

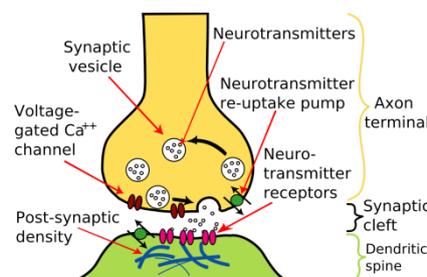
Where in the brain do thoughts originate?

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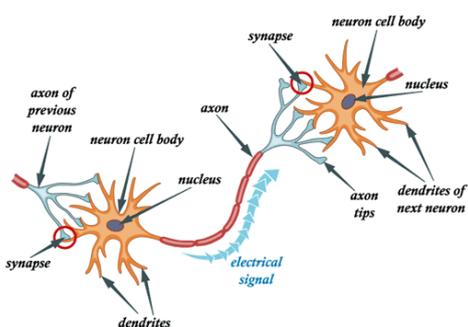
In 2004 - almost 16 years ago I wrote my first book "[Nature of Human Thought](#)", in which I tried to explain what is thought and how it is transmitted and received. However where and how the thought is produced in brain remained to be explained.

I will now make an attempt in trying to explain where thought originates. I feel it originates in the synaptic cleft!

[Synaptic cleft](#) is a tiny space of about 20 nanometers (nm) between an axon and a dendrite and is the place where two neurons exchange information via [neurotransmitters](#) (NT).



A [neuron](#) has three parts. At one end is dendrite which accepts NT from other neurons; the central nucleus which is the heart of neuron and a long nerve fiber called axon whose end (synapse) releases the NT for transmitting to other neuron.



It is a generally accepted fact that a thought is produced when neurons fire. How many neurons fire for a single thought nobody knows. When a neuron fires it produces an electrical signal which is transmitted via the axon and at its end this signal gets converted into chemicals called NT. These NT pass through the tiny space of synaptic cleft and are accepted by the dendrite of another neuron which converts them back into electrical signals before they

reach the center of the neuron and the cycle continues. This is how the neural pathways are formed.

Why did nature produce this type of communication system where electrical signal from the neuron is first converted into chemicals (neurotransmitters) and again back into electrical signal?

A possible answer could be that during this conversion in synaptic cleft [photons are produced](#) which are the signature of thought. This was further corroborated when in [late 2010s Canadian scientists detected very low energy photons](#) (in far infrared region) were being emitted during the firing of neurons and transfer of neurotransmitters across the synaptic cleft. Scientists are still not sure in what way brain uses these photons but speculate that somehow they may help in increasing communication between various parts of the brain.

I conjecture that each photon production in synaptic cleft creates a feeble signal and when millions of such signals combine and superimpose on each other a thought signature results.

The [emerging science of Synchronization](#) might help to explain it. This field emerged when it became possible to explain successfully how a very large number of fireflies start glowing in a synchronous manner in a short time after their random initial firing. Thus synchronization of fireflies glowing, heart cells beating (pace maker) etc. are all outcomes of a spontaneous order by which a large number of similar objects or oscillators work or fire in unison.

These oscillators synchronize spontaneously since they are influenced by each other via a positive feedback-type mechanism; in case of fireflies through their light signals. This feedback allows the oscillators to adjust their phases so that they synchronize.

Such synchronization of feeble photon signals at synaptic cleft might explain the emergence of a thought structure from a certain portion of the brain. As one thought emerges and subsides (if not enough energy is provided to it), it is replaced by another thought emerging from another part of the brain and in this way the brain chatter takes place!

I also conjecture that this [thought structure is a hologram](#) and probably the reason why most of our thinking is geometric in nature and we seem to visualize everything in terms of shapes and geometry.

Since synaptic cleft plays a major part in thought production it is important that it is kept clean. It accumulates a lot of NT debris during the waking cycle.

The [cleaning of cleft takes place during sleep](#) when the cleft expands and the cerebrospinal fluid which floods the brain helps flush out the debris. With inadequate and disturbed sleep the cleft starts getting cluttered with debris. Sleep deprivation in the long run may lead to dementia and other mental disorders.

Memory resides in the neural pathways. With strengthening of synapses in these pathways strong memories and a powerful brain results. Such a brain produces wisdom and happiness. That is what [Patanjali has said in his Yoga Sutra](#).

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