

Congress Science Information Spirit, St. Petersburg, 2011

A PROPOSED SPIRITUAL AXIS OF THE BODYMIND: HOW THE RETICULAR ACTIVATING SYSTEM (RAS), VAGUS NERVE AND THE ALTA MAJOR CHAKRA MAY BE THE NEXUS OF BODYMIND/SPIRIT CONSCIOUSNESS

Tiffany Barsotti, Holos University Graduate Seminary, tiffany@healandthrive.com

There are many important axes in human anatomy. The Hypothalamus-Pituitary-Adrenal (HPA) Axis, Liver-Stomach-Intestines (known as the Liver Triad Axis), Brain-Gut Axis are among a few well-known interactive system axes. This abbreviated thesis will outline why we should consider adding another.

Since its discovery over 50 years ago, the Reticular Activating System, or RAS, in the reticular formation of the brainstem, has been studied extensively. The RAS, acting in concert with the Vagus Nerve (CN-X), the most important nerve in the Autonomic Nervous System, directs and modulates functions throughout the body to maintain a dynamic balance - both with respect to the external environment and the body's internal environment. Less well known to Western medical scientists, there is a parallel system that develops in the subtle energy body of the human being. Within this parallel system, there are energy-junctions known as chakras. This energy body, while not visible with current western and mainstream technology, has been known in some of the ancient esoteric healing traditions of the East. According to these esoteric teachings, as the human being develops from a state of alert consciousness toward a condition of Spiritually Aware Consciousness, the locus of control over the functions of the bodies (physical and subtle) must shift from the physical brain to a Higher Mind within a more subtle body. This shift occurs after activation of the Alta Major Chakra. In a previous (2009) proceeding from this event it was written, "Human consciousness is a process of interaction between a person and a collective field, through which new ideas are formed, and the field is the place to which they return, making a contribution to the collective mind of humanity" [Korotkov, 2001]. The proposed axis suggests a mechanism for the process of interaction between the person and the collective field.

This thesis proposes the RAS-Vagus Nerve-Alta Major Chakra Axis as the nexus of communication from Higher Consciousness to the physical and subtle energy bodies of the human being. For the purpose of clarity, there is a need to identify two different types of "consciousness". The first type of consciousness (designated with a lower case "c") represents consciousness contained within the local domain of our physical bodies and refers to a state of being alert and focused. This type of consciousness is used to describe various states including

awake and alert states, dream states, drug-induced-states, hypnotic and others. In most medical references neuroscientists use “consciousness” to designate various states of mental alertness and focus, but they limit its reach to the Central Nervous System (CNS). It may be important to differentiate another type as capital “C” Consciousness, which will be used to describe our human connection to the collective field/God/Source/Spirit, and represents an Awakening to a Higher Consciousness. During his retirement speech, Wilder Penfield admonished his peers not to look for the mind within the brain. He had spent his career searching and could not find it there. We may come to find that neither consciousness nor Consciousness is under the control of a single structure, responding instead to reflexes within axes of structures.

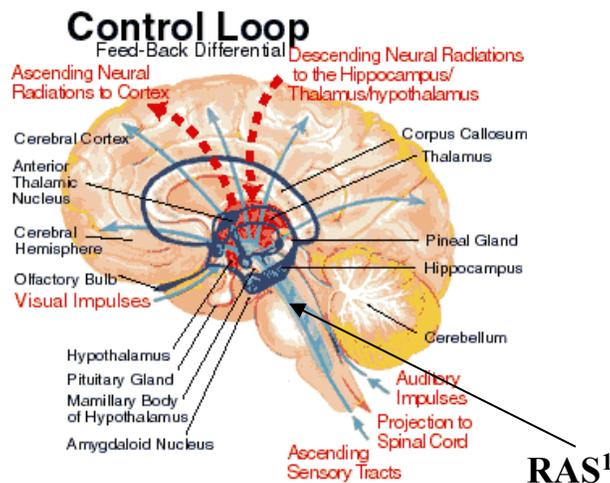


Figure 1.² **Brain depicted as a sensory feedback loop**

At this time, realistically, we can only measure the influence of consciousness on physiological or physical processes. The measurable information is conveyed along several channels, primarily through the cerebral cortex, which takes an active role in processing thoughts and emotions. The brain produces a cascade of chemical substances, which influence physiology. The CNS also modulates the work of the autonomic nervous system [Wisneski, Anderson, 2009].

Neuroscience frames the Reticular Formation (RF) (*reticulum* Latin for "net like") as the gateway to conscious awareness. The RF contains the Reticular Activating System (RAS). With its function as the afferent and efferent cholinergic conduit, the RAS activates an alert status throughout the brain. The RAS is said to be the gas pedal that ignites the diencephalon (the hypothalamus and thalamus) as well as the cortical areas of the brain. Functional Magnetic Resonance Images (fMRI) have given us the view or neural maps of which brain cortices become activated with thoughts, emotions and memories. However, the results of fMRI imaging reveal only cortical brain activity, leaving out the important afferent and efferent messenger molecules through the brainstem, which is where the RAS is located. The RAS is about the size

of one's little finger and sits centrally in the brainstem. It might be the primary gateway for which messenger molecules afferently (sensory) and efferently (motor) distribute throughout the nervous system. Without a functioning RAS there is no bodily connection. There is instead a type of disconnection akin to being "comatose" or "locked-in." The RAS responds to stimuli from all sensory systems through its afferent and efferent pathways, regardless of the state of consciousness, (e.g., sleeping, awake or altered states). These pathways integrate sensory, visceral, limbic, and motor functions. Reticular circuits branch throughout the central nervous system and exert important influences on autonomic regulation of vital organ systems, levels of alertness, sleep cycles, somatic motor activities, pain modulation and behavior.

THE VAGUS NERVE

The vagus nerve originates in the medulla oblongata, a part of the brainstem, and is dorsal to the RAS. The "vagus" (Latin for "wandering") is the tenth cranial nerve (CN X). This remarkable, "wandering" vagus nerve has a more extensive course of distribution than any of the eleven other cranial nerves.

The vagus nerve is the main nerve of the ANS. The two branches of the ANS are the parasympathetic, which acts like a brake, and the sympathetic, which acts like an accelerator. Efferent impulses start in the central nervous system and pass peripherally along spinal or cranial nerves. Afferent impulses start out peripherally and pass into the central nervous system. There are two general modalities of the peripheral nervous system, the motor (efferent) and the sensory (afferent). The vagus nerve is composed of both motor and sensory fibers, which communicate sensory and motor information bidirectionally between the brain and body. There is emerging experimental evidence that demonstrates that immune and inflammatory responses are modulated by communications along the vagus nerve. In normal anatomy, there is one vagus nerve on each side of the body (see Figure 2).

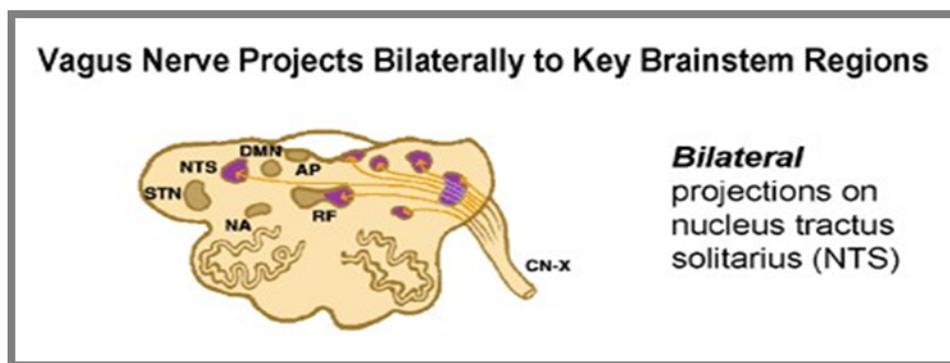


Figure 2.³ Vagus nerve bilateral projection from medulla

Illustration depicts a horizontal inferior slice of the medulla. STN = Spinal trigeminal nucleus; NTS = Nucleus Tractus Solitarius; DMN = Dorsal motor nucleus of the vagus; AP = Area postrema; NA = Nucleus ambiguus; CN-X = Cranial Nerve X; RF = Reticular Formation

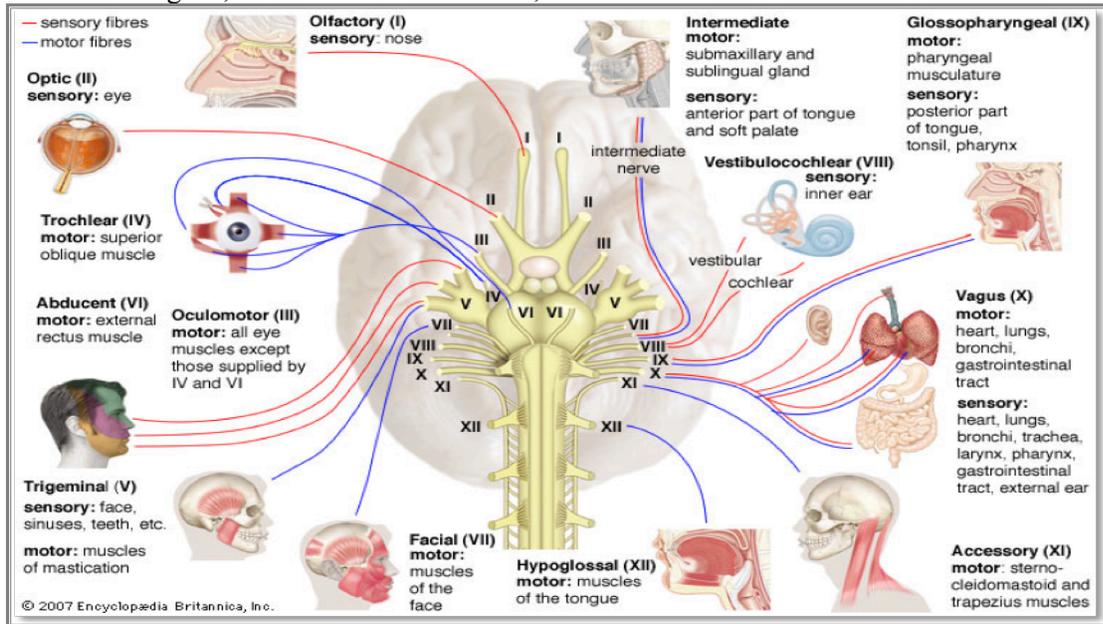


Figure 3. ⁴ **Cranial nerves (I–XII) and their areas of innervation**

This image depicts sensory (afferent) fibers in red and motor (efferent) fibers in blue for all the cranial nerves as seen from a ventral view of the brain.

Referring to Figure 2, the medulla is located in the brainstem above the spinal cord and ventral to the reticular formation. The medulla is the main site in the brain for regulating sympathetic and parasympathetic outflow to the heart and blood vessels. The nucleus tractus solitarius (NTS) of the medulla receives sensory input from various systemic sensory receptors and mechano-receptors, such as chemoreceptors, baroreceptors, thermoreceptors and osmoreceptors.

A chemoreceptor (also known as chemosensor) is a sensory receptor that transduces a chemical signal into an action potential. More generally, a chemosensor detects certain chemical stimuli in the environment.⁵

- Mechanoreceptors: hearing and balance, stretching
- Photoreceptors: light
- Chemoreceptors: smell and taste mainly, as well as internal sensors in the digestive and circulatory systems
- Thermoreceptors: changes in temperature
- Electroreceptors: detect electrical currents in the surrounding environment

Autonomic outflow from the medulla is divided chiefly into sympathetic and parasympathetic vagal branches as explained earlier. Some schools of thought believe that the hypothalamus is the locus of control regarding the visceral sensory receptors, while others believe that the RAS or

medulla is the locus of control. At this time it has become increasingly apparent that the RAS is not only a neuronal superhighway, but also an active conduit by which messenger molecules (e.g., neuropeptides, neurotransmitters, hormones, neuromodulators) conduct signals along long and short pathways, afferently and efferently. Without its principal and crucial involvement, any other cortical activity in the so-called “higher brain” cannot be registered throughout the body. If it is true that the brainstem’s excitatory and inhibitory signaling pathways are regulating the afferent and efferent expression of most of the body’s messenger molecules, then it might be useful to discover a way to measure the activity in this influential hub.

EXPANDING THE MIND, OPENING TO SPIRIT AND THE COLLECTIVE FIELD

How is it that we have become aware of the mind-body involvement? – The answer may lie in our biochemistry. Groups of cells related in structure and function are called tissues, from outer skin to each visceral organ. A cellular community creates these tissues, joined together in structured systems, with each system having a common function, (e.g., brain, respiratory, digestive, nervous, excretory, endocrine). Nearly every cell in the body has thousands of tiny formations faceted in its outer membrane called *receptors*. Receptors are like our senses, eyes, ears, nose, and their job is to detect signals coming to them via chemical messenger molecules. Just as cells use their receptors to sense the environment in which they exist, the outer body receives information using the five senses.

One of the beliefs within the new paradigm in biology and physiology is that cellular signaling and communication is providing for an infrastructure of biological and subtle energy systems, (e.g., chakras, auric fields). Our sensory responses are evidence of human contact with the world at large, as well as our inner-world of mind and body. We are both an open and closed system. The word Spirit is derived from the Latin root of *Spiritus*, meaning the breath of life (vitality). Spirit is the principle of conscious life and the vital principle in humans, animating a body or mediating between body and soul -- the nonmaterial, intelligent and sentient part of a person.^{6/7}

The Kybalion, an ancient Hermetic text states, “The Lips of Wisdom are closed, except to the ears of Understanding.”⁸ Esoteric healers know how to move within the subtle energy fields, access information and assist with bringing awareness to the person with whom they are working. The word *esoteric* is defined as “requiring or exhibiting knowledge that is restricted to a small group; and is designed for or understood by the specially initiated alone.”⁹ By comparison, *exoteric* is defined as “suitable to be imparted to the public; belonging to the outer or less initiate.”¹⁰ The esoteric texts teach us that the “specially initiated” are the ones willing to deepen self-awareness (Consciousness), and venture into unknown territory in a spiritually meaningful way. What is presented here is meant to inform regarding the importance of the alta

major chakra as it pertains to its inclusion in the proposed RAS-Vagus Nerve-Alta Major Chakra Axis.

Looking to the endocrine and lymphatic glands throughout the body, we find a striking parallel correlation to the chakra centers. The Theosophists were influenced by the Hermeticists of ancient Egypt, and have maintained the Hermetic arts and sciences, which they have taught since the mid 19th century. Their teachings included the anatomical and physiological mapping of how chakras relate to the energy surrounding the physical and subtle energy bodies – connecting our inner-world to the outer-world.

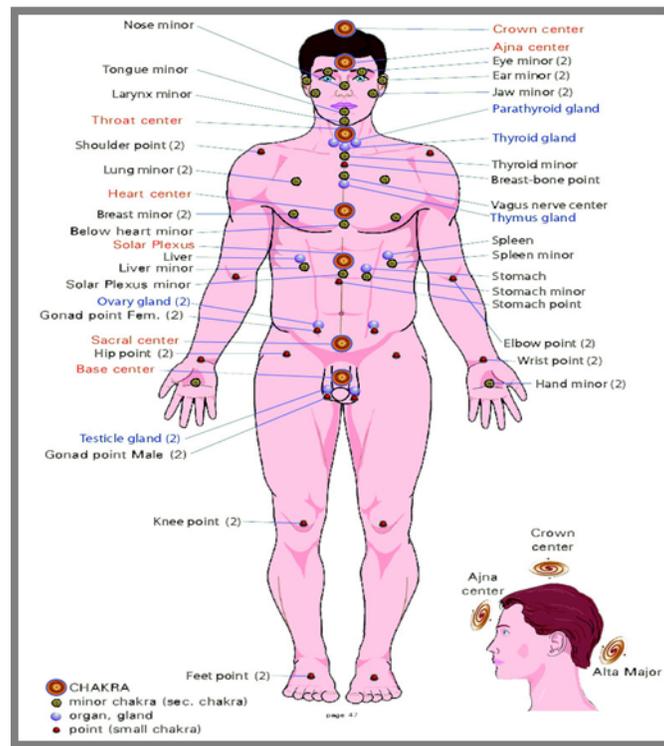


Figure 4. ¹¹ **Overlay of glandular system and the minor and major chakras**

Figure 4 is an illustration that reveals the overlays of the glandular system (in blue) as well the minor chakras (medium-sized yellow and black circles) and major chakras (multi-color circles). The small red circles point to ‘minor chakras’, which are key points along the body’s energy channels; these behave similarly to other chakras, but are less energetically dense by comparison to the major chakra points. The inset image of the head shows the three chakras as spinning vortices, and make up the three points of one of the head triangle sequences.

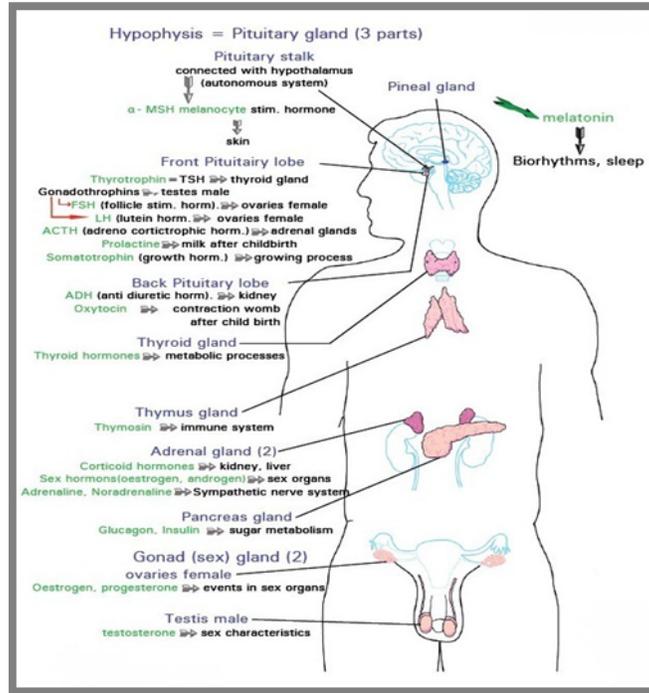


Figure 5.¹² **Endocrine gland correspondence to chakras**

Figure 5 illustrates the glandular system and the various hormones stimulated by the corresponding gland. The preceding image (Figure 4) includes these glands in the overlay with the chakras. Energetically speaking, the glands are denser energy channels as they are in the physical body, and coordinate with the nervous system as a whole. Major chakras are believed to correspond to major nerve bundles in the physical body. “The nervous system as a whole (consciousness stream) and via the endocrine glands into the blood stream via hormones (the life stream).”¹³ The importance of the endocrine glands cannot be overstated.

THE ALTA MAJOR CHAKRA: ADVANCING MIND IN SPIRIT AND MATTER

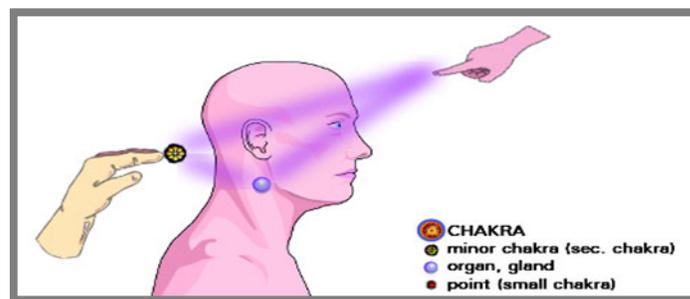


Figure 6.¹⁴ **Colored illustration of one of the three head triangles taught in Esoteric Healing**

In this illustration (Figure 6) the left hand at the base of the skull points to the alta major chakra, in the etheric field, which aligns with the location of the cerebellum, medulla oblongata and the

RAS. The finger on the right is pointing to the ajna center in the etheric field. The organ point associated is the bilateral carotid gland.

Esoterically speaking, the alta major center or chakra is believed to be in the etheric body. It is the final chakra or energy center of the human form to be activated. When the alta major center is activated, human consciousness expands to merge with Consciousness. While there are numerous fine details we could discuss, there are three major points with regard to the alta major center:

1. How it becomes activated
2. Its placement and interactions within the etheric/physical energy field; its alignment with the outcropping of the vagus nerve and the reticular activating system (RAS) -- the Axis proposal, and
3. The alta major center's etheric bridge-like position, making it useful in the processes of expanding awareness and in Spiritual development; a bridge connecting the physical and non-physical, and through which, body, mind and spirit are demonstrably not separate, but fused in union, engaging in purposeful two-way communication between the physical human life and the human Spirit.

In *Esoteric Healing*, Master D.K. writes, “Healers would do well to remember that when the three centres [sic] in the head are linked up and the magnetic field is therefore set up and the radiance is present, the healer can then use the ajna centre as the directing agent for this ‘dispelling radiance.’ ... You have, therefore, in the head three triangles, of which two are distributors of energy and the third is a distributor of force. ... The attention is placed; the magnetic field is spiritually vitalized; the generated vital radiance is then distributed and directed correctly through the medium of the third triangle.”¹⁵ See Figure 7.

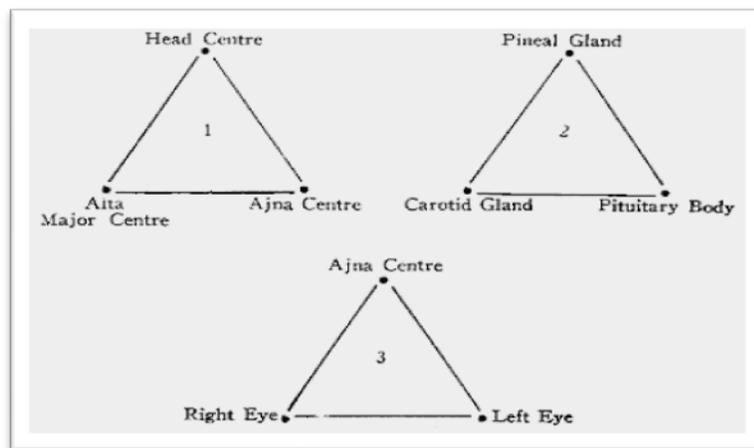


Figure 7.¹⁶ Esoteric Healing head triangles as depicted in *Esoteric Healing* -- these triangles and others are “magnetic in quality and radiant in activity.”¹⁷

Of all of these triangular points, the alta major center is the last to become activated. The reason for this involves the purposeful waking of Consciousness.

The alta major center is considered a minor chakra, but functions as a major chakra according to the teachings of Master D.K. In the head triangle, the alta major chakra has a unique position, first because of its relationship in the head triangle, and second due to its powerful link to the cerebellum, the medulla oblongata, the spine and vagus nerve. The cerebellum is part of the hindbrain and controls voluntary muscles and, therefore, movement -- and is energetically linked to the root or base chakra. The medulla oblongata, also part of the hindbrain, is closest to the spinal cord and is involved, as is the vagus nerve, with the regulation of heartbeat and heart rate, breathing, blood pressure and the reflex centers. The medulla is energetically connected to the throat and heart chakras. In Bailey's *Treatise on Cosmic Fire*, Master D.K. explains, "The alta major centre [is] **that nerve centre at the top of the spine** where the cranium and the spine make approximate contact. When **this congery of nerves** is fully developed, it forms a centre of communication between the vital energy of the spinal column (the kundalini fire) and the energy of the two head centres above enumerated (in the pineal, pituitary, carotid triangle). It is the physical correspondence to the antaskarana [the antaskarana is a thread or channel between the personality (lower worlds) and the higher worlds of Consciousness] on higher levels."¹⁸ In the full text version of this thesis, it is referred to as the Science of the Triple Thread.

Treatise on Cosmic Fire was published in 1925. It was more than thirty years later that knowledge of the reticular formation first came to Western medical science. It is likely that Master D.K.'s words, "*that nerve center at the top of the spine*", and "*congery of nerves*" refer to what medical science calls the RAS and reticular formation. To know for certain that there is a correlation here, a proper investigation will have to wait until there is a more robust imaging detector than the fMRI, since we cannot easily see the RAS using this current technology.

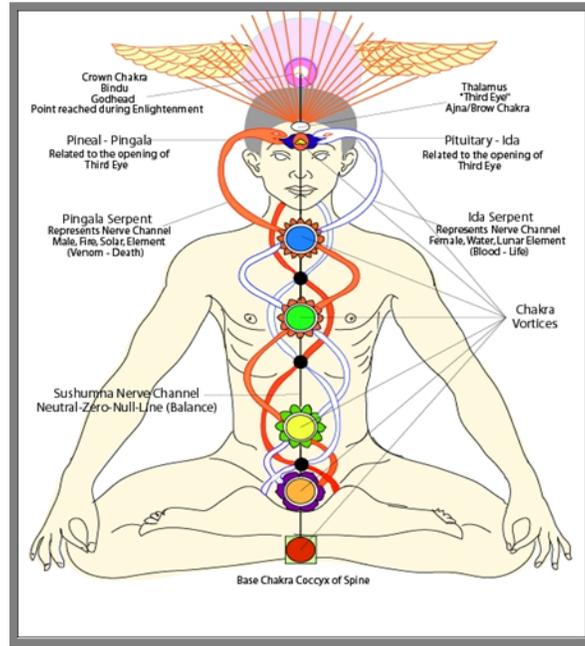


Figure 2. ¹⁹ **Points of enlightenment in the physical body according to Vedic philosophy**

This illustration uses Vedic language, but it represents the fully developed and energetically activated sutratma, antaskarana and antahkarana. Illustrated as well are the major chakras. The sushumna (thin center line) represents all three threads (or currents). The ida and pingala represent the male and female subconscious mind aspects, but do not form threads as this image implies. The raising of kundalini energy occurs with the development of the antaskarana and antahkarana, once they are empowered and intertwined -- this is not appropriately presented in this illustration. The connection through the crown chakra represented by the wings is the Monad (Mind of God).

Dedication to the Path of Consciousness means that the activated alta major chakra will become the distribution center of life-force energy. This life-force energy moves down and up the antahkarana, the energetic spinal column, radiating magnetically to open the chakra centers. As stated earlier, the RAS is the network hub of the physical nervous system, sending and receiving signals, creating connections using the endogenous hormones, neurotransmitters and neuropeptides that move throughout the body. The vagus nerve carries the signals that coordinate these collective movements and activations, creating a homeodynamically balanced nervous system within the body. In 1957 Magoun and Moruzzi discovered that the reticular formation was the area of the body that aroused the cortex of the brain. This thesis proposes that this RAS-Vagus Nerve-Alta Major Chakra connection is an axis which acts as a communication nexus between the physical systems and Consciousness, and which, when activated Consciously and consciously, can arouse a profound Spiritual connection. It is our individual choice to make.

Our power is in the here and now, and the journey begins in our physical bodies. Whether or not we choose to acknowledge our psychic potential as presented by Master D.K., each of us may recall times when we have both listened and not listened to our gut instincts. These “psychic” abilities may be no different than our innate ability to receive and respond to these gut instincts. The time has come to reconnect with our true nature, which is both physical and Spiritual. The RAS-Vagus Nerve-Alta Major Chakra Axis speaks to the anatomy of the Spirit in the self.

Coupled with knowledge and awareness, we now, together, stand on a promontory looking to build our bridge.

ENDNOTES:

¹ Image courtesy of: <http://newideas.net/adhd/neurology>: Section on: Reticular Activating System and ADHD

² “How vagus nerve stimulation works,” <http://www.vnsththerapy.com/epilepsy/hcp/vnsththerapy/mechanismofaction.aspx> (accessed May 10, 2010).

³ “Vagus Nerve Innervation,” <http://www.britannica.com/EBchecked/topic-art/141797/46720/The-cranial-nerves-and-their-areas-of-innervation> Image credit: Encyclopedia Britannica, Inc. (Accessed April 14, 2010).

⁴ “Vagus Nerve Innervation,” <http://www.britannica.com/EBchecked/topic-art/141797/46720/The-cranial-nerves-and-their-areas-of-innervation> Image credit: Encyclopedia Britannica, Inc. (accessed April 14, 2010).

⁵ “Chemosensor,” <http://medical-dictionary.thefreedictionary.com/Chemosensor> (accessed May 19, 2010).

⁶ “Definition of Spirit,” <http://www.merriam-webster.com/dictionary/spirit> (accessed: August 10, 2010).

⁷ “Definition of Spirit,” <http://dictionary.reference.com/browse/spirit> (accessed: August 10, 2010).

⁸ The Three Initiates; *The Kybalion: The Study of The Hermetic Philosophy of Ancient Egypt and Greece*. (Chicago, Illinois: The Yogi Publication Society, 1940), p. 12.

⁹ Merriam-Webster Online Dictionary. “Esoteric,” <http://www.merriam-webster.com/dictionary/esoteric>. (accessed site: June 17, 2010).

¹⁰ Merriam-Webster Online Dictionary. “Exoteric,” <http://www.merriam-webster.com/dictionary/esoteric>. (accessed site: June 17, 2010).

¹¹ Image source: Alan Hopking. <http://www.bluedolphinpublishing.com/INTRODUCTION1.pdf> p. 7.

¹² Ibid. p. 7.

¹³ Alan Hopking. *Esoteric Healing: A Practical Guide Based on the Teachings of the Tibetan in the Works of Alice A. Bailey* (Nevada City, CA: Blue Dolphin Publishing, 2005), p. 97.

¹⁴ Image source: Alan Hopking. <http://www.bluedolphinpublishing.com/INTRODUCTION1.pdf> p. 7.

¹⁵ Alice Ann Bailey. *Esoteric Healing* (New York, NY: Lucis Publishing Company, 1953), p. 581-582.

¹⁶ Alice Ann Bailey. *Esoteric Healing* (New York, NY: Lucis Publishing Company, 1953), p. 581.

¹⁷ Ibid. p.159.

¹⁸ Alice Ann Bailey. *A Treatise on Cosmic Fire* (New York, NY: Lucis Publishing Company, 1925), p. 960, 962.

¹⁹ “Images of major and minor chakras,” <http://mommymystic.files.wordpress.com/2009/04/chakras.jpg> (accessed site: June 14, 2010).

REFERENCES:

Bailey, Alice Ann. *Esoteric Healing*. New York, NY: Lucis Publishing Company, 1953.

_____. *A Treatise on Cosmic Fire*. New York, NY: Lucis Publishing Company, 1925.

Hopking, Alan. *Esoteric Healing: A Practical Guide Based on the Teachings of the Tibetan in the Works of Alice A. Bailey*. Nevada City, CA: Blue Dolphin Publishing, Inc., 2005.

Korotkov, Konstantin. "consciousness". Webpage editorial Science.Information.Spirit;
http://new.korotkov.org/index.php?option=com_content&view=article&id=58&Itemid=7

3: (accessed: May 16, 2011).

Three Initiates. *The Kybalion: The Study of The Hermetic Philosophy of Ancient Egypt and Greece*. Chicago, ILL: The Yogic Publication Society, 1912.

Wisneski, Leonard A., Lucy Anderson. *The Scientific Basis of Integrative Medicine, Second Edition*; Danvers, MA: CRC Press, 2009.