 10^{100}
- One has to live for 10^{54} years for his brain to strike the right combination
- Any mathematical theorem requires much more than 333 symbols to prove.
- Randomly hitting a proof seems impossible.



Direct Choice Algorithm

THIS THEORY PROPOSES THAT NEURAL
ALGORITHMS ARE NATURALLY BUILT INTO
THE NEURAL CIRCUITRY.

Direct Choice Algorithm

- It is clear that extensive trial and error is not the cause of inspiration
- Alternate mechanistic model suggests that there exists a very powerful algorithm built into the neural circuitry of the brain
- Two major problems
 1. Origin
 2. Subjective experience



Subjective Experience

- Abrupt realization of complete solution without subject's conscious awareness of immediate steps

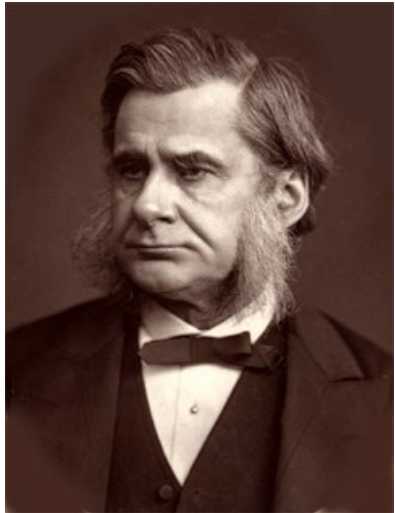
- Conscious awareness of intermediate steps during simple problem solving

Mechanistic models ignores subjective experiences



Eugene Weigner (Nobel Prize in Physics in 1963)

there are two kinds reality or existence: the existence of my consciousness and the reality of existence of everything else. The later reality is not absolute but only relative.



Thomas Huxley

*It seems to me pretty plain that there is a third thing in the universe to wit .. **consciousness**, which – I cannot see to be matter or force, or any conceivable modification of either.*

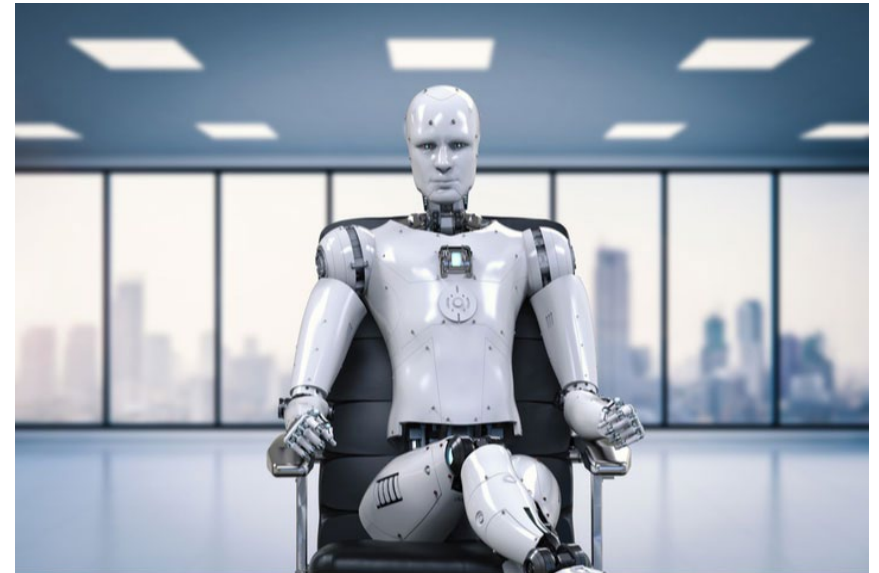
Here's what some physicists have to say!

Phenomenon of
Conscious
Awareness Is
Anti-material

- *Consciousness* is inexpressible by physical laws does not imply that it does not exist.
- Consciousness can clearly be known by experience
 - You may hit a machine, but it does not experience pain.
 - A robot may generate a code “I see a red light“, but it is not perceiving the red light
 - An automobile moves, but it doesn't itself experience motion.

Robot Einstein – Can one build it?

- Building a Robot Einstein
 - It should be as prodigious as Einstein.
 - Moment to moment and generation to generation behavior should be unpredictable.
 - Proposes a new theory like the theory of relativity.





Impractical Theory

➤ Hypothesis

- ❖ Physical science attributes all phenomenon to matter and force.
- ❖ All our activities are results of bodily chemistry

➤ Dilemma

- ❖ Denies self as a responsible agent with a free will
- ❖ Renders meaningless the idea of moral choice
- ❖ Features such as thinking, feeling, willing and loving are mere consequences of underlying chemical processes



Case Histories

A set of basic principles and underlying systems of mathematical relationships are used to solve any difficult problem. But there are several instances in which famous mathematicians have, without proof, stated mathematical results that later investigators proved only after elaborate systems of underlying relationships had gradually come to light.

Example -1

➤ *Reimann's Zeta function*

At the time of his death, Reimann left a note describing several properties of this function without any proof. Many years elapsed before mathematicians could provide proof for all but one, which is the Riemannian hypothesis itself, which is later proved by Poussin etc.

➤ *Hadamard says*

All these complements could be brought to Reimann's publication only by the help of facts which were completely unknown in his time; and, for one of the properties enunciated by him, it is hardly conceivable how he could have found it without using some of the general principles, no mention of which is made in his paper.

Example- II

➤ *French Mathematician Evariste Galois*

His paper written in a sketchy form just before his death revolutionized the subject of Algebra.

Hadamard says

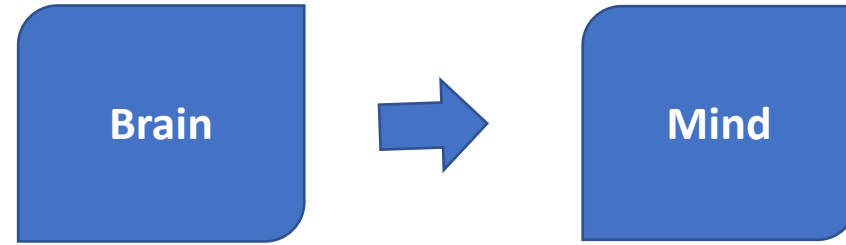
- ❑ *that Galois must have conceived these principles in some way;*
- ❑ *that they must have been unconscious in his mind , since he makes no allusion to them, though they themselves represent a significant discovery.*



Évariste Galois

Physicalist theories - Limitations

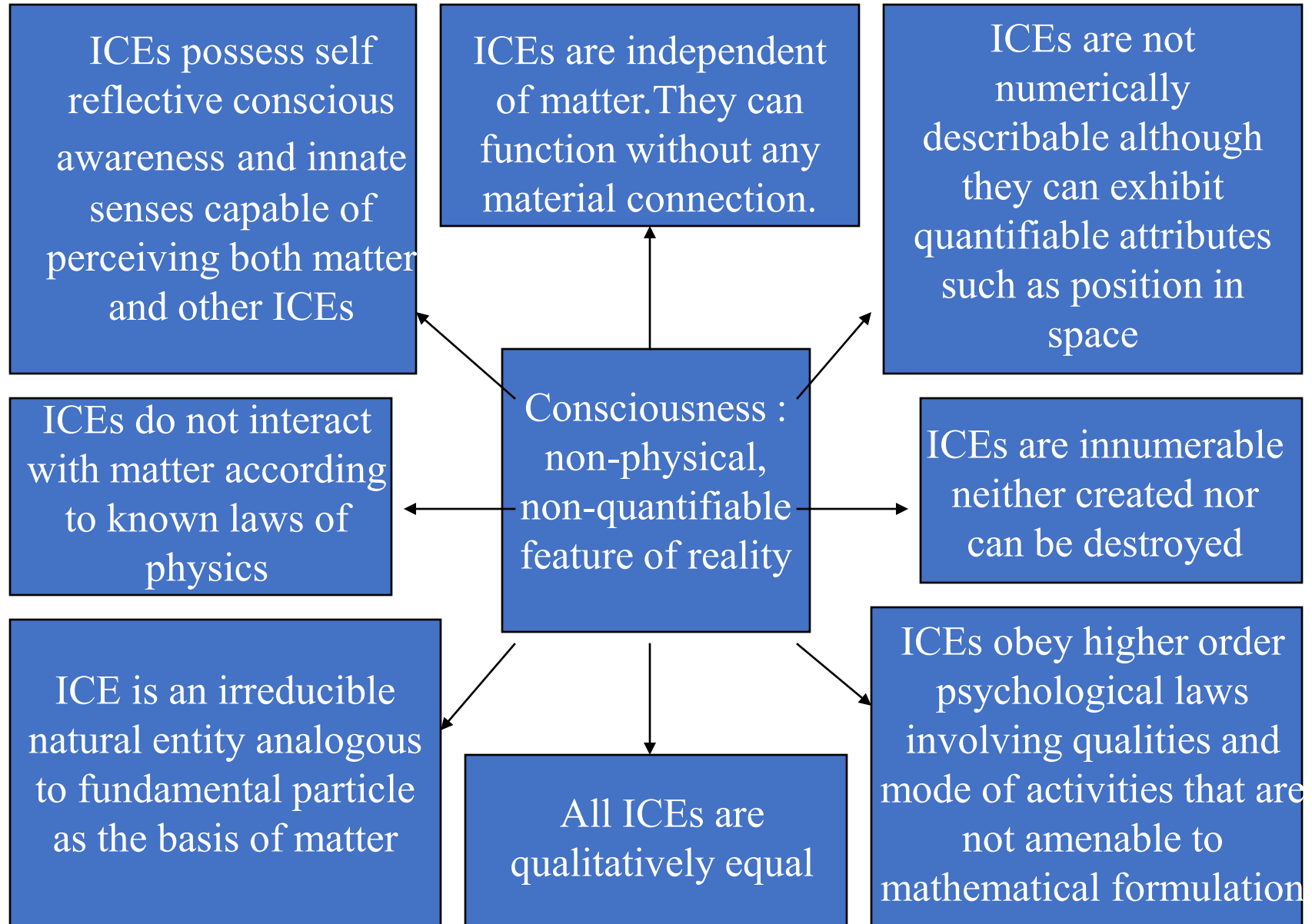
- Mind and consciousness are epiphenomenon of the brain
- Your feelings, loving propensity, desires, are all different forms of hallucination
- The laws of psychology are governed by the laws of physics, chemistry and biology
- Bottleneck:
 - Inspiration can not be explained
 - Existence of qualia (the felt qualities of experience) cannot be explained
 - Problems of intentionality are not solved
 - Physicalism of abstract objects, i.e., entities apparently not located in space and time cannot be explained
 - And the list is endless



The Bhagavad Gita/Vedanta Model

- Consciousness is the basis of existence
- Consciousness is not created or destroyed – is ever existing
- Material energy is subservient to spiritual energy
- Life comes from life
- Inspiration is an outcome of pure love

Individual Conscious Entity (ICE)





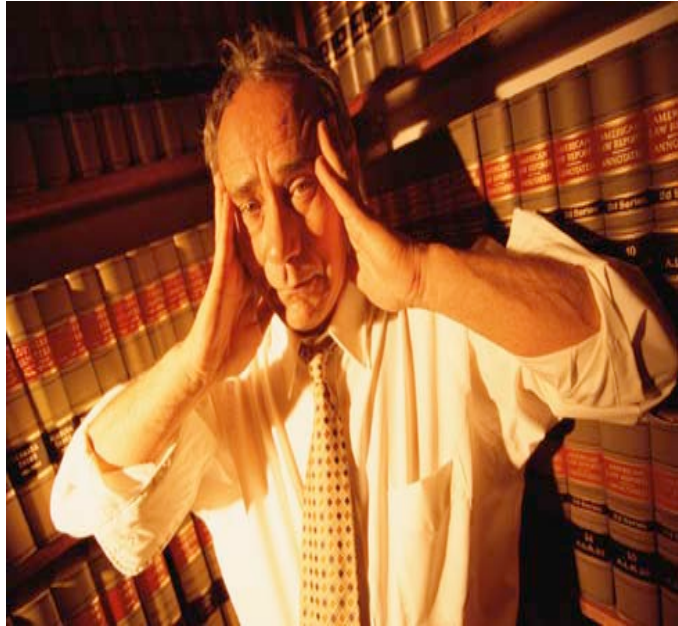
Supreme Conscious Entity (SCE)

- SCE is conscious of all points in space and time
- SCE is inconceivable by ICE unless SCE reveals Himself to ICE
- SCE is the very basis of reality and the ultimate source to all phenomenon
- SCE is a Supreme person fully endowed with all personal attributes such as senses, will and intelligence



ICE can only
desire

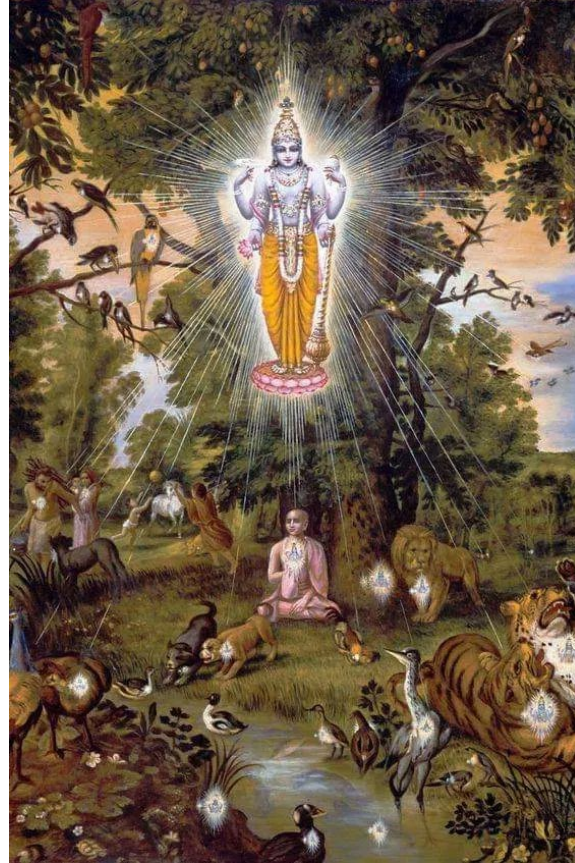
SCE may or may
not satisfy the
desire of ICE



Law of Karma is the basis by which SCE satisfies the desires of ICE

*mayādhyakṣeṇa prakṛtiḥ
sūyate sa-carācaram
hetunānena kaunteya
jagad viparivartate*

This material nature, which is one of My energies, is working under My direction, O son of Kuntī, producing all moving and nonmoving beings. Under its rule this manifestation is created and annihilated again and again. BG 9.10



*sarvasya cāham hṛdi sanniviṣṭo
mattaḥ smṛtir jñānam apohanam ca
vedaiś ca sarvair aham eva vedyo
vedānta-kṛd veda-vid eva cāham*

I am seated in everyone’s heart, and from Me come remembrance, knowledge and forgetfulness. By all the Vedas, I am to be known. Indeed, I am the compiler of Vedānta, and I am the knower of the Vedas. BG 15.15

Inspiration plays a key role even for small actions

- A student works hard
- A cook makes tasty preparations
- A researcher goes to the lab everyday in spite of many failures
- A businessman carries out his daily effort in spite of making losses
- Intellectuals, administrators, businessmen, service providers – all work on inspirations



A person tends to commit suicide when is devoid of any-form of inspiration

Desires and Inspiration

- ❑ Desires are inspired from associations
- ❑ There are three kinds of material association
 - Mode of goodness
 - Positive actions – do good to others, seek the truth, self-less service
 - Mode of Passion
 - Selfish actions – highly ambitious, ruthless, desire for fame, positions, and profit by hook or crook
 - Mode of Ignorance
 - Negative actions – self-harm
- ❑ There is spiritual association
 - Develop Character, spiritual quality and connection
 - Whatever they do brings auspiciousness

Inspiration is a product of Love

- Einstein is lover of Physics
- A sportsman/woman is a lover of specific sports
- A poet may be lover of nature
- A scientist is a lover of self-organization
- A leader is lover of civilized growth
- When the love is reposed on the Absolute Truth, an artist, a scientist, a leader, a poet – all transcend the material boundaries and denomination

Conclusion

- When it comes to life and properties of life, physical theories have their limitations
- Inspiration plays a key role in all of your life
- You have to know your nature and spiritual origin
- We can be benefitted a lot from Bhagavad Gita/Vedanta
- The first step is to learn 'What is Consciousness'
- The second step is to learn your nature – bodily nature
- The third step is to harmonize your bodily nature with your spiritual nature.

Thank you

