Sirajul Husain, PhD

From Spirit (Ruh) to Soul (Nafs), and Beyond
Neuropsychological Study of Spirit (Ruh) and Soul (Nafs)

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Abstract

Spirit (Ruh) is explored as the foundation of evolution of soul (Nafs), as the self or psyche of an individual. Based on Imam Ibn Qayyim’s thesis that “Ruh possesses the faculties of cognition and reason”, we postulate that Ruh constitutes the phenomenon of consciousness, based on two inherent traits of consciousness: One, it integrates multi-sensory information instantaneously to engender meaning in the concepts it forms. Two, it gives rise to two fundamental aspects of logic, ontology and epistemology. These two traits are explored as the basis of development of soul, that is, the self. In order to explain how Ruh is shared by the progeny of Adam we postulate that the Ruh is transmitted to his progeny through the process of procreation, especially in terms of a non-coding RNA gene (HAR1F), as a basis of a field of consciousness. A formal theory of consciousness, Ruh, as a foundation of cognition and free will is developed to show how the concept of an unseen, uncaused Creator arises constituting an immutable frame of reference for a purposeful development of the Self (Soul), for success in life on earth and beyond it.

Keywords: Spirit (Ruh), Soul (Nafs), Consciousness, non-coding RNA gene (HAR1F), Zygote

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Neuroscientific Exploration of Spirit (Ruh) and its Role in the Development of Soul (Nafs)

A Non-reductionist Study of Spirit, postulated as Consciousness, based on a Non-coding RNA gene (HAR1F)

The Notions of Spirit and Soul Have Existed Throughout Human History

- Yet, spirit, a metaphysical entity, has remained a mystery, because a formal science of brain anatomy and physiology was not available until the 1990s, when the declaration of "The Decade of the Brain" became official, and the Human Genome was completed in 2003, with about twenty eight thousand coding genes and far numerous non-coding genes.

Spirit, that is, Ruh is a Created Phenomenon. XX

Ruh has an element of divinity as it is believed to be coming from the Creator. This flaw is coming from a literal translation of the Qura'nic verse: "When I completed his (Adam's) mold, and "breathed" into him my Ruh....."

- This serious flaw can be easily resolved by the fact that everything, including Ruh, is created by Allah. Hence, Ruh being a created phenomenon cannot have Divinity.
Spirit (Ruh) is The Source of Potential Knowledge

- As soon as the clay mold of Adam was complete, Spirit (Ruh) was “breathed” into it to simultaneously cause two vital signs of “Life”

- 1. The Human Mind came into action, causing potentiality to generate meaning in concepts as a foundation of knowledge

- 2. The physiology and anatomy started functioning, governed by the mind.

Consequently: “And He (Allah) taught man all the names” (Qura’n 2:31)

Imam Ibn Qayyim al-Jawzia’s Scientific Attempt to Resolve the Mystery around Ruh

- Imam Ibn Qayyim postulated that Ruh, by virtue of its innate capacity to generate knowledge, should possess the faculties of Cognition and Reason.

- Imam Ibn Qayyim’s thirteenth-century postulate was a precursor to our own postulate that Consciousness functionally isomorphic with Ruh, as Consciousness is also the origin of Cognition, and Reason.

Imam Ibn Qayyim’s Postulate has Remained Unsubstantiated for the Last Seven Hundred Years

This is because:
- Neuroscience, in its present form, is a recent phenomenon
- Research on Consciousness was started seriously not more than five decades ago
- The modern science being exclusively founded on reductionism and logical positivism, it is simply incapable of exploring Consciousness, especially, the perennial problem of Consciousness: How a Conscious Experience arises in a physical brain. For example, how the “blueness” of a blue sky is formed in the brain.
**What is Ruh?**

- According to Qura’n, as well as, Torah, spirit (Ruh) was breathed into (that is, imparted to) the earthly mold of the first man, Adam, as the source of vital signs of life, notably breathing. Hence, the Arabic verb, nafakhto, meaning 'I breathed' is used in the verse: (Qura’n 15:29):
  
  "... {رُوحِىۡ منۡ فيۡهِ وَنَفَخۡتُ سَوَّيۡتُهٗ فَاِذَا فَأۡنَأَتَتَ وُلَدَتْ قَوۡمٗيۡ مَنَزَّهِ} ..."

- "When I completed fashioning him (the earthly mold of Adam) and breathed into him Ruh from Me, ........"

**Spirit is derived from the Latin word ‘spirare’ to breathe.**

- Our explanation of the above verse is: as soon as Ruh/spirit was "breathed" into (that is, imparted to) the clay mold of Adam two distinct changes occurred in him simultaneously:
  
  - One, the neuronal processing in the brain came alive as the basis of intellectual activity of mind.
  - Two, the physiological processes in the rest of the body as manifested by breathing, coursing of blood in the veins, and thumping of the heart, started functioning.

**How does Adam’s Progeny Receive Ruh, that is, Consciousness?**

- After Adam received Ruh as his birth-right to knowledge, his progeny inherits Ruh as "infused" in the fertilized egg, or Zygote, through the process of procreation.

- We postulate that Ruh, with its faculties of cognition and reason, arises in every newborn in the form of consciousness, which is known to be at the root of cognition and reason. Hence, we shall refer Ruh as Consciousness, hereon.
Exploration of Ruh-Consciousnes in Alaq, the Human Fertilized Egg

- To explore our postulate of Ruh-Consciousness identity, we analyze human fertilized egg, the zygote, as mentioned in the suratul Alaq (العَلَقٍ), Qura’n 96:1-5. In these five verses the core emphasis is on Knowledge. Since knowledge is a sure sign of its precursor of consciousness, we postulate that Ruh is Consciousness, as the latter is the source of Cognition and Reason. (Alaq, literally means that which is suspended, such as a fertilized egg that hangs from the wall of mother’s womb.)

Exploration of Ruh-Consciousnes in Alaq, the Human Fertilized Egg

- These five verses are:
  - *Read, in the name of your Lord, who created* (1);
  - *Created man from a suspended fertilized cell (zygote)* (2);
  - *Read, and your Lord, the Bountiful,
  - *Has taught (man) with the pen, (3)*
  - *Who Taught man, what he knew not* (4). (Qura’n 96:1-5)

Four Important Points Emerge from the above Five Verses

- 1. The creation of the universe, in particular, our postulate of a universal field of quantum-consciousness pervaded by neurons, capable of instantaneous communication, and being covariant with the space-time continuum.
- 2. A fertilized egg is the source of development of human physical body, as well as, a potential field of consciousness, contributed by a non-coding RNA gene (HAR1F) present in every human cell, as a basis of cognition and reason.
- 3. Pen is mentioned to emphasize the significance of recording knowledge, both the revealed and that which is generated by human creativity, for preservation and propagation to the posterity.
- 4. The cognitive capability to form concepts of human understanding the nature, and thereby the concept of the Creator of nature.
Earlier Explanations of the above Five Verses Dealt with Physical Development of Man only

- Various explanations of the above verses in the recorded history have invariably focused mainly on the amazing birth of man from a fertilized egg, while knowledge is mentioned by merely translating the last verse literally as: *if man is taught he learns*, as is evident from the two latest exegetes of the above five lines, by Abul Ala Maududi (1) and Syed Qutub (2), respectively.

- This lacking in explaining the above verse can be ascribed to the non-availability of recent advancements made in cognitive neuroscience, when these exegetes were written.

Abul Ala Maudoodi, in his *Tafheemul Qur’an*, explains these verses, as follows:

- *Allahu Subhanahu ta’ala created man from alaq, a fertilized egg, i.e., zygote, suspended from the wall of womb; and the Bountiful Creator elevated man from this "lowly" state to the level of a man, and honored him with the faculty of knowledge and capability to learn.*

Syed Qutb’s commentary on these verses is as follows:

- *From a congealed speck of blood hanging from the wall of the womb: a tiny entity of simple structure, manifests the generosity of the Creator as a marvel of His power. It is the generosity of the Creator that He elevated the fertilized egg to the stage of a human being, who can be taught, so he learns.*
We Propound Two Postulates to Study Consciousness

• 1. There exists a **universal field of quantum-consciousness**, pervaded by **neurons** as a system of quantum-conscious signals which are capable of instantaneous communication, as a basis of the well-known instantaneous unity of consciousness. This field was postulated as covariant with the space-time.

• 2. There arises a novel **field of epistemic faculty of consciousness** in the human brain, by the interaction of the universal field of quantum-consciousness (as in 1, above) and a novel regulatory field contributed by a non-coding RNA gene, termed (HAR1F), in every neuron of the brain.

Emergence of Conscious Experiences, as Concepts

• The field of epistemic faculty of consciousness is shown to spontaneously carry out integration of incoming multisensory information from the environment into the brain, in particular, the superior colliculus in concert with the cerebral cortex, giving rise to conscious experiences, emerging as concepts. These concepts are coded in a semantically coextensive manner by the neurons, such that the meaning and the cognitive energy become identically equivalent. The resulting concepts are termed noumenal concepts until they are expressed using a language in human communication.

$$E = \text{ms}^2$$

*E = Cognitive-Emotive energy, m = Neurosonemic energy, and s is the spontaneous speed of thought*

• Mathematical equations for explaining the cognitive kinematics involved in generating meaning in concepts, as well as, for explaining how novel concepts arise from other concepts. (2)

• We understand, the cognitive kinematics involved in the formation of linguistic concepts, as described above, is a very sketchy, mainly because the detailed description of it entails intricate mathematical arguments and equations.

• (For further details on consciousness please refer to our publication in the June-2015 issue of the Journal of NeuroQuantology.)
Consciousness cannot be Reduced to Brain Physiology

- For example, how a physical brain forms a conscious experience of the “blueness” of a blue sky, or of feelings of amazement, happiness, or grief, in a physical brain, has remained an insurmountable task. According to the Nobel Laureate Eric Kandel “One of the last frontiers of science, perhaps its ultimate challenge, is to understand the biological basis of mentation” that is, cognition, (the paraphrasing is ours.” Francis Crick, the discoverer of DNA, in his search for soul acknowledged that to look for a “neural correlate of consciousness” is not possible as consciousness cannot be reduced to brain physiology.

Concept of an Unseen and Uncaused Creator as an Immutable Frame of Reference

- It is well known that mind can not only think but also can reflectively think about what it is thinking. For example, in our observation of natural phenomena with its intricate and complex design, the human mind not only inquires if there is a cause behind it, but also most convincingly furnishes a response by defining the notion of an uncaused Creator, following Einstein’s epistemology.

- The notion of an uncaused Creator may be further defined in its inherent traits of omniscience, omnipotence, and omnipresence by its infinite knowledge. A conscious awareness of an ever vigilant Creator can be taken as an immutable frame of reference in development of a self, that is morally, ethically, and socially responsible under all circumstances.

The Soul, The Self (Nafs)

- However, the self (Nafs) is subject to vacillations as it grows in the conflicting situations of good and. Islam defines Nafs of three kinds: Nafsul Ammarah, the soul that impels toward evil, the Nafsul Lawwamah, the soul that reminds and redirects toward the good, and as a tranquil soul, Nafsul Mutmainna, that evolves by complying with the rules of the immutable frame of reference, the vigilant Creator.
Babies were observed to suckle from mother’s breasts within minutes after their birth.

- However, when 2-3 month old, breast-fed babies experience that the feeding breast is getting dry, they instinctively move from the dry breast to the other milk laden breast, by forming the conscious experience of “dryness” of the breast, as well as, a respective noumenal concept causing them to move to the breast with milk. (Picture from media)

Baby Mohammed, (6 months), discovers Lever System to swing himself

(Courtesy: Dr. Stephen Brown, and Mrs. Sadaf Brown)

Mohammed Brown was enjoying himself in an electrically operated swing. However, when the electric system broke down, he used his right foot to push the rod of the swing, to swing all by himself.

A prelinguistic baby can form noumenal concepts of ‘Effort’, ‘Load’, & ‘Fulcrum’, to enjoy his conscious experience of the “pleasure” of swinging.

Consciousness cannot be Reduced to Brain Physiology
Do you think, whether humans have a Mind?
Faisal Qazi, DO

Neuroscientific Theory of Consciousness
Neuroscientific Theory of Consciousness

Consciousness is a key component of soul in Islamic theological and philosophical discourse. Its absence or presence as subdivided in its various subcomponents raises interesting questions about the status of one’s soul, at least theologically. While dualism has dominated the Western philosophy of mind discussions, the scientific community has predominantly adopted a physicalist approach. In this presentation here, we would explain the latest research available in terms of conscious perception and cognition and reassess the question of whether a truly comprehensive neuroscientific theory of consciousness exists as of yet. This review would help correlate important scientific findings to the Islamic conception of the soul and how it relates to consciousness.
Neural Substrates of Consciousness
And
The Metaphysics of The Soul
Faisal Qazi, D.O., Don Fette, PhD,
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What is the soul and how are its capacities manifested bodily?

Initiative on Islam and Medicine
Working Group 2013-2015
Faisal Qazi, D.O. Jihad Brown, M.A., Aasim Padella, M.D.

"You don't have a soul. You are a soul. You have a body."
~ C.S. Lewis
Outline

1. Framing The Discourse
2. Neuroscience of Consciousness
   - Perception
   - Cognition
   - Memory
3. Philosophy of Mind
4. The Soul in Islamic Theological Discourse

1. Framing the Discourse

“The profound reality of our consciousness cannot be eradicated by the accident of bodily death.”

—Seyyed Hossein Nasr
And they ask you, [O Muhammad], about the soul. Say, “The soul is of the affair of my Lord. And mankind has not been given knowledge of except a little.” (Al-Isra: 85)

“Thoughts, sensations, feelings, and intentions do not have mass, momentum, shape, spatial location, spatial extension, or temporal location and they are neither particles nor waves. Meanwhile, material objects do possess some spatio-temporal properties. Since conscious states lack the properties of material objects, it follows that consciousness is neither identical with nor reducible to matter.”

“If science is defined as the pursuit of wholly naturalistic explanations for events and phenomena, then it is incompatible with theism since its premise is atheistic. If, however, science is any systematic exploration of nature, involving examination of evidence for or against a proposed theory, then the enterprise is compatible with theism and was originally stimulated by it. For science liberally defined, it is an open question whether the evidence we extract from nature, by studying its causal sequences, supports theism or atheism, as this liberal conception of science does not assume that the universe is unplanned.”

—Shabbir Akhtar

Shabbir Akhtar, “The Quran and the Secular Mind: A Philosophy of Islam”
2. Neuroscience of Consciousness

Definitions

“Consciousness is an active process involving awareness of oneself (or one’s cognitive experience) and the environment.”
— Dr. William James, The Principles of Psychology, 1890

“Human consciousness has two clinical dimensions: wakefulness served by brainstem ascending reticular system and its connections; and awareness of self and environment, served by thalamus, cerebral cortex and its connections.”
— Dr. James L. Bernat, Testimonial to US Senate Committee in April 2005

The Consciousness System

- Two basic divisions:
  - Content of consciousness
    - Comprised of systems mediating sensory, motor, memory, and emotional functions
  - Level of consciousness
    - Regulated by the “consciousness system” while OTHER brain systems provide the actual substrate/content upon which this division acts
    - Involves at least three processes (AAA)
      - Alertness
      - Awareness
      - Attention
Levels of Consciousness

• **Alertness**
  - Wakefulness
  - Depends on normal functioning of the brainstem and the diencephalic arousal circuits and the cortex
  - Maintained by ARAS and midline thalamic nuclei
  - Thalamic reticular nuclei is important in arousal
  - Neurotransmitters: Glutamate and Aspartate

• **Coma**
  - Lesions of brainstem or bilateral dorsal paramedian thalami
  - Diffuse cortical damage
Levels of Consciousness

• **Awareness**
  – Cerebral cortex and subcortical connections

• **Perception**
  – Processing of (modality specific) primary sensory information and subsequent integration with memory, attention and motor responses resulting in a symbolic relationship with external world

• **Neurotransmitters**: Dopamine and Norepinephrine

• **Persistent Vegetative State**
  – wakefulness without awareness

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Levels of Consciousness

• **Attention**
  – Attention is related to perception
  – Selection of alternatives
  – Concentration

• Prerequisites: wakefulness/alertness and awareness

• **Locus**: cingulate gyrus, dorsolateral prefrontal cortex, inferior parietal lobule, thalamus
  – Motor inattention from prefrontal lesions

• **Minimally Conscious State**
Assessing Consciousness

- Actual loss of consciousness due to various causes is typically accompanied by breakdown of the brain’s capacity to integrate neuronal activity across distant areas, especially via top-down or reentrant connectivity supported by the integrity of fronto-parietal areas.
- Typically, high conscious levels are associated with an increased range of conscious contents. Whether or not high level of consciousness without any conscious contents is possible remains unclear.

Prefrontal Cortex and Visual Cortex

Subconscious to Conscious

“Consciousness thus depends on the multitude of unconscious processes that occurs in the brain. Although they don’t represent consciousness, consciousness cannot exist without these processes. The factor that determines which of the subconscious processes will reach consciousness, appears to be focused attention. This act of deliberately bestowing attention on something specific draws attention to the enigma of free will.”

3. Neuroscience of Cognition

Definitions

• The mental action or process of acquiring knowledge and understanding through, experience, and the senses
  – A result of this: perception, sensation, notion, or intuition

• Components of Cognition
  – Language
  – Memory
  – Executive function
  – Visual-spatial function
  – Emotion

Hal Blumenfeld, "Neuroanatomy Through Clinical Cases"
Assessing Cognition

• ...increasing evidence suggests that in healthy awake humans, many, if not all, cognitive functions that involve fronto-parietal areas can also operate in the absence of reportable conscious perception of the relevant stimuli, even if performance is usually much diminished – a number of studies suggest that conscious perception may not be necessary for the operation of various complex cognitive processes
• Higher Order Thought Theories vs Global Workspace/Information Integration Theories

Higher Order Processing

Schema of Memory

Hal Blumenfeld, "Neuroanatomy Through Clinical Cases"
Spirituality

• “Many of our spiritual moments are linked to responses like the familiar "fight-or-flight." The brain structures underlying our survival impulses evolved long before other structures made the human brain capable of language and reasoning. From a neuroscience vantage, spiritual thoughts, feelings, and sensations may not be so much beyond language as before language. At the neurologist’s command, a flicker of electrical current to a discrete part of the brain gives the powerful illusion that consciousness left the body to float unbounded in space.”

Kevin Nelson, "Can faith reside within the brain?"

Volition

“acts of the will, are special mental events or activities by which an agent consciously and actively exercises his agency to voluntarily direct his thoughts and actions”.  
• anterior cingulate cortex (ACC), the supplementary motor area (SMA), and some parts of the prefrontal cortex (PFC)

Zhu, "Locating Volition"

3. Philosophy of Mind
The Mind & The Body (Brain)

It is fair to say that the debate instigated by Descartes over the mind-body problem has not ended at all; it has instead become almost painfully sophisticated and complex. Among the warring theories in play today we have (in one contemporary rundown) “the identity theory, the central state theory, neutral monism, logical behavioralism, token physicalism and type physicalism, anomalous monism, emergent materialism, eliminative materialism, various brands of functionalism”—and, undoubtedly, enough additional isms to assign one to every working philosopher in the world.

Neuroplasticity and the Power of Mental Force – Schwartz, Begley

Most to Least Materialist

- Functionalism
- Epiphenomenalism
- Emergent materialism
- Agnostic physicalism
- Process philosophy
- Dualistic interactionism

Functionalism

- Denies that the mind is anything more than brain states and functions; it is a mere by-product of the brain’s physical activity
- “Mental processes are just brain processes”
- Only recognizes material influences
- Paul and Patricia Churchland, Daniel Dennett
- Other than action potentials coursing through brain circuits, there is nothing more to the workings of the mind
- No mind, all matter – no mind-matter problem
Epiphenomenalism
• Acknowledges mind but holds it cannot have any effect on the physical world
• The mind itself doesn’t actually cause anything to happen that the brain hasn’t already taken care of
• The brain is the cause of all the mental events in the mind but that the mind itself is not the cause of anything
• Causal arrow points in only one direction (material to mental)
• “Mind does not move matter”
• Regarded as only generally acceptable alternative to stark materialism
• Contradicts basic core experience that mental states really do affect actions

Emergent Materialism
• Mind arises from brain in a way that cannot be fully predicted from or reduced to brain processes
• Attributes of mind cannot be explained solely by brain’s physical activity
• Steen Rasmussen, Roger Sperry (split brain)
• What emerges can affect what it emerges from
• Radically revised form of materialism in which the mind is not only emergent but also causal
• No unembodied mind or consciousness

Agnostic Physicalism
• Mind derives exclusively from matter of the brain, but this may not be the whole story
• Does not deny the existence of nonmaterial forces, just as an agnostic does not deny the existence of God
• William James
• Mental does not change without the physical changing too (physicalism vs. materialism)
• Any nonmaterial influences must work through the brain in order to affect the mind
• Materialism transcends physicalism in actively denying the existence of nonmaterial influence
Process Philosophy

• Alfred North Whitehead
• Mind and brain are manifestations of a single reality, one that is in constant flux
• Compatible with classical Buddhist philosophy
• “The reality is the process”
• Strikingly consistent with developments in quantum physics

Dualistic Interactionism

• Holds that consciousness and other aspects of mind can occur independently of brain
• Mental states have power to shape brain or cerebral states
• The mind cannot in any sense be reduced to the brain
• Although mind depends on the brain for its expression, the brain is by its very material nature not sufficient to explain mind completely
• John Eccles, Karl Popper
• “The essential feature of dualist-interactionism is that the mind and brain are independent entities … and that they interact by quantum physics.”
• Posits a nonmaterial basis for mind and speaks about possibility of life after death

David Chalmers

Even this abbreviated rundown of mind-brain philosophies would not be complete without what the Australian philosopher David Chalmers calls “don’t-have-a-clue materialism.” This is the default position of those who have no idea about the origins of consciousness or the mind but assert that “it must be physical, as materialism must be true,” as Chalmers puts it. “Such a view is held widely, but rarely in print.” One might add that many working scientists hold this view without really reflecting on the implications of it.

Schwartz: The Mind & The Brain
Islamic Conceptions of Soul

Imam Al-Ghazali’s Schema of the Soul

Principles of Rational Soul

- Hylomorphism
- Accident
- Single Particle
- Subtle Body
- Immaterial Substance
Hylomorphism

- Precedes atomism introduced by al-Baqillani
- hyle/huyyila - basic matter (maddah)
  - free of defining form
  - serves as one of two parts of hyolomorphic body
  - site that receives the other part, the ‘form’
  - form (surah) is what inheres basic matter
    • species particular identity or categorization
- Definitional problems: destruction of one entails destruction of the other.

Accidental Soul

- single faculty (quwwah) or configuration of faculties that inhere the body
- soul is a single property (accident)
  • soul is reduced to soul functions that are a single capacity or some configuration of multiple capacities
- This makes soul an accident as qualities, properties, faculties and capacities are all accidents
- Similar to contemporary idea of property dualism
  • Mental properties are distinct from physical although single physical substance
    Supervenience: mental supervenes physical ie mind-body dependence

Single Particle

- Single substance (al-jawhar al-fard) - al-Rawandi (d. 911)
  - single indivisible particle w/in physical heart
  - refuted by theologians like al-Badawi
    • as physical soul is bounded and finite
Subtle-Body

- *Jism al-latīf*: tenuously fine and atomically-dispersed body (al-Juwayni d. 1085) – a highly respected position in ‘high kalam’
  - Subtle bodies integrated into dense bodies (*corporeal jism katīf*)
  - When departed death follows life
  - Corporeality: soul within material world i.e. accessible to 5 empirical senses
    - doesn’t explain how soul will endure after the body
- Inherent problems with unity of consciousness
  - binding problem

Immaterial Substance

- *al-jawhar al-mujarrad*: non-physical entity without extension or parts, not perceptible to the 5 empirical senses.
  - Independent, indivisible, non-spatial entity
  - Soul is the substratum that supports the faculties (accidents) inhering in it as their singular and unified substrate.

5. Future directions of inquiry
Additional Resources

• “Materialism and Qualia: The Explanatory Gap” by Joseph Levine (1983)
• Sir John Eccles
• Faraday Institute
• Irreducible Mind

6. Questions and discussion
Correlating the presence of the soul with specific human anatomy/physiology via a systematic analysis of definitions of death
Abstract: The definitions of death in Islam, as reflected in the bioethical journal articles addressing brain death, frequently state a concept of what it means to be dead or alive, sometimes refer to a biological state as reflecting life or death, and rarely include specific testing for life or death. Stuart Youngner (following Bernat) suggests that a formulation of death must have all three components: a concept or definition of what it means to die (concept); operational criteria for determining that death has occurred (criteria); and specific medical tests showing whether or not the criteria have been fulfilled (tests). Not only are all three necessary, but ideally they accurately correlate with each other. For example, a person who fulfills all of the stated tests is actually in the biological state mandated by the criteria. While it is commonly accepted that death is the separation of the soul from the body, there is no consensus in Islam regarding the biological characteristics of the body bereft of the soul, or, the biological function whose presence indicates the presence of the soul. Due to the inability to directly measure the presence of a soul, the only data upon which a determination can be made is biological—assessing anatomy and/or function of the body in question. Unfortunately some opinions do not account for modern technology and utilize outdated false assumptions such as assuming that cessation of respiration/circulation implies the cessation of all function. Others utilize overly vague, undefined terms such as ‘integrated’ or ‘vital’ function. Unless these terms are accompanied by specific biological definitions, they are useless and frequently rely on outdated assumptions. A definition of death also needs to be consistent. There are many situations where a determination of life and death is needed: is a solitary functioning organ a human life? Is a transplanted human organ a human life, and if so, is it the life of the donor or the recipient? Are dicephalus twins (one body, two heads) two people or one? The definition of death also needs to be consistent with theological concepts. If man has free will, and he (and his soul) is rewarded/punished according to the choices he makes, is an isolated head containing a functioning brain capable of choice a human being? If his body was separated from the head but both were functioning, which would be considered the person? Starting in the mid 1980’s organizations and individuals published positions pro and con brain death. This presentation will review the literature, and illustrate that definitions of death based on neurological function are the most coherent, least vague (although some contain significant lack of clarity), and provide the most coherent results. They are also consonant with the theological doctrines of free will and reward/punishment. Ultimately the logical conclusion is that the soul is intimately related to the functioning human brain.
Correlating the presence of the soul with specific human anatomy/physiology via a systematic analysis of definitions of death

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Learning Objectives

• Become familiar with a method to systematically analyze definitions of death
• Identity common false assumptions and vague statements
• Become familiar with prevalent islamic approaches to brain death and how they shed light on the biological correlation of the presence of the soul

Definition of Death

• Concept of Life- “What quality is so essentially significant to a living entity that its loss constitutes the death of that entity?”
• In Islam, this is the separation of the soul from the body
3 tiered definition of death

- Tier one- “What quality is so essentially significant to a living human being that its loss constitutes the death of that human being?”

- Tier two- What is the biological state that correlates with the loss of the soul, or, the state that correlates with the presence of the soul?

- Tier three- diagnostic tests to show that what has been identified in tier two has actually been fulfilled.


Validity

- Do the tiers correlate with each other?
- Does fulfillment of the tests outlined in tier 3 result in the biological state identified in Tier 2?
- Do the authors accept all who fulfill the tier 3 testing as dead according to the Tier 1 concept?

The biological correlate of the soul

- Need for a soul-o-meter
- The testing available is only biological-function, imaging, anatomic, physiologically
- So even though the soul is a religious concept, a practical definition of death requires translating the presence/absence of the soul into a biological state that can be determined with testing
Modern medical accomplishments

- Artificial respiration with ventilators
- Artificial circulation - cessation of heart function no longer implies loss of circulation in the body
- Various parts of the body can be maintained independent of each other
- Transplantation of organs - who is the donor and who is the recipient?

Premodern assumptions that are now false

- Cessation of heart function, if not reversed quickly, implies irreversible cessation of circulation in the body
- Loss of circulation in the body implies the swift loss of all bodily functions
- Previously it was not necessary to identify any particular anatomy or function that correlated with life, because all function ceased essentially at the same time, and could be determined by loss of circulation/respiration.

Current false assumptions

- Cessation of heart function is irreversible
- Cessation of heart function implies loss of circulation
- Cessation of heart function implies loss of function in the entire body
- In the context of the achievements of modern medicine, the cessation of heart function means only that the native heart has ceased to function, and doesn’t necessarily have implications on the rest of the body or the status of circulation in the body - circulation can always be supplied by pumps, CPR, or a transplanted heart
Vague terms

- Body vs. parts- if there is a category of human tissue that does not qualify as a human body (such as an isolated arm or leg), then it is necessary to establish what anatomy/physiology is needed to deserve the label of body as distinguished from just parts.
- Integrated function- a term without a specific definition. If it is used, what are the specific biological parameters (tier 3) and what anatomy needs to be present?

Consistency with concepts/definitions of life outside of brain death

- Dicephalus twins- one person or two
- Organ transplantation- definition of donor and recipient
- Isolated functioning organs
- Personal identity- if the anatomy/physiology associated with personal identity is not the same as that associated with life, then there can be a human life without a personal identity, and a collection of tissue that qualifies as a particular person but is not considered an alive human being

Neurological definitions of death

- Identify a specific anatomy/physiology associated with life (Tier II)
- Associated with an at least somewhat well defined set of tests (Tier III)
- Good correlation between tiers (those that fulfill the tests, when applied with precision, are in the state mandated in Tier II)
- Criteria for identity can be the same as for life, so no inconsistency. Also consistent with the concepts of life usually associated with dicephalus twins
Non-neurological definitions of death

- Frequently depend on undefined terms
- Depend on premodern false assumptions
- Are challenged by the concept of identity (identity can be defined as persistence over time, but persistence of exactly what?)
- Have difficulty cohering with usual ideas of personhood with regard to dicephalus twins
- Can encounter difficulty in defining donor/recipient if enough organs are transplanted from one person to the other

Analysis of current definitions in the biomedical literature

- Islam differentiates between the presence of some features of life in the body, and ‘being alive’.
- The soul joins the body at the end of the fourth month of embryonic life (Al Hadith)- so physiological function can be present without the designation of human life
- Brain death does not contradict the concept of death in Islam.

The exact definition of death is vague in the Quran.

Absence of breathing is not an indicator of death—polio or cervical spine trauma for example.

Absence of natural heart is not a sign of death—transplants, bypass pumps.

The components of the person includes the Nafs (self), Rooh (Spirit), and Qalb (spiritual heart or mind)—correlate with the brain.

Brain death does not violate any Islamic Principles.

Some equate brain death with cardiopulmonary collapse—both being death.

Some hold brain death to be an in-between state between life and death.

Some reject brain death completely.

How the brain relates to the mind, and the mind to the notion of the self is less well explored in the Muslim bioethical literature.

The OIC-IFA declaration of brain death to be legal death suggests that a brain dead individual is one in whom no soul is present. Was there an intent to connect the vital function of the brain to the vital function of the soul?

“The moment of death is the time when all signs of life have ceased irreversibly and the soul has departed the body.”

The Quran describes that the signs of life are present as long as either the brain and/or the heart are capable of functioning.

What about an isolated heart? A person with two hearts? If a heart is moved from one body to another, what is the life status and identity of each?

Ambiguity and false assumptions allow statements like this to appear reasonable without the need for clarification.

- Separation of the soul from the body occurs via separation of the spirit from each and every tissue in the body, showing no signs of vitality in any part of the corpse.
- The heart and the liver, along with the soul, are components of life.
- Brain death is not death
- The authors do not supply an alternative method of determining death

- Since we cannot measure the presence of the soul, any definition of death is actually the determination of the first time there is certainty that the soul has departed from the body.
- A specific definition of death is needed: it is not adequate simply to state that brain death is not death. It is necessary to state a more compelling alternative
- Perhaps we are looking for the best definition of death, not THE definition of death.

Conclusions

- From a logical/practical vantage point (not necessarily based on religious texts), brain based definitions of death are the most coherent and compelling.
- The non-brain based definitions of death that have been suggested are fatally vague, and/or based on false assumptions.
- If death is the separation of the soul from the body, and cessation of brain function is the definition of death, then it appears that the presence of the soul in the body correlates with the presence of brain function
- If a person/soul is rewarded/punished for the choices it makes, then it is reasonable to correlate the soul with the anatomy/physiology responsible for choices.