Article

A Model of Human Consciousness

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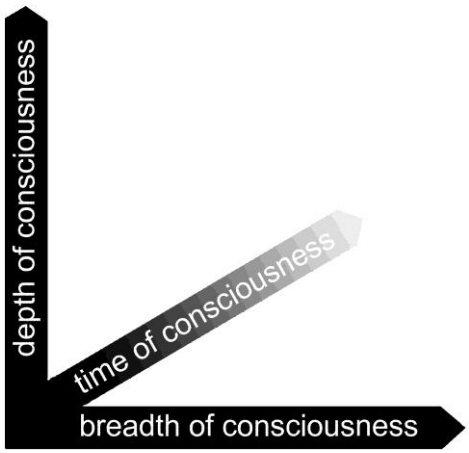
Abstract

It has been difficult to define human consciousness because of its many differing qualities and because of various views people have of consciousness. It is proposed that these multiple vantage points be united into a single three-dimensional model utilizing breadth, time and depth. This model could provide a more comprehensive definition of consciousness and encourage an exploration of the interplay of consciousness' many features. Such a model may also help answer some of the many questions that the concept of consciousness creates.

Keywords: quantum, consciousness, epiontic, Buddhism, theory of everything.



A Model of Human Consciousness

Over the years a variety of proposals have been suggested to clarify our understanding of the nature of a person's consciousness. Some proposals have focused on specific aspects our consciousness such as our focus of attention; others have attempted to take a more cosmic view; some people feel that there is no "overarching thing as consciousness" but only its separate parts (Brothers 2008). Many models have tried to illustrate consciousness by utilizing analogies to the structure of the brain; some follow a computer model; others rely on metaphysics. Francis Crick (1994 p. xii) has summarized the issue: "Consciousness is a subject about which there is little consensus, even as to what the problem is."

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The model of human consciousness proposed here expands current concepts of consciousness to make them more useful in explaining its operations. This model (Kettell 2009) suggests that the dimensions of *breadth*, *time* and *depth* might encompass more of what we know about consciousness and thus provides a more comprehensive view of the phenomenon. Previous models separate sleep from consciousness, but this model sees sleep as one part of the pattern of consciousness. This model attempts to create an overarching view that accommodates much of what we know about changes in consciousness over time. Some models have created a two-part system that includes a single conscious state and a mysterious unconscious, but this proposed model sees these features as part of a continuum.

Some previous models of consciousness have detailed either the dimensions of *breadth* or *time*, but none have combined all three dimensions. This proposed model details the dimension of *depth* unlike other models.

The model discussed here can be used to reexamine some of consciousness's nagging questions: the mind-body question, qualia, free will, animal and computer consciousness. The model does not address other consciousness questions such as the roles of thinking and cognition in consciousness, the difference between knowledge and information, the relation to "mental states," nor the source or cause of consciousness.

For some people it is important to know the underlying philosophy of an author prior to reading a paper – for these people "Underlying Assumptions Of The Model" is included later in this paper to expose the author's prejudices. For the remaining readers, the proposed model assumes that consciousness is not a physical thing, but a useful concept to explain some of the workings of the human brain and body. This model attempts to make the concept more useful.

1. The Three-Dimensional Model

Consciousness can be seen as having three-dimensions - not the three-dimensions associated with Cartesian space: height, width and distance - but the dimensions of *breadth, time* and *depth*. The dimension of *breadth* describes consciousness in varying intensities from fully focused on a subject, to somewhat attentive, to daydreaming, to experiencing waking dreams, to creating dreams that are never brought to full awareness, to deep sleep and finally to a coma or anesthetics. Human's consciousness plays a continuously changing role that makes the next dimension of consciousness *time*. Consciousness also comes in various levels that are referred to as the dimension of *depth.* Most people agree that the humans have at least one layer of cognition beyond our normal state of awareness; some refer to this as our unconscious. However, it is unlikely that the *depth* of our consciousness is a simple binary system - it is more likely that there is a continuum of layers of consciousness. We will look at each of the three-dimensions in more detail.

The Dimension Of *Breadth*: Most people realize that the intensity of their consciousness varies considerably; sometimes we are keenly aware of ourselves, while at other times we are lost in imaginary thoughts. According to Benjamin Pinkel (1992 p. 22): "In the normal course of life one encounters several ordinary states of consciousness in wakefulness, sleep, and dreaming." The proposed model adds a few gradations to Pinkel's simple three-part classification system:

- focused: When people are fully concentrating, their attention is narrowed to a limited range of objects or events, and their consciousness can be described as focused. At this *breadth* of consciousness other objects or events are ignored – they are brought back to attention only when the person's focus changes. A student takng the SAT test is hopefully in this focused state of consciousness.

  At the extreme end of focused awareness is deep mediation. Anthony Newburg (2001 p. 148) has developed a unique term for this: "Absolute Unitary Being is described as a state without time, space, and physical sensations; with no discrete awareness of any material reality at all."

- attentive: When a human is generally aware of his or her surroundings and activities - when a person is simply awake – their consciousness can be described as attentive. Some definitions of consciousness consider only this range of *breadth*, but such a definition is far too limiting. In our example the student is now walking through the quad and talking about her SAT exam to a friend – she is somewhat attentive to where and how she walks and whom she passes, but is primarily attentive to the conversation she is conducting with her friend.

- day dreaming: When humans are only vaguely aware of their environment and primarily imagining other possible surroundings and activities, their consciousness can be described as day dreaming. The same student, who is now lying on the grass in the quad with the warm sun shining on her, is gently absorbing her entire environment utilizing all her senses, but not concentrating on any one of them. She is present in her environment, but not attentive to any particular aspect of it, possibly thinking about shapes in the clouds above.

- waking dreams: When a human is emerging from a dream but continues with the dream's line of thinking - even though they now realize that it is only a dream - their consciousness can be described as a lucid dream or waking dream. Here they can manipulate the course of the dream. Our student lying on the grass had fallen asleep and begun to dream (see below) about aliens from another planet, but as she gradually awakes she continues to think about aliens hiding behind the clouds above.

  A variation of this *breadth* of consciousness would be hallucinations where a person has only partial control over the content of their thinking and only partially realizes their environment.

- dreams: When a human is engaged in imaginary settings and activities and is not aware that this imagined environment is not real, their consciousness can be described as dreaming. Our student has fallen asleep and now believes she is on another planet talking with its aliens.

- deep sleep: When humans is not visualizing any settings or activities - when they are performing internal regulatory functions, making connections or consolidating the day's activities - their consciousness can be described as deep sleep. Our student's dreams stop, she no longer has a narrative running, and she has lost all sense of time.

- anesthetics and coma: When a human is under the influence of anesthetics, or in a coma, they appear to be only performing internal regulatory functions. Our student is easily awakened from deep sleep,

but usually does not become attentive until the effects of anesthetics have worn off, or she recovers from the coma.

The exact end of the *breadth* scale is difficult to determine. Several recent reports on so-called brain dead people have shown that some learning can still take place (Harmon, 2009), people in vegetative states still have periods of sleep and wakefulness (Casert 2009), and some brain activity can take place in completely unresponsive people (Carey 2010).

Some of the changes from one *breadth* category to another can be abrupt (like suddenly waking from sleep), while some of the changes are smooth (such as the transition from focused to attentive). Anthony Freeman (2003 p.78) paraphrases Susan Greenfield in her analogy of the situation: "she regards consciousness not as an on/off switch but more like a dimmer dial for a room light."

One example of the transitions along the dimension of *breadth* is nicely described by Fred Dretske (2002 p. 426): You have been driving a car alone for a long time daydreaming about other matters when you suddenly realize that you had no conscious memory of the road or other traffic for several miles. Rudolfo Llinas (2002) attributes the transition between sleep and awake to the change in frequency of the brain cycles (or vortex) thus changing the "granularity" of a person's awareness of the world. According to Llinas a continuous low-level cycle of brain activity accounts for fact that people remember who and where they are upon awaking from sleep.

Susan Greenfield (2005 p. 3) indicates that a person's breadth of consciousness is "correlated with different sizes of neuronal assembly" at the time – the larger the assembly of neurons, the greater the *breadth* of consciousness. From a neurological view the dream state of consciousness is often called rapid eye movement (REM) sleep "and bears a marked similarity to that of waking," while in deep (or non-REM) sleep "most neurons show decreased firing." However, even deep sleep is not uniform – it can have an "intense burst firing" that are attributed to the consolidation of unstable memory traces and the transfer of information to long-term storage - thus influencing "the cognitive capacities of subsequent waking" (Hobson 2002 p.688). In fact, "sleep - in all its phases – does something to improve memory that being awake does not do" (Strickgold 2008).

The Dimension Of *Time*: According to Rudolfo Llinas (2002 p. 120) time is the basic element that creates consciousness in humans: "Timeness is consciousness." In his view the brain's neurons are linked to an "internal clock" which acts as the connecting mechanism needed for consciousness. However, he is thinking only on the quickest time scale of consciousness – in terms of 40 vibrations per second. Dan Lloyd (2007 p. 330) also notes the importance of time in understanding consciousness: "Time, I'll suggest, is the fundamental structure of our experience (and essential to every aspect of cognition). It is so basic as to be invisible and thus largely overlooked in both philosophy and cognitive science"

In this proposed model *time* changes a person's consciousness along several scales:

- microseconds: On the quickest time scale, the range of microseconds, some events occur so quickly that a person is not aware of them, or becomes aware only after they have already responded to the event. For example, visual stimulus that appears for less than 100 microseconds seldom reaches a person's level of awareness, but yet when asked about the image the person can often give an accurate

description (Fernandez-Duque 2009). Many of us are familiar with putting our hand on something hot, but realizing it was hot only after we have already pulled our hand from the object – we responded before we were aware of the event.

- seconds: On a slightly longer time scale, the range of seconds, consciousness is continually changing its focus from one object or thought to another. While this appears to be a uniform flow, this scale of consciousness can be compressed or expanded slightly. "During [non-REM] sleep, firing patterns are replayed on a condensed timescale, whereas during REM sleep, the timescale of the replay...is similar to that of the original waking experience" (Hobson 2002 p. 690).

- days: On an intermediate time scale, the range of a day, consciousness changes on a regular pattern for most people. The flow from one *breadth* of consciousness to another happens on a daily basis as people sleep, dream, wake, focus their efforts and eventually return to sleep.

- years: On the longest time scale, the range of years, humans grow from embryo to child to adult and the nature of their consciousness changes considerably. Up to a certain age consciousness' scope expands, its contents are more refined and its processing becomes more complex. Helena Gao (2008 p. 4) has identified six stages of consciousness in childhood: (1) inherited or "wired in" cognitive abilities, such as imitating gestures, distinguishing objects and actions and basic learning procedures, (2) minimal consciousness, such as repeating sounds, (3) stimulus-response or "conditioned" consciousness, such as labeling from semantic memory, (4) simple recursive consciousness where one uses utterances to cause others to act, as when an object like a bottle is present, (5) extended recursive consciousness causing other to act when an object is not present, and (6) self-consciousness where one can characterize the mental activities of others, look ahead to possible alternative courses of action, and plan sequences of actions. "At about the age of five, it is claimed, children begin to see others as conscious beings" (Noe 2009 p. 29). At the far end of this time scale, old age sometimes changes people's experience of consciousness and it can appear to be muted or slowed.

The Dimension Of *Depth*: Most people realize that a person's normal waking consciousness does not explain all of our behavior - even by extending the dimensions of *breadth* and *time* we cannot fill all of the explanatory gaps. We need to look for other layers; we need to look at consciousness in greater *depth*. While the basic awareness range of consciousness has some common understanding, there is little agreement when the characteristics of *depth* are discussed. A review of the literature shows that the existing models have very little in common with each other when this dimension of consciousness is described (Morin 2004 p. 1).

The most basic example of the *depth* of consciousness is our ability to regulate most of our bodily functions without being aware of the effort. Andrew Newberg (2001 p. 38-39) notes:

> With the input of various brain structures, the autonomic nervous systems are responsible for regulating fundamental functions such as heart rate, blood pressure, body temperature, and digestion. At the same time, because of its connections to higher brain structures, it also has a significant relationship with many other aspects of brain activity, including the generation of emotions and mood. The autonomic system is composed of two branches: the sympathetic and the parasympathetic nervous systems...There is evidence, however, of cases in which both

> systems function at the same time when pushed to maximal levels of activity and this has been associated with extraordinary alternative states of consciousness.

Daniel Reisberg (2006 p. 519) notes that through experiments with "blind sight" and amnesia, deeper levels of consciousness can receive, process and store sensory information that the levels of awareness cannot. He calls this *depth* of consciousness "memory without awareness."

At another level, Reisberg (2006 p. 512-17) uses the term "cognitive unconscious" when our lack of awareness does more than process information - at this level it is a support system for our awareness. When it acts in this supporting capacity it is responsible for remembering and categorizing. It contains our set of "unnoticed assumptions and definitions" needed for decision-making and framing a question. His "cognitive unconscious" establishes a "perceptual reference frame" that "determines the understanding of the conscious image, how the image subjectively appears, and what the image will call to mind." It is this level of consciousness that sets the context for our ideas, influences our priming, and "shapes both the content and sequence of our thoughts."

Another level of consciousness can actively and directly processes mental activities – it does some of our thinking. Reisberg (2006 p. 513-14) notes: "[T]hat our unconscious thinking can be rather sophisticated, with layers of inference and reasoning." In describing the conclusions of a placebo experiment he says:

> Note also the complexity of the unconscious thinking in this experiment. The participants are reasoning about themselves in an intellectually sophisticated manner: observing 'symptoms,' generating hypotheses about those symptoms, drawing conclusions, and so on.

David Rosenthal (1990) uses the term "order" to describe the *depths* of a person's consciousness: "[C]onscious states must be accompanied by suitable higher-order thoughts, and unconscious mental states cannot be thus accompanied." "Order" is the same term that Daniel Dennett (1991 p. 16) also uses: "The second-order thought does not itself have to be conscious in order for its first-order object to be conscious...some second-order thoughts are conscious - by virtue of third-order thoughts about them - these are relatively rare."

Philip Clayton (2004 p. 143) sees three "levels" of consciousness - "base," "second" and "reflective:"

> Biological systems are already 'end-governed propensities to perform certain behaviors,' either learned or genetically based. On this base-level system is built a second-level motivational system, which is composed of 'beliefs and desires about actions to be performed'. The motivational and habitual systems are in turn influenced by a reflective level involving higher-order cognitive processes.

Patricia Smith Churchland (2002 p. 105 & p. 90) describes the *depths* of our cognition in terms of "networks:"

> Roughly speaking, inner regulation is essentially low-level cognition with a narrow plasticity range: high-level cognition is essentially fancy regulation, with a much broader plasticity range...These high-level networks embody one's long-term plans, as well as one's preferences, skills, attitudes, and temperament.

This proposed model of consciousness details is a continuum of *depths*. Even though names can sometimes be misleading, the model has created labels for five points along the scale:

- physical feelings: When our consciousness is handling information about our body and its surrounds, we are operating at a basic physical level. Here we are monitoring and measuring electro-chemical information from our internal organs and are creating basic feelings or associations about our environment and ourselves. An often used example of this *depth* of consciousness would be the fear created when our ancient ancestors suddenly felt the presence of a lion in the bushes.

- subconsciousness: When our consciousness is evaluating information from physical feelings it is called subconsciousness. Information about bodily functions is compared to desired levels and necessary adjustments are made to compensate for changes. Information about the external environment is processed for importance. Critical information from this level is forwarded to the next level in the *depth* of consciousness. As the subconscious processes the basic feeling of fear of a lion it will prepare or package the feeling in the form of "fight or flight."

  At this level of consciousness we develop habits based on similar situations from the past. Many of these reactions become automatic responses to the environment and the body. This level might include what Daniel Reisberg (2006 p. 514-20) refers to as the "supporting and thinking" functions, the separate, self-contained well-defined "processing modules" that are relatively specialized. Subconsciousness may be what David Rosenthal (2002) calls "sensory states." This level is where Hans Phaf (1997) notes: "Nonconscious processes are activated by sensory or quasi-sensory input, but conscious experience is constructed in working memory by combining sequences of activated representations."

- awareness: When our consciousness is functioning at this level (which might also be called attention) we turn subconsciousness into cognitive experiences that become the center of our thoughts. The feelings and emotions that were attached to experiences in the subconscious level are not usually lost, but neither are they always fully realized. At this *depth* of consciousness our human ancestors would focus their attention on the lion, attempt to determine its intentions and evaluate alternative actions.

  At the *depth* of awareness we are continually changing our focus over short periods of time (often in the time scale of seconds) - this constantly variable feature is probably not present in the other *depths* of consciousness. Anthony Freeman (2003 p. 56) notes: "[A]ttention holds the key to which cognitive brain processes become conscious and which remain 'in the dark.'"

  Awareness creates memories of our experiences, and miraculously allows us to continue projecting these experiences into the future, and then to imagine experiences we has never encountered. At this level of operation, we can compare past experiences with projected future experiences, see the resulting differences, and match the differences with desired results.

- superconsciousness: When our consciousness is operating at this level we evaluate the desirability of different results to a specific situation. Our human ancestor is judging the worth of protecting his own life verses the lives of his family that are directly behind him. Here we create purposeful behavior in response to goals, values and visions established by subliminal feelings (see below). Here we can stop automatic subconscious behaviors and substitute behaviors that we desire.

This level of consciousness might be what others refer to as setting the "framework for perception" (generating hypotheses and drawing conclusions) or generating "third-order" thoughts. This is the level that might be described as "meta-cognition" by Alain Morin (2004 p. 13). Superconsciousness may be what David Rosenthal (2002) calls "intentional states." It may be one of our major sources of new ideas: "As regards superconsciousness (creative intuition), it probably belongs exclusively to the ideal needs of the cognition and transformation of the surrounding world" (Simonov 1994 p. 236). The thinking processes we use at the superconsciousness level are probably different from the thinking processes we use at the awareness level - rephrasing Hans Phaf (1997) one might say awareness (i.e. symbol manipulation) is sequential, whereas superconsciousness is predominantly parallel.

- subliminal feelings: When we are creating feelings or associations about beliefs, morals, ethical judgments, truth, wisdom, beauty and love our consciousness is operating at the subliminal level. Subliminal feelings help us establish the goals, values and visions that the superconsciousness uses to evaluate actions. Our ancient ancestor could not express it, but he unwittingly knows that he as some responsibility for others that are close to him.

  Daniel Dennett (1991 p. 370) may be describing this subliminal feelings level of consciousness when he uses the term "ground of consciousness":

  > [I]t is widely accepted (in Yoga, Vedanta, Buddhism, Taoism, etc.) that the surface phenomena of consciousness emerge from deeper structures of consciousness which can be experienced directly, and that these deeper structures in turn emerge from an underlying 'ground' of consciousness which is also experienceable.

  Andrew Newberg (2001, p. 34) may be describing subliminal feelings when he talks about altered states of consciousness:

  > The second characteristic, which was hinted at in our SPECT scan studies, is the ability of the mind to interpret spiritual experience as real. This ability, based on the mind's capacity to enter altered states of consciousness, and to adjust its assessment of reality neurologically, is a fundamental link between biology and religion.

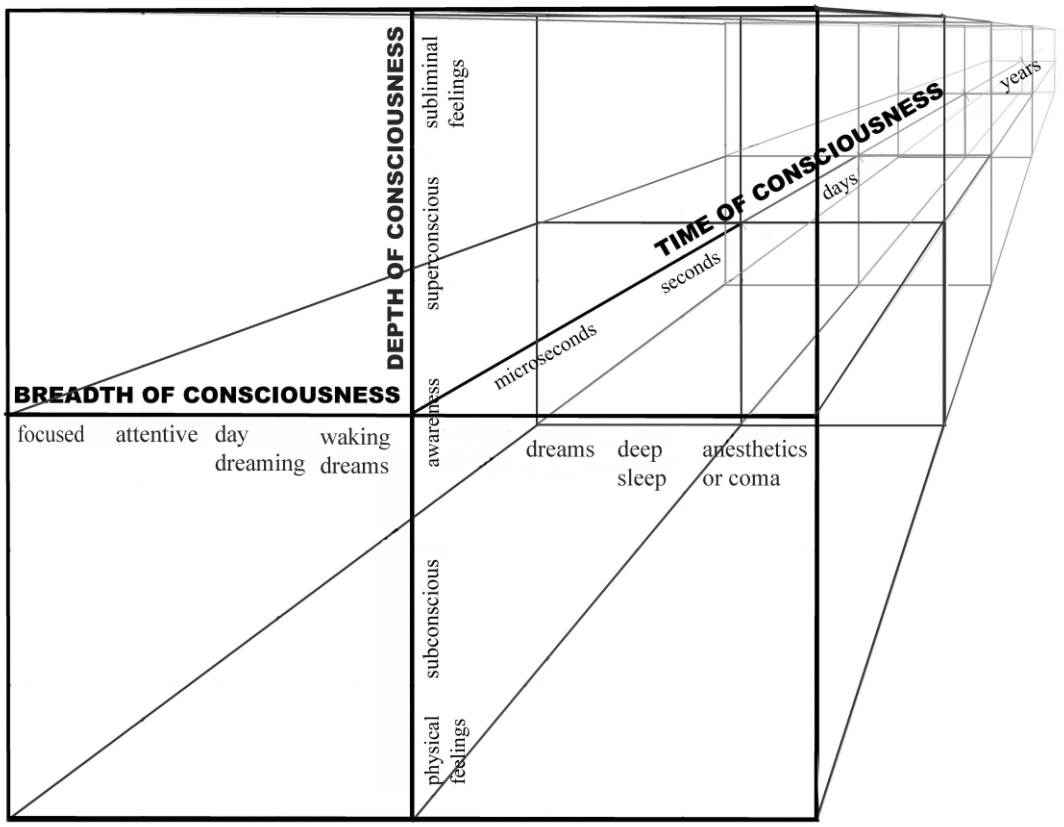
A few examples of transitions from different *depths* of awareness may be helpful: (1) You have been writing a paper on consciousness and vaguely feeling uncomfortable, then suddenly you realize what the problem is - you have headache that had previously not been recognized. This would be a transition from subconsciousness to awareness. (2) You are in a strange new social setting that somehow doesn't seem right, but you haven't expressed this feeling to yourself. When you decide to leave to this bad party you are making a transition from superconscious to awareness.

Transitions between different *depths* of consciousness also run the other direction: (A) Much of our attentive behavior becomes routine and automatic so that it no longer requires our direct attention.[1] For example, while it may have taken focused attention when you first learned to ride a bicycle, you can now perform this activity almost entirely at the subconsciousness level. (B) When a person continually makes

[1] This is sometimes referred to as expert knowledge.

moral decisions at the awareness level over an extended period of time, this pattern becomes part of the person's personality and it moves to his superconscious.

These examples imply some *depths* of consciousness transitions lie just outside of the range of awareness, but there are probably transitions from feelings to subconsciousness and superconsciousness that we do not recognize. There is probably a continuum of layers of consciousness involved. John Searle (1992 p. 166) expresses this as: "Sometimes there may be several inferential steps between the latent unconscious mental state and the manifest conscious intentionality."



The three dimensions of consciousness

In the *depth* of consciousness it appears that subconsciousness and superconsciousness are always operating in the background, while in the *breadth* of consciousness a change from one level replaces another sequentially.

It appears that subconsciousness processes basic physical feelings and superconsciousness processes subliminal feelings is such a way to organizes them into something that can be thought about, something that can be conceived and expressed. These levels filter, categorize and package the feelings and associations that eventually reach the level of awareness. As feelings are brought from the subconsciousness and superconsciousness their nature may change. Sim Liddon (1989 p. 162) sees that the unconscious "reflects emotion, intention, significance, meaning, and value within subjective experience.

In short it has life." However when these images reach awareness they become more linear and analytical. Here Liddon quotes William James as saying "for it is one of the peculiarities of invasions from the subconscious region to take on objective appearances."

Not all feelings are turned to thoughts that enter to the *depth* of awareness, if fact, it may be only the unusual that reaches the level of awareness:

> Processing of information is assumed to be unconscious and automatic at all levels, unless we attend to a particular at which processing is taking place. If this is an accurate picture of what is going on in the brain the mechanism of attention – that is, the mechanism that leads to consciousness – should be thought of as a kind of interruption in other processing, rather than a separate cognitive process in its own right (Freeman 2003 p. 141).

It appears that of the various *depths* of consciousness, awareness is not necessarily the most powerful level:

> [O]ur nonconscious information processing system is comparably more capable to process formally complex knowledge structures, faster, and 'smarter' overall than our ability to think and identify meanings of stimuli in a consciously [awareness] controlled manner (Lewicki 1995 p. 8).

Awareness is not necessarily our most creative either. Frederic Myers thought that genius is "a state in which the waking self is in continuous vital relationship with the subliminal self" (Grosso 2010 p. 2).

2. The Mind-Body Question In The Model

Since Rene Descartes many people have believed that humans have, in addition to their bodies, a separate mind that thinks and understands, but does not "extend into space," i.e. a mind that is immaterial or hidden from the physical world. But how can a hidden mind influence a material body? If the human body works by the principles of the physical science what role is there for any other nonphysical influence? How could something like a mind ever "talk" to a person?

The traditional mind-body question created two worlds separated by such a large philosophical divide that it was impossible to connect the two. In this traditional view there is either just one physical world or there are two worlds, one visible and one hidden – yet they somehow mysteriously communicate with each other only through humans. This lead to the corollary that consciousness was either a strictly a function of the physical brain or it had a mysterious capability to interact with both the visible and hidden worlds. While Descartes did not have the advantage of our current knowledge of the operation of the human brain, the questions raised have not changed much since his model. Descartes (1641 p. 19) realized this would remain a question: "[T]he nature of man as a combination of mind and body is such that it is bound to mislead him from time to time."

However, if consciousness is viewed from this proposed three-dimensional model, answers to some of these questions are within sight and the gap between the mind and the body may be somewhat reduced.

In the three-dimensional model the *depth* of consciousness is a continuum that begins with basic physical feelings about the human's internal operations (digestion, pain, etc.) and the body's senses (sight, smell,

etc.). Physical feelings are translated into something that can be organized and prioritized in the subconscious. Another level, awareness, is generated by subconscious thoughts and superconscious thoughts. The level of consciousness referred to as the superconsciousness serves the same role for subliminal feelings that the subconscious does for physical feelings – it organizes and prioritizes unthought emotions for expression in the level of awareness. Another level of consciousness, subliminal feelings, is the starting point for this chapter. What is the nature of these subliminal feelings? Where do these feelings come from? How do they enter the physical body and brain?

Examples Of Subliminal Feelings

The three-dimensional model of consciousness sees subliminal feelings as creating unspoken desires for goals, values and visions for a person's life. These feelings are one of the distinguishing characteristics of people – features that separate humans from other animals. There are many aspects of the consciousness that could qualify as such a distinguishing characteristic, but three will be mentioned:

- truth: Humans have a deep need to solve mysteries and discover truth – a feeling that appears to be unique among earth's species. Many mammals benefit from encounters with their environment, however when these animals "learn" from their fellows or their surrounds they are discovering the "when, where and who" of events. Humans are different from other animals in that they also seek to discover the "why" – the reasons, causes and purposes of events. This feeling for a need to answer questions and desire to continually search the unknown puts humans several steps beyond other animals in the evolutionary process. It appears that something has been added to their evolution of consciousness. Elizabeth Johnson (2008 p. 33) paraphrases Karl Rahner when answering the question: where does this desire come from? "It can only be that the human spirit is characterized by an unrestricted drive toward the truth, which is ultimately boundless."

- beauty: Humans have a deep need to create and enjoy beauty. This is different from simply seeking a friendly environment as single cell organisms do. This is different from simply seeking comfort, as some mammals seem to do. Only humans seek beauty in terms of finding unification in contrasts, creating organization in chaos and appreciating harmonious relations and rhythms.

- goodness: Humans have a deep need to strive for good works and actions. While some colonies of insects and some groups of mammals may appear to work for the greater good of their "organization," these actions are different from a general concept of doing good in general. Humans seem to be the only species that works to help unrelated individuals who are not necessary for the survival of their society – they seem to want justice for everybody, and often for other species. This characteristic does not seem to be something that would have naturally arisen in a world of survival of the fittest.

In another view, P V Simonov (1994 p. 237) seems to be describing "the three principal 'languages' of superconsciousness: the sense of beauty, the sense of humor, and the so-called 'voice of conscience'." William Grassie (2010 p. 23) lists the "noble qualities in humanity, including creativity, purpose, perseverance, gratitude, prayer, awe, responsibility, love, honesty, joy, humility, and generosity."

Traditional Sources Of Subliminal Feelings

If human's desires for truth, beauty and goodness do not come from natural evolutionary process, where did they come from? Human's physical feelings have their origin in the body's senses and internal body functions, but what is the source of human's subliminal feelings? For the answer to this question it would be helpful to first review suggestions for the answer to the related question - the mind-body question. The mind-body question is: how can the hidden influence the visible? This question will be reframed into a subliminal feelings question.

Without a comprehensive definition of consciousness people have attempted to solve the mind-body question in several ways – none of them completely satisfactorily. If these same people were to try to solve the question of the source of subliminal feelings they might answer as follows:

- option 1 - unusual evolution: Some might say that subliminal feelings have evolved naturally like all other brain and body functions; we simply have not yet found the mechanism for this stage of evolution. It may be possible that somehow in the random changes in genes over time one change produced a brain that felt the need for truth, beauty and goodness – characteristics that in themselves do not necessarily contribute towards an organism's survival. This evolved type of brain with its subliminal feelings may not have contributed to human evolutionary survival, but the body that contained this brain with these random changes may have had other survival capabilities that enabled the whole body to adapt to its environment and prosper.

  Peter Carruthers (2000) speculates on another evolutionary possibility: "To the extent that a faculty of inner sense exhibits complex internal organization subserving a unitary or systematically organized causal role, to that extent it will be plausible to postulate evolutionary selection." In this view subliminal feelings come naturally from the way our brain and body has evolved.

- option 2 – emergence: Some might say that subliminal feelings have emerged as a new complex functioning of the brain that grew out of simpler the operations of the brain. These new emerged capabilities are compatible with what we know about neuroscience, but operate beyond what can be predicted by only neuroscience. There are two variations of this view.
  option 2a - bottom-up emergence: The determinants of an object's nature depend upon the scale of observation and the object's environment. For example, the small atomic-scale properties of H_2O are useful when talking about water's spectrometric image, but this scale of observation in is not sufficient when describing the large collective-scale properties of water needed to describe H_2O in the form of steam. In other words, we need to look at a different set of characteristics at different levels of explanation. Similarly, in the brain the electrochemical properties of a single neuron are appropriate for one scale of explanation, but its large-scale assemblies or networks best describe the brain's informational processing properties. Based on these scale-based properties it is possible that the emergence of higher-level brain functions is consistent with and exclusively determined by basic lower-level brain processes - it is just that we are unable to explain the brains higher processes with our current knowledge of the basic neural systems. Therefore many of the properties of consciousness only appear to "emerge" from more basic forms of brain functions. In this view the expanded brain functioning is a bottom-up type of emergence that can happen

without any "outside" help. In this view subliminal feelings come from naturally occurring, but advanced brain processes that we will eventually understand.

or

option 2b - top-down emergence: From a top-down emergence perspective new characteristics of a system may be consistent with its component parts, but the individual parts do not fully determine the operations of the whole system. Here the full operation of a system can only be found in an understanding from some higher perspective or environment – often seen as the system's role or function or purpose. From this point of view there appears to be influences from "above" that create a "downward action" so that the higher functions of a system influence the behavior of the system's constituent parts.

For example "The emotion of fear, for example, stimulates the release of adrenaline into the bloodstream, which in turn influences the dynamics of neural behavior: a clear example of the downward action" (Scott 2001 p. 165). In this view of emergence our capacity for subliminal feelings comes from some new capability that has arisen from beyond the lower-level physical properties of the brain and body; some new capacity that has not yet been explained by science.

- option 3 – protopsychism: Some might say that subliminal feelings arise from a combination of some unknown element that physical things possess - we just have not yet found this basic pre-conscious property. Again, there are two possibilities:

  option 3a - universal protopsychism: Some might say that all material things have this proto-conscious element and as the complexity of things increases this property becomes more apparent. Thus while electrons have protopsychism characteristics their actions are too simple to reveal it. However in something as complicated as a human these basic elements of consciousness combine and their impact can se seen. David Chalmers (1996 p. 307) calls this panpsychism and he suggests how these unknown elements combine: "[I]t might be that microphenomenal properties add up to macrophenomenaology in a way that reflects their joint informational structure, rather than their joint spatiotemporal structure." In this view subliminal feelings might come from fragments of consciousness that have been combined into a complex structure in humans.

  or

  option 3b - living protopsychism: Some might say that preconscious properties have only arisen with the evolution of life – inanimate objects do not have them. In this view there is something special that arrives with life – something more than the ability to reproduce and evolve. As life-forms become more advanced these basic proto-conscious elements also advance and combine until with the complexity of humans real consciousness becomes apparent. In this view human's subliminal feelings come from the combining and organizing of the small basic elements of consciousness that all living creatures have. John Eccles (1994 p. 111) calls elementary mental events "psychons" and speculates that they may be organized "forming a psychic entity apart from the brain" – called the mind.

- option 4 – spirits: Some might say that subliminal feelings come from yet-to-be-discovered personalities that are hidden from the visible world but are accessible by humans. These personalities may be some unknown immaterial entity or physical entities that are simply hidden from us in the same way that dark matter cannot be seen. "Scientists are increasingly considering the possibility that dark matter is…a hidden side of the universe with a rich inner life. It may consist of a veritable zoo of

particles interacting through novel forces of nature – an entire universe interwoven silently within our own" (Feng 2010 p. 40). Again there are two possibilities:

option 4a – souls: In this view humans have a hidden force that is the source of their subliminal feelings and this extra something has been "given" to humans by some powerful, but hidden personality.[2] There are differing opinions whether this "gift" comes at a human's conception or at some later point in life. Often this view says that the extra something has a continued existence beyond the life of the human that possesses it – it lives in a hidden world after death. This personal "gift" may be created new for each person, or it may be recycled among people in different ages.[3] In this view subliminal feelings come from something that Michael Scanlon (2008) calls our personal "indwelling spirit."

or

option 4b – heaven: Some might say that there is a whole hidden universe that exists in parallel with the material universe that we know. This universe contains not only the personal forces that are "given" to humans, but also a wide variety of other hidden personalities. Humans (but probably no other species) have the capability to tap into this invisible universe. Colin McGinn (2004 p. 141) speculates that the human brain acts "like a kind of inter-universe radio receiver tuned in to the conscious events and processes already occupying" this universe. Thus in this view human's subliminal feelings come from personalities outside of the visible universe.

Two of these suggestions, unusual evolution (option 1) and bottom-up emergence (option 2a), comply with the strict demands of those materialists who do not see anything other than the physical world. The other views create a need for something else – they go beyond the visible universe we know. Some might criticize the suggestion that there are things that go beyond physical universe because these "extra somethings" are not needed to answer the question of the origin of subliminal feelings.[4] Others would answer these critics by noting that the purely physical options have shortcomings and do not fully explain the source of our subliminal feelings - they might also point out that in the evolution of science we have found that reality is usually more complicated than we originally imagined. A century ago who would have guessed that the simple atom is composed of a whole zoo of subatomic particles? Therefore, this model of consciousness does not limit itself to only the material options.

Another Source Of Subliminal Feelings

Conscious processes are affected by a variety of influences of which we are completely unaware. We only know those few events that break through the subconscious and superconscious into the *depth* of awareness. Most of the functioning of our consciousness is hidden from us. This model of consciousness allows for speculations that might fill in some of these blanks.

- external source of subliminal feelings: In the subliminal feelings level of operation, we have strong feelings for searching for truth, creating beauty and striving for goodness – characteristics that appear to come from beyond the normal capabilities of our body and brain. In processing these feelings the brain is utilizing multiple neural assemblies and networks – its operations involve more than a few

[2] This hidden being might be what many people refer to as God.

[3] This may be what people refer to as Reincarnation.

[4] This criticism is sometimes referred to as Occam's Razor.

million neurons. Here the brain's functions are sensitive to influences that span the entire contents of the brain and body – it no longer relies simply on input from senses and internal organs. It may be possible that the brain is receiving information from beyond the body. According to Alva Noe (2009 p. 49): "the skull is not a magical membrane; why not take seriously the possibility that the causal processes that matter for consciousness are themselves boundary crossing." Subliminal feelings may be exchanging information both internally and externally.

- communicating with the external: You might ask: How do subliminal feelings exchange information with an external source? Can we communicate by means other than our physical senses and internal organs? There are at least two possibilities – one based on physical methods of communication and one based on immaterial communication.

  Physical communication with an external source may be possible with electronic fields. Since 1967 we have known that when assemblies of neurons in the brain work together they can produce very small electrical fields which can be detected at the human scalp using electroencephalography or EEG (D'Zmura 2010 p. 1). Recently we are starting to learn what some of these signals mean. Some researchers are using these weak signals, enhanced by a computer, to allow totally paralyzed people to communicate (Winters, 2003); some researchers are using the emotions captured by EEG (such as excitement, boredom and frustration) to create computer games (Breen 2008); the Army is researching the possibility of using EEG signals so soldiers can use "communication that's silent, secure and free of background noise" (Miles 2008). According to Chris James (2009) "New research from the University of Southampton has demonstrated that it is possible for communication from person to person through the power of thought alone." So subliminal feelings could come from something that produces the right type of electronic field.

  Immaterial communication with an external source might be possible with something called quantum communications. Since the 1930s we have known that information can be exchanged at a distance without any apparent physical connection. For example, two entangled photons that have been spatially separated can somehow learn the state of their partner. This information seems to be communicated between the two photons faster than the speed of light, so the transferring media could not be anything physical. One could describe this process of transmitting information as immaterial. The Stanford Encyclopedia of Philosophy (2006) describes how Alice and Bob each have a photon that is in an entangled state of polarization with each other:

  > What is extraordinary about this phenomenon is that Alice and Bob have managed to use their shared entangled state as a quantum communication channel.

  In earlier experiments the entangled objects exchanging information were at the atomic scale, even though the distances between the objects exceeded the size of the human brain and body. Initially this immaterial communication was thought to be simple - knowledge of polarization, spin, momentum or location - but there is no philosophical reason to exclude more sophisticated information.

  According to our initial theories of quantum entanglement four conditions would need to be met for immaterial communications: 1) the objects must have some kind of relationship before hand, 2) the objects would need to remain isolated from other objects which would break the entanglement, 3) there would have to be additional means of interpreting the results of the communication, and 4) there

would have to be a means of manipulating the object for it send a communication[5]. Originally it seemed impossible to imagine how the human brain could possibly meet these four conditions. However recently Mohan Sarovar (2009 p. 25) found that entanglement plays a role in much larger and warmer systems, such as plant photosynthesis. He concluded:

> This opens the door to the possibility that entanglement could play a role in, or be a resource for, biological systems.

If biological systems can immaterially exchange information, or if something that can create the right type of electronic field near the brain, several questions arise. Might it be possible for the neuronal assemblies in the brain to exchange information using these techniques? Are there limits on the content of this information? What is the nature of the information exchanged? The role of information in the operation of the brain is still a young area of study:

> [W]e do not yet really understand what the notion of information should mean in a biological or psychological context. Moreover, we do not yet fully understand how neurons code information, whatever information is. (Churchland 2002 p. 170)

However, in the three-dimensional model of consciousness it is possible that information is exchanged to help humans create goals, values and visions for their life. This information, in the form of subliminal feelings, may be helping to create hidden desires for truth, beauty and goodness.

- source of information: Regardless of how subliminal feelings arrive, the question becomes: Where is the information coming from? Who are we "talking" to? Here possible answers become more speculative. Could communication take place between material objects, like neuronal networks, or hidden personalities, if there are such things? If any of the hidden options proposed by others (options 3 or 4 above) are true, subliminal feelings could be transmitted from them. Is the conversation with other material objects that possess proto-consciousness (option 3a above), or with living things that have developed complex combinations of proto-conscious (option 3b above)? If the communication is tied to physical objects, are there limits to the distance that such a conversation can carry? If the source of external information is independent of visible things (as in option 4a above), does a person's subliminal feelings communicate with his or her own indwelling spirit? If so, can communication also take place with another persons' indwelling spirit? Are people's indwelling spirits uniquely individual, or are they part of some sort of universal unconscious[6]? If hidden universes exist (as in option 4b above) several questions arise. What kind of invisible things or beings are there? Can a person communicate with all, or only some, of these hidden beings? If they exist, what do they do?[7]

The Mind-Body Question

Rene Descartes' mind-body question can be divided into three components: How could the immaterial communicate with a physical person? How could the hidden or spiritual have an influence upon a person's physical behavior? Are there, in fact, invisible personalities that communicate to us? The three-dimensional model of consciousness provides for an opportunity for answering two of these three questions.

[5] www.hardsf.org/hsftenta.htm

[6] For example C G Jung's "Archetypes and the Collective Unconscious" Princeton University Press 1969

[7] For one possible answer to these questions see *The Urantia Book*, Chicago, 1955.

- immaterial communication: The three-dimensional model allows for subliminal feelings to enter people through either immaterial or material communications - so the immaterial might be able to communicate with humans.

  > [S]o it is logically conceivable that if there be higher spiritual agencies that can directly touch us, the psychological condition of their doing so might be our possession of a subconscious region which alone should yield access to them. The hubbub of the waking life might close a door which in the dreamy subliminal might remain ajar or open (William James 1901 p. 242).

  However it has not yet been demonstrated that large neuronal networks can use immaterial communication, nor how a hidden entity can influence an electronic field.

- immaterial interaction: The three-dimensional model has a place for subliminal feelings, that when filtered through the superconscious, can enter a person's awareness and be used to guide actions and behaviors - so there is room for the immaterial to work with the physical person.

- immaterial influences: The model of consciousness does not predict anything about the existence of hidden influences – whether they are some new top-down emergence system, an entity that emerges from universal or living protopsychism, a personalized indwelling spirit, or a parallel multi-personality universe. If there are no hidden beings, then the model allows for subliminal feeling to come from within a person – either because humans have had an unusual evolutionary path, or by a bottom-up emergence of capabilities which generate unspoken desires for such things as truth, beauty and goodness.

So whatever the answer to the mind-body question, the proposed model allows the answer to be incorporated into the enlarged concept of consciousness.

3. Other Consciousness Questions In The Model

The question of how the hidden might "talk" to the visible is but one of several questions raised by the concept of consciousness. Many have questioned how our material body can produce ineffable subjective experiences, or "qualia." If we live in a physical materialist world, can consciousness explain free will? What role does language play in developing consciousness? This model of consciousness appears to be appropriate for humans, but can it also be applied to animals like dogs that seem to react their owner's physical feelings, or to elephants that seem to recognize themselves in a mirror? If "higher animals" have consciousness, why not "lower animals," or all living things? Can we use this model of consciousness for machines or robots?

- qualia and the hard question: Some question how a material brain can produce ineffable subjective feelings like the "experience" of the color red - as opposed to seeing, processing and analyzing the red light. Others suggest that subjective feelings, or qualia, do not exist at all, or as Daniel Dennett (2006, p. 86) puts it: "[P]hilosophers actually don't know what they are talking about when they talk about their qualia."

Some people, like David Chalmers (2000 p. 11) find it difficult to explain how we can create subjective emotions or feelings to our experiences; he calls this the "hard problem." He asks: "Why should physical processing give rise to a rich inner life at all?" Others like Philip Clayton (2004 p. 121-122), say that subjective experiences can be explained through emerging features of the brain as it processes increasingly more complex information.

This proposed model relies heavily on ineffable subjective feelings – they lie at both ends of the *depth* dimension in our physical feelings and our subliminal feelings. Occasionally they come to our level of awareness. But how can either the physical or the subliminal create such qualitative states?

The proposed model projects subjective feelings as being real things; not some new type of substance; not <u>just</u> a useful concept. They are part of the normal processing of the body and brain; they are patterns of electrical/chemical processes in our neurons. Patterns can be real things (Dennett 2008 p. 189-205). We may eventually, with more advanced technologies, be able to distinguish those patterns called feelings from the other regulatory and maintenance neuronal patterns. This model sees subjective feelings as the entry point to the *depth* spectrum of consciousness – the beginning of a process that may, or may not, lead to awareness. Those ineffable subjective feelings that do reach the level of awareness can be called qualia.

The emotions that the model calls physical feelings arise from the body's senses or the monitoring the body's functions. The origin of the emotions that the model calls subliminal feelings is less clear. As outlined in the discussion of the mind-body question above, subliminal feelings may also arise from physical origins because of human's unusual evolution or because of a bottom-up type of emerging capability. On the other hand subliminal feelings may have their origin in nonphysical causes such as top-down emergence, protopsychism or spirits.

- <u>free will:</u> In this model free will is not a physical thing; it is a useful concept that helps explain some of the functioning of our body and brain. Free will is one of many ways to describe the interplay of activities occurring in the *breadth* of consciousness called awareness. If the thoughts that enter our awareness come from the subconscious and superconscious, what role is there for the process called awareness? Can awareness change any of the activities or behavior patterns that are fed to it? If it can, how does it do it, and when does it do this? If awareness does not change any of our activities or behavior, why does it appear that it can?

  At one extreme of this discussion, it should be noted that awareness does not "control" some things even if they are in our most focused attention.

  > "[C]onsider a baseball player 'deciding' to tip his bat just up or just down as the pitch crossed the plate, which cannot possibly (because of processing speed considerations) be a personal decision in the sense of involving his deliberative consciousness" (Ross 2007 p. 4).

  At another extreme of this discussion, it should be noted that most human actions and behavior seem to be "controlled" by the subconscious and superconscious. Thankfully very few decisions reach the *breadth* of consciousness called awareness; otherwise we would be too preoccupied with routine decisions to accomplish anything. For example, as Wayne Christensen (2007 p. 273) notes: "upon hearing a sudden loud noise behind us in a dark alley" we automatically adjust our "fight or flee" muscles, increase our heart rate, raise our blood pressure, sweat and dilate our pupils in a coordinated

fashion. We make all of these decisions without any of them reaching our level of awareness – even though we are keenly aware of hearing the sudden loud noise. In both of these examples there does not appear to be any free will.

So can awareness control any of our activities or behavior? In the proposed model the short answer is yes - sort of. The processes that occur in our level of awareness place different values on input from various sources at different times. Sometimes the controlling influence might be our plans and goals; at other times the most important aspect of our awareness will focus on social pressures or psychological needs; our body's physical limitations and the desire to avoid pain may be the dominate factor in controlling some actions; feelings for creating beauty or doing good works will occasionally control our behavior; in some situations the dominate input can come from either from our subconscious and superconscious. The fact that controlling factors change gives us our feeling of free will. Or as Wayne Christensen (2007 p. 282) says: "Thus action performed 'at will' is determined episodically in relation to a constellation of factors, and so can exhibit high levels of spontaneity and variability."

When do these spontaneous and variable factors kick-in and when do our "normal" processes apply? The proposed model offers no short answer. Anthony Freeman (2003 p. 56) says: "[A]ttention holds the key to which cognitive brain processes become conscious and which remain 'in the dark.'" The subconscious and superconscious process subjective feelings and feed them to awareness as thoughts – often sort of "speaking to ourselves." With each of these thoughts comes its underlying subjective feeling. The attached feelings may be consciously ignored so we can focus on the thought itself, however these attached feelings play an important role in determining how the thoughts are processed. Some of the feelings associated with our thoughts provoke little response and demand no action. If desired we can usually call up the underlying feeling – as when someone asks you how you feel about a situation to which you have given little thought. Some of the thoughts that enter our awareness come with strong feelings, or occasionally the thoughts themselves generate a strong feeling. In some cases the feeling is an uncomfortable one or one that suggests a decision is needed or action should be taken. When the strength of these attached motivating feelings is powerful enough, the level of awareness recognizes this as a new thought and thus we become aware that something other than our "normal" processing has kicked-in. Sim Liddon (1989 p. 84) also says it is the strength of the feeling: "Gestalt images symbolize feelings, but, at the same time, when a feeling is intense enough it brings the symbol to conscious awareness." This contributes to our belief that we have free will.

But, again, when does this form of free will happen? The answer may depend upon how far back in the chain of events we can trace the factors leading up to the "decision" and also depend upon the significance of the decision. We are all familiar with the student who claims that no amount of studying her history, her feelings or her predispositions can predict whether she will raise her left hand or her right hand - so this sort of empty decision-making probably is probably completely "free." The student's larger and more important decisions – what to do upon graduation, where to live, etc. - are probably greatly influenced by her subconscious and superconscious.

Our belief that we have a free will is very strong. We do not have sensory neurons in our brains that can tell us what is going on, so we are somewhat at a loss to explain our thought processes. At the same time we have a strong desire to discover truth, to explain the world, to understand our actions

and behaviors. This strong desire to understand ourselves may have lead to the creation of stories that describe our thought processes and make us feel comfortable in our world – thus the development of our feeling that free will controls our actions and behaviors. Frances Crick (1994 p. 265-268) says that people imagine that something called a "self" makes free will decisions, because they are not aware of the workings of those portions of the brain that plan their actions. The proposed model does not include a separate thing called a "self;" nor does it includes an "I" that makes our decisions; nor does it count upon a special thing called the "mind" which helps us "make up our mind."

Some would argue that society's need to assign responsibility for personal actions, and thus creating an argument for laws and punishments, contributes to the need for a concept of free will. This has been expressed as: "the belief in robust moral responsibility leads to the belief in free will" (Sommers 2007 p. 64). How critical is the answer to the question if we have free will or not? As long as humans feel that they have free will, they should continue to act as if they have free will and should continue to take responsibility for their actions.

- role of language: Some have speculated that without language human consciousness would not have arisen, or at least, as Paul M Livingston (2004 p. 234) says: our insights "reveal the understanding of consciousness and the understanding of language as fatefully linked." On the other hand Paul M Churchland (1996 p. 269) says: "The social institution of language has nothing to do with the genesis of consciousness."

  This proposed model of consciousness does not dictate any particular method for explaining how humans developed consciousness. However it appears that once consciousness appeared, human language played a significant role in shaping our *depth* of consciousness. Here language helps us create symbols for objects and our feelings; it helps create structure and rules for manipulating these symbols; it helps create our world-view; and all of this sets a tone for determining which of our feelings enter into awareness. The advantages of language in expanding our awareness is also responsible for limiting our use of awareness: "It seems legitimate to say that when language reduces something to logical and rational concepts, it reduces or deemphasizes the 'feeling' of the experience" (Liddon 1989 p. 71).

- animal consciousness: The three-dimensional model helps explain human consciousness, but can it be applied to other things – living or not? Only partially. The type of consciousness that many of the "higher" mammals have seems to change over the course of day and night so they have some variations in their dimension of *time.* However most of these animals do not have the large changes in consciousness from childhood to death that characterize humans – they appear to have a condensed version of the human dimension of *time*. The same may be true of the consciousness dimension of *breadth*. Some mammal, like dogs, appear to experience both deep sleep and dreams; their activities are sometimes focused and sometimes they seem to be day dreaming. The largest difference between animals and humans is in the dimension of *depth.* All mammals have physical feelings from internal and external sources; some appear to attach basic emotions to some of these feelings – fear, excitement and even playfulness. However none of them seem to have a *depth* of consciousness that is similar to human's awareness. Their lack of language makes any awareness considerably different from human awareness, or as Sim C Liddon (1989 p. 217) says unsymbolized awareness "being essentially nonsymbolic, is presumably shared by our animal cousins, while the latter [natural

language systems] is symbolic awareness that is unique to humans." It seems unlikely that any mammal has superconsciousness or subliminal feelings - none seem to have deep strivings for such things as truth, beauty and goodness.

What about the "lower" animals? Bacterium respond to their environment, but is it proper to call this physical feelings? At what point on the evolutionary scale can we say that emotions or feelings are attached to physical impulses? Alva Noe (2009 p. 39-41) would argue that bacterium have a relationship with their surrounds even if they live in a simpler environment, so: "the problem of consciousness, then, is none other than the problem of life." Others might disagree.

This model of consciousness probably does not apply to nonliving things – things that do not respond to their environment.

- computer consciousness: Computers can change their dimension called *breadth* by "going to sleep" or putting themselves in a "safe mode." We can say that at some times computers are focused, but do they have a state that we can properly call day dreaming? Would we want a computer that is actively processing without a purpose? Consequently current computers seem to have a more condensed *breadth* dimension than most mammals.

  Computers will eventually become sophisticated enough so that they can change their responses over the dimension of *time*. They will probably respond to their environment in nonprogrammed ways so they will "learn" over the course of their life. Currently their variability over the dimension of *time* is constricted, but this can change with improved technologies.

  Computers ability to develop a real *depth* of consciousness is more speculative. Currently computers appear to operate only in the *depth* of awareness – they "know" what they are doing. Would we want to develop a computer with subconscious and superconscious operations? Computers can currently monitor their states and performance, but this appears to be a direct, rather than subconscious, process. Computers can set priorities for selecting functions and operations, but this appears to be somewhat different than attaching emotions to functions and processes. Computers might someday simulate human feelings or mental states "but the simulation of mental states is no more a mental state than the simulation of an explosion is itself an explosion" (John Searle 1992 p. 18). Computers can currently receive information from nearby people utilizing EEG technologies and might someday be able to receive information from organic systems utilizing quantum communications. Could this information include subliminal feelings? Can we develop a computer sensitive enough to receive EEG or quantum communications of subliminal feelings from spiritual beings – if there are such things? Such a technology would certainly expand the computer's *depth* of consciousness.

4. About The Model

Underlying Assumptions Of The Model

As Diego Fernandez-Duque (1999 p. 111) notes: "We need to know what our deepest assumptions are, how they affect what we can think and know, and whether they need to be revised in various ways. Otherwise,

we are blind to the implications of our models, including both what they highlight and what they hide from us." The major assumptions in this three-dimensional model are:

- reality: This paper assumes there are real things in the universe - things do exist outside of the "idealists" mind. Real things have varying degrees of physicality. Some real things have basic physical properties like mass, spin and charge – even if we can never "see" these properties, but only their effects. Some real things are not physical at all - things such as numbers and concepts. Physical and non-physical realities can interact with each other. Daniel Dennett (2008) provides a strong argument that strong and widespread concepts, his term is "memes," can create changes in the physical world as people act on their concepts. Some concepts have no basis in the physical universe - unicorns may be a real concept to a third grade girl, but this does not mean that the unicorns have a physical existence. Some people divide real concepts into three realms – material, psychological and social (Poli 2009 p. 5).

- truth: According to the old classical tradition, science discovers truths by developing an idea, devising experiments to test the proposal, and if the experiments don't invalidate the hypothesis it gradually becomes accepted theory - until something better comes along. Or as William James (1901 p. 495) put it: "Truth was what had not yet been contradicted." However some philosophers have taken these scientific theories as statements of truth - some have even suggested that only scientific truths are true, all else is an illusion. This paper prefers Bernard d'Espagnat's (2009) suggestion that according to the new quantum tradition, scientific truths should only be interpreted as prediction of things that we might observe; they should not pretend to be descriptions of reality. "It might be better to ask which is the more useful way of viewing the matter, rather than which is the true one" (Freeman 2003 p. 96).

- knowledge: This model assumes that people discover insights and obtain knowledge by means other than science, in fact, very few people use the traditional scientific method to obtain knowledge. Most of us are able to build on oral and written knowledge obtained from others – testing statements and evaluating which seem appropriate for our time and place. Some of our knowledge is obtained from our own personal experience; some of these nonscientific insights and understandings are true.

- determinism: This model assumes that the universe is not deterministic; both random and purposeful events happen. People seem to control some purposeful events – see "free will" see above.

- consciousness: This model assumes that human consciousness is not a physical thing, but a concept - a useful concept. "Inner sensations cannot prove that consciousness has independent existence" (Walsh 2010). Our concept of consciousness can be considered to be true if it allows us to predict things that we can observe; it is not true just because it sounds right. Consciousness might be somewhat like the number five. People cannot see, touch or smell five, but people use five every day and they believe that five is real. Consciousness is a concept that can change at least one physical thing – our actions. This paper assumes that most humans develop a sense of consciousness that is not unlike that of other humans – there is little reason to question consciousness in other people, as Descartes (1641) did. Humans seem to develop similar concepts of consciousness by a combination of their brain and body acting in their environment. As Alva Noe (2009 p. xii) put it: "Consciousness isn't something that happens inside us. It is something that we do or make." There have been several attempts to describe how the mechanics of this process works, but there is not yet a consensus on the subject.

Limitations And Uses Of The Model

Any model of consciousness will have some limitations and shortcomings, but it should provide a framework into which other concepts of consciousness can fit. This model does not try to address all issues related to consciousness: it does not discuss the roles of thinking and cognition in consciousness; it does not differentiate between knowledge and information; it does not address "mental states" and their relationship to consciousness; it does not attempt to identify the "mechanics" of consciousness; it does not locate the source or cause of consciousness. Some of these issues are addressed in Rudolfo Llinas' (2002) *I of the Vortex* and Paul Livingston's (2004) in *Philosophical History and the Problem of Consciousness*.

There are several aspects of consciousness that might prove to be useful areas for future study using this model:

- content of awareness: This proposed model focuses on the processes of consciousness, not the content of conscious thought. Such subject-matter subdivisions, as described by Alain Morin (2004), can be further refinements of this basic proposition. For example, the model does not differentiate between consciousness that focuses on a person's external environment and consciousness that focuses on a person's internal awareness. However some feel this may not be a useful tract - following the lead of David Armstrong (1981 p. 63): "introspective consciousness *seems to have*, but does not necessarily *actually* have, a quite special status in the world."

- memory: This model does not address how people remember (or misremember) their conscious experiences over time; a separate model for memory is needed. Memory appears to be a critical part of all three-dimensions of consciousness. Most of the processing of memory seems automatic, but bringing a feeling or event to the *depth* of awareness provides a greater likelihood that the event will be remembered over time. Daniel Dennett (2005 p. 167-172) refers to this as amplification and repetition or reflective power or echo power. What is the precise relationship between consciousness and memory?

- the binding question: How we can pull together the inputs of all of our various senses and all of our subconscious and superconscious feelings to create the appearance of a consistent whole? This model does not address the question, but Ray Tallis (2010) provides a perspective to possible answers:

  > Researchers have attempted to explain this unity, invoking quantum coherence (the cytoskeletal micro-tubules of Stuart Hameroff at the University of Arizona, and Roger Penrose at the University of Oxford), electromagnetic fields (Johnjoe McFadden, University of Surrey), or rhythmic discharges in the brain (the late Francis Crick).

  Most of these theories are really looking at only the *depth* of consciousness called awareness that comes and goes over the source of a day. If we see consciousness as three continuums that are continually operating, the question does not seem so difficult – the consistent whole may be always there running in the background.

- mind: The concept of mind often refers to something separate from our brain, our body, and our consciousness. However as Nancey Murphy (2006) notes: "[W]e are our bodies – there is no additional metaphysical element such as a mind or soul or spirit." As with consciousness, the concept of a mind probably should not be treated as a thing, but as a useful concept to explain the human condition. With

this expanded model of consciousness there appears to be little need to use a concept such as the mind – whatever the mind was supposed to explain now seems to be covered by this model of consciousness. In fact this model of consciousness could have been called a model of the mind instead.

- self: Our current fragmented view of consciousness may be similar to the current fragmented view of self that is clearly described by Raymond Martin (2006 p. 302). For the concept of self he notes: "[I]f there is unity is sight, it is the unity of the organism, not of the self or of theories about the self." Similarly, it may well take such a concept as a "unitary person" to accurately describe consciousness. On the other hand consciousness may be far more complex than we are imagining and the only way to answer our questions is to break consciousness into its component parts. "[W]e may be using the words consciousness and unconscious for too many somewhat distinct activities" (Crick 1994 p. 248).

Implications Of The Model

Evaluating this model of consciousness should not be unlike assessing other models. According to Eugen Zelenak (2007, p. 5) there are five criteria for judging models:

> In these tests we may either consider (i) whether they are internally consistent, (ii) whether they are coherent with some other assumptions we want to make, (iii) whether they match with what modern science tells us...(iv) with respect to their simplicity, and (v) with respect to the amount of counterexamples they have to face.

Hopefully the readers of the model will make these assessments.

If the model is successful there should be two primary benefits. With a more comprehensive definition of consciousness it may be possible that fewer researchers will "talk past each other" because they were discussing a different dimension of consciousness. With a better perspective of consciousness researchers can more clearly see how its various "parts fit together" and more easily visualize the whole.

This three-dimensional model could lead to a variety of additional experiments that will help flesh out the details. Though many of these questions have been asked in the past, with this model the questions can be asked in a new light:

- It is not clear that all physical feelings go through the subconscious to get to awareness, nor that all subliminal feelings go through superconsciousness to get to awareness – in emergency situations there may be a direct route to awareness. When awareness receives contradictory information from the subconscious and superconscious how are issues resolved? Is it only awareness that combines these two flows of information? Can feelings be combined, interpreted, evaluated and resolved at some other point before awareness?

- How many modes of consciousness do we utilize at a single point in time? How quickly can we change back and forth between modes?

- Questions can be asked about the interactions between different points in a single dimension. For example in the *breadth* dimension, what role does day dreaming play in our attentive state? In the *depth* dimension how do subconsciousness and superconsciousness interact?

- What are the relationships between the different dimensions of consciousness? For example, how do dreams (in the *breadth* dimension) affect states in the *depth* dimension of subconsciousness? And visa versa? What information flows between different dimensions? Does the information flow in both directions? Do these interactions change with various changes in the *time* dimension?

When the details of this model have been fleshed out, it may be possible to complete a unifying theory of consciousness, rather than dozens of concepts that we currently hold that describe only a portion of the phenomenon. "But how are we supposed to get on with the research? A promising line of attack is to approach consciousness by way of the unconscious" (John Searle 1997 p. 199).

References

Armstrong, David M (1981) *What Is Consciousness?* in "The Nature Of Mind And Other Essays." Ithaca: Cornell University Press

Breen, Randy (2008) *Lecture By Randy Breen Of Emotiv Inc For The Stanford University Computer Systems Colloquium*, www.sciencestage.com/v/19497/demonstration-of-brain-computer-interface-using-the-emotiv-epoc.html

Brothers, Leslie (2008) *Is Consciousness Definable?* in "Closer To Truth" edited by Robert Lawrence Kuhn. www.closertotruth.com/

Carruthers, Peter (2000) *The Evolution Of Consciousness* in "Evolution And The Human Mind." University of Delaware, www.philosophy.umd.edu/Faculty/pcarruthers/Evolution-of-consciousness.htm

Carey, Benedict (2010) *The Riddle Of Consciousness*. New York Times, February 5, 2010

Casert, Raf (2009) *Mother: Son Was Aware, Not In Coma*. Philadelphia Inquirer, November 24, 2009

Chalmers, David J (1996) *Conscious Mind: In Search Of A Fundamental Theory.* Oxford: Oxford University Press

Chalmers, David J (2000) *Facing Up To The Problem Of Consciousness* in Jonathan Shear's "Explaining Consciousness: The Hard Problem." Cambridge: MIT Press

Christianson, Wayne (2007) *The Evolutionary Origins Of Volition* in "Distributed Cognition And The Will" edited by Don Ross, David Spurrett, Harold Kincaid and G Lynn Stephens. Cambridge: Bradford Book

Churchland, Patricia Smith (2002) *Brain-Wise: Studies In Neurophilosophy*. Cambridge: Branford Press

Churchland, Paul M (1996) *The Engine Of Reason, The Seat Of The Soul: A Philosophical Journey Into The Brain*. Cambridge: MIT Press

Clayton, Philip (2004) *Mind & Emergence*. Oxford: Oxford Press

Crick, Francis (1994) *The Astonishing Hypothesis: The Scientific Search For The Soul*. New York: Touchstone Books

D'Espagnat, Bernard (2009) *Statement At The Templeton Prize New Conference*, March 16, 2009. www.templetonprize.org

Dennett, Daniel C (1991) *Consciousness Explained*. New York: Little Brown

Dennett, Daniel C (2005) *Sweet Dreams: Philosophical Obstacles To A Science Of Consciousness*. Cambridge: MIT Press

Dennett, Daniel C (2008) *Real Patterns* in "Emergence: Contemporary Readings In Philosophy And Science" edited by Mark A Bedau and Paul Humphreys. Cambridge: MIT Press

Dennett, Daniel C (2008) *Memes* lecture April 16, 2008 at University of Pennsylvania

Descartes, Rene (1641) *Meditations On First Philosophy, Sixth Mediation: The Existence Of Material Things, And The Real Distinction Between Mind And Body* as quoted in "Philosophy of Mind: Classical and Contemporary Readings" edited by David J Chalmers. New York: Oxford University Press, 2002

Dretske, Fred (2002) *Conscious Experience* in "Philosophy of Mind: Classical and Contemporary Readings" edited by David J Chalmers. New York: Oxford University Press

D'Zmura, Mike (2010) *MURI: Synthetic Telepathy*. University Of California Irvine, www.cbskab.ss.uci.edu/muri/research.html

Eccle, John C (1994) *How the Self Controls Its Brain*. New York: Springer-Verlag

Feng, Jonathan and Mark Trodden (2010) *Dark Worlds*. Scientific American, November 2010

Fernandez-Duque, Diego (1999) *Attention Metaphors: How Metaphors Guide The Cognitive Psychology Of Attention*. Cognitive Science, Vol. 23

Fernandez-Duque, Diego (2009) *Cognitive Psychology*. Villanova University course, Spring 2009

Freeman, Anthony (2001) *Emergence Of Consciousness.* Charlottesville: Imprint Academic

Freeman, Anthony (2003) *Consciousness: A Guide To The Debates*. Denver: ABC Clio Press

Gao, Helena H and John H Holland (2008) *Agent-Based Models Of Levels Of Consciousness*. www.santafe.edu/research/publications/workingpapers

Grassie, William (2010) *Advanced Methodologies In The Scientific Study Of Religion And Spirituality*. Philadelphia: Metanexus

Grosso, Michael (2010) *Consciousness and Parapsychology: A Thought Experiment*. Ions, Institute of Noetic Sciences, July 2010

Greenfield, Susan and Toby F T Collins (2005) *A Neuroscientific Approach To Consciousness* in "The Boundaries of Consciousness: Neurobiology and Neuropathology" Progress in Brain Research, Volume 150. www.science-direct.com

Harmon, Katherine (2009) *Conditional Consciousness*. Scientific American, December 2009

Hobson, J Allen and Edward F Pace-Schott (2002) *The Cognitive Neuroscience Of Sleep: Neuronal Systems, Consciousness And Learning*. Nature Review, September 2002

James, Chris (2009) *Communicating Person To Person Through The Power Of Thought Alone*. University of Southampton, www.soton.ac.uk/mediacentre/news/2009/oct/09_135.shtml

James, William (1901) *Varieties Of Religious Experience*. Minneola, NY: Dover Publications

Johnson, Elizabeth A (2008) *Quest For The Living God*. New York: Continuum Press

Kettell, Robert H (2009) *Can A Person's Consciousness Best Be Visualized By A Three-Dimensional Model?* unpublished paper, Villanova University

Lewicki, Pawel, Thomas Hill and Maria Czyzewska (1995) *Nonconscious Acquisition Of Information.* www.cogprints.org/722/0/lewicki

Liddon, Sim C (1989) *Dual Brain, Religion, And The Unconscious*. Buffalo: Prometheus Books

Livingston, Paul M (2004) *Philosophical History And The Problem Of Consciousness*. Cambridge: Cambridge Press

Llinas, Rudolfo (2002) *I Of The Vortex: From Neurons To Self*. Cambridge: MIT Press

Lloyd, Dan (2007) *Civic Schizophrenia* in "Distributed Cognition And The Will" edited by Don Ross, David Spurrett, Harold Kincaid and G Lynn Stephens. Cambridge: Bradford Book

Martin, Raymond & John Barresi (2006) *The Rise And Fall Of Soul And Self*. New York: Columbia Press

McGinn, Colin (2004) *Consciousness And Its Objects.* Oxford: Clarendon Press

Mele, Alfred R (2009) *Effective Intentions: The Power Of Conscious Will* as quoted in a book review by Manuel Vargas. www.ndpr.nd.edu/review.cfm?id=17385

Miles, Donna (2008) *Army Research Grant To Explore Communications Through Brain Waves*. American Forces Press Service, www.defense.gov/News/newsarticle.aspx?id=51091

Morin, Alain (2004) *Levels Of Consciousness And Self Awareness*. www.cogprint.org/3808/1/levels.pdf

Murphy, Nancey (2006) *Bodies and Souls, or 'Spirited Bodies?* Cambridge: Cambridge University Press

Newberg, Andrew & Eugene D'Aquili (2001) *Why God Won't Go Away*. New York: Ballentine Press

Noe, Alva (2009) *Out of Our Heads: Why You Are Not Your Brain, And Other Lessons From The Biology Of Consciousness*. New York: Hill and Wang

Phaf, Hans and Gezinus Wolters (1997) *A Constructivist And Connectionist View On Conscious And Nonconscious Processes*. Philosophical Psychology, Vol. 10, No. 3

Pinkel, Benjamin (1992) *Consciousness, Mater And Energy: The Emergence Of Mind In Nature*. Santa Monica: Turnover Press

Poli, Roberto (2009) *Analysis – Synthesis*. www.metanexus.net

Reisberg, Daniel (2006) *Cognition: Exploring The Science Of The Mind*. New York: W W Norton

Rosenthal, D (1990) *A Theory Of Consciousness*. ZIF Report No 40, 1990, in "Consciousness Explained" by Daniel Dennett (1991). New York: Little Brown

Rosenthal, David M (2002) *Explaining Consciousness* in "Philosophy of Mind: Classical and Contemporary Readings" edited by David J Chalmers. New York: Oxford University Press

Ross, Don (2007) *Distributed Cognition And The Will*. Cambridge: Bradford Book

Sarovar, Mohan (2009) as quoted in "Easy Go, Easy Come: What Spoils Quantum Entanglement Can Also Restore It" by George Musser. Scientific American, November 2009

Scanlon, Fr. Michael J (2008) *Presence And Absence Of God* a Villanova University course, fall 2008

Scott, Alwyn (2001) *We Could Be Siblings Yet: Reflections On Houston Smith's 'Why Religion Matters'* in "The Emergence of Consciousness" edited by Anthony Freeman. Charlottesville: Imprint Academic

Searle, John R (1992) *The Rediscovery Of The Mind*. Cambridge: MIT Press

Searle, John R (1997) *The Mystery Of Consciousness*. New York: New York Review Of Books

Sheldrake, Rupert (2008) *Mysteries Of Consciousness* in "Matter and Beyond" edited by Mary Lynn Schiavi. www.ebru.tv/en/p.fullepisode.html?prg=Matter%20And%20Beyond

Simonov, P V (1994) *Consciousness And The Brain* in "Neuroscience and Behavioral Physiology," Vol. 24, No. 3

Sommers, Tamler (2007) *The Illusion Of Freedom Evolves* in "Distributed Cognition And The Will" edited by Don Ross, David Spurrett, Harold Kincaid and G Lynn Stephens. Cambridge: Bradford Book

Stanford Encyclopedia Of Philosophy (2006) *Quantum Entanglement And Information.* www.plato.stanford.edu/entries

Strickgold, Robert and Jeffery M Ellenbogen (2008) *Sleep On It: How Snoozing Makes You Smarter*. Scientific American, www.sciam.com

Tallis, Ray (2010) *You Won't Find Consciousness In The Brain*. New Scientist, January 7, 2010

Walsh, Roger (2010) *Why Is Consciousness So Baffling?* in Robert Lawrence Kuhn's "Closer To Truth" www.closertotruth.com/participatn/Alva-no/73

Winters, Leslie (2003) *Communicating By Brain Waves*. Psychology Today, www.psychologytoday.com/articles/200307/communicating-brain-waves

Zelenak, Eugen (2007) *A Problem For The Kantian-Style Critique Of The Traditional Metaphysics*. www.metanexus.net