

Searching for the Origin through Central Nervous System: A Review and Thought which Related to Microgravity, Evolution, Big Bang Theory and Universes, Soul and Brainwaves, Greater Limbic System and Seat of the Soul

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Abstract

Cerebrospinal fluid (CSF) serves buoyancy. The buoyancy thought to play crucial role in many aspects of the central nervous system (CNS). Weightlessness is produced mainly by the CSF. This manuscript is purposely made to discuss its significance which thought contributing towards an ideal environment for the CNS to develop and function normally. The idea of microgravity environment for the CNS is supported not only by the weightlessness concept of the brain, but also the noted anatomical position of the CNS. The CNS is positioned in bowing position (at main cephalic flexure) which is nearly similar to an astronaut in a microgravity chamber, fetus in the amniotic fluid at early gestation, and animals and plants in the ocean or on the land. Therefore, this microgravity position can bring us closer to the concept of origin. The hypothesis on 'the origin' based on the microgravity were explored and their similarities were identified including the brainwaves and soul. Subsequently a review on soul was made. Interestingly, an idea from Leonardo da Vinci seems in agreement with the notion of seat of the soul at the greater limbic system which has a distinctive feature of "from God back to God".

Keywords: microgravity, limbic system, soul, brainwaves, evolution

Introduction

Weightlessness of the brain is produced by the cerebrospinal fluid (CSF), and anchoring effects of the nerve roots, denticulate ligaments, and filum (1,2). Immersion of the central nervous system (CNS) in the CSF is analogous to the animals live in the ocean (water). The microgravity environment produced by the ocean and CSF is crucial for both animals and CNS, and interestingly it seems to cause microgravity (bowing/flexure/"T"/horizontal/prostration or sujood) position for them. Such position is also manifested by the developing embryo at early gestation during the CNS development. The striking phenomenon of microgravity inside the CNS, ocean, uterus in pregnancy, interstellar and interplanetary spaces tells more "about our origin" on this third planet. We present here a review including an author's thought on many aspects regarding the origin of living being in

this planet. In the current review we will discuss "about our origin" in connection to microgravity environment, CNS closed relationship with the heart, connections between the brainwaves, oscillations (waves) and our soul (our origin) and the possible site for the seat of our soul inside the brain - the greater limbic system. This review is an attempt to discuss some salient points related to our origin, which have not been scientifically highlighted or emphasised before. However, further work is needed in this connection to prove or disapprove scientifically those many aspects discussed in this rather short review.

Living Creatures, their Origin and Central Nervous System

Microgravity and the central nervous system

CNS is regarded by many as the most important system or organ in our body. It is an organ enclosed by the dura, arachnoid, and pia

matter. The subarachnoid spaces are filled with CSF. CSF creates buoyancy or floating effect on the CNS. The weight of the brain varies when the cranium is filled with CSF (50g) or without (1400 g) (1,2). This microgravity or weightlessness of the brain inside CSF is maintained by the CSF pulsations created by the *Windkessel effect* (macro-circulatory pulsations) (3,4). Hence, it seems that the brain has a closer relationship with the heart which not only guarantees enough blood flow to the brain, but also ensures maintaining the microgravity environment of the brain. Unlike the microgravity environment in the ocean or river, provided by a very large amount of fluid, the amount of fluid inside the CNS is miniscule, yet adequate for weightlessness environment. This is possible because of the anchoring effects of the nerve roots, dentate ligament and filum terminale for the spinal cord; and cranial nerves for the brain. Archimedes' principle of buoyancy discovered in 212 BC is useful in understanding the CNS. Archimedes' principle states that an object immersed in a fluid is buoyed up by a force which is equal to the weight of the liquid displaced by the object. The object therefore becomes weightless in the new environment (Figure 1).

Other human organ with microgravity environment: uterus in pregnancy

Besides CNS, another human organ that may show microgravity or weightlessness phenomenon is the uterus in pregnancy. During pregnancy, the amniotic fluid inside uterus makes the fetal weight lowered. The microgravity environment inside uterus gradually diminishes once the fetus completes developing the bones and muscles, and starts kicking movements felt by the mother. The uterus is thus seen as a microgravity environment at early half of the gestational age and it creates the actual gravity environment (same weight inside and outside of the amniotic fluid) at later stages of pregnancy when bones and muscles are well developed. To ensure survival in the subsequent gravity environment (earth or the *third* planet), the development of bones and muscles is important for the fetus. Therefore, this concept highlights the fact that the normal development of the CNS probably requires a 'microgravity environment' (5).

Microgravity in the ocean and in the sky

With the concept of microgravity environment inside human CNS and uterus during pregnancy (CNS during its development) described above, it is now probably easy to understand the evolution of living creatures. Prior

to further discussion on evolution, it is important to discuss briefly the position of the CNS and the fetus at early gestation. The fetus shows a 'curving' position at early gestation similar to human CNS; the main cephalic flexure makes the position of human CNS in 'flexure or curving position'. A position similar to an astronaut who is in the microgravity chamber or whenever floats inside the microgravity space. This curving or flexure position is known as 'microgravity' or 'sujood' position which is different from 'gravity' or vertical position. The microgravity position is commonly labelled as "T" while the gravity position as "I". The human CNS is always in "T" (microgravity) position from the beginning (early fetal gestation) to the end (adulthood) (Figure 2). On the contrary, the human body shifts from microgravity (T) position (fetus) to gravity (I) position (late gestation till adult) and at the end, back to the antigravity position (elderly: curving/bowing – ready to go back to the origin). These features may suggest that human is originally

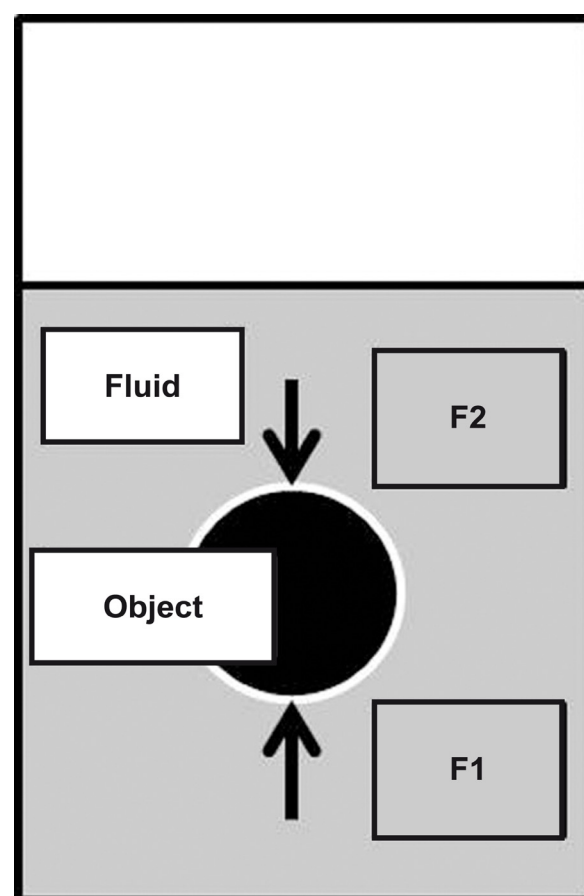


Figure 1. The Archimedes principle. The sunked object will not move if the F1 force equals the F2 force.

coming from a microgravity environment (residual microgravity environment inside our body, i.e the CNS - initial microgravity environment for the human fetus and bowing position for the elderly).

Regarding animals (invertebrates and vertebrates), their origin is also likely from a microgravity space (6). The ocean (and river) provides enough fluid for buoyancy to exist in the ocean (and the river). In reality, planet earth is two-third covered by water (majority from ocean), hence, the microgravity environment exists in ocean is the largest microgravity space on earth. The animals (invertebrates/vertebrates) inside ocean (microgravity environment) manifest a microgravity position (T position or horizontal position). In contrast, land is under gravity environment (no weightlessness, instead pulling force by the earth gravity), therefore, the animals should be in the "I" position or gravity position similar to human, but interestingly it does not appear to be so. The microgravity "T" position or horizontal position is still maintained by animals. This residual microgravity effect showed by the animals on land suggests that they might have evolved from one single parent or origin deep in ocean.

To summarise this section, animals are probably originated from ocean (the biggest microgravity space on earth). Although humans are also thought originated from microgravity space, but unlikely from the ocean. Humans are probably originated from another microgravity space - the largest microgravity space in this meta-universe is either interstellar and interplanetarium space (heaven) or microgravity space/dimension unknown to us (first heaven) as described in religious books – Bible or Al-Quran. Following are arguments in support of the fact that humans do not originate from the ocean: a) once the brain is fully matured, humans take up the "I" or vertical position, while animals still maintain the "T" position across their ages/maturity; b) morphology and fundamental genes of humans are always the same. Humans have the same nose, ears, two eyes at the front and above the nose (fundamental genes for eyes etc) but differ in height, eye colour or bony weight because of the changes in the living environment or changes in non-fundamental genes.

Origin for the Universes

Einstein's formula and the Big Bang theory – physics and metaphysics

The content discussed here is mainly based on Einstein's theory of general relativity and

Einstein's famous formula of $E = mc^2$, where E stands for energy; m for mass and c for speed (of light)]. Equation $E = mc^2$ tells us two things: a) mass is another form of energy; and b) space (dimension), time, matter and energy are locked together in the most intimate embrace. Whilst Einstein theory of general relativity is a theory of gravitation that relates the curvature of space-time with motion of matter. Basically, it describes 'matter and energy' actually 'mould the shape of space and the flow of time'. Theory of general relativity correctly predicted that the universe is expanding and the outer edges are moving away from us. This indirectly applies that the universes were originated from a single point or singularity, where all of the matter and energy was concentrated in a single point. According to Big Bang theory, the universe came into existence from a large explosion. Currently, Big Bang theory is seen as the most plausible theory in explaining the existence of our physical universes (7).

At a first glance, the formula $E = mc^2$ may not be correct at all to be applicable in this context. The purpose of using this formula is to help people in understanding 'the concept of what might have happened at the beginning of the universes'. As the Big Bang tells that the universes were originated from a singularity, therefore, this none to creations might explain the existence of a creator or a God. Einstein well-known formula of $E = mc^2$, perhaps

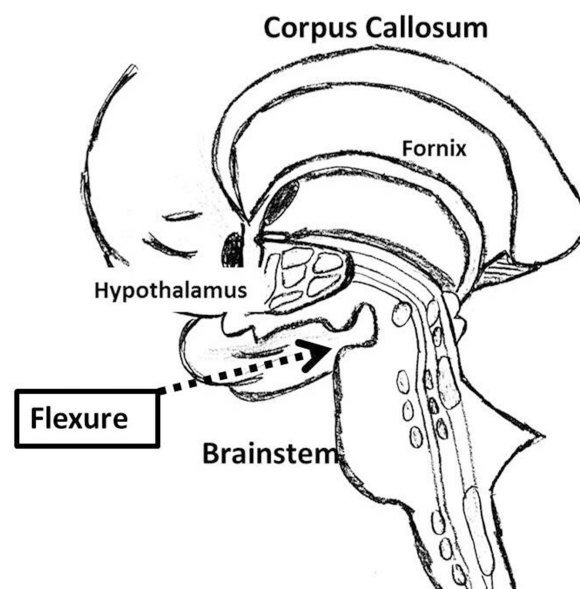


Figure 2: The microgravity or "T" or flexure position of the central nervous system made possible by the main cephalic flexure during microgravity environment of the uterus.

has the capability to explain more - the Big Bang theory and beyond. The calculations which based on the $E = mc^2$ are presented and they are made by the author (author's thought). At time zero or simply when there is no time, the 'c' has 'infinity' value (infinity refers to something without any limit). This is because 'c' equals to distance or dimension divided by the time. At time zero, the mass or 'm' does not exist simply because 'c' is infinity or because 'time' is zero. At infinity 'c' and no time, there is no mass being created yet; therefore, the energy or first 'E' equals to zero ($E = mc^2$; 'E' = $0 \times \text{infinity}$; so first 'E' = 0).

However, when time is non-zero, the 'c' is not infinity anymore. The shift from a zero (0) value of time to the smallest positive number (e.g. when $t = 0.000\,000\,000\,1$ ms); the 'c' value changes to the largest number that can be recorded. This is simply because 'c' equals to distance or dimension divided by the smallest number (i.e time starts to exist). Therefore, from infinity value for 'c' now changes to the highest number for 'c'. Since, there is a change from infinity value to very large number for 'c', the 'm' or mass is now starting to appear (first mass) and the value for 'E' at this point is not zero anymore. According to $E = mc^2$, the E is now having a very large value [$E = mc^2$; $E = m$ (exist) $\times c$ (massive number)²; so $E = \text{massive value}$]. The change in 'E' value from zero to massive value indicates a "Big Bang" or "massive explosion". From this initial bang, oscillations exist and more masses were created. Therefore, the Einstein's $E = mc^2$ formula really seems capable in explaining the Big Bang phenomena (author's physics perspective).

Now let us look at the *metaphysics perspective* of 'E' of Einstein's formula (author's metaphysics perspective). The initial 'E' according to physics at time zero, carries no value (zero energy or $E = 0$); but when viewed in the perspective of metaphysics (neither mass nor time does exist), the initial 'E' (or 'hidden E' because it is metaphysics) is in fact 'infinity'. When using the same Einstein's $E = mc^2$ formula for metaphysics perspective, the 'c' value is still regarded as infinity because time is zero (time does not exist in metaphysics); and the 'm' value should be zero too (because mass does not exist in metaphysics). Nonetheless, the 'm' here does not refer to the mass anymore, the 'm' according to metaphysics is instead being referred to as "the existence" which is not in the mass form, passing the time, the most powerful ("the existence" here denotes the creator: simply because when viewed according to physics perspective, the creator has already existed before the big bang) and can not

be imagined (God's appearance is unthinkable/unimaginable – whatever brain thought/imagination on God's appearance, it is still not God. Basically, it is metaphysics). In short, at point when time does not exist, no mass created and no physics law governing the universes, there is only "one" in existence, that is the God. The God is mostly viewed by humans as metaphysics. Hence, $E = mc^2$ formula according to metaphysics would be: $E = 1$ (one only exists in metaphysics) \times infinity (metaphysics: there is no mass and no time) will produce infinity value for E (i.e $E = 1 \times \text{infinity}$; $E = \text{infinity}$; 'MAHA' concept in Islam - 'MAHA' simply means infinity; names for God has infinity or MAHA concept). In conclusion, the $E = mc^2$ tells two things: when initial 'E' is viewed according to *physics*, *Big Bang is noted*, while when initial 'E' (or can label it as 'hidden E') is viewed according to metaphysics; there is no Big Bang but instead telling of one existence - 'a hidden one' who has 'infinity energy/power forever' i.e a God.

The first light (nur) and beauty of numbers zero, one and infinity

According to Islamic scholars (8,9) and author's thought based on Einstein formula, the first creation by the God is 'light' (? a spot/a dot of light) which is a lot brighter than sunlight. At zero time or when the time does not exist, the 'c' value is infinity (when regard the dimension or distance as not zero – see below when dimension/distance is regarded as zero). This infinity item could represent the first God creation: 'light', which is brighter than sunlight with infinity 'c' and carries no mass or better known as 'nur Muhammad' (8,9). Interestingly, when further consideration is made at zero time (time does not exist) and when the distance or dimension is also regarded as zero, the c value becomes "everything". Everything here simply means "everything inside the new forming universes" [e.g. when zero is divided by five, we get zero; when seven is divided by zero, the value is infinity; but when zero is divided by zero, the answer is "everything", i.e. let us say, $0/0 = y$ - What is the value of 'y'? It can also be viewed as follows: $0 = 0 \times y$, then 'y' value is "everything in universes" or simply means $1 = 67$; house = cat; male = female; animal = human etc. It means that when both time and dimension are regarded as zero, all have been 'maximally squeezed into one'(? a spot/a dot of the brightest light). This number one could again represent nur Muhammad – the origin]. From this infinity (when time is zero and dimension is non-zero) or everything (when both time and dimension have zero value) item which

could represent nur Muhammad (8,9), all in the universes were created (via Big Bang) and all are in oscillations/waves [note: the 'infinity value' or 'everything value' for 'c' when viewed according to physics may denote 'nur Muhammad' whilst the infinity value (or everything value) for both 'c' and first 'E' when viewed according to *metaphysics* may represent the God]. Therefore, God (ﷲ) and Muhammad (ﷺ) seem to have close relationship just like the 'brain' and the 'heart'.

Similarities pertaining to the Origin for the Living Creatures and the Universes

From the above discussion of general relativity, Big Bang theory in the light of physics and metaphysics, and microgravity in CNS, uterus in pregnancy, ocean and the sky, we may draw some similarities between universes and origin of the living creatures. Those similar features are discussed below:

- a) The concept of micro (near to zero) or no gravity for the origin:- Gravity does not play any role in the origins of humans, animals and universes (microgravity or weight reduction for animals and human, while no mass for the universes when viewed with regard to either physics or metaphysics perspectives). It seems that the story of the origin might involve three main major areas – ocean for animals (plants); first heaven (or ? interstellar/interplanetary spaces) for human (as Adam and Eve); and singularity for universes [metaphysics to physics via Big Bang or explosion to form planets etc].
- b) Once created, all are in oscillations (waves) or produce two phenomena (up and down or down and up; or right to left or left to right movements, like a wave). Examples include brainwaves, heart rate, blood pulsation and pressure, respiration, peristalsis for most living creatures and oscillations or waves for the whole of the universes contents (from atoms etc).
- c) The most important feature for this comparison is that "all in the universes" remember the God, either via: i) chanting the greatness of God (zikir) manifested via oscillations (waves) and two phenomena of up and down or down and up (right to left or left to right) movements (producing word of God: two only - AL...LAH; that is ALLAH (ﷲ)) or/and ii) *sujood* (bowing) to God by

living creatures via microgravity concept or position as manifested by CNS (flexure position); or microgravity or horizontal position and finally plants, flowers and trees, branches (or stems) of a tree (or flower) curving downward or bowing (their origin is also most likely from the ocean).

Brainwaves and Waves Related to the Soul

Regarding humans, oscillations and wave like movements (up and down or down and up, right to left or left to right) are thought to be related to indirect manifestations of the human soul (8,9). The 'actual human body' is the one that can be noted after few seconds or minutes of dying which shows no wave like movements such as respiration, heart rate, vascular pulsation, peristalsis, neural signalling and blood pressure. Human body is like a sculpture, and soul manifests itself via oscillations (atoms in the body etc) and wave like movements (heart rate, respiration etc). Therefore, the noticeable indirect manifestations of the soul commonly include brainwaves, heart rate and blood pressure (including Windkessel effect or vascular pulsations), respirations, peristalsis and neural signalling. It is interesting to note that some definitions of body death or brain death relate isoelectric brainwaves or electroencephalography (EEG), isoelectric electrocardiography (ECG), and no respiratory effort. This signifies the soul has already come out from the body hence, the actual body (no heart rate, no blood pressure, no brainwaves, no oscillation etc.) behaves like a sculpture. In conclusion, studying the brainwaves is nothing but studying the soul.

Greater Limbic System as the Seat of Our Soul

It seems that the soul is related to our brainwaves (functions of the brain). Studies in this regard concluded that the EEG waves are derived mainly from pyramidal post-synaptic potentials; and EEG rhythms hypothesis, the waves are thought to be contributed by the thalamocortical as well as the cortical-cortical networks (circuits), majorly originated from the reticular system (10,11). The hypothesis also mentioned about pacemaker cells in the thalamus which regulate input from the reticular system, thus control the rhythm for the brainwaves. Extra-thalamic networks (basal forebrain nuclei, hypothalamus, amygdala, and hippocampus) are also considered

to have important role in regulating the rhythms for the brainwaves. These deep cell masses (reticular system, hypothalamus, thalamus, basal forebrain nuclei, amygdala, hippocampus and maybe basal ganglia) are parts of one system - the “greater limbic system”, as suggested by Nieuwenhuys et al. in 1988 (12,13). The greater limbic system may be viewed as the centre of all brain networks – neural signalling from all areas goes to greater limbic system and from there, it then projects to all areas (brain, brainstem and spinal cord) [14]. The greater limbic system is likely the area/system which may responsible for many things and regulate many things (such as respiration, memory, sleep, hormones). Interestingly, the history on soul disclosed that this area is probably the area for the “seat of our soul” (15,16).

The historical review on the debates regarding human soul revealed that, since the Egyptians periods (3000 BC), the soul is considered to be composed of five distinct parts: Ren, Ba, Ka, Sheut, and Ib. The Ib or heart was regarded to be the most important. Later, Plato (424–348 BC) labelled brain as an important organ for the soul. Aristotle (circa 384–383 BC) who learnt from Plato disagreed on Plato’s idea (named brain as the seat of the soul) and he preferred the heart rather than the brain as the seat of soul. Galen (circa 200/216 BC) augmented the Plato’s encephalocentric theory (brain) of the soul. Later Herophilus of Alexandria (an anatomist) believed that the soul was inside the brain based on his extensive anatomical dissections. Subsequently, during the renaissance period, began roughly at 14th century in Italy, Leonardo da Vinci (1452–1519) had located the soul inside the brain, more specifically in the middle ventricle (close to anterior portion of the third ventricle near the hypothalamus, above the optic chiasm after drawings the intersecting lines of human cranium). The area identified by Leonardo da Vinci is, in fact, part of the greater limbic system. Therefore, it seems that the greater limbic system is an attractive notion for the seat of human soul. This is further supported by our recent data obtained from a patient who underwent awake brain surgery and brain mapping and willing to hear to the contents of religious book (Al-Quran). The brainwaves became flattened (lower amplitudes) or changed in morphology (less beta or alpha waves and decreased spikes activity (Figure 3). From these observations, made the author agreed with Leonardo da Vinci’s observation and made a similar conclusion that the seat of our soul is at the “greater limbic system”. This could further be

supported by the words and concept of “from God back to God” as mentioned in Al-Quran.

The words “from God back to God” mentioned in Al-Quran can also be interpreted as “from one to all and from all to one – centre or assembly or single origin concept”. This seems related to the seat of our soul or the greater limbic system: all neural signalling from the body go to this area and from here it projects to other areas (all to one and one to all – centre or assembly or single origin concept too). Augustine, who was born in North Africa in 354 BC said “to know the soul was to know the God” (15). Therefore, it is likely to exist a relation between the soul and the God and also likely to have a relation between things outside and inside of our body - such as the concept of “from God back to God” mentioned above. Following are the assemblies exist outside the human body: a) assemble to face God when dead; b) assembly during Haj in Mecca; c) assembly during Friday praying and d) Al-Quran itself (from one to all). On the other hand, inside human body, it (assembly concept) is reflected by the “greater limbic system” which regarded by the author and possibly by Leonardo da Vinci as “the seat

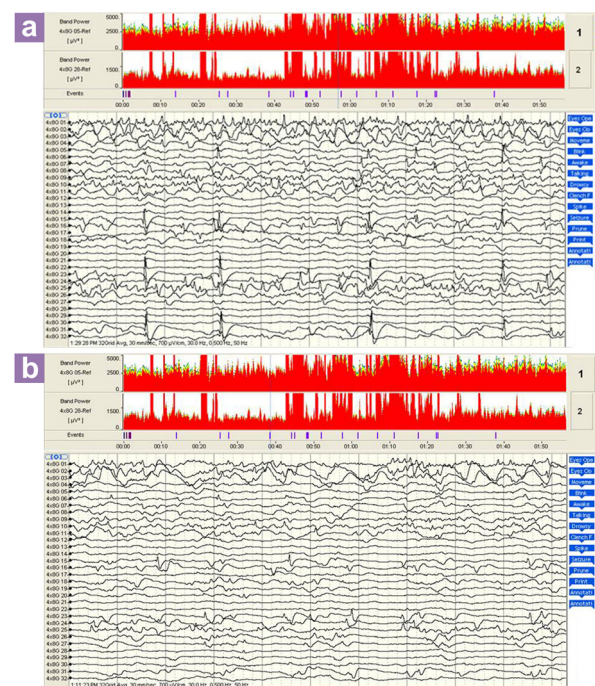


Figure 3. The morphological and spike changes of brainwaves detected by electrocorticography (ECoG at 700 uV/cm for both images) at motor area during awake surgery. (a) did not listen to Al-Quran and (b) during listening to Al-Quran.

of our soul” or the centre of our soul, assembling all the neural-signalling data and projecting to other areas (centre of the brain networks). It is interesting to note that this greater limbic cell masses lie close to the ventricular compartments containing CSF (four compartments). The shaped of this ventricular system is nearly similar to an Arabic word for “ALLAH” (الله): alif (ا) - spinal central canal till aqueduct of sylvius and covers the 4th ventricle; 2 lam (ل) - the lateral ventricles; and Ho (ه) - the third ventricle. The another important organ for the brain (الله) to work with is the heart (قلوب); noteworthy that the heart also has four chambers for the fluid-conductivity (blood), and blood/heart has nearly the similar concept as the brain, i.e “from God back to God” or assembly/centre concept: the blood flows to the single heart and from there it pumps out to other areas.

Conclusions

The microgravity or weightlessness concept inside the CNS tells many things. I can summarise them as follows: a) importance of CSF inside the CNS; b) antigravity effects can be achieved via Archimedes principle (floating) (note: other ways to go against the gravity are via acceleration, something that has no mass or time, or dark energy); c) the closed relationship between the heart and the brain; d) microgravity environment is needed for CNS or stem cells development (embryology); e) microgravity or sujud/bowing position of the CNS; e) evolution for the living creatures from the microgravity environment; f) the largest microgravity area on earth is the ocean which could be the origin for the animals and plants; g) tracing the origin of human or universes should also be focused on the microgravity area or concept; h) knowing the origin for the animals, plants, human, and universes via microgravity concept revealed the oscillations (waves) or wave like movements (up and down or down and up or right to left or left to right movements) forming the fundamental item; i) the oscillations (or waves) and these two movements (up-down etc) seem to be related to our soul which might reflect the word “الله” [two sounds/items: AL...LAH; always remember (zikir) the God]; j) the historical review on the soul together with the analysis on our brainwaves data indicated the same site for the seat of our soul (the greater limbic system); k) the likely seat of our soul is the “greater limbic system” that lies deep inside our brain and behaves in accordance with the concept of “from God back to God” or “assembly/centre” concept or “one origin” concept.

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Conflict of Interest

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