

***Tawhīdic* Epistemology and Cognitive Science: Harmonising Artificial Intelligence with Natural Intelligence**

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Abstract

This article discusses several key facets of the contemporary Artificial Intelligence (AI) Agenda that is primarily shaped by the technologically advanced countries of the world. It describes the AI Agenda as having both ideological and social dimensions. The ideological dimension pertains to the pursuit of theoretical scientific advancement in intelligence-related studies such as in neuroscience and cognitive science with the view of unravelling the mysteries of human intelligence. As for its social dimension it pertains to applied AI that seeks to transform both the human individual and his physical and social environment, the former into a new humanity through technological enhancement of the human body and the latter into a technocratic cultural space. With respect to this quest, this article provides a critical discussion of the transhumanism movement in America. The most important facet of AI Agenda is perhaps the issue of the interface of natural intelligence (NI) and AI generated by rapid developments in the two dimensions in question. This article argues for the harmonisation of NI and AI in the light of the traditional Islamic discourse on NI, especially on prophetic intelligence. It seeks to remind human beings that, as a product of the human mind, AI could never equal the total intelligence of its creator, let alone to surpass it. Further, this article seeks to emphasise that it is the *tawhīdic* epistemology (TE) inspired cognitive science that makes possible the harmonisation of NI and AI.

Keywords: *Tawhīdic* epistemology, artificial intelligence, natural intelligence, prophetic intelligence, cognitive science

Introduction

This essay deals with some of the major issues that have arisen in contemporary human thoughts following the fast-expanding and problematic interface of natural and artificial intelligences that we have been witnessing during the last several decades. Not only is the interface rapidly expanding, but it is also getting more complex and epistemologically muddier. Moreover, it is sending more signals that it is now venturing into danger zones for human security. The very nature and characteristics of the interface could only mean that more major issues will emerge to haunt the contemporary human mind. We observe that the interface has become more controversial in recent years.

In this essay, I seek to discuss the interface of natural and artificial intelligences in the light of the organic conceptual link between TE and cognitive science. By NI is meant that part of the human person comprising all his cognitive organs, physical and non-physical, together with their respective functions and activities in information gathering and organisation for the purpose of knowledge-processing and acquisition and understanding the mysteries of human language. In Islamic civilisation, NI thus understood is signified by the term '*aql*', which is usually translated as intellect or reason.ⁱ Interestingly, the same term is used in Islamic philosophy and cosmology to refer to angelic intelligence apparently for the reason that human and angelic intelligences are regarded as of being of the same nature; namely, a form of incorporeal light that is described in theological language as "spiritual". It is perfectly legitimate to refer to angelic and other forms of intelligence that God has created as NI, but this essay is solely interested in human NI. And by AI is meant humanly created intelligence that seeks to simulate human intelligence in machines by programming them to think like humans and mimic their actions. In short, AI is the name of a programme to create human-like intelligence to the greatest degree of complexity and sophistication possible.

The interface of NI and AI we are now discussing was essentially generated by the encounter of two important developments in postmodern science and technology. One key development was scientific advances in neuroscience and related disciplines in human biology, particularly in relations to cerebral intelligence, which were enhanced by new biomedical engineering and biotechnological tools. Cerebral intelligence studies have rapidly advanced as a result. The other key development, which is perhaps more important than the first in terms of impact on human beings and their society, is contemporary man's desire to create AI in the image of his own NI. His attempt to exteriorise this desire in societal space, which is essentially driven by

materialism in various forms, has already produced visible fruits that invite mixed reactions from individuals and groups and even governments. The first early images of human intelligence on the material plane, albeit only partial and not total, have appeared in the forms of several AI technological objects. The present prediction is that it would be only a matter of time before bolder and more sophisticated images of human intelligence will appear in the contemporary material civilisation. What the consequences of such a development would be, we can only speculate and conjecture at this point of time.

The AI Agenda: The Ideological Dimension

The AI agenda, which is presently pursued with vigour especially in the wealthier and more scientifically and technologically advanced countries in both East and West, is an outcome of the two key developments I have just mentioned. In a sense, although related, the two developments may be viewed as different from each other in terms of orientation and goal. The main interest in the first line of development is theoretical, meaning the pursuit of scientific research of the human brain with the expressed purpose of deepening man's understanding of his own intelligence. The assumption here is that the brain is the true seat of human intelligence and knowledge and the source of his cognitive powers.ⁱⁱ The orientation and goal of brain research is towards the progressive enhancement and empowerment of human natural intelligence. Interest in AI, however, is not excluded from this research enterprise, but it is subordinated to the theoretical goal of revealing the mysteries of human intelligence, which is viewed as the essential attribute of human nature or the core of humanness.

The orientation and goal in the other line of development is quite different. It is practical or more precisely technological. It is to create AI in the image of NI in the analogous way that the Abrahamic religious traditions – Judaism, Christianity, and Islam – speak of “man as being created in the image of God”. In the latter case, the image is understood to be total. As such, the image of NI needs to be total in nature as well. Theoretically, this would mean the creation of AI that would be a replica of NI and that would be as good as it. But the most ambitious of the contemporary technological minds are not content with this envisaged achievement. They harbour the dream of creating AI that would be superior to NI. The idea of the possibility of a future AI being superior to NI is being entertained by them and other prime shapers of the second line of development, because they strongly believe that human evolution will make it inevitable. In fact, as we shall later see, there are organised voices within the ranks of these prime shapers of AI, who are optimistic about the coming of such a technological future.

However, notwithstanding the difference in orientation, goal, and concentration between the two lines of scientific-technological developments, there are common philosophical ideas and issues about intelligence that bind them together, thus meriting their epistemological merger into one greater cultural movement. The common philosophical ideas underlying the concepts of both NI and AI that have been defined are found rooted in the theories of human nature. Both religion and science have a deep interest in human nature, but they differ in their perspectives of understanding this very important subject. Not only are they different in their formulation of fundamental questions about human nature – such as its origin, purpose, development, implications for human behaviour, and significance for the Earth's planetary ecology – but also in the answers they provide to these questions. These differences explain the multiple and contending theories of human nature that have been borne out of the wombs of religion and science.

But differences aside between the religious and the scientific perspectives in respect of meaning and significance which they confer on human nature, there is convergence in their appreciation of the distinctiveness and centrality of intelligence in human nature. More fundamental still is convergence in their characterisation of self-consciousness and self-discovery as important psychological features that are integral to human nature. Such a view that posits intelligence, self-consciousness, and self-discovery as core features of human nature is especially characteristic of the religion of Islam. Moreover, Islam's theological perspective on human nature has been consistent in maintaining the idea of the complementary role of science as a source of knowledge to help empower that very perspective. Epistemologically, human nature is perhaps the most fertile ground for a productive encounter between religion and science in the history of Islamic thought. Of particular importance, human intelligence has served as an illustrative case of this broad encounter, especially during the most creative phase of Islamic civilisation when the subject was extensively discussed and explored, albeit largely theoretical in nature. Now, in the light of the extraordinary interest in intelligence studies, both natural and artificial, and theoretical and applied, it might be a welcome idea for Muslims to particularly revisit past discourses in their civilisation to gain new insights on the subject.

The classical Islamic discourse on human intelligence may serve as an objective and independent critic of the contemporary AI Agenda, its ensuing controversial debates, and the various projections into the technocratic future of AI. Roberto Pauraⁱⁱⁱ has described some of these future projections as over-optimistic, wish-fulfilment fantasy, and utopian. He is referring

in particular to the technocratic utopia of transhumanism, a contemporary cultural and philosophical movement, whose ideology is centred on the idea of the feasibility of a technological enhancement of the human body and thus the emergence of a new type of humanity.^{iv} Transhumanism was born in the United States during the 1980s “as a product of the technological revolution represented by the mass distribution of information technology and cybernetics, as well as by the first scientific studies on nanotechnologies” (Paura, 2016, p. 23). Transhumanists believe in the future appearance of a post-human species “whose members can theoretically live forever thanks to breakthrough findings in medicine, biotechnology, nanotechnology, computer science and artificial intelligence” (Paura, 2016, p. 25). The goal of transhumanism is nothing less than a total fusion between humans and artificial intelligences. It is “to get rid of hardware by transferring the whole content of our brains inside of supercomputers, so to preserve the software, i.e., our consciousness, untouched” (Paura, 2016, p. 25). Arguing from the Islamic perspective, Mahmoud Dhaouadi, a professor of Sociology at the University of Tunisia, upon reviewing the ongoing controversy over AI and NI (Dhaouadi, 2006, pp. 158–173), concludes that the two can never be equal, let alone AI surpassing NI in quality and performance. The main message from the Quran, says Dhaouadi, is that “AI can never be equal to NI, for God has not imparted to it His divine breath” (Dhaouadi, 2006, p. 173).

From the theological point of view, AI will always be inferior to human NI, simply because it is man’s creation. It is against logic and natural law for a creature to be equal to its creator. But man’s desire to create things in his image will always be part of his consciousness, because God has implanted that desire in his nature to permanently remind him of the truth that he has been created in His image. Man’s desire to know everything about his intelligence and to create its replica in physical form is none other than the expression of his self-discovery as an intelligent being who is an image of divine intelligence and as *homo faber* (man the maker) who is an image of God the Maker. In the light of this theological perspective, it may be argued that man’s pursuit of AI has a metaphysical justification and should, therefore, be fully supported. But a counterargument from theology is that perfect human imitation of divine intelligence is to be pursued on the spiritual plane. On the physical plane man’s creation of AI cannot have limitless possibilities, constrained as it were by the laws of biophysics.

The AI Agenda: Its Social Dimensions, Real and Imagined

There is no doubt that the desire of contemporary man to create AI to various degrees of sophistication is an important issue for our time. Turning this desire into physical and social reality can have many implications, both positive and negative, for the present and future humanity. There are many questions that can be asked about this human desire such as: What is its nature? Why it has surfaced at a particular moment in human history, namely in post-modern times? What is it that motivates and sustains it? And what explains its technological progress? The scope of this essay does not allow us to address these questions. However, we have at least touched on the appearance of transhumanism and its historical and technological background, which gives us some insights into the current thinking on the future social space that is expected to be dictated by the progress of AI.

The ongoing interface between AI and NI has thus far aroused mixed responses and assumed a new significance for the world community on which it seems worth reflecting, not least out of our concern for the future of NI itself that has been traditionally accepted as an essential defining element of humanness and humanity. The general concern in the minds of many people, especially those following the discourse, is about the serious implications of the interface for the global socio-economic order. The gulf in economic wealth between the rich and the poor nations keeps progressively widening, which could only threaten the wellbeing of the global community. It is to be noted that the current agenda of AI, which is dominated by rich countries that are also the most advanced in science and technology, is motivated by several considerations, including scientific-technological, economic, and political-military. Consequently, this agenda has generated activities of multiple kinds in different sectors of societal life.

First, there is the purely scientific-technological motive directed at the pursuit of AI that would serve as tools of scientific research on NI itself and on extra-terrestrial intelligences. Second, there is the economic motive, which is mainly interested in the large-scale production of robotic and other forms of AI for commercialisation purposes to serve sectarian economic interests. How we wish that the economic motive is closely tied up to a social motive in the name of the pursuit of AI for the sake of a common social good! But such a joint motive is apparently missing from the agenda of AI. That would leave the impression that the economic interest in AI is mainly dictated by profit-making at the expense of social security as humans in the job market are forced to give way to robots. And third, there is the political-military motive that is

aimed at the creation of the most sophisticated AI-supported weaponry of the day in the name of national security and military superiority such as that which is pursued by the United States.

These various motives have resulted in rapid growths of demands for AI. The expanding scientific and technological applications of AI are increasingly shaping the public view of what is and what is not important for humans to know about NI. In short, contemporary man's appreciation of his own NI is beginning to be clouded if not also devalued by his increasing admiration for AI.

The Clash between AI and NI

In theory, it is rather strange that we could be entertaining the idea of a clash between AI and NI when, in fact, the source of the former is none other than the latter. But the point is that the clash has become a reality as may be inferred from various contending positions in contemporary discourse on the interface between the two forms of intelligence. There are several explanations for this clash. For the sake of brevity, I am offering here only one explanation, which I think, however, is the most important. It pertains to the clash of understandings about the respective natures and powers of NI and AI. There would be no clash possible, if we always bear in mind that AI owed NI its origin and existence and whatever powers it has received from its human creator. But a clash would occur if AI were to be valued beyond its real worth, while underestimating the worth of NI. I argue that such a condition already exists in our time, and hence the clash!

To avoid clashes, it is important for us to be intellectually honest about the fundamental differences between AI and NI that many insist are irreconcilable, and to refrain from making excessive claims on the potential powers of AI. Intellectual honesty demands from us sound knowledge of the true nature, characteristics, and powers, and developmental possibilities of NI. There is such a thing as the collective treasury of human knowledge about NI drawn from both religious traditions and modern science. Islam would insist on adding Qur'anic ideas on NI to the treasury. It is in the light of the total treasury of knowledge about NI that the contemporary world should pursue the AI Agenda so that destructive conflicts between the two forms of intelligence could be avoided.

It is also important to take note that the contents and dimensions of NI are perceived or understood differently by different groups of scientists, philosophers, and theologians even if they live and think within the same civilisation. Quite often, we don't mean the same thing

when we used the word NI. Thus, when we say that there is a clash between AI and NI, to which conception of NI are we referring? From the Islamic perspective, it may be argued that the human NI that is currently serving as the model for AI is not what is portrayed in its fullness in Islamic and many other religious traditions as well as by many modern psychologists and cognitive scientists, but rather what is believed and understood by proponents of AI who have reduced NI to cerebral intelligence. The objective model of NI to be emulated in Islam is the prophetic intelligence, which is generally regarded as the most perfect intelligence that is possible for man. This prophetic intelligence that embraces cerebral, intuitive, and cardiac intelligences in their most excellent forms may be presented as the best argument against the claim that it is possible to create an intelligent bio-machine that would be superior to human intelligence. After all, the Prophet Muhammad (may peace be upon him) is believed in Islam not only as the best human but also as the best of all creatures!

Until modern times, wisdom or the Qur'anic *hikmah* has been universally extolled as the most excellent form of human knowledge and intelligence. The issue of the future of wisdom in the economy of human intelligence is seen as inextricably tied up to the future of civilisation itself and which, therefore, must be of duly concern to our present and future humanity. In the light of the AI agenda, the future of wisdom is at stake for two main reasons. First, there is growing acceptance of cerebral intelligence as man's highest achievement. This belief would lead to the impoverishment of wisdom, since cerebral intelligence is not its source. Rather, wisdom is identified with intelligence of the heart and of the intellect and with intuition. In short, wisdom will flourish only if higher forms of intelligence are given ample spaces to grow and develop. Second, the popularisation of AI that is pursued at the expense of NI, especially as understood in religion, will further erode man's appreciation of the higher forms of NI that by nature cannot be reduced to the simplest form of logical reasoning, be it human or bio-machine.

Consequently, it is imperative for humanity to pursue an AI agenda that would not be in destructive conflict with NI. Furthermore, the contemporary man needs to be reminded of the intelligence that defines his humanness and the role of the prophetic intelligence as the model to be emulated. These two imperatives are now discussed further in the following sections while their implications for the contemporary human civilisation are being pointed out.

Islamic Philosophy, Prophetic Intelligence, and the AI Agenda

Let me now rephrase the first imperative stated above in the form of a fully loaded question: how can we pursue an AI agenda that to all intents and purposes would serve humanity by delivering societal and civilisational goods and countering social ills in innovative ways that would at least minimise destructive consequences on the present humanity and its civilisation if not altogether eliminate them? And let me also rephrase the second imperative in the form of a no less loaded question: how can we persuade and impress upon the present humanity to listen to and appreciate the precious message embodied in the traditional idea of prophetic intelligence and draw the necessary conclusions from it? This part of the essay now attempts to put forward several big ideas that may help us formulate some key answers to the two questions.

For Muslims, the two stated imperatives, which in our opinion are civilisational in scale, are integral to the Qur'an's social philosophy. In Qur'anic terms, "delivering societal and civilisational goods" would be acts of honouring the social principle of *amr bi'l-ma'ruf* while "countering social ills" is to honour the principle of *nahy 'an al-munkar*. (see The Qur'an, 3:104)^v Furthermore, the idea of technology as a tool of human progress as opposed to the idea of man as a servant of technology or the idea of technology as an end in itself – a simple but precious message from traditional civilisations that has fast disappeared from the screen of modern consciousness – is a very important integral element of the Quran's social philosophy. The issue of ethics of technology, a novel example of which is what we have just raised in relation to the possible and indeed already visible misuses of AI, may easily be seen in Islam as part of a much broader epistemological concern, namely the ethics of knowledge. Islamic ethics of knowledge is best summed up in this well-known prophetic instruction: "Seek knowledge from the cradle to the grave" and "seek knowledge even as far as China." But only "seek knowledge that is beneficial" and at the same time "seek God's protection from knowledge that is unbeneficial."

Beneficial knowledge is traditionally understood in Islam as any knowledge that would contribute to the affirmation of two fundamental revealed truths. These truths are: first, the principle of Divine Unity (*al-tawhīd*); and second, the principle of Divine Law (*al-Shariah*) (see The Qur'an, 5:48)^{vi} understood as the foundation of a just and balanced socio-political, or better still civilisational order. The latter principle may also be understood as the principle of Divine Justice since the essence of the Divine Shariah is justice for both the human and natural

orders. The domain of such knowledge is indeed vast and in fact unlimited since both unity and justice are in the natures of things. And the opposite of beneficial knowledge, that is, the unbeneficial or useless kind, is any idea or knowledge claim that negates or undermines these twin truths or that is indifferent to their epistemological demands. From the perspective of the two truths, such kind of knowledge is far *limited* in scope, and yet some humans prefer to indulge in it.

It is in the light of this understanding of the concept of useful and useless knowledge that contemporary Muslim discourse on the AI agenda should be conducted. And it is with such an awareness that we need to ask ourselves this very fundamental question: is the AI Agenda going to enhance our appreciation of cosmic unity of which human unity is an integral part and, more importantly, our appreciation of the divine unity of which this cosmic unity is a reflection? (see The Qur'an, 21:22)^{vii} Or will it destroy the unity of the human order because of the havoc it wreaks on the human microcosm through uncontrolled technological innovations and hence destroy the idea of cosmic unity itself? Consequently, with the unity of the human and cosmic orders shattered, does the AI Agenda not render incomprehensible or meaningless the pursuit of knowledge of divine unity? From the Islamic perspective, all these questions pertaining to the benefits and harm, and merits and demerits of AI are issues with profound implications. We could only ignore them at the peril of the *ummah*.

The Concept of Prophetic Intelligence

The most fundamental of the big ideas we have in mind in this discussion is the idea of prophetic intelligence, the very concept of intelligence that is needed to remind us that it is the prototype of our humanity and our own ideal in life. By prophetic intelligence Muslim philosophers who were deeply immersed in its study understand it to mean human intelligence in its most perfect form, which they made efforts to explain. In other words, it is the most developed form of intelligence that can possibly be attained by the human mind. The Muslim philosopher al-Farabi (870 CE – 950 CE) identifies this super intelligence with the class of persons traditionally known as prophets. In Islam, the technical term for prophet is *nabiy*, which is known to have a precise and generally accepted meaning unlike the word 'prophet' in the English language, which is known to have a rather loose meaning in its general usage.

The essential meaning of prophet as understood in the Quran refers to someone who is a recipient of divine revelation (*wahy*) through the intermediary role of Archangel Gabriel. It

seems clear that the Prophet Muhammad (salutation and peace be upon him) understood the word prophet in this precise sense when he mentioned that God sent 124,000 prophets to mankind beginning with Adam (peace be upon him) and ending with himself. Numerically, this special group of people constitutes a minute fraction of mankind and yet in influence and impact they are the real shapers of human history. They were able to accomplish their earthly feats thanks largely to their super intelligence. It is thus not without good reason that some Muslim philosophers chose to devote their intellectual efforts to the study of prophetic intelligence.

The definition of prophet (*nabiy*) as recipient of divine revelation raises the issue of the interrelationship between the well-known triad, namely Allāh, Gabriel, and the Prophet Muhammad. At the popular level the interrelationship between the three entities is only understood in general terms or accepted as a matter of faith. But at a more philosophical or intellectual level the issue of the interrelationship in question requires an understanding of why the three entities are to be viewed as the most fundamental triad underlying the Islamic belief system. The requirement for such an understanding becomes obvious when we realise that the first four out of six Islamic articles of faith are incorporated into the meanings of the triad. Islamic philosophy pursues the understanding by delving deeper into the meaning of revelation and prophethood beyond the popular understanding of the doctrines. One of the main aspects of this deeper meaning pertains to the nature and characteristics of prophetic intelligence that we argue will help define the limits of AI and thereby restore epistemological order into its contemporary discussion that is increasingly viewed by philosophers of ideas as in a state of utter conceptual confusion.

In our view, this confusion has largely arisen from an uncritical acceptance of ideas and concepts pertaining to intelligence and more specifically of the human type that are floating around in abundance these days. One noteworthy source of such confusion is *transhumanism*, the contemporary American socio-philosophical movement advocating human transformations through intelligence engineering, which I have earlier discussed. This uncritical acceptance of ideas surrounding AI speaks much about the state of ignorance of many people in the contemporary world about man's past knowledge of his own natural NI as accumulated and preserved in various philosophical traditions of the world. It is mainly in response to the state of confusion surrounding the issue of the comparative worth of NI and AI that the idea of prophetic intelligence is sought to be discussed in this essay. We further argue that the idea of

prophetic intelligence ought to serve as our definitive source of an all-embracing theory of human and artificial intelligences in which the real potential and the veritable role of each is clearly discerned and spelt out. In this way the legitimate role of AI may be defined and promoted without doing injustice to NI, which logic itself tells us is a necessary condition for the sound development of AI.

It is to the Islamic philosophical tradition that we turn for inspiration and help in articulating a solid and coherent theory of prophetic intelligence. The main reason for our choice is simple. It may be cogently argued that Islamic philosophy provides the best rational approach to an exposition of prophetic intelligence for the very purpose of this essay. The rational approach in question is viewed as universal and scientific, the meaning of which is now explained. To begin with, it is pertinent to emphasise that such an approach is none other than that of the *Quran* itself. To underline its universal approach, the Quran refers to the long line of prophets in human spiritual history, who were sent to all branches of the human family (The Qur'an, 13:7) to spread the same message of divine unity (The Qur'an, 21:25). These scriptural data pertaining to the divine appointment of prophets from all communities or nations allow us to speak of the *Quran* as championing the universal idea of prophetic institution that is grounded on the common message of divine unity and justice of the divine law. Rather central to this spiritual institution is the universal teaching of prophetic intelligence in which light we may hope to better understand the limits of both human natural intelligence and AI. Islamic philosophy takes the same revealed data as source of their inspiration to formulate a universal theory of prophetic intelligence. The first such theory to be presented in detail was formulated by al-Farabi.^{viii}

Islamic philosophy's exposition of prophetic intelligence is not only universal but also scientific. Since the word scientific is understood and used in several senses a clarification of its usage is called for. In current popular usage the word is understood in the limited sense of empirical study of the world of nature that is based on physical observation and experimentation. Thus, the validity or legitimacy of the term is dictated by the field and method of study. In the academia, however, a wider meaning is granted to the term to include the social sciences and to a small extent the humanities. But while in this case the field for scientific investigation has been widened the same empirical method of study is in use. Worth comparing, it is in the Islamic intellectual tradition that the notion of scientific enjoys its broadest usage that cuts across diverse objects and methods of study. Here in this tradition, it is possible to

speak with unambiguity and coherence of a science of divine reality and a science of angels in the same way it is possible to speak of sciences of minerals, plants, animals, and human beings. In the same breath, along with empirical methods, Islamic epistemology speaks of the non-empirical ones, including mathematical, linguistic, metaphysical, and symbolical methods and scriptural exegesis. Islamic philosophy views all these different methods as scientific (*'ilmiah*) in nature.

In pursuing a scientific approach to the study of prophetic intelligence Islamic philosophy seeks to faithfully emulate the Quran's scientific spirit as expressed in the concept of *burhan*, which carries the meaning of clear and convincing proof. The noun *burhan* occurs eight times in the Qur'an where it is used to denote convincing proofs that either come from God (e.g. The Qur'an, 4:174) or are to be furnished by deniers of the truth in support of their counterclaims (e.g. The Qur'an, 2:111). Al-Farabi (870 CE – 950 CE), Ibn Sina (980 CE – 1037 CE), Ibn Rushd (1126 CE – 1198 CE), Qutb al-Din al-Shirazi (1236 CE – 1311 CE) and other members of the Peripatetic school of Islamic philosophy adopted the term *al-burhan* to denote their idea of scientific method, which they argued is the best of all logical methods when it comes to the task of delivering to the human mind knowledge that is characterised as certain (*'ilm al-yaqin*). They understood *burhan* to mean a demonstrative proof. According to al-Farabi, demonstrative proof is the most certain kind of proofs since assent to its premises is of the degree of certainty, the highest possible. The certain and excellent nature of *burhan* is derived from the certain nature of its premises (Bakar, 1998, p. 85). Al-Farabi views revealed data and sense-data as reliable premises for demonstrative proofs. Thus, significantly, Islamic philosophy accepts an integrated and unified theological and empirical approach to the study of prophetic intelligence, which confers it with some kind of independent authority to critically examine and judge the epistemological claims of AI.

Another related term in the Quran is *bi'l-haqq*, which conveys its scientific spirit when addressing ontological and cosmological issues relating to the different orders of reality. The term *bi'l-haqq* means in truth or with the truth. This term occurs many times in the Quran. Its basic meaning is “in conformity with the truth,” which is traditionally understood as referring to knowledge at various levels. At its highest metaphysical level, the truth refers to the knowledge of Divine Unity, while the lowest level of the truth is identified with knowledge of biophysical reality the essence of which is knowledge of the four principles of causality. Muslim philosopher-scientists hold in high esteem this knowledge of the principles of causality

– the material, formal, efficient, and final causes – which they view as scientific. The concept of final cause is especially significant for our present discussion on science since it affirms the relevance of the idea of purpose to the study of nature. In fact, one of the meanings of *bi'l-haqq* is the idea of purpose of everything that exists in the cosmos. As applied to the study of intelligence, its purposive dimension needs to be given due treatment as exemplified by Islamic philosophy.

Engaging AI with the Help of Prophetic Intelligence

According to a prophetic hadith, the first thing created by God was intelligence (*'aql*). This is the universal intelligence (*al- 'aql al-kulliy*) that is metaphysical and luminous in nature and that is yet to be reflected in the mirror of cosmic existence at various levels of its hierarchic reality and in multiple forms. The complete Islamic cosmos as shaped by the *Quran* and the prophetic hadiths stretches downwards from this heavenly universal intelligence to the lowest earthly intelligence through the angelic intelligences. It displays an orderly, beautiful, and majestic hierarchy of intelligences in which the place and role of human intelligence is rather unique. There is thus the cosmic ocean of intelligence in which our human intelligence is placed and functions and of which we should always be conscious when talking about its powers and potentials. Human intelligence alone possesses characteristics that are partly heavenly and partly earthly. Its powers appear limitless, but man's uncontrolled earthly desires and ambitions have also made real the corruption of his intelligence.

As the first and the most perfect creature that preceded and originated all other intelligent creatures, the universal intelligence may be viewed as the immediate principle of the cosmos. Since based on the *Quran* and hadiths the Prophet is regarded as not just the best human but also as the best creature (*khayr al-khalq*) and hence more specifically as the most perfect and the most excellent of all creaturely intelligences, human and non-human, some philosophers and Sufis have identified the intellect of the Prophet with this universal intelligence. Accordingly, the universal intelligence became known within the Islamic universe as the Muhammadan Intellect. The implication of this Muslim philosophical teaching for the contemporary AI discourse is obvious. From the perspective of the Muhammadan prophetic intelligence, which defines the limits of creaturely intelligence, all attempts to create an intelligence that would be superior to the human intelligence as such will be doomed to failure from the start. This is because the best of human creation will still fall within the creaturely realm. As such, it could not surpass the perfection of the Muhammadan prophetic intelligence.

Dreamers of an AI utopia may be deeply disappointed to hear such a conclusion and may decide to ignore it. But the idea of prophetic intelligence is there in the Islamic tradition to remind ourselves of the numerous possibilities of intellectual development and advancement and mind transformations that are open to our natural intelligence. We do not deny the possibility of man creating intelligent machines that could outperform man in doing certain types of works. That possibility should be explored in the name of technology at the service of man. But we argue that the issue of such a possibility is altogether of a different kind from the issue of intelligence transformation as conceived by the transhumanists that, in our view, threatens the traditional idea of humanness and thus the very existence of the human species itself.

More generally, the AI agenda of exploring “the machine in man” with all its technological possibilities may be viewed as still falling within the ethically permissible realm. However, in undertaking this exploration there is something that can be learned from Islamic philosophy, particularly al-Farabi’s comprehensive theory of intelligence. The theory, we argue, does justice to both natural intelligence and AI. It explains the various stages of intelligence transformation from childhood to adulthood culminating in the attainment of what al-Farabi calls the acquired intellect (*al-‘aql al-mustafad*),^{ix} which is the most developed form of the human intellect. In principle, this possibility is open to every human being, which makes the quest for it democratic. This superior intellect has the power to think about itself and its knowledge content without having any more to depend on new empirical and rational data. But this intellect admits of degrees of perfection. Al-Farabi defines prophetic intellect as the acquired intellect in its most perfect form, which has the distinction of being in frequent contact with Gabriel. That distinction is a matter of divine choice, not human. As the *Quran* says, “But God will choose for His special Mercy whom He will.” (The Qur’an, 2:105)

Al-Farabi’s theory is relevant to the exploration of the machine in man through his discussion of man’s five imaginative powers that are associated with his five internal senses. These are the powers of formal representation (*al-musawwirah*), estimation (*al-wahm*), memory (*al-hafizah*), animal compositive imagination (*al-mutakhayyilah*), and human compositive imagination (*al-mufakkirah*). In my view, if at all AI can emulate and even surpass the powers of human intelligence, it would be in this domain of the internal senses but limited to their machine-like dimension.

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Endnotes

ⁱ In Islamic thought, there are non-human forms of natural intelligence. These are animal intelligences and invisible spirits known as jinn found in the terrestrial world and angelic intelligences in the extra-terrestrial world. There is abundant literature on the relationship between animal and human intelligence in both modern science and traditional Islamic thought which, however, study the subject from different philosophical points of view. The relationship between human and angelic intelligences was also extensively discussed in Islamic philosophy and science, but such a discussion is not within the purview of modern science, since supernatural beings such as angels have long been taken out of the Western cosmos. For a detailed discussion of Islamic theory of intelligences, see (particularly Chapter 2) of Bakar, O. (1998). *Classification of Knowledge in Islam*. The Islamic Texts Society.

ⁱⁱ A contending assumption in both science and religion is the idea of the heart as the true seat of intelligence and knowledge. In other words, cardiac intelligence is a more fundamental psychological concept and reality than cerebral intelligence.

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^{iv} For an informative article on transhumanism, see Paura, R. (2016, June). Singularity believers and the new utopia of transhumanism. *Im@go: A Journal of the Social Imaginary*, 7(V), (23-55).

^v The Qur'an, 3:104. The phrase *amr bi'l-ma'ruf* literally means "enjoining what is known to be good" while the phrase *nahy 'an al-munkar* has the literal meaning of "prohibiting what is evil".

^{vi} Islam sees the affirmation of these twin truths as the *raison d'être* of every prophetic mission in human spiritual history. See *The Quran*, 5:48.

^{vii} In one verse the Quran speaks of cosmic unity as proof of divine unity, meaning that the former unity reflects the latter. See *The Quran*, 21:22.

^{viii} For al-Farabi's theory see Chapter 2 of Bakar, O. (1998). *Classification of Knowledge in Islam*. The Islamic Texts Society.

^{ix} The literal meaning of this word is "acquired intelligence or intellect." The acquired intellect is so-called because it is attained through human efforts based on healthy development of the naturally endowed human intelligence and not through artificial interventions.