

Indian Knowledge Systems and Mental Health – Research Agenda

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STRESS OF LIFE - EVERYBODY GOES THROUGH



STATISTICS

One in every eight individuals worldwide suffers from a mental disorder - WHO 2022

Mental health illnesses - 15% of the global disease burden.

Teens who spend 5 hours daily on their mobile devices are 51% more likely to have inadequate sleep (BankMyCell)

56% of teens feel lonely, anxious or upset when they don't have their phones with them (Pew Research Center)

About 70% to 80% of persons in India struggling with mental illness receive no care - NIMHANS 2016

5.6 crore Indians suffer from depression and 3.8 crore from anxiety disorders

Teens who spend too much time on social media face a 27% increased risk of depression (BankMyCell)

India will lose \$1.03 trillion in economic value owing to mental health issues between 2012 and 2030 - WHO forecast

THE STORY

CONCLUSION

Most of us lack the holistic understanding of life.

The harmonious configuration of body, mind and consciousness is the key to success

OUR UNDERSTANDING OF MIND BODY CONSCIOUSNESS IS VERY POOR SPIRITUAL CONNECTION IS THE WAY

OUR SPIRITUAL IDENTITY IS NOT WITHIN THE
PURVIEW OF EMPIRIC SCIENCE



BUT WE CAN STUDY THE EFFECT OF
CONSCIOUSNESS ON BODY AND MIND
EMPIRICALLY

WE ARE ALL SPIRITUAL BEING AND
WE NEED TO BE CONNECTED
SPIRITUALLY TO VARIETIES OF LIFE
FORMS UNDER THE UMBRELLA OF
ONE SPIRITUAL WHOLE



THE STORY OF BHAKTIVEDANTA GURUKUL,
VRINDAVAN

BEFORE (2012)

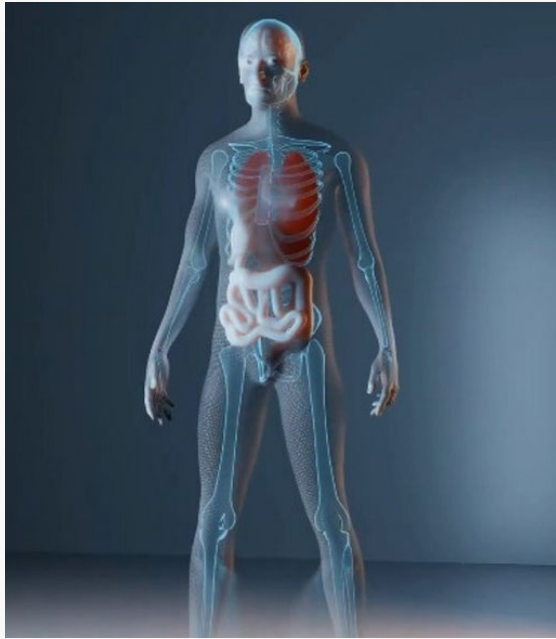


NOW



SCIENCE OF MIND, BODY AND CONSCIOUSNESS

WHO AM I?
HARDLY DO WE
INTROSPECT

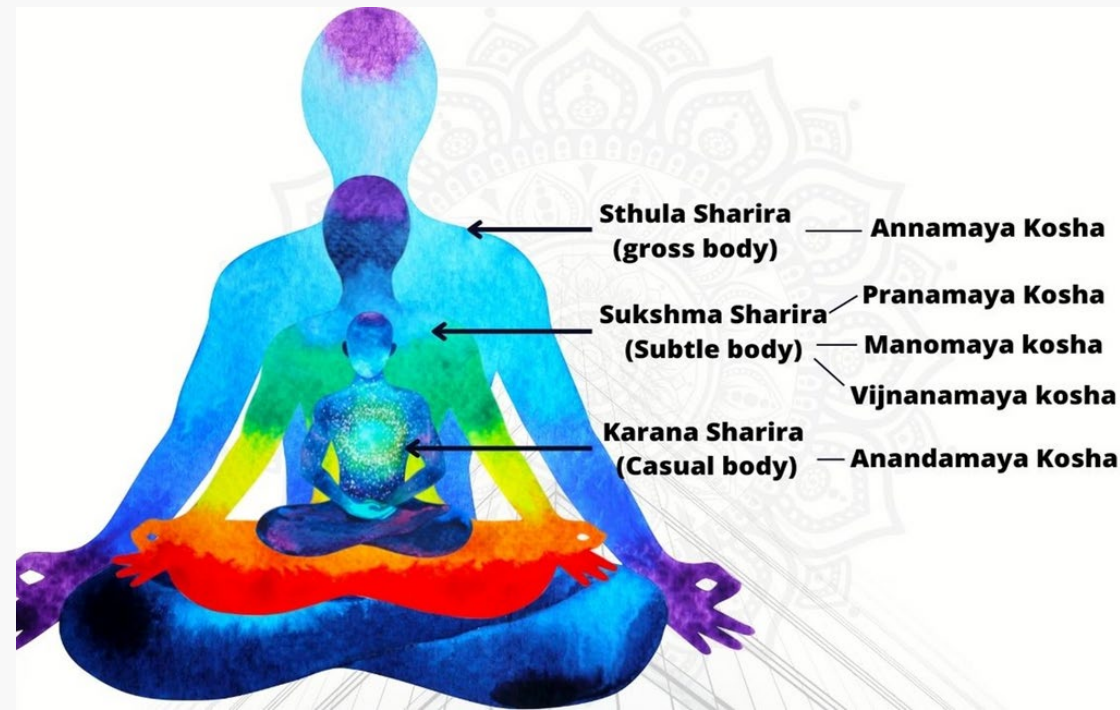
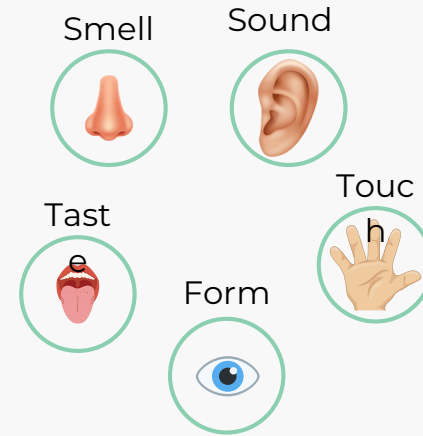


IS IT OF FLESH, BONE,
BLOOD, CELLS?

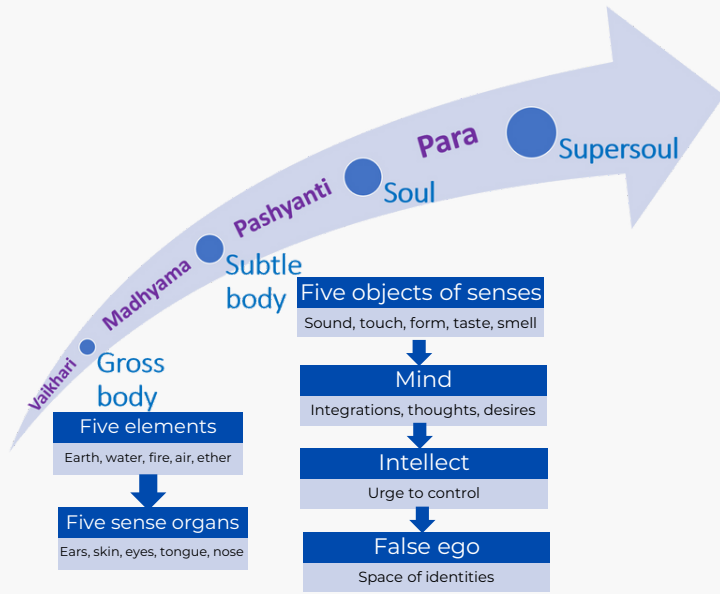
IS IT A MATERIAL PERCEPTUAL
SPACE OR A DIVINE
PERCEPTUAL SPACE ?

INDIAN KNOWLEDGE
SYSTEMS

PHENOMENAL WORLD IS
MADE UP OF FIVE
TANMATRAS



FLOW OF INFORMATION

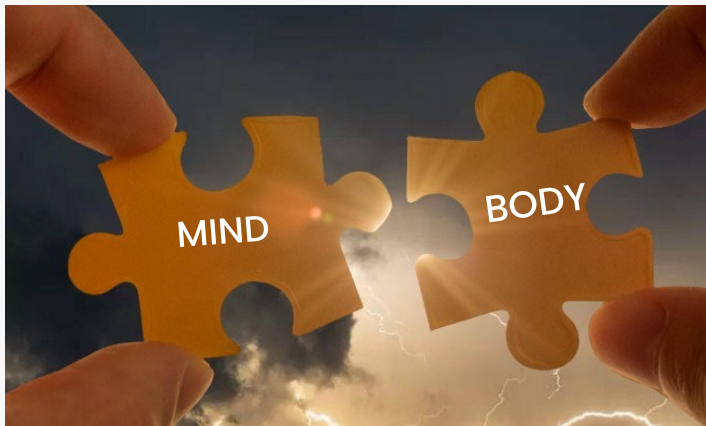


ALTHOUGH MIND IS MATERIAL AGENT, IT ATTAINS THE COGNITIVE NATURE IN CONNECTION WITH PURE CONSCIOUS AGENT AND THIS MIND (MENTAL ENERGY) SUSTAINS THE BODY

KIND OF ASSOCIATION



POSITIVE ENERGY



NEGATIVE ENERGY

MIND IS POSITIVE IMPLIES BODY IS POSITIVE

INDIAN KNOWLEDGE SYSTEMS - ASSOCIATE WITH SATTVA

WE DON'T HAVE THE CAPACITY TO ASSOCIATE WITH PURE SELF. THUS, ASSOCIATE WITH SATTVA (MODE OF GOODNESS) WHICH IS THE CONSCIOUS CREATION OF SAINTLY PEOPLE

- SATSANGA
- MEDITATION
- ORGANIC FARMING
- YOGA
- COMMUNITY SERVICE
- GOSHALA
- INDIAN ART FORMS

RESEARCH

COGNITIVE BEHAVIORAL THERAPY WITH MINDFUL DEVOTIONAL MEDITATION FOR INSOMNIA



Participants - 48 men in the age group 19–45 years
HMBCT group (n=26) and the control group (n=22).

Results

- 80% of the subjects experienced a 32% decrease in total arousal.

-A larger post-treatment Sleep Efficiency value, for the HMBCT group ($p < 0.001$)

-A significant increase in the mean percent REM sleep score in the HMBCT group ($p < 0.001$)

-A decreased day-time sleepiness in the HMBCT group.

Behera CK, Reddy TK, Behera L, Birbaumer N, Ika K. A Meditation Based Cognitive Therapy (HMBCT) for Primary Insomnia: A Treatment Feasibility Pilot Study.

Appl Psychophysiol Biofeedback. 2023 Apr 27.

THE EFFECTS OF INDIAN CLASSICAL MUSIC ON THE COGNITIVE FUNCTION OF THE BRAIN LIKE INTELLIGENCE, ATTENTION, EMOTION REGULATION



Participants -

Experiment 1 - Raga Darbari for cognitive enhancement - 20 students

Experiment 2 - Mishra jogiya raag for emotional coping - 20 students

Results

Experiment 1 -

- According to the findings of the study, Raag Darbari can help bust stress
- Ease of concentration goes up, improves thoughtfulness, and the time in taking decisions reduces.

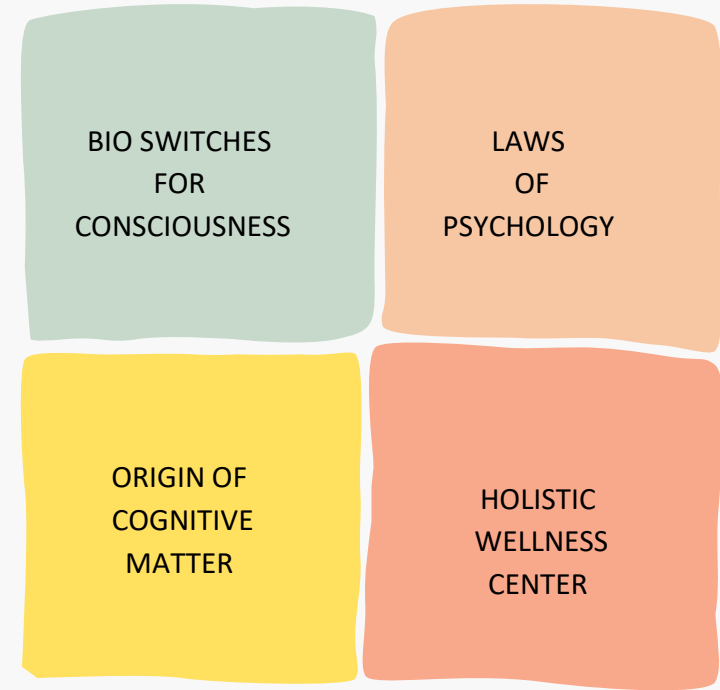
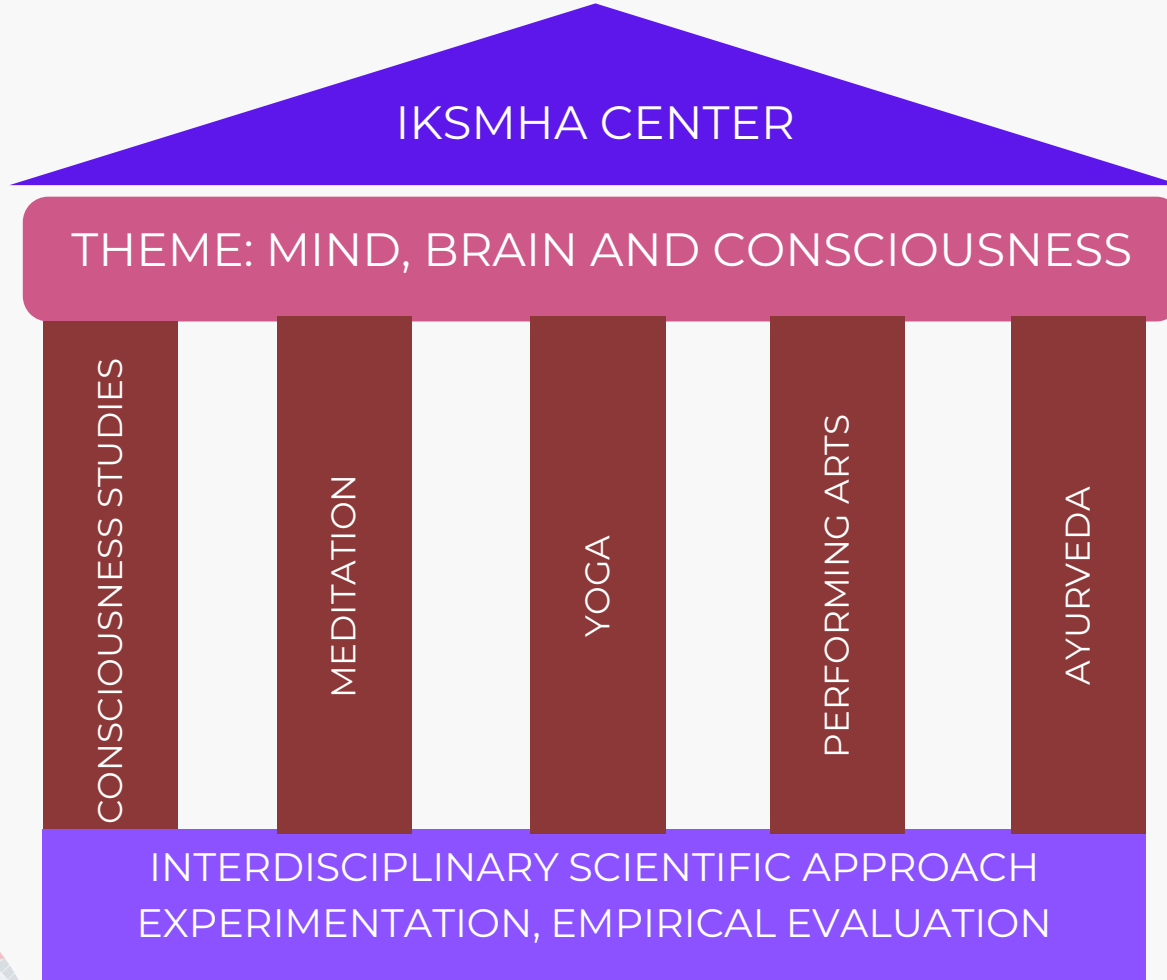
Experiment 2 -

- Listening to Mishra Jogiya Raga (sad music) enhances alertness and processing of sad emotions and memories.
- The coping effects are not simply due to the aesthetic appeal of the music, as previously believed, but an inherent property of sad music.

Gupta A, Bhushan B, Behera L. Short-term enhancement of cognitive functions and music: A three-channel model. *Scientific Reports*. 2018 Oct 19;8(1):15528.

Gupta, Ashish, Braj Bhushan, and Laxmidhar Behera. "Neural response to sad autobiographical recall and sad music listening post recall reveals distinct brain activation in alpha and gamma bands." *Plos one* 18.1 (2023).

INDIAN KNOWLEDGE SYSTEM AND MENTAL HEALTH APPLICATIONS (IKSMHA) CENTRE AT IIT MANDI



First mistake in empiric science

- Materialism
 - Studies the observed (experience) while neglecting the observer (experiencer)
 - Even a highly accomplished person can not explain how does he/she experience
 - What is the purpose behind the existence and its variegatedness?
 - Neglect of the self (semantic understanding – svarupa) – created a huge imbalance in mind-body-consciousness
 - No role of ethics and morality

Indian Knowledge Systems

- Attainment of Equilibrium of Mind-body-consciousness
- Development of the spiritual character
- Ramayana, Mahabharata, Bhagavata Purana are used for counselling
- Yoga, meditation, performing arts (dance, music, drama), ayurveda along with the integrated life-style are meant to attain internal happiness
 - Understanding the nature – NOT exploiting the nature
 - Sustainable development
 - Self-less service
- Source matters
 - Healthy mind matters
 - Pure Consciousness matters

Need of the hour

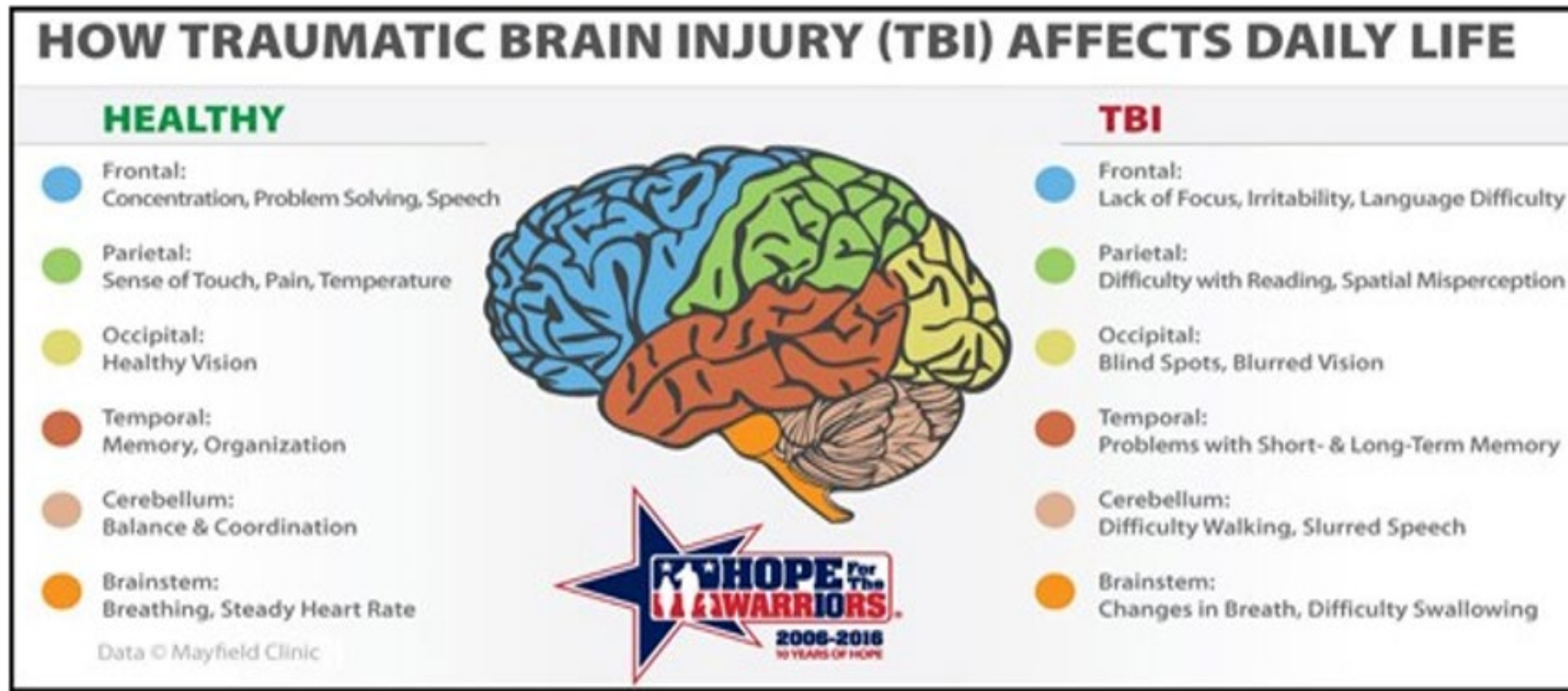
- Empiric science has been accepted by the society
- Lets take the Indian knowledge Systems to the domain of empiric science
- Mental Health has taken the shape of a pandemic
- Bio-signals – EEG, ECG, Brain images – can be used to find out bio-markers for healthy and sick mind
- Virtual reality based immersive neuro (bio) – feedback can augment IKS for therapeutic intervention.

Mind-Body and laws of Psychology

- Is the mind simply the brain in action or a more fundamental object than any fundamental object known within empiric science?
- Researchers like Christof Koch have changed their stance from the former to latter.
- Why mind-body? Mind - as it is – is empirically inaccessible but the effect of mind on body is measurable

Mind-Brain connection

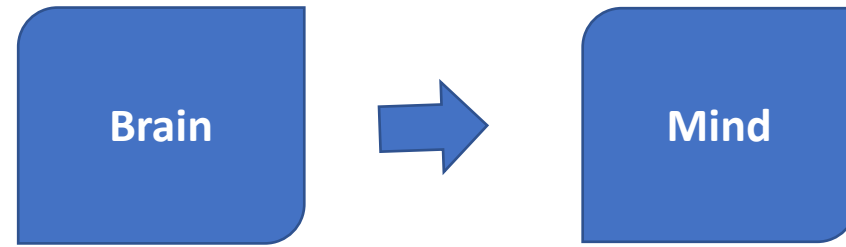
- Suppose our finger is cut, our personality doesn't change.
- But if a brain-part is damaged, then our personality changes
- Eg: Traumatic brain injuries[1]



1. Traumatic brain injury: Hope through research. National Institute of Neurological Disorders and Stroke. <https://www.ninds.nih.gov/Disorders/Patient-Caregiver-Education/Hope-Through-Research/Traumatic-Brain-Injury-Hope-Through>. Accessed Dec. 17, 2020.

Physicalist theories

- Mind is the epiphenomenon of the brain
- Thus, the laws of psychology are governed by the laws of physics, chemistry and biology
- Bottleneck:
 - 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



Physicalist theories – Lack of intentionality



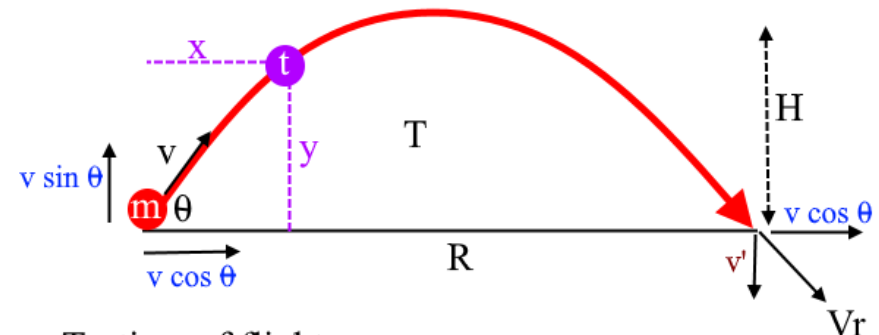
The dynamics of the trajectory of the stone and its force upon the window can be studied in the current physicalist science, but the intention of the child (mischief) cannot be.

total momentum before = total momentum after

$$m_A v_A + m_B v_B = m_A v'_A + m_B v'_B$$

total kinetic energy before = total kinetic energy after

$$\frac{1}{2} m_A v_A^2 + \frac{1}{2} m_B v_B^2 = \frac{1}{2} m_A v'^2_A + \frac{1}{2} m_B v'^2_B$$



T - time of flight

H - maximum height

R - maximum horizontal range

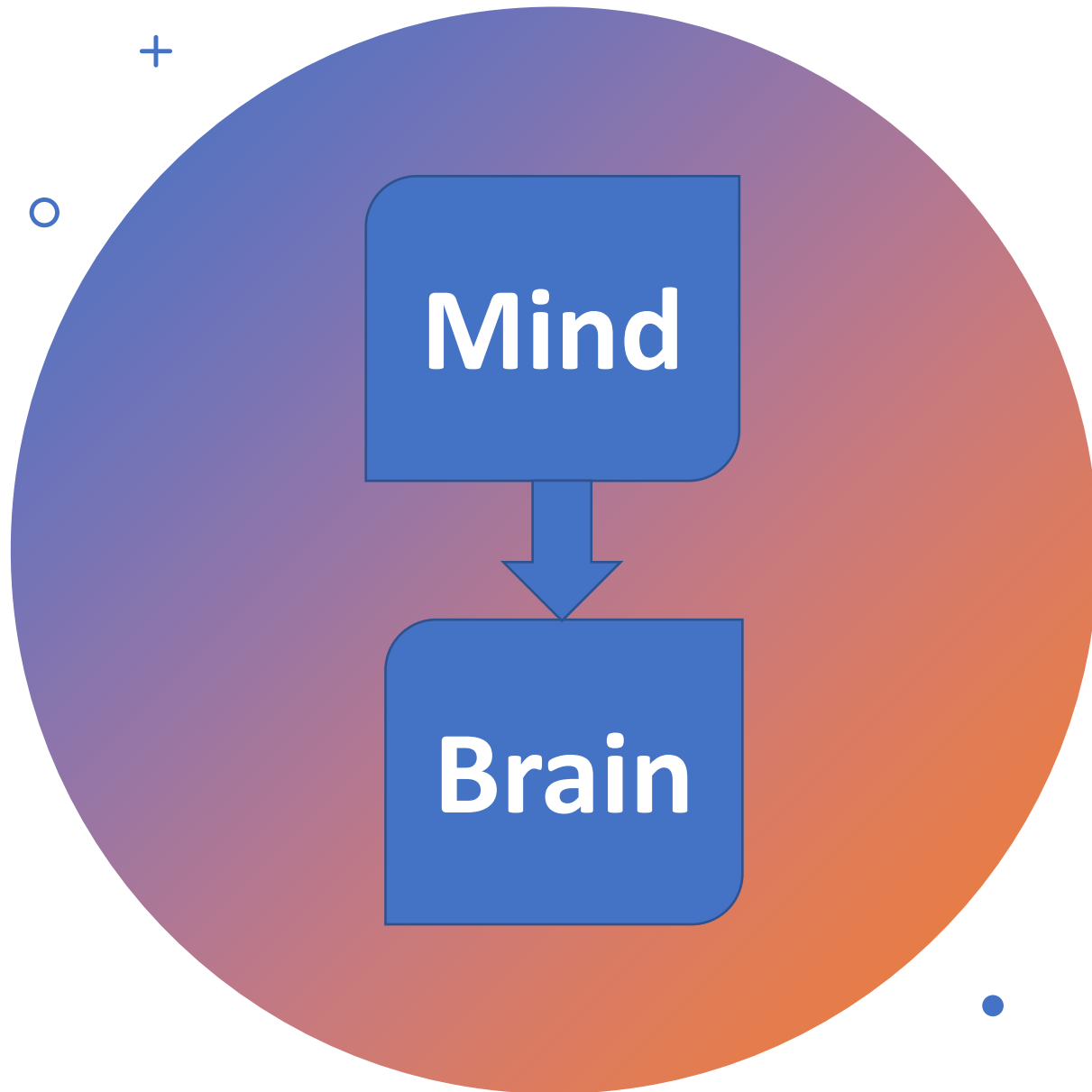
V_r - velocity at which it hits the ground

y - equation of trajectory

Physicalist theories - Limitations

- A person being asleep, anesthetized, or in a coma regains his consciousness – how the same brain becomes active can't be explained?
- Many people have near-death experiences, regression to past lives and spiritual experiences which can't be explained.





Non -Physicalist theories

- Mind is the cause of the brain activity
- Thus, we need to know the laws of semantics or meaning.
- Laws of Psychology is more fundamental than the laws of physics, chemistry and biology

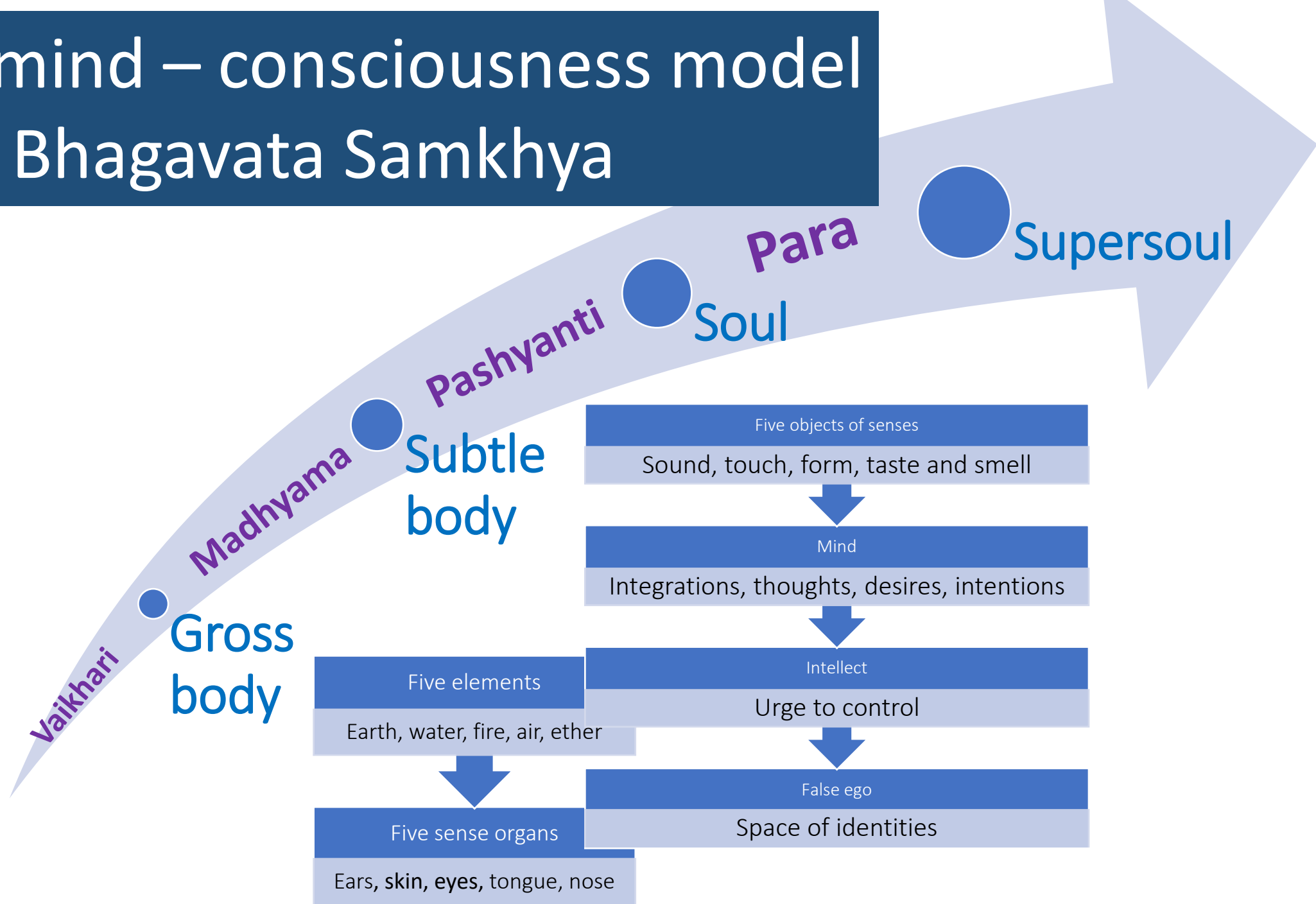


How the theory matters?

- If mind is brain and brain is mind, then this world is completely physical, then there is no purpose behind this world
- If mind is more than brain, then the foundations of physical world as advanced by scientists would shake completely. But I would recover a world with meaning and purpose

Body – mind – consciousness model

Bhagavata Samkhya





Let's study living
matter

Axiom 1

Pure mind can't be empirically studied whereas mind-body can be.

Definition of mind-body: Any matter in which mind has expanded

Thus, mind-body will have different properties than that of a rigid body.

Axiom 2

Although mind has expanded into matter, when matter gets annihilated, mind remains untouched.



How to study mind-body?

Performing
cognitive
experiments

Mind-body
simulation



Mind-body simulation

Can we simulate the behaviour of mind-body in some computer simulation ?

If successful, then we can attempt to formulate the laws of mind-body behaviour

A rigid body vs a mind-body – Some characteristics

When subjected to external force , a rigid body explodes to pieces following the laws of conservation

When subjected to mental force (intention, stress, etc .), a mind-body gets deformed but can come back to its original shape when the force is withdrawn

Its explosion is irreversible

Its explosion is reversible



A thought experiment

- A mind-spherical ball gets deformed but reverts to its original shape
- In trying to simulate such a ball, the laws of mental equilibrium can be found



Some ideas for such simulation

- For such restoration to happen, each part must be related to every other part in some way, and they remember their neighbourhood relations.
- These relationships are preserved
- These relationships must be defined using metrics in a space of meanings.



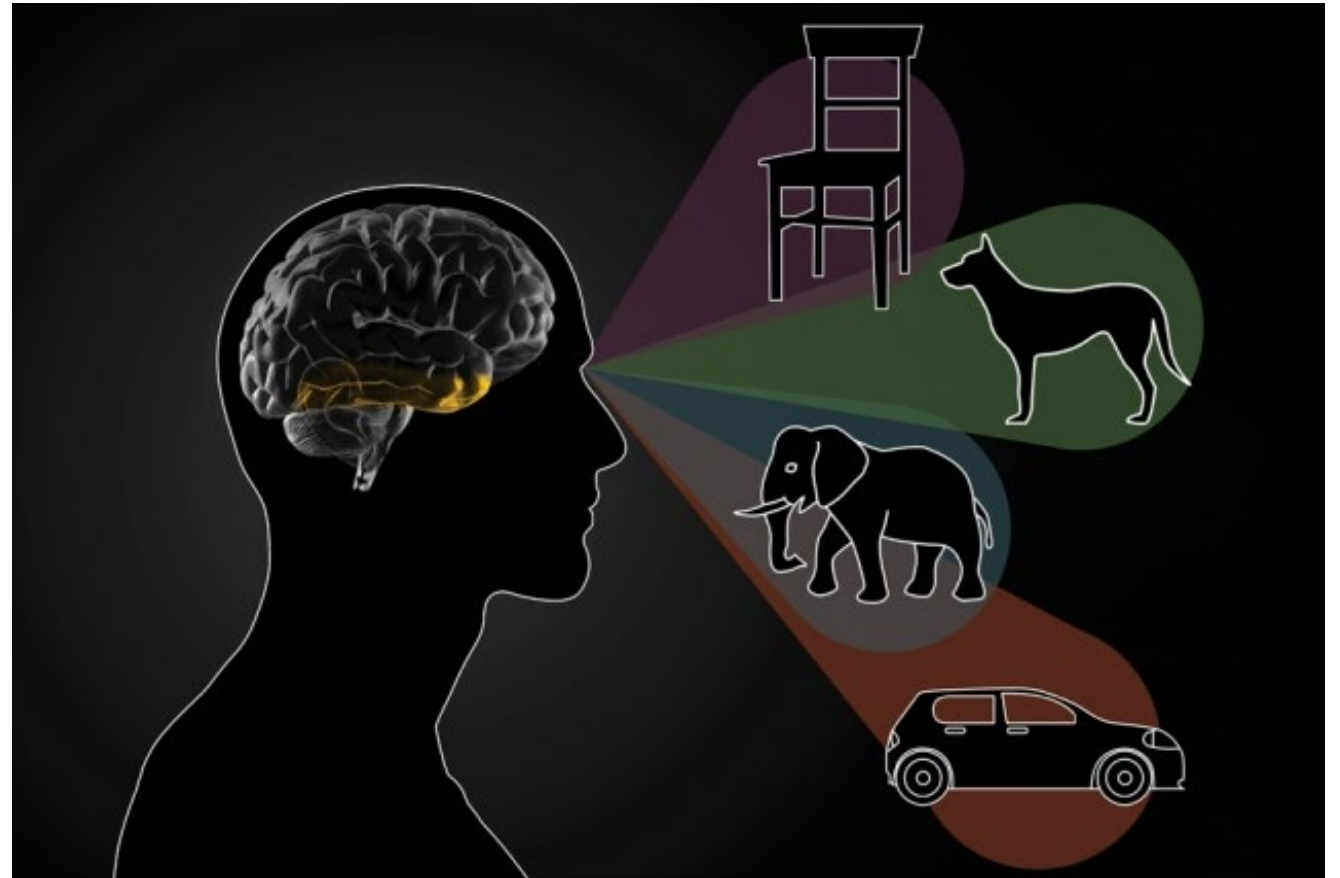
Applications


Applications -- Perception

- Problems of perception can be tackled differently
- The current reductionist scientific approaches[1] cannot understand why our experiences are
 - Subjective - Each of us experiences a world of sensations that feel unique and private
 - Holistic - Our experience of the world at any given moment is felt as a single unified experience
 - Intentional - i.e., that they are about something: about their intentional object.
- If mind-body laws could be formulated, we probably could explain that as per axiom 1, mind expanded into his experience, and since mind has such nature , so our mind-body experiences have that nature.



Applications -- Perception

- The current understanding is that cognitive processes are passively determined by sensory stimuli originating in the external world
- But based on our relation to the environment, perception is actively being constructed shaped by internal events in the brain [1]
- Thus, brain as an expansion of the mind would be studied







Applications -- Modern visual and audio processing

- The severe limitation of a lack of meaning or semantics in the present visual/audio processing techniques can be dealt if we know the laws of meaning-based mind-body simulations.
 - New algorithms can be developed based on new laws.
- 
- 





Applications – New foundational physics

- The physical reality is understood not just in a system of space and time but also the meaning.
 - A new set of building blocks would be explored.
- 



Applications – To understand the real nature of mind

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- The kind of cellular model mind has
 - How it allows itself to expand according to external situation
 - How it takes the shape of or grows into a body
- 

Research

- Cognitive behavioral therapy with Mindful devotional meditation for insomnia.
- Deciphering the effects of Indian classical Music on the cognitive function of the Brain like intelligence, attention, emotion regulation



A screenshot of a news article from THE HINDU. The article is titled "Decoding music's effect on brain networks" and is written by Aswathi Pacha. It was published on November 03, 2018, at 18:31 IST. The article is categorized under SCIENCE. The screenshot shows the top part of the article, including the title, author, and date. Below the title, there is a photo of a man wearing a blue EEG cap, being adjusted by two other men in a laboratory setting. The man in the center is wearing a pink shirt. The two men adjusting the cap are wearing white shirts. The background shows a laboratory setting with a bed and other equipment. The article text is partially visible, mentioning "Increased power in the occipital and prefrontal cortex improves decision making, says Ashish Gupta (centre)."



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With help of his colleagues and students, the Balasore native cooks for 1,000 children and migrant labourers himself.
Published: 15th April 2020 10:55 AM | Last Updated: 15th April 2020 08:16 PM



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