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Empowerment of Women Between Law and Science

Role of Biomedical Technology in Enhancing Equitable Gender Relations in the Muslim World

Ayman Shabana

Georgetown University in Qatar

as2432@georgetown.edu

Abstract

This paper examines the role of biomedical technology in reconstructing traditional gender roles in the Muslim world. It questions the neutrality of this technology and explores the extent to which various applications of genetic and reproductive technologies can be used either to enhance or diminish gender equality. It concentrates on Islamic normative discussions surrounding pre-marital genetic testing and sex selection and emphasizes the role of these discussions for the proper accommodation of these technologies within the Muslim context.

Keywords

Islamic law and ethics – bioethics – sex selection – pre-marital genetic testing – fatwas – family law – legal reform – women's rights

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Introduction

In the modern period, legal reform has been one of the main channels used to enhance the status of women in the Muslim world. Surveys of personal status legislation reveal the range of changes introduced in the legal codes governing and regulating marriage, divorce, and other family related issues. These reforms have largely appealed to legal authority by implementing such methods as limiting the jurisdiction of courts, eclectic accommodation of legal schools, and reinterpretation of earlier opinions and doctrines. With the emergence of modern biomedical technology and its various applications in the past few decades, a new type of authority has been introduced, one that appeals to modern science and its ability to provide an accurate, objective, and neutral explanation of reality. Proper integration of modern biomedical technology, however, remains dependent on the development of socio-cultural awareness and understanding without which the utility of such technology will be limited.

This study explores the role of biomedical technology in reconstructing traditional gender roles in the Muslim context. More particularly, it examines the extent to which various applications of genetic and reproductive technologies can modify traditional gender roles, which generally tend to privilege males over females. It argues that as much as biomedical technology can be used to foster greater gender equality, it can also be used to sustain and even aggravate gender inequality. For example, while pre-marital genetic testing can place limits on traditionally more powerful male agents, fetal sex assignment can perpetuate traditional discrimination, often against female gender. The study will pay closer attention to shari'a-based articulations arguing both for and against these biomedical applications with relevant implications on the (re)definition of traditional gender relations. For this purpose, the study will examine illustrative normative discussions, mainly in the form of collective fatwas and recommendations pertaining to the two issues of pre-marital testing and sex selection by some transnational institutions such as the Islamic Organization for Medical Science (Kuwait), the International Islamic Fiqh Academy (Jeddah), and the Islamic Fiqh Council (Mecca).

Shari'a and Legal Reform in Family Law

Modern legal history in the Muslim world is usually traced back to the emergence of national legal systems that took their initial shape during the colonization period throughout the 19th and 20th centuries. Despite various

contextual differences, most of these systems share two important features: displacement of shari'a from its centuries-old privileged status as the dominant legal system and introduction of legal codes along European models. In some cases, these legal codes were borrowed in total as was the case in Turkey where a uniform civil code was upheld on the basis of the Swiss Civil Code.¹ In most cases, however, family law was the main exception, which maintained its connection with shari'a although often in a more eclectic fashion drawing on the diversity and multiplicity of opinions within the legal tradition rather than being limited to a single legal school (*madhhab*).

Since the inception of the legal reform movement in the Muslim world, the reconstruction of family law has remained contested in view of its connection with several debates involving: methods of legal reform; the relationship between law and religion and the extent to which family law can be secularized; the relationship between family law and global gender equality as inspired by relevant UN treaties and conventions, particularly those ratified by national governments; as well as the relationship between family law and nation building efforts in various national contexts both before and after colonization. These debates and related discourses have provoked different strands of activism. While some call for a return to a religiously-based family law, others call for a modern and unified family law, secular in nature and fully compatible with international expectations. Still, some Muslim activists call for systems more compatible with the spirit of shari'a rather than common custom.²

Women's Rights Between Law and Science

Evaluating the impact of legal reforms on enhancing women's rights would require qualitative studies that examine the difference that such reforms have made in women's lives. In effect, these studies would also assess the role that law can play as an agent of positive social change or as a means for the

1 Wael Hallaq, *Shari'a: Theory, Practice, Transformations* (Cambridge: Cambridge University Press, 2009), 498.

2 See, for example, Kenneth M. Cuno and Manisha Desai, *Family, Gender, and Law in a Globalizing Middle East and South Africa* (Syracuse, NY: Syracuse University Press, 2009), xiv; Hallaq, *Shari'a: Theory, Practice, Transformations*, 474, pointing out that these debates usually involve four main actors: the state, the secular modernists, the ulama, and the Islamists. Also see Lama Abou-Odeh, "Modernizing Muslim Family Law: The Case of Egypt," *Vanderbilt Journal of Transnational Law* 37 (2004), 1043–1146, describing the interaction between Islamist and secularist actors and arguing for total secularization of family law.

empowerment of women. Definitions of empowerment often refer to the ways through which disadvantaged groups obtain social and political power. If power is understood in distributive terms associated with opportunities, resources, or capabilities, then empowerment refers to the process of providing fair access to traditionally disadvantaged groups. On the other hand, if it is understood in relational terms, it refers to the transformation of structural relations—including social, economic, cultural and political aspects—that are perceived as biased against or discriminatory towards certain groups.³ In feminist literature, the term is used to indicate both connotations with varying degrees, although the latter usage seems to be more common with its implied emphasis on the notion of liberation.⁴

Ethnographic studies analyzing the impact of legal reform on the improvement of women's status and their role as legal actors question the utility of law as a tool for empowering women. For example, according to a revealing study investigating paternity lawsuits in Egypt, following the most recent legal reforms in the area of family law, female litigants were found to face numerous difficulties in the process of filing paternity suits. The study finds that, in the absence of a specific legislation to regulate paternity issues, cases are left to the subjective interpretation of individual judges.⁵ According to classical Islamic jurisprudence, establishment of paternity is dependent on the existence of a licit sexual relationship and that is why it is often treated under broader legal themes such as marriage or divorce. The study reveals that cases are often settled on the basis of the marriage-paternity connection, which is often interpreted broadly with a view towards achieving the interest of children by acknowledging questionable types of marriage, especially following the new law issued in 2000, which treats the controversial '*urfi* marriage as the officially registered one for the purpose of filing for divorce.⁶

In the course of exploring the consequences of this legal void in the area of paternity, the study discusses a draft law that was submitted to the Egyptian parliament in 2006. The proposed law required a father who denies the paternity of a child to submit to DNA testing. Refusal to comply should be taken as

3 Dovile Budryte, "Empowerment," in *The Encyclopedia of Political Science*, ed. G. Kurian et al., (Washington: CQ Press, 2011), <http://search.credoreference.com/content/entry/cqpolisci/empowerment/o>.

4 On the notion of the liberation of Muslim women, see Lila Abu Lughod, *Do Muslim Women Need Saving?* (Cambridge, MA: Harvard University Press, 2013), 45–46.

5 Hind Ahmed Zaki, *Law as a Tool for Empowering Women within Marital Relations, A Case Study of Paternity Lawsuits in Egypt* (Cairo: The American University in Cairo Press, 2012).

6 Ibid., 54.

circumstantial evidence against him, in which case paternity should be established. On the other hand, if the testing results did not support the claim of the woman, she would be penalized by imprisonment and payment of a fine.⁷ The draft law was conditionally supported by Dār al-Iftā', whose statement indicated the possibility of its integration within the framework of Islamic family regulations.⁸ Ultimately, however, the draft law failed to pass. According to its authors, this was due to two main reasons: the government's fear of Islamist opposition in the parliament as well as the prohibitively high cost of the test, which would need to be covered by the state. The study published by Hind Ahmed Zaki (cited in note 4) looks at this draft law as a lost opportunity to introduce long overdue comprehensive reforms in the area of family law. Criticizing the attitude of judges who tend to settle paternity cases on the basis of the existence of a marital relationship, the author remarks: "Why would they insist on resorting to a much harder manner that is subject to human error, rather than the much easier and more certain method of DNA testing?"⁹ In this context, DNA testing is presented as a scientific method that is capable of yielding decisive and impartial results.

This characterization of DNA testing as an effective scientific method may also apply to a wide range of biomedical applications, particularly in the area of reproductive health. Ethnographic fieldwork indicates that since their emergence in the late 1970s, assisted reproductive technologies have been enthusiastically embraced in the Muslim world.¹⁰ The introduction of these technologies, however, has stirred endless debates on their legitimacy and compatibility with Islamic family norms. The major bulk of these debates can be located in the numerous individual and collective fatwas, especially in the absence of binding legislation to regulate the use of these technologies in most Muslim-majority countries. These fatwas often address general moral guidelines in the process of implementing these technologies with a particular focus on two main points: the scope of proper inter-gender interaction and

7 Ibid., 37.

8 According to the letter that was sent by the former mufti, 'Alī Jum'ah, to the parliament in response to the draft law, in cases where a marital relationship is claimed to exist (even in the absence of proper documentation), it is permissible to require a party that denies the paternity of a child (whether the man or the woman) to submit to the test. <http://www.ahram.org.eg/Archive/2006/3/11/EGYP3.HTM>, accessed February 2016.

9 Zaki, *Law as a Tool*, 56–7.

10 See, for example, Soraya Tremayne and Marcia C. Inhorn, "Islam and Assisted Reproductive Technologies," in *Islam and Assisted Reproductive Technologies, Sunni and Shia Perspectives*, ed. Marcia C. Inhorn and Soraya Tremayne (New York: Berghahn Books, 2012), 1–21.

preserving the supremacy and sanctity of the marital relationship. This, in turn, translates into a total ban on third-party involvement in the reproductive process, which includes gamete or embryo donation and also surrogacy arrangements. From the late 1990s, a more liberal trend has started to emerge in Iran as a result of a fatwa by Ayatollah Khamene'i in which he allowed third party donation.

Notwithstanding this overall positive attitude towards assisted reproductive technologies, feminist studies, on the other hand, point out the role of these technologies in sustaining and confirming traditional gender-based discrimination.¹¹ From this perspective, assisted reproductive technologies facilitate the treatment of involuntary infertility and, in turn, end up implicitly perpetuating conventional stereotypes emphasizing the reproductive role and function of women. But, beyond this general feminist criticism, some studies also point out the side effects of these technologies, particularly when the outcome seems to challenge dominant social and cultural norms.¹² In general, ethnographic fieldwork shows the importance of the cultural accommodation of these technologies in order to avoid serious conflicts with society's deeply entrenched values.¹³

- 11 Within the context of modern genetic and reproductive technologies, two main approaches to feminist ethical perspectives are distinguished. The first focuses on power in the physician-patient relationship and also on the extent to which modern reproductive technologies have the potential to exploit women and sustain discriminatory practices. The second, which is also referred to as feminine, is associated with the ethics of care. It focuses more on relationships rather than on mere choices in the analysis of genetic testing, see Donna L. Dickenson, "Feminist Perspectives on Human Genetics and Reproductive Technologies," in *Living with the Genome: Ethical and Social Aspects of Human Genetics*, eds. Angus Clarke and Flo Ticehurst (New York: Palgrave, 2006), 286.
- 12 See, for example, Soraya Tremayne, "The 'Down Side' of Gamete Donation, Challenging 'Happy Family' in Iran," in *Islam and Assisted Reproductive Technologies, Sunni and Shia Perspectives*, ed. Marcia C. Inhorn and Soraya Tremayne (New York: Berghahn Books, 2012), 140–144. Tremayne analyzes a case study of an Iranian woman who was able to conceive through third-party sperm donation that was undertaken in the United Kingdom. Her children's features did not bear any resemblance with her husband. As a result, she was subjected to harassment from both her husband and her own family.
- 13 For example, in her extensive work on the practice of reproductive technologies in the Middle East, Marcia Inhorn has emphasized the need for such practice to be in line with local normative systems. Inhorn draws on the work of Harvard medical anthropologist Arthur Kleinman with a particular focus on what he refers to as "local moral worlds" of pain and suffering, which reflect "the commitments of social participants in a local world about what is at stake in everyday experience." Kleinman calls for the need to "pay close attention to the moral issues that may accompany the arrival of new biotechnologies

The Cases of Pre-marital Testing and Sex Selection

What the above-mentioned two examples demonstrate is that proper integration of biomedical technologies is a function of a process of negotiation with religious and cultural norms. This process of negotiation is vital for the articulation of initial moral insights that can then be translated into distinct moral positions. The latter, in turn, may inspire public policies or binding legislation. The first example shows that DNA testing could be accommodated as long as it is not treated as the sole or exclusive criterion, especially in the absence of a marital relationship or in cases involving conflict with an established marriage. The second example shows that assisted reproduction by donor gametes is more problematic. Although some religious authorities approved the procedure, significant conflict with social and cultural norms could result in serious adverse consequences.

The two cases of pre-marital testing and sex selection demonstrate the range of options that modern genetic and reproductive technologies make available, especially with regard to their preventive and therapeutic potentials. Advances in genetic technology provide means for prediction, early detection, and possibly treatment of genetic disorders. In particular, they can be used to provide prospective couples with valuable information on their own health status and also on potential genetic disorders in their offspring, especially in the case of consanguineous marriage. Similarly, modern reproductive technology offers a wide range of unprecedented possibilities including fetal sex selection. Islamic bioethical discourses examine the general guidelines that should inform the proper implementation of these procedures.

Genetic testing is the process through which an individual's DNA is examined in order to check for potential genetic disorders. Advances in modern genetics, especially after the successful completion of the Human Genome Project, have allowed testing for more than a thousand genetic disorders and the number is expected to increase significantly in the next few years.¹⁴ The availability of this increasing number of genetic tests has raised important

around the globe." See Marcia Inhorn, "Making Muslim Babies: IVF and Gamete Donation in Sunni versus Shi'i Islam," *Culture, Medicine, and Psychiatry* 30 (2006), 429–430. In her most recent book, Inhorn concentrates on the transformation of patriarchy and traditionally dominant masculinity in the Muslim world as a result of new reproductive technologies, see Marcia Inhorn, *The New Arab Man, Emergent Masculinities, Technologies, and Islam in the Middle East* (Princeton: Princeton University Press, 2012), 32.

14 Lewis Vaughn, *Bioethics: Principles, Issues, and Cases* (Oxford: Oxford University Press, 2010), 527–8.

questions on their utility, especially in cases when effective cures are not yet available. Moreover, results of genetic testing are not always straightforward and they often require expert interpretation and proper counseling both before and after testing.¹⁵ Important types of genetic testing include the following: newborn screening undertaken for the purpose of early detection and treatment, carrier testing undertaken to verify whether someone carries the genes of certain genetic disorder, predictive testing to check for a genetic disorder without any symptoms, diagnostic testing to confirm a genetic disorder after the appearance of its symptoms, and preimplantation genetic diagnosis (PGD) undertaken to check IVF embryos for potential genetic disorders before they are planted into the mother's womb.¹⁶ If an individual carries a copy of a mutated gene for a disease, this does not mean that s/he will get this disease. But, if a couple carries copies of the same mutated gene, this means that their children will receive two copies of the mutated gene (one from each parent), which increases the chance of getting the disease. Pre-marital genetic testing can, therefore, alert prospective couples to potential genetic disorders, especially in their future children. Consanguineous marriages present increased risks for the occurrence of genetic disorders in prospective children. The Middle East, North Africa, and South Asia are regions that have been known for high rates of consanguineous marriages.¹⁷

From the Islamic perspective, fetal sex selection raises several religious concerns. First, the procedure seems to contradict references in the foundational sources implying that knowledge and control of embryos belong exclusively to God. Second, fetal sex selection risks disturbing the natural balance and distribution of the sexes, which has been maintained and preserved since the beginning of creation.¹⁸ Some scholars, however, argue that if undertaken within

15 This, in turn, raises questions about direct-to-consumer (DTC) genetic testing. It is estimated that about 1500 tests from about approximately 35 companies are available for sale to consumers via the internet, see Kimberly Quaid, "Predictive Genetic Testing," in *Bioethics*, ed. Bruce Jennings (Farmington Hills, MI: Macmillan Reference USA, 2014), 3:1303–8.

16 Vaughn, *Bioethics*, 462.

17 Nizar Ben Halim et al., "Consanguinity, Endogamy, and Genetic Disorders in Tunisia," *Journal of Community Genetics* 4 (2013), 273–284. In some places, the rate of consanguineous marriages could reach more than 40% as it is the case in Kuwait, see Ya'qūb Yūsuf al-Kandārī, *Zawāj al-Aqārib fī al-Mujtama' al-Kuwaytī wa 'Alāqatuhu bi ba'ḍ al-Mustawayāt al-Itimā'iyyah wa al-Thaqāfiyyah* (Kuwait: Majlis al-Nashr al-'Ilmī, Kulliyat al-Ādāb, Jāmi'at al-Kuwayt, 2006), 47.

18 See 'Abd al-Nāṣir Abū al-Baṣāl, "al-Handasah al-Wirāthiyyah min al-Manzūr al-Shar'ī," in *Dirāsāt Fiqhiyyah fī Qaḍāyā Ṭibbiyyah Mu'āṣirah*, 2 vols., (Amman: Dār al-Nafā'is, 2001),

proper guidelines, fetal sex selection should be permitted. They refer to the Qur'ānic passage conveying the supplication that Zakariyyā (Zechariah) made in which he asked God to grant him a baby boy (Q 19:5–6). In response to possible conflict with God's knowledge, they note that relevant references in the foundational sources imply God's detailed knowledge, which is qualitatively different from human knowledge. With regard to potential disturbance of natural gender balance and distribution, they argue that ultimate achievement of such balance belongs solely to God and, accordingly, fetal sex selection would amount to achievement of, rather than challenge to, God's will.¹⁹

Collective Juridical-Scientific Deliberations on Genetic Testing and Genetic Counseling

Within the rapidly increasing amount of literature (mostly in Arabic) devoted to Islamic bioethical discourses, these two issues have received a great deal of attention. In general, discussions on any given topic in this literature tend to center around collective fatwas, statements, resolutions, or proceedings of major transnational institutions such as those of the Islamic Organization for Medical Sciences, the International Islamic Fiqh Academy, and the Islamic Fiqh Council in addition to recommendations of major international thematic conferences. In exploring Muslim reaction to the various applications of genetic and reproductive technologies, it will be important to pay special attention not only to the resolutions that these institutions issue but also to the collective discussions that precede these resolutions, which often combine the insights of Muslim religious scholars as well as technical subject-matter experts.²⁰

In October 1998, the Kuwait-based Islamic Organization for Medical Sciences (IOMS) convened a three-day (October 13–15) seminar under the title, “Genetics, Genetic Engineering, Human Genome, and Gene Therapy—an

2:716–717; ‘Abbās Aḥmad Muḥammad al-Bāz, “Ikhtiyār Jins al-Mawlūd wa Taḥdīduh qabla Takhalluqihi wa wilādātihi bayna al-Ṭibb wa al-Fiqh,” in *Dirāsāt Fiqhiyyah fī Qaḍāyā Ṭibbiyyah Mu’āṣirah*, 2 vols., (Amman: Dār al-Nafā’is, 2001), 2:862.

19 Ibid., 719; Muḥammad ‘Uthmān Shubayr, “Mawqif al-Islām min al-Amrāḍ al-Wirāthiyyah,” in *Dirāsāt Fiqhiyyah fī Qaḍāyā Ṭibbiyyah Mu’āṣirah*, 2 vols., (Amman: Dār al-Nafā’is, 2001), 1:339; al-Bāz, “Ikhtiyār Jins al-Mawlūd wa Taḥdīduh qabla Takhalluqihi wa wilādātihi bayna al-Ṭibb wa al-Fiqh,” 2:868.

20 See Mohammed Ghaly, “Human Cloning through the Eyes of Muslim Scholars: the New Phenomenon of the Islamic International Religioscientific Institutions,” *Zygon* 45 (2010): 7–35.

Islamic Perspective,” in partnership with the International Islamic Fiqh Academy (IIFA, affiliated with the Organization of Islamic Cooperation—OIC), the regional office of the World Health Organization (WHO) in Alexandria (Egypt), and the Islamic Educational, Scientific, and Cultural Organization (ISESCO). The seminar included ten thematic panels addressing a wide range of ethical concerns associated with modern genetic technology and its various applications.²¹ One of the main issues that the seminar addressed was the possibility of including genetic testing as part of pre-marital medical tests in order to verify not only the current health status of prospective couples but also potential genetic disorders to which either they or their future offspring may be susceptible.

A close examination of the proceedings of the seminar shows the effort that the participants, particularly the religious scholars, expended in order to relate pre-marital medical testing to pre-modern juristic discussions on health-related concerns before and after marriage. The seminar proceedings, both in the working papers as well as ensuing discussions, highlighted various rules, principles, and general injunctions that meant to prevent diseases or to encourage their treatment. They include, among other things, instructions on the choice of marriage partners, pronouncements on guarding against diseases in general and avoiding their causes, and health-related defects sanctioning dissolution of marriage.

Islamic injunctions pertaining to marriage often start with advice on the choice of marital partners on the basis of their moral character. Several pronouncements also address physical suitability for marriage, which are usually linked to the reproductive function of marriage. In this context, explicit warning against consanguineous marriage is meant to avoid any negative impact on the health of future children, which has been confirmed by modern genetic research. The Islamic tradition includes several references discouraging this practice on the basis of the observation that consanguineous marriages often result in weaker offspring. The most important reference is attributed to the second Caliph ‘Umar who advised the clan of al-Sā’ib to marry outside close

21 See ‘Abd al-Rahmān al-‘Awaḍī and Aḥmad Rajā’ī al-Jindī, eds., *Ru’yah Islāmiyyah li-ba‘ḍ al-Mushkilāt al-Ṭibbiyyah al-Mu’āṣirah, Thabt Kāmil li-‘Amāl Nadwat al-Wirāthah wa al-Handasah al-Wirāthiyyah wa al-Jinūm al-Basharī wa al-‘Ilāj al-Jinī – Ru’yah Islāmiyyah*, 2 vols., (Kuwait: al-Munazzamah al-Islāmiyyah li al-‘Ulūm al-Ṭibbiyyah, 2000) hereafter *Ru’yah Islāmiyyah*.

family circles.²² Several Prophetic narratives are also reported but the authenticity of these narratives has been questioned.

Apart from these general injunctions on the selection of the marital partner, the Islamic normative tradition includes numerous references emphasizing the importance of taking preventive measures to avoid diseases either by contagion or any other means. The issue of contagion has been particularly problematic due to several competing references that seem to give different connotations on the exact relationship between contagion and actual occurrence of particular diseases. This causal connection between contagion and illness has often triggered larger theological questions pertaining to the efficacy of independent causes and the extent to which a belief in such efficacy would conflict with God's omnipotence. Pre-modern legal debates centered on the question of whether contagion by itself can be seen as the real or exclusive cause of disease. Moreover, the Islamic legal tradition also includes extensive discussions on health defects that justify dissolution of marriage. Within this context, genetic testing is framed as a modern extension of these pre-modern discussions.

The main question that the participants debated was not so much the permissibility of pre-marital genetic testing but more precisely the extent to which it can be enforced.²³ On this question, the participants were divided into two main groups: those who argued for the enforcement of pre-marital genetic testing and those who argued that it should remain optional. The first group emphasized physical fitness as an important condition for the achievement of the ideal objectives of marriage, which include sexual gratification and emotional fulfillment.²⁴ The second group, on the other hand, link their

22 'Abd al-Sattār Abū Ghuddah, "al-Muwākabah al-Shar'īyyah li-Mu'ṭayāt al-Handasah al-Wirāthiyyah," in *Ru'yah Islāmīyyah*, 1:585.

23 Some scholars, such as the late Saudi jurist 'Abd al-'Azīz ibn Bāz, argued against pre-marital genetic testing on the grounds that results can be inaccurate. It is also argued that, in principle, couples are presumed to be free from genetic diseases, which obviates the need for genetic testing. See Sa'd ibn 'Abd al-'Azīz ibn 'Abd Allāh al-Shuwayrakh, *Aḥkām al-Handasah al-Wirāthiyyah* (al-Riyad: Dār Kunūz Ishbīlā lil-Nashr wa al-Tawzī', 2007), 128–9.

24 See, for example, Muḥammad al-Zuhaylī, "al-Irshād al-Jinī," in *Ru'yah Islāmīyyah*, 2:773–93; Ḥamdātī Mā' al-'Aynayn Shabihunā, "al-Amrād al-Latī yajibū an yakuna al-Ikhtibār al-Wirāthī fihā Ijbāriyyan," in *Ru'yah Islāmīyyah*, 2:943–56; 'Abd Allāh Muḥammad 'Abd Allāh, "Naẓarāt Fiqhiyyah fī al-Jinūm al-Basharī, al-Handasah al-Wirāthiyyah, al-'Ilāj al-Jinī," in *Ru'yah Islāmīyyah*, 2:727–765.

attitude to the question of medical treatment in general which, according to this line of reasoning, is considered permissible rather than obligatory.²⁵

Supporters of the enforcement of pre-marital testing point out the importance of exercising discretion when it comes to the choice (*takhayyur*) of the marital partner as indicated in several Prophetic reports. These injunctions on the proper selection of marriage partners can lend support to pre-marital genetic testing, which would equip prospective couples with valuable information regarding their own health as well as the health of their children.²⁶ In this regard, statements against consanguineous marriages are read in light of modern biomedical findings linking consanguineous marriage with increased likelihood for genetic disorders in the second generation. For example, the Syrian jurist Muḥammad al-Zuḥaylī notes that if tests show more than 50% chance of serious genetic disorders, legal action can be taken to prevent marriage in this case.²⁷

With regard to the issue of physical health, supporters of this attitude highlight the importance of guarding against all types of diseases, whether by contagion or any other means.²⁸ On the issue of contagion, they rarely question its influence and they largely do not think that such influence would imply contradiction with religious faith. In this regard, textual references supporting

- 25 See Nāṣir ibn ‘Abd Allāh al-Maymān, “al-Irshād al-Jinī: Ahmiyyatuh, Āthāruh, Maḥādhiruh,” in *Ru’yah Islāmīyyah*, 2:797–824; Muḥammad Ra’fat ‘Uthmān, “Nazrah Fiqhiyyah fī al-Amrād al-Latī Yajibu an yakuna al-Ikhtibār al-Wirāthī fihā Ijbārīyyan kama tara ba’d al-Hay’at al-Ṭibbiyyah,” in *Ru’yah Islāmīyyah*, 2:915–939; Muḥammad ‘Abd al-Ghaffār al-Sharīf, “Ḥukm al-Kashf al-Ijbārī ‘an al-Amrād al-Wirāthiyyah,” in *Ru’yah Islāmīyyah*, 2:959–74.
- 26 Abū Ghuddah, “al-Muwākabah al-Shar‘iyyah,” 1:583. For an overview of this issue in Arabic culture and literature, see Geert Jan Van Gelder, *Close Relationships: Incest and Inbreeding in Classical Arabic Literature* (London: I.B. Tauris, 2005).
- 27 al-Zuḥaylī, “al-Irshād al-Jinī,” 2:784; Abū Ghuddah, “al-Muwākabah al-Shar‘iyyah,” in *Ru’yah Islāmīyyah* 1:584; ‘Abd Allāh, “Nazarāt Fiqhiyyah,” 2:740–1. Supporters of enforcing pre-marital testing argue that it is permissible for the governing authority to enforce these tests in order to protect progeny, which is one of the main objectives of sharī‘a, see al-Ṭayyib Buḥālāh, *al-Fuḥūṣāt al-Ṭibbiyyah qabla al-Zawāj* (Manṣurah: Dār al-Fikr wa al-Qānūn, 2010), 301–2.
- 28 For example, according to the Syrian jurist ‘Abd al-Sattār Abū Ghuddah, pre-marital genetic testing can be subsumed under a general principle that can be referred to as guarding against all types of diseases. See Abū Ghuddah, “al-Muwākabah al-Shar‘iyyah,” 1:582. A similar argument was made by ‘Abd Allāh Muḥammad ‘Abd Allāh. He notes that Islam is keen on ensuring physical wellbeing as well as prevention of diseases as can be gleaned from the various Prophetic guidelines on medical treatment, which also include warning against infection. See ‘Abd Allāh, “Nazarāt Fiqhiyyah,” in *Ru’yah Islāmīyyah*, 2:739.

the influence of contagion are emphasized and other competing references are interpreted. For example, the text of the famous Prophetic hadith negating the influence of contagion is said to mean either no contagion can be effective without God's permission or no one should cause contagion to befall others. In this context, genetic testing is seen as an important preventive measure to avoid contagion by protecting offspring against potential genetic disorders.²⁹ With regard to the legal status of medical treatment, although it is recognized that the general ruling is permissibility, this ruling may change to recommendation and even obligation if it affects others, as is the case with communicable or genetic diseases.³⁰

One of the important contexts within which pre-marital genetic testing is often placed is the pre-modern discourse on health defects that justify annulment of marriage.³¹ Shari'a gave the annulment option to a marital partner upon the discovery of a health defect that was not known prior to the conclusion of marriage on the grounds that such a defect would compromise the emotional and psychological objectives of marriage. If, in the past, these health defects could not be discovered in advance, genetic testing makes this possible. Supporters of the enforcement of genetic testing do not see the list of the defects that the pre-modern jurists discussed as exhaustive, which means that any other condition that jeopardizes the emotional wellbeing of marriage can be added as well.³²

29 Abū Ghuddah, "al-Muwākabah al-Shar'iyyah," in *Ru'yah Islāmīyyah*, 1:583. For a detailed discussion on the question of contagion in the Islamic tradition, see Justin Stearns, *Infectious Ideas: Contagion in Pre-modern Islamic and Christian Thought in the Western Mediterranean* (Baltimore: John Hopkins University Press, 2011).

30 al-Zuhaylī, "al-Irshād al-Jinī," in *Ru'yah Islāmīyyah*, 2:779–80.

31 See Abū Ghuddah, "al-Muwākabah al-Shar'iyyah," in *Ru'yah Islāmīyyah*, 1:582–4; Shabīhunā, "al-Amrāq al-Latī yajibū an yakuna al-Ikhtibār al-Wirāthī fihā Ijbāriyyan," in *Ru'yah Islāmīyyah*, 2:944. Subsequent studies often adopt this approach as well. See, for example, Shubayr, "Mawqif al-Islām min al-Amrāq al-Wirāthiyyah," 1:333–347.

32 Shabīhunā, "al-Amrāq al-Latī yajibū an yakuna al-Ikhtibār al-Wirāthī fihā Ijbāriyyan," in *Ru'yah Islāmīyyah*, 2:952–3. By way of analogy to the health conditions that pre-modern jurists listed as sanctioning the dissolution of marriage, several jurists argue that a genetic disease can serve as a valid reason for the annulment of marriage provided that such a disease was not known or confirmed before the conclusion of the marital contract, see al-Shuwayrakh, *Aḥkām al-Handasah al-Wirāthiyyah*, 202–4. Some researchers, therefore, suggest pre-marital genetic testing as a precautionary preventive measure that should be undertaken by prospective couples. For example, Shubayr notes that undertaking pre-marital testing does not conflict with shari'a or with the objectives of marriage because marriage of healthy couples is likely to last more than that of ill couples. He argues that such tests should be facilitated and administered by the government without

On the other hand, supporters of the permissibility of genetic testing argued against its enforceability. They do not question the considerable advantages of genetic testing, but they urge caution as they point out its limitations. After all, genetic testing does not by itself involve any therapeutic value and all it does is to reveal existing, latent, or potential risks. Some actually question its utility in case of incurable conditions. They note that negative results in genetic testing do not necessarily mean that the tested individuals are free from genetic diseases in general, but only from the particular genetic diseases for which they are tested. In light of the increasing number of genetic disorders, it is almost impossible to find out one's status regarding all possible genetic diseases. But, apart from these immediate and direct disadvantages that genetic testing may involve, it can also result in several adverse moral, legal, and also economic consequences that may affect not only the person being tested but also other members of the family.³³ For example, they argue that enforcing genetic testing would open the door for corruption in case someone wants to obtain a certificate without being tested. Moreover, they denounce general condemnation of consanguineous marriage as the percentage of genetic disorders that can be linked directly and exclusively to this type of marriage can hardly be determined beyond any doubt. Even in the case of genetic disorders, the role of the environment as well as other causal factors cannot be excluded.³⁴ After all, the Quran includes references to marriage with first cousins.

Genetic testing is often discussed with respect to the larger process of genetic counseling, which aims to provide detailed information about the tests

charge. He also suggests that such tests should be a standard procedure for all individuals once they reach 15 years of age. This medical statement should then be submitted at the time of concluding the marriage contract, see Shubayr, "Mawqif al-Islām min al-Amrāḍ al-Wirāthiyyah," 1:336.

- 33 Muḥammad 'Alī al-Bār, "Naẓrah Fāḥiṣah lil-Fuḥūṣāt al-Ṭibbiyyah al-Jīniyyah: al-Faḥṣ qabla al-Zawāj wa al-Istishārah al-Wirāthiyyah," in *Ru'yah Islāmīyyah*, 2:630–1; see al-Shuwayrah, *Aḥkām al-Handasah al-Wirāthiyyah*, 92–5 (speaking about the false impression that genetic testing may give and also possible adverse consequences). These considerations prompted some religious scholars to question the benefit of genetic testing and argue against it. The majority view, however, argues for its permissibility as indicated and supported by the recommendation of this IOMS seminar. See Ibid., 126–7. On the probability rather than certainty of genetic test results, see Carol Emslie and Kate Hunt, "Genetic Susceptibility," in *Living with the Genome*, 104.

- 34 al-Bār, "Naẓrah Fāḥiṣah," 2:644–9. Moreover, supporters of this attitude argue that ascertainment of the medical condition of a prospective spouse is not one of the conditions of a valid marriage. They also note that marriage is not necessarily meant for reproduction. See Buḥālāh, *al-Fuḥūṣāt al-Ṭibbiyyah*, 308.

being undertaken, as well as advice on possible options in light of test results according to best practices. In the Muslim context, this also includes elucidating possible implications and consequences of medical decisions in light of Islamic norms and regulations.³⁵ One of the great advantages of genetic counseling is to reassure individuals in case of negative test results. In case of positive results, genetic counseling can provide possible options depending on the exact circumstances of the couple and whether both of them carry the same copies of mutated genes. These options range from cautioning them against marriage in severe circumstances to detailed advice on further steps if they choose to proceed with marriage indicating recommended procedures after marriage, whether before pregnancy, during pregnancy, or after birth.³⁶ In these cases they would be in a better position when it comes to anticipation of potential disorders as well as necessary arrangements to address them.

Possible options for couples whose offspring are at great risk for genetic disorders prior to pregnancy include preimplantation genetic diagnosis (PGD). This is one of the techniques that assisted reproductive technology has made possible and by means of which IVF embryos can be tested for potential genetic disorders prior to implantation in the mother's womb. Apart from the high cost of the procedure, as well as the limited success rate, the technique raises other ethical questions regarding the moral status of the embryo as well as proper disposal of surplus embryos.³⁷ Another option is fetal sex selection, particularly when genetic disorders are associated with one sex more than the other. In this case, this technique is proposed as a therapeutic procedure rather than an exercise of preference for a particular sex over the other. A range of other options can also be explored during the process of genetic counseling along with related moral as well as religious evaluation of these options (e.g., temporary or permanent prevention of pregnancy or aborting deformed or defective fetuses). At the end of the seminar, a concluding statement was issued which included recommendations for the main topics discussed. With regard to genetic testing and counseling, the statement called for raising public awareness about the importance of genetic counseling, especially for prospective couples, preserving the privacy of individuals and confidentiality of their

35 Muḥsin bin 'Alī Fāris al-Ḥāzimī, "al-Istirshād al-Wirāthī: Ahammiyyat al-Taw'īyyah al-Wiqā'iyyah wa Maḥādhiruh al-Ṭibbiyyah wa al-Akhḷāqīyyah," in *Ru'yah Islāmiyyah*, 2:682.

36 Ibid., 2:680–1.

37 al-Bār, "Nazrah Fāḥiṣah," in *Ru'yah Islāmiyyah*, 2:634–5.

test results, ensuring that the process remains optional, and raising awareness about genetic risks associated with consanguineous marriage.³⁸

Collective Juridical-Scientific Deliberations on Fetal Sex Selection

One of the earliest collective discussions on the possibility of fetal sex selection was undertaken during a seminar that the Islamic Organization for Medical Sciences organized under the general theme of “reproduction in light of Islam” held on May 24, 1983.³⁹ Within this seminar, the discussion centered on a brief paper that the late Egyptian physician Ḥassān Ḥaṭḥūt presented in order to explain the medical and scientific nature of the procedure and how it can be implemented. According to Ḥaṭḥūt, two methods could be used. The first involves extracting a sample of the amniotic fluid surrounding the fetus and analyzing it in order to find out its sex. A decision then can be made either to retain the embryo or to get rid of it depending on the desired sex, which would raise the question of (im)permissibility of abortion as well. The second method, which, at the time, was undertaken only in animal breeding, depends on sperm sorting by subjecting extracted semen to a technical process by means of which Y-chromosomes (male) and X-chromosomes (female) are separated

38 *Ru'yah Islāmiyyah*, 2:1050–2. Similar resolutions were also issued by both the International Islamic Fiqh Academy (IIFA, affiliated with the Organization of Islamic Cooperation, formerly Organization of Islamic Conference in Jeddah) and the Islamic Fiqh Council (IFC, affiliated with the Muslim World League in Mecca). The IIFA decision that was issued in its 21st session held in Riyadh in November 2013 included a statement giving the authorities the power to enforce pre-marital genetic testing if this is deemed of a considerable public interest (*maṣlaḥah mu'tabarah 'āmmah*), see <http://www.iifa-aifi.org/2416.html>, accessed March 2017. A similar indication was also included in IIFA's decision with regard to the rights of the disabled in its 22nd session that was held in Kuwait in March 2015, see <http://www.iifa-aifi.org/3998.html>, accessed March 2017. The IFC decision that was issued in its 17th session, held in Mecca in 2003, indicated that medical tests can be included among the conditions of the marital contract. However, it also indicated that making it a pre-condition for the authentication of the marital contract would be impermissible (*wa rabṭ tawthīq al-'aqd biḥā amr ḡayr jā'iz*), see al-Majma' al-Fiqhī al-Islāmī, “al-Qarār al-Khāmis bi Sha'n Mawḍū' Amrāḍ al-Damm al-Wirāthiyyah,” *Majallat al-Majma' al-Fiqhī al-Islāmī* 15, no. 17 (2004): 305.

39 Aḥmad Rajā'ī al-Jindī, ed., *al-Islām wa al-Mushkilāt al-Ṭibbiyyah al-Mu'āṣirah, al-Injāb fī ḍaw' al-Islām* (Kuwait: al-Munazzamah al-Islāmiyyah li al-'Ulūm al-Ṭibbiyyah, 1983) (hereafter *al-Injāb fī ḍaw' al-Islām*).

and then later injected in order to increase the likelihood of obtaining an embryo with the desired sex.⁴⁰

During the ensuing discussion, the question of fetal sex selection raised two main theological questions: potential conflict with God's knowledge and will, and the potential risk of unsettling original divine balance of male and female distribution.⁴¹ The first question emanates from several scriptural sources indicating that knowledge of embryonic life belongs solely to God.⁴² These scriptural references imply that this divine knowledge controls one's sex during the early stages of embryonic life. In his commentary, however, the Egyptian jurist Yūsuf al-Qaraḏāwī questioned the possibility that such a procedure would place a limitation on God's comprehensive knowledge, which includes every aspect of one's life. He argued that whatever man knows (e.g., in the case of fetal sex determination) is facilitated in the first place by God's knowledge, not despite it. Moreover, human ability to control fetal sex is no different because this also cannot escape God's will or command. As much as human knowledge is facilitated by divine knowledge, so also is human will, which is facilitated by the divine will. As far as the question of whether humans should interfere in the development of a fetus, he argued that they should not unless in cases of necessity, which should be treated on an individual rather than collective basis. According to this argument, humans are better off maintaining natural gender distribution, which has always been established from the beginning of human existence in the universe.⁴³

In general, the opinions expressed during the seminar were indicative of three main orientations, which could be termed as liberal, restrictive, and intermediary. The liberal orientation emphasized the religious merit of discovering the secrets of the universe, which is the explicit goal of science. Ultimately,

40 Ḥassān Ḥaṭḥūt, "al-Taḥakkum fī Jins al-Janīn," in *al-Injāb fī ḍaw' al-Islām*, 37–8.

41 al-Jindī, *al-Injāb fī ḍaw' al-Islām*, 93.

42 For example, see "God knows what each female carries (whether male or female) and what the wombs decrease or increase (of the pregnancy term) and everything with him is according to a (precise) measure." [Q 13:8] and "with God is knowledge of the Hour (Day of Judgment), He causes rain to descend, He knows what is in the wombs, no single soul knows what it will acquire the following day or where it will perish" [31:34].

43 al-Jindī, *al-Injāb fī ḍaw' al-Islām*, 94–5. This is with reference to this Qur'ānic verse "and you can only will what God has willed" [76:30 and 81:29]. In support of this argument, some participants also elaborated on the notion of ultimate supremacy of the divine will by pointing out the role of the original God-given condition into which man is created (*fiṭrah*). Part of this original condition is individual inclination towards a particular sex, which differs from one person to another and which, even in case of human intervention, would eventually maintain even distribution of the sexes, see *Ibid.*, 96.

this search for the hidden secrets of the universe cannot escape divine knowledge and this remains a matter of theological belief. Scientists will continue to explore all types of natural phenomena and Muslims should participate in this effort and explain the boundaries of the permissible and impermissible. In this example, one of the main restrictions would be a total ban on the mixing of the gametes of unmarried couples. Several normative precedents are used to bolster this argument such as the example of Prophet Zakariyyā and his appeal to God to bless him with a baby boy. Another precedent believed to be supportive of this attitude is the Prophet's remark concerning coitus interruptus (*al-ʿazl*). While the Prophet did not forbid this for his Companions, he noted that if a pregnancy is decreed, it would occur regardless whether coitus interruptus is practiced or not.⁴⁴ Some reports also urge prospective couples to keep in mind future offspring while choosing marital partners (*takhayyarū li nuṭfikum*).⁴⁵ One of the main religious concerns that fetal sex selection raises is that it may involve changing the original form of God's creation (*taghyīr khalq Allāh*). Proponents of this attitude, however, retort by noting that this process does not entail changing the original nature of either the sperm or the ovum. All it does is to facilitate the merger of certain gametes, not refashion them in order to modify their basic characteristics. As long as sharīʿa rules are observed (e.g., preservation of the marital framework), the process should be subject to *ijtihād* (independent legal reasoning).⁴⁶ Moreover, in certain individual circumstances, the procedure could be quite helpful in satisfying the need for a baby of a particular gender. Such would be the case, for example, of spouses who have four or five girls and who want to have a baby boy. This need should not be dismissed as trivial or insignificant.⁴⁷

On the other hand, a more restrictive orientation was expressed, mainly by some of the participating physicians in light of practical experience with the early phases of the fetal sex detection technology. They noted that this technology was almost always used to facilitate aborting female fetuses (even in the West), which demonstrates a general, almost global, trend of anti-female bias.⁴⁸ This technology, therefore, raises the risk of facilitating modern forms of female infanticide (*maw'ūdah*), in comparison to the pre-Islamic Arabian practice. Accordingly, Islam's attitude on this issue should be total rejection

44 al-Jindī, *al-Injāb fī daw' al-Islām*, 97.

45 al-Jindī, *al-Injāb fī daw' al-Islām*, 112.

46 al-Jindī, *al-Injāb fī daw' al-Islām*, 103.

47 al-Jindī, *al-Injāb fī daw' al-Islām*, 104.

48 For a discussion on how the technology is used to reinforce anti-female attitudes in India, see Dena Davis, "Sex Selection," in *Living with the Genome*, 291–5.

of technical intervention in fetal sex selection. Any form of explicit or implicit bias against women would conflict with the original spirit of Islamic legislation and should therefore be condemned, whether before or after birth. Some proponents of technical intervention argue that it could assist in the process of readjusting the balance of gender distribution in certain circumstances, such as post-war situations, during which the male-female ratio is usually disturbed in favor of the female side due to the fact that more men are killed during war-time. Opponents, however, refer to some demographic studies indicating that, in these circumstances, gender balance is usually readjusted through natural means, obviating, therefore, the need for human or technical intervention.⁴⁹ While the proponents of the liberal attitude de-emphasized the theological implications of fetal sex selection, proponents of the restrictive attitude insisted that this issue has clear theological implications on the grounds that scriptural references relegate choice of the gender of babies exclusively to God (e.g., 42:49–50). Moreover, fetal sex selection involves changing God's creation, which covers any type of intervention in the natural process.⁵⁰ In particular, this procedure opens the door for more questionable procedures, especially those involving intervening with human sperm.

This exchange of views shows that one of the main grounds for disagreement between proponents of the restrictive and liberal orientations was whether fetal sex selection is fundamentally a theological or merely a legal/jurisprudential question. While the former emphasized the theological implications of the issue, the latter insisted that this should be pursued as a regular legal/jurisprudential question. Between these two main orientations, a third attitude also emerged, which urged caution and advised against rushing into premature conclusions. Proponents of this attitude noted that more time was needed in order to be able to judge on the basis of actual results in the real world in light of the fact that up until then, technical means for sex selection had not yet been implemented in human reproduction.⁵¹ The recommendations issued at the conclusion of the seminar included a statement on the question of fetal sex selection indicating its impermissibility at the collective level. On the other hand, while some participants argued for permissibility at the individual level to satisfy the need for gender balancing, others argued for impermissibility lest this should lead to unsettling natural gender balance.⁵²

49 al-Jindī, *al-Injāb fī daw' al-Islām*, 101.

50 al-Jindī, *al-Injāb fī daw' al-Islām*, 109–11.

51 al-Jindī, *al-Injāb fī daw' al-Islām*, 102.

52 al-Jindī, *al-Injāb fī daw' al-Islām*, 349.

Following this collective discussion on the issue during the IOMS seminar, normative Islamic discussions usually distinguish two main methods for sex selection: natural and technical.⁵³ The natural methods include a range of procedures that are meant to increase the likelihood of pregnancy with a fetus of the desired gender, such as timing of the intimate relationship relative to the ovulation process, following a specific diet, or use of special types of herbal or chemical solutions.⁵⁴ While these natural methods are generally considered permissible, some scholars include certain stipulations for their permissibility, such as the fact that pursuing such methods should not conflict with belief in divine omnipotence, they should not result in greater harm either for the man or the woman, and they should not involve uncovering the private parts of the body. The technical methods also include several procedures that are meant to achieve pregnancy with a fetus of the desired gender, which require artificial insemination either internally through direct injection of properly sorted sperm or externally through in vitro fertilization.⁵⁵ In general, juristic opinions on the use of technical means to achieve fetal sex selection can be divided into three main attitudes: permissibility as long as there is a justified psychological, social, or medical need; total prohibition; and restricted permissibility in cases of necessity for therapeutic purposes only. The third attitude, representing the majority view, captures the opinion of the Islamic Fiqh Council of the Muslim World League. Its resolution on this issue during its 19th session, held in Mecca in November 2007, indicates that natural methods for sex assignment are permissible as long as they do not include any questionable procedure from the sharī'a perspective. Technical methods, on the other hand, could be used only

53 This distinction can be traced back to the initial discussions during the seminar that the IOMS organized in 1983, see al-Jindī, *al-Injāb fī daw' al-Islām*, 114. See also Fahd Sa'd al-Rashīdī, "Ikhtiyār Jins al-Janīn bi al-Wasā'il al-Ṭabī'iyyah wa al-Mikhbariyyah, Dirāsah Fiqhiyyah Tibbiyyah," *Majallat al-Sharī'ah wa al-Dirāsāt al-Islāmiyyah* 26: 86 (2011), 567–624.

54 For example, some studies indicate that sexual intercourse during the early phase of ovulation increases the chance of obtaining a male fetus in comparison to later phases, which increases the possibility of obtaining a female fetus. Similarly, some studies point out the connection between certain types of food and pregnancy with a fetus of a particular gender. Accordingly, a diet rich in potassium and sodium increases the chance of obtaining a male fetus while a diet rich in magnesium and calcium increases the chance of obtaining a female fetus. The sex of a fetus may also depend on the acidic or alkaline environment within the uterus. While an acidic environment is said to be more likely for obtaining a male fetus, an alkaline environment is more likely for obtaining a female fetus. See al-Rashīdī, "Ikhtiyār Jins al-Janīn," 583–6.

55 al-Rashīdī, "Ikhtiyār Jins al-Janīn," 590.

for medical necessity as is the case with genetic diseases affecting a particular gender. Cases of medical necessity should be evaluated individually on the basis of a consensus evaluation of a specialized committee consisting of a minimum of three physicians.⁵⁶

Concluding Remarks: Gender Implications of Biomedical Technology

The two cases of pre-marital medical testing and fetal sex selection illustrate the implications that modern biomedical technology could have on renegotiating traditional gender roles. Gradually, pre-marital medical testing is emerging as a necessary procedure that prospective couples have to undertake prior to concluding their marriage. It has even become mandatory in several jurisdictions in the Muslim world.⁵⁷ Pre-marital medical testing provides prospective couples an equal opportunity to make informed decisions in light of their

56 al-Majma' al-Fiqhī al-Islāmī, "al-Qarār al-Sādis bi Sha'n Ikhtiyār Jins al-Janīn," *Majallat al-Majma' al-Fiqhī al-Islāmī* 20, no. 23 (2008): 359–360.

57 Most Muslim-majority countries already require pre-marital medical testing but these tests are generally perceived as routine and ineffective. See, for example, Abū Ghuddah, "al-Muwākabah al-Shar'īyyah," in *Ru'yah Islāmīyyah*, 1:584 (noting that these tests often do not include genetic testing); al-Bār, "Nazrah Fāḥiṣah," in *Ru'yah Islāmīyyah*, 2:631 (noting that, in most cases, formal medical statement certifying physical fitness for marriage can be easily obtained without actual testing). In general, while some countries make pre-marital testing optional, others make it compulsory. It is worth mentioning that legislations that make pre-marital testing mandatory often emphasize the confidentiality of the testing results, see Buḥālāh, *al-Fuḥūṣāt al-Ṭibbiyyah*, 33, 75. They also often give prospective couples freedom to conclude the marital contract regardless of the testing results on the basis of their mutual consent. For example, article 18 of Qatar's Family Law no. 22 (2006) indicates that prospective couples shall submit medical statements, obtained from the designated medical authority indicating lack of the genetic diseases stipulated by the National Health Authority, to the marriage registrar. The marriage registrar shall inform prospective couples of the content of these statements prior to the authentication of the contract. However, the marriage registrar may not refuse to authenticate the contract because of the testing results if the prospective couples so desire, see al-Majlis al-A'lā lil-Qaḍā', Dawlat Qatar, *Qānūn raqam 22 li-sanat 2006 bi-Iṣḍār Qānūn al-Uṣrah*, http://www.sjc.gov.qa/lawlib/Court_family/court_family/laws/22-2006/1.htm (accessed August 2017). Similarly, Kuwaiti Law no. 31 (2008) concerning premarital testing includes several articles to the same effect, see Wizārat al-'Adl, Dawlat al-Kuwayt, *Qānūn raqam 31 li-sanat 2008 bi Sha'n al-Faḥṣ al-Ṭibbī lil-Rāghibīn fī al-Zawāj qabla Itmām al-Zawāj*, <https://www.moj.gov.kw/sites/ar/authentication/Pages/thelaw.aspx> (accessed August 2017).

immediate as well as anticipated health status in the future. On the other hand, while fetal sex selection could be used for therapeutic reasons to avoid genetic diseases associated with a particular gender, it can also be used to discriminate against a particular gender, usually females. This, in turn, may challenge common perceptions of medical technology, which emphasize its neutrality and inflate its potential in achieving gender equality, as the above-mentioned characterization of the use of DNA for paternity verification seems to suggest. Although the various applications of medical technology can be said to be neutral in themselves, their implementation remains subject to dominant religious and cultural norms. Mere legal enforcement cannot change rooted behaviors and tendencies, which must be addressed at the wider social and cultural levels. As Khaled Abou El-Fadl argues with regard to cultivation of human rights in the Muslim world, the process ought to take place at the broader cultural level rather than at the narrower level of legal enactment.

The effective plane of human rights commitments—the level at which they manifest and produce recognizable results—is not law, but culture. There are numerous laws that honor human rights in the grandest of terms, and yet they are nothing but rhetoric on paper ... Before becoming effective laws, human rights are embedded in individual consciousness and collective wills expressed as cultural practices, habits, and attitudes that embody individual values such as the following: people ought to be able to speak their minds; people should not be tortured, there should be gender equality; no person ought to starve or be homeless; or parents ought to be respected and honored.⁵⁸

One may well extend this argument to the scientific tools of biomedicine. Unreflective or insensitive deployment of these technologies prior to adequate cultural accommodation is likely to generate costly side effects. Abou El Fadl notes that the promotion of proper cultural attitudes is a long-term process that involves cumulative education as well as internal interrogation of questionable practices.⁵⁹ Considering the relatively short history of genetic and reproductive technologies, they have already transformed traditional male supremacy, which has for so long dominated inter-gender relationships. After all, infertility is no longer seen as an exclusively female problem. The normative

58 Khaled Abou El Fadl, "Cultivating Human Rights: Islamic Law and the Humanist Imperative," in *Law and Tradition in Classical Islamic Thought*, ed., Michael Cook, Najam Haider, Intisar Rabb, and Asma Sayeed (New York: Palgrave, 2013), 170–171.

59 Ibid., 180.

discourses on pre-marital genetic testing and sex selection reveal the range of moral deliberations through which such techniques can be integrated within the broader Islamic context as well as the extent to which they can facilitate the generation of more equitable gender relations.

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