Volume 21, No. 2 Special Issue 2024

# JOURNAL OF

Islam in Asia

A Refereed International Biannual Arabic – English Journal

INTERNATIONAL ISLAMIC UNIVERSITY MALAYSIA





### Journal of Islam in Asia

#### **EDITOR-in-CHIEF**

Abdul Salam @ Zulkifli bin Muhamad Shukri

#### **EDITOR**

Noor Azlan bin Mohd Noor

#### ASSOCIATE EDITOR

Homam Altabaa

#### **GUEST EDITORS**

Khaliq Ahmad Bin Mohd Israil Berghout Abdelaziz Nurul Ain binti Norman Nik Md. Saiful Azizi Bin Nik Abdullah

#### **COPY EDITOR**

Nur Mashitah Wahidah binti Anuar

#### EDITORIAL COMMITTEE

#### LOCAL MEMBERS

Abdel Aziz Berghout (IIUM) Muhammed Mumtaz Ali (IIUM) Nadzrah Ahmad (IIUM) Rahmah Bt. A. H. Osman (IIUM) Saidatolakma Mohd Yunus (IIUM) Thameem Ushama (IIUM)

#### INTERNATIONAL MEMBERS

Abdullah Khalil Al-Juburi (UAE) Abu Bakr Rafique (Bangladesh) Anis Ahmad (Pakistan) Muhammad Al-Zuhayli (UAE)

Articles submitted for publication in the *Journal of Islam in Asia* are subject to a process of peer review, in accordance with standard academic practice.

© 2024 by International Islamic University Malaysia

All rights reserved. No part of this publication may be reproduced, translated, stored in a retrieval system, or transmitted in any form or by any means, electronic, mechanical, photocopying, recording or otherwise, without prior written permission of the publisher.



#### **JOURNAL OF ISLAM IN ASIA**

Vol. 21, No. 2, Special Issue 2024

DOI: https://doi.org/10.31436/jia.v21i2

#### المقالات العربية

1 نظرية الأهلية عند الأصوليين وعلاقتها بالأمراض النفسية في علم النفس: دراسة تحليلية (The Theory of Legal Capacity According to Scholar of Uṣūl and Its Relationship with Mental Disorders in Psychology: An Analytical Study)

أكمى مارياني بنت تون محمد

أهمية منهج ابن تيمية في الجمع بين النقل والعقل لتنسيق العلاقة بين الوحي والعلم الحديث

(The Significance of Ibn Taymiyya's Method in Harmonizing Between Reason and Revelation to Regulate the Relationship Between Revelation and Modern Sciences)

محمد عصري بن صبري، محمد شهر الدين بن تيتيه، الأستاذ المشارك د. نئ محمد سيف العزيزي بن نئ عبد الله

المعوقات النّفسية لنهوض الأمّة الإسلاميّة عند مالك بن نبي: (دراسة تحليليّة)

(Psychological Obstacles to the Advancement of the Islamic Nation According to Malek Bennabi (Analytical study))

حاشور إدير، عبد العزيز برغوث، نئ محمد سيف العزيزي

### English Articles

Muslim Women's Perceptions of Barriers to Sectorial Participation: Insights and Clarifications from an Islamic Perspective Based on a Qualitative Study in Ampara District, Sri Lanka Mohamed Sulthan Ismiya Begum, Indriaty Ismail and Zul' Azmi Yakoob	92
Anders Breivik's Manifesto: Measuring Violence Indicator in Anti-Islamic Extremist Discourse Mariet Rosnaida Cabrera Cusi and Abdelaziz Berghout	115
Representation of Islamic Thought and Civilisation at International Islamic University Malaysia Through Semiotics: An Analysis Mehwish Riaz and Thameem Ushama	142
<b>Transhumanism – Old Challenges in a New Garb?</b> Anke Iman Bouzenita	172
SDGs for Gender Equality: Is there a Clash between the Western and Islamic Perspectives  Iffat Ara Nasreen Majid	194
Balancing Tradition and Technology: Islam's Approach to Modern Healthcare Across All Ages S. S. Meraj, Mohamad Fauzan Bin Noordin and Asadullah Shah	220
Modes of Green Resistance in Mahmoud Darwish's Poetry of Exile Hamoud Yahya Ahmed Mohsen, Tanja Jonid and Homam Altabaa	243

#### Transhumanism - Old Challenges in a New Garb?

#### Transhumanisme - Cabaran Lama dalam Penampilan Baru?

Prof. Dr. Anke Iman Bouzenita\*

#### **Abstract**

Transhumanism, a philosophical, cultural and political movement, holds that human development is still in an early phase to be radically changed by technology. Singularity describes the point in time where man and machine (or artificial intelligence, AI) will merge, giving way to unforeseen possibilities. Transhumanist visions entail the annihilation of any distinction between the biological and the mechanical or between the physical and virtual reality. This paper critically analyses transhumanism and identifies it as a conglomerate of old ideas in technologically-backed dystopian garb, a substitute religion (*Ersatzreligion*) without the Creator. It discusses the intellectual fallacies of the underlying ideas of this concept, while pinpointing possible repercussions on contemporary society. The discussion will focus on the ideas of enhancement, AI and the body-mind-soul complex from an Islamic perspective, giving relevant answers to the main tenets of transhumanism and the challenges it may pose.

**Keywords**: Transhumanism, Posthumanism, Singularity, AI, Body-Mind-Soul-Complex, Islam.

#### **Abstrak**

Transhumanisme, sebuah gerakan falsafah, budaya dan politik, berpendapat bahawa perkembangan manusia masih berada dalam fasa awal untuk diubah secara radikal oleh teknologi. Singularity menggambarkan titik masa di mana manusia dan mesin (atau kecerdasan buatan, AI) akan bergabung, membuka jalan kepada kemungkinan yang tidak terduga. Visi transhumanis melibatkan pemusnahan sebarang perbezaan antara biologi dan mekanikal atau

©International Islamic University Malaysia (IIUM)

Article received: October 2024 Article accepted: November 2024 Publication date: December 2024 Journal of Islam in Asia Special Issue, Vol. 21, No. 2. 2024 E-ISSN: 2289-8077

<sup>\*</sup> Department of Islamic Sciences, College of Education, Sultan Qaboos University, Sultanate of Oman (bouzenita@squ.edu.om).

antara realiti fizikal dan maya. Kertas ini menganalisis secara kritis transhumanisme dan mengenal pasti ia sebagai gabungan idea-idea lama dalam bentuk distopia yang disokong teknologi, sebuah agama pengganti (Ersatzreligion) tanpa Pencipta. Ia membincangkan kesilapan intelektual dalam idea-idea asas konsep ini, sambil mengenal pasti kemungkinan kesan terhadap masyarakat kontemporari. Perbincangan ini akan menumpukan pada idea-idea peningkatan, AI dan kompleks tubuh-akal-jiwa dari perspektif Islam, memberikan jawapan yang relevan kepada prinsip-prinsip utama transhumanisme dan cabaran yang mungkin timbul.

**Kata Kunci:** Transhumanisme, Pascamanusia, Singulariti, AI, Kompleks Tubuh-Jiwa-Akal, Islam.

#### Introduction

The paper critically engages with aspects of trans- and posthumanist thought, focusing on some of its logical fallacies. Upon examining some of the recent Muslim contributions in the field and discussing some of the logical fallacies in trans- and posthumanist thought, the author concludes that the real challenge of transhumanism is not an intellectual one but the proliferation of advocated technologies in the wake of globalisation, designed to commodify human life.

#### **Transhumanism: Definition and History**

Transhumanism is a multifaceted movement with philosophical, cultural as well as political implications. It propagates that human development is still in an early phase<sup>1</sup> and will be radically changed by technology. The point in time when man and machine (or artificial intelligence, AI) will merge is described as *singularity*, a hypothetical future,<sup>2</sup> a romanticised virtual place of yearning (*Sehnsuchtsort*), with no actual indicators or evidence of its possible enactment. Transhumanist

<sup>&</sup>lt;sup>1</sup> Susan Schneider, "Future Minds: Transhumanism, Cognitive Enhancement and the Nature of Persons," *University of Pennsylvania: Neuroethics Publications* (2008), 3.

<sup>&</sup>lt;sup>2</sup> Kok-Leong Ong and Fatima Samar, "ChatGPT – Sentient AI or singularity. How close are we?" https://www.scientificamerican.com/article/google-engineer-claims-ai-chatbot-is-sentient-why-that-matters/

visions entail the annihilation of any distinction between the biological and the mechanical or between physical and virtual reality.<sup>3</sup> Transhumanism has been described as a 'religion of technology' for its utopian visions, presenting technology as the ultimate saviour of mankind.<sup>4</sup> In this vein, research results on longevity are pictured as if eternal life, the complete reversal of the aging process, were just waiting around the corner.<sup>5</sup>

Most of the intellectual underpinnings of modern transhumanism are neither new nor surprising. The idea of human 'enhancement' is probably as old as humankind,6 with variations in approach, goals and ways of enforcement. In the modern era, it brought about eugenics and Social Darwinism. However, this 'quest for improvement' considerably changed with the advancement of scientific means of the last decades. Intellectual precursors to the movement star Nietzsche (d.1900), who described the concept of humanity as being in a transient stage,8 or Thomas Henry Huxley (d.1895), a stern supporter of Darwinian evolutionism. Notable for engaging with transhumanism are also other members of the Huxley family, such as grandson Aldous Huxley's (d.1963) famously dystopian novel seems to anticipate aspects of a transhumanist vision gone wrong. His biologist grandson and member of the British Eugenics Society, Julian Huxley (d.1975) was the first to coin the term 'transhumanism' in his essay published in 1957, where he announced:

\_

<sup>&</sup>lt;sup>3</sup> See Ray Kurzweil, "Reinventing Humanity: The Future of Human-Machine Intelligence," *The Futurist* (March-April 2006): 39-40; 42-46.

<sup>&</sup>lt;sup>4</sup> Andrew Pilsch, *Transhumanism. Evolutionary Futurism and the Human Technologies of Utopia* (Minneapolis: University of Minneapolis Press, 2017), 1-25.

<sup>&</sup>lt;sup>5</sup> See for instance De Grey, Aubrey, "Radical Life Extension: Technological Aspects." In *Religion and the Implications of Radical Life Extension*, ed. C. Mercer and D.F. Maher (New York: Palgrave Macmillan, 2009); Pilsch, *Transhumanism*, interim.

<sup>&</sup>lt;sup>6</sup> Alexandra M. Franco, "Symposium Article: Transhuman Babies and Human Pariahs: Genetic Engineering, Transhumanism, Society and the Law," *Children's Legal Rights Journal*, 37, no. 2 (2017):191. For a more detailed discussion of the enhancement theme from an Islamic perspective, see Anke Iman Bouzenita, "The most dangerous idea?" Islamic deliberations on transhumanism," *Darulfunun Ilahiyat* 29, no. 2 (2019): 201-228. https://doi.org/10.26650/di.2018.29.2.0031

<sup>&</sup>lt;sup>7</sup> Franco, "Transhuman Babies", 192.

<sup>&</sup>lt;sup>8</sup> Ibid.

#### Transhumanism - Old Challenges in a New Garb?

The human species can, if it wishes, transcend itself – not just sporadically, an individual here in one way, an individual there in another way – but in its entirety, as humanity. We need a name for this new belief. Perhaps transhumanism will serve: man, remaining man, but transcending himself, by realizing new possibilities of and for his human nature.<sup>9</sup>

The modern transhumanist movement came into being in the 1990s, with propagators such as FM-2030 aka F.M. Esfandiary, Nick Bostrom who established the World Transhumanist Association in 1998 together with David Pearce, Max More, Natasha Vita-More and the transhumanist artist and James Hughes. Although differences in approach and societal vision exist, 10 common transhumanist tenets are the elimination of human disease and suffering, increased intelligence, and human immortality itself. 11 The catchy slogan "Why choose to die?" is such an example; however, it is not propagated by every faction. Sorgner's approach of a 'moderate' transhumanism which instead supports attempts to achieve life prolongation or extreme longevity. 12 Technological immortality, as suggested by Ronald Cole-Turner, is opposed to true or 'biological immortality' in the sense that life may still be ended by accidental death or the destruction of the universe. 13

As discussed further below, these new ideas mark the transition of transhumanist values into mainstream society as, for instance, reflected in the application of current reproductive technologies<sup>14</sup> or the

<sup>&</sup>lt;sup>9</sup> Julian Huxley, "Transhumanism." *Ethics in Progress,* 6, no. 1 (2015): 12-16. doi: 10.14746/eip.2015.1.2. Reprinted from Julian Huxley, *New Bottles for New Wine* (London: Chatto and Windus, 1957), 15.

<sup>&</sup>lt;sup>10</sup> See Franco, "Transhuman Babies", 193; Stefan Lorenz Sorgner, *Transhumanismus. Die gefährlichste Idee der Welt!?* (Freiburg im Breisgau: Herder, 2016): 24ff.

<sup>&</sup>lt;sup>11</sup> See Franco, "Transhuman Babies," 192f.

<sup>&</sup>lt;sup>12</sup> Sorgner, *Transhumanismus*, 33.

<sup>&</sup>lt;sup>13</sup> Hamid Mavani, "God's Deputy. Islam and Transhumanism," in *Transhumanism and the Body. The World Religions Speak*, ed. C. Mercer and D.F. Maher (New York: Palgrave Macmillan, 2014), 75.

<sup>&</sup>lt;sup>14</sup> Franco, "Transhuman Babies", 197; see also Roland Benedikter and Katja Siepmann, "Transhumanism", A new global political trend?" *Challenge* 59, no. 1 (2016): 47-59, and

growing acceptance of AI technology. Though the movement may not be palatable to most contemporaries and may not have taken a grip on societies beyond the Western hemisphere, it deserves more attention as it pushes a clear societal and political agenda.<sup>15</sup>

Muslim responses and discussions of transhumanism in the Western hemisphere seems to have been initiated by Abdul Hakim Murad (Timothy Winter), who argued in a 2012 lecture that the most pressing issue for the world is not an alleged 'clash of civilisations' between Islam and the West but rather that of "traditional humanity" facing "a really unprecedented ability to edit our species so that something else emerges." <sup>16</sup>

Interestingly, the Muslim contributions merely attempt to reconcile Islam with transhumanism, either in content or in terminology,<sup>17</sup> rather than attempting to deconstruct transhumanist thought. Regrettably, this meek approach of trying to accommodate modern political systems and concepts such as socialism, democracy or capitalism within the framework of Islam and find common ground is pervasive and reflects the preoccupation of contemporary Muslims with Western (and, to a lesser extent, Eastern) ideologies. However, attempting to accommodate ideologies that are incommensurate with Islam are not part of Islamic thought, especially when their origins, important tenets and goals are not being rigorously examined and questioned, creating its very own Procrustean moments.

Mobayed, at the end of his discussion of transhumanism through an Islamic lens, calls it short-sighted to reject the possibility of formulating 'Islamic transhumanism'. <sup>18</sup> Mobayed argues that something similar to Islamic transhumanism already exists. Contrary to the contemporary secular branch of transhumanism, "Islamic transhumanism calls on believers to improve and purify their perceptions

Philip Hefner, "The Animal that Aspires to be an Angel: The Challenge of Transhumanism." *Dialog: A Journal of Theology*, 48, no. 2 (September 2009): 158-167.

<sup>&</sup>lt;sup>15</sup> Benedikter and Siepmann, "Transhumanism", 47.

<sup>&</sup>lt;sup>16</sup> Abdul Hakeem Murad (Timothy Winter), "Transhumanism and Islam", 2018. https://www.youtube.com/watch?v=xOWrrRpQVco Accessed 5/11/2018

<sup>&</sup>lt;sup>17</sup> Mobayed, *Immortality on Earth*; Mavani, "God's Deputy"; Aisha Y. Musa, "A Thousand Years, Less Fifty: Toward a Quranic View of Extreme Longevity," in *Religion and the Implications of Radical Life Extension*, ed. C. Mercer and D.F. Maher.

<sup>&</sup>lt;sup>18</sup> Mobayed, *Immortality on Earth*, 25.

177

by way of God-consciousness [...]. It might be argued that a Muslim's transhumanist goals are directly tied to his devotion to God, rather than mastery of secular science. This then embodies the fundamental Islamic transhumanism difference between and transhumanism."19 In spite of the preceding critical and fruitful discussion of some of the aspects of transhumanism, the author contributes to framing the term as a term that is 'Islamically acceptable'.

The few contributions on transhumanism made by Muslim authors seem to be an attempt to reframe these concepts. Two anthologies, both edited by Maher and Calver, discuss positions of world religions vis-à-vis transhumanism. Both are framed as attempts to initiate discussions and prepare ground with various religious communities, rather than to critically engage with the larger implications of transhumanism. In this vein, they attempt to reconcile some aspects of transhumanism with Islamic thought.

Aisha Y. Musa concludes in her 2009 anthology that there is no conflict between Islamic norms and ideals from the perspective of scripture and doctrine and the idea of radical life extension, at least as far as immortality is not implied. Her main argumentation revolves around precedent cases of extreme longevity with the Prophet Nūḥ (Noah, may peace be upon him). Further, she suggests that "alternative understandings of death and the hereafter that could accommodate extreme longevity and even practical immortality are possible"20 before discussing the practical implications of extreme longevity for Islamic rituals, practices and institutions.<sup>21</sup>

his 2014 anthology, Mavani discusses aspects transhumanism in relation to Islamic thought. Knowing that the basic tenets of transhumanist thought like attaining eternal this-worldly life other than by divine intervention are not reconcilable with the Islamic faith, he tries to endorse the weakened version of 'life extension' rather than 'immortality'. Mavani emphasises that the propagated idea of life

<sup>20</sup> Aisha Y. Musa, "A Thousand Years, Less Fifty," 130.

<sup>&</sup>lt;sup>19</sup> Ibid. 25f.

<sup>&</sup>lt;sup>21</sup> Ibid, 128ff.

extension "does not collide with the religious world view that humans will die eventually".<sup>22</sup>

Since my first encounter with this topic in 2018,<sup>23</sup> more literature has been published, partly consisting of diverse attempts to steer the contemporary Islamic discourse towards this new ideology and to embrace a trans- or posthumanist framing,<sup>24</sup> invoking images of "other forms of Islam". 25 More recently, the term 'posthumanist' has acquired a connotation critical of some perceived misconceptions transhumanism,<sup>26</sup> so as to present a more palatable, weakened version that may be accessible to more religiously-minded audiences. Here, transhumanism is described as "stuck as it is in the very paradigms of humanist thought that brought upon us racist ideologies, two world wars, and a climate catastrophe."27 Also, it is not too different from "the kind of thinking that it wants to overcome." 28

Sara Hejazi notes that it is her intention "to analyse the philosophic, imaginative, and theological aspects of Islam, which give grounds to the integration, acceptance, and enhancement of the transhuman, through the analysis of core concepts such as 'humanity' and 'body' in human tradition."<sup>29</sup> She positions the acceptance – or sheer discussion and preoccupation – by Muslims with new technologies such as biotechnology, genetics, and genome editing as shaping future perspectives towards a transhuman discourse. One might argue, however, that the reflection on practical parts of these technologies and how they relate to Islamic rules does not necessarily equate their acceptance of transhumanist ideology. Focusing on a perceived (constructed) epistemic

<sup>&</sup>lt;sup>22</sup> Hamid Mavani, "God's Deputy", 75.

<sup>&</sup>lt;sup>23</sup> Bouzenita, A. I. (2019). "The most dangerous idea?"

<sup>&</sup>lt;sup>24</sup> On the power of framing see Elisabeth Wehling, *Politisches Framing: Wie eine Nation sich ihr Denken einredet - und daraus Politik macht* (Berlin: Ullstein, Edition Medienpraxis, 2018).

<sup>&</sup>lt;sup>25</sup> Jackson, Roy, *Muslim and Supermuslim. The Quest for the Perfect Being and Beyond* (Palgrave Studies in the Future of Humanity and its Successors (PSFHS), 2020), 5.

<sup>&</sup>lt;sup>26</sup> See Hureyre Kam, "New Bottles for Old Wine. On Playing God: Post- and Transhumanism from the Perspective of Kalam," *Journal of Posthuman Studies* 1 (2023): 24-50. https://doi.org/10.5325/jpoststud.7.1.0024, 28.

<sup>&</sup>lt;sup>27</sup> Kam, "New Bottles for Old Wine", 28f.

<sup>&</sup>lt;sup>28</sup> Ibid, 29.

<sup>&</sup>lt;sup>29</sup> Sara Hejazi, "Humankind. The Best of Molds'—Islam Confronting Transhumanism" *Sophia* 58, no. 4 (2020): 677-688, 677.

emphasis on a 'human essence' to be found in their sociability rather than "their thinking skills and self-consciousness", <sup>30</sup> Hejazi concludes that Muslim believers worldwide can possibly be included in contemporary transhumanist discourses "as far as the benefit of the *'Ummah* is the clear reason for transhumanist attempts." <sup>31</sup> Essential points of conflict between transhumanist and Islamic worldviews are, however, not discussed.

Roy Jackson begrudges Muslims for attempting to position their discourse and search for solutions in current issues such as transhumanism according to the Qur'an and Sunnah, which suggests a highly prescriptive understanding of Islam.<sup>32</sup>

How, therefore, can Islam engage in the transhumanist debate without bringing God into it? Ultimately, this will, as has already been argued, depend on what 'Islam' we are talking about, and what we mean by God.<sup>33</sup>

Jackson repeatedly reiterates that only an 'explorative Islam' rather than a traditional Islam can contribute to the transhumanist debate, in the hope that, as a result, "the number of secular transhumanists will decline". He does not, however, present a convincing description of what an explorative Islam might be, and how it would not be in need of God or the Qur'an and Sunnah?

More recently, Hureyre Kam places the discourse on post- and transhumanism in a 'kalām perspective', arguing that "the Critical Posthumanist approach provides a fertile ground for Muslim scholars",<sup>35</sup> thereby positioning himself in that discourse as opposed to traditional transhumanism. 'Critical posthumanism' here advances to a transhumanist version. As Kam rightly concludes after substantial literature review, the majority of Muslim scholars stand in outright

<sup>31</sup> Ibid. 688.

<sup>&</sup>lt;sup>30</sup> Ibid, 682.

<sup>32</sup> Jackson, Muslim and Supermuslim, 22.

<sup>&</sup>lt;sup>33</sup> Ibid, 53.

<sup>&</sup>lt;sup>34</sup> Ibid. 60.

<sup>35</sup> Kam, "New Bottles for Old Wine", 24.

opposition to transhumanist positions<sup>36</sup> which also apply to critical posthumanist positions.

Seyithan Can argues that "the promises of transhumanism are not so utopian", given "the effectiveness of areas such as virtual reality, genetic intervention, and artificial intelligence." Seyithan critically engages with transhumanist understandings of the human within an Islamic framework and concludes that "the transhumanists' view of human perfection in terms of only bodily perfection stands out as a major shortcoming". 38

Perceivable in some of these Muslim contributions is the obvious focus on new technologies as a tool of empowerment and a 'saviour' from the current state of things.<sup>39</sup> However, they ignore the fact that (material) technologies do not change ideas; rather, they are used in the mould of the prevailing ideologies and are themselves in need of a proper ethical framework to regulate them. Kam, for instance, sees no reason to reject participation in AI research, "given that an advanced AI may help us to maximise our efficacy and minimise our destructive footprint on the environment".40 This may prove to be a rather naïve outlook on the reality of AI and its potential in a framework of surreptitious capitalism<sup>41</sup> and unprecedented accumulation of power in the hands of multi-national companies owned by tech multi-billionaires trying to advance a transhumanist agenda. History should have taught us that the usage of any technology has a positive and a negative side and can be both beneficial and detrimental. However, it is the ethical and societal framework in which those systems are implemented, which decides over the choices that are made. Any preoccupation with new technologies, from genetic engineering to AI, needs to be situated in a strong Islamic ethical, legal and cultural framework so as to acquire possible benefits

<sup>&</sup>lt;sup>36</sup> Ibid, 30.

<sup>&</sup>lt;sup>37</sup> Seyithan Can, "Critique of Transhumanism's Concept of Humans from the Perspective of Islamic Thought," Ilahiyat Studies 14/1 (2023): 107-131. https://doi.org/10.12730/is.1274636, 107.

<sup>&</sup>lt;sup>38</sup> Ibid, 126.

<sup>&</sup>lt;sup>39</sup> See Jackson, *Muslim and Supermuslim*, 175; Kam, "New Bottles for Old Wine", 29.

<sup>&</sup>lt;sup>40</sup> Kam, "New Bottles for Old Wine", 42.

<sup>&</sup>lt;sup>41</sup> See Adi Setia, "Freeing Maqasid and Maslaha from surreptitious utilitarianism," *Islamic Sciences* 14, no. 2 (2016): 127 -158.

without being overwhelmed by impeding harms. Unfortunately, this is not actually the case.

It seems that transhumanism is neither an epistemic nor an intellectual challenge for the Islamic worldview. However, it may turn out to be an ideological challenge in the sense that some of the material forms used to drive its agenda will be proliferated into the Islamic world without an activated framework of Islamic culture and its systems. As Mobayed puts it, "we are all likely to be affected by it in one way or another".<sup>42</sup>

Intellectually, post- or transhumanist visions are based on a number of logical fallacies. First and foremost, transhumanist literature reveals certain problems underlying Western secular thought, among them the inability to define what constitutes a human being. While some still refer to classical Greek thought to arrive at a rational definition, others seek the solution to this conundrum in human psychology, legal definitions of personhood and human agency, or in the natural sciences. It is surprisingly difficult to take human DNA as an indicator of humanness, there being no major difference between human and, for example, chimpanzee DNA. Albeit some interesting and plausible critiques on transhumanism exist within these frameworks,43 any attempt at self-definition based on human constructs is bound to result in error. Many contributions to transhumanism can be distilled into the human inability to properly self-define. In combination with postmodernist thought, however, even the material reality is supposedly defined by a person's imaginative powers. All of these attempts are, therefore, ultimately reductionist.

## Fallacy One: Human Personality Can Be Reduced to Measurable Brain Waves

Reductionism is fortified in the attempt to confine the distinctive human personality to a mere material, measurable reality of brain activity. Jackson has brought this issue to the point: "Whether this 'spiritual' expression of myself can survive the death of the physical body

\_

<sup>&</sup>lt;sup>42</sup> Mobayed, *Immortality on Earth*, 8.

<sup>&</sup>lt;sup>43</sup> Schneider, "Future Minds", Franco, "Transhuman Babies", and Agneta Sutton, "Transhumanism: A New Kind of Promethean Hubris," *The New Bioethics*, 21, no. 2 (2015): 117-127.

does become a matter of faith for which I am on less firm ground, but my more modest declaration that what constitutes 'me' is a qualia that is not reducible to data seems intelligible and, as such, raises concerns for me that my 'computer me' would not be me at all, but a pale and incomplete copy." <sup>44</sup>

There is a number of questionable aspects in the attempt to locate the personality of a person in measurable brain waves. For instance, not all brain activity may currently be measurable or quantifiable. 45 The brain may not be the only organ that stores memories, as suggested by research on heart transplants and experiences of transplant receivers.<sup>46</sup> For the time being, it seems no scientist can, with good conscience, claim to know how the human brain or intellect actually works. Ascribing the entire process of thinking to the brain may turn out to be too reductive a view after all. Further, what about the role of the senses in communicating sensations to the brain? The dimensional importance of the human body experience and its limitations for the process of thought and personhood? The indispensability of previous information to initiate the process of thinking? The human experience is shaped by its physical boundaries and the interplay between body, mind and soul. This perspective is, regrettably, completely erased in materialist reductionism. As Steven J. Jensen aptly puts it,

Transhumanism, then, does not get beyond human nature, as if it sought some good in which human nature has no share. Rather, transhumanism misconceives human nature. It supposes that human nature is simply disembodied intelligence, which can be transferred from a body to a

<sup>&</sup>lt;sup>44</sup> Jackson, Muslim and Supermuslim, 52.

<sup>&</sup>lt;sup>45</sup> See P. Gardner and B. Wray, "From Lab to Living Room: Transhumanist Imaginaries of Consumer Brain Wave Monitors," *Ada: Journal of Gender, New Media, and Technology* 3 (2013). doi:10.7264/N3GQ6VP4, 6ff. An intrinsic argument alluding to the dangers of declaring human life ended with the "death", i.e. no measurable activity of the brain or brain stem.

<sup>&</sup>lt;sup>46</sup> See A.T. Hashim, A.S. Albayati and E. Nazal, "Heart Memory and Feelings," in *Heart Transplantation*. Ed. H.T. Hashim, N. Ahmed, G. Faggian, M. Manyalich and F. Onorati (Springer, Cham, 2022). https://doi.org/10.1007/978-3-031-17311-0\_17.

#### **Transhumanism - Old Challenges in a New Garb?**

183

computer, and which can be elevated in unforeseen ways.<sup>47</sup>

The material reduction of a human being to quantifiable and measurable data is a product of secular thought, of a worldview without room for the existence of an eternal, not quantifiable soul.

The Islamic worldview does not subscribe to this reductionism. What makes the human being 'human' are concepts such as being created for a purpose namely to serve Allah and be His  $khal\bar{i}fah$ , (viceregent on earth), being endowed with dignity ( $kar\bar{a}mah$ ); a right to inviolability (hurmah), responsibility, accountability, a sound mind ( $^caql$ ), personality (nafs) and soul ( $r\bar{u}h$ ). At The eternal soul ( $r\bar{u}h$ ) leaves the body while the human is asleep to return when he wakes up, its leaving the body with no return marks the state of death and only on the Day of Judgment will the resurrected body and soul be reunited. The soul can neither be fully explained with the restrictions of the human mind nor can it be located in the human body. Contrary to the eternal soul, the nafs dies with the person. In the context of transhumanism, both nafs and  $r\bar{u}h$ , the great mysteries of human existence, seem to be reduced to mere perceptions that can be saved to a hard disk.

## Fallacy Two: The Limited Material Body Can Be Replaced by Limited Data Carriers to Overcome its Material Limitations

This brings us to another very important point of discussion: robots and artificial intelligence. The idea of creating interfaces between artificial intelligence (AI) and human beings, hybrid creatures between robots and humans (cyborgs), 'chipping' newborns so as to enhance their capability or even uploading the brain on data carriers. Apart from the

<sup>&</sup>lt;sup>47</sup> Steven J. Jensen, "The Roots of Transhumanism," in *Nova et Vetera*, English Edition, 12, no. 2 (2014): 525.

<sup>&</sup>lt;sup>48</sup> It may be noted that Islamic scholarship on the mind – body – soul complex has, particularly in its philosophical orientation, been formed in its discussion of Greek thought. Particularly the terms  $r\bar{u}h$ , nafs and  $^caql$  may acquire different meanings, according to context or be used synonymously, which makes translation difficult. The term nafs, for instance, can be translated as soul, person, human being, psyche, mind or life.  $^cAql$  refers to the process of thought or sound mind; the term  $r\bar{u}h$  refers to the soul, but could also (used with an article) refer to the Angel Jibrīl (peace be upon him). In addition, both nafs and  $r\bar{u}h$  are conceptually congruent for some scholars.

ethics of this enterprise which is still in need of discussion; how about their actual feasibility?

Undoubtedly, AI has made astounding progress in the last decades. However, the hype around it seems to serve the commercialization and surveillance technologies. As of today, there are no self-aware machines that possess an understanding of the world, others and itself. This original understanding of artificial intelligence is far from being materialised. Even the theory of mind machines as the initial form of AI that are able to create representations of the world and have an understanding that other entities exist has yet to be fully implemented. What is available today are reactive machines, such as chess computers, and limited memory machines that can interact more with the world around them, such as self-driving cars. Yet, even those rudimentary forms of AI have already raised a number of ethical and legal concerns in terms of usage and liabilities.

Sentience, however, is not expected. Any form of AI is a product of programming, algorithms, multiple combinations of zeros and ones. They collect data, writings, ideas, art produced by humans and piece them together with limited ingenuity. Lemoine, the Google engineer who claimed to have detected growing sentience in LaMDA (Language Model for Dialogue Applications),<sup>49</sup> may have mistaken his very own programming for independent thought. Could this be a reflection of the effects of self-isolation in a world where Alexa and Siri become the only voices that are left? Or are they a purposefully panned marketing strategy?

Al will always be dependent on programming, however refined it may be. However, programming based on algorithms cannot produce sentience. To formulate more concisely, no sentient Al will ever exist because sentience requires the existence of a  $r\bar{u}h$  and nafs which can only be bestowed by the Creator. The example of John Searle's Chinese room<sup>50</sup> is still a valid metaphor for this technology. Al may appear to be sentient but it is not. It simply parrots figments of its programming, eschewing the programmer's own thoughts like an echo chamber.

\_

<sup>&</sup>lt;sup>49</sup>https://www.scientificamerican.com/article/google-engineer-claims-ai-chatbot-is-sentient-why-that-matters/

<sup>50</sup> https://plato.stanford.edu/entries/chinese-room/

It seems that, despite all major advances, experts in the field are less enthusiastic about prospects of joining brain and machine than transhumanists are.<sup>51</sup> The proneness of any application to viruses, data loss, data theft and its effects are not a secret, in addition to the most fundamental of all limitations: the need for energy. Once the machine is plugged off, discussions on the superiority of AI become futile. The consumerisation of CBI applications may be hyped<sup>52</sup> but can we really expect more than technological gadgets?

The idea of gradually 'augmenting' human existence through 'cyborgisation' is just as unfeasible. Apart from the technical limitations and the ethicalities of it, there will be a time where human gives way to machine. How many cyborg elements can the human body sensibly sustain? There will be a turning point where the human dies, where the soul leaves the body, where personality is lost and only the machine remains.

### Fallacy Three: Human Life Will Improve through Trans- or Posthumanism

Apart from these rather technical questions, a number of other suppositions remain uninvestigated. Will human life indeed become better through singularity and cyborgisation? Is it really desirable to be uploaded on data carriers? The transhumanist claims to enable people to lead 'the good life' may prove to be an oxymoron. As Habermas critically remarked: "But with the acceleration of social change, the lifespans of these models of the good life have become increasingly shorter". There is no evidence backing the hyperbolic assumption that transgressing physical limitations – even if at all possible – will benefit humankind rather than harming it. As Seyithan rightly remarked, the transhumanist focus on physical aspects of human life is a major shortcoming.

#### Fallacy Four: Volitional Evolution is Possible and Desirable

Evolution and Islamic views on evolution deserve more than just a short paragraph. The topic is mentioned here merely for the purpose of

<sup>&</sup>lt;sup>51</sup> Gardner and Wray, From Lab to Living Room, 27.

<sup>52</sup> Ibid

<sup>&</sup>lt;sup>53</sup> Jürgen Habermas, *The Future of Human Nature* (Cambridge: Polity Press, 2003), 2.

<sup>&</sup>lt;sup>54</sup> See Can, "Critique of Transhumanism's Concept of Humans from the Perspective of Islamic Thought," 126.

completing the list. Transhumanists subscribe to the notion of volitional evolution, supposing that the human being is a result of evolution and a 'faulty design' that is in need of enhancement so as to overcome its limitations. Post-humans<sup>55</sup> or neohumans<sup>56</sup> as a result of volitional evolution are future beings "whose basic capacities so radically exceed those of present humans as to be no longer unambiguously human by our current standards".<sup>57</sup> This supposition is not in line with the Islamic worldview of the human being created in its best shape.<sup>58</sup>

#### **Possible Dangers and Delusions of Transhumanism**

mentioned beforehand that refuting transhumanism intellectually is not a major challenge. However, the interconnectedness between globalisation, postmodernism and neoliberalism as well as its role in the transhumanist agenda may have unexpected impacts. Transhumanism seems to be an intellectual preoccupation, a happy quest and intellectual merry-go-round of the chosen few. Transhumanist advocates are with no exception 'First-Worlders' with centres in the USA and Europe, while the rest of the world population is still struggling to meet their essential needs. However, transhumanist decision-making is also linked to globalisation and may impact people's lives as a new form of colonisation. Will globalisation finally bring about the liberated homo immortalis or just another version of the enslaved human body and soul? Globalisation led to the dissemination of a neoliberal, postmodernist capitalist culture and economic and political order after the downfall of the communist bloc, fuelled by the technological revolution, more particularly the digital revolution of the late 1980s.

Transhumanism, in its basic tenets of attempting to overcome the corporeal boundaries and life span of human existence, the search for eternal, this-worldly life is considerably older than this. It has, however, benefitted from the recent globalisation and technological advancements. The hitherto unforeseen possibilities of genetic engineering and affiliated technologies have certainly contributed to uplifting transhumanist thought. It seems that both globalisation and transhumanism have a shared common ground namely materialism and the commodification of

<sup>55</sup> Ibid

<sup>&</sup>lt;sup>56</sup> Benedikter and Siepmann, "Transhumanism", 47.

<sup>&</sup>lt;sup>57</sup> Nils Bostrom, *The Transhumanist FAQ* (World Transhumanist Association. 2003), 5.

<sup>&</sup>lt;sup>58</sup> See Bouzenita, "The most dangerous idea?" for a detailed discussion.

human life. It is no coincidence that the contemporary transhumanist movement has strong supporters in the US technology hub.

On another note, transhumanism as a life style trend will be subject to marketing. Numerous attempts at creating marketable brain-AI interface gadgets account for this phenomenon. Originally, medical and therapeutic devices were developed to facilitate lives of the disabled (e.g., hearing devices, limb replacements, cryonics) and will be developed further. Advances in applications in cursor control, neuroprosthetics and limb rehabilitation, applications in somatosensation, auditory sensation, speech synthesisers and optical prosthetics are reported; however, the use of BCI and AI for cognitive training is still in an early stage, clinical BCI applications are still limited, and the generated machine learning algorithms cannot be predicted and comprehended in the real world. In addition, questions of cost and availability, human autonomy and the possible exploitation of the collected data by third parties accrue:

Brain information as digitally stored neural data can also be exploited by others with sufficient computational power to make inferences about our memory, intentions, conscious and unconscious interests, and emotional reactions.<sup>61</sup>

Zhang et al. also allude to other dangers of brain-computer interfaces (BCIs) in the form of side effects such as patients undergoing deep-brain stimulation for Parkinson's disease developing impulse-control issues or developing hypersexuality.<sup>62</sup> Though stating that technology and application is in its beginning, Zhang et al. are optimistic that "the development of this technology must trigger a revolution in medicine."<sup>63</sup>

Neuralink, an American neurotechnology company founded by Elon Musk and based in Fremont, California, has developed implantable brain-computer interfaces. According to their website, the company is

<sup>&</sup>lt;sup>59</sup> Gardner and Wray, From Lab to Living Room.

<sup>&</sup>lt;sup>60</sup> Zhang X, Ma Z, Zheng H, Li T, Chen K, Wang X, Liu C, Xu L, Wu X, Lin D, Lin H. The combination of brain-computer interfaces and artificial intelligence: applications and challenges. *Ann Transl Med* 2020;8(11):712. doi: 10.21037/atm.2019.11.10, 1-6.

<sup>&</sup>lt;sup>61</sup> Ibid, 6.

<sup>&</sup>lt;sup>62</sup> Ibid, 6.

<sup>&</sup>lt;sup>63</sup> Ibid, 6.

currently searching for volunteers with quadriplegia "to participate in a groundbreaking investigational medical device trial for our brain-computer interface", with the mission to "create a generalized brain interface to restore autonomy to those with unmet medical needs today and unlock human potential tomorrow."<sup>64</sup> Musk is but one example of the concentration of immense corporate power used to advance a transhumanist agenda. He is quoted as saying he wants humans to merge with AI "to achieve a symbiosis with artificial intelligence". <sup>65</sup>

While testing the grounds with quadriplegics may be seen as a humanistically masked precursor to introducing BCIs to the ordinary consumer, the massive concentration of corporate power opens tremendous possibilities, linking people's brains to their smart devices<sup>66</sup> and ultimately attempting to control their every move and thought. Silicon Valley is currently working on a system of artificial general intelligence, an AI system that can perform all cognitive tasks a human can do and more. Leading AI companies such as OpenAI, DeepMind and Anthropic seem to be a tool for the realisation of transhumanist aspirations of tech billionaires. Concentrated hubris that may, indeed, impact humankind. The human relationship with technology is not as simplistic – and not as singularly positive – as perceived by the transhumanists. In the words of Alexander Thomas:

In this way, transhumanism becomes a kind of "techno-anthropocentrism", in which transhumanists often underestimate the complexity of our relationship with technology. They see it as a controllable, malleable tool that, with the correct logic and scientific rigour, can be turned to any end. In fact, just as technological developments are dependent on and reflective of the environment in which they arise, they in turn

<sup>65</sup> Alexander Thomas https://theconversation.com/transhumanism-billionaires-want-to-use-tech-to-enhance-our-abilities-the-outcomes-could-change-what-it-means-to-be-human.

<sup>64</sup> https://neuralink.com/

 $<sup>^{66}\,</sup>https://www.vox.com/future-perfect/2019/7/17/20697812/elon-musk-neuralink-ai-brain-implant-thread-robot$ 

feed back into the culture and create new dynamics – often imperceptibly. <sup>67</sup>

While neoliberalism seems to serve (or facilitate) transhumanist agendas through materialism and commodification, postmodernism with its tenets that every individual is defined by what they assume as identity rather than their actual biology facilitates the annihilation of boundaries between man and machine. The seemingly dystopian applications of AI powered control mechanisms in some countries such as the social credit system in China may shed light on expectable excesses. Military and intelligence applications of AI, BCIs and DARPA (Defense Advanced Research Projects) have been presented in detail – at least what is publicly known of it.<sup>68</sup>

In addition, the theme of self-improvement (which may bluntly morph into self-exploitation) in transhumanism is in line with neoliberalism. For instance, will biohacking be the new yoga? Transhumanist thought and its trajectories cannot be divorced from newest forms of capitalism. Surveillance capitalism as described by Shoshana Zuboff, the widespread collection and commodification of personal data by giant corporations, the steering and conditioning of consumers, sources of data, subjects, to personally engineered consumerism and political thought are perfect examples of the exploitation of AI to advance corporate interests. Preparing the ground for the acceptance of more AI applications in people's lives is also an opening of more markets.

On the other hand, one does not need to subscribe to trans- or posthumanist views of volitional evolution, cyborgisation and the possibility of engineering human immortality on earth to make use of new technologies. Muslims, however, must ensure that these technologies are indeed compatible with the Islamic worldview by evaluating them against the principles of Islamic law and the ethical framework of Islam before even considering to adopt them.

<sup>&</sup>lt;sup>67</sup>Alexander Thomas, https://theconversation.com/super-intelligence-and-eternal-life-transhumanisms-faithful-follow-it-blindly-into-a-future-for-the-elite-78538

<sup>&</sup>lt;sup>68</sup> Matthew Devlin, Cultivating Better Brains: Transhumanism and its Critics on the Ethics of Enhancement Via Brain-computer Interfacing (University of Western Ontario, 2014), 59ff.

#### 190

#### Conclusion

Transhumanism is a reductionist ideology. Reductionist approaches limit the human personality to the brain, reduce brain activity to measurable data and attempt to transfer this snippet of the human experience to equally reductionist data carriers that are not autonomous and not independent. At the same time, these reductionist approaches promise to liberate humankind from its material boundaries, which is a masterful marketing strategy and a masterful deception.

Transhumanism suggests *Ersatz* solutions for *Ersatz* problems. It somehow manages to avoid the real questions of human existence. What makes a human a human? What makes human life liveable? What is the purpose of life on earth and what happens after death? What really is 'the good life' that everyone desires? Is longevity desirable at any cost? These questions are, curiously, not even raised in the current discourse. It is somehow taken for granted that longevity is desirable, that death needs to be overcome, that the purpose of life can only mean this-worldly gratification.

Trans- or posthumanist aspirations of extreme longevity or even immortality, enjoyed by a superior cyborg race with uploaded human minds will not materialise. Sentient AI will not be developed. What is bound to happen, however, is a massive exploitation of the transhumanist agenda for economic, political and military purposes, deceiving the global public into thinking they must discard their human body and their human soul to enjoy 'the good life.'

#### **BIBLIOGRAPHY**

Benedikter, Roland, and Katja Siepmann. "Transhumanism, A new global political trend? *Challenge* 59, no. 1 (2016): 47-59

Bostrom, Nils. *The Transhumanist FAQ.* World Transhumanist Association, 2003.

Bouzenita, Anke Iman. "The most dangerous idea?" Islamic deliberations on transhumanism." *Darulfunun Ilahiyat* 29, no. 2 (2019): 201-228. https://doi.org/10.26650/di.2018.29.2.0031

Can, Seyithan. "Critique of Transhumanism's Concept of Humans from the Perspective of Islamic Thought." *Ilahiyat Studies* 14, no. 1 (2023): 107-131. https://doi.org/10.12730/is.1274636

De Grey, Aubrey. "Radical Life Extension: Technological Aspects." In *Religion and the Implications of Radical Life Extension*, edited by Calvin Mercer and Derek F. Maher, 13-24. Palgrave Macmillan, 2009.

Devlin, Matthew. *Cultivating Better Brains: Transhumanism and its Critics on the Ethics of Enhancement Via Brain-computer Interfacing*. University of Western Ontario, 2014.

Franco, Alexandra M. "Symposium Article: Transhuman Babies and Human Pariahs: Genetic Engineering, Transhumanism, Society and the Law." *Children's Legal Rights Journal* 37, no. 2 (2017): 191.

Gardner, P., and Wray, B. "From Lab to Living Room: Transhumanist Imaginaries of Consumer Brain Wave Monitors." *Ada: A Journal of Gender, New Media, and Technology* 3 (2013). doi:10.7264/N3GQ6VP4

Hefner, Philip. "The Animal that Aspires to be an Angel: The Challenge of Transhumanism." *Dialog: A Journal of Theology* 48, no. 2 (September 2009): 158-167

Hejazi, Sara. "Humankind. The Best of Molds'—Islam Confronting Transhumanism." *Sophia* 58, no. 4 (2020): 677-688

Huxley, Julian. "Transhumanism." *Ethics in Progress, 6,* no. 1 (2015): 12-16. doi: 10.14746/eip.2015.1.2. Reprinted from Huxley, Julian. *New Bottles for New Wine* (London: Chatto and Windus, 1957)

Jackson, Roy. Muslim and Supermuslim. The Quest for the Perfect Being and Beyond. Palgrave Studies in the Future of Humanity and its Successors (PSFHS), 2020.

Jensen, Steven J. "The Roots of Transhumanism." *Nova et Vetera*, English Edition, 12, no. 2 (2014).

Habermas, Jürgen. *The Future of Human Nature*. Polity Press, 2003.

Hashim, A.T., Albayati, A.S., Nazal, E. "Heart Memory and Feelings. In *Heart Transplantation* edited by H.T. Hashim, N. Ahmed, G. Faggian, M. Manyalich, F. Onorati. Springer, 2022. https://doi.org/10.1007/978-3-031-17311-0 17.

Kam, Hureyre. "New Bottles for Old Wine. On Playing God: Post- and Transhumanism from the Perspective of Kalam." *Journal of Posthuman Studies* 1 (2023), 24-50. https://doi.org/10.5325/jpoststud.7.1.0024

Kurzweil, Ray. "Reinventing Humanity: The Future of Human-Machine Intelligence." *The Futurist* (March-April 2006): 39-40.

Mavani, Hamid. "God's Deputy. Islam and Transhumanism." In *Transhumanism and the Body. The World Religions Speak*, edited by Calvin Mercer and Derek F. Maher. Palgrave Macmillan, 2014.

Murad, Abdul Hakeem (Timothy Winter). "Transhumanism and Islam", 2018. https://www.youtube.com/watch?v=xOWrrRpQVco Accessed 5/11/2018

Musa, Aisha Y. "A Thousand Years, Less Fifty: Toward a Quranic View of Extreme Longevity," In *Religion and the Implications of Radical Life Extension*, edited by Calvin Mercer and Derek F. Maher.

Ong, Kok-Leong and Fatima Samar. "ChatGPT – Sentient AI or singularity. How close are we?" https://www.rmit.edu.au/news/acumen/ChatGPT\_sentientorsingularity (2023)

Pilsch, Andrew. *Transhumanism. Evolutionary Futurism and the Human Technologies of Utopia*. University of Minneapolis Press, 2017).

Schneider, Susan. "Future Minds: Transhumanism, Cognitive Enhancement and the Nature of Persons." University of Pennsylvania: Neuroethics Publications, 2008.

Setia, Adi. "Freeing Maqasid and Maslaha from surreptitious utilitarianism." *Islamic Sciences*, 14, no. 2 (2016): 127 -158

Sorgner, Stefan Lorenz. *Transhumanismus. Die gefährlichste Idee der Welt"!?* Herder, 2016.

Thomas, Alexander. "Super Intelligence and Eternal Life Transhumanisms: Faithful Follow It Blindly into a Future for the Elite". https://theconversation.com/super-intelligence-and-eternal-life-transhumanisms-faithful-follow-it-blindly-into-a-future-for-the-elite-78538

#### Transhumanism - Old Challenges in a New Garb?

einredet - und daraus Politik macht. Ullstein, Edition Medienpraxis, 2018.

Wehling, Elisabeth. Politisches Framing: Wie eine Nation sich ihr Denken

Zhang X, Ma Z, Zheng H, Li T, Chen K, Wang X, Liu C, Xu L, Wu X, Lin D, Lin H. "The combination of brain-computer interfaces and artificial intelligence: applications and challenges". *Ann Transl Med* 8, no. 11 (2020): 712. doi: 10.21037/atm.2019.11.10, 1-6.