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What are Robots?

An Islamic Approach from a Metaphysical Understanding of the Human Being

Abstract

This paper aims to gradually approach the concept of robots by relating it to an Islamic concept of humaneness. It describes the human as a spiritual being, who, although honoured by God, has certain weaknesses, which calls for the human struggle with his darker self.[1] Continuing from this aspect, it provides an Islamic view on the meaning of technology, together with a short elucidation about traditional robotics in Islamic history. Afterwards, a descriptive observation on the (potential) usage of robots in Islamic countries, such as Saudi Arabia and Iran, is presented. Finally, from an Islamic legal and moral point of view,[2] the issue of robots and robotics is discussed in an attempt to address the question of the roles of robots in Islamic tradition, while contrasting the issue with an Islamic concept of the human being.

1. Introduction

What is the difference between humans and robots from an Islamic perspective? Before we can address this question, we have to establish the adequate preconditions in order to provide an appropriate

1 The term darker self is a reference to the term *an-nafs al-ammāratu bi-s-sū'*, which is discussed in section 2.3.

2 With *moral* we refer to the discipline of *'ilm al-mu'āmala* (the science of praxis) within the field of Sufism as a basis of Islamic ethics. See e.g.: *Al-Ghazālī*: Iḥyā' 'ulūm ad-dīn, Vol. 1, 35.

answer, as our main issue already implies an Islamic definition of the human being. Thus, our main issue is preceded by the question: What is the human being in Islam? And what does it mean to be human? It is true that the concept of man has already been elaborated on from several perspectives, especially within the framework of Islamic tradition.[3] Even though there have been works about robots in Islamic education in Iran or the role of AI in regard to Islamic online content, which provide some insights into modern technology and its influence on Muslim society,[4] the question of humanness in Islam has not yet been extensively related to the idea and endeavour of robotics, as the growing potential of AI and robots increasingly becoming human-like challenges the very idea of being human. Hence, we would like to present and explain this connection, as our age is characterised by seemingly exponential technologisation, rendering human society increasingly dependent on devices and machines, which ultimately necessitates examining issues of contemporary technologies, especially from a religious perspective.

This paper aims to gradually approach the issue of robots by initially presenting an Islamic concept of humanness. We then continue with a short elaboration from an Islamic perspective on technology and a depiction of traditional robotics in Islamic history. Afterwards, we present a descriptive observation on the usage of robots in Islamic countries like Saudi Arabia and Iran. In the last section, we discuss the issue of robots and robotics from an Islamic legal and moral point of view. Finally, we conclude this paper with the humble attempt to answer the question of the difference between humans and robots by dividing our response into a legal and theological elucidation. With that said, we initiate our exposition with the first question: What is the human being in Islam?

3 *Hoover*: Fiṭra. See also: *Tottoli*: Adam.

4 See papers such as: *Shamdi/Lai/Aziz* et al.: Artificial intelligence; or: *Alemi/Taheri/Shariati* et al.: Social Robotics; or: *Atwell/Brierley/Dukes* et al.: An artificial intelligence approach.

2. An Islamic metaphysics of man

2.1 The Divine honouring

The description of man in the Qur'an is ambivalent. On the one hand, the human being is characterised by Divine nobility, since God ordered the angels, being His purest and most obedient creatures, to prostrate themselves before the obviously fallible earth creature (Adam). Beforehand, God announced in the presence of the angels that He would create a representative on earth (*khalīfa*).[5] The narrative of humankind in the Qur'an thus begins with the Divine recognition of man: "And when thy Lord said to the angels, 'I am placing a vicegerent upon the earth,' they said, 'Wilt Thou place therein one who will work corruption therein, and shed blood, while we hymn Thy praise and call Thee Holy?' He said, 'Truly I know what you know not.'"[6] In complete surprise, the angels questioned God's decision, as they were already convinced about the corruption of humankind. Their surprise apparently indicates a negative prior experience with God's creation on earth. According to Qur'anic exegesis, it is believed that the Jinn inhabited the earth before the existence of humans, causing bloodshed among themselves by fighting wars.[7] Despite the expected corruption and violence at the hands of mankind, the angels submitted to their heavenly duty, placing their trust in God's knowledge and wisdom. For He knew something of which they had no knowledge. The narrative continues thus: "And He taught Adam the names, all of them. Then He laid them before the angels and said, 'Tell me the names of these, if you are truthful.'"[8] It is unclear which names Adam was taught by God. On the one hand, some believe that the names symbolise man's ability to speak; others understand that God taught Adam the names of living, rational creatures.[9] On the other hand, the names could also stand for the ability to call God by His name. Apparently, the angels did not have the capacity to worship God through His (highest)

5 *Hossein Nasr*: The Study Qur'ān, 108–110.
6 Qur'an, 2:30.
7 *Hossein Nasr*: The Study Qur'ān, 108.
8 Qur'an, 2:31.
9 Meaning the names of the angels or the human prophets.

names. The idea of the (Divine) name was therefore given to Adam, whereby he was not only able to honour and praise God in a unique manner, but also to know Him in a more intimate way.[10] To God's request: "Tell me the names of these, if you are truthful."[11] The angels responded in complete humility: "They said, 'Glory be to Thee! We have no knowledge save what Thou hast taught us. Truly Thou art the Knower, the Wise.'"[12] In response, God commanded Adam to present his Divine knowledge to the angels: "He said, 'Adam, tell them their names.' And when he had told them their names He said, 'Did I not say to you that I know the unseen of the heavens and the earth, and that I know what you disclose and what you used to conceal?'"[13] Without hesitation, the angels acknowledged Adam's superior knowledge and, as a result, proved themselves to be faithful servants of God by prostrating themselves before Adam in obedience to the Divine command: "And when We said to the angels, 'Prostrate unto Adam.', they prostrated, save Iblis. He refused and waxed arrogant, and was among the disbelievers."[14] Iblīs refers to the archdevil, who apparently had been among the angels as he defied God's command. The Divine honouring of man also occurs in the verse: "We have indeed honoured the Children of Adam, and We carry them over land and sea, and provide them with good things, and We have favoured them above many We have created."[15] God honoured humankind by entrusting them with responsibility on earth; herein lies the confirmation that God has bestowed upon mankind, among all other creatures, special favour, despite their imperfection, of which the angels already knew. In contrast to the earth creature, Iblis sees himself as a superior being created of fire, a conviction that the devil, with his awareness of human weaknesses, sought to reinforce by misleading humanity.[16]

10 *Hossein Nasr*: The Study Qur'ān, 109–110.
11 Qur'an, 2:31.
12 Qur'an, 2:32.
13 Qur'an, 2:33.
14 Qur'an, 2:34.
15 Qur'an, 17:70.
16 Qur'an, 4:119.

2.2 The human weakness

But what is the weakness of a human being? The answer can be derived from the narrative of Adam and Eve in the Qur'an, in which man's misdeed commences with forgetfulness: "And We indeed made a pact with Adam aforetime, but he forgot."[17] This pact is a reference to Adam's promise to God that he would not eat from the seemingly distinctive tree in Paradise. God forewarns Adam of the archdevil and assures him and his wife of total bliss in heaven as long as they are obedient to His command:

> We said, "O Adam! Truly this is an enemy unto thee and thy wife. So let him not expel the two of you from the Garden, such that thou wouldst be wretched. Truly it is for thee that thou shalt neither hunger therein, nor go naked, and that thou shalt neither thirst therein, nor suffer from the heat of the sun".[18]

However, Adam's forgetfulness was caused by two major intrinsic *vulnerabilities* that induced him to sin: "Then Satan whispered to him. He said, 'O Adam! Shall I show thee the Tree of Everlastingness and a kingdom that never decays?'"[19]

The expression *Tree of Everlastingness* (*shajarat al-khuld*) reflects the first human vulnerability, namely their fear of death. Iblis deceives them by presenting the tree as an opportunity to become immortal. Therefore, they are told that the fruit of the tree will protect them from death, thus relieving them of their fear.[20]

A kingdom that never decays (*mulk lā yablā*) is a representation of (worldly) power. Knowing about the human weakness for power, the archdevil promises the human beings eternal dominion; in other words, that the tree will elevate them to divinity.[21] Power as a leitmotif of human weakness is conveyed in particular in the depiction of the Pharaoh in the Qur'an. With his conviction of Divine authority: "I am your lord most high."[22] he failed to recognise the Divine

17 Qur'an, 20:115.
18 Qur'an, 20:117–119.
19 Qur'an, 20:120.
20 *Ar-Rāzī*: Mafātīḥ al-ghayb, Vol. 22, 126–127.
21 *Aṭ-Ṭabarī*: Jāmiʿ al-bayān, Vol. 16, 188–189.
22 Qur'an, 79:24.

message of Moses, which is why Pharaoh, in his efforts to subjugate the Children of Israel, was ultimately punished by God.[23]

Humans are therefore susceptible to the temptation of power and the desire for immortality. Both vulnerabilities evoke the forgetting of God, which ultimately leads to disobedience or sin. Fakhr ad-Dīn ar-Rāzī argues that the aspects of power and immortality were in fact the actual desires of the archdevil, who was prevented from fulfilling them by God.[24] Be that as it may, the two vulnerabilities primarily arise from two *impulse forces* that are inherent in the human soul. The vulnerabilities depicted can be seen as an expression of these impulse forces.

The first driving force of the human soul is called *shahwa* in Arabic. Lane translates *shahwa* as "Desire, or longing, or yearning, of the soul for a thing; [meaning for a thing that is gratifying to sense: or eager, or intense, desire; particularly for such a thing]."[25] In this case, it is an impulse force that releases human instincts. The *shahwa* is an expression of the desire for food or sexuality, which means that it can be described as appetite or lust. It is an urge that pushes man to fulfil his natural needs, which in this sense equates him with animals. Fulfilling the *shahwa* may only be sinful if the urge is either appeased with forbidden pleasures or the person is seduced into gluttony.[26]

The second impulsive force has the Arabic term *hawā*, which can be translated into English as "Love, and attachment: then, inclination of the soul, or mind, to a thing: then, blameable inclination."[27] *Hawā* is therefore a desire that human beings seek to realise through their decisions and actions. It does not primarily relate to the fulfilment of natural needs, but to the striving for a (certain) wordly cause, regardless of whether it is material or abstract. Accordingly, the desire can lead man astray if it violates Divine principles. Therefore, the term *hawā* has a rather negative connotation in the Qur'an and in the Islamic concept of virtue.[28] An exception to this, however,

23 *Hossein Nasr*: The Study Qur'ān, 1200–1204.
24 *Ar-Rāzī*: Mafātīḥ al-ghayb, Vol. 22, 126.
25 *Lane*: Arabic-English Lexicon, s.r. *sh-h-w.*
26 *Al-Ghazālī*: Iḥyā' 'ulūm ad-dīn, Vol. 3, e.g. 100–120.
27 *Lane*: Arabic-English Lexicon, s.r. *h-w-y.*
28 *Najm ad-Dīn al-Kubrā*: at-Ta'wīlāt an-najmīyah, Vol. 5, 185–186.

can be found in Sufi poetry, in which *hawā* has been associated with the love of God.[29]

Adam and Eve's disobedience can be understood as a consequence of these two impulses. Eating the forbidden fruit from the tree of paradise is a representation of the first impulse force (*shahwa*), as it urges man to satisfy his natural needs. The two promises of the archdevil—immortality and power—which, as already discussed, prove to be the vulnerabilities of the human race, unleash the second impulse force (*hawā*) in particular. Since it evokes the desire for immortality and power, Adam fell prey to heedlessness and thus to sin.

Consequently, man's fallibility was already foreseen by God. This Divine providence is the very reason for the archdevil's bitterness and rebellion. Although humankind is doomed to fail in its actions due to human weakness, the human being was granted the opportunity to renounce his sinfulness in order to return to God, unlike Iblis, who lacked insight and arrogantly blamed God Himself for his disobedience: "He [the devil] said, 'Because Thou [O, Lord] hast cause me to err, I shall surely lie in wait for them [namely men] on Thy straight path.'"[30] In contrast, humility and self-criticism characterise human nature: "They [Adam and Eve] said, 'Our Lord! We have wronged ourselves. If Thou dost not forgive us and have Mercy upon us, we shall surely be among the losers.'"[31] Therefore, the very concept of *tawba* has been introduced to mankind. *Tawba* signifies the remorseful return to God in order that He forgives the sinful believer.[32] Therefore, human failure is inevitable, precisely because any moral or religious imperfection is inherent in humanity by virtue of the Divine plan; humanness and perfection can thus be considered a contradiction because only God is entitled to absolute perfection: "All the sons of Adam are sinners, but the best of sinners are those who are given to repentance."[33] The greatness of human beings, as the reason for the angels' prostration, is thus ironically accompanied by man's failure. However, this failure is corrected

29 *Al-Badawī*: Shahīdat al-ʿishq al-ilāhī, 64–65.
30 Qu'ran, 15:39.
31 Qu'ran, 23:73.
32 *Al-Ghazālī*: Iḥyāʾ ʿulūm ad-dīn, Vol. 4, e.g. 4–19.
33 Mishkāt al-Masabīḥ 2341, Book 9, Hadith 114.

by the graceful humility that heralds the completion of humanity's return to God.

2.3 The breath of God

The Qur'an states: "And [remember] when thy Lord said unto the angels, 'Behold! I am creating a human being from dried clay, made of moulded mud; so when I have proportioned him and breathed into him of My Spirit, fall down before him prostrating.' Thereupon the angels prostrated, all of them together".[34] The breath of God is the pivotal point of this passage, for it is the concept that underlies the Islamic metaphysics of man.

God's breath gave existence and life to the human being, whereby he is endowed with Divine qualities that transcend material ones. The essence of a human is therefore not physical but metaphysical, especially since death implies a departure from the body and soul. Although the death (of the body) in no way erases the existence of the individual, the spiritual life breathed into them by God ultimately remains; in other words: the image formed of the human decays, but the breath of God persists.

Thus, the human being consists of three interrelated essences, all of which constitute his soulish existence. The first essence is called *nafs*. It is the essence of the human being that passes into the afterlife after death.[35] Often, *nafs* also refers to the *self* or the "*ego*". The latter has a negative connotation, especially in the teachings of Islamic virtues, because the ego is often described as a veil that prevents people from seeing God and His work.[36] In addition, *nafs* has various manifestations. For example, there is the self, which *constantly incites humans to conduct bad actions* (*an-nafs al-ammāratu bi-s-sū'*). It exerts pressure on man's weaknesses so that he (potentially) succumbs to sin. If this is the case, the individual is required to repent in order to turn to God. Due to his sinfulness, this repentance develops into self-blame, which lies at the heart of his burden in conscience. In this condition the *constantly blaming self* (*an-nafs al-lawwāma*) arises.

34 Qu'ran, 15:28–31.
35 *Al-Ghazālī*: Iḥyā' 'ulūm ad-dīn, Vol. 3, 5.
36 *Al-Harawī al-Anṣārī*: Manāzil as-sā'irīn, 308.

The guilt subjects the sinful state of the soul to change, whereby the self finally evolves from the urge to sin to the rebuke of the self. Thus, guilt should induce the individual to renounce all their sins in order to walk the path of God.[37] However, pursuing this path requires *determination* (*himma*)[38] and *striving* (*muğāhada*),[39] as the struggle with oneself, and in particular with one's own bad character traits, is the hardest of all endeavours. The soul will attain peace if one is able to free oneself from wickedness by purifying the heart from evil qualities. This tranquillity of the soul is known as *an-nafs al-muṭma'innah* (the calmed self), through which the human being finally becomes sensitive to the Divine.[40] As a result, the Divine *state of being* unfolds within the individual, enabling one to gaze through the material world—i.e. to see beyond what is physical—which finally leads the to a constant (earthly) presence with God (*al-ḥuḍūr*).[41]

The second essence is referred to as *rūḥ* in Arabic. In the Qur'an, the actual sense of *rūḥ* is restricted to God alone.[42] Nevertheless, there are numerous attempts to explain this concept, which provide some insight into its meaning. For example, there is the view that *rūḥ* signifies the human breath of life;[43] other scholars describe *rūḥ* as the spirit of life that circulates in the bloodstream.[44] *Rūḥ* is also considered to be synonymous with *nafs*, especially since both terms are often used for the same meaning.[45] In this article, we use *rūḥ*—in relation to the subject of robotics—in the sense of the human spirit of life, which connects the human being to the Divine.

The third essence is the (spiritual) heart (*qalb*), which is the essence that shapes a person's character, which constitutes the moral conduct of a human.[46] Also, the heart has epistemic abilities[47] that are particularly reinforced when it is purified by a virtuous and

37 *Al-Ghazālī*: Iḥyā' 'ulūm ad-dīn, Vol. 4, 5.
38 *Al-Harawī al-Anṣārī*: Manāzil as-sā'irīn, 238.
39 Mishkāt al-Masabīḥ 33, Book 1, Hadith 30.
40 *Al-Ghazālī*: Iḥyā' 'ulūm ad-dīn, Vol. 3, 5.
41 *Al-Qushayrī*: ar-Risālah, 258.
42 Qu'ran, 17:85.
43 *Lane*: Arabic-English Lexicon, s.r. *r-w-ḥ*.
44 *Al-Ghazālī*: Iḥyā' 'ulūm ad-dīn, Vol. 3, 4.
45 *Picken*: Spiritual Purification, 172.
46 *Mawlūd*: Maṭharat al-qulūb, 1.
47 *Hossein Nasr*: The Study Qur'ān, 1006.

spiritual way of life. The purification of the heart signifies the overall cleansing of the human soul, enabling the individual to develop into a virtuous, pure being.[48] However, if a believer commits a sin, the heart will be tainted with immorality and wickedness: "When the believer commits a sin, a black spot appears on his heart. If he repents and gives up that sin and seeks forgiveness, his heart will be polished. But if (the sin) increases, (the black spot) increases. That is the *covering* (*rān*) that God mentions in His Book: 'Nay! But on their hearts is the covering (manifested due to sins and evil deeds) which they used to earn.'"[49] If the heart is defiled, the believer becomes distant from God, which ultimately leads to spiritual blindness.

In addition to the essences, man is in possession of reason (*ʿaql*), whose significance has been reflected upon by numerous scholars, especially philosophers, such as al-Farābī (d. 951), Ibn Sīnā (d. 1037) and Ibn Rushd (d. 1198), who advocated a rather essentialist concept of reason in line with the Aristotelian and Neoplatonic tradition.[50] Thus, human intellect was regarded as a non-corporeal substance that granted the human soul the disposition to reason. A similar view is held by al-Ghazālī (d. 1111) and al-Muḥāsibī (d. 858), who describe reason as *gharīza* (natural endowment).[51] In contrast, a modern Islamic view of reason can be found in the philosophy of ʿAbd ar-Raḥmān Ṭāhā (b. 1944), which we seek to relate to robotics.

Ṭāhā moves away from the traditional, essentialist concept of reason by describing reason as an activity of man (*fāʿilīya*). According to him, reason is not an essence inherent in the human soul, but an action that is expressed in many different ways. Even though Ṭāhā usually refers to the one inherent reason through which clear concepts and definitions are formed, it should be understood as the formal, analytical faculty of reason, expressed especially through logical, mathematical deduction. Nevertheless, Ṭāhā negates the idea of a single reason (*ʿaql*); other modes of reasoning exist as well, which are constituted in human thought. Reason is therefore not exclusively limited to the perception of external aspects of a matter (*al-asbāb*

48 *Mawlūd*: Maṭharat al-qulūb, e.g. 2–4.
49 Sunan Ibn Mājah, Vol. 5, Book 37, Hadith 4244.
50 Davison: Alfarabi, e.g. 3–18.
51 *Al-Muḥāsibī*: al-ʿAql wa-fahm al-Qurʾān, 203.

aẓ-ẓāhira li-l-ashyāʾ), it also has the capability to transcend what is external. Hence, there is a kind of reasoning by which the interior of external matters can be recognised. This particularly includes virtues or moral values, as well as spiritual concepts. Moreover, there is a rational activity that transcends the reasoning of morality and thus reveals the hidden causes of the world through mystical experience.[52] Although Ṭāhā often refers to three modes of reasoning, human reason, according to him, is not restricted to only three kinds of reason (*ʿuqūl*) due to its dynamic activity, for it unfolds in many different expressions and patterns: Ṭāhā calls this dynamic *rational multiplication* (*at-takawthar al-ʿaqlī*).[53]

3. Robots in Islam

3.1 Technology and traditional robotics

In our article "Die Auswüchse der Technik" (The Excesses of Technology), we argued for the need of an Islamic philosophy of technology. In doing so, we aimed to present an Islamic concept of technology by defining technology *as an expression of Divine empowerment (tamkīn rabbānī), whose realisation must be driven by Divinely ordained motives (asbāb ilāhīyah). The existence of Technology is based on human inability (ʿajz); Technology begins where man's natural ability ceases.*[54] As such, technology should not be detached from religious practice. In fact, it must be regarded as a sacred human endeavour[55], so that the regard for the hereafter is upheld, even in the circumstances of using machines. Furthermore, technological development must go hand in hand with a critical approach to the

52 *Ṭāhā*: Suʾāl al-ʿamal, 40.

53 *Ṭāhā* al-Lisān wa-l-mīzān, 21.

54 Abdin: Die Auswüchse der Technik, 302.

55 Technology, with the extraction of raw materials guided by self-control, specifically through a disciplined pursuit of progress, must protect nature and preserve its balance without leading to injustice among humans. Its spiritual application should help overcome man's inherent flaws, addressing issues and obstacles without overpowering him or nature. Technology should be viewed as a Divine blessing that supports spiritual growth, and as such, it should be utilised in service to a higher power. See: Abdin: Die Auswüchse der Technik, 302.

idea of progress, meaning that (technological) progress should not unfold unconditionally. Its ethical implications in terms of resource extraction and production have to be considered in order to adequately implement the Islamic concept of *maṣlaḥah* (i.e. bringing benefit and averting harm);[56] we examine the field of robotics within the framework of this definition.

In fact, the field of robotics is not alien to Islamic intellectual culture. As early as the 12th century, the Mesopotamian polymath and inventor Ismāʿīl al-Jazarī (d. 1206) presented the concept of the automatism of mechanical devices. Besides this, procedures such as the lamination of wooden materials to avoid curvature, the mechanical balancing of wheels to regulate speed, the use of templates for the production of standardised objects or the use of orifice plates to measure flow were among al-Jazarī's technical methods. He was also occupied with the idea of reciprocal motion in mechanisms such as water pumps or automata, which demonstrated an essential principle of robotics. Among his humanoid automata, he invented a water automaton in the shape of a slave with a water jug, which dispensed water when needed and thus assisted the caliph in performing ablution; a serving automaton, which was intended for the transportation of drinks; a parrot fountain with a water-dispensing function; and a music automaton in the shape of a boat, on which four humanoid musicians were located entertaining visitors on special occasions. Probably al-Jazarī's most famous invention is the elephant clock. The clock was an automaton resembling a life-sized elephant, operated by a water clock, which displayed the time. It was decorated with figures (including a man with a cymbal and a bird) who were seated in a carriage on the elephant's back. After every half hour, the cymbal would sound, accompanied by bird's chirp.[57]

The definition of the modern robot is not as clear as many would imagine, especially since several countries have different standards for labelling a machine as a robot; nevertheless, more clarity can be gained by distinguishing between the concept of a *manipulator* and that of a *robot*:[58]

56 *Opwis*: Maṣlaḥa, 1.
57 *Al-Jazarī*: The Book.
58 *Niku*: Introduction, 2.

> If you compare a conventional robot manipulator with a crane attached to, let's say, a utility or towing vehicle, you will notice that the robot manipulator is very similar to the crane. Both possess a number of links attached serially to each other with joints, where each joint can be moved by some type of actuator. In both systems, the "hand" of the manipulator can be moved in space and placed in any desired location within the workspace of the system. Each one can carry a certain load, and in each, a central controller controls the actuators.[59]

Although the manipulator is similar to the robot, there is one significant difference between them: the manipulator is controlled by a human, whereas the robot is operated by a computer or microprocessor which is based on a specific program. Any modification of the program will result in a change in the robot's behaviour.[60] The purpose of the robot's construction is to perform several different tasks: "Therefore, the robot is designed to be able to perform many tasks based on the running program(s) simply by changing the program. The simple manipulator (or the crane) cannot do this without an operator running it all the time."[61] As a result, robots can be classified into four different categories. The first is the *simple fixed-sequence robot*, which carries out a number of operations according to a specific, unchangeable procedure; however, this robot does not yet contain a sophisticated computer program. The *Playback robot*, on the other hand, is slightly more complex; its work procedures are initially carried out by human control. The robot memorises the manual operations, enabling it to conduct them on its own afterwards. Furthermore, the *numerical-control robot* is already equipped with a motion program and is therefore able to execute tasks without initial human instruction.[62] Finally, there is the *intelligent robot*, which can be described as follows: "A robot with the means to understand its environment and the ability to successfully complete a task despite changes in the surrounding conditions under which it is to be performed."[63] The last category is of particular interest for our paper, as it is the type of robot that raises most (theological) questions.

59 Ibid., 2.
60 Ibid., 2.
61 Ibid., 2.
62 Ibid., 3.
63 Ibid., 3.

Today's robotics is engaged in the production of automatic (intelligent) machines. Robotics can actually also be described as an artistic endeavour, as it not limited to the functional aspect of the robot, but also involves the design of its appearance: "Robotics is the art, knowledge base, and know-how of designing, applying, and using robots in human endeavours."[64]

In addition, the purpose of robots can be described as follows: "Robots may be used in manufacturing environments, in underwater and space exploration, in researching human and animal behaviour, for aiding the disabled, for transportation and delivery, for military purposes, or even for fun. In any capacity, robots can be useful but need to be programmed and controlled."[65] Besides this, robots are also used for religious purposes nowadays. This has been demonstrated in particular by *Christian robots* such as SanTO or BlessU-2 as well as the *Buddhist robot* Mindar, which even has a partially human form. These are known as prayer robots, which also have pastoral and ritual functions. They are able to answer religious questions and explain theological ideas, qualifying them as intelligent robots, especially due to their speech capabilities.[66] Examples of religious robots also exist in an Islamic context. As part of the Vision 2030 economic project in Saudi Arabia, which is being realised to gradually reduce the country's dependence on oil through the cultivation of alternative resources, a great amount of money is being invested in modern technologies. AI and (intelligent) robots in particular could contribute significantly to the economic endeavours in question, which may explain Saudi Arabia's keen interest in new technologies. However, Saudi Arabia is considered an Islamic kingdom, meaning that the religious needs of the population must also be taken into account when using robots. Thus, official Islamic legitimisation for the use of intelligent machines is required, first and foremost in order to remove any religious doubts about the utilisation of robots. Therefore, it is no coincidence that one of the nine imams of the Holy Mosque in Mecca (*masjid al-ḥarām*) ʿAbd ar-Raḥmān as-Sudays (born 1961) participated in a public presentation of an *AI sermon robot* as part of the smart Haramain project

64 Ibid., 3.
65 Ibid., 3.
66 *Machreich*: Robotersegen.

by promoting the use of an *Islamic robot*. The robot is designed to fulfil a variety of religious functions, including reciting the Qur'an, performing the call to prayer (*adhān*) and delivering sermons and reminders. In addition, interaction between the robot and pilgrims using smartphones will be provided so that visitors can obtain religious information from it. This particularly involves consultations on matters of Islamic law, with the robot even issuing *fatwas* (Islamic legal opinions). The Saudi Arabian religious authority is also planning the use of hygiene robots in mosques to ensure more efficient cleaning in holy places.[67]

The Iranian government is also considering the use of robots. The utilisation of AI or intelligent machines could prove to be highly beneficial in the issuing of fatwas.[68] Nevertheless, a significant restriction is already being imposed on the use of robots: "'Robots can't replace senior clerics, but they can be a trusted assistant that can help them issue a fatwa in five hours instead of 50 days,' said Mohammad Ghotbi, who heads a state-linked organisation in Qom that encourages the growth of technology businesses."[69] In the Iranian context, efforts are being made to reconcile religious tradition and modern technology by using new technological systems to preserve religious values: "The seminary must get involved in using modern, progressive technology and artificial intelligence," Ayatollah Alireza Arafi said in July. "We have to enter into this field to promote Islamic civilisation."[70] The critical attitude of Islamic scholarship in Iran is due to the fear that the population is increasingly turning its back on religion and instead adopting Western values under the influence of modern technology. However, this concern can be refuted by the argument that the use of AI will enable the Iranian clergy to adopt a more comprehensive approach to the dissemination of religious ideas, as fields of knowledge, such as sociology, psychology, health and entertainment, can be evaluated more quickly and efficiently in religious discourse or even used for religious purposes: "Ghotbi said it was incorrect to assume the Iranian society was inevitably becoming less religious. Rapid technological develop-

67 *Tamim*: AI sermon robots.
68 *Bozorgmeh*: Robots can issue a fatwa.
69 Ibid.
70 Ibid.

ments, and the refusal of many women to wear headscarves since the protests, had unsettled many, particularly the more religious Iranians, and prompted them to seek 'rescue' through Islamic teachings, he said. Technology could also help the clergy address public concerns and reconcile them more swiftly with Islam, while helping clerics make rulings in an increasingly complex society, he argued."[71]

3.2 An Islamic view on robots

How can robots be approached in Islam? These questions may be addressed on two levels: on an Islamic legal and ethical (spiritual) level. First, the usage of robots must be evaluated from a normative perspective. A normative evaluation means a legal assessment within the framework of Islamic law. In relation to robotics, the question needs to be examined as to what extent the production and utilisation of robots is legitimate in an Islamic context.

As a preliminary point, it can be stated that the manufacture and use of robots is generally permitted in Islamic law (*ḥalāl*) according to existing fatwas;[72] thus, in principle, nothing speaks against the use of robots. Nevertheless, the problem under Islamic law lies in the field of robot design. In general, Islamic law does indeed place strict prohibition on visually depicting living beings, whether humans or animals. This prohibition applies in particular to the visual arts, which means that the visual design of artwork may only be pursued to a limited extent. Undoubtedly, there is an artistic element in the field of robotics. This is because the production of robots is not restricted solely to the development of their function, but also places importance on the appearance of the machine, which is certainly intended to evoke a psychological effect.[73] A fatwa from the Islamic educational institute Dār al-Muṣṭafā in Tarīm (Yemen), published in English by Yusuf Weltch on the Islamic online platform SeekersGuidance, states: "The issue of the robot revolves around the issue of taswir or form-making. It is prohibited to make any 3-dimensional

71 Ibid.

72 According to the fatwas from islamweb.NET, islamqa.org and seekersguidance.org. See footnotes: 67, 73 and 74.

73 *Weltch*: Is It permissible?

form of any animate creature. Even though the robot does not have a human face or skin—its form and shape are that of a human."[74] Hence, Islamic legal issues revolve around the question of the legality of the production and use of robots, particularly when it comes to their appearance.

The manufacture of a robot is prohibited if it is endowed with (human) extremities, regardless of the purpose of the machine. In such a case, Weltch even speaks of a great sin, which he explains by referring to the traditions in Hadith literature;[75] for example: "The people who will be the most severely punished before God on the Day of Resurrection will be the image makers."[76] Weltch elaborates on this aspect as follows: "This ruling applies even if the robots are used for menial labor, such as cleaning; this is because of the intense warning against those who make 3-dimensional forms (that resemble animate creatures) and because form makers are the most severely punished on the Day of Judgment."[77] Nonetheless, children's toys are an exception to this prohibition on the basis that the Prophet Muhammad is said to have permitted child's play with dolls. However, a legal difference of opinion occurs in the case of manufacturing robots that are missing vital human extremities, for example if the machine is missing an entire half of its humanoid shape.[78] The legitimacy of the production of such robots is argued for by this statement by the Prophet: "Order him to cut off the head of the statue that exists in house to let it become like a tree".[79] In this respect, it should be emphasised that only the external appearance of the robot is taken into consideration when it comes to legal assessment, whereas the internal features have no relevance in this case.[80] In contrast, an uncommon view holds that the humanoid appearance of a machine does not entail any prohibition as long as the robot is not worshipped as an idol; unfortunately, the Islamic legal justification for this opinion remains unknown.[81]

74 Ibid.
75 Ibid.
76 Sunan an-Nasaʾī 5364, Vol. 6, Book 48, Hadith 5366.
77 *Weltch*: Is It permissible?
78 Ibid.
79 *Islamweb*: Working with and using robots.
80 *Moosa*: Consensus of Scholars.
81 *Weltch*: Is It permissible?

Thus, the possession or usage of robots is viewed within the framework of the general prohibition on depicting human or animal images, which means that a robot is not allowed to be owned or used as long as it has a full humanoid appearance. Beyond that, the robot can be used only for permissible purposes: "As for that which is prohibited to make, then if it is kept or acquired to fulfil some physical desire or devilish aim, to revere, as an adornment—such as it being put on the roof, a wall, or an erect cushion—it is strictly prohibited to have and to attend any place it is in. In fact, it is prohibited to even enter upon it (i.e. into that room which it's in) according to some scholars due to the narration of Imam Muslim on the authority of 'Aisha'."[82] The use of robots as assistants in maintaining residential areas or for physically demanding activities is permitted. Unfortunately, the Islamic legal assessment of robots seems to be shallow, as the fatwas so far have mainly considered the appearance of the machines in question. But what about other potential functions of robots? What are the effects on human civilisation emanating from the deployment of robots? What is the Islamic verdict on the exploitation of resources for manufacturing, not only intelligent machines, but modern technologies in general?

Based on the Islamic teachings of virtue, as a branch of Sufism, we emphasise the importance of ethical production and use of technology. In particular, the extraction of resources cannot be carried out in conjunction with the exploitation of people. At the same time, technology must be submitted to nature, for nature has to be seen as a place of divinity, which means that it should not be downgraded to a merely exploitable resource. Instead, nature needs to be given its rights, as technologisation and progress have to adhere to a certain balance. Technologisation, as one of the manifestations of human progress, must develop in harmony with the well-being of humankind and nature. Negative effects, such as the spreading of corruption (*fasād*) and injustice (*ẓulm*), need to be prevented. Corruption in this context means exposing nature to long-term destruction; injustice, on the other hand, refers to the exploitation of people for the sake of alleged technological progress.[83] Robotics must absolutely comply with these moral aspects. Virtue in particular should

82 Ibid.

83 Ramy Abdin: Die Auswüchse der Technik.

enable the believer not only to perceive the advantages of technology, but at the same time to acquire an understanding of the downsides of using modern machines. Without a doubt, it is currently not possible to answer all morally relevant questions about modern technology, although the first step in answering them must be taken by raising some of these questions; for example: How does the use of intelligent machines affect human social interactions? What general psychological and spiritual impact will robots have on us once we are constantly interacting with them? How much will the economy change if humans are replaced by robots in certain work areas? What will it mean for human civilisation if only robots perform difficult or physically demanding tasks? Should we actually grant highly intelligent robots political power? We strongly emphasise here that not all technological developments guarantee the well-being of mankind. The invention and use of weapons of mass destruction should serve as a prime example of the dark side of technology.[84] Just because it is possible to produce innovative machines or new types of artefacts does not mean that they must always be developed, especially if negative consequences can be anticipated. In the *Rome Call for AI Ethics* conference on 10.01.2023, the Islamic scholar Hamza Yusuf (born 1958) referred to the potentially destabilising element of (technological) innovations; in contrast, religions are a conservative enterprise, so they are inherently cautious, especially towards human innovations. It is precisely the excessively fast pace at which innovations are created that may result in such destabilisation.[85] Therefore, intentional abstinence from innovations should be regarded as a serious option, which means that the entire concept of progress has to be reconsidered, since refraining from certain technologies can also be seen as an expression of progress, especially when harm is prevented; religions, as conservative enterprises, could provide a contribution to the pursuit of *balanced progress*.

4. Conclusion and Outlook: Men and Robots

Coming back to the question of the difference between humans and robots, the observant reader will already have an idea of what the

84 Ibid.
85 *Yusuf*: AI Ethics.

distinguishing aspects might be, yet we would like to elaborate on this issue slightly more by addressing the question on a normative and theological level.

The intelligence of a robot in conducting analysis and making calculations is beyond any doubt. Its efficiency and computing speed will always surpass that of a natural human being; hence, an intelligent machine is endowed with a basis of human rationality. However, what kind of reasoning ability are we talking about here? As already explained, humans possess three basic types of reasoning: analytical reasoning, moral reasoning and spiritual reasoning. Analytical reasoning stands for the intellectual capacity for analytical (mathematical) thought; the second represents the foundation for moral judgement of human activity; the last represents the ability to become receptive to what is Divine through mystical experiences. Hence, we argue that an intelligent machine is nothing other than an enormous extension of analytical reasoning. In fact, it is the only reasoning that is devoid of any emotion; it only operates by the means of deduction and induction or through processes of calculation. Even though a robot certainly has the potential for moral reasoning, such reasoning requires the capacity for emotional perception and, above all, a conscience, especially when empathy or even virtues such as compassion and mercy become necessary in matters of moral complexity. This begs the question of how far human emotions could be recreated in a machine. Even if this possibility does arise at some point, to what extent do these recreations actually match human emotions? To be more specific: Are these really human emotions? Furthermore, we take the theological view that a robotic individual definitely cannot be endowed with spiritual reasoning, even though it is not impossible for machines to have a spiritual impact. In particular, the notion of *barakah* ("giving of blessings") might be applicable to technological devices; the general concept implies that individuals, places or even objects, as instruments of Divine activity, can become sources of blessings, which a believer would spiritually benefit from.[86] In addition, human beings are constantly exposed to the experience of their own weaknesses, which means that they are in lifelong conflict with their *darker self*. On the one hand, human actions are greatly influenced by the

86 *Hossein Nasr*: Sufi Essays, 35–36.

(worldly) impulse forces of the soul—*hawā* and *shahwa*—so that one has to balance these forces in order to purify the heart and, as a result, the soul of their bad qualities. A robot's activity, on the other hand, is determined by algorithms. It neither experiences the forces of human impulse, nor does it embody the essences of man, namely the soul (*nafs*), spirit (*rūḥ*) and heart (*qalb*), because the presence of the essences constitutes the condition of human weakness. Hence, it does not have a *metaphysics of man*. Unlike humans, a robot does not need to overcome itself when carrying out actions; instead, it chooses to perform an act that normally poses a challenge to humans without enduring any hardship. However, if what is Divine and the respective hereafter are considered, the robot, as a complex machine, may contribute to man's spirituality; although the robot is not a human being, it can be experienced as an expression and manifestation of God's work.

However, one function that is of particular interest from the viewpoint of Islamic law is the responsibility for making decisions about life and death, for example when a robot is used for military purposes, a matter which, we believe, has not yet been sufficiently reflected in Islamic law. So how is an intelligent robot that is used to kill people to be legally assessed, especially if the act of execution is not self-defence, but first-degree murder? Who is to be held responsible? The owner or even the manufacturer or programmer? It is certainly not reasonable to attribute (religious) responsibility to an intelligent machine. This is because Islamic law adheres to the concept of *taklīf*. *Taklīf* is *the human responsibility to fulfil the commandments and prohibitions of Islamic law*. Thus, a believer is considered responsible (*mukallaf*) if they have reached maturity, have full mental capacity and demonstrate the (physical, psychological and circumstantial) ability to follow Divine command.[87] Therefore, it is questionable how the principle of *taklīf* can be applied on robots, as they function through algorithms, which in no way corresponds to human understanding and nature. Thus, given the emergence of robotics, it is imperative to re-examine the issue within the framework of Islamic law, in order to determine how intelligent machines can be evaluated and regulated in accordance with Islamic principles.

87 *Powers*: Intent in Islamic Law, 12.

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