ESTABLISHING LEGAL RIGHTS AND LIABILITIES FOR ARTIFICIAL INTELLIGENCE^{*}

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ABSTRACT

The rapid development of technology has enabled the creation of artificial intelligence. Even the most vocal critics against artificial intelligence and automated systems acknowledge the tremendous benefits offered by this new technology as can be seen in various aspects of human life from trade and commerce, healthcare, safety and security, transportation to social life and beyond. At the same time, the spread of artificial intelligence, automated systems, and robotics poses an incredible risk to our jobs, privacy, safety, health and more. The purpose of this article is to understand the level of impact posed by artificial intelligence and to establish legal rights and liabilities for artificial intelligence. This article also analyzes the viewpoint of Islam on this phenomenon. This article is mostly library-based, benefitting from the extensive literature already available in international journals, books by scholars, and online news. In addition, this article also benefitted from interviews with scholars and experts on cybersecurity and artificial intelligence. The ultimate focus is on the possible recognition of artificial intelligence as a legal entity in its own right, capable of possessing rights and liabilities. The additional focus is on the Islamic perspective on the matter. This article shows that there is

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an urgent need to establish a uniformed minimum legal rights and liabilities for parties involved, including consumers, manufacturers, and designers, although such rights and liabilities can be tailored to fit the unique scenarios faced by the parties. This article reveals that Islam provides various useful guidelines on this modern and unique matter.

Keywords: Artificial intelligence, robotic, Islam, technology

MEWUJUDKAN HAK-HAK PERUNDANGAN DAN LIABILITI UNTUK KEPINTARAN BUATAN

ABSTRAK

Perkembangan memberangsangkan teknologi telah memungkinkan kewujudan kepintaran buatan. Pengkritik paling hebat terhadap kepintaran buatan dan sistem automasi turut mengiktiraf sumbangan besar yang ditawarkan oleh teknologi ini seperti yang dapat dilihat dalam pelbagai aspek kehidupan manusia termasuklah dari sudut perniagaan dan jualbeli, kesihatan, keselamatan dan sekuriti, pengangkutan kepada sistem sosial dan lebih lagi. Pada masa yang sama, perkembangan kepintaran buatan, sistem automasi dan robotik memberikan ancaman serius kepada pekerjaan, privasi, kesihatan dan banyak lagi. Tujuan makalah ini ialah untuk meahami impak yang berikan oleh kepintaran buatan, dan untuk mewujudkan hak-hak perundangan dan liabiliti ke atas kepintaran buatan. Makalah ini turut menganalisa isu ini dari pandangan Islam. Makalah ini berasaskan sumber bacaan dari perpustakaan, dan mengambil manfaat dari material yang komprehensif yang dapat dilihat di dalam artikel jurnal, buku penulisan pakar, dan berita dalam talian. Tambahan lagi, makalah ini mengambil manfaat daripada temubual dengan pakar keselamatan dan kepintaran buatan. Fokus utama ialah untuk melihat kemungkinan mengiktiraf hak-hak perundangan untuk kepintaran buatan sebagai entiti undang-undang dalam kategorinya sendiri. Fokus tambahan ialah pandangan Islam dalam isu ini. Makalah ini menghujahkan bahawa wujud keperluan segera untuk mewujudkan hak-hak perundangan dan liabiliti yang seragam dan jelas kepada semua pihak yang terlibat dalam kepintaran buatan termasuklah pengguna, pengilang, perekacipta, tetapi hak dan liabiliti tersebut boleh diubahsuai untuk mengambilkira senario yang dihadapi oleh pihak-pihak. Makalah ini

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juga mendedahkan bahawa Islam menyediakan garis panduan yang sangat bermanfaat dalam isu yang moden dan baru ini.

Kata kunci: kepintaran buatan, robotik, Islam, teknologi

INTRODUCTION

The development of modern technology has been remarkable.¹ New gadgets, machines, and other products that were made available due to advanced technology largely characterize life in the 21st century. This can be seen in almost all aspects of life including the economy, infrastructure, social and even state welfare and security. The mesmerizing and spellbinding effects of this advanced technology were beautifully captured in the Black Mirror, a British science fiction anthology television series that examines modern society with special focus on unanticipated consequences of this new technology.

The introduction of social media applications with Artificial Intelligence (AI) - based algorithms (such as face detection and SIRI) as well as Facebook, twitter, Instagram and WhatsApp has revolutionized the way people interact with each other, for better or worse. One major characteristic that can be seen and associated with these new products is our ability to dictate, control, and adjust the products to suit our needs and interests. That is, until now. The creation of AI changes everything.²

What is Artificial Intelligence (AI)? In 1955, John McCarthy, the founding father of the discipline of AI, described the process as, "that of making a machine behave in such ways that would be called intelligent if a human were so behaving".³ The scope of AI is difficult to be measured

¹ Bertalan Mesko, "10 ways mobile technology will save your life in the future" (*CNN* 25 February 2014), http://edition.cnn.com/2014/02/25/business/10ways-mobile-technology-will-save-your-life/index.html.

² Abbi Whitaker, "How Advancements In Artificial Intelligence Will Impact Public Relations" (*Forbes* 20 Marh 2017), https://www.forbes.com/sites/theyec/2017/03/20/how-advancements-inartificial-intelligence-will-impact-public-relations/#6267c84341de.

³ Jerry Kaplan, *Artificial Intelligence: What everyone needs to know* (Oxford University Press 2016) pg.1.

since there is no universally accepted legal definition for it. The world community is unable to come out with a standardized definition of AI because the criteria or minimum standard is difficult to understand or determine. Defining intelligence itself is challenging as mentioned by Kaplan (2016). He argues that, "there's little agreement about what intelligence is," and there is little evidence, "to believe that machine intelligence bears much relationship to human intelligence, at least so far."⁴

In essence, AI refers to the type of intelligence that is not natural. Human intellect and animal intellect like cat and dog are regarded as natural intelligence. Natural intelligence is associated with biological creatures. On the other hand, AI is associated with computers, robots and other mechanical, cyber or digital creations.

In order to claim AI, the level expected of these mechanical creations seems to be much higher. A calculator is able to calculate super difficult mathematical calculations at an amazing speed yet a calculator is not generally regarded as possessing AI. One common methodology to test AI is the Turing test; the computer claiming to possess the AI is put behind a wall or in a location that cannot be seen by the other party (human). The computer will then communicate with the human through a series of questions and answers. If the human is unable to detect that the other party is actually a computer, the computer is deemed to reach the expected level of AI. By applying this standard, it can be said that an application like Siri is already close to reaching the required level of AI.

There is no universally accepted definition at both international and national level. This is problematic from the legal perspective since the regulators will not be able to set the minimum standard etc. A report from Stanford University shares the common definition of AI. It defines Artificial Intelligence (AI) as:

'a science and a set of computational technologies that are inspired by but typically operate quite differently from—the ways people use their nervous systems and bodies to sense, learn, reason, and take action'.⁵

⁴ Jerry Kaplan, *Artificial Intelligence: What everyone needs to know* (Oxford University Press 2016) pg.1.

⁵ "One Hundred Year Study on Artificial Intelligence (AI100)," Stanford University, accessed 20 November 2017 via https://ai100.stanford.edu.

The Turing Test, proposed by Alan Turing (1950) was devised to provide a satisfactory definition of intelligence. To pass the test, a machine needs to possess the following capabilities: (1) natural language processing to enable it to communicate properly, (2) knowledge representation to store what it hears or knows, automated reasoning to answer questions or draw conclusions based on the stored information and (4) machine learning to adapt, and to detect extrapolate patterns.⁶

The introduction of AI is a serious game changer. The potential impact of AI on industries and organisations is enormous. This include product manufacturing (more reliable demand forecasting, a flexible and responsive supply chain, quicker changes in operations, and more accurate scheduling and inventory optimisation), defence and security (protection of infrastructures that are vulnerable to attacks, detecting anomalous behaviour in individuals, and using distributed sensors and pattern recognition to predict infrastructure disruptions through natural/man-made causes), disaster management, logistics (adaptive scheduling of deliveries and routing of vehicles), financial services (early detection of financial risk and systemic failures, and automation to reduce malicious intent in financial systems, such as market manipulation, fraud), travel and transportation, agriculture, and consumer goods and services.⁷ Yet, the dangers must not be underestimated. Eliezer Yudkowsky warned that, "... by far, the greatest danger of artificial intelligence is that people conclude too early that they understand it."8

AI has been used in an unexpected situations like determining whether to keep a suspect in custody. In November 2017, it was reported that the United Kingdom's Members of Parliament are investigating the growing use of algorithms in decision-making⁹. While they were

⁶ Stuart Russell and Peter Norvig, *Artificial Intelligence: A modern approach* (Pearson Education Limited 2014) pg.2.

⁷ "Artificial Intelligence and Robotics – 2017: Leveraging artificial intelligence and robotics for sustainable growth"

⁽*PwC* March 2017), https://www.pwc.in/assets/pdfs/publications/2017/artificial-intelligence-and-robotics-2017.pdf.

⁸ Bernard Marr, "28 Best Quotes About Artificial Intelligence" (*Forbes* 25 July 2017) via https://www.forbes.com/sites/bernardmarr/2017/07/25/28-best-quotes-about-artificial-intelligence/#6bdae9334a6f.

⁹ "Police warned about using algorithms to decide who's locked up" (*BBC News* 16 November 2017) via

concerned about the potential scope for errors and misunderstandings, the Durham Police have already launched a system that uses AI-based algorithms to help decide whether to keep a suspect in custody. The Harm Assessment Risk Tool (HART) uses historical data on offending to classify suspects as low, medium or high risk of offending by using information such as offending history, the type of crime a suspect has been accused of, their postcode and gender.¹⁰

Since the beginning of mankind's history, higher intellectual capacity can only be attributed to mankind alone. No other creations e.g. animals and plants (flora and fauna) can claim superior intellect. With this advance intellect, mankind becomes the dominant species on this planet.

The modern digital computer is a relatively new invention. However, the term 'computer' was first recorded in 1613, referring to a person who carried out computations or calculations, and the word remained to be used in that definition until the middle of the 20th century.¹¹

Since the creation of the first programmable computer in 1936, nations around the world have been trying to come out with faster, smarter, better and superior computers. An advance computer is associated with stronger military and security capabilities. During the competition, the Internet was created and made available to the public. Initially, the concept of computer network was created by the military with the idea to create a communication system that can survive a nuclear war. However, the public and business community found this concept of a network to be extremely valuable and relevant.

The speedy development of both computing technology and the Internet eventually lead to the creation of AI. The creation of AI becomes the golden measure for futuristic technology as reflected in various

http://www.bbc.com/news/uk-politics-

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^{41996422?}intlink_from_url=http://www.bbc.com/news/topics/ce1qrvleleqt/art ificial-intelligence&link_location=live-reporting-story.

¹⁰ "Police warned about using algorithms to decide who's locked up" (BBC News 16 November 2017) via

^{41996422?}intlink_from_url=http://www.bbc.com/news/topics/ce1qrvleleqt/art ificial-intelligence&link_location=live-reporting-story.

¹¹ "Chapter 1: History of Computers",

^{%20}Computing%20Basics/csca0101_ch01.pdf.

Hollywood movies. Doomsday movies like the Terminator series instill fear in the society that AI can bypass the human race and lead to termination and extinction. Other movies like Artificial Intelligence (AI) by Steven Spielberg looked at the situation from a new dimension; the emotional and social aspects. Important questions were raised in the movies including the question whether robots and android with advanced AI can possess emotion, or at least, certain legal rights. AI is also popular in Asia. In Japan, cartoons like Doraemon and Astro Boy projected a very positive image for AI-based robots.

In the past, questions regarding legal rights and responsibilities related to robots and android are confined to the domain of science fiction. This is no longer the case. Advanced AI has already been introduced to the public and has been commercialized. A simple example will be the operating system known as Siri (created by Apple). Siri is a common feature for Apple's new products including iPhone, iPad, and Macs. The user can communicate with Siri and in most situations, will obtain sound answers that are normally associated only with a human.

Despite the rapid growth of AI technology, the law has been surprisingly slow. This is strange since the negative implications of AI can be very grave and disastrous, especially if left unchecked. An efficient but malicious AI used for a military purpose could result in the death of millions. AI created with the task to create biological weapon might end up with a new strain of virus that is so strong that it can wipe mankind. A lesser serious scenario can still be fatal. Computer malfunction associated with AI in a hospital can lead to fatality.

In addition to the dangers and harms that AI can bring to mankind, there are other noble legal questions as well. For example, can an advanced robot that physically looks exactly similar to a human, and with advance AI argue for the basic legal rights that are normally associated with human and animal e.g. right not to be killed or tortured?

The lack of a legal instrument to regulate is nerve-racking. However, there has been some positive development in the law in several countries. On 20 January 2015, the Committee on Legal Affairs of the European Parliament (JURI Committee) decided to establish a Working Group (WG) on legal questions related to the development of robotics and artificial intelligence (AI) in the European Union.¹² This will pave way for a more comprehensive policy on AI.

This article proposes that it is necessary to have a clear legal and regulatory framework to govern and regulate basic matters related to AI. At the very least, the minimum standard must be clearly specified so that the public interest will not be jeopardized at any time. This article also analyzes the legal and practical challenges of assigning legal rights and liabilities to advanced AI.

THE BACKGROUND AND MODERN DEVELOPMENT

The seeds of modern AI were planted by classical philosophers who attempted to describe the process of human thinking as the mechanical manipulation of symbols. In the 1940s, the invention of the programmable digital computer paved the way for the creation of modern AI. The invention of the computer proves the possibility of building a digital or electronic brain.

In 1956, a group of researchers in the campus of Dartmouth College requested millions of dollars for a project; to build a computer as intelligent as the human in around one generation. The funding was given but the project was not able to reach its target due to hardware and software limitations of the past. Strong criticism and pressure from the Congress resulted in the cancellation of funding in 1973.

Seven years later, the Japanese Government decided to provide billions of funding but the absence of the needed hardware and software also resulted in a similar cancellation, and the investors withdrew their money.

In the 21st century, the creation of powerful computer hardware and software has enabled renewed interest and investment in the field of AI. The commercialization of AI-based products further accelerated the pace of its development.

¹² Mihalis Kritikos, "European Parliament Report on Civil Law Rules on Robotics: Setting the Ground for a European Perspective on Robot Law?" (*Scientific Foresight Unit*, 27 July 2017), https://www.ucl.ac.uk/cles/events/materials/20170727-artificalcosmoi/MKritikos_Law_Robotics.pdf.

THE POTENTIAL BENEFITS, RISKS AND DANGERS

AI has brought a lot of benefits from various aspects including economic,¹³ health, safety, security, entertainment and more. The massive contribution of AI in improving human's health is now apparent, as mentioned in the Stanford Report. The report highlights that in the healthcare sector, there has been a huge development "in collecting useful data from personal monitoring devices and mobile apps, from electronic health records (EHR) in clinical settings". ¹⁴ The same report reveals that "surgical robots designed to assist with medical procedures and service robots supporting hospital operations" are benefitting the healthcare sector. In addition, AI-based applications could improve the quality of life for millions of people in the coming years.¹⁵

The impact of AI on the economy, particularly on employment is serious. The IBA Global Employment Institute Report entitled 'Artificial Intelligence and robotics and their impact on the workplace', released on April 2017 reveals as follow:

"The developing countries in Central and South America will also not profit from the trend of the fourth industrial revolution. It is to be feared that these countries – like the North African countries and Indonesia – are not equipped to face automation and digitalisation due to the lack of education of much of the population, lack of investment in a (digital) infrastructure and lack of legal framework...Finally, Western developed countries will profit from the relocation of the companies' production sectors when robotic production becomes cheaper than human production in low-labour-cost countries. This will create new jobs in these countries and destroy many routine jobs in the low-labour-cost countries."¹⁶

¹³ 'Sizing the prize', PwC's Global Artificial Intelligence Study: Exploiting the AI Revolution, https://www.pwc.com/gx/en/issues/analytics/assets/pwc-aianalysis-sizing-the-prize-report.pdf.

¹⁴ "One Hundred Year Study on Artificial Intelligence (AI100)" Stanford University, accessed 20 November 2017 via https://ai100.stanford.edu.

¹⁵ "One Hundred Year Study on Artificial Intelligence (AI100)," Stanford University, accessed 20 November 2017 via https://ai100.stanford.edu.

¹⁶ Gerlind Wisskirchen, Blandine Thibault Biacabe, Ulrich Bormann, Annemarie Muntz, Gunda Niehaus, Guillermo Jimenez Soler, Beatrice von

In relation to business and marketing, AI has already paved a new way that can replace traditionally personalized marketing. Algorithms are being used by many social media apps for marketing purpose.

Artificial Intelligence can also be developed to identify criminals. In a research conducted by Edinburgh University, AI computers learn to spot the killer in CSI episodes. The AI correctly identified the perpetrator during the final part of an episode 60% of the time although the study found people who watched the same show were able to identify the killer 85% of the time.¹⁷

Amazon and Netflix are also setting trends for personalization based on predictive patterns and interest of their customers to maintain loyalty. This is possible because of AI. Google is another great example of AI and machine learning that really does make life easier for everyone. The potential of AI is so vast that AI is already able to write perfectly acceptable pop songs.¹⁸

Nevertheless, there are also many dangers and risks associated with AI.¹⁹ In an interview with the BBC, Stephen Hawking warned that "the development of full artificial intelligence could spell the end of the human race … It would take off on its own, and re-design itself at an ever-increasing rate. Humans, who are limited by slow biological evolution, couldn't compete, and would be superseded."²⁰

Brauchitsch, "Artificial Intelligence and robotics and their impact on the workplace" (*IBA Global Employment Institute*, April 2017).

¹⁷ "AI computers learn to spot the killer in CSI episodes" (*BBC News* 9 November 2017), http://www.bbc.com/news/uk-scotland-edinburgh-east-fife-41932030?intlink_from_url=http://www.bbc.com/news/topics/ce1qrvleleqt/art ificial-intelligence&link_location=live-reporting-story.

¹⁸ Mark Savage, "Now computers are writing perfectly acceptable pop songs" (*BBC News* 10 November2017),

http://www.bbc.com/news/entertainment-arts-

^{41935971?}intlink_from_url=http://www.bbc.com/news/topics/ce1qrvleleqt/art ificial-intelligence&link_location=live-reporting-story.

¹⁹ James Barrat, Our Final Invention: Artificial Intelligence and the End of the Human Era (St. Martin's Press 2013).

²⁰ Bernard Marr, "28 Best Quotes About Artificial Intelligence" (*Forbes* 25 July 2017) via https://www.forbes.com/sites/bernardmarr/2017/07/25/28-best-quotes-about-artificial-intelligence/#6bdae9334a6f.

Many share the concern. Nick Bilton, a tech columnist in the *New York Times* illustrates the danger by asking us to "imagine how a medical robot, originally programmed to rid cancer, could conclude that the best way to obliterate cancer is to exterminate humans who are genetically prone to the disease."²¹ AI that is programmed for war or to do destructive things can cause havoc and trouble at an unprecedented level.

There are differences of view whether the benefits outweigh the harms. According to the Stanford Report entitled 'One Hundred Year Study on Artificial Intelligence (AI100)', the benefits outweigh the potential harms:

"The frightening, futurist portrayals of Artificial Intelligence that dominate films and novels, and shape the popular imagination, are fictional. In reality, AI is already changing our daily lives, almost entirely in ways that improve human health, safety, and productivity. Unlike in the movies, there is no race of superhuman robots on the horizon or probably even possible. And while the potential to abuse AI technologies must be acknowledged and addressed, their greater potential is, among other things, to make driving safer, help children learn, and extend and enhance people's lives."²²

THE LEGAL AND REGULATORY FRAMEWORK

Clearly, the pace of the development for AI has been very fast, and the law failed to catch up.²³ Elon Musk wrote in a comment on Edge.org that "the pace of progress in artificial intelligence (I'm not referring to narrow AI) is incredibly fast" and "unless you have direct exposure to groups like Deepmind, you have no idea how fast—it is growing at a pace close

²¹ Bernard Marr, "28 Best Quotes About Artificial Intelligence" (*Forbes* 25 July 2017) via https://www.forbes.com/sites/bernardmarr/2017/07/25/28-best-quotes-about-artificial-intelligence/#6bdae9334a6f.

²² "One Hundred Year Study on Artificial Intelligence (AI100)," Stanford University, accessed 20 November 2017, https://ai100.stanford.edu.

²³ Matthew U. Scherer, "Regulating Artificial Intelligence Systems: Risks, Challenges, Competencies, and Strategies" (2016) *Harvard Journal of Law & Technology*, Volume 29, Number 2 Spring 2016.

to exponential".²⁴ He further warned that "the risk of something seriously dangerous happening is in the five-year timeframe. 10 years at most."

Currently, there is no comprehensive legal and regulatory framework for AI at both national and international level. Overlapping jurisdiction and difficulty to allocate responsibility are some of the challenges faced in relation to a legal and regulatory framework. Currently in the United States, at least sixteen separate agencies govern sectors of the economy related to AI technologies but as people integrate AI more broadly and deeply into industrial processes and consumer products, best practices need to be spread, and regulatory regimes adapted.²⁵

Asaro suggested that legal and regulatory framework for robot should be similar to other products.²⁶ However, for AI, the situation can be more complicated.

LEGAL RIGHTS AND LIABILITIES

In the absence of a clear law establishing the legal rights and liabilities related to artificial intelligence and robotics, reference can be made to Article 12 of the United Nations Convention on the Use of Electronic Communications in International Contracts.

Article 12 states that, "a person (whether a natural person or a legal entity) on whose behalf a computer was programmed should ultimately be responsible for any message generated by the machine."

Rights can be defined as legal, ethical or social principles of entitlement or freedom. Certain rights are said to be natural. For example, humans are said to have a natural right to life, also known as moral rights. This right is universal.

On the other hand, there are rights that are not natural, like legal rights. Legal rights are not universal and are based on society's law, customs, legislation or statutes. Some of the important documents in the political history of rights include:

²⁴ Bernard Marr, "28 Best Quotes About Artificial Intelligence" (*Forbes* 25 July 2017), https://www.forbes.com/sites/bernardmarr/2017/07/25/28-best-quotes-about-artificial-intelligence/#6bdae9334a6f.

²⁵ "One Hundred Year Study on Artificial Intelligence (AI100)" Stanford University, accessed 20 November 2017, https://ai100.stanford.edu.

²⁶ P M Asaro, "Robots and Responsibility from a Legal Perspective", (2007) *Proceeding of the IEEE.*

- 1. The Persian Empire established unprecedented principles of human rights in the 6th century BC under Cyrus the Great.
- 2. The Constitution of Medina (622 AD; Arabia) established a number of rights for the Muslim and non-Muslims of Medina
- 3. The Magna Carta (1215; England) required the King of England to accept that the will of the king could be bound by law
- 4. The Bill of Rights (1689; England) declared that Englishmen possess civil and political rights
- 5. The Virginia Declaration of Rights (1776) by George Mason declared the inherent natural rights and separation of powers.
- 6. The United States Declaration of Independence (1776) concisely defined the rights of man as including, but not limited to, "Life, liberty, and the pursuit of happiness". Article 3 of the Universal Declaration of Human Rights reads, "Everyone has the right to life, liberty and security of person".
- 7. The Declaration of the Rights of Man and of the Citizen (1789; France) defined a set of individual rights and collective rights of the people.
- 8. The Virginia Statute for Religious Freedom (1785; United States), written by Thomas Jefferson in 1779 recognized the right of man to form a personal relationship with God free from interference by the state.
- 9. The United States Bill of Rights (1789–1791; United States), the first ten amendments of the United States Constitution specified basic rights of individuals in which government could not interfere
- 10. The European Convention on Human Rights (1950; Europe) was agreed to protect human rights and fundamental freedoms.
- 11. The International Covenant on Civil and Political Rights (1966), a follow-up to the Universal Declaration of Human Rights, concerns civil and political rights.
- 12. The International Covenant on Economic, Social and Cultural Rights (1966), another follow-up to the Universal Declaration of Human Rights, concerns economic, social and cultural rights.

Rights are not only limited to the domain on mankind. There are various domestic protections given to animals by the legal system of individual countries to protect animal rights but there is currently no global legal agreement specifically concerned with the welfare and treatment of individual animals. The available international instruments only focus on their preservation, trade and/or use rather than on their welfare or treatment.

There are many noble issues related to legal rights and liabilities associated with artificial intelligence. One issue is whether AI can be deemed to be a legal entity, capable of possessing rights and liabilities. Currently, AI is not deemed to be a legal entity of its own. Accordingly, no rights and liabilities are given to AI. In relation to this, Gray Scott posed the following questions:

"The real question is, when will we draft an artificial intelligence bill of rights? What will that consist of? And who will get to decide that?"²⁷

The separation of legal entity is not a new concept. The same concept can be seen with the modern company. Under the doctrine of separate legal entity, a company is treated differently from its human founder. A company can sue and be sued in its own name. However, the comparison between a company and AI will not be accurate. Although a company can sue and be sued, a company is always managed by the directing minds; human. The comparison between company and AI is relevant but not really accurate. Buckley L.J in the Cour of Appeal in Continental Tyre and Rubber Co. (G.B.) Ltd v Daimler Co.²⁸ stated that:

"The artificial legal person called the corporation has no physical existence. It exists only in contemplation of law. It has neither body, parts, nor passions. It cannot wear weapons nor serve in wars. It can be neither loyal nor disloyal. It cannot compass treason. It can be neither friend nor enemy. Apart from its corporators it can have neither thoughts, wishes, nor intentions, for it has no mind other than the minds of the corporators."

The purpose of establishing rights and liabilities, and granting legal status to a company is to facilitate trade and commerce, and make human life easier. In the past, before the introduction of the legal concept of separate legal entity, a business will usually die together with its founder. However, with the introduction of separate legal entity, a company can

²⁷ Bernard Marr, "28 Best Quotes About Artificial Intelligence" (*Forbes* 25 July 2017) via https://www.forbes.com/sites/bernardmarr/2017/07/25/28-best-quotes-about-artificial-intelligence/#6bdae9334a6f.

²⁸ [1915] 1 K.B. 893 at p.916.

go on long after the founder is dead. The culmination of long experience and networking enjoyed by the company sometimes lead to the creation of a strong, big and resilient company that is beneficial to the economy and society.

On the other hand, giving legal rights and liabilities to AI is counterproductive and dangerous. Although animals are also given legal rights e.g. the right not to be tortured, the rights are not similar to the ones given to a human. For example, it is legal to kill an animal for consumption purpose. It is perfectly legal to have an animal farm where animals are raised for food.

If legal rights are to be given to AI, what are the rights? If a similar right is given to an advanced AI robot merely because the AI looks like human and can reasons like human, many problems will occur. There will be social and economic challenges. The lifespan of human is a limited. The capability of AI to exist can be indeterminate.

Currently, the legal rights and liabilities normally associated with AI are still the same with those related to other products or manufactured goods. The legal rights and liabilities are the one assigned to the creator, seller or user of the product.²⁹

Another legal issue in relation to AI is about the implication of decision or action made by AI. As mentioned before, some police force already uses AI in determining whether to put a suspect in custody or not.

It is also noted that there are many challenges when it comes to establishing the legal rights and liabilities associated with AI.³⁰ Peter Diamandis correctly argues that 'if the government regulates against use of drones or stem cells or artificial intelligence, all that means is that the work and the research leave the borders of that country and go someplace else.'³¹

²⁹ See Hubbard, F P, & Motley, R L, "Regulation of and Liability for Risks of Physical Injury from 'Sophisticated Robots", (2014) *Florida Law Review* 66 (5) 1806-1872.

³⁰ Matthew U. Scherer, "Regulating Artificial Intelligence Systems: Risks, Challenges, Competencies, and Strategies" (2016) *Harvard Journal of Law & Technology*, Volume 29, Number 2 Spring 2016.

³¹ Bernard Marr, "28 Best Quotes About Artificial Intelligence" (*Forbes* 25 July 2017), https://www.forbes.com/sites/bernardmarr/2017/07/25/28-best-quotes-about-artificial-intelligence/#6bdae9334a6f.

In 2016, the European Parliament's Legal Affairs Committee commissioned a study entitled 'European Civil Law Rules in Robotic' to evaluate and analyse, from a legal and ethical perspective, a number of future European civil law rules in robotics. The study stressed the need to have proper regulation in place and suggested that "in an attempt to alleviate the fear surrounding robots, it might be a good idea to put a system in place for maintaining control over robots and artificial intelligence."³² The study warned that "the sectors which pose a potential danger to humanity like the self-replication of robots, and especially nanorobots need pinpointing" to enable it to be properly regulated. ³³

ISLAMIC PERSPECTIVE ON ARTIFICIAL INTELLIGENCE AND ROBOTIC

The study of mechatronic is not prohibited in Islam. Islam is generally permissive in nature. The legal maxim in Islam is that everything is generally permissible unless there is a prohibition in the Quran, the Holy book for the Muslims or in the sunnah, the practice and tradition of Prophet Muhammad. The reasoning is because in Islam, the idea is not to make things unnecessarily difficult, but instead to make life easier whenever possible, as long as it is consistent with Islamic teaching. This can be seen from the following verses:

'O you who have believed, when you rise to [perform] prayer, wash your faces and your forearms to the elbows and wipe over your heads and wash your feet to the ankles. And if you are in a state of janabah, then purify yourselves. But if you are ill or on a journey or one of you comes from the place of relieving himself or you have contacted women and do not find water, then seek clean earth and wipe over your faces and hands

³² "European Civil Law Rules in Robotic" (2016) *The European Parliament's* Legal Affairs Committee,

http://www.europarl.europa.eu/RegData/etudes/STUD/2016/571379/IPOL_S TU(2016)571379_EN.pdf.

³³ "European Civil Law Rules in Robotic" (2016) *The European Parliament's Legal Affairs* Committee, http://www.europarl.europa.eu/RegData/etudes/STUD/2016/571379/IPOL_S TU(2016)571379_EN.pdf.

with it. Allah does not intend to make difficulty for you, but He intends to purify you and complete His favor upon you that you may be grateful.³⁴

The above verses explain that Allah does not intend to make things difficult, as can be seen from the flexibility given to travelers in relation to performing prayer during travel. The following verse is also relevant:

'And strive for Allah with the striving due to Him. He has chosen you and has not placed upon you in the religion any difficulty. [It is] the religion of your father, Abraham. Allah named you "Muslims" before [in former scriptures] and in this [revelation] that the Messenger may be a witness over you and you may be witnesses over the people. So establish prayer and give zakah and hold fast to Allah . He is your protector; and excellent is the protector, and excellent is the helper.'³⁵

The above verse explains that the religion (Islam) is not a difficult religion. The next verse explains that no soul is burdened beyond its capacity:

"Allah does not charge a soul except [with that within] its capacity. It will have [the consequence of] what [good] it has gained, and it will bear [the consequence of] what [evil] it has earned. "Our Lord, do not impose blame upon us if we have forgotten or erred. Our Lord, and lay not upon us a burden like that which You laid upon those before us. Our Lord, and burden us not with that which we have no ability to bear. And pardon us; and forgive us; and have mercy upon us. You are our protector, so give us victory over the disbelieving people."³⁶

For summary, the following verse is relevant on this matter: "And Allah wants to lighten for you [your difficulties]; and mankind was created weak."³⁷

Looking from the above verses, it can be seen that the creation of artificial intelligence is generally permissible in Islam provided that it is meant to ease our matter, without causing harms to others.

In addition, it is noted that Islam recognizes Allah as the sole creator. The creation of artificial intelligence and robots are merely modifications

³⁴ Quran, Surah Al-Maidah (5):6.

³⁵ Quran, Surah Al-Hajj (22):78.

³⁶ Quran, Surah Al-Baqarah (2):286.

³⁷ Quran, Surah Al-Nisa (4):28.

and adjustments of materials that were already created by Allah, in order to improve human life. This is similar to the creation of car and other useful machinery. This can be seen in the following verse:

"It is He who created for you all of that which is on the earth. Then He directed Himself to the heaven, [His being above all creation], and made them seven heavens, and He is Knowing of all things."³⁸

The following verse is a better authority that the creation of artificial intelligence and robots for the improvement of human life is generally permissible:

"And He has subjected to you whatever is in the heavens and whatever is on the earth - all from Him. Indeed in that are signs for a people who give thought." (Quran 45:13)

However, despite the general permissiveness of Islam, it must be noted that Islam generally shunned the creation of statute like idols and images of living things. This can be seen in the following hadiths (sayings of prophet Muhammad):

Hadith 1:

"Among the people who will be most severely punished on the Day of Resurrection will be the image-makers."³⁹

Hadith 2:

"The makers of images will be punished on the Day of Resurrection, and it will be said to them, 'Breathe life into that which you have created.""⁴⁰

Hadith 3:

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³⁸ Quran, Surah Al-Baqarah (2):29.

³⁹ Imam Al-Bukhari, *Sahih Al-Bukhari*, Vol. 7 (Lahore: Kazi Publications, 1979), Hadith No. 834, Imam Muslim, *Sahih Muslim*, Vol. 5 (Riyadh, Darussalam: 2007), Hadith No. 5525.

⁴⁰ Imam Muslim, Sahih Muslim, Vol. 5 (Riyadh, Darussalam: 2007), Hadith No. 5533 from 'Aisha (and 5535-5536 from Nafi'), Imam Al-Bukhari, Sahih Al-Bukhari, Vol. 9 (Lahore: Kazi Publications, 1979), Hadith No. 647 from 'Aisha (and 647 from Ibn 'Umar).

"Aishah reported: Allah's Messenger (s.a.w) visited me and I had a shelf with a thin cloth curtain hanging over it and on which there were portraits. No sooner did he see it than he tore it and the color of his face underwent a change and he said: 'Aisha, the most grievous torment from the Hand of Allah on the Day of Resurrection would be for those who imitate (Allah) in the act of His creation. 'Aisha said: We tore it into pieces and made a cushion or two cushions out of that."⁴¹

However, it is noted that such prohibition mostly refers to idols or images that might be idolized or worshipped.⁴² Toys *etc* are permissible in Islam despite their similarity to living creature:

"Aishah narrated, "I used to play with dolls when I was with the Prophet (s.a.w) and my girlfriends also used to play with them. When he used to enter the house, my girlfriends used to hide themselves, but the Prophet (s.a.w) would call them to come and play with me."⁴³

The Muslim scholars are generally in agreement that making machines for the improvement of human life is permissible as long as it is beneficial and does not trangress the limitation laid down in the religion.

However, for humanoids or robots that resemble human being or other living creatures, the arguably safer view is to avoid the creation of such humanoids or robots unless due to emergency e.g. the need in battlefield, military needs etc. This is because Islam discourages the creation of things that resemble the original creation of God, unless with good or strong justification.

The many harms that humanoid and robots that resemble human can bring from the social and emotional aspect cannot be simply dismissed. The creation of humanoids that look like human, and are capable of intellectual discussion and physical contact will definitely alter the very fabric of society.

⁴¹ Imam Muslim, Sahih Muslim, Vol. 5 (Riyadh, Darussalam: 2007), Hadith No. 5528.

⁴² Yusuf Al-Qardhawi, *The Lawful and the Prohibited in Islam* (Cairo: Al-Falah Foundation, 2001), 103.

⁴³ Imam Al-Bukhari, Sahih Al-Bukhari, Vol. 8 (Lahore: Kazi Publications, 1979), Hadith No. 151, Imam Muslim, Sahih Muslim, Vol. 6 (Riyadh, Darussalam: 2007), Hadith No. Hadith No. 6287.

Despite this concern, in 2017, Saudi Arabia became the first country in the world to grant citizenship to an android named Sophia. In the same year, it was reported that the country plans to build a \$500 billion megacity populated by robots to diversify the economy and modernize the country.⁴⁴

CONCLUSION

The law should not stand in the way of progress. However, at the same time, the law is meant to protect the interest of the public of large. For example, recognizing the danger of unregulated and uncontrolled arm race especially in relation to the development of nuclear weapon, the world community has come up with treaty to control and manage the development of nuclear weapon. Regulatory oversight is necessary. The same applies to AI.

During the MIT's AeroAstro Centennial Symposium, Elon Musk gave the following suggestion:

"I'm increasingly inclined to think that there should be some regulatory oversight, maybe at the national and international level, just to make sure that we don't do something very foolish. I mean with artificial intelligence we're summoning the demon."

In addition, sooner or later, the law will still need to answer the ultimate question: whether to grant legal rights and liabilities to autonomous machine with AI. David C. Vladeck in his article 'Machines without principals: Liability rules and artificial intelligence' suggested as follows:

"Truly autonomous machines may be driving cars through our neighborhoods or piloting drones that fly above our heads sooner than we think. So long as we can conceive of these machines as "agents" of some legal person (individual or virtual), our current system of products liability will be able to address the legal issues surrounding their introduction without significant modification. But the law is not necessarily equipped to address the legal issues that will start to arise

⁴⁴ Christina Maza, 'Saudi Arabia gives citizenship to a non-Muslim, Englishspeaking robot' (*Newsweek* 26 October 2017), http://www.newsweek.com/saudi-arabia-robot-sophia-muslim-694152

when the inevitable occurs and these machines cause injury, but when there is no "principal" directing the actions of the machine. How the law chooses to treat machines without principals will be the central legal question that accompanies the introduction of truly autonomous machines, and at some point, the law will need to have an answer to that question."⁴⁵

Due to the significant impact of AI and its potential, it is essential for the world community to come up with a basic understanding and agreement in relation to definition, minimum standard, minimum rights and liabilities etc.

Although arguably AI should not be given legal rights and liabilities because this is counterproductive, can be dangerous, and not necessary, it is possible to have a uniformed or standardized policy and law on how to deal with autonomous AI, without necessarily ascribing strict liability to the seller, user, owner or manufacturer of the AI.

As for the Islamic point of view, everything must be treated with honor and respect. Creating an android that look like human and can interact like human, but without any legal rights whatsoever, is basically similar to creating a new species of slave, and Islam is against slavery. The Muslim should seriously observe the prohibitions and warnings on the punishment in the hereafter for making creature without soul. This article argues that unless there is a real and urgent need to create robots with similar attributes and physical appearances to human, such practice should better be avoided. In any event, the *muftis*, experts and scholars of Shari'ah should sit together with the experts on artificial intelligence and robotics to discuss the matter in more details so that public interest can be protected.

⁴⁵ David C. Vladeck, "Machines without principals: Liability rules and artificial intelligence" (2014) *Washington Law Review*, Vol. 89, Issue 1, pg. 117