

INTEGRATING COGNITIVE SCIENCE WITH ISLAMIC PHILOSOPHY: EMERGENCE AND CURRENT CHALLENGES

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Article Info

Submitted : August 27, 2024 DOI: 10.20885/ijis.vol7.iss2.art1
Accepted : December 31, 2024
Published : December 31, 2024

Abstract

This paper seeks to discuss the inclusive approach of cognitive science with Islamic philosophy. Islamic philosophy has put forth a significant role in the development of cognitive science. The emergence of cognitive science in Islamic philosophy commences with the knowledge about heart, soul, reasoning, ('aql), cognition (marifat) contemplation (fikir) meditation (zikr), mystic cognition, and their relation with the mental processes like 'tafakur', 'tadabur', 'ta'qilun' and 'iqra'. This paper tries to show the novel ideas of cognitive science with the new advances and researches in Neuro-theology, religious mantras and spiritual nexus. It also discusses the basic building blocks of cognitive sciences which are ilm (knowledge), mind, heart, soul, reasoning, language, intellect and mystic cognition. As the role of philosophers is significant in the emergence of cognitive science, some notable Muslim cognitive scientists will be highlighted in this paper. This paper also examines the future aspect religious sciences in the growth of cognitive science.

Keywords: Cognition (Marifat); Cognitive science; Mind; Aql (intellect); Neuro-theology; Mystical Cognition

INTRODUCTION

Cognitive science is an interdisciplinary scientific study of human cognitive system and its functioning. It has developed from the knowledge received through different researches carried out in the discipline of linguistics, artificial intelligence, computer science, biology, psychology, religious studies, philosophy, and neuroscience. Before 1950s, the imprints of cognitive science were present in the form of philosophy of mind, metaphysics, epistemology, ontology, and in some religious studies.¹ There are many evidences found in religious studies which imply that cognitive science was discussed implicitly in Indian philosophy especially in *Vedas* (Sedlmeier and Srinivas 2016) and *Upanishad's* (Chakrabarti 2001), and many other religions such as Buddhism (Yao 2009), Confucianism (Reber and Slingerland 2011), Christianity (Barrett 2007), Judaism (Stein 2018) and Islam (Nakissa 2020)). In Islamic philosophy, the knowledge of the cognitive science is derived from sources like *Quran*, *Hadith*, *Kalam*, *Falsafa* and *Fiqh*. The equivalent term of cognition in Islamic philosophy are found in the Study of mind (*Ilm-al-Aql*), the Study of Gnosis (*Ilm al-Marifa*) and the study of soul or self (*Ilm-al-Nafas*). Cognitive science explores various aspects connecting the human cognitive system with bodily processes. One such process is spirituality, which, when adopted, modifies mental functions like perception, emotion, and cognition. While spirituality involves personal, transcendent experiences, religion provides a communal framework of beliefs and practices. Cognitive science examines how religious rituals and spiritual experiences shape mental processes, fostering shared meaning and ethical guidance in human consciousness. Unlike basic cognitive functions, inward intelligence or consciousness represents a deeper, reflective awareness that facilitates spiritual growth and the experience of the divine. This heightened

¹ In many religious studies, cognitive science was discussed; see Chatterjee, Amita (2007). Indian Philosophy and Cognitive Science. In Manjulika Ghosh (ed.), *Musings on Philosophy: Perennial and Modern*. Sundeep Prakashan. pp. 131, and [Religion and Science \(Stanford Encyclopedia of Philosophy\)](#).

awareness, nurtured through meditation, religious practice, and scriptural reflection, operates at a more profound level, enabling a connection with transcendence.

There are many Muslim philosophers who contributed their notable ideas in the domain of cognitive science but the problem was that the name cognitive science did not exist at the time of emergence of Islamic philosophy which when was at its golden period. To understand cognitive science in Islamic philosophy, it is necessary to describe the concepts like reason, intellect, logic, thought, memory, self, soul, beliefs, knowledge, mind, and heart which come under the domain of cognitive science. It is a sheer reality that the Muslim philosophers especially Al-Kindi, Al-Farabi, Avicenna (Ibn Sina), Al-Ghazali, Averroes (Ibn Rushd), Mulla Sadra, Ibn Tufail, and Rumi have contributed much in the domain of cognitive science.

This study examines the concept and Islamic integral approach to cognitive science and the relation of this concept with modern scientific knowledge through perception, reasoning, contemplation and mystic cognition. Muslim philosophers, thinkers and scientists have described the connection between logic, language, mind, intellect, spirituality, God, soul and imagination as vital and novel for cognitive science. They followed a period in which logic was regarded as an influential, reliable methodological tool for reason and science seeking, to the extent possible, (*al-yakin*), what is certain. And it was Ghazali who welcomed logic as a cognitive tool in the middle period of Islamic philosophy though it was already present in other works before Ghazali (López-Farjeat, 2016, p. 2). In this research paper, we cannot entertain the contribution of all Islamic philosophers but we can limit our study only to those thinkers who have written on the issues and problems concerning the cognitive science (Haque, 1998).

Cognitive Science Roots in Islamic Philosophy

Early Islamic philosophers translated and interpreted prominent works of Greek philosophers like Plato and Aristotle into Arabic and Persian. The translation of Aristotle's *De Anima* remains the foundational work for cognitive science in the world at that time (Gutas, 2001). After translating Greek texts, they applied the philosophical methodology and techniques to solve Islamic problems which arose due to the interpretations of the Quran. These Islamic problems are predestination, free will, God's attributes, His vision, afterlife, heaven, hell, intellect, reason and revelation, meditation and knowledge. Moreover, the Muslim scientists studied and analysed the works of Greek philosophers in light of the verses of the Quran and the sayings of Prophet Muhammad (PBUH). In the religion of Islam, human mind, heart, spirit, self, Gnosis, meditation (*zikr*), logical reasoning and thought processes were the most technical terms for cognitive science which we find in modern science as well as common to science in western world. Cognitive mechanism involves both the intellectual knowledge and the intuitional knowledge i.e. the intellectual knowledge like reasoning, abstraction and thinking and the intuitional knowledge of intentionality and direct experiences Intellectual knowledge is known as (*ilm-al-aqliyyah*) which comprises knowledge derived from man's ability for thinking, sense perception and observation while as intuitional knowledge is the direct knowledge or experience of things without the involvement of senses. Both intellectual knowledge and intuitional knowledge gives us the knowledge of abstract and absolute things. Cognition is a multi-stage process involving numerous levels of brain organization, which interact in various ways and remain open to external influences.² Conscious thought, the result of myriad physical and social interactions, is also a construct, a concatenation of many different types of cognition, operating in the conscious and backstage capacities. This implies that

² Cannolly, Corvin and Hall, Andrew and Kallberg, Jan. 2021, gave a cognitive hierarchy in the form of understanding, judgment, knowledge, cognition, information, processing and data.

conscious thought encompasses both physical and non-physical dimensions of cognition, offering a holistic view of consciousness. While Ibn Sina and Ibn Tufayl emphasized mind-body dualism, this passage adopts an integrative perspective, recognizing conscious thought as the result of interactions across multiple cognitive levels — both “conscious and backstage capacities.” It does not dismiss non-physical aspects like reflective awareness or inward intelligence, as highlighted in Islamic philosophy. Instead, it acknowledges that cognitive functions, influenced by physical and social factors, also give rise to higher-order reflective states, akin to the *aql* emphasized by Islamic philosophers (Druart, 2016, p. 79).

Building Blocks of Cognitive Science

The basic building blocks of cognitive science in Islamic philosophy are clearly described as *ilm* (knowledge), mind, heart, soul, reasoning, intellect and mystic cognition. Knowledge (*Ilm*) has an important role in shaping our cognitive mechanism. As Prophet Muhammad (PBUH) mentions: ‘Seeking knowledge is a duty upon every Muslim, and he who passes knowledge to those who do not deserve it is like one who puts a necklace of jewels, pearls, and gold around the neck of swans (Ibn-Majah: 224).

Human knowledge cannot be separated from the knowledge of the heart, intuition, and perceptions, which have a unique function in developing our cognitive system. These concepts can reveal novel ideas in the domain of cognitive science. According to Sharief, there is an intimate relationship between gnosis (*marifa*) and knowledge (*ilm*). He equated *al-marifah* (*gnosis*) and sometimes *ilm* with cognition. Human cognition is also described as *nafs*. In Islamic philosophical thought, particularly in the works of thinkers like Ibn Sina and Al-Farabi, *nafs* is seen as the seat of cognitive faculties, including perception, imagination, and intellect (*aql*). This framework presents cognition as a multi-layered process involving sensory input, imaginative representation, and rational

abstraction, culminating in higher-order reflective awareness. By associating *al-marifah* and *ilm* with *nafs*, Sharif highlights the view that cognition is not limited to sensory data processing but also involves spiritual and intellectual dimensions integral to the human soul (Sharif, 1966). There are three kinds of *nafs* explained in Islamic sciences; *nafs al-amara*, *nafs al-lawama*, and *nafs al-mutmainna*. In most of the interpretations, *nafs* is defined as self but it is not appropriate to define *nafs* as self because in arabic *nafs* is a contextual term which includes one's mind, thoughts, individuality and ego. Mulla Sadra affirms that knowledge is an 'abstraction' (*tajarrud*), 'impressions or representation (*irtisam*), which determines the contents of the mind and provides us the true description of the mind. Mulla Sadra emphasizes the process of cognitive content formation. His philosophy views cognition as the abstraction of universal concepts from sensory experiences, aligning with modern cognitive science's higher-order processes like conceptualization and mental representation. His notion of *irtisam* reflects mental imprinting, akin to memory encoding or mental imagery, offering a metaphysical account of how cognitive content is generated and structured in the mind (Kolak et al. 2006). For Fakhr al-Din al-Razi, the concept of knowledge is a 'relation' (*idafah*) which keeps all cognitive acts dependent on relationality, which itself signifies the empiricist approach only and neglects the rationalist approach. He acknowledges that knowledge is not a mere mental act but a cognitive interaction with other phenomena outside human mind. This approach aligns with embodied and situated cognition theories, conceptualizing cognition as a unified system that extends beyond the brain to include interactions with the environment. Social, cultural, epistemological, and ontological factors are integral to this system, shaping cognitive processes through continuous interaction and contextual influence. Razi's radical claim is that in mental analysis, "essence precedes existence" because the mind can conceive only the universal properties of things (Kolak et al. 2006). Ibn Sina argued that it is in the nature of self or soul to manifest and the forms (archetypes) reside in the soul as separate substances

without destroying its unity which is maintained between soul and intelligible forms (Kalm 2010).

However, Islamic philosophy includes the spiritual aspects of cognitive science which includes mystical cognition, prayers, meditation, gnosis and Neuro-cognition. In addition, from novel researchers we gather that neuro-theology has a close connection with cognitive science. It explains the religious state and behaviour influenced by reciting spiritual hymns, verses and Sufi music. The research carried out by Newberg, Dr. Eugene d'Aquili and by S. Begley at the University of Pennsylvania confirms that "the human brain has been genetically wired to encourage religious beliefs and even praying affects the brain in many ways".³ Ghazali is also a thinker with profound mystical knowledge and awareness of the diverse processes of cognition. He regards human heart as the locus of human consciousness. It is the heart (*qalb*) which differentiates humans from non-rational animals. But this heart is distinct from physical heart and is spiritual and immaterial. This kind of knowledge of the human heart belongs to transcendental world and Ghazali calls it "world of dominion" (*alam-al-malakut*).

Rumi, on the other hand, believed that human cognition has a twofold nexus; one is the bodily stream and the other is the mental stream. He argued that transformation of bodily streams into mental streams is possible. He further said that 'body is not the cause of mind but is created by the mind and its instrument for working on the material or phenomenal plane. Rumi was in favour of transforming mind into divine consciousness as he believes that we see the transformation of the water, earth, plants, and air into ascending life and why can't mind be transformed into spiritual life'. Therefore, Rumi's perspective does not imply a complete separation between mind and spiritual life. Instead, he views the mind as a dynamic medium capable of transformation into a higher state of divine

³ This concept of Neuro-theology has been also discussed in S. Begley, "Searching for God within" Newsweek, p.54, Feb 5 (2001) and V. Rause, "Searching for the divine", Readers Digest, p. 22-27, March (2022).

consciousness. For Rumi, spiritual life is not devoid of mental processes but an elevated state of cognition where the mind transcends its ordinary functions. By drawing an analogy with the transformation of natural elements (water, earth, plants, and air) into higher forms of life, Rumi illustrates the possibility of the mind evolving into a state of spiritual awareness. Hence, spiritual life is not separate from the mind but represents its higher, more refined state, where cognitive processes like reflection and inward intelligence are oriented toward divine realization (Sharif, 1966).

Anthony Kenny mentions in his book, *Medieval Philosophy* that Avicenna had the idea that human intellect is empty when a baby is born (Kenny, 2005). John Locke also believed that the child's mind at birth is a clean slate and on this clean slate, experiences and perceptions can make their impressions. There are no innate ideas which are present in the mind before birth. This kind of exploration was first mentioned by Ibn-Sina. And some philosopher argued that it is the human soul which has the capacity for thought processes. Avicenna posits that the soul inherently possesses cognitive faculties, which are not developed biologically but actualized through sensory and intellectual experiences. This process reflects the activation and refinement of these faculties over time, facilitating a progression toward higher intellectual and spiritual understanding. This view aligns with modern cognitive science, which suggests that mental processes, although initially latent, evolve and mature through engagement with the environment and intellectual stimulation (e.g., Sternberg, 2006). Thus, the soul's cognitive potential is realized gradually, paralleling the maturation of cognitive abilities in the brain. So, Avicenna calls the rational soul, among other names, "tranquil soul" (*nafsa-e- mutma'inna*), "sacred soul" (*nafsa-e-qudsīya*), "spiritual spirit" (*rūhan rūhānīya*), "spirit (from) the command (of my Lord)" (*rūhan amrīyan*), "divine secret" (*sirran ilāhīyan*), and ultimately this treatise corresponds exactly al-Ghazālī's understanding of the heart. The rational soul is not destroyed, but enters another state (*hāla*), which is either "felicity or pleasure"

(*sa'āda wa-ladhdha*) or “misery and pain” (*shaqāwa wa-alam*) (Avicenna 196AD).

Modern science did not consider soul as a scientific concept, rather it argued in favour of mind or behaviour. By contrast, religious studies put much stress on human soul for its role in the mystical cognitive development and spiritual practices. Here it is totally apparent that Avicenna treated intellect as human mind. In Muslim philosophy the word *aql* is frequently used for human mind. The Greek philosopher Pythagoras said that soul consists of three parts, intelligence, reason and passion. The seat of the soul extended from the heart to the brain, passion being located in heart, and reason and intelligence in the brain (Pioreschi 1996). Rene Descartes said that the human soul lies in the *pineal gland*. As it lays deep within the brain, in the midline, it is unpaired. It is interesting that in Neurosurgery journals, Descartes views are quoted with respect discussions on surgery on the area of the pineal gland (Apuzzo and JR 1996). The emergence of cognitive science is not a new discipline, rather it has its roots in most of the religious traditions of the world. One of the religious sources of the cognitive science is Islamic philosophy and the main sources of its surfacing in Islamic philosophy are Quran, Hadith, Fiqh, Ilm-al-Kalam and Falsafa. The Qur'an does not mention direct glimpses of cognitive science, but it contains a vast knowledge and signs of different types of mental processes, stages, mechanism, functions and knowledge system, concepts that commonly describe the fundamental role of cognitive science. The Quran address various terminologies for cognition which are *Rooh* (spirit), *nafs* (ego), *qalb* (heart), *aql* (intellect) reflection (*fikr*), will (*himmah*), attention (*hamm*), and *faham* (consciousness).

We should, however, not overlap cognitive science with philosophy of mind, psychology, brain science and neurology despite the fact that we cannot separate them. Cognitive science is the interdisciplinary study of all these subject matters which carry the explanations regarding cognitive science. In order to understand the crux of cognition in Islamic sciences, one must first explore these concepts.

Islamic philosophy laid stress on the innate mechanism of the human cognition which is known as *al-fitrah*. *Fitrah* is the innate nature of human beings, which is generally defined as the pristine nature within humans that lead them to acknowledge the truths of God's existence and to follow His guidance. It is an inborn capacity to accept a transcendental being Who created us, the world around us, and all that is in it. Prophet Muhammad SAW says: "No child is born unless he is born in a state of *fitrah*. So, then the two parents will make the child become a Jew, Christian or Magi like the cattle that give birth to cattle perfectly. Do you see any defects in him?" (Bukhari-1271). Human mind possesses different intelligences like active intelligence, material intelligence, and actual intelligence and acquired intelligence. Al-Kindi defined mind as 'mind is a simple essence that is aware of things and their reality'. This innate characteristic is described in the Qur'an as:

"So, direct your face (self/mind/heart) towards the religion, inclining to truth. Adhere to the *fitrah* of Allah upon which He has created all people. No change should there be in the creation of Allah. That is the correct religion, but most of the people do not know" (Quran 30:30)

Islamic philosophers consider intelligence, reasoning and wisdom as the cognitive processes which are used to learn from previous experiences, to solve problems and to differentiate between correct and incorrect (Butkus, 2015, p. 79). As we know, Avicenna defined logic as the subject which distinguishes correct from incorrect, and valid from invalid. *Aql* (reasoning) as a cognitive process is described as the understanding, comprehension, discernment, insight, rationality, mind or intellect. It implies that cognition is the universal mental process that contains different modular processes (Druart, 2016, p. 79). As per Ibn Tayamiyyah, the cognitive faculty that is '*Aql*' is the instinctive faculty that God has bestowed upon humans. Because of this faculty we understand the truth of our existence as well as the world. There are many verses in the Qur'an which reflect the cognition or the cognitive process. In the Qur'an, it is mentioned:

“And they, disbelievers will say: If only we had been listening or reasoning, we would not be among the companions of the Blaze” (Quran 67:10).

Ibn Taymiyyah further asserts that mind is one of the necessities that should be preserved in Islam and the other necessities are faith, life, lineage and property. He emphasizes the importance of preserving essential elements for a well-functioning society in Islam, which includes the protection of the mind alongside faith, life, lineage, and property. By including the mind as one of these necessities, Ibn Taymiyyah stresses its vital role in ensuring rational thought, ethical reasoning, and the capacity for faith and decision-making. This highlights that safeguarding intellectual and cognitive integrity is crucial in Islamic ethics and societal functioning (Taymiyyah, 2005). Hossein Nasr wrote that ‘we live in a world in which the human intellect has become synonymous with intuition, reason, and mind. It is very difficult to understand what intellect, reason, and intuition, these key faculties, mean in the context of Islamic thought, on which knowledge is based upon’. The concept *aql* (reason/intellect) has been often narrated by God in Quran (as *taaqiloon* or *tafaqaroon*) in an individual’s religious life and even in salvation. *Al-aql* is also used for reason, intelligence, foresight, common sense and keenness of perception. Many other concepts of the related order usually use ‘*aql*’ with a modifier such as *al-‘aql al-juzi* (partial ‘*aql*’), which is often used for reason.

The Heart as Organ of Knowledge

The human heart is the source of human cognition. It has been argued that people with healthy heart may have better cognitive abilities (Vina et al. 2007). There is an interaction between heart and the brain. The brain and its interaction with the heart give impulse to raise perceptions, consciousness and other cognitive functions (McCraty, Rollin, et al. 2004; Rivera 2022). But if we take the case of knowledge of the mind instead of heart, it is considered lower than the knowledge of the mind and in some cases provides false impressions. Human mind can make mistakes in reasoning, or in differentiating between correct and incorrect, truth

and falsehood but it has certain limits to testify the knowledge Al-Ghazali and Pascal emphasize the role of the heart (*qalb*) as a source of intuitive knowledge beyond rational cognition. This view aligns with modern psychophysiological studies, such as those on heart-brain coherence, which demonstrate that the heart influences emotional and cognitive processes via neural feedback pathways. Like the mind, the heart is also subject to misperceptions when affected by emotional or cognitive imbalances. It takes the help from the sense-perceptions. The knowledge of the heart is considered definitive, as it integrates both sensory experience and rational analysis, ultimately providing validation of truth. This process is facilitated through the purification of the heart and the detachment from external desires, allowing it to attain a state of heightened intuitive insight, often referred to as *kashf* (unveiling). In this state, the heart perceives truths directly, resulting in a level of certainty (*yaqeen*) that surpasses the limits of rational cognition. Modern psychophysiological research offers a parallel perspective, highlighting how heart-brain coherence enhances cognitive clarity and emotional stability, enabling more accurate perception and decision-making. Human mind sometimes forgets to remember things because forgetting is natural to it. The knowledge of the heart is intuitional and it does not consider sense perceptions for carrying out certain process, however, human mind can. That is why the message of the revelation addresses the heart more than the mind as the following verses of the Quran reveal:

[O men, now there has come to you an admonition from your Lord. And a healing for what is in the breasts (namely the heart) and a guidance, and a mercy to the believers.] (Surah 10:57, Arberry Translation)

Similarly, it is the human heart which is accountable before the God. The Quran mentions as:

[God will not take you to task for a slip in your oaths: but He will take you to task for what your hearts have earned: and God is All-forgiving, All-clement.] (Surah 2: 225, Arberry Translation)

So, the knowledge of the heart is considered as necessary for attaining liberation from jealousy, egoism and attachment. Most of the scholars and Sufis apprehend those who deny to recognize themselves with the heart or center of their living shall lose the possibility of entering paradise which metaphorically lies at the center of the heart as the famous dictum of Jesus Christ “Kingdom of God is within you” testifies the truth. The Quran asserts:

[We have created for *Gehenna* many jinn and men; They have hearts, but understand not with them] (*lahum qulubun la yafqahuna bihaa*) (Surah 8: 178, Arberry Translation)

In the Hadith studies, there are various references which signify the knowledge of the heart. The knowledge of the heart is fundamental and necessary and is recognized as the part of one’s faith and belief. The Hadith quoted by *Bukhâri* demonstrates as:

[Faith descended at the root of the hearts of men, then came down the Quran and (people) learned from the Quran and from the example (of the Prophet).]

The human heart is considered conscious and reflective. It is always open to knowledge. As Prophet Muhammad (peace be upon him) has said: “Blessed is he who makes his heart open for wisdom. It is stated in the language of the Noble Quran and Hadith that heart implies the seat of true knowledge. (Surah Al-Hajj, 22:46) For this reason, the Sufis have developed the doctrine of “the knowledge of the heart” that took the attention of the many great Sufi masters who used this knowledge of the heart to recognize their lord. Gonzalez describes this process as “affective understanding” (Gonzalez 2020, 2), emphasizing a distinction between reception and perception. He explains that while reception encompasses modalities like sensory perception, cognitive processes, emotional reactivity, and pure intellection (e.g., conceptualization and appreciation), perception specifically involves processing information through the senses. Gonzalez further notes that Islamic sources use metaphors such as the heart and the “inner eye or gaze” to address concerns beyond corporeality. These metaphors act as

psychological agents of affective understanding, reflecting a multi-layered noesis where emotion validates knowledge. Thus, the heart and inner eye relate to reception rather than perception (Gonzalez 2020).

This kind of the knowledge of the heart is known as “eye of the heart” (*‘ayn al-qalb* in Arabic and *chishm-i-dil* in Persian) as the “third eye” connected with the intellect, through this we can gain knowledge which is different from the physical vision. The famous Persian poet Hâtif affirms: ‘Open the eye of the heart so that thou canst see the spirit’, and gain vision of that which is not visible. The knowledge of the heart extends beyond sentiments, attachments, and emotions; it encompasses a deeper understanding that contrasts with the emphasis on reason in modern philosophy. Humans do not possess only the faculty of thinking and emotional intelligence but also they possess the conceptual knowledge which transcends the dualism of reason and emotions, intellect and heart, mind and body. Cognitive mechanism involves both the intellectual knowledge (conceptual knowledge) and the intuitional knowledge. Intellectual knowledge is best demonstrated by the Greek philosopher Plato who regards it as the knowledge of the universals or class concepts. It is the knowledge of the numbers, properties, God, soul, and the mind. Intuitional knowledge is defined by Rene Descartes as knowledge through a-priori means and is possible when the rational mind apprehends the truth or falsity of something with immediacy, which means without any process of reasoning or inference (Mursell 1919). There was a time when intellectual and intuitional knowledge are treated as one but now the research has broadened these concepts and has recognized them as separate and interrelated. It is necessary to return to the division between “presential” (*huduri*) and “attained” (*husuli*) knowledge.

Comparative Perspectives on Cognitive Knowledge in Modern and Islamic Thought

All rational knowledge related to the mind is possible through concepts that are “attained” by the mind. Consequently, all mental knowledge is “attained”

knowledge. Rationally man can only know ‘fire’ or ‘water’ through the concept of fire or water abstracted through the senses and made available by the various mental faculties for the analytical faculty of the mind recognized with reason. But there is another type of knowledge which is possible for all men, but in practice attained only by the few. It is a knowledge that is direct and immediate, a knowledge that is identified with the heart and that kind of knowledge contains the spiritual world. It is believed that the knowledge of the heart for gnostic persons goes vast because this kind of faculty is open for them through spiritual practices. It has been found that to know God through knowledge involves both the intellect and the intuition which implies that in this state of mechanism all the cognitive experiences merge to form a single and unique highest plane.

From an Islamic perspective, knowledge is understood as a hierarchical continuum that progresses from sensory perception to imagination, rational cognition, intellectual comprehension, and ultimately, intuitive insight. These stages are not viewed as mutually exclusive or opposing; rather, each build upon the other in a complementary manner. The human mind is seen as a reflection of the heart (*qalb*), which is regarded as the spiritual center of the microcosm. Central to this framework is the Islamic doctrine of Unity (*tawheed*), which unites all forms of knowledge into an integrated whole. At the meeting of this hierarchy lies the supreme form of knowledge—gnosis (*marifah*)—which is attained through the purification of the heart. This purified state allows for a direct, unmediated realization of Divine Unity (*tawheed*), serving as the ultimate aim of Islamic revelation and spiritual realization (Nasr 2006).

The role of Islamic philosophers is very significant in developing cognitive science. Islamic philosophy emphasises more the cognitive aspect than the psychological aspect. The Quran offers a description of how the universe works including the mind (41:53). According to Haque, when God creates something, He instills within it its inherent nature and the law that governs its existence, allowing it to align with the greater order of the universe. The human mind is no

exception, as it operates according to the divine laws embedded within it (Quran, 91:7-10). Human cognition is shaped by multiple interconnected faculties, including the intellect (*al-'aql*), knowledge (*al-'ilm*), spirit (*al-ruh*), heart (*al-qalb*), and soul (*al-nafs*). These faculties, together with the human disposition (*al-fitrah*), function as an integrated cognitive system, enabling human beings to perceive, reason, and engage with reality in a holistic manner (Haque, 2009).

Logical reasoning is treated as one of the elements of the cognitive system. It correlates reasoning with cognition. Reasoning is of three types; inductive, deductive and abductive. The role of reasoning is to draw inferences from the arguments which we either form in speaking or in writing. The potentiality to make inferences is universally wired in the brain. Avicenna argued that logic provides us certainty about reality. Reasoning, certainty and knowledge are cognitive matters. He regards logic as the cognitive faculty and chooses a language, known as the language of 'necessity', 'possibility', 'contingency' and 'syllogistic sentences'. Wilfrid Hodges said that Avicenna and Farabi regarded mind as the base to make deductions from the premises. Also, these premises have to be presented before the mind in the right order which is known as *tartib* in Arabic terminology. Farabi asserted that syllogisms are actually the things that are sequenced in an order in the mind innately (Hodges, 2018).

As we know, language is the coefficient of our cognitive system and it is highly emphasized and studied in the western world. Many scientists argue that language is necessary for the operation of human mental processes, but this is not the case with the Ibn-Sina. He argued that language, as a collection of discrete expressions, is not essential for the human mind to perform its operations and processes. Instead, the use of language is incidental, something humans adopt out of necessity rather than intrinsic requirement (Hodges, 2018, p. 150). It has been argued that language is one of the forms of the human soul. And this form is divided into two distinctions: mental and spoken. While spoken language is a representative, sensible and subjective, mental language is a spiritual, rational and

objective. Mental language refers to the internal, non-verbal system of representation through which the soul apprehends the essence of ‘things in themselves.’ While sensory perception and cognition are necessary to engage with external objects, the soul, in many philosophical and spiritual traditions, is understood to grasp deeper, abstract realities that go beyond mere sensory experience. Unlike animals, whose cognitive processes are limited to instinctual or perceptual responses, human beings possess a higher-order mental language—often linked to universal, conceptual, or abstract representations, that enables reflection on metaphysical realities, such as justice, truth, and beauty. This mental language operates independently of spoken linguistic systems, functioning as an internal framework for reasoning and contemplation, regardless of the diversity of external, spoken languages. This unique capacity for conceptual abstraction is seen as a defining feature of human cognition (Baffioni 2010; Druart, 2016). Therefore, there are two approaches to understanding mental language: cognitive and non-cognitive. The cognitive approach suggests that religious language conveys beliefs that can be evaluated as true or false, emphasizing factual claims. In contrast, the non-cognitive approach argues that religious language does not express beliefs but instead reflects other mental states that are not concerned with truth or falsehood. This type of approach asserts that religious beliefs express emotions, feelings and are neither true nor false (Lacewing 2017). Mental language is a propositional language in which our mind works and carries out many cognitive functions. It is only through this mental language that humans think, abstracts, reflects, and analyzes. However, animals also have a mental language but that is not much developed. Their language is applicable to their world. Neither humans can apply their mental language to understand the world of animals nor can animals apply their language to understand the world of humans (Kärkkäinen 2011).

Cognitive science is a discipline which attempts to discuss different cognitive processes like perception, reasoning, thought, willing and their relation with

language, computation, genetics and society. Cognitive science as per Quranic perspective includes heart besides mind and brain.

Human heart (*qalb*) is the mirror or the reflection of the universe for the realities of being. Prophet Muhammad says “The sky and the earth do not contain Me; it is only the heart of My believing servant which can contain Me” (Sahih al-Bukhari, Hadith 6980). This statement, according to al-Jili, proves that the heart is primary and the universe is only secondary. God’s understanding by the heart is of three sorts: first is knowledge. God can be known and understood by heart. The heart, in this context, is seen as the locus of spiritual insight and intuitive knowledge, where, through purification and spiritual practices, it develops the capacity to perceive truths beyond intellectual reasoning. This form of knowledge is direct, experiential, and transformative, fostering a deeper connection with the Divine. While the intellect processes logical understanding, the heart facilitates a more intimate and experiential recognition of God's presence. Second is observation (*mushahidah*). God can be observed by seeing (intuition) which means that the beauties of the majesty of God can be perceived. Third is vicegerency. In this stage, the humans become the servant of the God. Man will become the God’s will. God becomes the complete form of divine attributes. Man will do the work of prophets on earth. He then becomes God’s vicegerent. There are three kinds of reason defined in Islamic philosophy. The first is intelligence (*aql al-awwal*), second is universal reason (*aql al-huUi*), and third is ordinary reason (*aql al-maash*). The first type of intelligence base is the locus of the form of divine knowledge in existence and as such it is identical with the Exalted Pen. It contains explicitly and analytically what is contained implicitly and synthetically in divine consciousness. It is the light of divine knowledge which became the first manifestation of the essence in the phenomenal world. Universal reason is the luminous percipients in which those forms of knowledge are made manifest which are deposited in the first intelligence. Al-Jili rejects the view of those who regard universal reason as the sum of reasons of all rational beings, for

reason is a unit and a substance. Therefore, reason is a singular, unified entity, not fragmented across individual beings. As a substance, it is not just an abstract capability, but a foundational, concrete principle that defines intellectual activity in all rational beings. Ordinary reason is a light which is judged and measured by the laws of reflection. Its sphere of activity is confined only to one of the several aspects of the universal reason; it has no access to the first intelligence which is beyond logical inferences and is the sphere where sacred revelation takes place. Ordinary reason has only one scale, that is nature, while universal reason has two scales, that is of wisdom and power, with the result that knowledge gained through the universal reason is infallible and covers almost everything and while the knowledge received through ordinary reason is of limited scope, fallible, and is mostly of the nature of conjecture (Sharif 1966).

Classical Islamic Philosophy and Sufism on Knowing

Alfarabi, Avicenna, and Averroes combined the active intellect and the potential intellect into bigger cosmic spheres. In each sphere, the physical universe contains transparent celestial spheres, in which the stars and planets are fixed, and a stationary sublunary world, about which the celestial spheres rotate. A first supreme being consisting of pure thought, while other intellects have the function of maintaining the celestial spheres in motion. The active intellect, the cause of actual human thought, locates at the end of the series of supernal intelligences. In the philosophies of Alfarabi, Avicenna, and Averroes, intelligences, along with the active intellect, come into existence through a series of eternal emanations that begin with the First Cause. As for Alfarabi and Avicenna, they comprehend that the series of emanations expands to the celestial spheres and brings them into subsistence as well. All three philosophers (Farabi, Avicenna and Averroes) place the human potential intellect instantly after the active intellect in the descending order of existence (Davidson 1992).

Alfarabi regards the cosmos as the eternal emanation of the first causes through nine intelligences (Alfarabi, 2003, 45-47). These intelligences have a modular basis in thought. Human intelligence describes the general mental capability that involves the ability to reason, to think abstractly, and to learn quickly from experiences. Human intelligences depend on the integration of information that is being processed in functionally specialized brain regions. There are many parts of brain that are responsible for higher cognitive processes. It has been found that there is interaction, segregation, and coordination between different cognitive modules for performing cognitive processes. While certain regions of the brain are associated with intelligence, the specific mechanisms by which these modules interact with each other remain under-explored (Fiebc 2017).

Cognitive psychology in Islam does not only focus on the brain but also includes the feelings, passions, and conscience. Islam is based on three principles, Iman (belief), Islam (surrender), Ihsan (doing kindness). There are many terms that have their resemblances with intelligences and reasoning such as *aql*, *lubb*, *fikr*, *Bashar*, *nuha*, *fiqh*, *fikr*, *mazhar*, *tadabbur*, *zikr*. These are often used in Quran in the form of verb like *ta'qilun*. While Muhammad Ali Al-Shabuni, interpreted the word *'afala ta'qilun*, as 'Don't you use your mind?'

According to Al-Gazali, one's actions are the reflection of one's mind. He believes that consciousness could be understood by the phenomenon when the body is sleeping. The control of the sense organs on the 'divine inner light' or 'rational soul' is broken while sleeping. As a result, the sense organs do not keep the soul or mind busy as the soul transforms from innate faculties to its imaginative faculties. It is mentioned by Ibn Tufail who interpreted Ghazal's concept of vision (*mushahada*) as consciousness (Davidson, 1992). Accordingly, by interpreting Al-Ghazali's (*mushahada*) as consciousness, Ibn Tufail expands the scope of spiritual vision to include not just mystical perception but also rational awareness and self-realization. This view anticipates modern

understandings of consciousness as a multi-faceted phenomenon, blending reason, intuition, and spiritual insight into a comprehensive framework for understanding human consciousness and the direct perception of reality. Therefore, Ibn Tufail bridges classical mystical thought with philosophical conceptions of consciousness, providing a deeper understanding of the interconnection between the spiritual and intellectual dimensions of the human cognition. However, it is believed that he often used his own terminology for the terms like 'heart' for rational soul (Treiger 2012). In Surah Al-Ankabut verse 49 and Al-Hajj verse 46, it is narrated that the centre of thinking is not in the brain but also in the human heart. In order to understand Al Quran, people cannot only use the cognitive (brain), but it has to felt or use feeling in the heart sincerely.

In the ninth century AD, Neoplatonism becomes the most dominant philosophy among Muslim thinkers. Sufis devised the idea of the blend of *baqa* with the *fana* as the cognitive states of the mind that were not limited to physical life. The Sufis who created this path was Abu Said al-Kharraz of Baghdad. He affirmed that *baqa* means the abiding principle in the contemplation of God's divinity. *baqa* and *fana* are the stages of cognitive development in sufism, while *fana* implies the total destruction of one's awareness or ego. Al-Hujwiri states that the total destruction of the ego comes by way of a vision of God's majesty. This line of thought characterizes the attitude of Al-Junayd of Baghdad and other restrained Sufis toward mystical experience. They believed that the mystic continued to experience a perfected awareness of the self after annihilation in God.

There is a term known as '*hal*' which is used by Sufis to explain a kind of inward religious consciousness. They adapted it from the technical vocabulary of early Muslim scholars of Arabic language, medicine, and philosophy. It has been believed that Al-Muhasibi of Basra, a contemplative mystic, is thought to have been the first to have engaged it in relation to mystical experience. The *hal* was treated as an inner state or spiritual "encounter" that descends from God into the

heart of the mystic. Most Sufi thinkers considered it to be a spontaneous state of grace, or “flash of lightning,” that was one of many possible states in the quest for higher consciousness, or intimate knowledge of God. Unlike the *maqam*, or spiritual “station,” the *hal* could not be attained as a result of the Sufi’s own intentions or efforts. Sufi philosophers and mystics explored and practiced many states such as “repentance,” “longing,” “love,” “intimacy,” “contraction,” “expansion,” “delight,” and even “terror.” The leading writers who contributed to the development of the idea of the spiritual cognitive state among Sufis were Al-Sarraj of Tus, Al-Hujwiri of Lahore, Al-Qushayri of hal, Al-Ansari of Harat and Al-ghazali of Tus. Ghazali took the concept of intelligence from Avicena and understands that it lies in the gradation of the intellect from material intellect to actual intellect and finally to prophetic intellect. Knowledge as per Ghazali is the reflection of the heart. Ghazali calls intellect inner eye (*ayn batina*). Intelligence includes both the innate knowledge and the acquired knowledge. Intelligence is actually in stages and each stage is marked as development in human development. In his work, *Deliverer from Error*, Ghazali speaks of following stages. The stuff of a human being (*jawhar al-ādami*), that is the heart, is in its unique nature (*fī asl al-fitra*) created as a *tabula rasa*, devoid of any knowledge about God’s worlds (*khāliyan sādhan lā khabara ma ‘ahū min ‘awālim Allāh*). Next, senses are created (this phase is general to humans and non-rational animals). After that, discernment (*tamyīz*) comes about at about the age of seven. As we study from al-Ghazālī’s other works, it is at the age of judgment that the child receives necessary knowledge (*al-‘ulūm al-darūrīya*). After discernment, the person reaches the state of intelligence (*‘aql’*), which comes at approximately the age of fifteen. And, lastly, in special cases, one also receives the “eye of prophecy” (Treiger 2012).

The Islamic Conception of the Intellect: Aql

Aql (reason/intellect) is the faculty which binds an individual to truth, to God, to his origin. It is only by the reasoning faculty that an individual becomes a man and shares in the attribute of knowledge, which finally belongs to God alone. Regarding reason, which is the reflection of the intellect upon the plane of the human mind, other terms such as *istidlal* are also used. In any case, each school of Islamic thought has elaborated in great detail on those aspects of the meaning of intellect that pertain to its perspective and inner structure (Nasr 2006). If we look at the concept of intuition, the terms *hads* and *firasah* have been used for it. There are some other terms which we get from the texts of philosophy; *dhawq*, *ishrâq*, *mukâshafah*, *basirah*, *nazar*, and *badihah*. These terms are concerned with the direct knowledge of the things in contrast with the indirect and conceptual knowledge. Hossein Nasr holds the vision that to understand the nature of intuition as a cognitive concept, it is necessary to turn to those Islamic intellectual perspectives that have contributed to various intellectual, mystical, and formal possibilities inherent in the Islamic sciences. These includes the purely religious sciences i.e. Quranic and Shariite studies, theology, kalam, falsafa and finally Sufism. As for the Quran, it declares that the intellect work is not merely reason, which is its basic property, but it is also the instrument of vision and intuition, which when united to faith enables man to look into the deep meaning of religion. Humans must use their intelligence and reasoning in order to understand God's revelation (Nasr 2006). It is only Ibn Rushd who used different technical terms for intellect, intuition, mind, and reasoning, in his writing on philosophy, psychology, medicine and logic.

In Muslim philosophy, there are three schools that mostly deal with the knowledge, intellect, reasoning and its relation with intuition; Peripatetic (*Mashayii*) philosophy, Illuminationist (*Ishrâqi*) philosophy, and the "transcendent theosophy". The Mashshayi thought derived its teachings from the Aristotelian and Neoplatonism. In this school, intellect is a property regarded as

the metaphysical which distinguishes between reasoning (Reasoning is the reflection of the intellect upon the human mind) and the intellect itself which deviates the individual to different levels of reality. We can understand the analysis and the meaning of intellect explicitly from the works of Ibn-Sina who based his theory of knowledge on the theory of intellect. His most important works regarding knowledge, cognition and intellect are; The Book of Healing (*al-Shifa*), The Book of Salvation (*al-Najah*), Springs of Wisdom (*‘Uyun al-Hikmah*), and his last masterpiece The Book of Directives and Remarks (*Kitāb al-ishārāt wa’l-tanbihāt*). Ibn-Sina differentiates between the active intellect (*al aql-al-faal*) which is general and self-sufficient of the individual and the cognitive function within humans. Each human being possesses intelligence in virtual reality. This is known as “material” or “potential” intelligence (*bil-quwwah*). Therefore, Ibn Sina distinguishes between the active intellect (*al-‘aql al-fā’il*), a universal and self-sufficient intellect, and the potential intellect (*al-‘aql al-quwwah*), which exists as a latent cognitive power within each human. This potential intellect is akin to a undeveloped capacity for knowledge, awaiting actualization through intellectual development and sensory knowledge. This “virtual reality” of intelligence is not a reference to modern digital concepts but to the inherent potential in human cognition that can be realized through reasoning and experience. It differs from Kant’s Noumena, as it is not beyond human access but can be actualized by the individual.

It has been argued that when an individual grows in knowledge, the first intelligible forms are placed in the soul from above, and at that state an individual attains the level of the habitual intelligence (*bil-malakah*) and at final stage, acquired intelligence (*mustafad*). There is a stage and state known as active intellect (*al-aql-al-faal*) which exists above these stages and states. This stage (active intellect) is a divine and it enlightens the mind through the act of knowledge. According to Ib-Sina, illumination of the mind happens through active intellect. The active intellect provides form to the mind and kicks start the

operations of the mind for acquiring knowledge. This type of mechanism regarding the mind and knowledge resembles the Platonic concept of intellect and the empirical states of the human cognitive system. However, Ibn Sinâ refutes the Platonic ideas; he stands certainly closer to the realists of the medieval West than to the nominalists. It is no coincidence that the followers of St. Augustine endorsed the teachings of Ibn Sina once his works were translated into Latin, leading to the development of a school of thought rooted in both St. Augustine and Ibn Sina (Lindberg, 2007, 173). Ibn Sina clearly distinguishes between reason and intellect, not confusing the two, and he does not completely dismiss the role of intuition in the cognitive system. He compares intuition to Aristotle's *agkhinoia* or quick wit but also asserts that it is not identical to it.

The questions arise as to why there is a need to research on cognitive science even if there are at least some researches carried out in the domain philosophy of mind, psychology and knowledge. The answer to this question is simple and lucid: Islamic philosophers look at cognitive science or cognitions in a broader way, as they study and examine cognitive science with multiple dimensions. There is not a single approach or philosophy which could ultimately define cognition. They gave it different terminologies and conceptual framework and then finally it emerged as a whole cognitive science.

Islamic Cognitive Science in Western Perspective

During the medieval period, a lot of interest has been developed in the cognitive science which regards not the will but the intellect. This philosophy of cognitive science didn't arise in Christendom but in the Muslim schools of Baghdad. Both Al-Farabi and Al-Kindi have contributed their wit to analyze the basic dictum in Aristotle's *De Anima*, which implies that there are two types of intellects, one is known as agent intellect which has a job 'to make things' and a receptive intellect which works 'for becoming things' (Kenny, 2005). They went further to hold the view that nine celestial spheres possess a rational soul. These

are moved spiritually by intelligences, emanated one from another, in a series originating ultimately from the God who is a prime mover. The ninth intelligence (which governs the moon) emanates a tenth intelligence, which is known as agent intellect. Following Aristotle, this agent makes all things. The concept of the agent intellect in Al-Farabi's philosophy, which transitions the intellect from potentiality to actuality, can inform a novel cognitive science framework by integrating spiritual and intellectual growth. The agent intellect not only activates the intellect's potential but also aligns with processes of learning and knowledge acquisition. By incorporating this concept, the idea can bridge the gap between empirical cognitive science and spiritual cognition, offering a holistic model that includes both rational and transcendent dimensions of human cognition. This method provides a comprehensive understanding of cognitive development, incorporating both intellectual and spiritual maturation. These hierarchies of intelligences are regarded as the manifestations of the mystical cognitions, may be interpreted as stages or levels of cognitive processing, from basic sensory input to higher-order reasoning. It is transition of the intellect from potentiality to actuality which activates the latent cognitive abilities in the brain. By integrating this framework (from potentiality to actuality) with modern cognitive science, we can explore how mystical experiences might relate to cognitive development, providing a bridge between spiritual insight and neurocognitive function (Kenny 2005). Avicenna argued that human thought is a single phenomenon and do not have parts. Thoughts belong to soul which is indivisible and spiritual (Kenny, 2005, p. 225).

In sum, Islam gives the priority to the revelation which does not mean that it avoids cognitive approaches. The Holy Quran and various Hadiths mentions urge humans to think and reflect on the universe and to examine all knowledges, but the revelation should be the standard by which we can judge the developing sciences (Utz 2011). Human soul, which was treated as metaphysical element in the traditional philosophy, has now been found treated as the locus of the human

capacity for free will in recent researches. (Butkus, 2015) Ibn Sina (Avicenna) argued that it is in the nature of self or soul to manifest. The forms (archetypes) reside in the soul as separate substances without destroying its unity.

This study was also inspired by the great philosopher and cognitive scientist Daniel Dennett who writes:

One widespread tradition is that we, the human beings are responsible agents and captains of our fate because we are actually souls, immaterial and immortal clumps of Godstuff that inhabit and control our material bodies like spectral puppeteers. It is our souls that are the source of all meaning, and the locus of all our suffering, our joy, our glory and shame. But this idea of immaterial souls, capable of defying the laws of physics, has outlived its credibility, thanks to the advance of the natural sciences (Dennett 2003, 5).

The human soul has the property to ascend, descend, hear, see, speak, so on and so forth. These acts of the soul are different from the physical acts. The soul spreads throughout the whole body. It drives the physical body's feelings, movements and volition. When the soul is removed, life ends. Ibn Taymiyah said that "The *ruh* does not reside in any particular part of the body rather it flows throughout it. If life is dependent on the *ruh*, so when the *ruh* is in the body, it is alive and when the *ruh* departs, life is over" (Utz, 2011). The knowledge in the domain of soul (*ruh*) is innate.⁴ It is mentioned in the Qur'an that the concept of soul (*ruh*) is the command (decree) of God which functions as a special capacity for acquiring knowledge (Ansari, 1992).

CONCLUSION

This essay provides glimpses at novel approaches to the cognitive sciences, which are discussed in Islamic sciences. In Islam, cognitive sciences have

⁴The term *ruh* is translated as soul or self but in most of the texts of Islamic philosophy, it is termed as a whole cognition. it is used in AL-Quran contextually because it has variety of meanings in different verses. See Khamenei, Seyyed (unknown). Cognition in Islamic Philosophy. *Kheradnameh Sadra Quarterly* 40. And Dr. Yusuf Dalhat. (2015). The Concept of Al-Ruh (soul) in Islam. *International Journal of Education and Research*.

developed in the form of the knowledge of the heart, mind, intellect, soul, gnosis, reasoning, consciousness and intuition. It has been further argued that there are mystical processes or gnostic processes which develop our cognitive faculties during meditation and prayers. In Islamic sciences, the knowledge of the heart, soul and Sufi practices provide original spiritual insights in the domain of cognitive science. Through new researches in the domain of the soul, mind, and heart, and in meditative practices, it appears that these humanistic-spiritual insights enlarge the relationship between the cognitive sciences with other systems of knowledge. The influences of Sufi music, zikr (meditation), chanting sacred verses of the Quran, daily prayers, and avoiding sins have a major role in developing the cognitive system of the individual. As per Chomsky, the cognitive system is like the respiratory system, digestive system and neural system. The difference is only that some systems can be touched and seen, while the cognitive system cannot be seen and touched but could be inferred. So, in the future, we will see more development in the cognitive sciences through diverse religious studies as well as through neuro-theological expressions. The inclusion of the religious studies in the domain of cognitive studies, in my view and from experience, is at present needed because cognitive sciences could benefit from approaches informed by the religious studies. Islamic sciences have put the studies of the human heart, soul and meditation back into the cognitive sciences. As Laura Sanders says, the heart has its own brain and this brain is sending more neurons than the brain. In Islamic philosophy, human reason is regarded as (*fikr*) reasoning and intellect is as (*al-aql*) which implies that reasoning has been greatly emphasized and stressed in Islamic sciences. The important thing in reasoning as per Islam is that it is universally guided by the power of God. Thinking, reflection, perception, abstraction and imagination and even doubting are recommended in Quranic, Hadiths and Islamic philosophical sciences, but there is a restriction regarding the process of doubting. One cannot doubt on God's attributes but can doubt on His creation (world) and himself (humans). So broadly speaking, Islamic

philosophy has not separated and excluded cognitive science. Therefore, there are many things in Islamic sciences which can be analyzed through novel researches and multidisciplinary approaches.

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