

# ISLAMIC ETHICAL FRAMEWORK TO TACKLE SCIENTIFIC AND TECHNOLOGICAL DILEMMAS

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**Abstract:** This article proposes a suitable ethical framework based on Islamic teaching in tackling emerging scientific and technological issues. The framework is based on the *maqasid al-shariah* or the higher purposes of the Islamic Divine law. Under this framework, there are five purposes of the Islamic Divine law which are protected, namely faith, life, intellect, progeny, and property. This framework can serve as a useful checklist that can assist Muslims in providing responses to the various issues pertaining to science and technology. Islamic ethical framework must, therefore, be grounded on these five higher purposes of the *maqasid* in order to address the changes taking place in the world as a result of the rapid progress in the various branches of science and technology. This would provide the much needed moral norms to ensure that science and technology do not bring forth harm and destruction.

**Key Terms:** Islam, Religious Ethics, Science And Technology, *Maqasid Al-Shariah*, and Culture.

## 1. Introduction

The rapid advancement made in modern science and technology has posed many benefits and opportunities for improving the quality of life in sectors such as public health, agriculture and food processing. At the same time, modern science and technology also brings out many challenges that require a comprehensive and prompt response from the society. As a result, a number of models that have been suggested in order to tackle

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ethical issues that result from the rapid progress in science and technology. Science and technology have the ability to adapt to demands. Ethics should be able to assist in providing sense into these demands.

Up until now, many of the debates on ethics for science and technology revolve around the more advanced regions of the world. These debates look at ethics from the secularistic, pluralistic and multidisciplinary points of view.<sup>1</sup> Islam, as one of the major religions of the world, also has something to offer to the ethical discussion set forth by the current wave of scientific and technological revolution.

## 2. Islam and Advancements in Science and Technology

From the Islamic perspective, knowledge is a gift from God to humankind in order to enable us to administer the world as His vicegerents (*khalifah*). Knowledge is also a gift from God to enable us to differentiate from right and wrong so that we will always be on the right path. The very first revelation (verses 1-5 of Surah al-'Alaq) in the Quran is: "Read! In the name of thy Lord and Cherisher, who created – Created man out of a (mere) clot of congealed blood. Read! And thy Lord is Most Bountiful. He who taught (the use of) the pen. Taught man which he knew not."

This important revelation is significant for a number of reasons. Chief among these reasons is, of course, the appointment of Muhammad Ibn Abdullah as the last messenger and prophet of God to humankind. The second significance is the instruction from God for humankind "to read" which, as many would attest, is the key to knowledge. Herein is the importance stressed by Islam on the need to continue to pursue knowledge. The third significance of this first revelation is the very scientific information provided by God to Muslims on embryology. This provides the indication that Muslims should give serious attention to science and technology in particular the life sciences. Finally, the first revelation is also significant in that it highlights the very character of knowledge which is always evolving and adapting from time to time. This can be seen in verse 5 of the first revelation, wherein God says to the effect that He "taught man which he knew not." As we progress over time, more and more areas of knowledge are being brought to light, where things – that may be thought of before as impossible – is today very possible and very common.

<sup>1</sup>R. J. Cook, B. M. Dickens and M. F. Fathalla, *Reproductive Health and Human Rights: Integrating Medicine, Ethics and Law*, Oxford: Clarendon Press, 2003, 65.

For example, the developments in the area of biotechnology catapulted humankind into a new era known as the Bio-Century. While George Mendel in the 19<sup>th</sup> century is credited with establishing the field of genetics, it was not until 1953 when James Dewey Watson and Francis Harry Compton Crick suggested the double helix structure of the deoxyribonucleic acid (DNA) that genetics really took a quantum leap in terms of research and development. Much progress has been made since then – some of which are welcomed and embraced by man without disagreement, others meanwhile shrouded in great controversy. Developments in areas such as organ transplantation, human reproductive cloning, genetic modification of organisms, gene therapy, eugenics, and more recently, the three-parent IVF technique, have invited much debate and dispute all throughout the world. Various stakeholders such as ethicists, consumer groups, environmental activists, and religious groups have raised concerns on science and technology seemingly tampering with the natural order of things.

It may be apt at this juncture to be reminded that all knowledge obtained through research and development is, in actual effect, a gift from God. If God does not will for humankind to obtain such knowledge, then such a thing will not happen. Only when God wills for a particular knowledge to be made known, would that knowledge be obtained. This is an important reminder for Muslims in particular because all knowledge that is made known to humankind is actually a sign from God for us to remember that God is All-Powerful and Most Benevolent. This is mentioned explicitly in verses 20-21 of Surah al-Dharyyat in the Quran: "On the earth are Signs for those of assured faith. As also in your own selves: will ye not then see?"

The Bio-Century has in fact shown the Signs of God's Might that could be found in our own selves. For those who think, then, these signs are very significant because they could strengthen one's belief and faith in God. The question now is, how best should we utilise this knowledge for the betterment of humanity? It is crucial in this day and age that we do not be led astray and transgress the natural order of the world as set forth by God, lest should we destroy the world and ourselves along with it.

### 3. Islamic Ethical Framework

Discussions on Islamic ethics on science and technology are quite recent,<sup>2</sup> compared to the more developed world. Bioethics which began to be widely discussed in the 1970's<sup>3</sup> can be defined as "the systematic study of the moral dimensions – including moral visions, decisions, conduct and policies – of the life sciences and health care, employing a variety of ethical methodologies in an interdisciplinary setting."<sup>4</sup> In the case of bioethics, it involves various moral dimensions in making deliberations on issues that arise out of biotechnology. As bioethics involves morality, it makes a strong case for the need to include religious perspective into bioethical discussions. It has been argued that religion should be a stakeholder in the development and discussion of scientific and technological issues.<sup>5</sup>

Equally interesting to note is that a number of proponents of bioethics are those with religious and theological backgrounds.<sup>6</sup> It is heartening to observe that the number of Muslim scholars involving themselves in discussions on scientific and technological ethics from the Islamic perspective has increased.<sup>7</sup> Siddiqui argues that the words 'ethics'

<sup>2</sup>A. Siddiqui, "Ethics in Islam: Key Concepts and Contemporary Challenges," *Journal of Moral Education* 26,4 (1997), 423-431.

<sup>3</sup>W. T. Reich, "The Word 'Bioethics': Its Birth and the Legacies of Those Who Shaped It," *Kennedy Institute of Ethics Journal* 4, 4 (1994), 319-335.

<sup>4</sup>W. T. Reich, ed., *Encyclopedia of Bioethics*, 2<sup>nd</sup> ed., New York: Simon & Schuster Macmillan, 1995, xxii.

<sup>5</sup>S. M. Saifuddeen, "The Role of Diverse Stakeholders in Malaysian Bioethical Discourse" in J. Schreiber, T. Eich and M. Clarke, eds., *Conference Proceedings of the International Conference: Health Related Issues and Islamic Normativity*, 176-182, Halle: MENALib, 2013.

<sup>6</sup>Among them, Joseph Fletcher (1905-1961) was professor of pastoral theology in Cambridge, Paul Ramsey (1913-1988) was professor of religion at Princeton, and Richard McCormick (1923-2000) was professor at the Kennedy Institute of Ethics.

<sup>7</sup>In Malaysia, bioethics from the Islamic perspective are actively discussed at institutions such as the Institute of Islamic Understanding Malaysia, the Centre for Civilisation Dialogue of the University of Malaya, and the Ahmad Ibrahim Kulliyah of Laws of the International Islamic University Malaysia. Among those who are actively involved in the discourse of Islamic bioethics include Azizah Baharuddin who is Deputy Director-General of the Institute of Islamic Understanding Malaysia, Abu Bakar Abdul Majeed who is Assistant Vice Chancellor (Research) of Universiti

and 'bioethics' are alien to Islam, he also points out that there is already awareness on the part of Muslims to focus on Islamic ethics as a discipline.<sup>8</sup> It can be argued that ethics in Islam is synonymous with *akhlak* (good character), *adab* (right action) and *tasawwuf* (sufism). These three forms of knowledge revolve around character-building towards obtaining the pleasure of God.<sup>9</sup>

Looking at ethics from this perspective, we would like to put forth the idea that scientific and technological ethics in Islam is a study of how Islam evaluates the research activities, processes, products, and outcomes of science and technology. We can define scientific and technological ethics in Islam as a set of rules or principles that is in line with the Islamic Shariah which functions in providing guidelines to scientists, technologists, researchers, practitioners, policy-makers, and other stakeholders who are involved in science and technology in making important decisions relating to ethical dilemmas.

As an example, contemporary bioethics lists down four principles namely autonomy, beneficence, non-maleficence, and justice.<sup>10</sup> For Muslims, these four principles are not sufficient without basing them on the interpretation of legal and ethical principles as outlined in the two primary sources in Islam, namely the Quran and the Sunnah (tradition) of the Prophet. The Quran and the Sunnah are the central sources of references for the laws and principles that guide the Muslims' way of life. Further to this, the use of *ijtihad* (derivation and deduction of religious opinion) is also needed in order to tackle new problems within the ambit of the two primary sources.

The higher objectives of the Shariah (Islamic Divine Law) are the protection and preservation of the faith, life, intellect, progeny, and property. The injunctions of the Shariah are stipulated to preserve and protect human dignity, steer humankind away from harm and destruction and show the way towards success in this world and the hereafter. Whilst the Quran and Sunnah do not give specific solutions to social, health, and

other issues that have emerged since the Quran's Divine Revelation and the teachings and traditions of the Prophet Muhammad, there are general guidelines from these two sources that could be analysed in providing an Islamic perspective on contemporary issues and problems. One of the basic guidelines provided in the Quran and the Sunnah allows humanity to fulfil the needs of the present day without straying into the path of destruction.

In looking at Islamic ethics for science and technology, one practical framework that could be utilised is *maqasid al-shariah* or the 'higher purposes of the Islamic Divine law' which has a number of advantages as it looks at Islamic principles from a comprehensive point of view.<sup>11</sup> This approach involves the compilation of arguments from various verses of the *Quran* and traditions of the Prophet which are relevant to the issue at hand.

Jurists have classified the entire range of *maqasid* into three descending order of importance, namely *dharuriyyat* (essentials), *hajiyyat* (necessities), and *tahsiniyyat* (desirables).<sup>12</sup> Under the *maqasid al-shariah* framework, the most critical needs fall under the category of *dharuriyyat*. The five essentials, known in Arabic as *al-dharuriyyat al-khams*, are preservation and protection of faith, life, intellect, progeny, and property. These five essentials are essential in preserving and protecting the dignity of humankind.

#### 4. Understanding the Framework of *Maqasid al-Shariah*

We argue that *maqasid al-shariah* is the best and most practical framework for Islamic ethics for science and technology. As such, in discussing matters pertaining to science and technology ethics from the Islamic perspective, the five higher objectives or essentials of *maqasid al-shariah* would become the focal point for deliberation which could act as a pragmatic ethical checklist. If any one of the five higher objectives or essentials are at risk, then from the perspective of Islam, the research activities, processes, products, and outcomes in question would be deemed unethical and by consequence, would not be permissible. For Muslims, using the *maqasid al-shariah* framework is much more holistic compared to the four bioethical principles (autonomy, beneficence, non-maleficence

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<sup>8</sup>Siddiqui, "Ethics in Islam," 423-431.

<sup>9</sup>E. Moosa, "Muslim Ethics?" in W. Schweiker, ed., *The Blackwell Companion to Religious Ethics*, 237-243. Malden: Blackwell, 2005.

<sup>10</sup>T. L. Beauchamp and J. F. Childress, *Principles of Biomedical Ethics*, New York: Oxford University Press, 1994.

<sup>11</sup>A. B. Abdul Majeed, *Making the Best of Both Worlds*, vol. 1: *Faith and Science*, Kuala Lumpur: Institute of Islamic Understanding Malaysia, 2001, 121.

<sup>12</sup>M. H. Kamali, *Principles in Islamic Jurisprudence*, Cambridge: The Islamic Texts Society, 1991, 397.

and justice) as laid down by Beauchamp and Childress.<sup>13</sup> It can be argued that Muslims can look at the framework of *maqasid al-shariah* as a complement to the conventional ethical model.<sup>14</sup>

The first emphasis as laid down by the *maqasid* framework is the protection of the faith. This means that any and all scientific and technological activities, be they in the form of research, processes, products, and outcomes, must be in line with Islamic teachings and must not go against any ruling as set forth by the Quran and the Sunna as well as the *ijtihad* on contemporary matters made by the jurists.

The second essential of the *maqasid* framework is the protection of life. In line with this, scientific and technological advancements must ensure that human life must not be put at risk, nor cause any harm or destruction on humankind and environment but would contribute towards the betterment and promotion of life.

Next, under the framework of *maqasid al-shariah* is the need to ensure that the intellect is protected. This connotes that scientific and technological research must ensure that the intellect is protected, and should not be harmed in any way.

The fourth component that is protected under the framework of *maqasid al-shariah* is the progeny. Similar to the previous aims of the Shariah or Islamic Divine law, all scientific and technological endeavours must ensure that the progeny is protected. This means that anything that can cause harm or destruction to the progeny would be prohibited under Islamic teaching.

The fifth focus which is protected under the framework of *maqasid al-shariah* is property. It is imperative to ensure that scientific and technological advancements do not result in the destruction of property.

It is of the view of the authors that ethical dilemmas involving science and technology could be resolved with the aid of the framework as outlined by the *maqasid al-shariah*. Only when these five higher objectives are taken into consideration would ethical problems and issues pertaining to science and technology be resolved satisfactorily for Muslims.

<sup>13</sup> Beauchamp and Childress, *Principles of Biomedical Ethics*.

<sup>14</sup> S. M. Saifuddeen, N. N. A. Rahman, N. M. Isa and A. Baharuddin, "Maqasid al-shariah as a Complementary Framework to Conventional Bioethics," *Journal of Science and Engineering Ethics* (2013).

## 5. Using *Maqasid al-Shariah* for Science and Technology

There are many contemporary scientific and technological issues that require response from Islam. Most of these issues are not explicitly mentioned in the Quran or the tradition of the Prophet. In view of this, the opinions given by Islamic scholars on these matters are based on *ijtihad* based on Islamic legal maxims, which take into consideration the five objectives of *maqasid al-shariah*.

In this section, we will look at two of these contemporary issues of science and technology in the light of *maqasid al-shariah* to ascertain the permissibility of these scientific and technological developments. The issues that will be touched on are: (i) Organ transplantation; and (ii) Human reproductive cloning. In the case of organ transplantation, we will see how the framework of *maqasid al-shariah* allows a form of treatment which would have traditionally been deemed impermissible, while in the case of human reproductive cloning, we will discuss as to how a danger posed on one of the higher objectives of *maqasid al-shariah* results in this technology be prohibited from the perspective of Islam.

### 5.1. Organ Transplantation

With regards to organ transplantation, it must be understood that the Quran nor the Prophetic traditions neither sanctions nor prohibits this form of treatment. This is because there is no specific mention of organ transplantation in both these primary sources of Islam. While this may be the case, modern Islamic scholars have been deliberating extensively on this matter ever since the 1950's when cornea began to be transplanted.<sup>15</sup>

All Muslim scholars are of the view that the human body is sacred and its dignity must be protected. Therefore, any act that is deemed as an aggression to the human body and tantamount to body mutilation is regarded as impermissible. This is based on the Prophetic saying, "Verily the act of breaking the bones of the deceased is the same as breaking the person's bones while he is alive."<sup>16</sup> Based on this prohibition by the Prophet of Islam, it is inferred that organ transplantation is prohibited because it involves the act of cutting up a dead body in order to take out organs and tissues.

<sup>15</sup> S. M. Saifuddeen, M. R. Ramli, S. N. Mihat, N. A. Marsom and M. R. Masran, *Organ Transplantation from the Islamic Perspective*, Putrajaya: Ministry of Health Malaysia, 2011, 10.

<sup>16</sup> Ahmad Ibn Hanbal, *Musnad al-Imam Ahmad Ibn Hanbal*, vol. 42, Beirut: Mu'assasah al-Risalah, 2001, 431.

This view that Islam forbids organ transplantation is held by a number of Muslim jurists such as Muhammad Shafi' of Pakistan, Abd al-Salam al-Sukri of Egypt<sup>17</sup> and Shams Peerzadah of India.<sup>18</sup> The arguments used to prohibit organ transplantation are that the sacredness of the human body must be upheld, the human body is a trust from God, and the transplantation procedure allows for the human body to be subjected to material ends.<sup>19</sup> If one goes against this prohibition, then one is considered to go against the directive of God and His Prophet, thus affecting the first higher objective of *maqasid al-shariah*, that is, to protect the religion.

While it is indeed true that Islam does not allow for any form of mutilation on the human body, it is also important to note that Islam also upholds human welfare. If and when there exists a genuine need for organs to be transplanted from a deceased person in order to save another person's life, then this necessity would overrule the prohibition. Islam views that all deeds are judged by their purpose or intent. In the instance of organ transplantation, the intention is to save a patient's life, which is one of the essentials under the framework of *maqasid al-shariah*. Quran encourages the act of saving other people's lives, "... and if anyone saved a life it would be as if he saved the life of the whole people..." (part of verse 32 of Surah al-Maidah).

In view of this, a growing number of contemporary Muslim scholars and jurists are of the view that organ transplantation is permissible. The Islamic Fiqh Academy in Jeddah has resolved that organ transplantation from the body of a dead person is allowed "if it is essential to keep the beneficiary alive, or if it restores a basic function of his body."<sup>20</sup> This juridical opinion was released in 1988, and became the standard for viewpoints on organ transplantation in Islamic countries.

<sup>17</sup> A. F. M. Ebrahim, "Organ Transplantation: An Islamic Ethico-Legal Perspective" in *FIMA Yearbook 2002*, 70-72, Islamabad: Federation of Islamic Medical Associations, 2002.

<sup>18</sup> S. Peerzadah, "Grafting of Human Organs" in Q. M. I. Qasmi, ed., *Contemporary Medical Issues in Islamic Jurisprudence*, 26-30, Kuala Lumpur: A. S. Noordeen, 2007.

<sup>19</sup> A. F. M. Ebrahim, *Organ Transplantation: Contemporary Islamic Legal and Ethical Perspectives*, Kuala Lumpur: A.S. Noordeen, 1998, 56-61.

<sup>20</sup> Islamic Fiqh Academy, Resolution No. 26/1/4, "Concerning Organ Transplant from the Body (Dead or Alive) of a Human Being onto the Body of Another Human Being" in *Resolutions and Recommendations of the Council of the Islamic Fiqh Academy 1985-2000*, 51-54, Jeddah: Islamic Development Bank, 2000.

The Senior Ulama Council of Saudi Arabia has permitted corneal transplant ever since 1967.<sup>21</sup> Subsequently, the majority of the scholars who sit in the Senior Ulama Council of Saudi Arabia also permitted the transplant of whole or parts of organs from cadaveric donors to living persons when there is no alternative.<sup>22</sup> Similar rulings were also made in other Islamic countries such as Malaysia<sup>23</sup> in 1970 and Kuwait<sup>24</sup> in 1979, as well as countries with Muslims as minorities such as Singapore<sup>25</sup> in 1986, India<sup>26</sup> in 1989 and the United Kingdom<sup>27</sup> in 1995.

The basis of the rulings made in these countries is that there is an urgent necessity to save the lives of patients, and that organ transplantation is a viable treatment that can safeguard the second essential of the *maqasid* framework, that is the protection of life. In essence, the need to save a life through organ transplantation overrides the inferred prohibition derived from the Prophetic saying disallowing the act of mutilation.

In general, Islam allows human organ transplantation based on two main reasons, namely to save lives and to avoid harm. Islam allows transplantation of organs such as heart, kidneys, lungs, liver and cornea because these organs and tissues are critical for saving lives and improving the quality of life. A person who receives corneas for instance will be able to live a better life and he would be able to be independent. Similarly, while kidney patients may have dialysis as an alternative treatment, the best form of treatment for kidney failure is kidney transplant as the patient

<sup>21</sup> M. A. Albar, "Islamic Ethics of Organ Transplantation and Brain Death" in I. Ibrahim and A. B. Yang, eds., *Islam dan Pemindahan Organ*, 2<sup>nd</sup> ed., Kuala Lumpur: Institute of Islamic Understanding Malaysia, 2010, 101.

<sup>22</sup> Purport of the Senior Ulama Commission, Decision No. 99, dated 06-11-1402H, in *Directory of the Regulations of Organ Transplantation in the Kingdom of Saudi Arabia*, Jeddah: Saudi Center for Organ Transplantation, n.d., 46.

<sup>23</sup> Saifuddeen, Ramli, Mihat, Marsom and Masran, *Organ Transplantation from the Islamic Perspective*, 16-22.

<sup>24</sup> Albar, "Islamic Ethics of Organ Transplantation and Brain Death," 105.

<sup>25</sup> Islamic Religious Council of Singapore, *Organ Transplantation in Islam*. Singapore: Islamic Religious Council of Singapore, 2007, 10-11.

<sup>26</sup> A. F. M. Ebrahim, "Organ Transplantation: An Islamic Ethico-Legal Perspective" in *FIMA Yearbook 2002*, 76-78, Islamabad: Federation of Islamic Medical Associations, 2002.

<sup>27</sup> R. Howitt, *Islam and Organ Donation: A Guide to Organ Donation and Muslim Beliefs*, London: NHS Blood and Transplant, 2009.

would be able to improve his quality of life. For a Muslim kidney patient who undergo kidney transplant, he would also have the opportunity to perform the pilgrimage to Mecca.

Islam, however, does not give a blanket approval on all types of organ transplantation. Testes and ovary transplants, for examples, are forbidden in Islam as these transplantations go against one of the higher objectives of *maqasid al-shariah* namely the protection of the progeny. Testes and ovary are organs involved in the formation of human gamete cells. Testes produce sperms while ovary produces ovum. Transplantation of these organs from one individual to another would also involve the ability to produce these gamete cells. It is feared that this will cause confusion on the progeny's genetic make-up as the gamete cells produced from organs which do not belong to the progeny's actual parents. Islam strictly prohibits the mixture of gamete cells outside legal marriage as the implication on the progeny is very significant.<sup>28</sup>

The view that favours organ transplantation is based on the importance of saving lives, and that there is no other option of treatment for the patient. This is very much in line with the second higher objective of *maqasid al-shariah*, namely the protection of life. However, if transplantation is done other than for this reason, then it would not be allowed.

## 5.2. Reproductive Cloning

Advancements in genetic research have made it possible now for doctors and scientists to initiate the process of life itself through various state-of-the-art technologies in assisted human reproduction (ARTs) such as *in vitro* fertilization (IVF), zygote intra-fallopian transfer (ZIFT), intracytoplasmic sperm injection (ICSI) and reproductive cloning. It is claimed that the first human embryo was produced *in vitro* by John Rock and Arthur Hertig in 1938.<sup>29</sup> Since then, the study of human reproduction in

<sup>28</sup> Islamic Fiqh Academy, Resolution No. 57/8/6 on "Transplant of Genital Organs" in *Resolutions and Recommendations of the Council of the Islamic Fiqh Academy 1985-2000*, Jeddah: Islamic Development Bank, 2000, 114.

<sup>29</sup> A. T. Hertig, J. Rock, E. C. Adams and W. J. Mulligan, "On the Pre-Implantation Stages of the Human Ovum: A Description of Four Normal and Four Abnormal Specimens Ranging from the Second to Fifth Day Development" in *Contributions to Embryology*, 35, 1954, 199-219.

women was conducted in other laboratories.<sup>30</sup> The first human birth conceived from IVF technique was reported in 1978 when Louise Joy Brown was born near Manchester, England to an English working class couple, John and Leslie Brown.<sup>31</sup> The earliest justification for an IVF procedure was specifically to by-pass a barrier to conception, for example tubal damage or blockage that prevented fertilization.<sup>32</sup>

From the Islamic perspective, it is permissible for the ART techniques to be carried out provided that a number of conditions are met. The first condition is that the ART techniques used must involve a married couple when the marriage is still valid, where the sperms are those of the husband, and the eggs are from the wife. This is to ensure that the sanctity of the marital contract is never violated at any point in time during the ART process.<sup>33</sup>

The second condition is that the Muslim practitioner of ART must guard the purity and legality of the sperm and ovum of the couple. Since the union of the sperm and ovum is occurring one step beyond the act of sexual coitus, the fusion must take place within the jurisdiction of a marriage contract done by a competent team to ensure conscientious handling of the process so as to ensure that the gametes of the husband and the wife are the ones actually being used in the procedure. In other words, "the dyad of the legal husband and wife must not be intruded by any third party."<sup>34</sup>

At the same time, it must also be ensured that the appropriate number of fertilized eggs is transported in the uterus. This is critical in order to decrease the risk of triplets and higher order multiple pregnancies which increased risk of miscarriage and preterm delivery.<sup>35</sup> In other words, the

<sup>30</sup> A. T. Hertig, "Thirty-four Fertilized Human Ova, Good, Bad and Indifferent, Recovered from 210 Women of Known Fertility: A Study of Biological Wastage in Early Human Pregnancy," *Pediatrics* 23 (1959), 202-221.

<sup>31</sup> P. C. Steptoe and R. G. Edwards, "Birth after Implantation of a Human Embryo," *Lancet* 2 (1978), 366.

<sup>32</sup> R. G. Edwards, "Fertilisation of Human Eggs *in Vitro*: Morals, Ethics and the Law," *Quarterly Review of Biology* 49, 1 (1974), 8-14.

<sup>33</sup> H. E. Fadel, "Assisted Reproductive Technologies: An Islamic Perspective" in *FIMA Yearbook 2002*, 62-63, Islamabad: Federation of Islamic Medical Associations, 2002.

<sup>34</sup> M. M. Nordin, "An Islamic Perspective of Assisted Reproductive Technologies," *Bangladesh Journal of Medical Science* 11, 4 (2012), 252-257.

<sup>35</sup> Fadel, "Assisted Reproductive Technologies," 62-63.

technique used should not pose greater harm to the mother. This is very much in tandem with one of the higher objectives of the *maqasid al-shariah*, namely the protection of life.

While most ART techniques such as IVF, ZIFT and ICSI are conditionally allowed in Islam and are today seen as acceptable methods to overcome infertility, human reproductive cloning on the other hand is much more controversial. This technology, which was first reported to be possible in the early 1950's, has never failed to attract controversy. However, it was not until embryologist Ian Wilmut's announcement in 1997 of the birth of the cloned sheep Dolly that it dawned upon people that the possibility of human cloning was nearer than ever.<sup>36</sup> Cloning is a replication of the DNA from the donor where no actual reproduction takes place. Procreation involves a sperm and an ovum, where the baby would have both the parents' genetic codes. In contrast, cloning only uses the DNA of one person, in which the resulting baby is the DNA replica of the donor. It is also observed that the problems that human cloning creates goes further into society. Human cloning would no doubt allow women to reproduce asexually.

From the Islamic perspective, cloning a human is against human nature, and is therefore prohibited. The Jeddah-based Academy of Islamic Fiqh had unanimously agreed that human cloning is prohibited in Islam,<sup>37</sup> as Islam "insists on the necessity of preserving man's innate nature, by maintaining the five universal principles: religion, life, intellect, offspring and wealth."<sup>38</sup> Reproductive cloning technology poses a threat to these five higher objectives of the framework of *maqasid al-shariah*, especially the protection of the progeny.

This juridical opinion was based on various verses in the Quran that state that reproduction involves the male's sperm and the female's ovum. Cloning, however, is a form of asexual reproduction which does not involve fertilisation of the ovum by the sperm. Islam places great importance on the family institution. If human reproductive cloning is allowed, then there is no longer a need for marriage. Reproductive cloning

would disrupt the definition of *nasab* or lineage, which would then cause confusion to family ties, which in turn causes the problem of determining those who are in the prohibited degree of marriage, which later results in the destruction of the concept of family.<sup>39</sup> This confusion is a consequence of the absence of sperm in reproduction. Furthermore, this would lead to the increase of the number of single parents, thus reducing the role of men, and also would result in sexual acts as sources of pleasure which would lead to further social irresponsibility.<sup>40</sup> Not only does human reproductive cloning poses a threat to the safeguarding of the progeny, it would also in the long run affect humankind, thus endangering the religion as well. These threats that human reproductive cloning pose became the main basis for its prohibition in Islam.

## 6. Conclusion

In actuality, the four principles to bioethics as proposed by Beauchamp and Childress are inbuilt within the framework of the *maqasid al-shariah*. For Muslims, the *maqasid al-shariah* framework would be more acceptable and practical as compared to the four principles of bioethics, as the latter is viewed to be secular.

It is critical at this juncture for Muslims to play an active role in the deliberation of ethical issues pertaining to science and technology. Failure to do this would result in Muslims being left out on ethical deliberations, and as such, Muslims' sensitivities and inputs would not be highlighted. In participating in ethical discourse pertaining to science and technology, Muslims could resolve the ethical dilemmas by utilising the framework of *maqasid al-shariah*.

<sup>36</sup>M. L. Rantala and A. J. Milgram, *Cloning: For and Against*, Illinois: Carus Publishing Company, 1999.

<sup>37</sup>Islamic Fiqh Academy, Resolution No. 100/2/10 on "Human Cloning" in *Resolutions and Recommendations of the Council of the Islamic Fiqh Academy 1985-2000*, 208-213, Jeddah: Islamic Development Bank, 2000.

<sup>38</sup>Islamic Fiqh Academy, Resolution No. 100/2/10 on "Human Cloning," 209.

<sup>39</sup>M. Zawawi, *Human Cloning: A Comparative Study of the Legal and Ethical Aspects of Reproductive Human Cloning*, Kuala Lumpur: Institute of Islamic Understanding Malaysia, 2001.

<sup>40</sup>Zawawi, *Human Cloning*.