



# The New Bioethics

A Multidisciplinary Journal of Biotechnology and the Body

ISSN: 2050-2877 (Print) 2050-2885 (Online) Journal homepage: <http://www.tandfonline.com/loi/ynbi20>

## Framing the Mind–Body Problem in Contemporary Neuroscientific and Sunni Islamic Theological Discourse

Faisal Qazi, Don Fette, Syed S. Jafri & Aasim I. Padela

To cite this article: Faisal Qazi, Don Fette, Syed S. Jafri & Aasim I. Padela (2018): Framing the Mind–Body Problem in Contemporary Neuroscientific and Sunni Islamic Theological Discourse, *The New Bioethics*, DOI: [10.1080/20502877.2018.1438835](https://doi.org/10.1080/20502877.2018.1438835)

To link to this article: <https://doi.org/10.1080/20502877.2018.1438835>



Published online: 05 Mar 2018.



Submit your article to this journal [↗](#)



View related articles [↗](#)



View Crossmark data [↗](#)

# Framing the Mind–Body Problem in Contemporary Neuroscientific and Sunni Islamic Theological Discourse

FAISAL QAZI

*Department of Neurology, Western University of Health Science, Pomona, CA, USA*

DON FETTE

*Barrett, The Honors College, Arizona State University, Tempe, AZ, USA*

SYED S. JAFRI

*Department of Neurology, University of Wisconsin, Milwaukee, WI, USA*

AASIM I. PADELA

*Department of Medicine and Initiative on Islam and Medicine, University of Chicago, Chicago, IL, USA*

Famously posed by seventeenth-century French philosopher René Descartes, the mind–body problem remains unresolved in western philosophy and science, with both disciplines unable to move convincingly beyond the dualistic model. The persistence of dualism calls for a reframing of the problem through interdisciplinary modes of inquiry that include non-western points of view. One such perspective is Islamic theology of the soul, which, while approaching the problem from a distinct point of view, also adopts a position commensurate with (substance) dualism. Using this point of convergence as a conceptual starting point, we argue that bringing into dialogue contemporary neuroscientific, philosophy of mind, and Sunni Islamic theological discourses may provide a fruitful way of reframing the age-old mind–body problem. This paper provides an overview of how these three discourses have approached the issue of the mind–body (-soul) problem. Juxtaposing these three discourses, we hope, may ignite further scholarly dialogue and investigation.

**KEYWORDS** mind–body problem, dualism, consciousness, Sunni Islamic theology, neuroscience, soul

## Introduction

How does the mind interact with the body? What is the connection between thoughts, emotions, intentions, and other states of mind with the body? Is consciousness a function of, or somehow dependent on, the body – or is it something entirely distinct from the body? How are “mind” and “consciousness” related? Are they synonymous or disparate entities? These are the kinds of questions which, according to philosopher Tim Crane (1999), ‘in effect, define the contemporary debate on the mind–body problem’. For the religiously-inclined, other questions must be considered: What is the soul? How does the soul relate with the body? Are the functions of the soul identical to or analogous with the various properties attributed by modern science to the mind or consciousness?

Investigation into the connection between mind and body by modern neuroscience has fallen short of explaining the gap between the non-physical and the physical. The possibility of bridging the mind–body divide seems even to some an impossible task. Indeed, as Crane and Patterson (2000) note, science has provided ‘no adequate account, and in the case of consciousness at least, the problems in giving such an account are sometimes taken to be insuperable’.

Part of the problem in giving such an account (of mind being an entity distinct from body) is connected to the origin of the problem in Western philosophy dating back to Plato but taking its more modern form from René Descartes (d. 1650). Descartes, by categorizing mind and body as two completely distinct and incommensurable substances, created an impassable, or nearly impassable, gap between the two which haunts science and philosophers of mind to this day.

One way that modern philosophers and scientists have addressed this impasse is simply to undermine the non-physical nature of the mind and reduce it exclusively to the confines of the physical brain. In other words, there is no mind–body “problem” per se, since there is no non-physical aspect to the mind–body connection: the mind and body are, in essence, one and the same. As Schwartz and Begley (2002) notes, these kinds of physicalist/reductionist approaches have been criticized by prominent philosopher of mind David Chalmers, who has dubbed them as ‘no-clue-science’, noting that it would be impossible to reduce the entire mind solely to a physical organ such as the brain. Avoiding reductionist approaches, in this paper we will focus on the substance dualism position, as that position provides a point of intersection between the three discourses discussed. While such physicalist/reductionist modes of inquiry in neuroscience have produced some interesting findings, this data is not only limited but it also has not addressed the dualism on which the mind–body problem hinges.

This paper seeks to avoid the limitations of inquiry based solely on modern western scientific and philosophical approaches as well as the scientism that they give rise to and propagate. We believe that a cross-cultural, interdisciplinary approach may provide insights that allow for addressing the mind–body problem in novel ways, and by doing so will advance our understanding of our being. What makes this approach possible is the commensurability and overlap of dualism across all three fields: modern neuroscience, western philosophy of mind, and Islamic theology. Accordingly, this paper, while it intends mostly to initiate

the dialogue, will demonstrate that the metaphysical and the physiological hold a profound correlation which supplements, rather than dismisses or invalidates the long-held beliefs of millions of people about the “soul” across time, culture, and place.

This study, then, calls for an examination of the connection between the philosophical (the metaphysical reality of the soul) and the neuroscientific (the soul’s physiological impact) from a new perspective, by bringing into dialogue Islamic conceptions of the soul and reflections on the linkages between soul and body.<sup>1</sup> In other words we propose to initiate a multidisciplinary, dialogical interaction spanning three broad categories of study: (1) philosophy of mind; (2) cognitive neuroscience; and, (3) Islamic theology and metaphysics. In what follows, the position of each of these disciplines with respect to the dualism problem will be outlined and the pertinent sub-disciplines highlighted.

## History of the mind–body(-soul) problem in western philosophy

Before addressing how contemporary neuroscience addresses the mind–body problem, it will be useful to give a brief overview of the history of and approaches to the mind–body(-soul) problem in the Western philosophical tradition, not only because the problem (which continues to be debated today) began as a purely philosophical one, but also because contemporary neuroscience, being a relatively recent field, has undoubtedly inherited, intentionally or unconsciously, many of the perspectives and tenets from the philosophy of mind. The mind–body problem has enjoyed a vast and fruitful history, with schools and sub-schools of thought too numerous to recount for our purposes here, so we will focus on those most salient for our project.

To begin, the Western perspective on this issue has traditionally hinged upon two ontological positions: dualism and monism. Dualism and its variants divide the world into the physical and the non-physical and, based on this distinction, they endorse the notion that there is a distinct non-physical entity, i.e. the mind and/or soul, at play in human cognition and that this entity is separate from the physical brain itself. Monism, on the other hand, maintains that there is no actual dualism at work, rather what is held by dualists as an immaterial, distinct mind or soul is simply part of the body, as one singular fundamental entity, i.e. located and contained within the physical brain. Many contemporary monists, but not all, are materialists, and, as we will note below, much of contemporary neuroscience relies on a materialist, monistic ontological orientation. Outside of these two broad distinctions is a more recent argument popularized by the philosopher Colin McGinn and termed by Owen Flanagan as ‘mysterianism’, which, as McGinn (2012) himself simply states, amounts to this: ‘we just don’t have the faculties of comprehension that would enable us to remove the sense of mystery. Ontologically, matter and consciousness are woven intelligibly together but epistemologically we are precluded

<sup>1</sup> In this essay we focus primarily on the Sunni tradition and further references to “Islamic” theology and philosophy are to the Sunni tradition. For further reading on the Shi’a tradition regarding the soul, see Šadrā (2003, 2008), Panjwani (2014), al-Tūsī (1964).

from seeing how'. According to mysterianism, then, there is an epistemic limitation to any sure-fire interrogation of the mind–body problem, and thus neither dualist nor monist arguments are satisfactory.

Before arriving at the important Cartesian and post-Cartesian dualist and monist instantiations of the problem, it will be useful to trace very briefly its ancient history by highlighting some early key ideas and figures, some of whom were known in paraphrases or directly to early Arab and Muslim scholars such as Al-Kindî, Al-Razî (Rhazes), Al-Fârâbî, and, most famously Ibn Sina (Avicenna) and Ibn Rushd (Averroes). The origins of the problem in the West can be traced to ancient Greek philosophy and, namely, discussions on the nature of the soul (psyche) by Athenian philosopher Plato and his famous pupil Aristotle. In Book IV of the *Republic*, Plato describes the soul as consisting of three components: the appetitive (ἐπιθυμητικόν), the spirited (θυμοειδές), and the rational (λογιστικόν) portions. Associated with each of these three components were the following functions or faculties: the appetites (ἐπιθυμία), passion/spiritedness (θυμός), and the mind/intellect (νοῦς). According to Plato, the soul was an incorporeal substance and, consequently, immortal. Aristotle, however, differed from his teacher, keeping 'the physical aspect of psychological activities very much to the fore' (Ackrill 1981). 'The Philosopher', as he was known for over a millennium, notes in his treatise *De Anima* that the soul could not exist apart from, and thus perished along with, the body. Despite this difference, both philosophers propounded the idea that the soul was a separate entity that interacted with the physical body.

Plato's notion of an immortal soul aligned well with that of the early Church and thus held prominence well into the Middle Ages. A notable idea during this time (late second century BCE) that continued to persist for centuries was Galen of Pergamon's (d. ca. 216 BCE) contention that psychological capacities were associated with the brain and that the soul itself was anatomically related to the fluid-filled ventricles within the brain (Bennett 2007).

For the next 1500 years the mind–body problem remained essentially unchanged until the Early Modern Era. The discourse was then largely impacted by René Descartes, who is almost single-handedly credited for creating the discipline of philosophy of mind (Kim 2011). According to Descartes' ontological view, all of nature was divided into two discrete substances: thinking things (*res cogitans*) and things extended in space (*res extensa*). The embodied human being was no different in composition: humans possess an extended body ruled by a non-extended, thinking mind (soul). According to Descartes, the extended body was the passive, acted-upon, flawed, and fundamentally mutable and therefore ephemeral part of the human being while the mind (soul) was active, acted upon extended objects, perfect, and fundamentally immutable, and thus immortal. In light of this division, Descartes' famous declaration that 'I think, therefore I am' (*cogito ergo sum*) signaled a major shift in how mind (thought) and body (extension) were understood as connected both to each other and to the notion that our consciousness as the preliminary basis not only for our identity but also for our very existence: it would seem to most as though the tangible, extended body is the measure of who we are as human beings and the surest proof of our existence, but, in reality, Descartes suggests, the opposite is quite true: the invisible, immaterial, non-measurable

thinking part of us is the ultimate proof of who and what we are as humans. And thus, though the body perishes and decays, the immaterial, immortal soul endures. Indeed, Descartes' position that our essence as individual humans depended solely on our status as thinking things privileged the place of the psychological (conscious self-awareness) and maintained that the psychological (the mind/soul) was really distinct from the physical. This distinction between the two modes of substances is the essence of so-called Cartesian dualism (Descartes 1984).

Descartes' contemporaries also made several important contributions to this newly conceived dualism. Reminiscent of the use of creative metaphors such as Descartes' comparison of the soul–body distinction to a pilot in a ship, Gottfried von Leibniz (d. 1716) made a famous contribution to the mind–body problem in the so-called mill argument in Section 17 of the *Monadology* (von Leibniz and Latta 1968). In it, he asserted that no matter the degree and extent of inspection of a machine (extension), one would remain hard-pressed to find therein a perception (thought). He stated: 'Assuming that, when inspecting its interior, we will find only parts that push one another, and we will never find anything to explain a perception. And so, one should seek perception in the simple substance and not in the composite or in the machine' (von Leibniz and Latta 1968). In effect, the dominant position in this time was that due to the real distinction between thought and extension, consciousness could not arise from mere matter but the two were nevertheless connected causally. Cartesian dualism gave rise to what is commonly referred to as substance dualism, which asserts that there are two entirely distinct *substances* – one physical (brain) and another non-physical (mind – often synonymous with consciousness and with soul) – and that the two of them interact with each other in a causal relationship. The obvious problem that remains to be resolved, apart from whether or not there are two really distinct substances at work, is *how* does the non-extended soul/mind interact with the extended body?

In part as a solution to this and other problems with substance dualism, some philosophers diverged from the two-substance model and eschewed the notion of thought being a non-extended substance and instead posited that only one substance existed – physical, extended substance. Working within this paradigm, so-called property dualism affirms that the mind exists as a non-physical entity (but not a substance), but that it is a mere *property* of the physical brain, a kind of side-effect, and not a unique substance unto itself (Gennaro 2006). Hereafter, much could be said about the ways in which a non-physical entity (essential to both substance and property dualism) *interacts with* the physical entity. Ideas here include interactionism, occasionalism, and parallelism. Of these, the latter two are more or less historic relics whereas the first remains (Gennaro 2006). Interactionism asserts that a non-physical mental entity has a causal relationship with the physical.

During the mid- to late nineteenth century, a new scientific methodology of investigating psychology surfaced. It was in this context that the works of Herman von Helmholtz, Wilhelm Wundt (widely considered the founder of experimental psychology), and American psychologist/philosopher William James came to the fore. Even with the start of their investigation, the relation of consciousness to the brain remained a mystery. A famous remark by T. H. Huxley captures the

thought and unresolved problem of the age: ‘How it is that anything so remarkable as a state of consciousness comes about as a result of irritating nervous tissue, is just as unaccountable as the appearance of the Djin, when Aladdin rubbed his lamp?’ (Huxley 1986).

With regards to monism, there are two broad categories within the discourse: (1) physicalist monism and (2) non-physicalist monism. The former asserts that the only existing substance is physical, viz. the brain and thus further advances in cognitive neuroscience will ultimately uncover all explanations therein (Bennett 2007). Although nuanced distinctions are present between them, for the purposes of this conversation, functionalism, behaviorism, and neural identity theory are all more or less physicalist monisms. Non-physicalist monisms, foremost amongst them being idealism, asserts that only mental and conscious phenomena exist, and that the physical world is a benign by-product or appearances of a primarily mental existence (Bennett 2007).

Turning to the past several decades, the shift in the discourse regarding the mind–body problem had two closely-related catalysts in the 1970s and 1980s. The first was the famous paper by Thomas Nagel entitled ‘What Is It Like to Be a Bat?’ Nagel’s essay brought to the fore the idea of a first-person, subjective consciousness that is in principle inaccessible to objective interrogation. The second catalyst was a preponderance of scientific advancements that allowed a deeper and more thorough assessment of neurobiological functions. Later, in the 1990s especially, many contemporary philosophers such as Dennett, Penrose, Crick, Chalmers, and others crafted a resurgence in conversations about the mind–body problem. A plethora of articles, books, journals, conferences, and other scholarly activities have taken off as of late as neuroscientists and philosophers both attempt to tackle the relation between consciousness and the brain (Kim 2011). In fact, Jaegwon Kim has proposed to rename the mind–body problem to the consciousness-brain problem (Kim 2011). Further, following Owen Flanagan’s lead, philosopher Collin McGinn has recently popularized the notion of mysterianism, or the notion that neither dualism nor monism are satisfactory arguments given the current state of knowledge in cognitive neuroscience, that there is an epistemic gap yet to be traversed (McGinn 2012).

Despite its rich history of philosophical refinement, scientific development, and more recent calls for paradigm shifts, the mind–body(-soul) problem indeed remains what David Chalmers has been attributed to calling the *hard problem* of consciousness and subjective experience – one that faces a seemingly insurmountable explanatory gap or gaps in understanding the link between mental and physical substances (from the dualist perspective) and the link between the objective physical changes in the brain and the subjective experience of the individual feeling them (from a materialist perspective). Turning to other discourses such as modern neuroscience or Islamic theology may help to bridge this seemingly Gordian gap. Thus bringing the philosophical discourse on the mind–body problem into dialogue with other, more seemingly disparate, discourses that approach the problem with points of view that are disciplinarily different yet share a common thematic scaffolding for substance dualism is in order.

## Consciousness in neuroscience

Attempts to resolve the intricate and difficult philosophical question of the mind–body connection by appealing to past philosophical works, on intense personal introspection, and, at best, on soft sciences such as psychology, have not yet provided answers that move us beyond in any satisfactory way the substance dualism introduced by Descartes. One promising way of answering the questions raised by the philosophy of mind and posed at the outset of this paper might be by turning to contemporary neuroscience. What neuroscience (and specifically cognitive neuroscience) can offer to the traditional philosophical approach is a more data-driven approach that relies both on empirical observation/measurement as well as the scientific method. Before examining the most recent findings of the field with respect to a possible mind–body connection, including neural correlates of consciousness, we will first provide an overview of important concepts and key terms connected to the understandings of consciousness within contemporary neuroscience.

In contemporary neurological discourse, and cognitive neuroscience by extension, we find two aspects of consciousness: (1) the *level* of consciousness and (2) the *content* of consciousness. The level of consciousness refers to the degree of ‘wakefulness’ an individual possesses—ranging from being fully awake to being in a state of sleep and could vary from a state of delirium to brain death with many additional states in between. The level of consciousness, in turn, has three subcategories – alertness, attention, and awareness (Blumenfeld 2002). Each of these states is thought to have a physical/biological correlate, which, if damaged manifests as a ‘disorder of consciousness’. For example, a lesion in an area of the brainstem referred to as the RAF (reticular activating formation) is associated with a state of coma.

The content of consciousness, by contrast, is best understood, as various components (elements and substrates) that are involved in producing an individual’s ‘awareness of self and environment’ (Blumenfeld 2002). This is discussed in more detail in sections below but a more technical definition of consciousness in terms of content, offered by neurologist Hal Blumenfeld (2002), is: ‘The unification of higher order cerebral functions, including the sensory, motor, emotional, and mnemonic (rational), into an efficient summary of mental activity which can potentially be remembered at a later time’.

The most visible determinant of a functional/healthy brain is the presence of what is called global consciousness where full awareness is present. By contrast, a state of lack of global consciousness is seen for instance in conditions such as coma, where the opposite of an awake/alert state is evident. In this condition however, content-consciousness by definition is deemed lacking even though the brain may retain an extremely low degree functioning and minor brain-mediated reflexes in response to stimuli might be present. While excluded by definition, the presence or absence of conscious content in this state remains an important empirical question.

When in a coma, the patient lacks awareness of, and is thus unable to interact with, the surrounding environment. Such unresponsiveness is correlated with the absence of sleep-wave cycles and the suppression of cerebral rhythm as can be seen on electrographic studies (Young 2000). This widespread dysfunction of the brain results in both the decreased level and loss of the content of consciousness,



although some areas of the brain, particularly those responsible for autonomic function remain working. Between a fully awake/alert state of global consciousness and a comatose one lies a wide spectrum of conscious/subconscious states. These include: vegetative, minimally conscious, obtunded, stuporous, lethargic or cognitively impaired states as in dementia or traumatic brain injury. All of these states involve different levels of conscious awareness, contents of consciousness, and perceptive abilities (Tindall 1990).

High-level cognitive functions such as those requiring attention and executive function are thought to rely primarily on the fronto-parietal regions of the brain, though it is now known that various cognitive functions performed in this region can operate in the absence of ‘conscious perception of the relevant stimuli’ even while functional performance is diminished (Boly *et al.* 2013). Somewhat surprisingly, in awake individuals metabolism is higher in the visual cortex than in the fronto-parietal region of the brain – the region that is otherwise considered the seat of conscious perception. This raises the interesting question of how widespread consciousness, in terms of content and level, might be disseminated across the brain, and suggests that a process for the integration of sensory information is required for varying levels of perception. One prominent theory, the Global Workspace Theory, suggests such integration involves neuronal inputs from several brain structures. This theory as proposed by Baars, describes coalescing of information from various areas of the brain to produce, in essence, a conscious stream by excluding contradictory or unnecessary information (Baars 2002).

The cerebral cortex is where the content of consciousness is generated and where perceptions achieve meanings. As Negrao and Viljoen (2009) have noted, ‘unity of consciousness is conferred by integrative processing of these regions’. This does, however, create a so-called ‘binding problem’ requiring adequate explanations of the exact processes involved in such integration, or ‘binding’ of all (sensory) input that results in unique perceptions and experiences (Boly *et al.* 2013). Specifically, the fronto-parietal areas of the cerebral cortex seem to be the primary areas responsible for producing consciousness content and without the functioning of these areas brain activity is not integrated well enough to sustain consciousness. In addition, this area is also an important factor in cognition, a key element in perception or consciousness content. Yet cognition may occur without conscious perception as ‘increasing evidence suggests that in 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’ (Boly *et al.* 2013). Indeed a number of studies suggest that conscious perception may not be necessary for the operation of various complex cognitive processes such as attention, cognitive control, conflict monitoring, volition, arithmetic, feature binding, and semantic analysis. And while ‘high conscious levels are associated with an increased range of conscious contents [it remains unclear whether] or not a high level of consciousness without any conscious contents is possible’ (Boly *et al.* 2013). In summary, conscious content allows for the development of perception as well as awareness, yet how the presence or absence of these elements correlate with various lower levels of consciousness still remains an area of investigation.

### ***The neural correlates of consciousness***

Neural correlates of consciousness are the minimal measurable neural activity in the brain that ‘correlate’ to a person’s conscious, subjective state of mind. In other words, when a person is having a subjective, conscious, experience in the mind, the brain will show physical, objectively measurable changes. While some measurable brain activity does not operate on or otherwise affect the conscious awareness of the individual, in the case of neural correlates of consciousness, the individual must register an experience at the conscious level, whether it be love, hunger, or even the slightest touch a feather on the skin that then corresponds to measurable neuronal activity.

The most comprehensive of such events then is that of consciousness as experience, wherein an individual’s conscious experiences represent a ‘phenomenal quality’ in their mind (Graaf *et al.* 2012). The content changes in this form of consciousness allows the ‘subject [to] experience different things [while being] conscious in the sense of “medically aware”’ (Graaf *et al.* 2012). The state of being aware of these experiences is known as ‘phenomenal awareness’ or ‘qualia.’ The information present in content-consciousness is both globally available and widely distributed across the brain reaching ‘access consciousness’ (Graaf *et al.* 2012).

In order for content-conscious experiences to occur, certain mechanisms for awareness must be employed within brain structures such as the frontal lobes. The employment of these awareness mechanisms blurs the distinction between what can be understood as mere attention and individual consciousness. As Graaf *et al.* (2012) note: ‘The relation between attention and consciousness is so strong, that a rather severe debate rages on whether consciousness is really nothing more than attention, or stimuli reaching attention’. This leads us to ask: Is attention, then, the only prerequisite for consciousness? Following Graaf *et al.* (2012), attention is a necessary component of conscious awareness but it is not necessary for other types of perceptions that may be present subconsciously.

We agree with Negrao and Viljoen (2009) in that consciousness ‘depends on the multitude of unconscious processes that occurs in the brain. Although they don’t represent consciousness by themselves in isolation, consciousness cannot exist without these processes’. We also agree on the importance of focused attention in determining ‘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’ (Negrao and Viljoen 2009).

In summary, models of the mental architecture of consciousness are divided. On the one hand, consciousness is thought to be widely distributed throughout areas of the brain that coalesce to produce the unified experience of being conscious; on the other hand, some models attribute consciousness to specific regions of the brain only. The latter view would suggest that these specific areas must undertake complex interactions to integrate information to produce said consciousness (Baars 2002).

### *The mind–body problem in neuroscience*

As can be seen from the increase in scholarly papers and commentaries over the last thirty years, neuroscience is revisiting the mind–body problem. This increase in interest may be due to concerns about the effects of technology on holistic health care, which can, in effect, contribute to the ‘dehumanizing’ of patients. In response to this sense of dehumanization, scholars such as Brian Dolan (2007) have noted that the ‘soul is what makes a person more than a machine’. Elaborating on his anti-mechanistic position, Dolan (2007) continues: ‘As an organ of reflection, meditation, and memory, the brain becomes synonymous with what defines the self through the existence of consciousness—of mind’.

With twentieth-century advancements in identifying the brain’s circuitry, a focus on localizing the cognitive functions of the brain have led to a physicalist-dominant approach to the mind–body discussion. According to Dolan, the question of the seat of the soul did not ‘disappear from the discourse’, but instead medical humanism became more concerned with how to replace what he calls ‘classic Christian dualism’ (the view that there is a metaphysical reality beyond the physical which is demanded by beliefs about a creator and creation) without engaging in a necessarily pure ‘reductionist materialism’, which at once does away with any notion of a creator distinct from or beyond the material, physical world and thus precludes the possibility of mind (or soul) as being anything other than an entity reducible to material reality (Dolan 2007).

On the other hand, some have argued that consciousness (and thus rationality) evolved in such a way that the mind is contingent on the body. Neurologist Antonio Damasio (1994) is a major proponent of this position, arguing against what he calls ‘Descartes’ error’ of separating reason (mind) from emotion (body). Damasio (1994) holds that our seemingly rational decisions may actually be guided and informed by – and thus not distinct from – our emotions. The basis of this hypothesis is rooted in the belief that ‘there can be no separation between mind and body, as all thought is grounded in’ body-representing neural structures (Dolan 2007). Advances in neurosciences as noted above, however, have been able to identify elaborate systems in the brain that produce and sustain consciousness and cognition, and sustain attention, making Damasio’s argument somewhat less viable within the framework of a working physiological model. Yet further research is required to support advocate any specific position regarding how consciousness and rationality are connected, if at all, and whether functions we attribute to the ‘mind’ supervene upon brain structures.

In modern neuroscience, despite the ability to localize experiences using functional MRI and other advanced imaging techniques, Joseph Levine’s (1983) so-called ‘explanatory gap’ argument has continued to undermine experimental findings. Levine’s argument aims to demonstrate our inability to explain away conscious experiences such as pain by relying solely on descriptions of the physical processes that occur in the brain at the time of those experiences. In other words, Levine is clarifying that physicalist theories will inevitably face difficulty insofar as purely physiologic knowledge does not lend insight into the subjective experience correlated with. He famously stated in 1983 that ‘pain is the firing of C fibers’ referring

to the gap between identifying the neurophysiology as an objective entity and the actual reality of experiencing, in the subjective sense, that very thing. This insolubility of the explanatory gap requires more thought in any reframing of the mind–body–soul problem. As limitations of a purely scientific interrogation of consciousness are felt in the broader discourse, theorists would do well to broaden the epistemes under which they presently operate. The persistence of an explanatory gap is indication enough that physicalism is less tenable a view, and that in substance dualism, as an example, an explanatory gap does not even exist for the presence of a non-physical substance (soul) renders the whole issue more congruent.

According to Kurthen *et al.* (1998), science can address the problem of the explanatory gap, not by trying to solve the problem but, instead, by redefining the way it is framed, thus *dissolving* the problem: ‘The explanatory gap cannot simply be closed by achieving a better understanding of the neural correlates of consciousness. What is required instead is an approach that somehow undermines the explanatory-gap intuition itself’.

Consequently the big question for the field of neuroscience and empirical approaches is whether modern scientific investigative methods can study the soul while maintaining the paradigm of the mind–body nexus? This idea may appear difficult, but according to Dolan, at least one British research group has recently provided cause for cautious optimism. In their resolve to use advanced imaging techniques on the prefrontal cortex to understand paraspsychotic grief, this group has suggested, ‘the soul will be elusive but not an impossible concept to study with neuroimaging’ (Dolan 2007).

## An Islamic theology of the soul

One approach that may be useful in reframing the explanatory gap problem lies turning to the discourse of Sunni Islamic theology. While this discourse also resolves itself into a view generally commensurate with substance dualism,<sup>2</sup> it is distinct from the other two approaches, which hinge on the *Weltanschauungen* of the secular, materialist, and scientific/scientistic culture of the Western modern world. In the following, we will outline some essential features of the Sunni Islamic conceptualization of the soul as well as point to two major areas where the Islamic position may be placed into fruitful dialogue with contemporary neurological/philosophy of mind perspectives (the two Western discourses have begun to overlap), namely the so-called ‘binding problem’ in neurology and Levine’s ‘explanatory gap’, while pointing out more generally several other areas of potential dialogue.

In Islamic thought, the soul is a necessary entity, as it serves as the basis for a number of essential theological views, which include its role as the diagnostic of life, the locus of moral accountability, the explanatory principle of post-mortem existence, and it allows for access to understandings from the Divine realm (Brown 2013). The term ‘soul’, however, can apply to a number of significant theological terms, which can, consequently, be a source of confusion for researchers. The

<sup>2</sup> For a discussion of possible subtle distinctions between Cartesian dualism and dualism in Islam, see Aftab (2015).

two most common and certainly most easily conflated of these terms are *al-rūḥ* and *al-nafs*. The first term, *al-rūḥ*, while meaning ‘soul’, might perhaps best be translated as ‘spirit’. As its root is r-w-h, it is, at a deep etymological level, connected with the verb ‘to breathe’ or the noun ‘breath’.<sup>3</sup> The second term, *al-nafs*, also translated as ‘soul’, carries with it a sense of soul as ‘mind’ or ‘psyche’, and can also often be translated as ‘self’.<sup>4</sup> In theological discussions the term most commonly used to refer to the human soul is *al-nafs*.

Despite the similarity between these two fundamental terms, there is an important distinction between them, which may also connect Islamic thought to the binding problem in neuroscience. As noted by al-Ghazālī:<sup>5</sup> the spirit ‘is the subtle divine essence (*al-latifa al-rabbaniya*) – knowing, thinking, and percipient, abiding in human beings’ (Sachedina 2009); as such, it is essentially synonymous with other terms, which can be used to denote various facets or functions of the spirit via the body, such as ‘the heart (*al-qalb*), the soul (*al-nafs*), and the intellect (*al-‘aql*). The bodily parts are the tools of the spirit, which, infusing the body, enables the organs to perform different tasks’ (Sachedina 2009). In other words, the body and soul, while closely linked, as evidenced in the spiritual functions expressed via the body, are distinct entities, which, at death separate. As al-Ghazālī himself notes, ‘Just as the onset of an incapacitating disease may mean that the hand is no longer a tool of which use is made, so death is an incapacitating disease spread throughout all members’ (Sachedina 2009; our emphasis). al-Ghazālī’s notion of a singularly-bounded, coherently-unified soul that at once is connected with ostensibly disparate functions or ‘tasks’ may serve as a starting point to reframe or open a dialogue with contemporary neuroscience and the problem of ‘unity of consciousness’ noted by Negrao and Viljoen (2009) above.

This view of the interconnectedness yet distinction between soul and body ultimately finds its roots in verses of the Qur’an. These verses appear to substantiate an eschatological doctrine that holds there to be an immaterial, nonphysical entity that constitutes the essence of the human experience (namely, a soul or spirit, words that are interchangeable for our discussion in English; see above and notes 3–4 for finer distinctions), and that the body is merely a vehicle to which it is attached in the temporal world. For example, one verse recalls a primordial covenant where God asks mankind to testify to His lordship:

And [mention] when your Lord took from the children of Adam – from their loins – their descendants and made them testify of themselves, [saying to them], ‘Am I not your Lord?’ They said, ‘Yes, we have testified.’ [This] – lest you should say on the day of Resurrection, ‘Indeed, we were of this unaware.’ (Quran 7.172–182)

Based on this verse, many Islamic theologians and Qur’an exegetes point out that all human souls perceived God prior to bodily embodiment and thus a type of dualism between soul and body is required.

<sup>3</sup> The term *al-rūḥ*, shares, it turns out, the same root as the Hebrew term for spirit, i.e. *ruah*.

<sup>4</sup> It may be useful to compare these two terms *al-rūḥ* (spirit, breath) and *al-nafs* (soul, mind, self, psyche) to the familiar distinctions in the Western tradition, which include the Greek *πνεῦμα* (spirit, wind, breath) and *ψυχή* (soul, mind, psyche) as well as the Latin *spiritus* (spirit, wind) and *animus* (mind, soul, psyche).

<sup>5</sup> For further reading on the etymology of ‘soul’ in Arabic, see: Ibn Mandhūr (1984), p.326.

Looking at the Islamic intellectual tradition as a whole, and the development of theological orthopraxy, it is critical to note that Muslim theologians throughout the ages have discussed and debated the nature of the soul and have held many different positions on its linkage to the body and its essential nature as substance or body. Tracing this history is beyond the scope of the present paper, rather our point here is to stress that speculative discussions and debates occurred within Muslim scholarly circles in full recognition of the fact that the Qur'an conveys that mankind has been endowed with little knowledge of the soul (see verse 17:85). Rather, the essential meaning of this verse bears great significance insofar as rendering a pre-requisite flexibility to any conclusive statements concerning the soul.

The flexibility mentioned above can be seen among the myriad of contentions about the ontological realities of the human soul posited by Muslim thinkers over the centuries, particularly during the Islamic Golden Age (eighth through thirteenth centuries). It is not the intention of this paper to highlight each of the arguments, but rather to note the two most-dominant positions, at least in Sunni theology: (1) the 'subtle body' position (*jism al-latif*) and (2) the immaterial substance position (*jawhar al-mujarrad*). The former stated that a physical locus of the soul is to be found somewhere in the body proper – and traditionally thought to be the heart – whereas the latter stated that the soul is by its intrinsic nature immaterial and non-physical and has more of an "attachment" relationship with the body. Of these two positions, the latter is one that modern thinkers should build off of in their contributions to the mind–body problem discourse for it attends to critical questions and knowledge gaps the former cannot.

The subtle body (*jism al-latif*) position suggests that the soul is a tenuously fine and atomically dispersed body (as purported by highly renowned scholars such as al-Juwayni,<sup>6</sup> d. 1085). The position is based on the notion that subtle bodies are integrated into dense bodies, i.e. corporeal ones (*jism kathif*), and holds that when these subtle bodies depart the dense ones, a change happens. In the case of the human then, when the soul departs, animation, and cognitive as well as integrative faculties leave with it and 'death' ensues. This position is widely taught in seminaries as part of early studies of creed and doctrine and is attested to by works such as *Al-Fiqh Al-Akbar* authored by the promulgator of the Hanafi school of law himself Imam Abū Ḥanīfa, and is attributed to Abu Bakr al-Bāqillānī one of the founders of the Ash'arite school of theology (al-Muntaha al-Maghnisawi 2007). This corporeality necessitates that the soul exists within the material world and must therefore be accessible to the five empirical senses (Brown 2013). It does not explain, however, how the soul will endure after it departs the body. Additionally, this theory runs into inherent problems with unity of consciousness as well as with the 'binding problem' noted above, but may indeed be brought to bear in a dialogue with the contemporary neuroscientific theories regarding the problem.

<sup>6</sup> Abd al-Malik bin `Abdullah al-Juwayni is known by the honorific title *Imam al-Haramayn* (the Scholar of the Two Holy Sanctuaries, i.e. the Ka'aba and the Prophet's Mosque) and was a preeminent theologian and jurist. He authored leading texts such as *Kitāb al-Irshād 'ala Qawā'it al-Adilla fi Usūl al-I'tiqād*, and was the teacher of Abu Hamid al-Ghazali.

Another theory expounded by theologians such as ‘Aḡud al-Din al-‘Ijī<sup>7</sup> (d. 1355) is that the soul is an immaterial substance (*al-jawhar al-mujarrad*). According to this theory, the soul is defined as a non-physical entity without extension or parts, and therefore it is not perceptible to the five empirical senses. It is an independent, indivisible, and a non-spatial entity. It is viewed as a substratum supporting faculties (which are accidents) inhering in it; or in other words it instantiates modes and properties. As the soul in this view would not be a spatially-extended entity, it would seem to follow that consciousness (more specifically intellection or thought is a faculty of the soul) which is a faculty of the soul, cannot simply be a physical thing (Brown 2013).

This understanding of the soul, then, provides an Islamic entry-point into discussions about the relationships between the physical/material and the metaphysical/mental, which may be brought to bear on the mysterianism proffered recently in philosophy of mind or, perhaps more directly with Nagel’s ‘explanatory gap’ problem. Indeed, since the soul cannot be interrogated by the senses and empirical experiments according to the Islamic perspective, an epistemic gap needs to be recognized. Perhaps the explanatory gap between the ‘objective’ *description* of what is happening in the brain during various qualia or experiences of feeling and the ‘subjective’ *experience* of those feelings could find fruitful dialogue with al-‘Ijī’s position. The question of how the soul and body relate within the realm of Islamic scholastic theology (*kalām*) therefore has resonances to the brain–mind relationship in philosophy of mind.

Bringing the two disciplines into conversation around a table constructed by neuroscientific data, would facilitate fruitful exchange. As an example it may be that models of interactionist mind–body causation beholden to substance dualism, such as those offered by Karl Popper, help advance arguments in Islamic scholastic theology of the soul. Similarly it is possible that recovering arguments made by Islamic theologians about whether the soul is a simple substance and how it governs the body might nudge the field of philosophy of mind a bit further. Lastly, perhaps in a more practical way, bringing Islamic theology, philosophy of mind, and neuroscience into conversation might afford us to think more deeply about the borders of life. What we have in mind (pun intended) is that brain death might provide the occasion for each of these three disciplines to engage with data and models that emerge from the other fields and by doing so attend to the ethical, empirical and metaphysical conundrums of biomedicine.

## Conclusion

Discussion of the mind–body problem, or as Jaegwon Kim (2011) states, consciousness-brain problem, abounds. Physicalist positions dominate, especially as they are strengthened by ongoing advances in modern neuroscience. It should be maintained, however, that the ‘jury is still out’ and that an entirely physical explanation for higher-order cerebral functions – consciousness in particular – do not yet

<sup>7</sup> ‘Aḡud al-Din al-‘Ijī is a renowned Sunni scholar known for the monumental theological treatise, *al-Mawāqif fī ‘ilm al-Kalām*. He was a trained Shafī‘ī jurist and Ash‘arī theologian and served as state judge.



exist and may not arise in the future. Karl Popper noted an idea he deemed ‘promissory materialism’, or the belief that, although reductionist explanations do not suffice at present, scientific advances will inevitably confirm such beliefs to be facts. Thus it is felt by most that although consciousness (content of consciousness) has not yet been explained in physical terms, it will one day. To adequately and fairly address the mind–body problem, especially so in light of contemporary Islamic thought, such an underlying philosophy must be highlighted and side-lined.

The ‘hard problem’ of consciousness is noteworthy. David Chalmers, credited for coining the term, argues that even in principle, a complete objective interrogation of the brain could not grant access to the subjective phenomena experienced by the possessor of said brain (Chalmers 1995). That is to say, even if one were to perform every fMRI study conceivable, if all 100 trillion synapses of the human brain were to be mapped into a connectome, objective data would remain objective, and subjective experience would remain subjective. In other words: all of our advanced machinery and methods of measurement remain merely at the level of describing what happens from the outside but can never explain how or why things feel the way they do to the subject. This explanatory gap persists and the consciousness–brain problem remains un(re)solved.

Therefore, substance dualism is not outmoded, but rather, a tenable position worth revival in an age where scientism predominates. Indeed, one of the dominant positions on the soul within Islamic theology, *jawhar al-mujarrad*, or the position of ‘attachment’ of an immaterial substance (soul) with a particular body, may provide a fruitful starting point for engaging the mind–body problem. While argued for theological purposes, and not empirical or philosophical ones, this Islamic vision of the soul suggests that the attachment relationship is one whereby the soul exerts governance on the body for fulfillment of duties in the worldly realm (and acknowledges that an ‘otherworldly’ realm also exists).

What then should be made of the modern neuroscientific assessment of the brain, of consciousness, of deficits after brain injury such as stroke, brain tumor, and multiple sclerosis? Accounting for an Islamic conception of the soul might lead us to consider the physical brain to be the tangible intermediary between the non-physical and the physical, and injuries or defects to it negatively hinder this relay. The patient with glioblastoma multiforme experiencing cognitive disturbances (in other words disruptions that appear to be linked to faculties of the soul) does so because of a ‘transmission’ problem – there does not exist a deficiency in the individual soul per se, but what is manifested to us in this physical realm may appear as such. The brain is thus seen as the means of connection of the soul to the worldly realm, the place in the body where such function is most localizable, and any accumulating injury to it weakens or lessens that connection. Total brain failure, then, would signify the complete detachment of the soul with the body.

We would suggest that one who embarks on a deeper inquiry of mind–body problem might do so with a particular framing in mind. This framing requires the simultaneous juxtaposition of (1) an understanding of the philosophical underpinnings of the mind–body problem in the West, which are inflected in modern neuroscience; (2) advances in modern neuroscience itself; and (3) frameworks from Islamic scholastic theology. Bringing into reflexive conversation these disparate bodies of



knowledge might yield fruitful insights into our understanding of the essential aspects of cognition and the human being.

## Acknowledgments

In 2016, this paper was presented in partial form at Bayan Claremont College at a symposium entitled ‘Dignity and Healthcare at the End-of-Life: Abrahamic Faiths in a Bioethics Conversation’ and at the University of Chicago at a conference entitled ‘Interfaces and Discourses: A Multidisciplinary Conference on Islamic Theology, Law and Biomedicine’. We are indebted to Shaykh Jihad Hashim-Brown (Jason Totten) whose lectures and writings provided much of the Islamic arguments and resources for this paper. We would also like to thank Drs. Ahsan Arozullah, Muhammed Volkan Stodolsky, Katherine Klima, and Shaykh Mohammad Amin Kholwadia who were key interlocutors and partners in the working group project that motivated the work presented herein.

## Funding

Research support for AIP, FQ, and DF was covered by a grant from the John Templeton Foundation (#39623) entitled “Scientific Discoveries & Theological Realities- Exploring the Intersection of Islam and the Human Sciences.” Additional time-effort for AIP and symposium support was provided by the Doha International Center for Interfaith Dialogue.

## References

- Ackrill, J. L. 1981. *Aristotle the philosopher*. Oxford: Oxford.
- Aftab, Macksood. 2015. Is Islam committed to dualism in the context of the problem of free will? *Journal of Cognition and Neuroethics*, 3(1), pp. 1–12.
- al-Muntaha al-Maghnisawi, Abu. 2007. *Imam Abu Hanifa’s Al-Fiqh al-Akbar explained*. Santa Barbara, CA: White Thread Press.
- al-Tūsī, Nasīr al-Dīn. 1964. *The Nasirean ethics*. Translated by G. M. Wickens. London: Allen and Unwin.
- Baars, B. J. 2002. The conscious access hypothesis: Origins and recent evidence. *Trends in Cognitive Sciences*, 6 (1), pp. 47–52.
- Bennett, M. R. 2007. Development of the concept of mind. *Australasian Psychiatry*, 41(12), pp. 943–956.
- Blumenfeld, Hal. 2002. *Neuroanatomy through clinical cases*. Sunderland, MA: Sinauer Associates.
- Boly, M., Seth, A., Wilke, M., Ingmundson, P., Baars, B., Laureys, S., Edelman, D. B. and Tsuchiya, N. 2013. Consciousness in humans and non-human animals: Recent advances and future directions. *Frontiers in Psychology*, 4, pp. 625–620.
- Brown, Jihad. 2013. The problem of reductionism in philosophy of mind and its implications for theism and the principle of soul: Framing the issue for further Islamic inquiry. *Tabah Paper Series*, 7, pp. 1–30.
- Chalmers, David. 1995. Facing up to the problem of consciousness. *Journal of Consciousness Studies*, 2(3), pp. 200–219.
- Crane, T. 1999. *Mind-body problem*. *The MIT Encyclopedia of the Cognitive Sciences*. Cambridge, MA: MIT, pp. 546–548.
- Crane, T. and Patterson, S. 2000. *History of the mind-body problem*. New York: Routledge.
- Damasio, A. R. 1994. *Descartes’ error: Emotion, reason, and the human brain*. New York: G.P. Putnam.

- Descartes, René. 1984. *Meditations on first philosophy*. Translated by John Cottingham, Robert Stoothoff and Dugald Murdoch. *The philosophical writings of Descartes*, Vol. II. Cambridge: Cambridge.
- Dolan, B. 2007. Soul searching: A brief history of the mind/body debate in the neurosciences. *Neurosurgical FOCUS*, 23(1), pp. 1–7.
- Gennaro, Rocco J. 2006. Consciousness. *Internet Encyclopaedia of Philosophy*. Available from: <http://www.iep.utm.edu/consciou/> [Accessed 13 December 2015].
- Graaf, Tom, Hsieh, P. J. and Sack, A. T. 2012. The ‘correlates’ in neural correlates of consciousness. *Neuroscience and Biobehavioral Reviews*, 36(1), pp. 191–197.
- Huxley, T. H. 1986. *Lessons in elementary physiology (1900)*. London: Macmillan.
- Kim, J. 2011. *Philosophy of mind*. 3rd ed. Boulder, CO: Westview Press.
- Ibn Mandhūr, Muḥammad. 1984. *Lisān al-‘Arab*. Lebanon: Dar al Kutub al Ilmiyah, p. 326.
- Kurthen, M., Grunwald, T. and Elger, C. E. 1998. Will there be a neuroscientific theory of consciousness? *Trends in Cognitive Sciences*, 2(6), pp. 229–234.
- von Leibniz, Gottfried Wilhelm, Freiherr, and Latta, R. 1968. *The Monadology and other philosophical writings*. London: Oxford.
- Levine, Joseph. 1983. Materialism and qualia: The explanatory gap. *Pacific Philosophical Quarterly*, 64, pp. 354–361.
- McGinn, Colin. 2012. All machine and no ghost? *New Statesman*. February 20. Available from: <http://www.newstatesman.com/ideas/2012/02/consciousness-mind-brain> [Accessed 1 December 2015].
- Negrao, B. L. and Viljoen, M. 2009. Neural correlates of consciousness. *African Journal of Psychiatry (South Africa)*, 12(4), pp. 265–269.
- Panjwani, Imranali. 2014. ‘Soul.’ *The Oxford Encyclopaedia of Philosophy, Science and Technology in Islam*. Oxford: Oxford University Press, pp. 267–273.
- Quran*. Sahih International Version. Available from: <http://quran.com/7/172-182> [Accessed 22 August 2016].
- Sachedina, Abdulaziz. 2009. *Islamic biomedical ethics: Principles and application*. Oxford: Oxford UP.
- Ṣadrā, Mulla. 2003. *Iksīr al-‘Arifīn* (The elixir of the Gnostics). Translated by William Chittick. Chicago: Brigham Young University Press.
- . 2008. *Spiritual psychology: The fourth intellectual journey in transcendent philosophy – volumes VIII & IX of the asfar*. London: ICAS Press.
- Schwartz, J. and Begley, S. 2002. *The mind & the brain: Neuroplasticity and the power of mental force*. New York, NY: Harper.
- Young, G. B. 2000. The EEG in coma. *Journal of Clinical Neurophysiology*, 17(5), pp. 473–485. Available from: [https://journals.lww.com/clinicalneurophys/Abstract/2000/09000/The\\_EEG\\_in\\_Coma.6.aspx](https://journals.lww.com/clinicalneurophys/Abstract/2000/09000/The_EEG_in_Coma.6.aspx) [Accessed 26 August 2016].

## Notes on contributors

Faisal Qazi is co-founder of The Neurology Group, a large consortium of Neurologists in southern CA and Assistant Professor of Neurology at Western University, College of Osteopathic Medicine in Pomona, California. Dr. Qazi’s research interests involve concepts in Neuroethics; he has presented and written about Disorders of Consciousness including Brain Death. His research include advances in the field of consciousness, metaphysics of soul, and the philosophy of mind. He is an advisor to University of Chicago’s Islam and Medicine Initiative. Dr. Faisal Qazi is the founder of MiNDS (Medical Network Devoted to Service) established in 2012, a community development and charitable healthcare foundation.

Don Fette is a Lecturer and Honors Faculty Fellow at Barrett, the Honors College of Arizona State University. He earned his PhD in Comparative Literature from the University of Chicago, where he also served as assistant director of the Writing

Program at Chicago and co-director of writing at the Institute for Clinical Social Work in Chicago. Also, he is an internationally experienced writing consultant who has worked on projects spanning economics, psychoanalysis, and grant/proposal work related to the human sciences. Dr. Fette's teaching and research interests include classical literature and philosophy, lyric and epic poetry, early modern philosophy, nineteenth-century continental philosophy, British and German Romanticism, intersections across science and literature, the theory and pedagogy of writing, psychoanalysis, and Gothic literature.

Syed S. Jafri is a resident training in the adult neurology program at the Medical College of Wisconsin in Milwaukee, Wisconsin. His research interests include clinical neurology, Islamic theology, and the philosophy of medicine.

Aasim I. Padela is a clinician-researcher and bioethicist whose scholarship lies at the intersection of community health and religion. He utilizes diverse methodologies from health services research, religious studies, and comparative ethics to examine the encounter of Islam with contemporary biomedicine through the lives of Muslim patients and clinicians, and in the scholarly writings of Islamic authorities. Through systematic research and strategic interventions, he seeks (1) to improve American Muslim health outcomes and healthcare experiences and (2) to construct a multidisciplinary field of Islamic bioethics. At the University of Chicago, he directs the Initiative on Islam and Medicine, and the Program on Medicine and Religion.

Correspondence to: Aasim I. Padela. Email: apadela@uchicago.edu.