

Homeokinetic Mind: Equanimity (*Sthita-Prajna*) and Self-Renewal

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Abstract

Homeokinetics is an extension of the concept of homeostasis. ‘Homeo’ means the same; ‘stasis’ means a steady state and ‘kinetic’ means a dynamic movement. Homeostasis is defined as a tendency toward a relatively stable internal environment in organisms through interacting physiological processes. It implies maintenance of an internal steady state of an organism by means of self-regulation. It also includes a stable psychological condition of an individual with respect to opponent psychodynamic forces like drives, desires, emotions, and motivations.

Homeokinetics emphasizes a tendency toward relatively stable rate of change of internal environment of an organism and its mental activity. Organisms, including humans, are complex self-organizing systems, which are governed by thermodynamic principles with transportation of molecules, energy, and information across its biophysical and cognitive border to maintain their functional form, self-integrity, and behavior.

A river represents a typical homeokinetic system. It is not static but a dynamic process. It consists of ever-fluctuating water molecules, ‘atomisms’ at one level of observation, and a collective and continuous form, ‘continuum’ at another. The river is both, ever-new, and ever-the-same, depending on one’s perspective. Most of the complex living systems, like organism, mind, and society, are homeokinetically organized in a nested hierarchy.

The mind (*Antah-karana*) in Vedanta is considered to be the internal organ of action (*Karma*), cognition (*Jnana*), and experience (*Bhoga*). It includes four hierarchical components: sense of self with intentionality (*Aham-bhava*), memory (*Chitta*), discriminating intelligence (*Buddhi*), and thought-emotion (*Manas*).

The main thesis of this article is that all of these mental processes are homeokinetic and that they regularly go through periodic cycles of activity and steady state. Whereas the steady state is a state of relative equilibrium or homeostasis, activity is like a homeokinetic vector with three phases of emergence, sustenance, and dissipation. These three phases apply to all forms of energy, information, and personal experience.

A desire for the peace of mind and equanimity has been a persistent dream of humanity from time immemorial. It is probably the basis for many religious beliefs and practices. In Vedanta, *Sthita-Prajna*, the ideal of wisdom, equanimity, resiliency, and bliss, is well expressed in Bhagavad Gita, Upanishads, Brahma-sutra, and Yoga.

Key Words: Homeostasis, Homeokinetics, Equanimity, Self-Renewal, Mind, Self, Consciousness, Turiya, Meditation.

Introduction

It is interesting to note that the modern homeokinetic physics is not only consistent with, but also provides a scientific explanation for the age-old introspective observations from the Vedantic Indian literature. The ancient concept of mental equanimity (*Sthita-Prajnaa*) with self-mergence of mental activity can now be better understood in the light of homeokinetic physics. Homeokinetics is a logical extension of the commonly used term 'Homeostasis' in general Biology. This article will provide an introduction to homeostasis, homeokinetic physics, and its novel application to human mental activity, and the concept of equanimity. The ideal state of mental equanimity (*Sthita-Prajnaa*) is well described in Bhagavad Gita, Upanishads, Brahma-Sutra, and Yoga. This article will also provide specific quotations from the ancient Vedantic sources.

Homeostasis

Homeostasis is a well established term in Biology. 'Homeo' means the same or similar and 'stasis' means a steady state. Homeostasis is defined as a tendency toward a relatively stable internal environment in organisms through interacting physiological processes. Homeostasis implies maintenance of an internal steady state of an organism by means of self-regulation. Claude Bernard, a nineteenth century French physiologist first recognized the tendency toward stabilization of the internal environment of the animal body. In 1932, Walter B. Cannon, the American Physiologist at Harvard University, used the term 'Homeostasis' and published his well-known book, "The Wisdom of the Body." Cannon described the fundamental adaptive process of homeostasis as the ceaseless balancing and rebalancing of physiological processes that maintain internal stability and restore a normal state when it has been disturbed [1]. It reminded me of the ideal meditative state of one's mind described in the Bhagvat Gita as a flame that remains unperturbed in a wind-free space (*Nirwaat deepa iva*).

Homeostasis applies to many physiological variables at multiple levels of organization in both unicellular as well as multicellular organisms. For the optimal functioning of an organism, these physiological variables are maintained within a certain range of tolerance. Some of the examples of homeostatic regulation in humans and animals include the maintenance within a normal range of blood pressure, heart rate, blood oxygen, carbon dioxide, and H ion concentration or pH, water metabolism, osmotic pressure, body temperature, energy metabolism, neuro-endocrine regulation and behavioral self-regulation, including our conscious decision making. Homeostatic regulation applies to all levels of organization including molecular, cellular, tissue, organ system, individual organism, and even inter-individual social interactions [2].

Antonio Damasio recently proposed an interesting hypothesis about the possible relationship between subconscious or automatic homeostatic mechanisms and the

evolution of adaptive conscious behavior. He states: “Homeostatic regulation, which includes emotion, requires periods of wakefulness (for energy gathering); periods of sleep (presumably for the restoration of depleted chemicals necessary for neuronal activity); attention (for proper interaction with the environment); and consciousness (so that high level of planning of responses concerned with individual organism can eventually take place).”

He goes on to say that consciousness is valuable because it introduces a new means of achieving homeostasis. The neural mechanisms in the brainstem and hypothalamus can coordinate non-consciously with great efficiency, the visceral functions of the heart, lungs, kidneys, endocrine system, and immunological system within an adequate range to make life possible, whereas the neural mechanisms of consciousness handle the problem of how an individual organism may cope with unpredictable environmental challenges, which is essential for its survival and the survival of the species.

“Creatures with consciousness have some advantages over those who do not have consciousness. They can establish a link between the world of automatic regulation and the world of imagination. The world of imaginary creations – the world of planning, the world of formulation of scenarios and prediction of outcomes – is linked to the world of proto-self.” [3]. Damasio recently summarized his position eloquently: “Consciousness permits an extension of these automatic homeostatic mechanisms by allowing for flexibility and planning, important functions in complex and unpredictable environments. Conscious organisms know about their past and can make guesses about their future. They can implement this knowledge and manipulate it through planning, in an endeavor to approach that which is beneficial and avoid the harmful.” [4].

Homeokinetics

The term ‘Homeokinetics’ was coined by Soodak and Iberall in 1978 [5, 6]. They consider the origin of life as a self-organizing process and propose ten principles to describe the physics for complex living systems.

“Self-organizing systems use cyclic processes to regulate their inner environments. These cyclic processes transport matter and energy and therefore in effect, import and export entropy. We call this thermodynamic cyclic conception of the life phase of complex systems *homeokinetics*, by extension of Claude Bernard and Walter Cannon’s concept of homeostasis. In the homeostatic view, internal mechanisms regulate the organism so as to return the organism to equilibrium. Homeokinetics emphasizes the role of kinetic processes, particularly in the form of ongoing periodic thermodynamic engine processes, in carrying out the regulating functions of the organism.”

“A river represents a typical homeokinetic system. A river is not a fixed form, but is a process cycle. It is not a hydraulic element in a fixed channel, but the effect of rainfall in a hydrological cycle. The rainfall causes both water runoff and the appearance of a bed-load of transportable material that erodes and maintains the form of the river.”

This analogy of a river as a homeokinetic system reminded me of my poem called “A River and a Lake.” [7]:

A River and a Lake

A river is lake that is in a hurry to reach the ocean;
 A lake is a river that pauses to look at the blue sky.
 A river carves out of time and knows the ‘time’;
 A lake reflects on eternity and knows the ‘timeless’.
 A skillful mind can flow like a river and standstill like a lake.
 It depends on the terrain it faces at the present moment.
 It lives with joy and spontaneity,
 Sometimes like a river and at times like a lake!

Another good example of a homeokinetic system is a school of fish swimming freely in an ocean. Each individual fish is an element or atomism of the system, but the school as whole, the continuum, behaves like a single holistic entity or an organism. Iberall and Soodak wrote a primer on Homeokinetics in 1998 [8] and on the biophysics of the origin of life on earth in 2001 [9].

Scott Kelso and David Engstrom’s recent publication, “The Complementary Nature” in 2006 is another landmark publication in this field. They explain complementary nature as the name they have given to nature itself, while at the same time voicing their belief that nature itself entails complementarity in its manifold expression. They suggest that the nature is experienced by humans as complementary pairs. The sense of self or agency of action emerges from the spontaneous self-organizing coordination tendencies. Meaningful information is the joint product of a coordinated system of parts and processes that spans organism and environment. Coordination establishes meaning. The conscious awareness of self springs from the ground of spontaneous self-organized activity.

They described the ontogeny of our sense of self. “As a fetus moves spontaneously within the womb, it eventually discovers arms and legs that flex~extend, a mouth that opens~closes, a body that bends~twists. In other words, the neonate begins to make sense of itself as a living thing. ‘These movements belong to me! I am doing this!’ From spontaneous self-organized behavior emerges the self - ‘I am,’ ‘I do’ – and from there a huge range of potentialities (‘I can do’). ‘I-ness’ thus arises from spontaneity, and it is this ‘I’ that may be said to direct action.” [10].

The Mind (*Antah-karana*) in Indian Psychology

The concept of mind (*Antah-karana*) as the internal organ of mentation is different in the Indian Psychology than the one in the Western Psychology.

The APA dictionary of psychology (2007) defined mind as: “1. most broadly, all intellectual and psychological phenomena of an organism, encompassing motivational, affective, behavioral, perceptual, and cognitive systems; In other words, the organized

totality of the mental and psychic processes of an organism and the structural and functional cognitive components on which they depend. The term, however, is often used more narrowly to denote only cognitive activities, such as perceiving, attending, thinking, problem solving, language, learning and memory. **2.** The substantive content of such mental and psychic processes. **3.** Consciousness or awareness, particularly as specific to an individual. **4.** A set of emergent properties automatically derived from a brain that has achieved sufficient biological sophistication. **5.** Human consciousness regarded as an immaterial entity distinct from the brain. **6.** The brain itself and its activities.” [11].

The Handbook of Indian Psychology (2008) on the other hand defined mind and consciousness differently:

“In contrast to the bio-centric bias of Western psychology, Indian psychology has consciousness as its core concept. Centrality of consciousness is its defining characteristic. Consciousness is considered to be a primary principle irreducible to brain states. The brain does not generate consciousness; it simply reflects consciousness and often by filtering, limiting and embellishing it. Mind and consciousness are considered to be qualitatively different. Unlike consciousness, mind is assumed to be material but subtle. It is the interfacing instrumentality that is connected to consciousness at one end and with the body at the other end. Mind is seen as the gateway and one’s connection to reality. It is the tool of awareness, but not awareness-as-such. When the mind connects us with the world outside through the sensory system, we have phenomenal awareness. When the connection is to consciousness-as-such, there is transcendental realization.”

“Psychology cannot study consciousness-as-such because humans are cognitively “closed” from understanding it. Consciousness-as-such is not an object; it is considered undifferentiated subjectivity without any content... The ‘person’ is consciousness embodied. The person functions as a composite of consciousness, mind, and body. Mind and body have the effect of limiting, obscuring, veiling, and distorting consciousness.” [12].

The true self, which is consciousness-as-such, is considered independent of and free from the incessant mental activity. In fact, for self-realization to occur, all mental activity (*Antah-karana vritti*) has to merge spontaneously in its ground matrix state - the consciousness-as-such. This happens in the so called “the fourth state of consciousness (*Turiya-sthiti*).” [13]. The realization of one’s essential subjectivity can neither be objectified by senses, imagined by the thinking mind, nor described in any human language. Such self-realization or Yoga is knowing by actual being (*Atmavid atmaiva bhavati. Brahmaavid Brahmaiva bhavati*). Yoga is defined by Patanjali as a state of spontaneous, effortless self-mergence in the essential ground of our true conscious being, when our essential nature reveals itself. At other times, we remain preoccupied with our ongoing mental activity. (*Yogah chitta-vrutti nirodhah. Tada drashtuh svarupe avasthanam. Vritti sarupyam itaratra*). [14].

The concept of “person” in Advaita Vedanta is that of a nested, multi-layered entity like the multiple sheaths of onion or the trunk of a banana plant. A person (*Jiva*)

has at least five layers or sheaths made up of matter, varying from gross to subtle: a) Material or physical (*Anna-maya kosha*), b) Vital or physiological (*Praana-maya kosha*), c) Sensory-Perceptual (*Mano-maya kosha*), d) Cognitive (*Vijnaana-maya Kosha*), and e) Joyous, blissful (*Ananda-maya kosha*), being the core of it all. [15].

The mind (*Antah-karana*) in Vedanta is considered an internal organ/instrument of mental action/conation (*Karma*), cognition (*Jnaana*), and emotional experiences of pleasure or pain, fear, anger, etc (*Bhogah*). It includes four component processes: i) mentation, thinking-imagining, dealing with the sensory-motor organs (*Manasa*), ii) all memories including the conscious working memory, long-term semantic memory, and the subconscious memories, both individual and collective (*Chitta*), iii) decision-making, choosing, discriminating intellect (*Buddhi*), and iv) a sense and a feeling of being an ego, self, interpreter, predictor, volition, intentionality, planning, organizing, executing (*Aham-bhava*). There is a certain nested hierarchy in these regulatory capacities of the four mental subsystems. The hierarchy from below up would be mentation (*Manasa*), memory (*Chitta*), intellect (*Buddhi*), and ego (*Aham-bhava*). This nested hierarchy is manifested in both human and animal ontogeny as well as phylogeny.

According to the nondualistic Advaita Vedanta view of Adi Shankaracharya, the essence of human personality is the self (*Atman*), which is beyond body, life, mind and intellect. Self is attributed to have consciousness, continuity in consciousness, and awareness of itself as the knower and the agent of activities. The self lives through all states of consciousness, which mind does not. The two are different. The self is the knower of the personal phenomenal field (*Kshetrajna*), the seer (*Drashtaa*), the witness (*Saakshi*), the immutable (*Kutastha*), and pure consciousness (*Chit-Shakti*). [16].

Equanimity in Bhagavad Gita and Brahma-Sutra

In Bhagavad Gita, a person of self-realization with perfected wisdom (*Prajnaa*) is described as *Sthita-Prajna*. Such a person is described as one who has outgrown egoistic desires and conflicts, who is self-content (*Aatma-tushta*), wise, and at-peace with self (*Sthita-Dhii*). He is free of extreme negative or positive emotions and resilient to changing circumstances. He has mastered the art of self-regulation (*Samyamin*) and he is free of episodic feelings of I-Me-Mine (*Aham-bhava*). He realizes the true nature of self and reality. He looks at everyone with an eye of equanimity. Unperturbed by changing events, he enjoys inner bliss (*Atma-Prasaad*). He is compassionate and cares for all living beings. He is ever-free (*Mukta*) and a light to himself (*Brahmi-Sthiti*). [17, 18].

Brahma-Sutra described the process of self-mergence (*Svaapyayaat*) of the momentary (*Kshanika*) ego into the enduring (*Shaashvata*) knowing self (*Jna*). During activity, ego appears different from its inmost source (*Antaraa Bhuuta-Grama*), but both are the same due to self-effulgence (*Prakaash-Aashrayavat Tejasvaat*). It described the state of equanimity and stillness (*Achalatvam*) after mergence of speech (*Vaak*) into mind (*Manasa*), mind into spontaneous breath energy (*Praana-shakti*), breath awareness into self-awareness, and self into the witnessing awareness (*Saakshi, Chit-shakti*), which is its

true nature (*Tat Aatmakatvam*). Such a person is truly free (*Mukta*) and has no other ruler (*Ananya-Adhipatih*). [19].

General Discussion

It is clearly important to appreciate precise definitions of such key terms as “mind,” “consciousness,” and “self.” Lot of misunderstanding has occurred in both western and eastern literature when these terms were poorly defined. Each of these terms has so many connotations. The differences in the use of these terms in the Western and Indian psychology have been emphasized above.

The main thesis of this article is that all of the mental processes, like conation, cognition, emotion, perception, attention, memory, intelligence, ego, and imagination, are homeokinetic and that they regularly go through periodic cycles of activity and rest. Whereas, rest is a state of relative equilibrium, homeokinetic activity includes phases of emergence (*Udaya*), sustenance/existence (*Vritti*), and mergence (*Laya*) of energy, information, and conscious as well as subconscious experience.

The possibility of a spontaneous mergence of many of the transient mental activities into the essential matrix consciousness, which can still endure without any mental specificity, was clearly considered and discussed in a very recent chapter by Giulio Tononi and Steven Laureys. [20]. The authors have successfully differentiated between consciousness-as-such and almost all other mental functions like i) sensory input – motor output, ii) language, iii) reflection/introspection, iv) attention, v) memory, vi) sense of personal space, vii) sense of body and self. They have convincingly argued that all of these mental functions can be dissociated in different circumstances from essential consciousness-as-such with an existential sense of being. Their final conclusion is remarkably similar to the Vedantic concept of the existential witness consciousness (*Saakshi*). Here is their quote:

“Perhaps states achieved through transcendental meditation techniques can approximate a loss of awareness of space, body, and self: experts report a feeling of silence, no bodily feelings, unboundedness (no space, and possibly no self), and no time. Even in such cases, though, the experience would still be happening to one entity – it would be ‘centered’ if you wish, but not in the conventional spatial sense. This last sense of ‘self’, which we may call ‘intrinsic’ or ‘subjective’ self – would be one and the same as the experience, not further dissociable.”

The concept of such existential, essential self-awareness and its possible realization through different meditative practices has been reviewed recently by this author. [21, 22]. The concept of existential conscious being is also consistent with Damasio’s concept of basic or core self-consciousness and Thomas Bleck’s explanation of consciousness as an integrative function of three subsystems, namely conscious arousal, awareness, and attention.

According to Damasio, core consciousness provides the organism with a sense of self about one moment, now, and about one place, here. It is a simple biological phenomenon and operates in a stable fashion through the lifetime of an organism. It is independent of working memory, long-term memory, language, and reasoning. It is a central resource and serves the entire compass of brain's neural patterns. This core sense of self is newly created for each moment in time; conscious individuals continuously generate 'pulses of consciousness.'

According to Thomas Bleck, basic awareness in an aroused individual implies that the individual is not only alert, but also cognizant of self and surroundings. It does not imply any specificity for the modality of stimulation, which could be external or internal. [23].

The neurobiology of breathing and emotion has recently been reviewed. The basic spontaneous respiratory rhythm is generated in the lower brainstem. However, it is highly influenced by emotion and volition. Respiration is important in maintaining physiological homeostasis and it co-exists with emotions. The emotional modulation of respiration is mediated by the limbic network consisting of orbitofrontal cortex, amygdala, piriform cortex, entorhinal cortex, and the hippocampus [24]. The value of slow mindful breathing during meditation, as a means of achieving homeokinesis, has been emphasized in Vedic and Yogic literature. Heightened emotions can lead to rapid shallow breathing, while intentional slow deep breathing can help to calm down extreme emotions. This science of breathing (*Pranayama*) has been practiced for thousands of years in India [25].

The neurobiology of human volition or free will has been recently reviewed. The consensus seems to be that modern neuroscience rejects the traditional dualistic view of volition as a causal chain from the conscious mind or 'soul' to the brain and body [26, 27, 28]. Rather, volition involves brain networks making a series of complex, open decisions between alternative actions. Such a neocortical network includes pre-supplementary motor area, anterior prefrontal cortex, and parietal cortex. Free will is not a driving force for movement, but a conscious awareness concerning the nature of the movement. Movement is generated subconsciously, and the conscious sense of volition comes later as a result of self-perception.

Some Vedantists seem to take a dualistic spiritual perspective of self and consciousness-as-such, and reject the role of brain in the generation of consciousness-as-such. On the other hand, most of the neurobiologists believe that all of our conscious mental activities, including our sense of self, are generated by the optimally functioning brain and its complex neural networks. Therefore, there is a wide gap between these two views. There has been an attempt to bridge this 'great divide' between the spiritual and the physical.

Whereas, Ralph Pred talked about "organic or experiential monism," Schafer proposed a transcendental non-empirical reality in the order of the One. To quote Pred: "The physical and mental poles, like the perceptual and actional, are aspects of unitary

experiences enjoyed in the ongoing flow. It is in this sense of unitarity and seamlessness, in contrast with mind-body dualisms, that I talk of an experiential monism.” [29].

Schafer proposed: “The reality appears to us in two domains: the open and well-known domain of empirical, material things – the realm of actuality – and a hidden and invisible domain of non-empirical, non material forms – the realm of potentiality... Reality is an indivisible wholeness that is aware of its processes, like a Cosmic Spirit, and it reveals its awareness in the mind-like properties of elementary processes as well as in the human consciousness.” [30].

A universal pursuit for the peace of mind or equanimity has been a persistent dream of humanity from time immemorial. It is probably the basis for many religious practices and beliefs. In Vedanta, *Sthita-Prajnaa*, the ideal human state of wisdom, equanimity, resiliency, and bliss, is well expressed in the Bhagavad Gita, Upanishads, Brahma-sutra, and Yoga. A constant self-renewal of the “great river of consciousness” with accurate introspections, have been achieved by a few exceptional individuals. Such amazing achievements can now be understood in more rational, scientific terms of homeokinetic physics, neurobiology, experiential monism, and the wholeness of reality in the order of one.

I would like to end this article with a insightful quote from J. Krishnamurti:

“You actually have to die to (let go of) everything you know – to your memories, to your miseries, your pleasures. And, when there is no jealousy, no envy, no greed, no torture of despair, then you will know what love is and you will come upon that which may be called sacred; therefore, sacredness is the essence of religion. You know, a great river may become polluted as it flows past a town, but if the pollution isn’t too great, the river cleanses itself as it goes along and within a few miles it is again clean, fresh, pure. Similarly, when once the mind comes upon this sacredness, then every act is a cleansing act; through its very movement the mind is making itself innocent and, therefore, it is not accumulating. A mind that has discovered this sacredness is in constant revolution – not economic or social revolution, but an inner revolution through which it is endlessly purifying itself. Its action is not based on some idea or formula. As the river, with a tremendous volume of water behind it, cleanses itself as it flows, so does the mind cleanse itself when once it has come upon this religious sacredness.” [31].

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