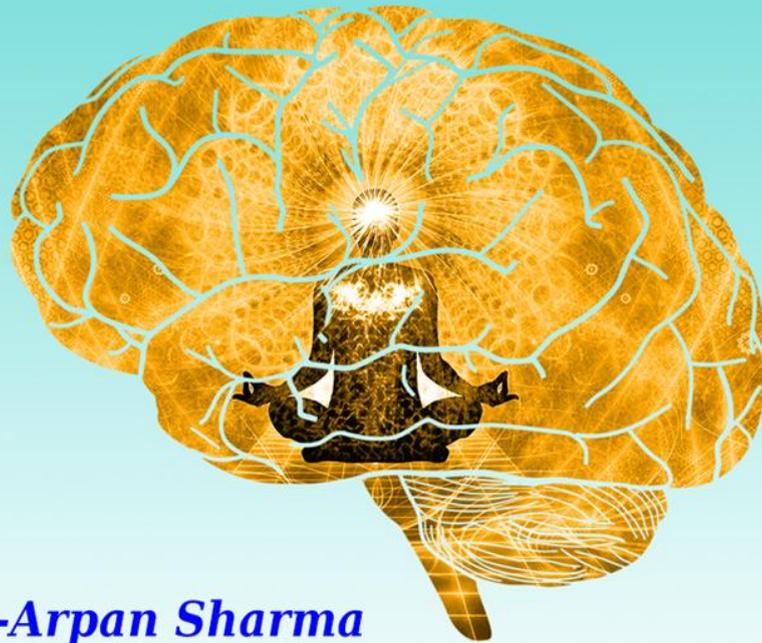


**Power of Mind, Placebo and
Cosmic Connections - Synthesis of
Scientific and Philosophical ideas**



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&
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Scientific Monk

Happy International Yoga Day 2021

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phenomenon through science, there is a chemical response in the body as your subconscious system creates some chemicals to process your thoughts and emotions. This process when it takes the final form is the *Philosophy* or the love for wisdom. It is why we find this word attached to the highest educational degree (Ph.D.). Reflection of the thought process is the unique ability of we human beings. This reflection upon our thought process is from our conscious mind. However, in all the species, the majority of the mind lies in the Subconscious area. You can take your time to see our [previous articles on stages of mind as per Indian Psychology](#).



Figure 2: Representational Image for Cosmic Connection of Mind.

Reflections on Human Intelligence.

The development of *Homo sapiens* as a species is considered a [pinnacle of evolution](#) because no other species have ever had such dominance over the resources of our planet be it biotic or abiotic. While the Human body has transformed significantly during Evolution the drastic change lies in the transformation of the brain. This has been possible through the power of mind. The way Humans can think and execute motor functions with high accuracy and flexibility has by far been the most distinguishing feature of Humans that makes us unique and different from other animals but the actual favour to humans lies in the ability to think about, study and understand the Human Body itself. And why not, we are the only species on the planet who can read books and articles, listen to podcasts, watch YouTube videos and use technology.

We have literally dissected the Human Body, cracked its code to very fundamental principles and created subjects like Human Anatomy, Physiology and so on which are ever-evolving. And based on these principles and subjects, have made possible various methods to cure numerous illnesses and are researching the whole bunch of others. This entire set of Human Function can be associated with one simple word,

“Intelligence”. It is the result of intelligence that today we are not just discovering possibilities but also creating possibilities.

When we talk about intelligence, we know it as a function of our Brain. To be intelligent our brain must be active, our brain must be awake. Again we should not get confused between the terms alert, awake and active. The awake state of the brain or what we can also call Wakefulness is the result of the process called Cerebral Arousal. This happens because of the impulses sent by something called RAS ([Reticular Activating System](#)) to the cerebral cortex, a part of the Brain. In simple language it is like a battery that needs recharging, by the end of the day it wears off and you have to sleep to recharge it. And that state when your RAS is not active, your brain is not awake. But even when our brain is not awake it is Active. It still keeps regulating various autonomic functions such as breathing, heartbeat, circulation, digestion, cell division, etc.

And these activities do not have much to do with how awake our brain is, there is altogether a different phenomenon concerned with these activities. This phenomenon, we will call the subconscious intelligence of our body.

Subconscious Mind and the Cosmic Connection.

Whenever we hear about cosmic connection, we tend to think about *Mysticism*. However, there is a logical aspect in the cosmic connection of mind with Nature. As stated above light from distant galaxies is being processed by some biological cells to make us see things. In the same way, sound waves come to our ears and we listen to sound because our mind processes it. These processes happen in our subconscious mind which accounts for the majority of our mind. Our breath, heartbeat, the feeling of pain, activation of our hidden memories, our memories, etc. lie in this area only. Can you assume yourself to be instructing your mind always by saying *breath for me dear mind or dear heartbeat please don't stop or dear mind please don't let that memory flashover*. These never happen. The instructions of how to process heart-beat, how to process the breath, how and when to activate hidden memories, are within the subconscious mind. This is the [power of mind](#).

Sometimes, a proper subconscious response is enough to cure the diseases within you also. Shocked? This is true and this is what happens in the Placebo effect.

The placebo effect, Power of mind.

Placebos are basically some inert drugs that are not therapeutic, but when consumed, they may cause some symptomatic relief in certain individuals. They are mostly some biochemical compounds like Normal Saline or Sugar etc. But when they are administered into the body in the form of medicine, it actually responds to them without the cognizance of our intelligence system. This is the Placebo Effect. Placebos, as said before, have no therapeutic properties, they do not cure or treat any disease, but it tricks our mind-body axis into creating certain effects like pain relief and feeling refreshed and less sick. Studies have shown that the mechanism of

placebo effects are not alien to the human body. Since a sugar pill cannot have any other property than to increase the blood sugar level and that too not to a very huge extent, certain endergonic mechanisms of the body itself are activated by this pseudo-drug. And hopefully, those mechanisms do exist. In this article, we will be discussing the mechanism of Placebo Analgesia which is one power of mind.



Figure 3: Representational Image for Placebo Pill.

So what Placebo does is, works behind the cognizance of our Conscious-Intelligence System, bringing out certain changes in the body which can have different physiological implications. But all of them take place, within the system of the infinite intelligence of this creation just at a subconscious level.

Mechanism of Placebo

- A study suggests that Placebo causes pain relief through an Endergonic Opioid Release Mechanism. This mechanism involves a process by which our body causes the release of endogenous opioids. Opioids are substances derived from the Opium plant, like Morphine. And endogenous opioids are the opioids that are produced by our own body. Interesting right? These endogenous opioids are endorphins and enkephalins. Before discussing what the Placebo drugs have to do with this, let us understand this mechanism clearly.

The Midbrain has a central canal for the circulation of the Cerebrospinal fluid called the Cerebral Aqueduct. The Aqueduct is the part of the Ventricular system of the brain and the CNS (Central Nervous System), which is important for the nourishment of the brain. Along its periphery, the aqueduct is surrounded by a variety of neurons (Nerve Cells) which form dark aggregations collectively called the Periaqueductal Grey (PAG). The neurons of PAG are enkephalinergic, which means that on stimulation they release Enkephalins (opioids). These enkephalins later provide

analgesia by exerting various inhibitory effects on the Pain Afferents (the nerve fibres that carry pain from the affected area to the higher centres in the CNS).

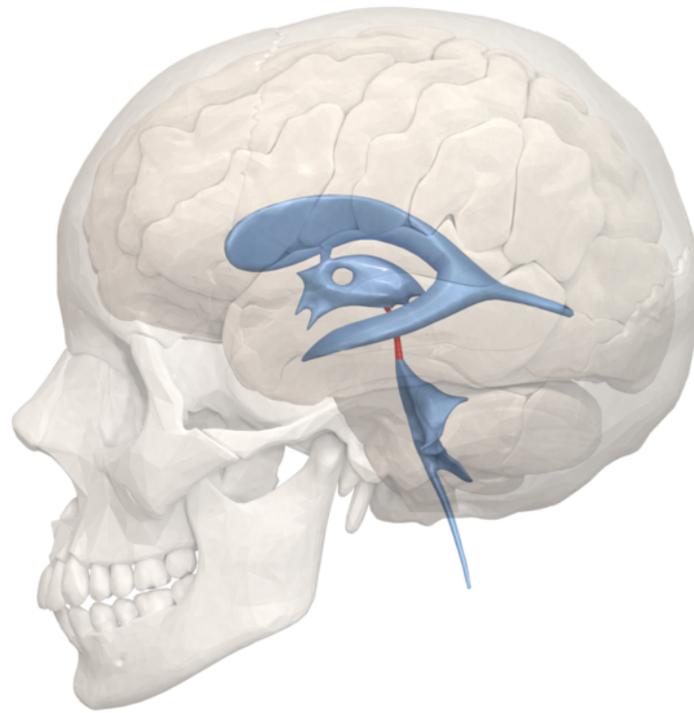


Figure 4: Cerebral Aqueduct ([Credit in the Link](#))

Studies have shown that this pathway is activated in the analgesia initiated by the Placebo Drugs. But while this happens in all of the Placebo Reactors (people who after giving placebo do experience pain relief), it doesn't happen in everyone. Placebo reactors theoretically are only one-third of the population and the rest are non-reactors. Now the question arises why does this mechanism operate in only a fraction of the people? What makes them different? To discuss this we have to reach the dimension of Psychology and Behaviour which will further pave our way towards discussing the Mind-Body Relationship.

Psycho-Physiology of Placebo-Responders

The reason for the discussion of Psychology of the Placebo-Responders is because Placebo does not work in every individual to whom it is given. Among the few people who react have some common characteristic psychology which plays an important role in producing the desired response to the pseudo-drug. Some studies suggest that [Placebo works in relatively elder people](#) (>5 years from the non-reactors), who have a strong religious faith and are more optimistic about the situations they are in. They complained less about the Hospital care they received, they were relatively more happy and cooperative; their opinions were frank and they were more emotionally expressive.

From this, we can draw that the people who responded to the placebo had an overall positivity in their personality. Also, the responders were less formally educated than

the non-responders but they had, on average, IQ similar to that of the non-reactors. The non-reactors based on their higher education, younger age and non-cooperative complaining nature were found to be of a more peculiar character, fussy, unsatisfied and pessimistic mindset who even talked and expressed less.

So where does it lead us to? What can we build out of this information? We can say that, when given a placebo, a certain group of people believed due to the above-mentioned factors that the given drug will work. They were old, less educated, believed in faith and optimistic. And in this group, the placebo worked. But How? How can an overall positive mindset lead to the relief of deep pain, when the physiology of the body of every human is the same? How can such non-scientific phenomena affect human physiology which eventually concludes that the Human Body is a well-crafted chemical machine? And how do our Yogis and the Masters of Shaolin Temple use it? Let's find out.

Biology and Placebo Response

When you take a placebo pill and you are among the reactors, your mind reminds you about the memory you have about using drugs. Memories are present in the form of various neurons present in our Cerebral-Cortex in the region called the Hippocampus and Para-hippocampal regions of the Limbic Lobe. Now memories associate a certain emotion to the experiences you have about modern healthcare, drugs, faith, etc. This emotion if they are optimistic, they fire certain neurons of that region. Those emotional impulses are carried through a bundle of white fibres (nerve fibres in the CNS) called Fornix, which forms the Papez Circuit.

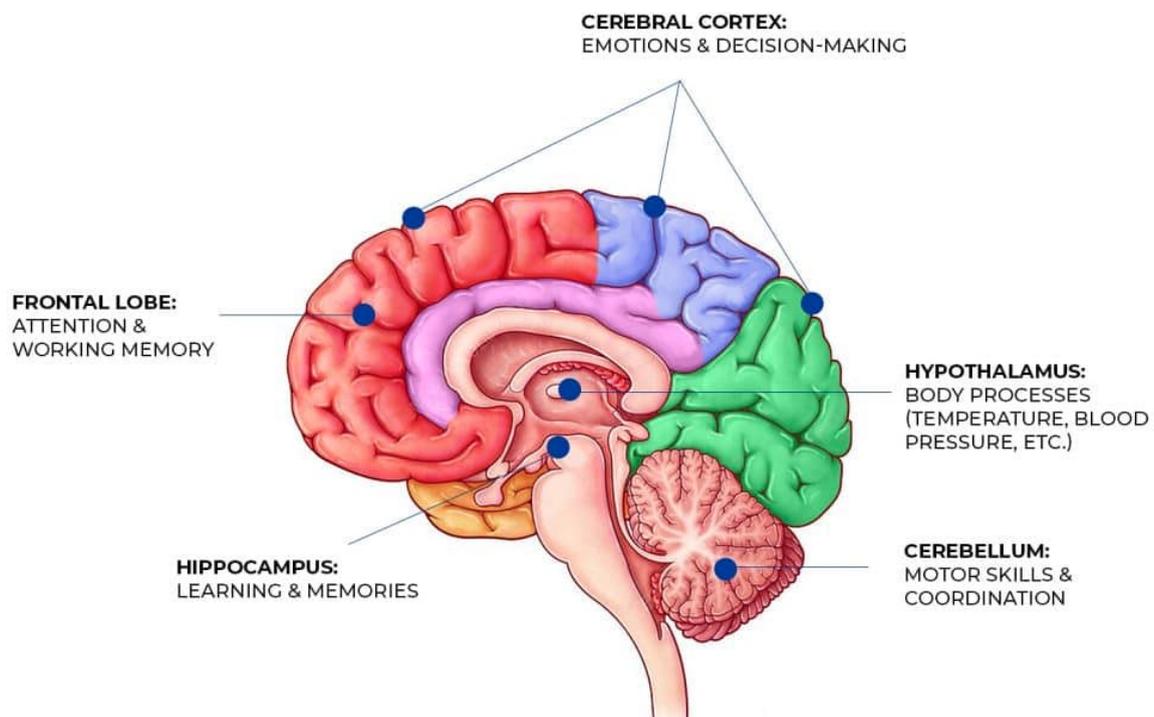


Figure 5: Parts of Human Brain and Psychological Responses. [\(Credits in the Link\)](#)

The Papez circuit is a reverberating circuit responsible for the arousal of thoughts continuously in your brain when your emotional centres fire. The Papez circuit gives significant information to the Cingulum.

The cingulum is another centre to process emotions. But it has another important feature too, some of the slow/deep-pain afferent fibres carrying visceral pain (pain from the viscera or organs) terminate here. So at this level, there can be inhibition of pain to some extent.

Also, some fibres of the Papez Circuit terminate in the Peri-aqueductal Gray (PAG) region of the mid-brain. One of the important functions of this region is that it produces Endergonic Opioids like Enkephalin and Endorphin. These opioids are known to inhibit the pain afferent signals at the level of secondary neurons of the Antero-lateral pain pathway. And studies have found that when Opioid Inhibitors were given to the patients receiving a placebo, they showed no response to the placebo. So the opioid system is the system causing placebo reliefs.

So, this Opioid system could be activated by some of those fibres connecting the Hippocampus to the PAG of the Midbrain through the Papez Circuit. And the Endogenous Opioids released from there cause the placebo reaction.

Tough Right? Let's understand the idea in a simple line. Placebo response is the feature of our Subconscious mind, it bypasses our Intelligence System (The Neo-Cortex) and acts through the pathways of Emotional Processing which activates the release of certain chemicals which bring relief.

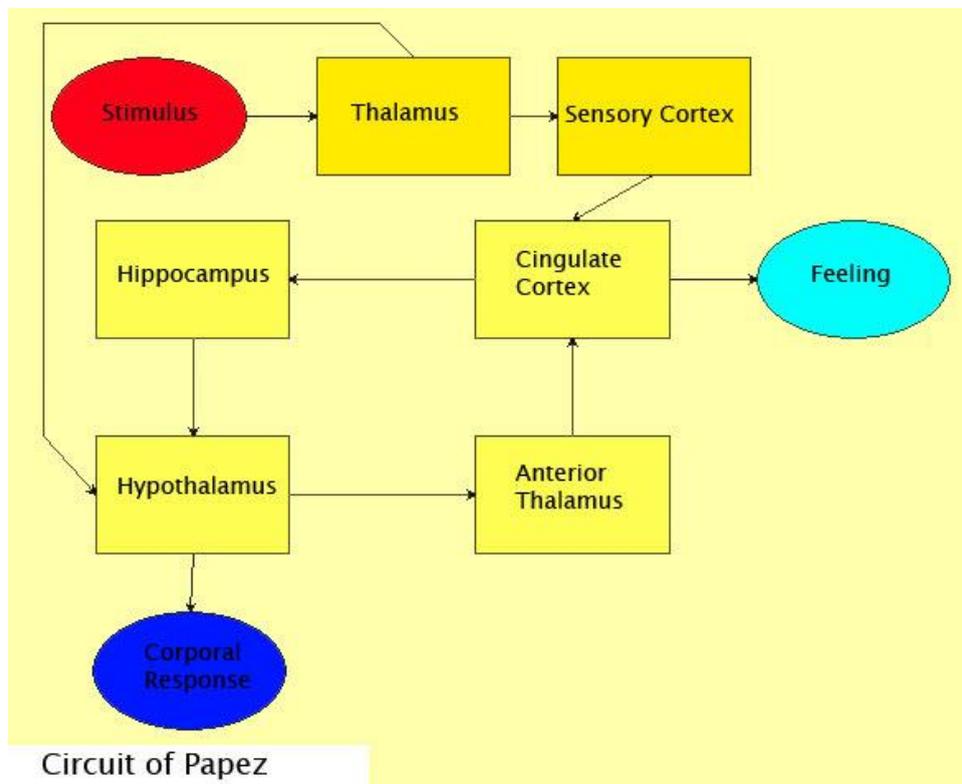


Figure 6: Papez Circuit ([Credit in the link](#))

The integrity of the Neurons, the fields, and the power of mind.

Let's connect with one simple practice. Count the numbers till 10, you did it, easy right? Now count the numbers till 1000, tough isn't it? Now count till 100,000, can you? I guess no. What about 100,000,000,000, completely impossible right? This is the approximate number of Neurons present in the mind. They are connected with great integrity. All of them are for you, they give information to the body when and how to react to pain, when and how to become old, when and how to be happy and millions of other information. These all informations are either based on Laws of the Biology/Physics/Chemistry or the Learning and applying Process.



Figure: 7: Image representing Neuron and Central Nervous System

Our mind has something called [*Mirror Neurons*](#). They are crazy Neurons that completely connect to ideas of Eastern Philosophy. As per the study mirror neurons can mediate the understanding of the behaviour of other animals. Let's see an example, a mirror neuron fires when the Primates (monkey) rips a piece of paper, it also fires when it sees a person rip paper, or hears the ripping of the paper that too without any visual thing.

These properties have led researchers and scientists to have an understanding that mirror neurons encode abstract concepts of actions like 'ripping paper'. This implies, our mind copies the same information from others through the use of our senses and encodes it, and later on when the mirror neurons fire, the same thing happens for a further course of action.

Just like in the above example this applies in other vast areas which cannot be mentioned completely. Our mind is exposed to great social networks. We learn from our social [connections and the mirror neurons' acts](#). Some scholars argue that emotions are learned by human mirror neurons. Just like DNA is for life, mirror Neurons are for psychology. You replicate, you learn and you act. However, as per the study if you have more empathy you [have stronger activations](#) both in the mirror system and the motor actions. So the first and only thing to [have a better life](#) is to have is *empathy*. Trying to understand the emotions, feelings and actions of other beings itself is the greatest of Science for human beings.

Sometimes seeing a favourite person is enough to make you feel good and sometimes listening to an animal sound. Sometimes to a piece of music and sometimes feeling the nature within. **Sometimes a placebo pill given by a humble and sincere doctor or a good person is better than expensive treatment by a rude doctor.** The dimensions of the mind are huge but integrity is one, this is consciousness.

Consciousness should not be mistaken as intelligence. It is an ability to maintain homeostasis with great ease and efficiency. Intelligence is not a function of only the human mind, there exists a subatomic intelligence of an electron from which an atomic balance is maintained by it interacting with the nucleus. Intelligence of a cell by which a balance is maintained by the interaction between different organelles and molecules. Intelligence of an organ, organ system, intelligence of Human body as a whole. And not just that there is an Intelligence of Earth by which it maintains balance and then there is the intelligence of the Overall Universe.

In terms of Physics, intelligence is the integrated character of the System and the Surrounding, in terms of Biology, it is the integrated characteristic of the organism and the infinite ecosystem that we exist in and that which exists in us. And Consciousness is being aware of the intelligence in every possible dimension at all such strata. The intelligence which we casually talk about is just the function of our neocortex which is basically based on memory and of that we are conscious. Whereas from the placebo section we have understood that even the subconscious intelligence of our mind-body is very sophisticated and equally efficient or even more. To bring these under the radar of [Consciousness](#) we need to connect the intelligence of one strata to that of the another and also with those that line within that strata. Our culture has taught us to make connections through a system called Yoga. The literal [meaning of Yoga is the Union](#). It is the Union between the whole intelligence and the physical body.

There still can be various questions in the mind. However, all the answers lie in mind, all the experiences are yours. We can write an article for you but you need to [experience it yourself](#) for validity and to unleash the power of mind.

This Yoga Day, let's understand the connection of our nature of mind with the body and the cosmos. This will be the "Yoga for Wellness". It is what we have, for now, you can visit [Scientific Monk](#) regularly to remain updated with Yoga and Life.



Figure 8: Representational Image for Yoga and Nature Connections.

Disclaimer: Scientific Monk doesn't endorse the use of harmful drugs. The mention of Opium and Opioids are done in Scientific Context, it shouldn't be correlated with harmful ideas. Also, the article has been written in a multidisciplinary context, readers are advised to use their power of judgment to understand the deeper aspect associated with it.

Notes.

Mirror Neurons : They are found in the premotor cortex, the supplementary motor area, the primary somatosensory cortex, and the inferior parietal cortex. Mirror Neurons are responsible for the learning process.

Mysticism : The belief system where the ultimate aim of human life is thought to be absorption in cosmic intelligence.

Endergonic Opioids : Organic compounds produced by our body that resemble the structure of the Opium Poppy extracts.

Analgesia : The phenomenon of relief from pain.

Cerebrospinal fluid: CSF is the fluid that flows within the ventricles of or Central Nervous System and provides nutrition to it.

Periaqueductal Grey (PAG): Collection of neuron cell bodies, around the cerebral aqueduct (a central canal of the midbrains containing CSF).

Enkephalinergic: Neurons that release Enkephalin (Endergonic Opioid).

Cingulum: Part of the Cerebral Cortex situated on the medial aspect, part of the Limbic System.

Psycho-Physiology : Physiology of the Mind.

Cerebral-Cortex : Outermost part of brain aka Neo-cortex composed of Gray Matter (Neuron Bodies).

Para-hippocampal : Part of the Cortex around the Hippocampus. Part of Limbic System.

Hippocampus : A structure of the Limbic system, concerned with memory and emotions.

Limbic Lobe: Part of the CNS situated medially in the Brain, deals with emotional processing.

Papez Circuit: A circuit of neurons connecting through The Fornix, The Hippocampus, the Hypothalamus, Mammillary Bodies, Anterior Thalamic Nuclei and the Cingulum.

Fornix: A bundle of White Fibres of brain (Nerve) foraging a part of Papez Circuit.

Neo-Cortex: The Telencephalon of Brain, which is newly developed in Human during Evolution.

Homeostasis: The process by which an organism maintains a constant internal environment.

Subatomic Intelligence: Approach to understand the consciousness from the perspective of physics.

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