

Understanding Human Consciousness: Theory and Application

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“Consciousness implies awareness: subjective, phenomenal experience of internal and external worlds... Our views of reality, of the universe, of ourselves depend on consciousness. Consciousness defines our existence.”
(Hameroff & Penrose, 2014, p. 39)

Abstract

Introduction: *The study of consciousness attracts the attention of psychologists, philosophers and scientists. It is, however, mostly dealt with in a descriptive and speculative manner, without explaining the nature of the subjective experience and the dynamics involved.*

Objectives: *This article aims to provide a brief overview of prominent philosophical, psychological, sociological and quantum physics perspectives on consciousness. The practical implications of consciousness theory are also addressed.*

Methods: *Literature review.*

Results: *From a social sciences point of view, Gebser’s Structure of Human Consciousness model, Clare Graves’s Spiral Dynamics (SD) model and Ken Wilber’s Integral AQAL model are briefly discussed to understand the concept of levels of consciousness and to differentiate between the developmental themes which characterise each of these levels.*

This is followed by a description of scientific theories and findings. Here the work of prominent philosophers of science, including Dennett and Laszlo, is briefly explored. Neurological and quantum physics discoveries, including the work of Bohm, Pribram, McTaggart, Hameroff and Penrose are referred to and the phenomenon of collective consciousness is explained in terms of the physics concepts of quantum nonlocality and entanglement.

Next, the application of consciousness theory is addressed within the contexts of societal transformation, leadership, organisational development, organisational culture and education.

Conclusions: *The subject of consciousness thus remains deeply mysterious but of profound importance for the proliferation of life and our continued existence and growth.*

Keywords: *Consciousness, Collective consciousness, Values, Valuing systems, Organisational culture, Leadership*

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1. Introduction

Consciousness is a complex phenomenon, a pearl in the crown of evolution. It is man's most powerful defence against meaninglessness, chaos and decline. No wonder then that the topic has become the focus of scholars across the physical-metaphysical divide.

The study of consciousness largely attracts the attention of psychologists and philosophers and is therefore often dealt with in a descriptive and speculative rather than an explanatory manner. The elusive nature of consciousness has, however, not discouraged scientists, quantum physicists in particular, from also peering into the void. Efforts at integrating qualitative and quantitative research findings on consciousness have subsequently followed.

This article is aimed at providing a brief overview of some interesting views of consciousness including philosophical, psychological, sociological, spiritual and quantum physics perspectives. A number of practical implications of the consciousness theories from a social sciences perspective are also touched upon.

2. Theory

2.1. Social science perspectives of consciousness

Humans have always been intrigued by the mystery of consciousness and the quest to understand it is as old as known human history itself. The following relatively recent theoretical contributions from philosophy, sociology and psychology provide particularly useful perspectives of consciousness development.

2.1.1. Jean Gebser (1905 – 1973): The structure of human consciousness

Noteworthy in this regard is the work of the Polish philosopher, linguist and poet, Jean Gebser, who published *The ever-present origin* in 1945. In this book, he identified five major epochs in human evolution, each anchored in a particular structure of consciousness. These are the *Archaic*, the *Magic*, the *Mythic*, the *Mental* and the *Integral* epochs.

As each consciousness structure emerges, it also eventually becomes deficient. Gebser proposed that the transformation of consciousness involves structural changes in body and mind that he refers to as *mutations* which are of a radical emergent nature - an idea also reflected by the work of Graves (see below). Each of these structures of consciousness entails a specific experience of space and time. The *Mythical* structure, for example, experiences time as cyclical and rhythmic, whereas for the *Mental* structure time is linear, directed

and *progressive*. The structures of consciousness find expression through various forms of economic development, namely foraging, horticultural, agrarian, industrial and informational modes.

According to Gebser, the *Archaic* epoch includes all structures of consciousness up to, and including, the first hominids. The *Magic* epoch involves a relatively undifferentiated body and mind. Here, the symbolic representation of reality becomes possible. Although *close to nature*, there is little or no reverence for the environment and immediate advantage is pursued.

The collective identity of tribal kinship, however, progressed from being based on a common ancestor to that of common rules, which leads to the emergence of mythology. During the *Mythic* epoch a transition from the tribal identity to an abstract identity takes place. Gebser describes mythic membership as socio-centric or ethnocentric. The *Mythic-rational* structure is reflective of the rationality of *concrete operations* (as also referred to by Piaget) where thinking about thinking emerges. In transitioning from the mythical to the rational, the mythological is justified rationally. During this phase, the capability to take different perspectives, formulate hypothetical possibilities and introspection become possible. The mythic-rational enables the emergence of a global, planetary consciousness. This global tendency is expressed by extending a particular mythology to world-embracing dimensions via military power, for example. In the past this gave rise to the emergence of great empires such as those of the Incas and Romans. The rational justification of the mythologies of such empires, also resulted in the emergence of rational philosophy and science.

With *Integral* consciousness, dualism and categorical thinking give way to *transparency*. Here, the distinct categories of past, present and future are replaced by systemic thinking. Time is also viewed as an indivisible whole. The *whole* and *purpose* thus become important. To Gebser, *Integral* consciousness transcends rationality and introduces a transpersonal dimension. Gebser's ideas find expression in the work of various other consciousness theorists, including Graves and Wilber.

2.1.2. Clare Graves (1914 – 1986): The Spiral Dynamics (SD) model

In 1952 Graves came to the conclusion that he "had it" with Psychology as it was, and that it was time to order the fragmented chaos which characterised psychological theories. He subsequently proposed an

integrated framework aimed at guiding all further psychological research - a comprehensive *biopsychosocial* model of consciousness. His model reflected a close link between human neurological functioning, referred to as *capacities of mind* or internal conditions, and the way in which people learn and perceive their world, which pose the external *life conditions*. Consciousness development is triggered by a dissonance between internal and external conditions.

The *Spiral Dynamics model* which Graves proposed and referred to as the *Emergent Cyclical Levels of Existence Theory (ECLET)*, provides a profound and elegant framework in terms of which human development can be understood. It is, however, not unique as a variety of consciousness and psychological development theorists came up with comparable conceptualisations. Examples of such similar views of psychological development include the work of Loevinger on ego states, Kohlberg on moral development as well as Perry and Piaget on intellectual development, to mention but a few (see 2.1.4.).

According to Graves, humans respond to life conditions by developing certain adaptive views and capacities which he refers to as *levels of human existence*. These adaptive responses can be grouped into specific levels of consciousness, valuing systems or cultural memes which permeate individual and collective minds and cultures. Each level of awareness forms the basis for the emergence of a greater and more encompassing level of consciousness. The levels are organised as a soft hierarchy and are not to be seen as fixed, but represent flowing waves that are continuously overlapping and interweaving with one another.

Higher order neurological systems or states of consciousness thus emerge in a hierarchically organised manner as new existential challenges, crucial for human survival, are encountered. The existential states, referred to as *A-N, B-O, C-P, D-Q, E-R, F-S, G-T, and H-U*, which Graves represents as a double helix, surface as a result of the process of mutual adjustment between the organism and the environment.

The various systems, or states of evolvement, can be referred to as valuing systems, paradigms, worldviews, mindsets, perceptual systems, decision making frameworks, values or cultural memes, each of which is characterised by a unique orientation. To each of these, Graves allocated a colour to simplify references to the valuing systems.

The various value systems are organised on an ever-growing dynamic spiral where there is a fluctuation in focus between the expressive *I*, or individualistic

systems, and the sacrificial *We* or collectively oriented systems. In terms of development, external factors normally *push* awareness towards the group-oriented systems, while internal factors normally *pull* awareness towards the expressive modes. At the lower levels of the spiral, in the *A-N, B-O, C-P* and *D-Q* levels, motivation is normally fear based; at the middle levels of the spiral, at the *E-R* and *F-S* levels, motivation takes on a broader emotional nature, whereas at levels of being at the high end of the spectrum, the *G-T* and *H-U* systems, an integrative and transcendent orientation prevails.

The progression to higher levels of consciousness involves moving from a state of self-preservation or survival (*A-N*); to one of in-group belonging (*B-O*); to an egocentrically driven state of discovering own free will and power (*C-P*); to a moralistic orientation in holding the space for others (*D-Q*); to one of self-empowerment in creating the future (*E-R*); to one characterised by embracing complexity (*F-S*); to an understanding of the dynamic whole (*G-T*); to a state of transcendence (*H-U*). Further states at increasingly higher level, can also emerge. The process may also be arrested along the way due to a variety of factors. Both progression and regression are, therefore, possible.

A detailed description of the *Spiral Dynamics model* can be found in Beck and Cowan (1996).

2.1.3. Ken Wilber: The All Quadrants All Levels (AQAL) model

Graves' ideas were further expanded on by Ken Wilber who viewed consciousness development in terms of *altitude* as implied by Gardner's observation of *the whole course of human development... as a continuing decline in egocentrism* (Wilber, 2001). This means that a person or group can be more or less aware. The more conscious we are, the less we are held ransom by the ego and immediate circumstances, and the larger our world becomes. As our awareness expands, so do our spheres of influence and concern.

Wilber's *Integral Model* (2000(a), 2000(b), 2001) represents an encompassing *All-Quadrant-All-Level (AQAL)* conception of human existence. The integrative AQAL model represents four dimensions of the cosmos, along the axes of the exterior and the interior as well as the individual and the collective. Wilber refers to the various quadrants as the *I, We, It and Its*.

Various developmental lines or streams can be identified within each of the quadrants. These correspond with one another across the quadrants. The *Individual* quadrant, for example, includes the cognitive, moral, psychosexual, affective, interpersonal, and

spiritual lines all at various levels of awareness. These lines are not necessarily equally well-developed. In other words, a person can be at a high level cognitively and a low level morally. The ethical line, for example, develops from egocentric, to ethnocentric, to world centric, to integration centric. The levels of development within the quadrants, however, correspond. For example, a particular value system in the upper-left quadrant will correspond with a particular level of neurophysiological development on the upper-right quadrant. Due to the scope of this article, the AQAL model will not be described in detail, though.

The AQAL model of Wilber offers a comprehensive metatheory to explain both reality and the related academic disciplines. Like Graves, Wilber also describes the process of consciousness development in terms of levels or stages which are fluid waves. The Self is the core system that navigates the waves, streams and states. The self-sense, identity, or ego, thus climbs the ladder of levels of consciousness, alternatively referred to as fulcrums, or centres of gravity. The upper-left quadrant or *The Interior - Individual*, indicates the intension and the consciousness of the individual, and is of particular interest for psychology.

2.1.4. Other theoretical contributions

A number of other theorists also contributed valuable models to enrich our understanding of consciousness and psychological development. Most of these models focus on the developmental processes of particular *lines or streams* as postulated by Wilber. Examples include the work of Jane Loevinger on ego states; Mary May's on consciousness development; Lawrence Kohlberg on moral development, William Perry on ethical development; Jean Piaget on intellectual development, Shalom Schwartz on values and Caroline Myss on spiritual awareness (Prinsloo, 2012).

A number of Spiritual models, as integrated by Caroline Myss (1996), provide an additional perspective on the developmental progression of awareness. Myss synthesised the themes identified by the Hindu Chakras, Christian Sacraments and the Kabbalah's Ten Sefirot or Tree of Life (specifying ten divine energies) by linking each to the *seven sacred truths* these systems share. Myss's summary (2004) clearly indicates the common ground between the notion of *energy centres* and the developmental phases frequently identified in consciousness literature.

An integration of taxonomies from various wisdom traditions as linked to the SD (Spiral Dynamics) can also be found in Prinsloo (2012).

2.2. Physical sciences perspectives on consciousness

Philosophical and developmental theories such as the already discussed views of Gebser, Graves and Wilber, emphasise, but do not address the physical aspects of consciousness in any depth. Graves, however, strongly promoted an integrated cross-disciplinary view in the case of consciousness studies. The integration of philosophical and physical explanations of consciousness is, however, not yet possible.

Physical science approaches to the study of consciousness broadly involve the philosophy of science approaches; neurological studies of the structure and function of the brain; as well as the abstract mathematical conceptualisations offered by quantum physics.

2.2.1. Philosophy of science

A meta-perspective in this regard is provided by Pribram (1986) who addressed the issue of mind-brain duality. He reviewed the eclectic interpretations involved by pointing out that "*Philosophical positions on the mind/brain relationship such as identity, dualism, interactionism, materialism, physicalism, and mentalism are described as theories that cannot be extended beyond their databases into overarching cosmologies.*" (p. 507). To Pribram, these perspectives all represent a metaphysical approach to awareness.

He also evaluated this epistemological pluralism from a scientific perspective by pointing out that concepts such as information, energy and entropy are neutral to the mind-brain controversy and constitute grounds for an integrative theory which he refers to as *structural monism*, in terms of which similar information structures underlie the functioning of both the brain and the mind.

Many examples of the above-mentioned positions on the mind-brain relationship can be found. One example is the popular materialist examination of human consciousness as relatively recently proposed by Daniel Dennett (1991), a philosopher of mind and science, in his book *Consciousness explained*. Dennett proposed the view that there is no consciousness over and above the computational features of the brain. He regards what is referred to as consciousness as amounting to illusory states generated by parallel brain architecture. To Dennett, human consciousness is no different from that of complex robots as he sees the conscious, feeling mind as non-existent and a remnant of folk psychology.

Critics regard what they refer to as Dennett's *eliminative materialist* views as *unscientific* and as a category error. John Searle (1992), for example, points

out the differentiation between epistemology – which is about what and how we know things, and ontology – which is about what things are, implying that *the map is not the territory*. He also differentiated between subjectivity and objectivity. Something is epistemically objective if its existence is experienced by a subject. Searle sees any value judgement as epistemically subjective. To say that one mountain peak is prettier than another, is epistemically subjective, but to say one peak is higher than another, is epistemically objective as the latter statement can be evaluated in terms of specific criteria, whereas no universally legitimate criteria for prettiness exist. Searle argues that the goal of science is to validate epistemically objective (where the truth can be discovered) as opposed to ontologically objective statements. According to Searle, *where consciousness is concerned, the existence of the appearance is the reality*, an approach which Dennett rejected.

Almost on the opposite side of the spectrum to the views of Dennett, are those of Ervin Laszlo, a Hungarian philosopher of science, who integrated scientific and spiritual perspectives to introduce the *Akashic paradigm* (Laszlo, 2004). He contextualised the concept of consciousness within the universe as primarily consisting of energy and information - as opposed to matter and space, and uses the metaphor of energy as the hardware, and information as the software of the universe. According to Laszlo the universe is rooted in coherence and he describes it as an entangled, holographic, non-local, connected field of information. If the energy in the universe was not coherent but random, complex systems would not have emerged. He refers to the coherent and interactive nature of sub-atomic particles in the universe as the *quantum vacuum*. It contains all information since the big bang and its interactive nature implies its awareness. The complexity and the inherent coherence characterising the quantum vacuum, result in jumps in complexity of organisation - otherwise referred to as evolution. This enables the quantum vacuum, also referred to as the universe or cosmos, to be conscious.

To Laszlo, life, and ultimately consciousness, thus originate from the quantum vacuum. He compared the quantum vacuum to the ancient Hindu spiritual tradition's concept of the *Akashic field* – a record of everything that ever was, is, or will be. In his 2004 book *Science and the Akashic field: an integral theory of everything*, Laszlo discusses possible evidence for the existence of the quantum vacuum or *zero point field* as the fundamental element of the cosmos.

2.2.2. Neurosciences

From a neurological perspective, consciousness is regarded as a developmental outcome of the biological evolution involved in the adaptation of living systems. Brain processes are generally regarded as a fundamental component of consciousness. Neurological studies which touch on the subject of consciousness include research on sleep and dreaming, the effects of anaesthetics, the phenomenon of flow, aging and dementia, neurological syndromes and psychiatric disorders, to mention but a few.

Neurosciences approaches largely explain consciousness as an emergent property of interactions and/or calculations in the form of complex neuronal firings, or synaptic transmission, among brain neurons. Electroencephalography (EEG) and functional magnetic resonance imaging (fMRI) techniques are often used to study these processes. The research results have, for example, indicated that axonal firings are preceded by synchronised dendritic integrations and that gamma synchrony EEG, which is regarded as the best indication of consciousness, primarily involves dendritic and somatic integration potential.

Inherently, proponents of neuroscience approaches to consciousness research uphold a dualistic philosophical perspective to mind-brain matters in that they focus on brain processes. But this scientific explanation of the processes involved, still does not explain the phenomenon of consciousness.

2.2.3. Quantum physics

Pribram's (1986) ontologically neutral position regarding mind-brain duality, points towards the viability of a quantum sciences, as opposed to classical sciences, approach to the understanding of consciousness. Here the diverse contributions of Bohm, Laszlo, Hameroff, Penrose, McTaggart and others are of particular interest.

Essential to any discussion of consciousness, is the work of the theoretical physicist and philosopher of science, David Bohm. In 1980 he introduced the possibility of a deeper reality in his book *Wholeness and the Implicate Order*. Bohm links the activity of consciousness with that of the *Implicate Order* of the universe. His term of implicate order reflects an ultra-holistic cosmic view in which everything is connected to everything else and every element can reveal detailed information of any other element in the universe. The layers of the implicate order infinitely enfolds and unfolds itself at deeper levels.

His theory thus provides a quantum physics perspective of the totality of existence including matter and consciousness. Physicists have subsequently referred to Bohm's implicate order of the universe as the *Zero-point Field (ZPF)*, universal field, or physical space-time.

The mind-brain relationship, central to consciousness theory, is also addressed by Bohm. He used the concept of the hologram as proposed by Dennis Gabor (1948) to explain the nature of brain functioning and human awareness. Holography relies on light-wave interference to photographically record or enfold a light field into a three-dimensional image, each point of which contains the entire whole. According to Bohm, consciousness too, reflects the totality of an interconnected whole.

The *Holonomic brain theory* which was subsequently developed by Pribram (1991, 2007) and Bohm, posits that the brain can be described as a holographic storage network which involves electric oscillations in the brain's fine-fibered dendritic webs – which differ from the known action potentials of axons and synapses. These oscillations are waves which create *wave interference patterns* for memory encoding. Like a hologram, each part of a dendritic network in the brain contains all the information of the entire network. To Pribram, time and spectral information is simultaneously stored in the brain as a dissipative structure which continually self-organises.

Further supporting evidence for this explanation has emerged given findings of auditory, visual and somato-sensory processing taking place in the wave-form domain (Fuxe et al, 2000). These researchers also regard the brain as a wave-form analyser in which information is distributed, thereby enabling transcendence of the structural composition of the brain.

But do the holonomic brain theory and findings regarding the brain as a wave-form analyser imply that individual consciousness can be transcended to access collective consciousness? Here the informative and ground-breaking explanation of the nature of consciousness as proposed by quantum physicists Stuart Hameroff and Roger Penrose (2014) offer greater clarity.

Whereas popular science and advocates of strong artificial intelligence regard consciousness as computational in nature, Penrose and Hameroff, in terms of Gödel's incompleteness theorem, claim that human *understanding* cannot be encapsulated by a computational system only. Instead, they explain the mechanisms involved in consciousness in terms of quantum physical processes intrinsic to the universe. Within the context of this approach, human

understanding is *non-computable*, which is a well-defined mathematical concept related to the incompleteness of quantum theory.

Quantum theory deals with physical phenomena at microscopic scales and the laws governing quantum entities, differ from the more predictable laws governing classical reality. According to Max Planck's famous formula $E = hv$, the term *quantum* indicates a discrete element of energy, or E , as the energy of a particle in a system, where E is related to the frequency ν of its oscillation (with h as the constant). The deep relation between discrete energy levels and frequencies of oscillation underlies the wave-particle duality of quantum phenomena.

Heisenberg's *uncertainty principle*, which underlies what is known as the *measurement problem* at quantum levels, however, poses certain challenges for consciousness research from this perspective. The issue was also highlighted by Einstein, Schrodinger and Dirac's findings regarding the incompleteness of quantum physics. According to the measurement problem, once we know the position of a subatomic particle, we cannot know its speed or its momentum. If a particle is at rest we would know both. But no particle is ever at rest – not even at the lowest known temperature of -273.15 degrees Celsius. In other words, the mere *observation* of a quantum state, results in the collapse of the *wavefunction*. It is problematic due to the measurement apparatus being a quantum entity, which forms a part of the entire quantum system.

In order to resolve the measurement problem, Penrose introduced an extension of the standard framework of quantum theory, namely the concept of *objective reduction (OR)*, or quantum state reduction. It suggests that consciousness arises from vibrations (moments of quantum state reductions) in protein polymers or microtubules inside the neurons in the brain which connect to deeper order ripples of space-time geometry. The microtubules act as quantum resonators. Hameroff and Penrose's (2014) OR approach therefore does not merely focus on the interactions between neurons, but on quantum processes at a deeper level inside brain neurons. They also regard microtubule vibrations as the source of the EEG correlates of consciousness as found in neurology. In addition, Orch OR suggests a connection between the brain's biomolecular processes and the basic structure of the universe.

The quantum perspectives of researchers such as Penrose, Hameroff, Bohm and Laszlo, all imply the non-locality of consciousness. It means that quantum particles can exist in several states or locations

simultaneously – which can be described mathematically by a quantum *wavefunction*.

The key concepts of *entanglement* and *nonlocality* as studied in quantum information sciences are fundamental in understanding consciousness. The term entanglement was introduced by Einstein, Podolsky and Rosen (1935) as well as by Schrodinger (1935). It arises when two quantum systems are produced from a common source. The mathematics here, are complex, but it means that entangled quantum systems behave as if they are one in that they affect one another instantaneously, even when extremely remote from each other. They thus exhibit a form of non-locality.

To summarise, quantum physicists view fields of consciousness in terms of long range entanglements which are nonlocal in nature. It suggests the transcendence of time and space. In term of time, our waking consciousness can thus potentially access deep, fundamental or boundary-less consciousness. But neither general relativity theory nor quantum mechanics - which are still unintegrated given the incompatibility of their mathematical foundations, fully explain the phenomenon of collective consciousness. Here M-theory or string theory, seems to provide fresh insights.

In string theory or M-theory, there is additional form of matter referred to as *hidden sector matter* or shadow matter. In particle physics the term hidden sector refers to yet-unobserved quantum fields and the associated hypothetical particles. These fields carry minute electrical charges which electromagnetically weakly interact with our bodies. It is hypothesised that this aspect may be an important constituent of what is referred to as mind, or mind which is independent of the body.

From a string theory perspective of consciousness, our hidden sector bodies, which are very cold and take on the characteristics of a superconducting world, is what is required for field effects or long-range entanglements of consciousness. Temperature seems a factor as quantum entanglements are fragile and cannot survive our high temperature world, but under superconducting conditions the decohering effects of temperature are reduced. Communication through our hidden sector bodies thus allow for non-local entanglements, which seems a physical prerequisite for collective consciousness.

The mathematical models of quantum theory are thus useful for exploring the principles of nature. And although it clarifies subtle issues in a way which goes beyond the speculation of the descriptive sciences, it nevertheless fails to go all the way in explaining consciousness. An integration of all the various

perspectives on the matter, be those of a social science, philosophical, physical or spiritual nature, probably offers most leverage towards an understanding of consciousness. Ancient systems in particular seem to offer many of the answers and are regarded by physicists as logically impeccable and worthy of further exploration.

3. Applications

A discussion of guidelines for the application of our current understanding of consciousness in society, the work environment, personal lives and public institutions, follows.

3.1. Societal transformation through collective consciousness

According to the philosopher Krishnamurti (1895 – 1986, <https://www.google.com/search?q=krishnamurti+quotes+a+crisis+of+consciousness>): “*We are facing a tremendous crisis, a crisis of consciousness. The turning point, the perceptive decision, the challenge, is not in politics, in religion, in the scientific world; it is in our consciousness. One has to understand the consciousness of mankind, which has brought us to this point.*”

Krishnamurti’s famous statement, “we have a crisis of consciousness”, refers to the lack of human awareness which lies at the root of many worsening societal dilemmas including the corrosive power of the current monetary system; the widely criticised greed and short-term vision of business leaders and shareholders; climate change; the impacts of the industrial complex; increasing political antagonism and military activity globally; the devastating effects of global income disparity and growing environmental destruction.

In Toynbee’s 1934 masterpiece, *A Study of History*, the British historian indicated that over time, 22 of the 23 civilizations which he studied have disappeared, which he ascribes to their inability to adapt to change. He refers to their final stage of conformity and rigidity as *societal suicide*.

While science and technology can well relieve the symptoms of this crisis, a more fundamental solution related to the transformation of the culture and values of societies, organizations and individuals, are required. Given the interconnectedness of human awareness and therefore values and culture, this is not an impossible task. Collective consciousness and leadership may well offer the leverage required.

Human awareness is not merely contained within the cerebral cortex of the individual, it is in constant interaction with its world. The subsequent

collective consciousness is a life force in society, rooted also in the quantum physics principles of entanglement and non-locality.

Evidence of collective consciousness, or the interconnectedness of intra-species awareness can for example be found in Ken Keyes's (1982) publication: *The Hundredth Monkey* which documents his observation of the spread of new skills from a group of monkeys on the island of Koshima to all other members of the species. This intra-species transfer of skill took place at the moment a critical mass of awareness of a skill was achieved, regardless of geographical distance or any kind of contact between the groups.

The phenomenon can be explained in terms of Rupert Sheldrake's concept of morphogenetic fields. Morphogenesis involves fields through which members of a biological species can learn skills faster because previous members of that species have already acquired it. In Sheldrake's (1981) book *A New Science of Life: The Hypothesis of Formative Causation*, he explains morphic fields in terms of the tendency of organisms to strive towards a morphological aim. He regards the process of evolution in terms of expressions of the morphology of inner functions as enveloped in morphogenetic fields aimed at fulfilling specific niches. This pattern of evolution comprises of morphic resonance beyond time and space and thus extends beyond the biological brain to involve mechanisms of consciousness at a collective level. According to Sheldrake, morphic fields enable resonance with past and future awareness. Sheldrake's theory is compatible to that of Bohm (1980) on explicate and implicate order, the latter indicating a deeper reality characterised by unbroken wholeness.

Given the possibility of collective consciousness, society can therefore be transformed. How can this be triggered? The most obvious practical solution can perhaps be found in leveraging leadership awareness in all spheres and at all levels of society and business. Over time, the worldviews of leaders are likely to permeate all aspects of social life.

3.2. Leadership

The concepts of values and consciousness have fundamental implications for leadership theory. Chatterjee (1998) is of the opinion that leadership should be interpreted in terms of fields of awareness rather than in terms of personality traits or mental attributes. Reams (2005) refers to a number of studies indicating that world class performers, frequently experienced higher states of consciousness. Torbert

(2004) too, found that, given the complexity of organisational change initiatives, the effectiveness of transformational efforts depends upon the level of consciousness of leadership.

Scientific views from biology, neurology and physics in particular, on the energetic nature of living beings, seem aligned to spiritual and philosophical speculations on collective consciousness.

David Hawkins (1994, 2001) explored energy fields from kinesiological and neurological perspectives. Like McTaggart (2001), Hawkins capitalises on the concept of *attractor fields* which are hidden energy fields extending beyond time and space. According to Hawkins "*energy bodies at various frequency levels*" congregate around attractor fields. Within consciousness theory, these fields reveal specific clusters of attitudes, thoughts, emotions and mental contents. The concept of attractor fields holds fundamental implications for the impact of leadership in society, Hawkins also found that advanced states of consciousness are characterized by particular EEG profiles.

The phenomenon of brainwave synchronisation, otherwise referred to as neural entrainment or brainwave entrainment, has been verified scientifically by researchers at the Spanish Basque Centre on Cognition, Brain and Language (BCBL). They have demonstrated through EEG studies that the brain waves of people are synchronised when they talk to one another.

As fundamental to our understanding of the impact of leadership, is William Braud's research on the transmission of thoughts which started in the 1960's. Braud (2011) found that the person with the most cohesive electroencephalogram (EEG) pattern of brain wave activity has the greatest influence on the EEG patterns of others.

The wisdom traditions too, offer compelling views on leadership. Sri Atmananda (2004), in his publication *Manifesting the Divine*, encapsulates the core messages of Hindu philosophy from the Upanishads in this regard. According to Atmananda, man's role is to make a collective decision about the consciousness on earth. He explains that the challenges man face lie within. He states that man has for a millennium put the emphasis on the expansion of matter and ignored the expansion of spirit. This has resulted in the emergence of global challenges.

The ideas voiced by Atmananda are well-aligned with those of Wilber, Graves, May and other consciousness theorists as well as that of Eckhard Tolle (1997). In fact, most of the spiritual traditions, including

the Perennial philosophy, resonate with the central themes of the consciousness models which, at sequentially higher levels, emphasise the diminishing impact of egocentrism and increasing self-transcendence, compassion, connection and integration, realisation of freedom of choice; awareness of personal responsibility and power as well as the transcendence of the intellect. These spiritual perspectives on consciousness thus unashamedly emphasise love and compassion as core growth mechanism of emerging consciousness.

Pauchant (2005) sees integral leaders as primarily following their higher self with moral courage, as opposed to focusing on followers. This involves drawing on something beyond themselves. Many other leadership theorists, such as Wigglesworth (2006), also emphasise the maturity and spiritual awareness of *second tier* leaders (given the Spiral Dynamics model), as a prerequisite for dealing with the increasing complexity of the leadership domain. Ploughman (2000) too, discusses the centrality of consciousness to leadership from an integral perspective.

As mentioned, Wilber's integral AQAL model provides a comprehensive four quadrant framework for leadership applications as it specifies the full spectrum of potential leadership challenges, applications, goals and possible developmental initiatives.

3.3. Organizational culture

Organizational culture can be seen in terms of a network of relationships, business processes and interpersonal transactions, or, to link it to Graves' Spiral Dynamics themes, the collective of interpersonal behaviour which is organized around core values or themes including: group belonging, power, structure, value, relationship, systems views and transcendence. An organizational culture emerges within the broader socio-cultural and business context as well as due to leadership orientations. People with particular value orientations seem to be attracted to specific industries or organizations.

Beck and Cowan (1996) regard the cultures of organizations in terms of an amalgamation of the value systems of the people in the organization. Schein (2009) also describes organizational culture as a pattern of shared assumptions that a group adopts as it addresses certain challenges in adaptation. The organizational culture is normally set by its leadership. Ways in which to perceive, think and feel about situations are thus established by the leaders, adopted by new comers and reinforced by all involved.

Cowan & Todorovic (2000) equate the specific Gravesian value systems to the underlying assumptions of organizations, which are responsible for its culture. This view is rooted in Jungian theory which regards *meaning* as key to why people are willing to invest their creativity and energy in organizations. Meaning is provided by the collectively held values at the heart of an organization's culture. This meaning can be described as "*unseen psychic forces that bind people to each other and their work*" (Corlett & Pearson, 2003, p. xiv).

According to Corlette & Pearson (2003), these underlying assumptions reside in the unconscious of an organization and are represented by archetypes. They regard archetypes as the primary vehicles of meaning, which can be described as psychic patterns that shape human behavior or controlling patterns in the mind which regulate how people experience life.

Again, Graves provides useful guidelines in terms of levels of consciousness and their impact on organizational culture. He points out that the various valuing systems are best suited to particular functional requirements. To ensure the richness of response to organizational complexity, cooperation between a diversity of value orientation on the spiral may be required. However, to avoid counter-productive conflict, individuals and groups with different value orientations need to learn to understand and appreciate one another. In addition, the differences in worldviews or value systems, can be bridged by those who show more than one value orientation. In a diverse cultural context, integral leadership may be required to ensure organizational coherence.

3.4. Education

Although Graves did not document many of his insights, fragmented recordings of his conversations with colleagues are still available. These transcriptions provide useful insights for application within the educational context. Here again, Graves emphasises the importance of the relationship between the mental capacities and life conditions of learners. One of his interesting findings is that learners, even at the ages of 6 or 7, already show a range of value orientations, including relatively high levels on the spiral of the SD (Spiral Dynamics) model. He recommends that educational practices should accommodate for these diverse capacities.

Graves advises that those characterised by the *survival* mode of A-N systems, learn best through habituation and classical conditioning. For those showing a *group belonging* orientation or B-O level, classical conditioning (involuntary) as well as learning

by imitation and repetition, works best. At the first level of self-realisation, or the *power*-oriented C-P system, learning is optimised through reward, and voluntary instrumental conditioning. The individual should be empowered while being protected from losing face, as they tend to fear failure. During this phase, denial and shame may be so energy draining that it prevents the individual from learning.

Avoidance learning seems to characterise the D-Q level of consciousness evolution which is driven by the *force of truth*. This system is adrenalin dominated and readily responds to punishment and threat in an effort to reduce own anxiety. It is also responsive to imposed structure and discipline.

Learning at the *strive and drive* E-R level is self-directed. This system is responsive to opportunities to respond autonomously without authoritarian involvement. Only those that are trusted, and who *have been there before*, are learnt from. At this individualistic system, failure should not be exposed either, but questions on *why?* or *why not?* seems to trigger productive engagement.

Those showing the F-S *human bond* value orientation respond best to observational learning principles in an accepting environment. Learning does not depend on reinforcement. At this level, unconditional trust of others and high expectations need to be addressed through a degree of discipline, though. Learners from this value orientation need to address their reliance on the opinions others. A lack of interpersonal harmony negatively impacts performance at this level and it is the one system most characterised by depression and suicide.

The flexibility and freedom characterising the *integral* G-T system tends to result in curiosity and exploration aimed at learning and understanding. Here learning is facilitated through providing access to knowledge resources and encouraging experimentation and discovery. This system holds little fear and therefore authority, networking and protection are not pursued.

A combination of Graves' educational guidelines and Kolb and Fry's (1975) experiential learning model, may hold significant advantages for instructional design in general.

4. Conclusions

Exploring the way in which human beings increasingly become aware and interconnected touches on the fundamental issue of our existential purpose.

Available perspectives on consciousness, its level-specific contents, how it translates across various

manifestations of our reality, the biological and subatomic dynamics involved as well as the implications for collective and transcendent consciousness, all soften the divide between the depth of our subjective experience of consciousness, or the territory, and our theoretical and speculative maps of what is involved.

It seems that consciousness is more than sensory awareness, feeling and thinking. It involves a sense of self which is inextricably embedded in a delicate awareness of transcendent consciousness. It manifests as a psychological ambiance or mental configuration which guides our decisions, often in counter-intuitive ways towards achieving our emerging personal purpose. It also takes on a prominent role in directly determining our own perceptions, preferences and decisions as well as those of others.

Consciousness may be coloured by physical, psychological and cultural factors, but may transcend those aspects. Its development seems nurtured by richness of experience, interpersonal harmony and love, spirituality, depth of interest, introspection, intention and feeling. The key catalysts for the emergence of higher levels of consciousness, however, seems those of practising compassion and observing silence.

Although there may be fluctuations of our levels of consciousness at certain periods of life or under certain circumstances, an overall tendency or state of awareness mostly tends to prevail. It affects those around us and can be leveraged to transform organizations and societies. Within the contexts of individual and collective life, however, consciousness is ever emerging – as pointed out by Graves' predicted possibility of a next *Coral* level, as a higher *Red*, *power* orientation, to be realised on the SD spiral.

The subject of consciousness thus remains deeply mysterious but of profound importance for the proliferation of life and our continued existence and growth.

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