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Ayatollahs And Embryos: Science, Politics, And Religion In Post-Revolutionary Iran

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DEDICATION

To my parents

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This dissertation has been several years in the making and embodies elements of research and study on Iranian biomedical sciences in the post-revolutionary Iran, beginning with a graduate seminar at the University of South Carolina (USC) and continuing still today. It originated in a paper I wrote in 2012 for a graduate seminar—titled "Nation Building" and taught by Dr. Ann Johnson—in my first semester as a doctoral student in the Department of History at USC. In addition to be the instructor of the course, Ann was my mentor at the time. I had the opportunity to work with Ann for almost five years before her untimely death in the December of 2016. Ann nurtured my understanding of the history of science and technology, and indeed, my entire intellectual worldview. I am and will be indebted to Ann forever.

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Obviously, the shortcomings of this work are my sole responsibility.

ABSTRACT

This study examines, and presents a revisionist account for, the development of the leading Iranian research institute for reproductive biomedicine and stem cell research—the Royan Institute—and more broadly, for the growth of biomedical sciences in Iran. It challenges the prevailing scholarly consensus that credits Islamic bioethics—a bioethical framework based on Islamic teachings that defines what is bio-ethically permissible—for biomedical developments in Iran and considers Islam to be the most important analytical framework there. The case is made that resorting to Islamic bioethics to account for the development of Assisted Reproductive Technologies, stem cell research, and animal biotechnology in Iran reduces the complexity of such multifaceted developments at the expense of overlooking other contributing factors, most notably, the nation-building agenda of modern nation-states. It is politically expedient to hold Islamic bioethics accountable for the development of biomedical sciences in the Muslim-majority Islamic Republic of Iran, but a more holistic, complicated, and nuanced historical perspective has been long due.

Support for this study's claims is grounded on oral history interviews with Royan officials and early founders as well as with international scientists who have visited the Royan Institute, archival research in Tehran, a survey of Iranian religious scholars' fatwas on bioethical issues, and an examination of bioethical institutional guidelines and

parliamentary regulations. Taken together, these sources demonstrate that the tale of Royan cannot be told in: 1) a political vacuum isolated from the Revolution of 1979 and the Iran-Iraq War (1980-1988); and it cannot be told in; 2) a scientific vacuum without discussing the development of reproductive medicine, stem cell research, and animal biotechnology in post-revolutionary Iran; or 3) in a social vacuum overlooking the dire familial demands for infertility treatment in the Iranian society.

There are many threads that run through the study of Iranian scientific institutions at the intersection of science, religion, state, and politics: a long-term celebration of science, a new and relatively short-term political dominance by religious conservatives, a highly calculated demand for nationalism from the government and elsewhere, an incorporation of modern science into Iranian modern identity, a demand for internationally credibility and regional hegemony, and a continuing presence of Iranian scientist-politician in scientific and political arenas.

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LIST OF ABBREVIATIONS

Academic Center for Education, Culture and Research .....ACECR

Medical Sciences Unit .....MSU

Supreme Council of Cultural Revolution..... SCCR

CHAPTER 1. INTRODUCTION

Perhaps it would be best to begin by explaining what this dissertation is *not*. It is not, and does not claim to provide, an exhaustive history of either the introduction of modern biological sciences to, or the development of biomedical sciences in, Iran.[1] Nor does it purport to portray a comprehensive scholarly review and analysis of the growing body of literature on Islamic bioethics.

The objective of this dissertation is to tell the story of the leading Iranian scientific institution in reproductive medicine, stem cell, and animal biotechnology—the Royan Institute—without committing the scholarly sin of framing the past into a *success* or *failure* category. Given the well-attended annual congress of the Institute, the increasing number of Royan's publications in international journals, their internationally-acclaimed research projects, their successful scientific experiments, and their well-received medical services in the arear of infertility treatments, one can safely state that Royan has been thriving. Nonetheless, this study does not intend to assess the

[1] See Cyrus Schayegh, *Who Is Knowledgeable Is Strong: Science, Class, and the Formation of Modern Iranian Society, 1900-1950* (University of California Press, 2009). By focusing on modern Western science and its significance for the modern middle class, and after providing a historical overview of the reasons that restricted the spread of modern Western science in Iran, Shayegh provides a description of how and why biomedical fields such as neurology, psychiatry, hygiene, eugenics, genetics, and psychology, were among the first Western sciences that were introduced to Iran in the first half of the twentieth century.

scientific status of the Royan Institute, but to provide a multifaceted account of its historical development.

The story of the Royan Institute, however, is not just one story. My long-term research journey on the subject quickly made it evident that to paint a historical portrait of Royan, I, unlike a static portrait artist, need to look at Royan from different angles. One cannot tell the tale of Royan in: 1) a political vacuum isolated from the Revolution of 1979 and the Iran-Iraq War (1980-1988); and it cannot be told in; 2) a scientific vacuum without discussing the development of reproductive medicine, stem cell research, and animal biotechnology in post-revolutionary Iran; or 3) in a social vacuum overlooking the dire familial demands for infertility treatment in the Iranian society.

The current unfolding of development of reproductive medicine and stem cell research in Iran—both in scholarly and popular circles—completely meshes with the conventional wisdom about Iran, and more generally, about any other Muslim-majority country, i.e. religion should be at the center of every story and every development, and that everything that happens in a Muslim-majority country must substantially have something to do with Islam. This dissertation challenges such conventional wisdom.

Scholars who have studied the development of Assisted Reproductive Technologies (ARTs) and stem cell in Muslim-majority countries have mainly focused on the extent to which biomedical sciences are compatible with Islam. This approach considers *religion*—i.e. Islam—the central category of analysis in understanding the

development of those scientific fields in the Islamic world.[2] Such scholarly favoritism, or what can be called a *religiocentric paradigm* is based on several postulates.

First and foremost, the religiocentric paradigm revolves around Islamic bioethics—a bioethical framework based on Islamic teachings that defines what is bio-ethically permissible. The central thesis of the religiocentric paradigm is that Islamic bioethics is *permissive* and *progressive*, especially compared to Catholicism; that Islam offers adaptive interpretation of Islamic view on bioethical issues; and that various ARTs techniques and methods as well as stem cell research are compatible with Islamic teachings. There is a unanimous scholarly consensus on the progressiveness and permissiveness of Islamic bioethics (hereinafter referred to as *progressive thesis*) which transcends denominational divisions and sectarian boundaries within Islam. The

[2] For instance, In *Islam and Assisted Reproductive Technologies*, authors suggest that the scholarly focus in studying the development of ARTs in Muslim-majority Middle Eastern countries should be on religion, i.e. Islam. Although authors tried to avoid treating the Islamic world as a single bloc and examined several countries such as Turkey, Egypt and Iran, that attempt stops short of a complicated and multi-faceted narrative. The authors' comparative analysis is only confined to the boundaries of religion, specifically to the Sunni-Shi'a divide, e.g. Sunni and Shi'a views on bioethics. Marcia C. Inhorn and Soraya Tremayne, "Introduction: Islam and Assisted Reproductive Technologies," in *Islam and Assisted Reproductive Technologies: Sunni and Shia Perspectives* (New York: Berghahn Books, 2012). Also, see Jonathan E. Brockopp and Thomas Eich, eds., *Muslim Medical Ethics: From Theory to Practice* (Columbia, S.C: University of South Carolina Press, 2008); Marcia C. Inhorn, *Quest for Conception: Gender, Infertility and Egyptian Medical Traditions* (Philadelphia: University of Pennsylvania Press, 1994); Jonathan E. Brockopp, ed., *Islamic Ethics of Life: Abortion, War, and Euthanasia* (Columbia, S.C: University of South Carolina Press, 2002); and B. F. Musallam, *Sex and Society in Islam: Birth Control Before the Nineteenth Century* (Cambridge: Cambridge University Press, 1983).

progressive thesis encapsulates the essence of the existing scholarly status quo on the development of biomedical sciences such as ARTs in the Muslim world.[3]

In the eyes of ethicists, philosophers, social anthropologists, and theologians who have studied Islamic bioethics, the core premise that substantiates the progressive thesis rests on the Islamic view that ensoulment of an unborn child does not happen—unlike Catholicism—at conception, but approximately four months or 120 days after embryo is conceived.[4] Such understanding is shared among Shi'a and Sunni scholars of religion alike and is primarily based on what has become known as the most-cited Qur'anic verses concerning bioethics:

> "We Created man of an extraction of clay, then We set him a drop in a safe lodging, then We created of the drop a clot, then We created of the clot a tissue, then We created of the tissue bones, then We covered the bones in flesh; thereafter We produced it another creature. So, blessed be God, the Best of Creators." (Qur'an, 23:11-14)."

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[3] Abdallah S. Daar and A. Khitamy, "Bioethics for Clinicians: 21. Islamic Bioethics," *Canadian Medical Association Journal* 164, no. 1 (January 9, 2001): 60–63; IMANA Ethics Committee, "Islamic Medical Ethics: The IMANA Perspective," Journal *of the Islamic Medical Association of North America* 37, no. 1 (2005); A. R. Gatrad and A. Sheikh, "Medical Ethics and Islam: Principles and Practice," *Archives of Disease in Childhood* 84, no. 1 (January 1, 2001): 72–75.

[4] For a thorough discussion of ensoulment, abortion, and contraception in the Western World from ancient times to the early-modern era, see John M. Riddle, *Eve's Herbs: A History of Contraception and Abortion in the West* (Cambridge, Mass. London: Harvard University Press, 1999). For a survey of views held by various adherents of Christians faith regarding conception and ensoulment see, Lindsey Disney and Larry Poston, "The Breath of Life: Christian Perspectives on Conception and Ensoulment," *Anglican Theological Review* 92, no. 2 (Spring 2010): 271–95.

Because the act of creation does not happen in the initial stages of embryonic development until "thereafter," is "produced another creature," Islamic jurists infer that ensoulment of an unborn child happens at this stage and hence, the destruction of embryo in an in-vitro scientific technique or experiment could be potentially justified. Based on the above-mentioned verse, Islamic bioethicists also infer that because God is "the best of Creators," but He is not the only creator in the universe and that human beings can participate in the act of creation, such as reproducing an in-vitro embryo or cloning a human body (see Chapter 2).[5] Although the ensoulment or the personhood of embryo is at the core of bioethical debates, the Islamic religiocentric paradigm rests on other postulates as well. It has been argued that the "florescence of a Middle Eastern ART" since the mid-1980s is partly because "Islam encourages the use of science and medicine as solutions to human suffering." Such convenient justification begs the question that what is exclusive to Islam's embrace of science and medicine to alleviate human suffering in our time? Do other (Abrahamic) religions, unlike Islam, disregard science and medicine as a means of improving the mental and physical health of human race? Additionally, if Islam's embrace of science should account for the development of ARTs in several Muslim-majority countries, why those countries have not made equally-substantial or similar advancement in other areas of science?

[5] Arif Abdul Hussain, "Ensoulment and the Prohibition of Abortion in Islam," *Islam and Christian–Muslim Relations* 16, no. 3 (July 1, 2005): 239–50.

Similar to the exceptionalist approach to Islam's embrace of science, characterizing Islam as pronatalist raises similar concerns. It has been argued that Islam "can be described as pronatalist, encouraging the growth of an Islamic multitude" which has made ARTs having "implicit appeal in the Muslim world."[6] According to this argument, pronatalism of Islam is, too, accountable for the growth of biomedical methods that assist human reproduction. One can ask whether pronatalism is exclusively Islamic. Are other (Abrahamic) religions not pronatalist? Is pronatalism a religious phenomenon or doesn't it go beyond the framework of religion? Should we not factor in, for instance, the rise of modern nation-states and the existence of cultural values such as patriotism, to explain pronatalist tendencies, if they do exist in the Islamic world and elsewhere?[7] Even if Islam is strongly pronatalist, Islamic advocacy for pronatalism still does not necessarily explain the desire of (Muslim) couples who resort to ARTs to reproduce. A Muslim woman might want to have a child, naturally or through ARTs, simply because she likes to become a mother, regardless of her faith. Not to mention, every Muslim-majority country has a sizeable community of irreligious individuals who do not practice Islam—Iran is the prime example of such tendency in

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[6] Inhorn and Tremayne, "Introduction: Islam and Assisted Reproductive Technologies," 3.

[7] Patrizia Albanese, *Mothers of the Nation: Women, Families, and Nationalism in Twentieth-Century Europe* (University of Toronto Press, 2006); Heather Jon Maroney, "'Who Has the Baby?' Nationalism, Pronatalism and the Construction of a 'Demographic Crisis' in Quebec 1960–1988," *Studies in Political Economy* 39, no. 1 (January 1, 1992): 7–36; Jessica Autumn Brown and Myra Marx Ferree, "Close Your Eyes and Think of England: Pronatalism in the British Print Media," *Gender & Society* 19, no. 1 (February 1, 2005): 5–24; Leslie King, "France Needs Children: Pronatalism, Nationalism and Women's Equity," *Sociological Quarterly* 39, no. 1 (January 1, 1998): 33–52.

the Islamic world (see chapter 2). More importantly, how does the putative pronatalism of Islam align with the effective, long-standing family planning policies and population control program in Muslim countries, of which many have made a considerable progress in ARTs? A quick survey of seven Muslim-majority country (Bangladesh, Indonesia, Egypt, Iran, Pakistan, Saudi Arabia, and Turkey) shows that the fertility rate (births per woman) has consistently, with some sporadic fluctuations, decreased in all of these countries since the 1960s (Figure 1.1).[8]

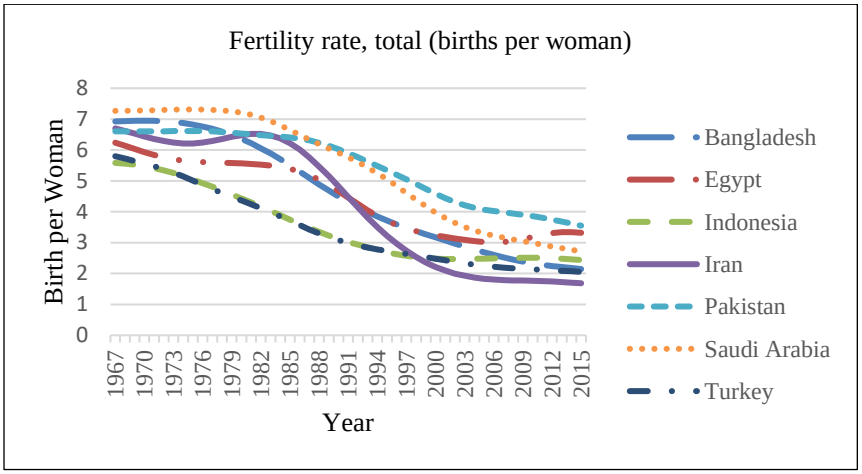

Figure 1.1 Fertility Rate, Total (Births per Woman)

[8] "Total fertility rate represents the number of children that would be born to a woman if she were to live to the end of het childbearing years and bear children in accordance with age-specific fertility rates of the specified year." World Bank data is based on (1) United Nations Population Division. World Population Prospects, (2) Census reports and other statistical publications from national statistical offices, (3) Eurostat: Demographic Statistics, (4) United Nations Statistical Division. Population and Vital Statistics Report (various years), (5) U.S. Census Bureau: International database, and (6) Secretariat of the Pacific Community: Statistics and Demography Programme. "Data Bank: World Development Indicators," The World Bank, accessed November 12, 2017, http://databank.worldbank.org/data/home.aspx.

The birth rate has been following a similar trend (Figure1.2).[9]

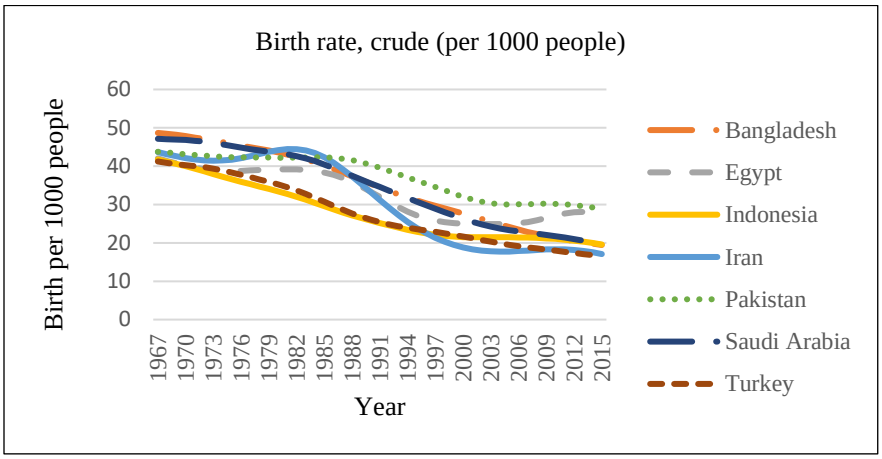

Figure 1.2 Birth Rate, Crude (per 1,000 People)

Moreover, if religion—i.e. the progressive thesis, Islam's embrace of science, or Islamic emphasis on pronatalism—plays a major role in the development of biomedical sciences in the Muslim-majority countries such as Iran, why Islamicity has not led to parallel development in ARTs and stem cell research in the three largest Muslim

[9] "Crude birth rate indicates the number of live births occurring during the first year, per 1,000 population estimated at midyear. Subtracting the crude death rate from the crude birth rate provides the rate of natural increase, which is equal to the rate of population change in the absence of migration." World Bank data is based on (1) United Nations Population Division. World Population Prospects, (2) Census reports and other statistical publications from national statistical offices, (3) Eurostat: Demographic Statistics, (4) United Nations Statistical Division. Population and Vital Statistics Report (various years), (5) U.S. Census Bureau: International database, and (6) Secretariat of the Pacific Community: Statistics and Demography Programme."Data Bank: World Development Indicators."

countries in the world? Why Indonesia, Bangladesh and Pakistan are significantly lagging behind countries such as Iran, Egypt, and Turkey in ARTs and stem cell research.

The key question is therefore what is wrong with conventional wisdom about the development of biomedical sciences in a Muslim-majority country such as Iran? Are Islam and science at odds? No, they are not. Does Islam argue against pronatalism? No, it does not. Is Islamic bioethics restrictive and preventive? No, this study does acknowledge the existence of a growing body of literature on Islamic bioethics which is built on a central thesis that characterizes Islamic bioethics as permissive and progressive. For the purpose of our discussion, let's accept the progressive thesis whole-heartedly.

The problem is the paradigmatic religiocentrism: the scholarly status quo that argues that the progressive Islamic bioethics, Islam's embrace of science, and Islam's pronatalism have led to the creation of permissive bioethical framework, including flexible institutional guidelines, approving *fatwas* (religious orders) and progressive parliamentary laws, in Muslim-majority countries; and then argues that the establishment of an ubiquitous permissive bioethical framework has propelled biomedical research in Muslim-majority countries. In other words, the problem is the current conventional wisdom that explains the rise of biomedical fields such as ARTs, stem cell, and animal biotechnology primarily through the lens of religion, and more specifically, through the lens of Islam. The issue is not whether or not Islamic bioethics is

permissive, but whether Islamic bioethics actually inform the scientific work of the Royan Institute.

This study examines, and presents a revisionist account for, the development of the leading Iranian research institute for reproductive biomedicine and stem cell research—the Royan Institute—and more broadly, for the growth of biomedical sciences in Iran. It challenges the prevailing scholarly consensus that credits primarily religious values and teachings for biomedical developments in Iran and considers Islam to be the most important analytical framework there. The case is made that exploiting Islam to account for the development of ARTs and stem cell in Iran overlooks the complexity of such multi-faceted institutional and scientific developments. A selective and reductionist treatment deprives us of identifying the holistic nature of the development of biomedical sciences in Muslim-majority countries. The central problem, as this study argues, is to assign religion, i.e. Islam, a much bigger role that it really, if at all, deserves while overlooking other contributing factors, most notably, the nation-building agenda of modern nation-states.

Without challenging the *progressive thesis*, this study denounces *religiocentrism*—or more specifically *Islamocentrism*, arguing that a religiocentric narrative is reductionist and misleading. It is politically expedient to hold Islamic bioethics accountable for the development of biomedical sciences in Islamic countries such as Iran, but a more holistic, complicated, and nuanced historical perspective has

been long due. By providing a critique of Islamocentrism, this study moves away from a religiocentric and reductionist narrative to include a *seeing-like-a-state* vision.[10]

Support for this study's claim is grounded on oral history interviews with Royan officials and early founders as well as with international scientists who have visited the Royan Institute, archival research in Tehran, a survey of Iranian religious scholars' fatwas on bioethical issues, and an examination of bioethical institutional guidelines and parliamentary regulations. Taken together, these sources present the case of Iran as a counterpoint to the religiocentric paradigm. The transition from a reductionist, religion-based analysis to a more holistic, socio-political approach is further highlighted by the *double identity* thesis, which juxtaposes the policies of the Royan institute—a state institution—with the national policies of the Iranian state. The *double identity* thesis argues that Royan has been promoting a Persian-rooted, secular, and apolitical identity for international consumption since its inception in the early 1990s, which has been at odds with and does not mirror the conservative and Revolutionary religio-political

[10] See James C. Scott, *Seeing like a State: How Certain Schemes to Improve the Human Condition Have Failed* (New Haven, Conn.: Yale University Press, 1999).

identity that the state has been promoting for national consumption since the 1979 Revolution (See chapter 3).[11]

This dissertation argues that the Royan Institute, although operating under the auspices of a conservative state-run bodies, has been promoting a vision that is in sharp divergence from the state's post-revolutionary political ideology. However, I do not suggest that Royan has been deliberately challenging the Iranian state's political ideology. I suggest that the Royan Institute serves as an exemplary case study that reveals how the Iranian state, run by the Supreme Leader, has tried to create two opposing identities: An apolitical, secular, and international-friendly identity rooted in the Persian legacy of the past for international consumption (*international identity*), and

[11] The genealogy of the term "Persian" versus "Iranian" is an ongoing concern among historians of Iran. The first encounter of the Western Civilization with Iranians took place when Greeks came across Persian Iranians who were ruling the Iranian territory under the Persian Empire. Greeks called the entire Iranians "Persis" (Persian) because Iranian Persians were the first group of Iranians that they encountered. Similarly, Iranians called the entire Greeks, Yunaniyans (i.e. Ionians) and referred to Greece, Yunan (Ionia), a terminology that has persisted to this day in the Iranian society. From a linguistic perspective, not from a historical one, another dichotomy exists between Farsi and Persian. Farsi is the Persian word for Persian just as Deutsch is the German word for German. Compared to Persian, Farsi does not carry any historical or cultural connotations. In the English-speaking world, Persian is frequently used to refer to Farsi as the language and culture of Iranians, analogous to the function of German in the eyes of an English-speaker. Homa Katouzian, *The Persians: Ancient, Mediaeval and Modern Iran* (New Haven [Conn.]; London: Yale University Press, 2010), 2–3.

a conservative, anti-Western, and religious-based identity for national consumption within the geopolitical boundaries of Iran (*national identity*).[12]

Additionally, I argue that the Cultural Revolution of early 1980s—which led to the closure of universities for three years—had a scientific arm, which has often escaped the attention of scholars of modern Iran. Scientific progress has always been part of the agenda of Iran's post-revolutionary political leaders to battle against what they saw as *cultural dependency, cultural assault*, and *colonial universities.* Hence, it is problematic to reduce the Cultural Revolution to a religiopolitical narrative focusing on the Islamicization of academia and to describe it exclusively as a period of aggressive and

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[12] Modern notion of Iranian national identity is a complex matter, reflected in the historiography of Iranian identity. There are two dominant trends of Iranian historiography. For nationalist historians, the pre-Islamic Persia was an era of enlightenment and glory. The Arab-Muslim conquest of the Persian Empire is comprehended as a pivotal moment that affected the progress of Iran. Hence, for nationalist historians the ancient history carries a tragic narrative and induces a desire to recover the lost golden age of the past. This form of national identity puts itself in distance with the Islamic and Arabic culture and calls for de-Arabizing and de-Islamizing of Iranian identity. On the other side, Islamic historians of Iran have generally dealt with nationalism with great suspicion. From the viewpoint of Islamic historiography, nationalism is essentially divisive and has been imposed by imperialist powers upon regions of the world so that they can divide and rule. However, Islamist historians do not reject nationalism, and approve such identity if it is subservient only to Islamic culture and principles. The post-revolutionary Islamist historians, hugely influenced by the pan-Islamic rhetoric of Khomeini and by the Islamic notion of *ummah* (Islamic community), further advocated a universal Muslim identity that transcends the geopolitical boundaries of nation-states. Touraj Atabaki, ed., *Iran in the 20th Century: Historiography and Political Culture*, International Library of Iranian Studies 20 (London; New York: New York: I.B. Tauris; Distributed in the U.S. by Palgrave Macmillan, 2009), 248–49. In this study, the *double identity thesis* reflects, to a certain degree, the dichotomy between the nationalist and Islamist historiographies, as the *international identity* taps into Iran's glorifying ancient civilization and the *national identity* connects to the religious, post-revolutionary identity of the Iranian state.

discriminatory policies against secular-minded academics. The Cultural Revolution had two wings: cultural and scientific.

There are many threads that run through this study: a long-term celebration of science, a new and relatively short-term political dominance by political conservatives, a highly calculated demand for nationalism from the government and elsewhere, an incorporation of modern science into Iranian modern identity, a demand for internationally credibility and regional hegemony, an unusual presence of Iranian scientists in politics, and immigration of Iranian STEM professionals.

The development of biomedical research in Iran in the post-revolutionary period serves as a case study through which this study undermines the scholarly mindset that unconditionally favors religion, as a category of analysis, in examining and understanding the Iranian society. An institutional development or a scientific development does not happen in a stagnant society, but due to an assortment of sociopolitical changes and at the intersection of various cultural, social, and political trajectories. Religion is not the best or the only framework for understanding the Iranian society, or any other Muslim-majority country. Historians are often encouraged to complicate their studies by examining their historical subjects through various lenses. This study values such approach.

This study undeniably suggests that there is something wrong with the status quo of the scholarly camps on Islam and modern Iran, and with the common-sense notions of why and how things happen in a Muslim-majority country. But I hope that my

readers—despite the fact that my historical interpretation is surprising, defies the conventional wisdom, and challenges understanding in terms of stereotypes—do not find my historical account and arguments incomprehensible.

Finally, I hope this study helps pluralize the current literature on modern Iranian history, where—fueled by the rise of an Islamic theocracy since the early 1980s—the growing literature has been dominated by religio-political perspectives and has only recently witnessed the emergence of scarce works on Science and Technology Studies (STS).

CHAPTER 2. THE BIRTH OF ROYAN

2.1. EARLY FOUNDERS

The Royan Institute, named after the Persian word for embryo, is a non-profit scientific organization with headquarters located in the capital city of Tehran, Iran. Royan was established by Dr. Saeed Kazemi Ashtiani (1961-2006) and his peers—(hereinafter referred to as early founders) in the early 1990s as the first Iranian research institute for reproductive biomedicine and infertility treatments. Among the early founders of the institute, in addition to Dr. Kazemi, were Dr. Abdolhossein Shahverdi, Dr. Ahmad Vosough and Dr. Hamid Gourabi.[13] One year later in 2005, the Institute was serving more than 54,000 couples with infertility issues, with an annual increase of 5000, which was "normal" and "in line with international" trends in the eyes of Dr. Vosough.[14] However, since inception in the early post-Iran-Iraq War era (1980-1988), the research and therapeutic activities of Royan have expanded to include stem cell

[13] Dr. Vosough received his medical degree from Iran University of Medical Sciences in 1993 and completed his Radiology specialty in 2000. He is currently the Clinical Deputy of the Royan Institute. Dr. Gourabi obtained his PhD degree in 1997 from Tarbiat Modarres University and is the current President of the Institute. Dr. Shahverdi received his PhD in Anatomy from Tarbiat Modarres University in 2007 and is the current Academic Staff, Research & Educational Deputy of the Royan Institute.

[14] Ahmad Vosough, A Report from the Sixth International Congress of Royan Institute, interview by Homa Naseri, Shargh Newspaper, September 18, 2005, Ettela'at Newspaper Archive.

research as well as biotechnology. Today, the Royan Institute comprises three research branches. Royan Institute for Reproductive Biomedicine (RI-RB), which aims to continue the early activities of the institute in the area of infertility treatments. Royan Institute for Stem Cell Biology and Technology (RI-SCBT) develops stem cell-based therapies and disease treatments in the field of regenerative medicine. Royan Institute Animal Biotechnology (RI-AB) is the most recent, and perhaps the most ambitious, addition to the institute, which focuses on cloning of animal and human body parts.[15] While the first two research centers are located in Tehran, the center for animal biotechnology is located in the old city of Isfahan—about 200 miles south of Tehran. The Royan Institute was recognized as a Cell Based Research Center by the Iranian Ministry of Health in 1998 and it currently has over 250 scientific researchers and lab technicians.

Dr. Kazemi was a veteran of the Iran-Iraq War, who had established several medical clinics during the war years in the capital city of Tehran. Dr. Kazemi is often cited by current Royan officials as the person who was mainly responsible for the

[15] RI-RB was established in 1991 and it has six departments: Reproductive Imaging, Epidemiology & Reproductive Health, Andrology, Reproductive Genetics, Endocrinology & Female Infertility, and Embryology. RI-RB conducts research on infertility and embryo health improvement in order to develop new methods for infertility treatment. The RI-SCBT was first established in 2002 as the Department of Stem Cells to conduct research on biology and technology of embryonic stem cells, induced pluripotent stem cells, germ line stem cells, adult stem cells, cancer stem cells, and cord blood stem cells. It currently consists of three departments and one center: Department of Stem Cells and Developmental Biology, Department of Molecular Systems Biology, Department of Regenerative Medicine, and Cell Therapy Center. “Royan Institute,” accessed October 16, 2017, http://www.royaninstitute.org/cmsen/index.php.

inception of the Royan Institute in the June of 1991 during an inauguration that was attended by state officials, notably by the Minister of Health and Medical Education. Dr. Kazemi had just obtained his undergraduate degree in Physiotherapy from Iran University of Medical Sciences (IUMS)—a prestigious state university founded in the mid-1970s. Six years after the inception of the Royan Institute, he received his doctoral degree in Anatomy with specialization in Embryology from the Tarbiat Modares University (TMU)—another Tehran-based state university founded in the early 1980s—in 1997.

When the Iran-Iraq war was coming to an end in the late 1980s, and when "the country had to deal with many [infertility] problems," one of the major units of the Academic Center for Education, Culture and Research (ACECR)—a post-revolutionary state institution—called the Medical Sciences Unit (MSU) organized and held the first international congress on infertility in Iran in 1986. [16] At the time of the congress, Dr. Kazemi was the head of the Research Department of MSU. Among the early founders of the institute, in addition to Dr. Kazemi, were Dr. Abdolhossein Shahverdi, Dr. Ahmad Vosough and Dr. Hamid Gourabi. Following the congress, Dr. Kazemi and a group of his colleagues decided to establish an infertility treatment medical center under the

[16] Abdolhossein Shahverdi, Meeting with the Research Deputy of the Royan Institute, interview by Sadegh Foghani, January 15, 2017.

auspices of ACECR at IUMS.[17] That medical center with a limited space and resource was the genesis of the Royan Institute, although the effective formation of the Royan Institute did not happen until five years later. The congress intellectually inspired the early founders to create the first infertility center in Iran, while the ACECR institutionally hosted and patronized their scientific ambitions.

The Royan Institute's early founders, many of whom currently hold high-ranking administrative positions at the Institute, assign an important role to the scientific ambitions, management skills, personality, and charismatic leadership quality of Dr. Kazemi. Dr. Abdolhossein Shahverdi, the current Research Deputy of the Royan Institute and one of the early founders, vividly remembers his first meeting with Dr. Kazemi:

> My first meeting with him goes back to the enrollment at the Faculty of Rehabilitation Sciences of the Iran University of Medical Sciences. I was accepted in 1982, but Dr. Kazemi had received his acceptance earlier during the Cultural Revolution. At the time, Dr. Kazemi was in charge of the ACERC unit of the Faculty of Rehabilitation Sciences. I was from Tafresh and he was from Ashtian [both cities in the Markazi Province of central Iran]. After a quick chat, we learned that his father knew some of my relatives. Similar views and being townsmen created familial relationships between us in a way that we would seize every opportunity to travel to Tafresh or Ashtian together. During the war years, we were dispatched to military zones together many times. Although he was at a young age, he taught Persian literature and Islamic guidance in high schools, and he was savvy in Qur'an and poetry…because of these attributes he was influential in his meetings with people, and in any

[17] At the time of the congress, Dr. Ahmad Vosough was the Cultural Deputy of MSU, Dr. Gourabi was the Head of the Department of Support at MSU, and Dr Shahverdi worked closely with Dr. Ashtiani.

> crowd that he was present, he could prove himself and was ahead of others a few steps.18

Early founders of the Royan Institute were unanimously religious individuals. Dr, Kazemi himself was raised in a religious family where there were many people with education in Islamic sciences. Dr. Kazemi was familiar with Qur'an and had a strong belief in Qur'anic bibliomancy. On the opening day of the Royan Institute, he asked a friend of his to read the qur'anic verse regarding the creation of man.[19] Dr. Mohammad Shiravand, a close friend of him and a current professor at the Faculty of Rehabilitation Sciences of the IUMS, remembers Dr. Kazemi:

> In 1980, Saeed and I were accepted in one of the universities in Isfahan after taking the first nation-wide university exams after the Revolution. Saeed was accepted in Physics and I was accepted in Chemistry. One day when our intercity bus pulled over on its way to Tehran for a praying break, I met Saeed for the first time. The interesting thing was that the both of us, in the national exam, had chosen the Rehabilitation Sciences. The Faculty of Rehabilitation Sciences played a considerable role in the Imposed War [referring to the Iran-Iraq War], and I think second to our martyrs, Saeed had the largest share [in the war efforts] …he left many memories both as a frontline soldier and a medical assistant.[20]

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[18] Fateme Shabani, "ghesehay-e natamame yek daneshmand (Untold Stories of a Scientist)," trans. Sadegh Foghani, *Hamshahri Mahale*, July 20, 2016.

[19] The Qur'anic verse regarding the creation of man is the most-cited verse by the scholars of Islamic bioethics, which was referred to in the introduction and will be fully discussed in the Chapter Two. Based on that verse and other Islamic teachings, the mainstream view on Islamic bioethics suggests that the ensoulment of an unborn child happens 120 days after conception.

20 Mohammad Shiravand, "Dr. Kazemi in the Words of Friends," trans. Sadegh Foghani, The Office of Preservation and Publication of Ayatollah's Khamenei's works, January 3, 2015, http://farsi.khamenei.ir/others-note?id=28543.

Dr. Mohammad Kamali, the current Head of the Research Center at IUMS, who had been admitted to the Faculty of Rehabilitation Sciences, remembered Dr. Kazemi not differently from Dr. Shiravand:

> His mastery of Qur'an, literature, speech ability, and communication skills quickly made him outstanding among the students. He always participated in the debates with leftist students. The early closure of universities because of the Cultural Revolution, impelled him to teach at high schools. In the March of 1982, I received a phone call to administer, with Dr. Kazemi and Dr. Joghtayi, the Medical Unit of ACECR which had been established for only a few months. In the late March of the same year, we prepared an office at the Faculty of Rehabilitation Sciences.[21]

At the time, the Medical Unit of ACECR included all medical and paramedical faculties, which made the responsibilities of the Dr. Kazemi and his colleagues very important. After the Presidential election of 2003, Dr. Kazemi was asked to serve as Minister of Cooperatives, Labor, and Social Welfare. After some deliberation he declined the offer. Dr. Kamali remembers the day he learned of the news of the decline appreciatively: "One day Dr. Kazemi told me that his candidacy for the ministry position has been canceled. I wanted to prostrate to thank God, but I found out he had already done it. When that irreparable and untimely incident happened in the winter of the same year, I thank God that he did not go as a minister, but as the founder of Royan."[22]

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[21] Mohammad Kamali, "Dr. Kazemi in the Words of Friends," trans. Sadegh Foghani, The Office of Preservation and Publication of Ayatollah's Khamenei's works, January 3, 2015, http://farsi.khamenei.ir/others-note?id=28543.
[22] Kamali.

Dr. Kazemi died of a heart attack in the Jamaran Heart Hospital—the same medical center where Grand Ayatollah Khomeini, the leader of Revolution of 1977 had died in 1989—on 4 January 2006 in Tehran at the age of forty-four, while performing a cardiac diagnostic test.[23] The next day, the Supreme Leader issued a condolence message:

> With regret and sorrow, I was saddened to receive the news of Dr. Saeed Kazemi Ashtiani—the faithful and fighting scientist—passing and I regret the absence of such valuable personage, who was the center of hope, initiative, and innovation. He was one of the righteous children of the Revolution and one of the blessed growths, promising a brilliant scientific future in the country. The Royan Institute, which is a valuable assembly for innovators and fighters of the arena of life sciences, in its inception, development, and elevation, is indebted to the endeavor, faith, and perseverance of this young and ambitious scientist."[24]

Dr. Mehdi Akbari, another close friend of Dr. Kazemi and a professor at the Faculty of Rehabilitation Sciences of IUMS, remembers Dr. Kazemi in a dream a few nights after his death: "I asked him about the status of praying, and he simply said praying is the [divine] light. A person without praying is in absolute darkness, and a believer who says his prayers is surrounded with the [divine] light. I asked him what

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[23] Shabani, "ghesehay-e natamame yek daneshmand (Untold Stories of a Scientist)."
[24] Ali Khamenei, "Condolence Message for the Passing of Dr. Saeed Kazemi Ashtiani," trans. Sadegh Foghani, The Office of Preservation and Publication of Ayatollah's Khamenei's works, January 5, 2006, http://farsi.khamenei.ir/message-content?id=197.

matters to God in the afterlife? He said: the rights of people. If you have observed that, you will have a good place. If you have trampled upon that, God will not forgive you."[25]

Two years before the death of Dr. Kazemi, a group of six researchers affiliated with the Department for Biology of Stem Cells at the Royan Institute published an article in in June 2004 in which they made a big announcement: "Here, we report the derivation of a new embryonic stem cell line (Royan H1) from a human blastocyst."[26] Royan scientists had successfully established one human embryonic stem cell line. They called it RoyanH1 and later registered it at the International Society of Stem Cell Research (ISSCR) in 26 July 2004.[27] A few days after the official registration of RoyanH1 at ISSCR, Ettela'at—the longest running Iranian newspaper—claimed that only "two research centers in England, three centers in the United States, one center in Russia, one center in Sweden, and one center in Finland" had already established and registered a human embryonic stem cell research.[28]

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[25] Mehdi Akbari, "Dr. Kazemi in the Words of Friends," trans. Sadegh Foghani, The Office of Preservation and Publication of Ayatollah's Khamenei's works, January 3, 2015, http://farsi.khamenei.ir/others-note?id=28543.

[26] Hossein Baharvand et al., "Establishment and in Vitro Differentiation of a New Embryonic Stem Cell Line from Human Blastocyst," *Differentiation* 72, no. 5 (June 1, 2004): 224–29, https://doi.org/10.1111/j.1432-0436.2004.07205005.x. *Differentiation* is the official journal of the International Society for Differentiation (ISD)—a non-profit American-based professional society founded in 1971 and dedicated to advancement of the field of cell and developmental biology—and is published by Elsevier.

[27] "Human Embryonic Stem Cell Line Was Registered by the International Society of Stem Cell Research," *Ettela'at*, July 29, 2004, Ettela'at Newspaper Archive.

[28] "Human Embryonic Stem Cell Line Was Registered by the International Society of Stem Cell Research."

The establishment of the first stem cell line and other scientific achievements of the Institute took place during the lifetime of Dr. Kazemi. His leadership and vision were instrumental to the development of the Institute, but in addition to the individual historical players, the role of Royan's parent institutions has been equally contributory.

Royan Institute declares itself to be non-governmental because it does not operate under the auspices of the presidential administration. However, Royan is not a private institution and is affiliated with the Academic Center for Education, Culture, and Research (ACECR). [29]

ACECR is a post-revolutionary state agency, founded by the members of the Cultural Revolution Headquarters on 7 August 1980 to realize the goals of the Cultural Revolution. The Cultural Revolution Headquarters was later renamed to the Supreme Council of the Cultural Revolution (SCCR). SCCR is state body founded by Grand Ayatollah Khomeini—the charismatic leader of the 1979 Revolution—in 1980 to purify the cultural atmosphere of the country, especially the educational system in

[29] Given the political structure of Iran, the Institute's claim to be non-governmental needs clarification. Iranian government is run by the president, who holds the second highest political office in post-revolutionary Iran, after the Supreme Leader who overseas many state, non-governmental institutions. Royan Institute is regarded non-governmental, because it is not run under the auspices of presidential administration. However, it is state-run, because it developed under the auspices of parent state institutions and under the supervision of Iran's Supreme Leader.

universities, from western influences.[30] SCCR played a key role in the Iranian Cultural Revolution (1980-1987), which resulted in the closure of universities for three years from 1980 to 1983. The Cultural Revolution is popularly known to have led to intellectual censorship and a sharp exacerbation in brain drain that had already intensified since the Revolution of 1979. [31] Iran's Supreme Leader selects all members of the Council and only he can overrule their decisions.

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[30] Iranian Revolution took place in February 1979 when the populace overthrew the Pahlavi Dynasty under the leadership of the Grand Ayatollah Khomeini. While Islamists were only one stratum of the revolutionaries, they eventually took full control of the state, called the Revolution the Islamic Revolution, and established an Islamic Republic government. Pahlavi Dynasty was pro-Western and maintained friendly political relationship with the West, particularly with the United States. While the Revolution did not immediately end the political relations with the United States, the two countries have had no diplomatic relations since the Hostage Crisis of November of 1979. See Ervand Abrahamian, *A History of Modern Iran* (Cambridge, U.K.: Cambridge University Press, 2008).

[31] There is no official figure on the Iranian brain drains. In 1999, the International Monetary Fund announced that Iran had the highest rate of brain drain among the developing countries. The rate of Iranian brain drain is estimated between 100,000 to 200,000 annually. It is said that 150,000 educated Iranians leave the country every year. The population of Iranian diaspora is estimated 4 million. Los Angeles, US, has the largest community of Iranians abroad. See William J. Carrington and Enrica Detragiache, "How Extensive Is the Brain Drain?," International Monetary Fund, 1999, http://www.imf.org/external/pubs/ft/fandd/1999/06/carringt.htm.; Golnaz Esfandiari, "Iran: Coping With The World's Highest Rate Of Brain Drain," *RadioFreeEurope/RadioLiberty*, March 8, 2004, Iran, http://www.rferl.org/content/article/1051803.html; Ibrahim Kahndan, "Farar-e maghzha; hekayat hamchenan baghi," July 20, 2013, http://www.bbc.co.uk/persian/iran/2013/07/130720_l01_brain_drain_iran.shtml.

2.2. THE CULTURAL REVOLUTION

Following the Revolution of February 1979, the new interim government held a national referendum on establishing an Islamic Republic on March 30 and 31. The binary referendum ballot read: “In the name of the Almighty; The Provisional Government of Islamic Revolution; The Interior Ministry; Referendum Election Ballot; [for] the former regime [Pahlavi Dynasty] change to Islamic Republic; the constitution of which will be approved by the nation.”[32]

The words “yes” and “no” were written on the right green side and left red side of the ballot, respectively. According to the officials, more than 98 per cent of electorates voted in favor of the change. On April 1, 1979, Ayatollah Khomeini announced the establishment of the Islamic Republic of Iran.

About a year after the referendum, a pivotal moment in the chronology of the Cultural Revolution germinated when Ayatollah Khomeini gave his Persian New Year’s message on the first spring day of 1980 on March 21, titled “Thirteen Advices to All Muslims.”[33] In his speech, Ayatollah Khomeini discussed various issues with the Iranian

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[32] Yvette Hovsepian-Bearce, *The Political Ideology of Ayatollah Khamenei: Out of the Mouth of the Supreme Leader of Iran* (New York: Routledge, 2017).
[33] Rohollah Khomeini, trans. by the author, “New Year Address (Thirteen Advices to All Muslims)" (Tehran, Iran, March 21, 1980), in *Sahifeh-ye Imam*, vol. 12 (Tehran, Iran: The Institute for Compilation and Publication of Imam Khomeini’s Works, 1999), 202.

people in the format of thirteen clauses. The eleventh clause of the speech called for massive change in all universities across the country:

> A foundational revolution must be germinated in all universities in the nation to purge professors who are linked to the West and/or East and to have healthy atmosphere in universities for teaching higher Islamic sciences. The mal-education of the former regime must be rigorously prevented in all universities, because such mal-education, which originated during the reign of this father and son [Reza Shah and Mohammad Reza Shah], is responsible for the entire misery of the Iranian society …Our entire backwardness is due to the lack of a proper understanding among the majority of intellectuals of the Iranian Islamic community, and unfortunately [that misunderstanding] still exists… Seminary and university students should study Islamic principles carefully and put away the mottos of aberrant groups, and replace all perverted thoughts with dear, sincere Islam. These two [student] groups should know that Islam is a rich school of thought on its own and there is no need to attach other schools of thought to it. And everyone should know that eclectic thinking is a great betrayal to Islam and Muslims; the bitter result and fruit of this mode of thought will become clear in the upcoming years. It is a huge regret that sometimes, because of the lack of a proper and accurate understanding of Islamic views, there are those who have mixed some of the [Islamic] issues with Marxist views and have created an admixture that is not compatible with the progressive Islamic laws. Dear students! Do not follow the wrong path of uncommitted university intellectuals and do not isolate yourselves from the laypeople.[34]

Although Ayatollah Khomeini did not use the term Cultural Revolution, his new year's speech effectively marked the official beginning of a nation-wide reform that soon became known as the Cultural Revolution. Ayatollah Khomeini's remarks were

[34] Rohollah Khomeini, trans. by the author, "New Year Address (Thirteen Advices to All Muslims)" (Tehran, Iran, March 21, 1980), in *Sahifeh-ye Imam*, vol. 12 (Tehran, Iran: The Institute for Compilation and Publication of Imam Khomeini's Works, 1999), 202.

visionary and broad, they did not contain specific policies, and hence, were interpreted variously across the political spectrum. On April 21st, 1980, Ayatollah Khomeini elaborated on his call for national academic reform, while addressing the public, among whom were many student members of Islamic Association of Universities and of other Islamic student associations:

> Greeting to the great nation of Iran. Greeting to the Islamic world. Greeting to the great academics and students who are soldiers of Islam. It is necessary that I give you an advice, so you know what we mean by reform in universities. Some [people] conjectured and deluded that those [of us] who want the reforming of universities and who want Islamic universities [believe] that every field of science has two sides. [That we believe] there is an Islamic geometry [and] there is a non-Islamic one. There is an Islamic Physics [and] there is a non-Islamic one. And because of this [misunderstanding] they objected that science does not possess an Islamic or non-Islamic side. Some others, [too], deluded that those [of us] who assert that universities should be Islamic [believe] that science is only limited to Islamic jurisprudence, hermeneutics, and Islamic principles, that the status of universities should be same as the status of old seminaries. These are the [two] mistakes that some people make or confuse themselves with.[35]

After responding to the critics and rejecting what he defined as two misinterpretations of his academic reform thesis, Ayatollah Khomeini laid out what, in his view, the academic reform was all about and why it was needed:

> What we are saying is that our universities are dependent, that our universities are colonial, that those who are trained and educated in universities are Westoxificated. Many of the professors are

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[35] Rohollah Khomeini, trans. by the author, "Speech to the Student Members of Islamic Associations of Universities" (Tehran, Iran, April 21, 1980), *Sahifeh-ye Imam*, vol. 12 (Tehran, Iran: The Institute for Compilation and Publication of Imam Khomeini's Works, 1999), 248.

> Westoxificated and they raise our youths to be Westoxificated. We say our universities are not useful for the nation. We have had universities for more than fifty years, with backbreaking, huge budget provided from the labor of this nation. During these fifty years we have not managed to be self-sufficient in sciences taught in universities. After fifty years, if we need to cure a patient, some or many of our physicians advise that the patient must go to England. We have had universities for fifty years and we do not have a physician who can meet the needs of [our] nation. According to physicians themselves, we do not have. We had and still do have universities and yet for our nation's needs we are dependent on the West. When we say that universities must change from their foundation, go through fundamental transformations, and become Islamic, that does not only include the teaching of Islamic sciences or it does not mean that sciences are of two kinds: Islamic and non-Islamic…we want to build independent universities, we want foundational reform so [universities] be independent, not dependent on the West, not dependent on Communism, not dependent on Marxism…the meaning of the Islamicization of universities is that they gain independence, that they unleash themselves from the West, unleash themselves from the East; to have an autonomous country; autonomous universities; an autonomous culture.[36]

Although Ayatollah Khomeini's speech was filled with Islamic sentiments, interpreting his speech merely based on such Islamic references is misleading. In his view, the ultimate goal was to unleash Iran from the yoke of imperial world superpowers. His emphasis on the Islamicization of universities was a means to achieve that goal. Improving the medical foundation of the country, too, was a strategy to establish independence and autonomy for the nation. Ayatollah Khomeini's speech belonged to the political genre of anti-colonial and anti-imperial speeches that shared many similarities with those of figures such as Gandhi or Jawaharlal Nehru. Indeed, Khomeini was building on the nationalist ideologies, which were popular for decades

[36] Ibid.

before his political ascendency and were proposed by individuals, of whom many had secular tendencies. For instance, although Ayatollah Khomeini used the term "Westoxification" frequently in his speech, the concept as well as the term, was not coined by Ayatollah Khomeini, but was popularized by Jalal Al-e Ahmad, an Iranian secular intellectual of the 1960s, who is best known both popularly and scholarly for his book with the same title.[37]

In his book, Al-e Ahmad criticized the loss if Iranian cultural identity through a blind pattern of imitation and adoption of western culture, arguing that Iran, like many other nations, had become a mere consumer of material as well as cultural products. In the first chapter, titled "Diagnosing an Illness", he wrote:

> I speak of Occidentosis as of tuberculosis. But perhaps it more closely resembles an infestation of weevils. Have you seen how they attack wheat? From the inside. The bran remains intact, but it is just a shell, like a cocoon left behind on a tree. At any rate, I am speaking of a disease: an accident from without, spreading in an environment rendered susceptible to it. Let us seek a diagnosis for this complaint and its causes-and, if possible, its cure. Occidentosis has two poles or extremes-two ends of one continuum. One pole is the Occident, by which I mean all of Europe, Soviet Russia, and North America, the developed and

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[37] Al-e Ahmad wrote in Persian and used the term *gharbzadegi*, which has been translated into English as Occidentosis, West-toxication (also spelled Westoxification), and Weststruckness. The word played on the dual meaning of *stricken* in Persian, which means to be afflicted with a disease or to be stung by an insect, or to be infatuated and bedazzled. In the preface, Al-e Ahamd stressed that he borrowed the term westoxification from Ahmad Fardid, whom Al-e Ahmad highly admired. Al-e Ahmad wrote the first edition of his book in 1962. The second edition was penned in the 1963, although its publication was delayed due to the government's disapproval. Jalal Al-e Ahmad, *Occidentosis: A Plague from the West (Gharbzadegi)*, trans. R. Campbell (Berkeley: Mizan Press Berkeley, 1984).

> industrialized nations that can use machines to turn raw materials into more complex forms that can be marketed as goods. These raw materials are not only iron ore and oil, or gut, cotton, and gum tragacanth; they are also myths, dogmas, music, and the higher worlds. The other pole is Asia and Africa, or the backward, developing or nonindustrial nations that have been made into consumers of Western goods. However, the raw materials for these goods come from the developing nations: oil from the shores of the Gulf, hemp and spices from India, jazz from Africa, silk and opium from China, anthropology from Oceania, sociology from Africa. These last two come from Latin America as well: from the Aztec and Inca peoples, sacrificed by the onslaught of Christianity. Everything in the developing nations comes from somewhere else. And we-the Iranians-fall into the category of the backward and developing nations: we have more points in common with them than points of difference.[38]

Jalal Al-e Ahmad's anti-colonial ideology was not anti-Western per se.[39] It was a nationalistic call for political and economic independence. Similarly, Ayatollah Khomeini's cultural reformation urged the people to unleash themselves from foreign dependence, and for him, that ambitious goal could only be achieved through gaining independence in the production of sciences; for Ayatollah Khomeini scientific nationalism was the only path to materialize the Revolutionary slogan of "Independence, Liberty, Islamic Republic." Ayatollah Khomeini's speech was given not only by an ayatollah—i.e. a high-ranking religious scholar—but more importantly by the supreme political authority of the country. The Cultural Revolution was part of Ayatollah

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[38] Jalal Al-e Ahmad, "Diagnosing an Illness," in *Occidentosis: A Plague from the West (Gharbzadegi)*, trans. R. Campbell (Berkeley: Mizan Press Berkeley, 1984), 27.
[39] Within the scholarship on anti-colonial nationalism, Pankaj Mishra's work on a diverse group of Asian intellectuals, who provided a cosmopolitan response to the homogenizing claims of European nationalism based on their own traditions, is relevant here. Pankaj Mishra, *From the Ruins of Empire: The Revolt Against the West and the Remaking of Asia* (New York, NY: Farrar, Straus and Giroux, 2013).

Khomeini's holistic vision for nation-building. His vision soon took an institutional turn and resulted in the establishment of state agencies that aimed to implement his agenda. On June 13, 1980, Ayatollah Khomeini ordered the foundation of a committee to effectively materialize the Cultural Revolution. The committee soon became known as the Cultural Revolution Headquarters. "It has been for some time that the necessity of the Cultural Revolution, which is an Islamic act and desired by the Islamic nation, has been expressed, [but] no effective and foundational action has been taken…"[40] Ayatollah Khomeini selected seven individuals to serve as the members of the committee. Their responsibility was to establish headquarter and to invite "committed clear-sighted individuals, from Muslim professors, committed employees, faithful students, and other educated, pious and committed groups" to implement the cultural reforms in universities.[41]

On 29 August 1983 as the re-opening of universities was approaching, Ayatollah Khamenei—the President of Iran at the time, who succeeded Ayatollah Khomeini after his death as the Supreme Leader of Iran—proposed to Ayatollah Khomeini in a letter to strengthen the Cultural Revolution Headquarters. Because of "the need for further mobilization in order for the universities to be better prepared for the admission of

[40] Ayatollah Khomeini's Order to Establish the Cultural Revolution Headquarters Addressed to the Selected Members of the Cultural Revolution Headquarters, trans. by the author, Tehran, Iran, June 13, 1980, in *Sahifeh-ye Imam*, vol. 12 (Tehran, Iran: The Institute for Compilation and Publication of Imam Khomeini's Works, 1999), 431.
[41] Ibid.

student," Ayatollah Khamenei sought in his proposal the permission of Ayatollah Khomeini to extend membership of the headquarters to several state officials including the Prime Minister, the Minister of Culture and Higher Education, and the Minister of Islamic Guidance.[42] Ayatollah Khomeini communicated his approval of Ayatollah Khamenei's proposal the next day. In his response, he wrote, "[I hope] that our dear youths in universities try as much as they can to excel our great country by earning science and technology."[43] Ayatollah Khomeini met with the new members of the headquarters in Tehran the next month on 3 September 1983. "The issue of universities is of crucial importance…because university is at the center of everything…I hope we can have universities that are of use for our nation," Ayatollah Khomeini said in the meeting.[44]

More than a year after the reopening of universities and in order to further reinforce and restore the headquarters, Ayatollah Khomeini met the headquarters' members to thank them for their efforts and to add more officials to the headquarters, including the Minister of Education, a body responsible for pre-college education In Iran. This second institutional amendment of September 10th, 1983 effectively represented a

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[42] Rohollah Khomeini, *Sahifeh-ye Imam*, trans. Sadegh Foghani, vol. 18 (Tehran, Iran: The Institute for Compilation and Publication of Imam Khomeini's Works, 1999), 82.
[43] Khomeini to Khamenei, August 30, 1983, Tehran, Iran in *Sahifeh-ye Imam*, 1999, 18:83.
[44] "Khomeini's Speech to the New Members of the Cultural Revolution Headquarters (Islamicization of Universities)," (Tehran, Iran, September 3, 1983) in *Sahifeh-ye Imam*, vol. 18 (Tehran, Iran: The Institute for Compilation and Publication of Imam Khomeini's Works, 1999), 166.

transitional, pivotal moment in the history of the institution. In his speech, Ayatollah Khomeini referred to the agency as the Cultural Revolution Headquarters several times, but also once as the Supreme Council of Cultural Revolution. One of Ayatollah Khomeini's staff who was overseeing the preparation of the news of the meeting asked him "if it's needed to change the name of Cultural Revolution Headquarters to Supreme Council of Cultural Revolution."[45] Ayatollah Khomeini responded, "it is not necessary, but there is no problem [to change the name] either."[46] The meeting later proved to have marked the transformation of Cultural Revolution Headquarters to Supreme Council of Cultural Revolution, as the latter title replaced the former in the vocabulary of state officials.

Ayatollah Khomeini died on 3 June 1989, less than a year after he bitterly accepted the United Nations Security Council Resolution 598, when he famously said "I drank the chalice of poison today" on 20 July 1988.[47] Eight years of war between Iran and Iraq effectively ended on 20 August 1988. After Ayatollah Khomeini's death, Ayatollah Khamenei succeeded him as the Supreme Leader, a position that he has held

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[45] Khomeini's Order Addressed to the Selected Members of the Cultural Revolution Headquarters (Appointment of New Members) (September 10, 1980) in *Sahifeh-ye Imam*, vol. 19 (Tehran, Iran: The Institute for Compilation and Publication of Imam Khomeini's Works, 1999), 110.
[46] Ibid.
[47] Rohollah Khomeini, "Message to Iranian Nation on the Anniversary of Mecca's Bloody Massacre (Acceptance of 598 Resolution)," in *Sahifeh-ye Imam*, trans. Sadegh Foghani, vol. 21 (Tehran, Iran: The Institute for Compilation and Publication of Imam Khomeini's Works, 1999), 74.

until today. After Ayatollah Khomeini's death, Ayatollah Khamenei was the highest political authority in the country and it was now in his hands to oversee the affairs of state agencies, including that of the Supreme Council of Cultural Revolution (SCCR).

On the twelfth anniversary of the formation of the Cultural Revolution Headquarters, Ayatollah Khamenei addressed SCCR in a message on 4 December 1996:

> The Supreme Council of the Cultural Revolution that was born out of the Cultural Revolution Headquarters at the wise thought of the late great Imam Khomeini, played an active and influential role in the realm of cultural affairs of the country, especially in the universities, leaving many long-lasting blessings. Today, with the advancement of the country in the [post-war] reconstruction and with the growing need to knowledge and specializations, and given the importance of learning science and technology, training productive researchers, innovators, university professors and specialists, the importance of cultural sector has been additionally highlighted. Development of universities, research centers, and other centers of learning and of higher education is a natural response to that need, and the impressive increase in the number of university students, on its own, has assigned new tasks to the officials in charge of the cultural affairs of the country. The first and foremost [task] is to enhance the quality of research and science in the [research] centers and secondly is to help spiritual upbringing of the students and to guide their creeds and deeds.[48]

Although Ayatollah Khamenei's rhetoric did not include catch-phrases such as "cultural dependence," "Islamicization of universities" or "colonial universities", which Ayatollah Khomeini used frequently in his speeches, his message warned of "a dangerous assault against not only Islamic values, but also against the genuine national

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[48] Ayatollah Khamenei's Order to Appoint New Members of the Cultural Revolution Supreme Council, trans. by the author, (December 4, 1996), The Office of Supreme Leader, http://www.leader.ir/fa/content/1360/.

culture of people." In his view, "cultural assault" was evident even in the eyes of skeptics.[49] While Ayatollah Khomeini warned of *cultural dependence*, Ayatollah Khamenei warned of *cultural assault*, the latter became a dominant term in the political rhetoric of Ayatollah Khamenei in the 1990s.

Similar to Ayatollah Khomeini, the Cultural Revolution for Ayatollah Khamenei too, had a scientific wing. While Ayatollah Khomeini was concerned with the lack of sufficient medical expertise in the country, Ayatollah Khamenei was also concerned with scientific lagging, science education, research centers and illiteracy. He regarded the Supreme Council as "the central and main base" in the campaign against "illiteracy, scientific backwardness, and cultural adherence."[50]

Elsewhere in his message, the Supreme Leader announced new changes to the structure of the Supreme Council. He introduced new positions, appointed twelve new officials to the Council, and renewed the membership of the eight incumbent members. The expansion of the Council was part of his strategy to "reinforce the Council," which he saw as "a responsibility on [his] shoulders." Towards the end of the message, Ayatollah Khamenei stressed that "the first step for the Supreme Council [was] to codify the job description and to outline the general cultural policies of the country."[51]

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[49] Ibid.
[50] Ibid.
[51] Ibid.

2.3. ROYAN'S INSTITUTIONAL PARENTS

Shortly after the inception of Cultural Revolution Headquarters, its members established the Academic Center for Education, Culture and Research (ACECR), also known as jahad-e daneshgahi (not to be confused with jihad). After a series of meetings, ACECR's constitution was compiled in the format of fifteen articles and six notes and sanctioned by the SCCR on 27 September 1986. It was later slightly revised on 2 December 1986. In the constitution, ACECR was described as "a Revolutionary institution that emerged from the Cultural Revolution" to fulfill the goals of the Cultural Revolution under the supervision of the SCCR".[52]

The goals of the ACECR were broadly defined into four categories and were the reminiscent of the mission of the Cultural Revolution, but with a more explicit and stronger emphasis on scientific research: "Islamicization of universities; preservation of Islamic values, eradication of the manifestations of decadent culture, and elimination of anti-Islamic values and insights coming from the alien culture; reinforcement and pursuit of the spirit of research and cogitation, and to unlock the hidden talents of academics and laypeople and realization of areas and opportunities appropriate for

[52] Supreme Council of Cultural Revolution's Constitution for the Academic Center for Education, Culture and Research (September 27, 1986), 68th, 76th, 78th, 80th, 81th, 82th, 85th, 86th, and 88th Meetings, Islamic Parliament Research Center of the Islamic Republic of Iran, http://rc.majlis.ir/fa/law/show/99816.

research and study; expansion of scientific, industrial and practical research, and use of the results [of that research] to meet the needs of the society.[53]

The importance of scientific research was not only observable in the goals of ACECR, but also in its organizational structure. The organizational chart of ACECR was comprised of three divisions: Cultural, administrative/financial, and research with the addition of another division with the task of communicating between ACECR and its many university units. Under the responsibilities of the Research Division, the constitution stressed that the first and foremost priority of the division should be research not service tasks: establishing relationships and communicating with research organizations, institutions and centers outside universities; establishing relationships with research and scientific centers outside the country; establishing scientific research cores in ACECR university units; collaboration with state agencies to fulfill their technical needs; and collaboration with universities' research officials and implementation of proper plans to enhance the spirit of research and innovation in universities, upon the request of universities. Scientific research was evidently at the heart of the Research Division.

The responsibilities of the cultural division were expressed in a general language: "Conducting cultural activities in universities" was the first task of the cultural division of

[53] Ibid.

ACECR listed in the constitution.[54] Other tasks included holding courses on Islamic knowledge in universities, upon the request of university officials, and communication and collaboration with cultural and art organizations and institutions in the country. The tasks of the cultural division overlapped with those of the research division. For instance, the cultural division was expected to facilitate publication of books and articles not only in the fields of culture, Islamic teachings, and politics, but also on sciences. The threefold organizational structure of the ACECR was duplicated in universities' branches, which meant that every ACECR unit, hosted in universities nationwide was responsible for cultural activities as well as scientific ones.

The members of SCCR met regularly to discuss the affairs of ACECR. In their 228th meeting, the members of the SCCR discussed various issues related to ACECR, particularly its place with regard to universities. They concluded that "ACECR university units should be based outside universities but could still have access to university resources with the permission of university presidents."[55] It was in this meeting that the members decided that ACECR should act as a "bridge between universities, and the industrial, manufacturing and service sector."[56] Since then, acting as a "bridge" has been an integral part of the center's identity. Nonetheless, ACECR's responsibilities to

[54] Ibid.
[55] Supreme Council Cultural Revolution's Bylaw, 228th Meeting (November 30, 1999), Islamic Parliament Research Center of the Islamic Republic of Iran, http://rc.majlis.ir/fa/law/show/100091.
[56] Ibid.

conduct research and organize cultural activities remained intact, under the condition that ACECR would not act contrary to the policy of the Islamic Republic.[57]

On the tenth anniversary of the ACECR's inception, the members of the central council of the ACECR met with the Supreme Leader in 1990, during which Ayatollah Khamenei gave a short speech. The core of the Supreme Leader's message was focused, again, on the dual nature of ACECR's mission: scientific research and cultural activities: "The responsibility of the ACECR is even beyond what has been determined as his task: research and cultural activities. ACECR can be the organization that guides the wave of college students to maturity and perfection." Better-equipped and with a younger demography than other state institutions and government ministries, ACECR was founded to "communicate with students, be composed of students, to address their issues, speak their language, and give them advices." In Ayatollah Khamenei's view, ACECR was the most qualified state body for "the intellectual guiding of the young generation" at the absence of sufficient institutional structure within universities. All research and cultural activities of ACECR were meant to be directed towards "guiding young college students towards the right intellectual and practical path." This ultimate goal, in the view of the Supreme Leader, was above all "political leanings and tastes" of

[57] Ibid.

state and university officials, and hence "eschewing of false political sensitiveness" was necessary for the ACECR's success.[58]

The Supreme Leader's strong support and passion for ACECR was more evidently than ever expressed in his epilogue: "Preserve and reinforce the ACECR. The expectation from me of material and political support [for ACECR], to the extent that is feasible and possible for me, is fair. God willing, I am meeting and will meet this expectation. ACECR is a major current, which should be preserved in universities."[59]

On December 29, 1997—six years after the inception of the Royan Institute—the member of ACECR, met with the Supreme Leader again. Ayatollah Khamenei, once again, stressed that ACECR was "one of the pillars of the Revolution and encouraged the members not to "give up Islamic and revolutionary values." [60] In his description of ACECR's mission, the emphasis on scientific progress was, again, evident. "In the beginning of the Revolution, there were those who tried to describe the Islamic and revolutionary forces empty of science and specialty," he stressed. Expressing satisfaction with the scientific status of the country, the Supreme Leader said, "many children of the Revolution are now masters in some fields." Once again, the significance

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[58] Ayatollah Khamenei, "Meeting with the members of the Central Council of the ACECR" (Speech, Tehran, Iran, September 2, 1990), The Office of Supreme Leader, http://www.leader.ir/fa/speech/353/.
[59] Ibid.
[60] Ayatollah Khamenei, "Meeting with the members of the Central Council of the ACECR", trans. by the author, (Tehran, Iran, December 29, 1997), The Office of the Supreme Leader, http://www.leader.ir/fa/content/1549/.

of "research, scientific and professional activities" paralleled, in the eyes of the highest-ranking political authority of post-revolutionary Iran, the "preservation and reinforcement of values and principles of Islam."[61]

For Iran's state officials, ACECR and its parent organization, SCCR, were the helmsmen of the scientific ship of the country. For Iran's state officials and policy makers, Islamicization of universities, cultural independence, and fighting against the cultural assault, were not possible without scientific advancement and technological progress. For Iran's leaders, the Cultural Revolution was as scientific as it was cultural; the two facets were not mutually exclusive; were inseparable. It would be incomplete to confine the development of SCCR to the restrictive and discriminatory measures of the post-revolutionary Iranian state that swept the universities and to portray the atmosphere of the time as a heavy and dark shadow on intellectual life in Iran. It is, too, misleading to render the complexity of the Cultural Revolution to the anti-colonial, anti-imperial aggressive political rhetoric of Iran's leaders and to interpret that rhetoric in isolation from a scientific-driven vision. Similarly, the function of the Cultural Revolution should not be reduced to the Islamicization of universities or only be expressed in the visionary religio-political rhetoric of Iran's leaders, for it also embodies the concerns of leaders over what they saw as the scientific and technological backwardness of Iran. The history of the Cultural Revolution and its main state agency, SCCR, should not be

[61] Ibid.

reduced to the first three years during which universities were shut down. Such extreme measures were, in the eyes of Iran's leaders, a response to the cultural maladies of the time. ACECR and specifically Royan, manifest the scientific wing of the so-called Cultural Revolution. The Cultural Revolution transcended the political culture. Cultural Revolution had a scientific wing.

This chapter aimed to bring a new revisionist light to our understanding of the Cultural Revolution and the function of the institutions that were born out of that cultural movement. The visionary anti-colonial, anti-imperial, anti-west, anti-east political rhetoric of Iran's charismatic leaders should not distract our attention from the scientific aspect of the Cultural Revolution. Cultural independence, in the language of Ayatollah Khomeini and Ayatollah Khomeini, could not be achieved without scientific independence. While the implication of the restrictive and aggressive cultural policies; such as closure of universities was immediately evident, the scientific legacy of the Cultural Revolution took years to form, in practice, the second aspect of the cultural revolution in the long term, not only in the rhetoric and speeches of Iran's political leaders, but also in the practical decisions and policies that they made in order to fulfill their visions of cultural dependency. Expulsion of professors from universities was done swiftly. Establishment of scientific institutions needed time. The inception of the Royan Institute belongs to the latter wave of developments.

CHAPTER 3. BEYOND RELIGIOCENTRISM

3.1. RELIGION: PERMISSIVE OR RESTRICTIVE?

In 2007, when Iran's Supreme Leader visited the Royan Institute for the first time, he urged the Royan researchers not to pursue science in isolation from religion:

> I insist that whenever we work on progressing science, we do not forget that science and religion are conjunctive. Science, separated and in distance from religion, might carry a country to a point of pride in the first step, in the short term, but in the long term it will be pernicious for humanity…if science is separated from religion, and does not hold itself committed to religion, the result will be what we see prevalent in the world: science has become a tool for coercion, for exploitation, a tool for destroying land and people; the product of science, on the one hand is the atomic bomb, on the other hand is the evil drugs; the product of science is the politicians who are far away from all humanistic emotions in many countries in the world.[62]

Human embryonic stem cells can revolutionize biomedicine due to their capability to generate new cells. Stem cell research has proved controversial due to varying ethical and religious views regarding the use of human embryos for scientific

[62] Sadegh Foghani, trans., "IR Leader visits Royan Research Center," The Office of the Supreme Leader, July 16, 2007, http://www.leader.ir/fa/speech/3067.

purposes.[63] The issue of cloning has sparked a great deal of ethical and religious debates and has generated many social concerns. There are often two areas of discussion: reproductive cloning and therapeutic cloning. The human embryonic stem cell research demands the destruction of human embryos and has consequently produced a wide spectrum of heated ethical and moral debates. The central question is when human rights should be granted to an embryo. On one end of the spectrum, there is a belief that recognizes an early embryo as a person, who is entitled to all human rights. On the other end, an early embryo is considered too rudimentary to entitle human rights.[64] Hence, the theological debate comes down to a perplexing question: In what stage of development human dignity is conferred?

Unlike Catholicism, where the Vatican stands as an authoritative voice, the absence of such central institution in the Islamic community has resulted in a variety of

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[63] See Albert R. Jonsen, "O Brave New World! The Ethics of Human Reproduction," in *The Birth of Bioethics*, First Edition (New York, NY: Oxford University Press, 1998). This book is one of the early works that offers a broad history of the origin and evolution of various bioethical debates including human reproductive technologies. For a full, and more theoretical, discussion of various bioethical debates see Richard Edmund Ashcroft et al., eds., *Principles of Health Care Ethics*, Second Edition (Chichester, England: Wiley, 2007); Tom L. Beauchamp and James F. Childress, *Principles of Biomedical Ethics*, Seventh Edition (New York: Oxford University Press, 2012).

[64] Francois Baylis, "Human Embryos for Reproduction and Research," in *The Routledge Companion to Bioethics*, ed. John D. Arras, Elizabeth Fenton, and Rebecca Kukla, First Edition (New York, NY: Routledge, 2015); Michael Tooley, "Personhood," in *A Companion to Bioethics*, ed. Helga Kuhse and Peter Singer, Second Edition (Malden, MA: Wiley-Blackwell, 2009).

contesting opinions on bioethical issues, such as stem cell research and cloning.[65] Nonetheless, because the formulation of Islamic laws is derived from Quranic text and the Prophet Mohammad's Tradition (his way of life and speeches), there are certain areas of consensus.[66] The most-cited Quranic verse concerning bioethics is: "We Created man of an extraction of clay, then We set him a drop in a safe lodging, then We created of the drop a clot, then We created of the clot a tissue, then We created of the tissue bones, then We covered the bones in flesh; thereafter We produced it another creature. So, blessed be God, the Best of Creators." (Qur'an, 23:11-14)

Contrary to the orthodox Catholic belief which defines the beginning of life at conception and regards the unborn fetus a human being from the conception, the mainstream Islamic view asserts that ensoulment happens approximately four months after conception. Hence, abortion and destruction of the embryo under certain circumstances is permissible before the ensoulment stage. While the Islamic view does not deny the sanctity of pre-ensoulment embryo, the Muslim jurists, based on the above-mentioned verse— "thereafter We produced him as another creation"—draw a distinct line between the pre-ensoulment and post-ensoulment stages of embryonic development. The dominant interpretation of Quranic verses suggests tenably that "as

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[65] Heather Widdows, "Christian Approaches to Bioethics," in *Principles of Health Care Ethics*, ed. Richard Edmund Ashcroft et al., Second Edition (Chichester, England: Wiley, 2007).
[66] Abdulaziz Sachedina, "The Search for Islamic Bioethics Principles," in *Principles of Health Care Ethics*, ed. Richard Edmund Ashcroft et al., Second Edition (Chichester, England: Wiley, 2007).

participant in the act of creating with God, (God being the Best of Creators) human beings can actively engage in furthering the overall well estate of humanity by intervening in the works of nature, including the early stages of embryonic development, to improve human health."[67] Hence, cloning is not regarded as playing God, superseding God or manipulating God's creation. From an Islamic-theological point of view, cloning is not problematic because the world is defined based on a causal relationship where all creation occurs through God's will.

Nonetheless, from the ethical perspective, human reproductive cloning is forbidden by the majority of Muslim scholars due to high chance of impaired health and development for the cloned-child and abuse of women, who provided the eggs and aborted the fetus.[68] Moreover, Muslim scholars have expressed concerns over "loss of kinship and lineage due to unnaturalness of reproduction, the social harms, the unjust eugenics, and the contradiction of the diversity of creations."[69] Overall it can be stated that the majority of Muslim scholars and jurists tend to prohibit human reproductive cloning, but permit stem cell research and cloning for therapeutic purposes during the pre-ensoulment phase of embryonic development.

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[67]Abdulaziz Sachedina, *Islamic Biomedical Ethics: Principles and Application* (New York: Oxford University Press, 2009), 131–32.
[68] B. Larijani and F. Zahedi, "Islamic Perspective on Human Cloning and Stem Cell Research," *Transplantation Proceedings* 36, no. 10 (December 1, 2004): 3188–89, https://doi.org/10.1016/j.transproceed.2004.10.076.
[69] Ibid.

The absence of heated ethical tensions on therapeutic stem cell research in Iran has created a mainstream view among scholars and pundits that the successful development of stem cell research in Iran is the result of adaptive interpretation of Islamic view on bioethical issues. In assessing the success of Royan Institute, this view assigns a central role to the progressive Islamic bioethical view, suggesting that the Iranian stem cell research would have been halted, if the Islamic bioethics had prohibited the pre-ensoulment embryonic research. Muslim scholars and liberal-minded Western pundits have particularly played an important role in developing this dominant scholarship on the Iranian stem cell research.[70]

One month after the birth of Iran's (and also the Middle East's) first cloned sheep—Royana—in 2006, CNN published a short report on Iran's stem cell research titled, "*Iran in the Forefront When It Comes to Stem Cell Research*." The report argued that Iranian scientists have an easy access to pursue human embryonic stem cell, because the Islamic clergies in Iran do not define life at conception. One Iranian stem cell researcher had told the reporter, "it's quite open, we can do our work easily, we don't have any restriction, any problem." Another doctor had told the reporter, "the [Iranian] scientists would now like to go back [to the scientific golden age of Persian Empire] and for this reason young scientists are really excited." Paralleling stem cell research with a nuclear energy program, where Iranian scientists had discovered the

[70] Mansooreh Saniei, "Human Embryonic Stem Cell Science and Policy: The Case of Iran," *Social Science & Medicine,* 98 (2013): 345–50.

process of uranium enrichment without foreign help, the reporter concluded that "science of all kinds is pushing ahead in Iran without pause."[71]

A *Washington Times*'s report, titled "Iran at Forefront of Stem Cell Research," based on a joint study by Harvard University and the Massachusetts Institute of Technology,[72] praised the Iranian stem cell research in 2009: "Controversial in the United States, embryonic stem cell research was embraced in 2002 by Ayatollah Ali Khamenei, Iran's conservative religious leader. President Obama has recently adopted a similar policy, reversing restrictions that George W. Bush's administration imposed because of the implications for destroying potential human lives." The report also quoted an Iranian researcher, Hassan Ashktorab of the Howard University Cancer Center: "Islam is very compatible with the modern sciences…Policies that may be classified as liberal in the American political system seem to be common sense to Iranian politicians."[73]

Mental Floss, the New-York media company that was founded in 2001 and focuses on millennials, published a report on the scientific progress of Iran on stem cell

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[71] Aneesh Raman, "Iran in the Forefront When It Comes to Stem Cell Research," CNN Behind the Scenes, November 17, 2006, http://www.cnn.com/2006/WORLD/meast/11/16/raman.iranstemcell/index.html.
[72] David W.G. Morrison and Ali Khademhosseini, "Science of Stem Cell in Iran" (Iranian Studies Group at MIT, November 2006), http://isgmit.org/research/?id=433&cat=iran&stat=full.
[73] "Iran at Forefront of Stem Cell Research," The Washington Times, April 15, 2009, //www.washingtontimes.com/news/2009/apr/15/iran-at-forefront-of-stem-cell-research/.

research titled "What Iran May Be Able to Teach Us About Stem Cells" in 2016, in which the author argued that "in 2002, Iranian supreme leader Ayatollah Ali Khamenei issued a religious ruling, a fatwa, declaring embryonic stem cell research acceptable under Islamic law. American scientists at that time were stuck in an epic political debate over the cells' use, but Iranian researchers had a green light to launch various experiments, develop cell lines, and invent novel therapies."[74]

A British article covered the Iranian stem cell research in a rather different fashion. While the article rightly pointed out to the absence of central authority in the Islamic world and emphasized the progressive nature of Islamic laws, it raised the issue that most Muslim countries have not yet developed well-established laws and regulations on embryonic stem cell research and human cloning. Given the high scientific status of Egypt in the Islamic world, the article expressed wonder that how Iran, and not Egypt, is the "first predominately" country to develop stem cell research.[75]

The *progressive thesis* suggests that Islamic bioethics—primarily shaped over the idea of ensoulment of embryo after 120 days—makes Islam—theologically—more progressive than Christianity and that theological edge has given scientists in the Islamic world more flexibility to conduct research on not only on human reproduction and but

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[74] Linda Zeldovich, "What Iran May Be Able to Teach Us About Stem Cells," Mental Floss, March 3, 2016, http://mentalfloss.com/article/76349/what-iran-may-be-able-teach-us-about-stem-cells.
[75] "Stem Cell Debate in the Muslim World," BBC, September 7, 2009, http://www.bbc.co.uk/religion/religions/islam/islamethics/stemcells.shtml.

also on stem cell, which inevitably requires the destruction of human embryos. However, the founders of Royan assign a radically different role to religion that is not compatible with the mainstream view—the progressive thesis—that assigns the progressiveness of Islam, particularly with regard to the issue of ensoulment—a central agency in the developmental of biomedical sciences such as stem cell in Iran. According to the Royan officials, religion's role has been more of a constraining nature rather than being unrestrictedly permissive. At Royan, Islamic laws define the scope and boundaries of biological research and Royan officials make sure that their scientific research is conducted with the limits of the Islamic guidelines. For instance, while explaining the demography of their foreign patients, Dr. Shahverdi points out that some of their patients who come from overseas to the Royan Institute for treatment are Muslims:

> "Religion and Shari'a overshadow infertility issues a lot. Not only in Islam, but also in other religions, many believe that there is a close interaction and relationship between infertility treatments and religious issues. And [such interaction] can create some boundaries for them. Well, this view can encourage a Muslim patient to prefer to be treated in an infertility center that pays attention to Shari'a. When it comes to donation debates, many [other] religions and countries are open. The transfer someone's sperm or egg or someone else's...Such concerns direct a Muslim patient morally and religiously to choose a fertility center that adheres to [Islamic] principles. Families turn to places that are adherent and committed to ethical principles. This has been an advantage for us as we have many patients even from European countries [who are Muslims]. This advantage has contributed to the [formation of the positive] international image of the institute. Our personnel are bound [to religious and moral boundaries] in their work"[76]

[76] Shahverdi, Meeting with the Research Deputy of the Royan Institute.

The progressive nature of Islamic bioethics, as mentioned earlier, is primarily constructed on the Islamic notion that ensoulment does not happen within the first 120 days. Dr. Gourabi, however, is of the opinion that such apparent, theological opportunity has no practical advantage for Royan researchers:

> "We have nothing to do with the embryo that forms in laboratory beyond the first four or five days. We do not manipulate the embryo. Embryo manipulation has never been our first research priority. We never take a patient's embryo, unless the embryo has no use for the patient, or unless its quality or condition, in addition to her own transplanted embryo, is not good enough for freezing, then we will use it for research purposes. In the beginning of the stem cell research, the freezing techniques were not reliable…so, we had more embryos for research purposes. We had embryos that were not suitable neither for the patients nor for the freezing. It is now more difficult and limited to access embryos for research to the extent that if a project aims to use human embryo directly, it will progress very slowly. We use embryos that have been diagnosed as abnormal in preimplantation genetic diagnosis (PGD)."[77]

Practical, moral, or religious restrictions have substantially affected Royan researchers' access to and use of human embryos in their research experiments. Such limitation undermines the importance that has been put on the progressive nature of Islamic ruling on the ensoulment. Whether or not—from a theological perspective—ensoulment takes place after 120 days has no practical impact on the works of researchers at scientific institutions such as Royan. Within the walls of Royan laboratories, such apparent advantage does not have any practical value or pragmatic currency as it hardly leaves its theoretical shell. The argument that assigns a central role

[77] Hamid Gourabi, Meeting with the President of the Royan Institute, interview by Sadegh Foghani, August 21, 2017.

to the absence of strict restrictions in embryonic research in the Islamic world does not resonate with the Royan founders and current executives, who believe that "other countries might have more open hands" in embryonic research, "even though they had not made similar advances" in the field.[78] For Royan researchers, if Islam plays any role in terms of how they should conduct their research, that role consists of setting strict boundaries for researches rather than permitting them to conduct research unrestrictedly. Islam plays a regulatory and restrictive role, rather than permissive, indulgent and compliant one.

3.2. BIOETHICAL PLURALISM

In the first decade of Royan's life, the ethical questions around stem cell and human embryonic research were scarcely brought up, because those research fields had not begun at the Institute yet. During the first decade after the inception of the Royan Institute, ethical questions revolved around infertility treatments as well as sperm and egg donations. "We were among the first institutions" that were trying to find an answer to sperm and egg donation and to lineage of the resulted offspring born through such processes.[79] From the beginning, the Royan founders sought to find answers to their bioethical questions "based on Islamic teachings."[80]

[78] Ibid.
[79] Ibid.
[80] Ibid.

Due to the absence of standard ethical guidelines at the time, the institute officials turned into religious scholars and contacted them in the search for answer. "We did not get too excited, so now that we had the [research] ability we could do whatever was possible [in the lab]…we tried to move forward within the framework of religious laws and regulations."[81] Even in the beginning, when there was not a legal and ethical apparatus—in the institute or nationally—to supervise and monitor the research activities of the Institute, Royan founders voluntarily chose to confine the research activities of the institute to what Islamic scholars would permit. The Institute did not have to move within religious boundaries, but "because the individuals who were managing the Institute had strong religious orientations," they always paid attention to such concerns.[82] The ethical questions were being generated in scientific circles within Royan, neither from the public debates nor from the Royan's state parent institutions, and they were new to the religious scholars.

In the early days of the Institute, when there was no bioethical guideline for researchers to follow, Royan officials voluntarily incorporated religious boundaries into the Institute's agenda and enthusiastically chose to work within an Islamic framework. However, at the turn of the century, and with the emergence of new ethical concerns around stem cell and human embryonic research, the Royan officials established an

[81] Ibid.
[82] Hamid Gourabi, Meeting with the President of the Royan Institute, interview by Sadegh Foghani, August 22, 2017.

autonomous and independent body, called the Ethics Committee, to draw ethical boundaries for researchers and to "completely oversee all human embryonic research"[83]. Once the Ethics Committee complied its first bioethical guidelines, the religious boundaries— a constant primary concern of Royan founders—were now being enforced even more rigorously compared to the early days when the Royan officials had to contact religious scholars every time a new ethical question arose. Today, "if the Ethics Committee does not approve of a research proposal, that proposal will not be moved forward."[84]

The Ethics Committee has seven members: one religious scholar who is an expert in Islamic jurisprudence, two epidemiologists, a sociologist, a radiologist, an embryologist, and a gynecologist. In the beginning, the Institute's high-ranking officials appointed the members, but currently a central committee based in ACECR appoints the member— although after considering the suggestions of the Royan officials. Regardless of the appointment process, Royan executives and managers have "no administrative control over the Ethics Committee and the members "make their decisions independently."[85] The outcome of the internal debates among the members of the Ethics Committee is not based on the majority vote and members discuss religious,

[83] Ibid.
[84] Ibid.
[85] Ibid.

ethical, and scientific matters persuasively until they collectively reach a unanimous conclusion.

In the immediate years after the establishment of the Ethics Committee, because Royan researchers were not familiar with the ethical approaches and opinions of the ethical guidelines, more proposal would get rejected by the Committee. Over time, and as researchers made themselves more familiar with the ethical frameworks of the Committee and learned from previous approved and rejected proposals, they gradually reached a level of mutual understating that allows them to propose ideas that were compatible with the existing guidelines or have a better chance of getting approved by the Committee. Royan researchers have learned from their own and others' experiences not to submit proposals that are unlikely to be approved.

Beyond the walls of Royan, several guidelines, committees and legislations on biomedical issues have published over the years. The establishment of National Committee of Medical Research in 1997, followed by the development of National Code of Ethics in Biomedical Research in 2000, structured the foundation of bioethics in Iran and further paved the way for the development of guidelines concerning stem cell research and three major legislation regarding organ transplantation, abortion and

assisted reproductive technologies (ART).[86] Iran's parliament ratified the Deceased and Brain-Dead Patients Organ Transplantation Act in 2000, Embryo Donation to Infertile Spouses Act in 2003 and the therapeutic Abortion Act in 2005.[87] The Policy-making Council of Ministry of Health and Medical Education (MOHME) prepared the Specific National Ethical Guidelines for Biomedical Research in 2005, in which it addressed a range of bioethical issues such as clinical trials, ART, stem cell research and transplantation research. The guideline was published in Persian and sent to the medical schools and research institutions.[88]

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[86] The National Code was prepared by the Ministry of Health and Medical Education (MOHME) and included 26 articles. Another related project began in 2002 by the research and technology deputy minister of MOHME, called "Strategic Plan for Medical Ethics Activities."

[87] Under the new act, donation of an embryo was permitted under certain circumstances. The act is expected to prevent divorce, where parents are unable to get pregnant. The new law allowed abortion in the case of serious fetus disorders that would risk the mother's health or result in undesirable circumstances for the parents. According to the Islamic law, the eradication of embryo at any stage is a sin, but its punishment in pre-ensoulment is "blood money." But when there is a high life-threatening danger to the mother or to the child, abortion is permissible. Abortion after ensoulment is more punishable, but the legal penalty varies in different Islamic countries.

[88] Farzaneh Zahedi and Bagher Larijani, "National Bioethical Legislation and Guidelines for Bioethical Research in the Islamic Republic of Iran." *Bulletin of the World Health Organization*, August 2008: 630-634. Larijani and Zahedi seem to have a strong pro-government perspective. They mention that "since minority groups such as Sunni Muslims and Armenians are represented in the parliament, their opinions are also considered in religious discussion…all Iranians, Muslim or non-Muslim, are permitted to follow their religious beliefs providing that they are not against the law." In another remark, they state that "the main rules of activities [in Iran] consist of the holy Quran and principles of Islamic ethics; the religious opinions (Fatwa) of Islamic scholars on special issues; the national laws or ethics code, international guidance; and the norms of society."

The ethical boundaries are not confined to the institutional framework of Royan. There are, as discussed above, national regulations that are expected—ideally—to oversee all biological research. Researchers are required to obtain what is called the Ethics Code before they begin conducting their research. Researches without the Ethics Code will not be granted any financial support. Even if researchers fund their own research, publication of their research "might get them into trouble."[89] Many universities have an ethics committee and depending on the scale of the research proposals that they receive, they might have ethics sub-committees as well. The ACECR has a central ethics committee, and several research institutes such as Royan, have their own ethics committee. Research or academic institutions that do not have an ethic committee of their own, are expected to redirect their research proposals to ACECR or the institutions such as Royan that have their own ethics body for ethical reviews and approval.

Despite the centralizing attempts and institutionalizing tendencies, the locality and plurality of bioethical committees and guidelines undermines the authority of any Islamic framework as a single, indisputable source for biological research. In reality, an interactive and localized process of negotiation among members of a committee decides on ethical issues, which could vary from one committee to another and from one institute to another.

[89] Gourabi, Meeting with the President of the Royan Institute, August 22, 2017.

Absence of firm rules and clear guidelines is a defining characteristic of Iranian bioethics. For example, the Specific National Ethical Guidelines for Biomedical Research or the Islamic jurisprudence in general did not bring about any specific legislation on stem cell or cloning in Iran. The Iranian parliament never ratified an act on stem cell research. Stem cell research activities did not receive its green light neither from the Iranian Parliament nor from Shari'a, but from the Supreme Leader's stem cell announcement in 2002, when he approved stem cell research, three years before the compilation of the Specific National Ethical Guidelines for Biomedical Research (will be discussed fully later in this chapter). The Supreme Leader's announcement was not an outcome of any religious discussion or public debate. None of the Iranian scholars were consulted. Although his announcement was interpreted as a stem cell fatwa from an Ayatollah (especially by Western media), in reality, it was an executive order from Iran's highest political authority, the Supreme Leader, who literally has the final say on every national issue and foreign policy, and who can practically overrule any piece of legislation.[90] The Royan Institute had started its activities before the compilation of the Specific National Ethical Committee Guidelines for Biomedical Research. The first human embryonic stem cell line was established a year after the Supreme Leader's announcement, but two years before the publication of the Guidelines.

[90]Jonathan Schienberg and Neil Katz, "Iran: The Stem Cell Fatwa," *PBS,* June 8, 2009. Available at http://www.pbs.org/frontlineworld/rough/2009/06/iran_stem_cell.html (accessed 2013).

The availability of bioethical guidelines does not guarantee their effectiveness, universality, and applicability. For instance, the policy-making council of the Ministry of Health and Medical Education and Tehran University of Medical Sciences' Medical Ethics and History of Medicine Research Center prepared a guideline titled the *Six Ethical Codes for Research* in 2006, which included ethical guidelines for research on six research fields: genetics, vulnerable groups, animals, gametes and embryos, organ and tissue transplantation, and clinical trials. Similar to other guidelines, the purpose of these ethical codes was to establish a moral handbook for researchers involved in biomedical and biotechnological fields. However, after examining the "Six Ethical Codes for Research," a group of legal experts and scholars of Ethics affiliated with the Avicenna Research Institute and Shahid Beheshti University—the former a major research center in the fields of biotechnology and infertility and the latter a major state university with a prestigious medical program—concluded that "a desirable ethical code is supposed to embody a general, consistent and justifiable moral theory in accordance with which precise and clear guidelines are set out for relevant problems. [However] the Six Codes does not represent such a theory and, hence, lacks clarity, comprehensiveness and precision. Moreover, certain parts of the codes deal with non-moral (e.g. legal) and scientific (technical) issues which definitely exceed the arbitrary ethical line."[91]

[91] Amir Hossein Khodaparast, Azadeh Abdolahzadeh, and Mohammad Rasekh, "A Critical Study of the 'Six Ethical Codes for Research' in Iran," *Journal of Reproduction & Infertility* 8, no. 4 (January 1, 2008): 365–79.

Furthermore, and contrary to the popular scholarly view that holds a strong religious basis for Iranian bioethical framework, the Islamicity of Iranian bioethical guidelines is highly questionable. For instance, the most comprehensive and recent Iranian bioethical guideline—the *Ethical Guideline for Research on Stem Cell and Regenerative Medicine in the Islamic Republic of Iran*—makes no reference to Islam, Qur'an, or prophetic hadith and provides to engagement with religious, Islamic, and scriptural literature. [92] While the word *ethical* appears almost 300 times in the guideline, the word *religious* only appears six times throughout the sixty-six pages of the lengthy guideline, while the word *Islamic* did not appear at all. Under the subheading, "Preserving the Ethical Status and Respect for the Rights of All Participants in the Research Process" the guideline states that the "research on human beings, especially embryo and human fetus, should be carried out in accordance with ethical principles and religious standards," but there is no discussion or explanation of what those "religious standards" are.[93] All other five religious references similarly addressed the treatment of the aborted fetus in different sections of the guideline: "the fetus should be buried with legal procedures and observance of religious standards."[94]

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[92] The author obtained the most recent draft of the guideline from Dr. Hamid Gourabi, the President of the Royan Institute on August 22, 2017. The draft was compiled a few months earlier on April 6, 2017, but had not yet been officialized by the time it was obtained by the author.
[93] "The Ethical Guideline for Research on Stem Cell and Regenerative Medicine in the Islamic Republic of Iran" (The Ethics Committee on Biomedical Research of ACECR, April 6, 2017).
[94] Ibid.

A close look at the *Guideline*'s bibliography reveals that an overwhelming majority of sources consulted by the Iranian authors and editors of the guideline were international—especially European and American—ethical codes and standards complied by various institutions such as EuroStemCells, Council of Europe, Council of the European Union, Kyoto University's Institute for Integrated Cell-Material Sciences (iCeMS), European Commission, European Science Foundation, International Organization for Standardization, International Society for Stem Cell Research, UK's Medical Research Council, the American National Society of Professional Engineers, Bioethics Advisory Committee of Singapore, and US National Institutes of Health (NIH). Of the fifty-five sources listed in the bibliography of the guideline, fifty-two were published by international institutions or individuals affiliated with such institutions.

The most recent and comprehensive Iranian bioethical guideline on Stem cell and regenerative medicine was neither produced based on Islamic teachings and scriptural interpretations, nor was compiled as the outcome of consultation with ulama or religious scholars, but based on ethical guidelines and codes developed by institutions in non-Islamic countries ranging from the United States to Singapore; by individuals unfamiliar with the Islamic bioethics; and by sources uninformed by the Islamic bioethics.

Scholars of Islam have produced a growing literature on Islamic bioethics, but ethical guidelines produced and used by institutions such as Royan in Muslim-majority countries such as Iran, as shown above, are not necessarily based on the growing body

of Islamic bioethics, e.g. this study shows that the argument over the occurrence of ensoulment after 120 days has not shaped or even influenced the development of Iranian bioethical guidelines. The examination of the *Ethical Guideline for Research on Stem Cell and Regenerative Medicine in the Islamic Republic of Iran* exhibits a lack of engagement with Islamic bioethics, and such disconnectedness between Iranian bioethical codes and Islamic bioethics undermines the narrative that considers Islamic bioethics as the driving force behind the development of biomedical sciences in Iran. Not to mention that Islamic bioethics has not been developing in isolation from non-Islamic bioethical debates, evident in the works of scholars who have substantially contributed to literature on Islamic bioethics.

3.3. THE COEXISTENCE OF RELIGIOSITY AND IRRILIGIOUSITY

In addition to the false postulate that assumes an Islamic basis for bioethical guidelines produced in Muslim-majority countries, the assumption that assigns a high degree of executability to those guidelines is equally alarming. Although a guideline assumes functionality in a hierarchical structure and is defined enforceable in a top-down approach, but one should recall that—from the perspective of a practicing Shi'a infertility patient (a potential donor of an embryo) or a practicing Shi'a Royan researcher—the final call on bioethical matters should be issued by his/her own *marja* (*source of religious imitation*). A practicing Shi'a individual follows the religious orders of his own marja. A marja is a high-ranking religious scholar, usually an ayatollah, who is qualified to issue a religious order (fatwa) on religious matters. A practicing Shi'a Muslim

is expected to choose a marja and follow his fatwas on religious matters. Basically, a fatwa is then a religious response from a religious scholar to a religious inquiry of an individual and could be prohibitive or permissive. A fatwa on a single inquiry could vary from one scholar to another. Hence, a fatwa has a limited scope and it is only bound to the religious followers of the fatwa-issuing scholar. The existence of many marja in the Shi'a majority Iran has led to the creation of a pluralistic sources of religious authority.

For example, if a guideline issued by an Iranian ethics committee permits the destruction of embryo for research purposes, but the marja of the individual researcher forbids such practice, the researcher is—from a religious perspective—obliged to follow the directions of his marja, not the ethical codes of his home institution. One must keep in mind that in Shi'a-majority countries, the ultimate decision-makers in biomedical processes are not state officials or members of ethics committees, but the individual patient or researcher, who if a practicing Shi'a, must follow the religious orders of his/her own marja, of whom, an overwhelming number—as will be discussed later in this chapter—forbids destruction of an in-vitro unborn child and abortion in any stage of development.

An underlying concern in this study is the assumption that considers Islam is omnipresent in the Iranian society, that Islam—as a religion based on the apocalyptic messages of Prophet Mohammad—is the most important social force and that religion is the most apt category of historical analysis in examining the Iranian society. Such (mis)understanding has actuated scholars, particularly those who have studied the

development of biomedical sciences in Muslim-majority countries such as Iran, to assign Islamic bioethics a central agency in their study of the roots of such development. However, contrary to the popular belief, many Iranians, including infertility patients and Royan researchers, are highly secular-minded and do not make their daily decisions based on religious teachings or Islamic fatwas.

Secular movements and schools of thought played an important sociopolitical role in the formation of the zeitgeist of the Iranian society throughout the twentieth century, best exemplified in the rise and popularity of Tudeh Party in the 1940s and 1950s. Historians of modern Iran who have studied the roots of the 1979 Revolution have strongly acknowledged the important role of secularism and the undisputable role of leftists, Marxists and communists in the formation of preceding events that led to the Revolution of 1979. It is only the seemingly-unexpected coexistence of irreligiosity and religiosity that best explains the socio-religious complexity of Iranian society throughout the twentieth century.

Following the Iranian Constitutional Revolution and the Bolshevik Revolution of 1917, Marxist circles greatly influenced thousands of Iranian workers, especially in northern Iran. These circles "played an important role" in the formation of the Communist Party of Iran in the 1920s.[95] Although Reza Shah (r. 1925-1941) suppressed

[95] Afshin Matin-Asgari, *Iranian Student Opposition to the Shah* (Costa Mesa, CA: Mazda Pub, 2001), 20.

the communists and other political parties alike, the Marxist ideology "resurfaced in a powerful communist movement" after the fall of Reza Shah in 1941.[96] The Communist Party of Iran—the Tudeh Party—was the "leading intellectual and political force, prominent" among the country's university student population, during the time when "European-educated lawyers, professors, physicians, and engineers" established several secular parties.[97] These forces remained a strong socio-political force until the 1980s, and the Revolution of 1979 could only strip secular force of their political, not cultural, power.

The irreligiosity of a significant stratum of the Iranian society is noticeable both in and outside Iran. A 2009 study concluded that Iranians living in Canada—compared to three other diasporic communities from Muslim-majority countries (Palestinians, Pakistanis, and Afghans)—are remarkably less religious: in terms of self-identification as a Muslim; religious identity; religious practice; and efforts to maintain children's religious ties.[98] For example, when respondents were asked how much they participate in religious activities, such as attending mosques or Friday prayers, Qur'an readings, eating halal food, fasting during the month of Ramadan, and following Islamic dress,

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[96] Matin-Asgari, 20–21.
[97] Matin-Asgari, 10, 20.
[98] Haideh Moghissi, Mark J. Goodman, and Saeed Rahnema, "Religious Identities and Identification," in *Diaspora by Design: Muslims in Canada and Beyond* (Toronto: University of Toronto Press, 2009), https://login.pallas2.tcl.sc.edu/login?url=http://search.ebscohost.com/login.aspx?direct=true&db=nlebk&AN=468812&site=ehost-live.

over seventy percent of Iranian respondents scored "low", ten times more than Afghans and Pakistanis, and five times more than Palestinians.[99] A "typical response" from the Iranian community was echoed by an Iranian woman:

> "Religious beliefs are [part of] the process of growth of every child in Iran. So, I cannot say that I did not have any, but it was weak. My father drank alcohol but fasted at Ramadan; many people were like my father. We were not a very religious family. After [the Islamic] revolution, I put aside those religious beliefs and started to work with the left-wing people. My beliefs are as the same before I came here.[100]

Hence, in addition to the plurality of religious authorities in Shi'a societies, a strong presence of secular-minded individuals and non-religious circles in the Iranian society, further challenges the executability and authoritative power of the so-called (Islamic) bioethical guidelines and questions the extent to which Islamic guidelines—regardless of whether they are compiled based on Islamic teachings or on international guidelines—directs the bioethical decisions of professionals such as Royan scientists and individual participants such as Royan infertility patients.

3.4. HE IS NOT THE POPE!

Iran's current Supreme Leader, Ayatollah Khamenei, expressed his approval of Royan's mission and activities in the early days of the Institution. Because the current Supreme Leader of Iran is an Ayatollah, i.e. a high-ranking religious title, many scholars

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[99] Haideh Moghissi, Mark J. Goodman, and Saeed Rahnema, *Diaspora by Design: Muslims in Canada and Beyond* (Toronto: University of Toronto Press, 2009), 98.
[100] Moghissi, Goodman, and Rahnema, 97.

and journalists have interpreted his patronage of the institute, as an indication of Islam's embrace of ARTs and human embryonic stem cell research.

Marcia C. Inhorn, in her description of "the impact of important ART fatwas on the practice of IVF and related technologies" argues that "in the late 1990s, Iran's supreme political leader as the Supreme Jurisprudent of the Shi'a branch of Islam, Ayatollah Ali Hussein Khamenei, the successor to Iran's Ayatollah Khomeini, issued a fatwa effectively permitting donor technologies to be used."[101] Building on Inhorn's argument, others have argued that "the endorsement of the supreme religious leader, Ayatollah Ali Hussain Khamene'i, gave third-party donation "official" legitimacy in 1999."[102] In 2009, a PBS article—after mistakenly using the title of Grand Ayatollah for Ayatollah Khamenei, argued that the Supreme Leader issued a "stem cell fatwa" in 2002, declaring experimentation with human embryonic stem cells consistent with Shiite Islam and encouraging scientists to advance the technology to save lives."[103]

What these studies failed to observe is the fact that the office of the Supreme Leader, which was introduced after the Revolution of 1979, represents the highest political—not religious—authority in Iran. While the Supreme Leader is constitutionally

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[101] Marcia C. Inhorn, "Fatwas and ARTs: IVF and Gamete Donation in Sunni v. Shi'a Islam," *The Journal of Gender, Race & Justice* 9 (Winter 2005): 303–4.
[102] Inhorn and Tremayne, "Introduction: Islam and Assisted Reproductive Technologies," 9.
[103] Jonothan Schienberg and Neil Katz, "Iran: The Stem Cell Fatwa," PBS Frontline World, June 8, 2009, http://www.pbs.org/frontlineworld/rough/2009/06/iran_stem_cell.html.

required to be a religious scholar, he is not the highest religious authority by any means. Indeed, there has been no single, universal religious authority nor in modern-day Iran, neither—by and large—in the Islamic world at any point in the history of the Islamic Civilization.

Historically, the Islamic world—Sunni and Shi'a alike—never experienced an Islamic equivalence of Papacy, but a plurality of religious sources. Such heterogenous structure is even more evident in Shi'a societies, where a number of (Grand) Ayatollahs serve individually as a source of religious imitation and reference, *taghlid*, for their followers. Despite the policies of the Safavids to consolidate the sources of Islamic teachings and reference, since her sweeping shift to Shi'ism in the sixteenth century, Iran has witnessed the concurrent presence of multiple, and sometimes rival, Ayatollahs, although not always under that title. Such plurality increased more rapidly within the Iranian religious community after the death of the leading Grand Ayatollah Boroujerdi in 1961. In modern Iran, Iranian religious individuals follow a scholar in religious matters, but they can choose their Grand Ayatollah from a pool of thirty individuals and are allowed to switch from one to another without much restriction, if needed.

Confusing the political status with the religious rank of the Supreme Leader, scholars who study the development of ARTs and stem cell research have frequently referred to the Supreme Leader as "the Supreme Jurisprudent of the Shi'a branch of

Islam" [104] or Iran's "supreme religious leader."[105] Such confusion has further led to the misperception of his speeches or orders as fatwa, i.e. religious order, even when they were issued as political commands or an administrative guideline. [106]

Ayatollah Khamenei, similar to other ayatollahs, has a responsibility to respond to the religious inquiries of his religious followers by issuing fatwas. He has a number of religious followers, although with the absence of any official registry or recordkeeping, the magnitude of any Ayatollah's followers, Ayatollah Khamenei's included, can be hardly estimated. The followers select an ayatollah of their choice as their *Source of Imitation*, but there is no mechanism in place for ayatollahs to know what persons are following them. Due to the concurrent existence of plural *sources of imitation*, it is a grave mistake to exaggerate the significance of Ayatollah Khamenei's fatwas by

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[104] Inhorn, "Fatwas and ARTs: IVF and Gamete Donation in Sunni v. Shi'a Islam," 291, 304.
[105] Inhorn and Tremayne, "Introduction: Islam and Assisted Reproductive Technologies," 9, 131.
[106] Although an ayatollah is not a political figure, the course of Iranian history has witnessed the emergence of ayatollahs, who influenced political affairs. For example, on the death of Sayyed Ḥosayn Kuhkamari in 1873, Grand Ayatollah Seyyed Hasan Mirzā-ye Širāzi, effectively became the main source of imitation of all Iranian Shiʿites. In 1891, when the Iranian government conceded the Tobacco monopoly to Great Britain, he issued an influential religious order (fatwa) banning the use of Tobacco, which played a salient role in the popular campaign against the tobacco concession. Hence, the historical agency of a fatwa in the 1890s is substantially different from that of post Iran-Iraq War era. See Nikki R. Keddie, *Religion and Rebellion in Iran: The Tobacco Protest of 1891-1892* (London: Frank Cass & Co, 1966). While before 1960s, the religious position of Source of Imitation was a potentially a position of great political influence, such consolidation of political power and religious authority, outside the political establishment, is not immediately extendable to the post-revolutionary Iran.

extending their applicability to domains beyond the community of his religious followers. Equally important to the presence of diverse views among religious scholars on various religious matters is the degree to which religious scholars' rulings—even the most unanimous ones—materialize effectively in an Islamic society with an overwhelming Muslim population such as the Islamic Republic of Iran. Not to mention that a significant segment of the Iranian society, as discussed earlier, is secular and so does not respond to the concept of *religious imitation* in the first place.

The distinction between *the religious* and *the political* in the complicated power structure of Iran, where many religious elites hold political offices and where there is no central religious authority is of crucial importance. i.e. the support of the highest political authority—who is an ayatollah—should not be interpreted as an Islamic support.

In 1999 and in response to an inquiry from Ayatollah Khamenei, a fatwa was issued about the uses of IVF, including both egg and sperm donation, in which he asserted that "there is no objection to carrying out IVF in itself…"[107] Scholars have argued that Ayatollah Khamenei's progressive fatwa on ARTs-related issues has played a key role in the development of ARTs infertility treatments in the Shi'a world to the extent that "the conservative, male, Iranian Shi'ite religious leaders may come as a

[107] Ali Khamenei, "Artificial Insemination and In Vitro Fertilization (IVF), Q1264," trans. Sadegh Foghani, The Office of the Supreme Leader, accessed October 20, 2017, http://www.leader.ir/en/book/23.

surprise to Westerners."[108] Such studies argue that in Iran, similar to other parts of the Muslim world, including the Middle East, "ARTs are practiced according to religious norms, which are clearly set out in nonlegally-binding, but nonetheless authoritative religious proclamations called fatwas."[109] Theological differences exist between Sunnis and Shi'ite as well as among various theologians of each denomination, but it is too convenient to account ARTs fatwas for the widespread practice of IVF and related technologies in the Shi'a-majority Iran. By the time Ayatollah Khamenei issued his fatwa, Royan Institute was already celebrating the 1000th birth by the assisted conception treatment in Iran in 1999. The first IVF birth was conducted in Iran in 1993, followed by the second Intracytoplasmic sperm injection (ICSI) birth and by the first frozen embryo birth in 1995 and 1996, respectively.

Ayatollah Khamenei's fatwa did not enact any bioethical policy or guideline. It was a religious response to a religious inquiry of an individual. It did not lead to any development in the field of infertility treatment, neither it did generate a public discussion. The Iranian parliament passed its first-ever law on embryo donation on July 2003. The Guardian Council approved it on 30 July 2003. Parliament then referred the law to the presidential cabinet and obliged the Ministry of Health and Medical Education to prepare and approve executive guidelines in collaboration with the Ministry of Justice in three months. Although, the presidential cabinet did not develop

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[108] Inhorn, "Fatwas and ARTs: IVF and Gamete Donation in Sunni v. Shi'a Islam," 311.
[109] Ibid., 291.

the executive guidelines until 14 March 2005. When Ayatollah Khamenei's fatwa permitted various methods of artificial insemination and in vitro fertilization (IVF) including egg and sperm donation, the parliamentary of law of 2003 generally permitted "transfer of embryos resulting from fertilization outside the womb of legal and lawful couples" under certain conditions.[110]

In an interview in 2005 with one of the Iranian newspapers, Ahmad Vosough—the Clinical Deputy of the Royan Institute—said:

> "An embryo bank was established early on at the Royan Institute, so patients who had excess embryo could freeze and maintain their embryos. Later on, these patients would either use their embryos or donate it. This is what we have been doing for years, and our embryo bank has more than thousands of embryos now. With regard to the sperm bank, a patient's sperm is kept only for his own use, we do not have sperm donation, the term "sperm bank" is not a good term. We have centers for maintaining someone's sperm for his own use, but we do not have sperm donation."[111]

When the interviewer inquired about the difference between sperm donation and embryo donation, Dr. Vosough quickly said, "we have religious problems where those who are eligible to issue a fatwa should permit whether this can be done or not."[112] Apparently, Dr. Vosough, similar to the members of the Iranian Parliament, did not know of the Supreme Leader's permissive fatwa on sperm donation. Regardless, his

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[110] Islamic Consultative Assembly, "Donation of Embryo to Infertile Couples" (Islamic Parliament Research Center of the Islamic Republic of Iran, June 20, 2003), http://rc.majlis.ir/fa/law/show/93943.
[111] Vosough, A Report from the Sixth International Congress of Royan Institute.
[112] Ibid.

comment confirms that Royan officials would only resort to religious scholars where there was no guideline or when the available guidelines were not as permissive as they would have liked it.

The reason behind the more elaborate language of Ayatollah Khamenei in his issuance of the 1999 fatwa was that the inquirer had presented his question in the format of several inquiries, and hence Ayatollah Khamenei had responded to each inquiry separately. The impact of Ayatollah Khamenei infertility fatwa should not be sought beyond the community of his religious followers. A closer look at the parliamentary law reveals that it gives a different instruction at some issues, compared to the Ayatollah Khamenei's fatwa. This shows the limit of Ayatollah Khamenei's fatwa. Ayatollah Khamenei fatwa was unsurprisingly not publicized. It was a religious response by a religious scholar to a religious inquiry of an individual. The scope of Ayatollah Khamenei's fatwa was very limited, otherwise it would be very unusual for the members of the Parliament to pass a law that was not in line with the fatwa of the Supreme Leader and indeed rejected certain parts of it. This undermines the *progressive* narrative—which primarily credits Islamic bioethics for the development of biomedical sciences in Iran—by showing that if an order is truly a fatwa, the scope of its influence is, by definition, limited. For a fatwa to have a national impact, it has to cease to exist as a fatwa; it needs to transform into a political order and to take a new identity that is not of religious nature, but of political. Besides, the carefully-worded language and the cautionary content of the parliamentary law was even more restrictive that Ayatollah

Khamenei's fatwa, which undermines eve further the legitimacy of the *progressive* narrative.

Ayatollah Khamenei expressed his patronage of the institute years before he released his *IVF fatwa* in 1999. In the early 1990s, when the soon-to-be founders of the institute were looking for patronage and financial support, they resorted to a mutual friend who personally knew the Supreme Leader. Once the Supreme Leader was informed of the mission and the needs of the founders, he obliged the Islamic Revolution Mostazafan Foundation to provide the founders with a space. Hamid Gourabi, the current President of Royan and one of the early founders of the Institute, later said in an interview:

> "Ayatollah Khamenei asked from us specifically how much financial support we needed. We declared six million Toman and we began the work with his support. When the Deputy of the [Mostazafan Foundation] saw the direct order of the Supreme Leader, he helped us a lot. However, because even the Deputy had no understanding of [the importance of] our work, he put a condition under which we needed to evacuate the building if we did not achieve anything by the end of the first year"[113]

Later in a speech given at the Royan Institute in 2007, the Supreme Leader, said:

> "When the mutual friend of me and the late Dr. Kazemi explained the early situation of the Institute about fifteen or sixteen years ago and shared with me his request, I saw the signs of a right action in the project,

[113] Hamid Gourabi, Interview by Research and Cultural Institute of Islamic Revolution, The Office of Preservation and Publication of Ayatollah's Khamenei's works, September 7, 2010, http://farsi.khamenei.ir/others-memory?id=10064.

and so I told him I would support it as much as I can. The passage of time, confirmed, not denied, that I had made the right choice."[114]

After the Iran-Iraq war and on the eve of the Reconstruction Era, when there was not a clear way of gaining support for any large-scale scientific activity and when the country was grappling with the devastating consequences of the war, the Supreme Leader supported the Institute. His IVF fatwa was not issued until almost a decade after his embrace of the Royan Institute. Indeed, at the time of Royan's establishment, Ayatollah Khamenei had not yet become eligible to issue a fatwa, neither was he an ayatollah.[115]

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[114] Foghani, "IR Leader visits Royan Research Center."

[115] One day after the death of Ayatollah Khomeini—the charismatic leader of the Iranian revolution of 1979—on June 3, 1989, the Council of Experts appointed Ayatollah Khamenei to succeed Ayatollah Khomeini as the second supreme leader. The constitution required the supreme leader to be a *Source of Imitation*, a requirement that Ayatollah Khamenei did not meet at the time. But that condition was later taken out of the constitution. Khomeini had appointed a council to revise the constitution before his death. The council made several changes to the constitution during their meetings from April 27, 1989 to 11 July 1989. Among the changes was the abolition of the Source of Imitation requirement for the office of the supreme leader. Iranian constitutional referendum was held on 28 July 1989. Of the fifty-four percent of eligible voters who participated in the election, more than ninety-seven per cent voted in favor of the new constitution. Ayatollah Khamenei did not become a Source of Imitation until December 2, 1994, three years after his early support of the institute, although his promotion to the rank of source of imitation has been a subject of dispute since then. Ayatollah Khamenei's early patronage of the institute should not be viewed through the lens of his religious rank which he only achieved much later or through the lens of his fatwas which were issued decades after his embrace of the institute.

3.5. THE NON-FATWA FATWA

Since the birth of Royan, the Supreme Leader has met and communicated with the Royan Officials on a regular basis. In his communication with Royan officials, the Supreme Leader always highlighted the importance of work being conducted by researcher at the Institute and stated his support of the institute. In December 2002 (or January 2003), when the institute was on the verge of entering the field of stem cell, Royan officials briefed the Supreme Leader on "stem cell research, its application, and cloning."[116] Because Royan officials were religious persons and had ethical concerns over the use and destruction of human embryos, they decided to share their concern with the Supreme Leader. "Given the existence of different ethical and religious views in the field [of stem cell research] we needed to ask whether we were allowed to destruct inutile embryos to achieve stem cells", Dr. Gourabi said.[117] In response to the inquiry od Royan officials, the Supreme Leader said, "tell these friends to pursue their big goals with effort and perseverance and ascertain such enormous wealth for themselves and the country." In another occasion, the Supreme Leader said, "you should be careful that the creation of spare body organs does not lead to the creation of a human body."[118] Royan officials understood those statements as Supreme Leader's approval of stem cell

[116] Ibid.
[117] Ibid.
[118] Ibid.

research. The only field that they were advised not to conduct research in was human cloning.

Scholars and journalists have perceived Ayatollah Khamenei's approval of stem cell research as the *stem cell fatwa*, an indicator of the importance of Shi'a teachings and a sign for the significance of the progressive nature of Islam. As mentioned earlier in this chapter, the Western media as well as Muslim scholars have interpreted the statement as an Islamic fatwa issued from the highest religious authority of the country and have reported it as a pivotal moment in the development of Royan's scientific activities— implying that without such approval, the institute's research would have been halted or Royan's stem cell research would not have started.

A quick glance at the substance of message, however, immediately shows that it is highly questionable to treat the message as a fatwa. Unlike the 1999 IVF fatwa, the Supreme Leader's message is hardly directed at the question. The Supreme Leader's response does not directly engage with the question and generally expresses the Supreme Leader's approval of scientific work. The content of the message makes no reference to Islamic teachings or Qur'anic verses. More importantly, the message never entered Ayatollah Khamenei's book of fatwas, which is a compilation of all questions from followers with Ayatollah Khamenei's answers. Ayatollah Khamenei's book of fatwa gets updated regularly, but even the most-updated edition does not include the so-called 2003 *stem cell fatwa*. Ayatollah Khamenei's message was another letter, speech or statement of support issued by the highest political authority of the country.

Even if we hypothesize that the Supreme Leader issued his message as a fatwa, due to the plurality of sources of religious imitation in Shi'a tradition, discussed earlier, his message could not serve as a religious order for all Royan researchers, many of whom were perhaps the religious followers of other ayatollahs; or were not religious at all. Why Royan officials asked for the approval of their long-time patron and not for the approval of other ayatollahs, of whom many were more senior than Ayatollah Khamenei? For the first two decades, Royan officials resorted to clerics when a religious concern came up. Why they consulted the Supreme Leader in the case of the stem cell? Why they did not consult their own Ethics Committee?

Additionally, one can ask how much Iranian religious scholars such as Ayatollah Khamenei were familiar with stem cell research in the first place to be able to issue a fatwa on the matter at the turn of the century. In his first visit to the Institute in 2007, Ayatollah Khamenei asked many specific questions about the scientific matters. At the time of his response to the inquiry of Royan founders, Ayatollah Khamenei was most likely not familiar with the stem cell. Issuance of a political order for the development of a scientific field as a nation-building project requires political legitimacy and authority, but issuance of a religious order on a bioethical issue requires a great deal of awareness of various scientific and ethical aspects.

The Royan officials were not simply looking for a religious approval issued by a religious scholar to meet their own personal ethical concerns, but as officials of a state institutions, they asked for a green light from the highest political authority of the

country, who was their long-term patron, and whose approval meant logistic and financial support for the Office of the Supreme Leader for the Royan Institute. It is perhaps questionable to assume that Royan officials turned to the Supreme Leader because of his religious rank and in the search for a fatwa. They turned to the political leader of country, the Supreme Leader, who was at the same time an ayatollah.

Moreover, banning researchers from only "human cloning" makes Ayatollah Khamenei the most liberal religious scholar in the Islamic world, with no close rival, while even in Iran, he is known as a conservative cleric. Ayatollah Khamenei's fatwas on non-bioethical issues including fasting or hijab has put him among the most conservative ayatollahs, but Ayatollah Khamenei's extremely liberal position on bioethics does not line up with his overall attitudes towards religious matters. Needless to say, human cloning is scientifically far beyond the reach of researchers, Iranian or otherwise, in the near future. Ayatollah Khamenei's order banned researchers from working on a research field that was far beyond the scientific, technological and financial capacity of Royan Institute. Again, it is highly questionable to frame political orders of Iran's highest authority as liberal religious fatwas being issued by one of the least liberal Iranian ayatollahs.

To compare the Supreme Leader's stem cell ruling with the opinions of other contemporary Iranian Ayatollah, an inquiry—regarding the embryonic development and destruction of embryo for research purposes—was made by the author from the Supreme Leader, Ayatollah Khamenei, and four prominent Shi'a Grand Ayatollahs who

reside in Iran: the ninety-one-year-old Grand Ayatollah Naser Makarem Shirazi, the ninety-two-year-old Grand Ayatollah Hossein Noori Hamedani, the ninety-two-year-old Grand Ayatollah Seyyed Mohammad Hosseini Shahroodi, and the ninety-seven-year-old Grand Ayatollah Hossein Vahid Khorasani.

The inquiry comprised three parts:

I. Is it permissible to destroy an in-vitro human embryo for research, scientific, and/or medical purposes?
II. If destruction of an in-vitro human embryo for research, scientific, and/or medical purposes is permissible, up to what stage of embryonic development, the destruction of embryo is permitted religiously?
III. Based on Islamic teachings, what are the stages of embryonic development and how long is each stage?

The Supreme Leader's fatwa permitted the destruction of an unborn child before ensoulment, but it did not clarify when ensoulment happens, nor did it explain the child developmental stages.[119] With the exception of the Supreme Leader, Ayatollah Khamenei, who is a less prominent religious scholar compared to the other four senior Grand Ayatollahs, the other four religious scholars considered the destruction of an in-vitro embryo at any stage of embryonic development *forbidden*. The Office of the Grand Ayatollah Makarem Shirazi wrote a lengthy response. The first part of the fatwa addressed the first two questions collectively:

[119] Sadegh Foghani to The Office of the Supreme Leader, "Religious Inquiry," August 5, 2017.

> "Abortion at any age and stage is haram [forbidden], and if committed diyah [atonement or blood money] is required. But, when embryo is in early stages and it is not yet a complete human (before ensoulment within the first four months), and if keeping the offspring at that point will lead to an impaired birth which, according to the pious experts [doctors] will cause *asr* and *haraj* [extreme difficulty] to the parents, it is permissible to end the pregnancy."[120]

The second part of the fatwa explained the embryonic stages according to Islamic teachings:

> "Qur'an states five stages for embryonic development: Then We made the sperm-drop into a clinging clot, and We made the clot into a lump [of flesh], and We made [from] the lump, bones, and We covered the bones with flesh [23:14]. These four various stages along with stage of conception, comprise the quintuple stages, of which each [stage] represents its own mysterious realm full of wonders which have been examined in the science of child development today and books have been written about it, but the day Qur'an revealed the various stages of child development and talked about its marvels, there was so sign of the science and knowledge [of child development]."[121]

The Office of the Grand Ayatollah Shahroodi's response was succinct and straightforward: "After conception, the destruction of unborn child is not permitted at any stage."[122] The Grand Ayatollah Noori Hamedani stated that the "destruction of unborn child at any stage of development is haram and [if committed] requires diyah."[123] The Office of Grand Ayatollah Khorasani's response, similar to other fatwas,

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[120] Sadegh Foghani to The Office of Grand Ayatollah Naser Makarem Shirazi, "Religious Inquiry," August 2, 2017.
[121] Foghani to The Office of Grand Ayatollah Naser Makarem Shirazi.
[122] Sadegh Foghani to The Office of Grand Ayatollah Seyyed Mohammad Hosseini Shahroodi, "Religious Inquiry," March 17, 2018.
[123] Sadegh Foghani to The Office of Grand Ayatollah Hossein Noori Hamedani, "Religious Inquiry," March 15, 2018.

expressed a prohibitory language, but in a slightly different way. His fatwa stated that "under obligatory precaution, [the destruction of unborn child] is haram in all stages of development."[124] *Obligatory precaution* is a technical term in Islamic jurisprudence which is used in cases where the Source of Imitation cannot produce a fatwa on a religious inquiry on the basis of the available sources and evidences. In obligatory precaution, it is obligatory to act either cautiously or refer to another Source of Imitation in the matter, who is—second to his/her own Source of Imitation—the most knowledgeable Source of Imitation. Hence, a follower of Grand Ayatollah Khorasani should either consider abortion in any stage of development forbidden, or alternatively, he/she can seek the fatwa of another Source of Imitation. Given that ayatollahs unanimously—with the exception of the Supreme Leader, Ayatollah Khamenei—consider the destruction of embryo or fetus in any stage of embryonic and fetal

[124] Sadegh Foghani to The Office of Grand Ayatollah Vahid Khorasani, "Religious Inquiry," March 15, 2018.

development forbidden, a follower of Grand Ayatollah Khorasani will most likely not be able to obtain a different ruling.[125]

With the exception of the Supreme Leader's fatwa, other fatwas did not point to any condition that would render the destruction of an in-vitro unborn child for scientific or medical purposes permissible. All fatwas universally and unconditionally ruled out destruction of in-vitro embryos for scientific reasons. For example, none of the Ayatollah said an in-vitro embryo can be used for stem cell research if the embryo is an excess result of infertility treatment.

To frame the Supreme Leader's approval of stem cell research as a religious fatwa that was released by the highest religious authority of the country, feeds the false

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[125] Modern science clearly differentiates between embryo and fetus and between embryonic development and fetal development. The Persian words for embryo and fetus are *royan* and *janin*, respectively, which are common in the scientific jargon used by Iranian researchers and scientists. However, the language of fatwas issued by Iranian ayatollahs does not reflect the distinction between embryo and fetus and Iranian religious scholars unanimously use the word *janin,* regardless of the stage of development. To avoid confusion, the author has consciously translated the word janin to unborn child, when the distinction between embryo and fetus was not highlighted in the issued fatwas. It is, however, understandable that for religious scholars who consider abortion and the destruction of an in-vitro unborn child forbidden in any stage of development, it renders unnecessary to acknowledge the distinction between embryo and fetus. In the case of the developmental period associated with the 120 days before the Islamic ensoulment of unborn child, the distinction between embryo and fetus does not seem to be useful either, because the pre-ensoulment period covers the entire embryonic development and about two months of the fetal development. Nonetheless, the lack of attention to the difference between embryo and fetus could be an indicator of unfamiliarity of religious scholars with the technical jargon and scientific aspects of child development.

narrative that emphasizes the role of Islamic fatwas and the progressiveness of Islam in the development of ARTs and embryonic stem cell research in Iran, and fertilizes the misunderstanding that puts religion at the center of historical analysis of the development of the Royan Institute.

3.6. NON-INSTITUTIONAL ACTORS

Regardless of the applicability of fatwas, if one maps out the Islamo-Iranian bioethical network of the institutional and individual actors, the nodes of such complicated map goes beyond the Supreme Leader, state institutions, and Royan officials, to include patients, Royan researchers, and clinic staffs. A recent article published by a group of scientists affiliated with Iranian scientific institutions—based on a cross-sectional, descriptive questionnaire survey of 203 infertile couples, 54 clinic staffs, and 49 embryo researchers at Royan Institute—examined the attitudes of various groups towards the personhood of the embryos at various stages of development.[126] The study defined the ensoulment as the time when soul enters the fetus, which—according to the Muslim scholars—is at the 120th day of gestational age. The study also

[126] Marjaneh Kayssan et al., "Attitudes of Infertile Couples, Fertility Clinic Staff and Researchers toward Personhood of The Human Embryo in Iran," *Cell Journal (Yakhteh)* 19, no. 2 (2017): 314–23. Infertile couples were sampled from patients who had referred to the Royan Institute. Clinic staff were infertility treatment service providers who were sampled from physicians, nurses and midwives who were directly in contact with patients with the minimum of one-year experience with the job. Researchers recruited for this study were Royan scientists with the minimum of one-year experience working with embryos.

defined four stages of development: pre-implementation embryos, post-implementation embryos, fetus prior to the ensoulment (complete from a bodily point of view, but has not been ensouled), and after ensoulment. The participants were given three choices to identify the personhood of the unborn child: not a human being, potential human, and complete human.

While the authors' reading of the statistical analysis of the questionnaires was not unsupported, their selective interpretation of the result makes their conclusion incomplete, raising several questions. For example, the authors concluded that "ensoulment time is a major and important border for personhood" to the extent that "most infertile couples and clinic staff consider the human embryo as not a human being" before the ensoulment, and "majority of all study participants considered the human fetus to be a complete human after ensoulment time."[127] While the authors assigned a central role to the 120-days Islamic notion, they failed to notice that—against the explicit Islamic prescription—still a considerable percentage of the participants did not consider the post-ensoulment fetus a "complete human." Parallel to the embryonic development, the participants' view across all the three groups naturally moved away from the "not a human" to a "complete human," but the ensoulment did not act as a

[127] Kayssan et al., 314.

demarcation criterion or a "border for personhood," contrary to the argument of the authors. (Table 3.1) [128].

Table 3.1 Attitude of Infertile Couples, Fertility Clinic Staff and Researchers Toward Personhood of Human Embryo

	Infertile patient n=406	Clinic staff n=54	Researcher n=49
Personhood of pre-implantation embryos			
Not human	340 (83.7)	42 (77.8)	33 (67.3)
Potential human	46 (11.3)	10 (18.5)	15 (30.6)
Complete human	20 (4.9)	2 (3.7)	1 (2.0)
Personhood of post-implantation embryos			
Not human	293 (72.3)	36 (66.7)	22 (44.9)
Potential human	77 (19.0)	15 (27.8)	25 (51.0)
Complete human	35 (8.6)	3 (5.6)	2 (4.1)
Personhood of fetus			
Not human	203 (50.0)	25 (46.3)	14 (28.6)
Potential human	112 (27.6)	23 (42.6)	27 (55.1)
Complete human	91 (22.4)	6 (11.1)	8 (16.3)
Personhood of fetus after ensoulment			
Not human	69 (17.0)	7 (13.0)	6 (12.2)
Potential human	99 (24.4)	11 (20.4)	8 (16.3)
Complete human	238 (58.6)	36 (66.7)	35 (71.4)

Over one-fifth of embryo researchers did not consider the post-ensoulment fetus a "complete human." That figure was even remarkably higher among the other two participant groups: of the 203 infertile couples and 54 clinic staffs, over 41 percent and 33 percent, respectively, did not consider the fetus after ensoulment a "complete

[128] Kayssan et al., "Attitudes of Infertile Couples, Fertility Clinic Staff and Researchers toward Personhood of The Human Embryo in Iran."

human." This observation is of even more significance given that the authors identified all participant—with the exception of eight Sunni-Muslim and two Christian infertile couples, and one Zoroastrian researcher—Shi'a Muslims. The failure of the 120-day thesis to act as a clear-cut borderline can partly be justified based on the irreligiosity of the Iranian society discussed earlier in this chapter. Also, the availability of intellectual pluralism in the Islamic world, particularly among the fatwa-issuing religious scholars, can potentially count as another explanation.

The article, however, rightly suggested that "there [were] significant differences between the attitudes of infertile couples, fertility clinic staff and researchers toward the personhood of human embryos…[even suggesting that] our results show that using excess embryos for treatment and research is likely to be less controversial among Iranian patients and fertility clinic staff than among the researchers themselves."[129] Why the Royan researchers have a significantly more conservative position on the personhood of the embryo compared to the two other groups, particularly compared to the infertile couples? While 55 per cent of Royan researchers considered a bodily-developed pre-ensoulment fetus "potential human," while half of the patients considered an unborn child at that stage of development "not human." If the progressive and permissive nature of Islamic bioethics is supposed to explain the rise of reproductive medicine in Iran, why the existence of such progressive bioethical

[129] Kayssan et al., 323.

framework has—ironically—led to a formation of conservative stance regarding the personhood of the embryo among the Royan researchers?

3.7. ANIMAL RESEARCH ETHICS

A brief overview of Islamic bioethics on animal research can further complicate the relationship between the Islamic bioethics and the development of biomedical sciences in Iran. While there is no official estimate on the number of animals used in research laboratories in Iran, Royan Institute, alone uses 2500-3000 animals—mostly rats and mice—for biomedical research annually.[130] Although the Royan researchers have been using animals for over a decade, no concrete ethical guideline has been developed. The interest in Islamic bioethics has been growing, but "little work has been done on research ethics, and even less on animal research ethics", as one scholar noted.[131]

The Iranian state in collaboration with academic institutions and research centers—many of them state-funded—has been trying to develop some guidelines on animal research and testing. For example, the Six Ethical Codes for Research—mentioned earlier in this chapter—offers several guidelines on animal research and testing, however, as mentioned previously, that guideline has been criticized by Iranian

[130] Robert Tappan, "Islamic Bioethics and Animal Research: The Case of Iran," *Journal of Religious Ethics* 45, no. 3 (September 1, 2017): 570, https://doi.org/10.1111/jore.12190.
[131] Tappan, 562.

experts due to exhibiting "certain ambiguities and deficiencies." [132] Moreover, the Head of the Ethics Committee at the Royan Institute, has expressed his preference not for Islamic or Iranian bioethical guidelines, but for the guidelines provided by the National Institute of Health (NIH) of the United States for animal research.[133] Given that Iranian researchers mainly use rats and mice, however, the Royan researchers may find NIH guidelines lacking.

In the United States, one of the most controversial aspects of animal welfare regulations is that the United States Department of Agriculture (USDA) regulations for the Animal Welfare Act does not consider mice, rates, and birds as animals according to the definition of the word, which leaves these species—approximately eighty-five per cent of all animal research—unprotected by the legislation. While the USDA excluded mice, rate, and birds from its definition of animals to reduce the cost of inspections, such exclusion "has had the effect of leaving many forms of research and even whole facilities totally uninspected and unregulated."[134] Hence, despite the interest of Royan Research to utilize foreign or international guidelines on animal research, those guidelines might fail short of responding to their bioethical inquiries.

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[132] Khodaparast, Abdolahzadeh, and Rasekh, "A Critical Study of the 'Six Ethical Codes for Research' in Iran."
[133] Tappan, "Islamic Bioethics and Animal Research," 567.
[134] Tom L. Beauchamp et al., *The Human Use of Animals: Case Studies in Ethical Choice*, Second Edition (Oxford: Oxford University Press, 2008), 37.

Nonetheless, exploring international and foreign ethical codes and guidelines goes well beyond the preference of a high-ranking Royan official and is not limited to animal ethics. The Royan Ethics Committee routinely examines international guidelines—such as the Declaration of Helsinki—and incorporates ethical codes from those guidelines into their own guideline once when they see fit. A 2017 article on Iranian bioethics problematized the approach of Iranian experts on animal bioethics by stating that no Iranian scholar has taken up "the larger task of unpacking the implications of the descriptions of the nature of animals presented in the scriptural sources before then moving to the discussion of the use of animals in research."[135] A recent article published by a group of scholars affiliated with the Avicenna Research Institute confirms the lack of effective Iranian guidelines and serious theological and ethical discussions on animal research ethics despite the widespread use of animals in Iranian research labs for over a decade.[136]

The Avicenna scholars' goal was to review the international laws and Islamic perspective to provide a comprehensive ethical guideline on animal research. The article featured a lengthy discussion of a guideline developed by the National Advisory Committee for Laboratory Animal Research (NACLAR) of Singapore in 2004 on animal research ethics titled, Guidelines on the Care and Use of Animals for Scientific

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[135] Tappan, "Islamic Bioethics and Animal Research," 568.
[136] Mohammad Mehdi Naderi et al., "Regulations and Ethical Considerations in Animal Experiments: International Laws and Islamic Perspectives," *Avicenna Journal of Medical Biotechnology* 4, no. 3 (July 22, 2012): 114–20.

Purposes.[137] The NACLAR guideline acknowledges the best practices of countries such as Australia, Canada, New Zealand, the US, and organizations such as the Council for International Organizations of Medical Sciences (CIOMS) and the European Convention for the Protection of Vertebrate Animals Used for Experimental and Other Scientific Purposes (1986).[138] In particular, the NACLAR guideline was based on several guidelines: the Australian Code of Practice for the Care and Use of Animals for Scientific Purposes issued by the National Health and Medical Research Council, Australia; the Guide to the Care and Use of Experimental Animals, Volume 1 (second edition, 1993) issued by the Canadian Council on Animal Care (CCAC), Canada; the Good Practice Guide for the Use of Animals in Research, Testing and Teaching issued by the National Animal Ethics Advisory Committee, New Zealand; the Guide for the Care and Use of Laboratory Animal issued by the National Research Council, USA; and the Public Health Service Policy on Humane Care and Use of Laboratory Animals and Arena/OLAW Institutional Animal Care and Use Committee Guidebook, issued by the Office of Laboratory Animal Welfare (OLAW), National Institutes of Health, USA.[139] Although the NACLAR was specifically written for Singapore, the Avicenna article echoed various ethical codes of the NACLAR

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[137] NACLAR operates under the auspices of the Agri-Food and Veterinary Authority of Singapore.

[138] "NACLAR Issues Guidelines on the Care and Use of Animals for Scientific Purposes in Singapore," Press Release (National Advisory Committee for Laboratory Animal Research, October 29, 2004).

[139] "Guidelines on the Care and Use of Animals for Scientific Purposes" (National Advisory Committee for Laboratory Animal Research, 2004), https://www.ava.gov.sg/docs/default-source/tools-and-resources/resources-for-businesses/attach3_animalsforscientificpurposes.

guideline, especially the guideline's emphasis on the principles of 3Rs (Replacement, Reduction and Refinement)—proposed by Russell and Burch in the late 1950s—and the advocacy for an Institutional Animal Care and Use Committee (IACUC).[140]

The case of animal bioethics shows how scientific research on animals has been carrying on for almost a decade in Iran despite unavailability of a practical and sound Islamic guideline. It would be anachronic to say in the future—once Islamic bioethical guidelines on animals come to exist—that the progressive nature of Islamic bioethics has been the driving force behind biomedical sciences in Iran, given that to this day no effective *Islamic* ethical codes on animal research guides the scientific experiments of Iranian researchers.

[140] W. M. S. Russell and R. L. Burch, *The Principles of Humane Experimental Technique* (London: Methuen, 1959).

CHAPTER 4. DOUBLE IDENTITY

As discussed earlier, this study presents a revisionist account for the development of the Iranian research institute for reproductive biomedicine and stem cell—the Royan Institute—and more broadly, for the growth of biomedical sciences in Iran, by challenging the unanimous scholarly consensus that credits primarily religious values and teachings—specifically Islamic bioethics and fatwas—for biomedical developments in Iran.

In Chapter One, the examination of the institutional development of Royan and its parent state agencies—The Supreme Council of the Cultural Revolution (SCCR) and the Academic Center for Education, Culture and Research (ACECR)—showed that the Cultural Revolution of early 1980s—which led to the closure of universities for three years—had a scientific arm, which has often escaped the attention of scholars of modern Iran; scientific nationalism has always been part of the agenda of Iran's post-revolutionary political leaders to battle against what they saw as *cultural dependency, cultural assault*, and *colonial universities.*

In Chapter Two, it was argued that what has been called the *progressive Islamic bioethics* played a little role in the development of the Royan Institute, and more broadly, in the growth of biomedical sciences in the post-revolutionary Iran. It was shown, in particular, that Ayatollah Khamenei's support of the Stem Cell Research—

which has been mischaracterized as an Islamic fatwa—did not generate any new bioethical policy, neither institutionally nor nationally. Additionally, a chronological examination of the scientific development of institute revealed that the Institute had already began its stem cell research prior to the issuance of the so-called Supreme Leader's fatwa. The Supreme Leader's political patronage of stem cell research, however, was not unprecedented and, indeed, was another episode of a long-term state guardianship of the institute. Although the historical examination of Royan suggests a bottom-up, non-monolithic conception, the Supreme Leader and Royan's parent state institutions have been patronizing the Institute—despite limited financial and logistical support in the immediate post-Iran-Iraq War era—since the birth, if not since the conception, of Royan. One might ask, what is the significance of the Supreme Leader's support if it was not a religious fatwa or if it did not create any immediate new bioethical policy?

The answer to that questions lies at the intersection of nation building, scientific nationalism, and national identity. Once released from the analytical yoke of Islamic bioethics, and more broadly—Islamocentrism—a nation-building perspective can help us to further examine the development of the Royan Institute beyond the confinement of religion. As discussed in previous chapters, Royan is a state institute, and an offspring of the Cultural Revolution of 1980s. Royan's parent institutions—SCCR and ACECR—were established in the 1980s as a direct outcome of state policies to address what were seen as cultural maladies and scientific shortcoming at the time. Building on

arguments presented in previous chapters, this chapter treats the development of the Royan Institute as a nation building project—not as a byproduct of progressive Islamic bioethics.

Through the examination of the Supreme Leader's speeches and notes about the Institute, his meetings with the Royan officials and researchers, the visits of Iran's high-ranking politicians to the Royan Institute, including the Supreme Leader's visit in 2007, a content analysis of Royan English-language newsletters and other publications, an examination of the Royan Institute's awards and conferences, the impact of economic sanctions on Royan's scientific activities, memoirs of Royan's foreign guests and visitors, and Royan's efforts to connect to the international scientific community— this chapter presents the *double identity thesis*, which juxtaposes the policies of the Royan Institute—a state institution—with the national policies of the Iranian state. The *double identity* thesis argues that Royan has been promoting a Persian-rooted, secular, and apolitical identity for international consumption since its inception in the early 1990s (international identity), which has been at odds with and with the conservative and Revolutionary religio-political identity that the state has been promoting for national

consumption since the 1979 Revolution (national identity).[141] The *doubly identity thesis* suggests that the Royan Institute, although operating under the auspices of conservative state-run bodies, has been promoting a vision that is in sharp divergence from the state's post-revolutionary political ideology.

This chapter does not intend to evaluate the scientific status of the Royan Institute. Given the success of Royan Institute's annual congress, the increasing number of the Royan researcher's publications in international journals, Royan's internationally-acclaimed research projects, and most importantly, their successful scientific experiments, one can safely state that Iran's scientific research in infertility biomedicine, stem cell research, and animal biotechnology has been thriving.

Prof. Stuart Howards—an American urologist and Professor of University of Virginia Charlottesville—who attended the sixteenth annual Royan International Conference on Reproductive Medicine and Stem Cell research in Tehran, Iran, wrote in

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[141] The genealogy of the term "Persian" versus "Iranian" is an ongoing concern among historians of Iran. The first encounter of the Western Civilization with Iranians took place when Greeks came across Persian Iranians who were ruling the Iranian territory under the Persian Empire. Greeks called the entire Iranians "Persis" (Persian) because Iranian Persians were the first group of Iranians that they encountered. Similarly, Iranians called the entire Greeks, Yunaniyans (i.e. Ionians) and referred to Greece, Yunan (Ionia), a terminology that has persisted to this day in the Iranian society. From a linguistic perspective, not from a historical one, another dichotomy exists between Farsi and Persian. Farsi is the Persian word for Persian just as Deutsch is the German word for German. Compared to Persian, Farsi does not carry any historical or cultural connotations. In the English-speaking world, Persian is frequently used to refer to Farsi as the language and culture of Iranians, analogous to the function of German in the eyes of an English-speaker. Katouzian, *The Persians*, 2–3.

his memoir: “The science related to male infertility was by an order of magnitude better than that at any of the many other meetings I have attended.”[142] Prof. Sherman J. Silber, the Director of Infertility Center of St. Louis and IVF Program, found as “a surprise” that the scientific knowledge of the “local Iranian speakers were outstanding.”[143] After attending the Royan Congress, Prof. Dominique Pioletti—Director and Principal investigator of Max Planck Institute for Heart and Lung Research—acclaimed the Royan Congress as “a world class meeting” and found the scientific level of congress was “elevating each year.”[144] Elza Sartorelli—a researcher in human genetics from the University of Santa Catarina, Brazil—expressed her appreciation of Royan researchers’ use of “most top techniques on human infertility” at the Royan Institute in a memoir.[145] Fabio Pasqualotto—another Brazilian researcher and a professor of Urology—wrote of the Royan Institute as a “first quality care in medicine, reproductive medicine, and stem cell research” and stated that he was “most amazed” by the Royan’s Andrology

[142] Stuart S. Howards, “An American Doctor’s Visit to Iran,” *Peyvand, ICSNC Newsletter* 92 (Winter 2016): 20, http://icsnc.org/sites/default/files/newsletter/ICSNC-NL92-Peyvand.pdf. Stuart Howard won the prestigious Keyes Award of the American Association of Genitourinary Surgeons in 2013.
[143] Sherman J. Silber, “Views on Royan Congress,” Royan Congress, n.d., http://www.royancongress.com/ArtonRoyan.aspx.
[144] Dominique Pioletti, “Views on Royan Congress,” Royan Congress, n.d., http://www.royancongress.com/ArtonRoyan.aspx.
[145] Elza Maria Prestes Sartorelli, “An Amazing Trip,” *Royan Institute Newsletter* 1, no. 2 (Spring 2008).

Department.[146] A chronological overview of the institute's major scientific projects and achievements is provided in Appendix A.

4.1. THE 2007 VISIT

In July 2007, when Iran's first cloned sheep, *Royana*, was ten-month-old, Iran's Supreme Leader, Ayatollah Ali Khamenei, visited the Iranian stem cell and reproductive biomedicine research center, the Royan Institute, for the first time.[147] In the new modern building that the Institute had just relocated to, he praised the work of the researchers and gave a speech, filled, as usual, with anti-imperialist sentiments and anti-Western remarks:

> The status and role of nations and countries in the international order should be based on their scientific capacity, but the world's imperialist superpowers have divided the world into the developed and the developing, into the dominant and the subjugated, so they can monopolize over science, but this trend must change…Given the history, culture, scientific legacy and brilliant talents of our country, our nation can play a significant role in this path.[148]

Ayatollah Khamenei's visit to the Royan Institute, in his own words, was a "symbolic act" to "express gratitude to a great scientific movement" that had begun in

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[146] Fabio Pasqualotto, "A Trip to Iran," *Royan Institute Newsletter* 1, no. 6 (Spring 2009).
[147] Royana was born in September 30, 2006 in the city of Esfahan. Ayatollah is a high-ranking title given to Muslim clerics in several Muslim countries, including Iran. The Supreme Leader is an Iranian post-Revolutionary political title that is given to Iran's highest political authority. While the former is a religious title, the latter is a political one.
[148] Payam: Monthly Newsletter of the Iranian Genetics Society, August/September 2007.

the country.[149] Ayatollah Khamenei's reason for the visit was two-fold: "I chose here, firstly, because of Royan. Secondly, because of the Academic Center for Education, Culture and Research (ACECR)," the latter being a state-run parent institution of Royan.[150] As discussed in Chapter One, ACECR is commonly known as the Jahad-e Daneshgahi in Iran ("daneshgah" is the Persian word for "university"). The term Jahad-e Daneshgahi promotes the idea that—along with economic jahad, political jahad, and other forms of jahad in society—an educational and academic jahad centered in universities is also needed. In Ayatollah Khamenei's view, jahad was a defining characteristic of the true science:

> Jahad-e daneshgahi comprises of two words: jahad and university; in jahad-e daneshgahi there should be jahad, and it should be related to university…jahad and jahd [Arabic word for effort] has the same etymological root; which indicates that there should be jahd in jahad, but jahad is not only jahd [effort]; jahad means fighting…fight against an enmity; fight against an obstacle; fight against a comrade is meaningless; fight should be against an enemy.[151]

In the eyes of Iran's Supreme Leader, a scientific act must "dissatisfy" the enemies of the Revolution [of 1979]; the criterion for a true jihad-based science should not be "the publication of ISI articles; only the scientific activities that "make the enemies feel threatened" were true jahadi sciences:

> When you, [Royan officials], talked about stem cell research and animal biotechnology with me, and I, or others, praised your work, the American

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[149] Foghani, "IR Leader visits Royan Research Center."
[150] Ibid.
[151] Ibid.

> officials declared that there should be another board of governors [referring to the Board of Governors of the International Atomic Energy Agency] for Genetics as well. What does this mean? The enemy is hurt that you are moving forward in this field…in a jahadi act, in a jahadi science, in a jahadi research, this condition must be met. And enemy is not only the United States. Of course, our evident enemy is the United States and the global imperialism, but enemies come in various kinds."[152]

The Supreme Leader's speech at the Institute was the reminiscence of an old post-revolutionary pattern—popularized by Ayatollah Khomeini, the leader of 1979 Revolution—that warns Iranians of imperialism and advocates for scientific nationalism to battle the "subjugators."

In the eyes of the highest political authority of Iran, Royan is an apparatus of nation-building and as a means to further promote the political ideology of the state and the Islamic-nationalistic rhetoric of its leaders. As Royan received more scientific renown, the more it lent itself as an apparatus of nation-building to the country's opportunist leaders.

The Iranian State TV, national and provincial periodicals, academic institutions and science agencies heavily covered the Supreme Leader's visit, as they always do (or are obliged to do). The Royan Institute, however, did not cover the Supreme Leader's visit. Indeed, an examination of the Royan news outlets, websites, and publications suggests little discussion of Royan's state-based institutional affiliation and patronage. In particular, the absence of any visual reference to the Supreme Leader in the Royan's

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[152] Ibid.

website and in the past issues of Royan's newsletters is extremely surprising.[153] This is remarkably unusual in a country where the pictures of the first Supreme Leader, Grand Ayatollah Khomeini, and of the current Supreme Leader, Ayatollah Khamenei, are not only required to be hung in public places, ranging from offices to sport stadiums and cafes, but also are always placed in all governmental agencies' websites, in an eye-catching fashion. (Figure 4.1-4.3).

Figure 4.1 The Website Header of Royan Institute

Figure 4.2 The Website Header of Academic Center for Education, Culture and Research (ACECR)

Figure 4.3 The Website Header of Supreme Council of the Cultural Revolution (SCCR)

The Royan Institute claims to be non-governmental, but Royan's self-proclamation as a non-government institution should not conceal its state-based

[153] There is only one textual reference about the Supreme Leader in the news archive of the Institute's website that is an external link to an outside news agency regarding his visit to a science and technology exhibition in 2008 in Tehran. In the past issues of Royan newsletters, too, there is only one reference to Iran's supreme leader on stem cell that came from a 2009 article of the *Scientist Magazine* that was reprinted in the Spring issue of newsletter in 2009.

institutional identity. But why the Royan Institute is reluctant to acknowledge the political patronage of the state? In order to answer that question, a more fundamental question needs be addressed first: What self-image has the Royan Institute been trying to portray, particularly to the international scientific community and in what ways the Royan officials have been constructing that international identity?

4.2. ROYAN SCIENTIFIC JOURNALS

The Royan Institute publishes two English-language quarterly international journals: The *Cell Journal (*formerly called *Yakhteh Medical Journal*) and the *International Journal of Fertility and Sterility (IJFS)*, which were founded in 1999 and 2007, respectively, and certified by the Ministry of Culture and Islamic Guidance afterwards. Both journals are open-access, peer-reviewed, and ISI-indexed, and were accredited as a scientific and research journal by the Health and Biomedical Information (HBI) and by the Journal Accreditation Commission (JAC) in 2000 and 2008, respectively. Both journals are also member of the Committee on Publication Ethics (COPE).[154] *Yekhteh* focuses on the publication of articles relevant to cellular and molecular

[154] Committee on Publication Ethics (COPE) was established in 1997 in the United Kingdom. COPE advocates publication ethics and "provides advice to editors and publishers on all aspects of publication ethics and, in particular, how to handle cases of research and publication misconduct." It also provides a forum for its members, currently over 12,000 worldwide, to discuss individual cases. "About COPE," COPE, February 1, 2018, https://publicationethics.org/about.

scientific areas and *IJFS* aims to disseminate scientific research studies on fertility and sterility.[155]

An investigation into the international composition of the editorial board of these two journals reveals a strong presence of international institutions. In 2012, the editorial board of *Yekhteh* comprised twenty-six members, of which eleven were affiliated with international institutions: Japan, USA, Australia and Singapore had two representatives, each, and France, Italy and Germany had one member, each. The size and international diversity of the editorial board has increased over the years. Currently, the editorial board has 33 members. The number of board members who are affiliated with a foreign institution has increased from 42 per cent in 2012 to 52 per cent in 2017. Out of the 17 members affiliated with foreign institutions, only two are of Iranian origin.[156] With the newly-joined Switzerland and China, current editorial board represents nine countries (Table 4.1). The *International Journal of Fertility and Sterility*, although founded about eight years after the *Cell Journal,* has a larger pool of editors, featuring ten divisions within its editorial board: Gynecology and Female Infertility, Andrology, Genetics, Embryology, Epidemiology, Endocrinology and Metabolism, Pathology, Psychology and Psychiatry, Radiology and Imaging, and Immunology.

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[155] "About Us," Cell Journal (Yakhteh), accessed July 10, 2018, http://www.celljournal.org/us.

[156] Ali khodamenhosseini is an associate professor of Harvard Medical School, and Esmaiel Jabbari is an associate professor of University of South Carolina, Columbia, USA.

Table 4.1 Institutional Affiliation of Cell Journal's Editorial Board in 2017

Country	No. of Editorial Board Member
USA	3
Singapore	2
Italy	2
Germany	2
France	2
Japan	2
Australia	2
China	1
Switzerland	1
Foreign Institutions	17
Iranian Institutions	16
Total	33

The *IJFS*'s editorial boards have expanded from fifty-eight members in 2012 to sixty-five in 2017. The number of editors has risen from thirteen in 2012 (23 per cent) to twenty-five in 2017 (38 per cent). Sixty per cent of the editors of the Gynecology and Female Infertility division—one of the early medical fields studied by Royan researchers—are currently affiliated with foreign institutions. The international diversity of the editorial board has increased from eight countries in 2012 to eleven in 2017 to include Austria, India, and Turkey. The only foreign joint member between the two editorial boards are Eimie Sato of Tohoku University, Japan and Daniela Toniolo of Salute San Raffaele University, Milan, Italy (Table 4.2).[157]

[157] "About Us," International Journal of Fertility & Sterility (IJFS), accessed July 10, 2018, http://www.ijfs.ir/us.

Table 4.2 Institutional Affiliation of International Journal of Fertility & Sterility's Editorial Board in 2017

Country	No. of Editorial Board Members
USA	5
Italy	5
Germany	4
Austria	2
Canada	2
Denmark	2
Poland	1
India	1
Argentina	1
Turkey	1
Brazil	1
Foreign institutions	25
Iran	40
Total	65

The two editorial boards, collectively, represent seventeen countries: seven European countries (Switzerland, France, Poland, Italy, Denmark, Austria, and Germany), four Asian countries (China, India, Japan and Singapore), two South American countries (Argentina and Brazil), Turkey, the United States, Canada and Australia. United States, Italy, and Germany are the three foreign countries with representatives in both journals and have the highest number of members represented: eight, seven, and six, respectively. The presence of countries that Iran does not have a political or friendly

relationship with is evident.[158] The absence of Middle Eastern representatives, with the exception of Turkey, is not inconsistent with the scientific status of Arab Persian Gulf nations in biomedical sciences.

In addition to journal articles published in Royan and international journals, the Royan researchers have authored, co-authored, and translated over 50 books and book chapters in Farsi and English on fertility and sterility as well as stem cell biology and technology since the inception of institute in the early 1990s—showing over eighty percent increase since 2012. Although most works were published in Farsi and by domestic publishers—of the eleven non-translated books and book chapters penned by Royan researchers—seven were published by American publishers such as Nova Science Publishers, Humana, and CRC Press.

4.3. ROYAN INSTITUTE NEWSLETTER

In addition to the two scientific journals, the Royan Institute publishes an English quarterly newsletter to be circulated among Royan staffs and researchers as well as among a lengthy list of international scientists. As a newsletter of a significant state-run

[158] Besides the obvious case of United States which has not had a political relationship with Iran since the Hostage Crisis of 1980, Iran-Canada relationship deteriorated since the 2003 case of Zahra Kazemi until Canada closed its embassy in Iran in September 2012 and ordered the Iranian diplomats to leave Canada in five days. Iran-Argentina relationship has been tensed since the 1994 bombing incident of the Jewish-Argentine Mutual Association (AMIA) community center in Buenos Aires. European countries, along with Japan and Singapore have restrictive visa policies towards Iran. Brazil, unlike Argentina, has friendly political ties with Iran, though a recent phenomenon.

national institute that is patronized by conservative political bodies, the publication aims to portray an apolitical picture, rooted in pre-Islamic, Persian history and civilization, in a friendly and welcoming fashion. In a country where universities' and colleges' undergraduate mandatory humanities curriculum does not include Persian history, but history of the Islamic civilization, the newsletter is indeed a throwback to the Persian Empire, implying that Iran is once again becoming a leader in the scientific realm. The header of the newsletter often features a classical Persian poem, accompanied by the English translation. The first featured piece is usually a "A Short Trip to Iran or An Amazing Trip to Iran," which is a short memoir written by one of the Royan annual congress's foreign guests, including a commentary report of visits to the Iranian ancient cities. The newsletter also has a section called "History of Iran," which is devoted to the ancient or medieval Persian history, the introduction of a Persian scholar of ancient times, or the description of an ancient Persian city. Other sections of the newsletter are: "Research Projects in Royan Institute, which presents the in-progress and finished projects of the Royan; "Royan Articles," which features the abstracts of several research papers written by the Institute researcher; and "Science News," which includes selected short news in the field of stem cell research selected from the *Science Daily*. The newsletter also publishes announcements of national and international conferences, seminars, and workshops, a list of Royan Award's winners, and a list of invited speakers to the Royan Congress.

4.3.1. AN AMAZING TRIP OR A SHORT TRIP TO IRAN

The first issue of the newsletter featured a *Nature*'s article penned by Rudolf Jaenisch—the renowned professor of biology at MIT and a founding member of the Whitehead Institute for Biomedical Research in Cambridge, Massachusetts—about his visit to the Royan Institute and his participation in the eighth International Royan Twin Congress in 2008. The headline of the report read, "enthusiastic stem-cell researchers in Iran face plentiful funding but a shortage of equipment."[159] Prior to his trip, Jaenisch's colleagues had expressed concerned over his trip to Iran. "Colleagues and acquaintances accused me of acting rashly. They were surprised that I dared to go to Iran."[160] Royan officials do not shy away from inviting scientists affiliated with American institutions, however, many of them, unlike Jaenisch, decline based on what they see as safety concerns. Jaenisch's first-hand experience, however, did not substantiate those concerns:

> During my time in Tehran, however, I encountered only enthusiasm and hospitality. Other Westerners, such as Emory University's Sarah Berga, who has spoken at this conference before, were treated equally well. My only regret is that there were not more Americans there. Despite my colleagues' concerns, I felt safer than if I had been a tourist in a large American city. There were no panhandlers or aggressive touts to harass me, and the country is beautiful.

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[159] Rudolf Jaenisch, "An American Scientist in Tehran," Nature Reports Stem Cells, October 25, 2007, http://www.nature.com/stemcells/2007/0710/071025/full/stemcells.2007.105.html.
[160] Rudolf Jaenisch, "Nature Reports Stem Cells," *Royan Institute Newsletter* 1, no. 1 (Winter 2008): 1.

In addition to Jaenisch's report, the first issue of Royan Institute Newsletter featured researches that had been finished or were being conducted at the Institute at the time, a list of Royan Award winners, and abstracts of selected scientific articles published by Royan researchers in international journals; all soon became permanent sections of the newsletter. The last page of the newsletter included "a surprising photo" of Professor Mahmood Hesabi (d. 1992)— the Persian physicist, senator, and minister of education— "learning and studying" in his deathbed.[161] A "Dear Friends Happy New Year" message congratulated the arrival of the Christian New Year in the Gregorian Calendar to the readers, which also became a permanent section of the upcoming newsletter's winter issues.[162]

Jaenisch was not the only foreign scientist visiting the institute. Elza Sartorelli—a researcher in human genetics from the University of Santa Catarina, Brazil—was invited to participate in the Royan Congress in 2002 to present her research as a poster. In a note titled "An Amazing Trip," published in the second issue of the Royan Newsletter, she described her trip as "an unexpected happening and a pleasant surprise in [her] life".[163] Sartorelli, similar to Jaenisch, was welcomed in "a special way," and after "all the splendid time" in Tehran, she took a guided tour, organized and sponsored by the Institute to Shiraz and Esfahan—two major, ancient Iranian cities.[164] The travel

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[161] "A Surprising Photo," *Royan Institute Newsletter* 1, no. 1 (Winter 2008): 4.
[162] "Dear Friends Happy New Year," *Royan Institute Newsletter* 1, no. 1 (Winter 2008): 4.
[163] Sartorelli, "An Amazing Trip," 1.
[164] Ibid.

experience of Fabio Pasqualotto—another Brazilian researcher, who was a professor of Urology—echoed similar observations: "my experience was terrific…in my country we listen many different things about Iran, but most of them were not correct…the people in Iran are great, very friendly, reminding me my own country."[165] A researcher from New Zealand, too, wrote about his travel memory of the historic city of Esfahan in the newsletter:

> I recall in Esfahan a young man asking where I was from and I said New Zealand: he responded with a smile and said 'gidday Kiwi Bro' which is street talk amongst young New Zealanders. While in Iran, many people asked me what my impressions of the country were: I could honestly say I haven't been in your country long enough to really understand fully but that I felt very comfortable and that people were very kind, with a great sense of hospitality. Esfahan and its architecture and Persepolis are extraordinarily impressive places-I feel privileged to have had the chance to visit.[166]

Such appreciative sentiments were also echoed by a British geneticist who found the congress "thoroughly interesting" and the post-congress tours of Esfahan, Shiraz, and Persepolis "truly amazing."[167] A Czech scientist and an avid hiker—who had spent several days mountain hiking in northern Tehran after the congress—wrote of "the natural friendliness of all [Iranian] people" as his "most important experience" of visiting Iran.[168] An Austrian scientist wrote of her trip to the cities of Shiraz and Esfahan as "a

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[165] Pasqualotto, "A Trip to Iran," 1.
[166] Kenneth P. McNatty, "An Amazing Trip," *Royan Institute Newsletter* 3, no. 1 (Winter 2010): 1.
[167] Sajjad Ahmad, "An Amazing Trip," *Royan Institute Newsletter* 3, no. 2 (Spring 2010): 1.
[168] Michal Hofer, "An Amazing Trip," *Royan Institute Newsletter* 3, no. 4 (Fall 2010): 1.

great moment to be physically in places [she knew] from her history classes."[169] A English professor of biology wrote of her trip as "an excellent way of combining work with pleasure," and of the young people "fully of energy and enthusiasm, [who] spoke English very well." She wrote of visits of not only mosque, but also of churches during her trip to Shiraz and Esfahan.[170] Some memoirs were less flattering, and the newsletter published those as well. After describing his journey as "not very easy from obtaining visa to flying from Seoul to Tehran," a Korean researcher wrote that his travel experience was "very helpful" in understanding the "Iranian thoughts and values," as the gaps between him and his Iranian fellows became "shorter or smaller than before," after having discussions and chats with researchers and students at the institute, although he admitted that he could not "agree with all of their opinions."[171]

Iran hosts the shrine of the eighth Shi'a Imam—the largest destination of religious tourism—in the city of Mashhad, a major historic city in the eastern part of Iran. Royan tours never included Mashhad or other Iranian religious cities who hosts monumental shrines and historic sites, even though two of Iran's most visited holy cities, Qom and Rey, are close to Tehran—Qom is 70 miles southwest of Tehran and Rey is now considered a district of the metropolitan Tehran. The Mausoleum of Ayatollah

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[169] Marianne Moser, "An Amazing Trip," *Royan Institute Newsletter* 4, no. 1 (Winter 2011): 1.
[170] Geraldine Hartshorne, "An Amazing Trip," *Royan Institute Newsletter* 4, no. 2 (Spring 2011): 1.
[171] Sangho Roh, "An Amazing Trip," *Royan Institute Newsletter* 3, no. 3 (Summer 2010): 1.

Khomeini, an elegant monument with an elaborate architecture in southern Tehran where foreign state guests commonly visit, too, was not a visitation site for Royan foreign guests. In the eyes of Royan officials, perhaps the religious identity of these cities overshadowed their Persian identity—only the latter being the hallmark of the Royan's self-image and the lens through which the Royan officials seek to identify not only the Institute, but also Iran—as an *imagined community*.[172]

4.3.2. A SHORT HISTORY ABOUT IRAN

Royan tours were organized for the guests to "smell history" and to see that "history is in the air," in Iran as one foreign researcher noted.[173] While Royan tours of ancient cities of Iran aim to familiarize foreign visitors and scientists with the Iranian culture, the newsletter routinely discusses Iranian history, especially the pre-Islamic Persian Civilization. The second issue of the newsletter featured a short article titled, "A Short History About Iran," discussing the Pre-Islamic Median and Achaemenian Empires—the latter represents the golden age of pre-Islamic Iranian history in the eyes of nationalist historians of modern Iran. The opening paragraph of the article quoted George Wilhelm Friedrich Hegel, the German philosopher: "In Persia first arises that light which shines itself and illuminates what is around...The principle of development begins with the history of Persia; this constitutes therefore the beginning of

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[172] Benedict Anderson, *Imagined Communities: Reflections on the Origin and Spread of Nationalism* (London: Verso, 1983).
[173] Pasqualotto, "A Trip to Iran," 1.

history…Few nations in the world present more of a justification for the study of history than Iran."[174] Hegel's celebratory account of Iranian history, was followed by a lengthy reference to the Cyrus Cylinder—"the first declaration of human rights"—in which Cyrus the Great advocated "love" rather than "fear:"

> I announce that I will respect the traditions, customs and religions of the nations of my empire and never let any of my governors and subordinates look down on or insult them until I am alive. From now on, till (Ahura) Mazda grants me the kingdom favor, I will impose my monarchy on no nation. Each is free to accept it, and if any one of them rejects it, I never resolve on war to reign. Until I am the king of Iran, Babylon, and the nations of the four directions, I never let anyone oppress any others, and if it occurs, I will take his or her right back and penalize the oppressor.[175]

The third issue, too, featured a piece on the history of pre-Islamic Iran, introducing the ancient city of Ecbatana (a.k.a Hegmatana) which was—according to the Greek sources—the capital of Media and was subsequently the summer residence of the Achaemenian kings and one of the residences of the Parthian kings. Describing the Golden Rhyton and the unique architecture of the city—especially the seven concentric walls—the piece argued for the existence of a long tradition of technological advancement in Iran.[176] The forth issue featured an article on the ancient and historic city of Yazd and the "center of Zoroastrian culture"—the ancient monotheistic, non-

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[174] "A Short History About Iran," *Royan Institute Newsletter* 1, no. 2 (Spring 2008): 3.
[175] Ibid.
[176] "History of Iran: Ecbatana (Old Persian)," *Royan Institute Newsletter* 1, no. 3 (Summer 2008): 3–4.

Abrahamic religion of Iran which predates Islam and Christianity.[177] Accompanied by a picture of the Zoroastrian Temple of Yazd, the article discussed "Yazd's heritage as a center of Zoroastrianism," its Zoroastrian architectural monuments—such as the Fire Temple and the Tower of Silence—,and how the city of Yazd "remained Zoroastrian even after the [Arab-Islamic] conquest [of Persia] by paying a levy."[178] The article also mentioned the Marco Polo's visit to Yazd in 1272 and his remarks on "the city's fine silk-weaving industry," and Yazd's reputation of having "the most skilled" qanat makers and "magnificent windcatchers" in Iran—given its hot climate.[179]

The fifth issue of the newsletter introduced another ancient city of Iran—Esfahan—to the readers. By mentioning that "large populations of Jews and Christians concentrated around Esfahan at this time, and that Esfahan fell only "temporarily" to the rule of Arab-Muslim conquerors, the piece downplayed the impact of the conquests on the culture of Esfahan, claiming that Esfahan "regained its importance" under the Iranian Buyid Dynasty, and later experienced multiple episodes of a "golden age" under the Saljuks and Safavids—two Turkish dynasties of eleventh and sixteenth centuries, respectively:

> During the reign of Shah Abbas I, who unified Persia, Esfahan reached its pinnacle. Esfahan had parks, libraries and mosques that amazed Europeans, who had not seen anything like this at home. The Persians called it Nesf-e-Jahan, half the world; meaning that to see it was to see

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[177] "History of Iran: Yazd City," *Royan Institute Newsletter* 1, no. 4 (Fall 2008): 3.
[178] "History of Iran: Yazd City," 4.
[179] Ibid.

half the world, and also referring to it as a point where many cultures and nationalities meet and mingled.[180]

Another issue of the newsletter covered a brief history of Kerman, a historic city in south central Iran, "founded by the Sassanid king Ardashir I" in the pre-Islamic era, "an important cultural center of Iran" under the rule of Arab-Muslims, and visited by Marco Polo during the time it was "a major trade emporium linking the Persian Gulf with Khorasan and Central Asia."[181] Shiraz, "the capital of Persia" during the Zand dynasty of the eighteenth century, a "leading center of the arts and the letters," predominated by "the presence of Persian scholars," "the city of poets, wine and flowers", known to Iranians by its many gardens and fruit trees, and a host of "major Jewish and Christian communities" was introduced in another issue of the newsletter.[182] Accompanied by the pictures of "the ruins of Persepolis" and "Eram Garden"—the latter a historic garden in the city of Shiraz built by the Saljuks in the twelfth century—the article claimed a special history for Shiraz, particularly after the decline of the nearby Sassanid capital, Istakhr, by "the Arab invaders."[183]

While Royan tours did not include any of the Iranian holy cities, the newsletter pieces on history of Iran never covered any religious cities either. Mashhad, one of the main pilgrimage destination for Shi'as in or outside Iran—where the shrine of the eighth

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[180] "History of Iran: Esfahan City," *Royan Institute Newsletter* 1, no. 5 (Winter 2009): 3–4.
[181] "History of Iran: Kerman City," *Royan Institute Newsletter* 1, no. 6 (Spring 2009): 3–4.
[182] "About Iran: Shiraz City," *Royan Institute Newsletter* 3, no. 1 (Winter 2010): 3.
[183] Ibid.

Imam is located—a historic city in northeastern Iran and the second most populous city in the country was not introduced. Rey, another historic city in the vicinity of the capital city of Tehran, which hosts the shrine of a Shi'a sacred figure, as well as the holy city of Qom, the largest Shi'a scholarship in the world where the shrine of the eighth Imam's sister is located, were not discussed in any issues of the newsletters—while the same piece on the history of Esfahan was printed in two issues. Although the history of these religious cities—Mashhad, Qom, and Rey—go back to ancient times, and similar to Esfahan, Kerman, Yazd, and, Shiraz are of historical significance, perhaps their religious identity did not pass the selection criteria of newsletter editors. The newsletter serves to create a *public sphere* where Iranianness is (re)constructed based on a pre-Islamic ethnolinguistic Persian identity segregated from its mutual and historical companion—the religious identity.[184]

Ancient and historic cities of Iran provided a window through which the Royan newsletters took the readers to a distant past where Iran was a scientific and technological hub, and when Persia cradled triumphant civilizations. Although historical pieces published in the newspapers were often taken from popular sources and not entirely accurate, but they collectively served a common purpose: to establish Iran as a cosmopolitan culture where Persian polymaths made numerous scientific discoveries

[184] Jürgen Habermas, *The Structural Transformation of the Public Sphere: An Inquiry into a Category of Bourgeois Society*, trans. Thomas Burger and Frederick Lawrence (Cambridge, Mass: MIT Press, 1989). This work originally appeared in German in 1962.

and technological advancements in the pre-Islamic era. Royan editors' ambivalent treatment of the Arab-Islamic conquest reflected this selective approach to the Iranian history. The newsletter pieces sporadically mentioned the golden age of science during the rule of Muslim caliphs, but the pre-Islamic era, where Zoroastrianism—not Islam—was the most common religion, and when the Persian kings—not Arab-Muslim caliphs—ruled over Iran, dominated the themes and topics of the historical pieces. The editor's urge to remind the readers of Iran's golden age of science and technology unveils itself best in two consecutively-published pieces titled, "Science and Technology in Iran," that argued that Iran was "a cradle of science in earlier times" and that Persian polymaths "contributed to the current understanding of nature, medicine, mathematics, and mathematics."[185] In the eyes of the newsletter editors, Royan Institute's scientific activities was "to revive the golden time of Persian science":

> Iran's scientists cautiously reach out to the world. Many individual Iranian scientists, along with the Iranian Academy of Medical Sciences and Iranian Academy of Sciences, are involved in this revival. Iran is an example of a country that has made considerable advances through education and training. Despite sanctions in almost all aspects of research during the past few decades, Iran's university population swelled from 100,000 in 1979 to 2 million in 2006. Seventy percent of its science and engineering students are women.[186]

The article then continued with a lengthy discussion of science in Persia before the arrival of Islam in Iran, arguing that "many of the today's concepts in Science

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[185] "About Iran: Science and Technology in Iran (Part I)," *Royan Institute Newsletter* 2, no. 3 (Summer 2009): 4.
[186] Ibid.

including Helio-Centric model of solar system, finite speed of light, and gravity were first proposed by Persian scientists"—and that during the Sassanid Period "attention was given to mathematics and astronomy" which was accompanied by the establishment of learning centers such as the Academy of Gondeshapur."[187] The article further argued that the "Sassanid observatories were later imitated by the astrologers and astronomers of the Islamic period" and "some medical [Persian] books later were translated into Arabic…by Iranian scholars."[188] The article further consolidated the distinction between the science in Sassanid era and the post-Islamic era by arguing that the "philosophy of the Islamic period was influenced by Greece, India, and Iran of the pre-Islamic period," best evident in the philosophy of Zakaria Razi, the ninth-century Persian-Muslim polymath—who "took from the ancient Iranians five principles of …Creator-Ahuramazda, Satan-Ahriman, Moment-Time, Place-Locality, and Essence-Spirit philosophy"—and in the works of Shahaboddin Sohrevardi—the twelfth-century Persian-Muslim philosopher—who quoted the "old Iranian terms and expressions derived from Zoroastrians, Manians, and Zarvanians" in his works.[189] In addition to the Sassanid scientific achievements, the article discussed the "Ancient Technology in Persia": qanats, which "originated in pre-Achaemenid Persia;" first batteries created by

[187] Ibid.
[188] Ibid.
[189] "About Iran: Science and Technology in Iran (Part I)," 5.

Persian inventors; windmill—"a more advanced wind-power machine" compared to the wind-wheels of Babylonians—developed by Persian engineers.[190]

The next issue continued the celebratory narrative of Iran's contribution to the world of science and technology by focusing on the field of medicine:

> "The practice and study of medicine in Iran has a long and prolific history. Situated at the crossroads of the East and West, Persia was often involved in developments in ancient Greek and Indian medicine; pre- and post-Islamic Iran have been involved in medicine as well…many of the approaches of physicians in medieval Persia are accepted today."[191]

Regardless of the historical accuracy of such claims by a newsletter of a stem cell research institute, the article was to remind the readers of Iran's legacy in medicine. Similar the other articles on history of Iran, the piece focused on the contribution of Persians and drew the attention of readers to the contribution of Persian scholars and physicians to medicine: a Nestorian Christian named Juris ibn Jabreel ibn Bakhtyasu, moved from the Sassanian Gondeshapur to the House of Wisdom in Baghdad upon the invitation of the officials in Baghdad; the first Muslim who wrote on medicine was "another Persian"; "the idea of xenotransplantation dates back to the days of [the Persian] Achaemenian Dynasty" evident in the surviving engravings in Persepolis; and the existence of "definitions and treatments of the headache in medieval Persia".[192] The

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[190] Ibid.
[191] "About Iran: Science and Technology in Iran (Part II)," *Royan Institute Newsletter* 2, no. 4 (Fall 2009): 4.
[192] Ibid.

discussion of medical works of Zakaria Razi—the ninth-century Persian polymath—was immediately followed by the contribution of his student, Abu Bakr Joveini, "who wrote a comprehensive medical book in Persian: the first book on medicine in the Persian language."[193] The piece argued that Abbas Majussi Ahwazi was named "the third important writer on medicine of this period," whose works "were considered the best and most complete" prior to Ibn Sina (Avicenna)—another Persian polymath, whose book, *Qanun,* "was used as a textbook by the Europeans for many centuries thereon."[194] According to the Royan article, in the post-Avicenna period, "no one gained the prominence" of Zayn al-Din al-Jurjani, who wrote "the first medical encyclopedia"—*Thesaurus of the Shah of Khwarazm*—in the Persian language, instead of the usual Arabic lingua franca, the article claimed.[195]

The article further claimed that Iranians "were also proficient in other natural sciences such as botany, pharmacology, chemistry, zoology, lithology, and mineralogy," especially to the works of Zakaria Razi on alcohol and sulfuric acid, and the works of Abu Reyhan Birouni's on the specific gravity of various substance. The contribution of Persian scientists was recorded and praised by European historians, the article claimed. In *Zur Quellenkunde der Persischen Medizin*—published in Leipzig in 1910— Adolf Fonahn "enumerates over 400 works in the Persian language on medicine, excluding

[193] Ibid.
[194] "About Iran: Science and Technology in Iran (Part II)," 5.
[195] Ibid.

authors such as Avicenna, who wrote in Arabic." European historians such as Meyerhof, Casey Wood, and Hirschberg also "have recorded the names of at least 80 [Persian] oculists who contributed treatises on subjects related to ophthalmology."[196]

The emphasis on the ethnolinguistic identity—the Persianness—of ancient and medical polymaths, even in the post-Islamic golden age of Islamic science, was a thread that ran through the newsletter articles on science and technology in Iran. An anecdote from the epic poem of the tenth-century Persian poet—*Shahname* (*The Book of Kings*)—featured in the ninth issue of the newsletter distinctly epitomizes this tendency: a female mythological figure in *Shahname*, named Rudaba, performs a cesarean using a special wine prepared by a Zoroastrian priest to produce unconsciousness, which illustrated the existence of the "working knowledge of anesthesia in ancient Persia."[197]

The celebration of Iranian history was not only featured in Royan editorial pieces, but—sometimes—also in the trip reports of foreign researchers who had visited the Institute. Dr. Giammaria Sitar of the University of Pavia, Italy, wrote about his three trips to the Royan Institute in the recent past: "it has been a very beautiful surprise to discover a country where the charm of several ancient civilizations blend nicely with a fast moving modern world".[198] Dr. Sitar—similar to other European and American scientists who had visited the Royan Institute—expressed his initial uneasiness caused

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[196] Ibid.
[197] "About Iran: Science and Technology in Iran (Part II)," 4.
[198] "An Amazing Trip," *Royan Institute Newsletter* 1, no. 3 (Summer 2008): 1.

by “being influenced by western newspapers which often describe the country as dangerous and unfriendly to Westerners,” but stated that he felt “comfortable everywhere,” after “a very short time.”[199] Praising Iran’s progress “not only in the scientific environment but also in protecting the artistic heritage of the country and in several other fields (except may be air pollution in Tehran)”, Dr. Sitar found such progress “unsurprising having in mind the history of Iran.”[200] Dr. Sitar’s commemorative account of his trips and the Iranian culture ended with the remark of the Austrian orientalist Alfred von Kremer, who—unlike the newsletter articles—cited and praised the Islamic, nor Persian, civilization:

> From a cultural and historical point of view the reduction in the cost of writing material, which went hand in hand with the production of paper, was of great importance. Books on parchment or papyrus were so expensive that they were available to few. By the production of a cheap writing material, and its supply to markets both east and west, the Islamic civilization made learning accessible to all. It ceased to be the privilege of only one class, initiating that blossoming of mental activity that burst the chains of fanaticism, superstition and despotism. So started a new era of civilization. The one we live in now.[201]

4.3.3. POEMS

In addition to the historical flashback to the pre-Islamic Iranian civilization and Persian empires, Royan newsletters often features an ancient Persian poem from Hafez, the fourteenth-century Iranian poet born in the ancient city of Shiraz, or from Omar

[199] Ibid.
[200] Ibid.
[201] Ibid.

Khayyam, the eleventh-century Persian polymath and poet born in the ancient city of Nishabur—below the headline banner.[202] The poems were sometimes accompanied by an Iranian miniature painting featuring a woman in a traditional Persian attire lying in a garden, which is a common theme of Persian miniature (Figure 6). [203]

Figure 4.4 Persian Miniature

The third issue of the newsletter featured a quatrain from Omar Khayyam:

O friend, for the morrow let us not worry,

This moment we have now, let us not hurry,

When our time comes, we shall not tarry,

With seven thousand-year-olds, our burden carry.[204]

[202] Historians of Iran have considered Persian literature as the hallmark of Persian civilization. One historian called the Persian literature "the most glittering jewel in the crown of Iranian history and culture, and the greatest single contribution of Iran to human civilization." Katouzian, The Persians, 2.
[203] "O Friend, for the Memory Let Us Not Worry," *Royan Institute Newsletter* 1, no. 3 (Summer 2008): 1.
[204] Ibid.

4.4. ROYAN CONGRESS AND AWARD

The institute has been holding an annual international congress, accompanied by multiple pre-congress workshops and symposium since 2000. The current official title of congress is Royan International Twin Congress as it is a joint meeting on reproductive biomedicine and stem cell biology and technology, borrowed from the two research sub-divisions of the Institute. The winners of the Royan International Research Award should present their works in the congress along with other speakers. Similar to the Royan Research Award, many foreign scientists participate in the congress annually. For instance, the invited speakers for the ninth Royan International Research Congress in 2008 included 26 scientists affiliated with foreign institutions: USA (five); Germany (four); UK (four); Japan (two); and China, Australia, Brazil, Italy, France, Austria, India, New Zealand, Sweden, Netherland, and Canada, each had one participant.[205]

The Royan Institute's Twin Congress is Iran's largest annual scientific event hosting about 2000 participants around the world each year. As one of the major annual scientific events in Iran, high-ranking governmental officials in the field of science and technology would attend and make a speech in the opening. For instance, Dr. Sorena Sattari, the Vice-presidency of Science and Technology of the Office of the Presidency gave a speech in the 2017 congress, highlighting "the importance of transforming the

[205] "Invited Speakers in 9th Royan International Research Congress," *Royan Institute Newsletter* 1, no. 3 (Summer 2008): 3.

scientific knowledge to the new source of revenues through furthering close collaborations with foreign countries."[206]

As part of the annual plan of the congress, an official visit to the Institute is organized for the invited speakers. During the visit, the Royan foreign guests, e.g. international invited speakers visit specialized laboratories, while being accompanied by researchers and lab technicians, and they would receive information on the various activities and studies conducted at the Royan labs. In the last day of the Congress, the banquet features events rooted in Persian culture such as traditional Persian music performed by well-known national bands.

One of the highlight of the Royan Congress is the sponsorship of an international annual award by the Royan Institute since the inception of the Congress. Royan Awards are given to selected researchers,"[firstly] to support the researchers financially and scientifically regardless of their nationality; secondly to appreciate their efforts, and third, to introduce the researchers and their findings to the world". [207] The award was initiated by the late founder and director of the Institute, Dr. Kazemi, "with the aim of encouraging researchers, appreciating their efforts and preparing a friendly scientific atmosphere for them to exchange their knowledge and experiences".[208] The Royan

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[206] "Congress Report," Royan Congress, 2017, http://www.royancongress.com/VisualReport.pdf.
[207] "Winners," *Royan Institute Newsletter* 1, no. 1 (Winter 2008): 2.
[208] "Introduction," Royan Award, accessed February 13, 2018, http://www.royanaward.com/Introduction.

International Award is usually given to five foreign researchers who are affiliated with international institutions.[209] In additional to the international award, the Royan Institute grants a national award to two to five researchers, who are affiliated with Iranian institutions. All winners—national and international—are awarded a certificate, the symbol of Royan Award and the amount of $5000.[210]

The international reception of the award has been increasing remarkably over the past eighteen years, since the establishment of its first executive committee in 1999. In 2002 the number of received papers was already three times more than that of the previous year, and the number of participating countries reached to forty-two. In 2003, the Institute received 222 papers from forty-seven countries. Despite usual fluctuations in the number of received papers, the committee has often received around 200 papers (Table 4.3).

[209] In some years, six awards were given. For instance, in 2009, the total number of winners were six as the award for the best research project in the field of female infertility was shared between two researchers from USA and Hungary. The only year that only four international awards were given was 2013.
[210] Royan Institute's About Award, available at http://www.royaninstitute.org/cmsen/index.php? option=com_ content&task=view&id=162&Itemid=162 (accessed 2013).

Table 4.3 Number of Received Papers for the Royan Congress from 2000 to 2017

Year	No. of Received Papers
2000	72
2001	78
2002	212
2003	222
2004	199
2005	198
2006	221
2007	248
2008	202
2009	253
2010	358
2011	280
2012	169
2013	206
2014	222
2015	204
2016	175
2017	239

In addition to the paper section, the Royan Congress has a poster section. In 2017, the poster presentation was in digital form to be "environment friendly" which added "a delicate and special taste to the congress by avoiding the paper-print of almost more than 300 posters".[211] In 2006, the 221 received papers were collectively judged by a jury board, comprised of 136 national and international references, where each paper was reviewed by five references. Given that more than 90 percent of received papers in each year were sent by scholars from international institutions, the competition for the

[211] "Congress Report."

Research Award has been far more competitive for international applicants. In 2006, 206 international papers along with fifteen national papers comprised the application pool. Similar to the previous years, five international winners and three national ones were chosen. 248 papers were received from fifty countries in 2007 (Table 4.4).

Table 4.4 Total Number of Awards Won per Country

Year	Total
Total (International)	92 (63 male and 29 female)
USA	16
Japan	9
Italy	8
France	7
India	6
China	6
Belgium	5
Netherlands	4
Germany	4
Canada	4
Australia	4
UK	2
Spain	2
Hong Kong	2
Denmark	2
Sweden	1
South Korea	1
Saudi Arabia	1
Qatar	1
Poland	1
Nigeria	1
New Zealand	1
Kuwait	1
Hungary	1
Finland	1
Argentina	1
National (Iranian)	52 (34 male and 18 female)

Overall ninety-two international awards were granted to applicants from twenty-six countries from 2000 to 2017. The United States has the highest share (sixteen), followed by japan and Italy (nine and eight, respectively). The Royan Award winners represented a diverse poll of researchers from Europe (38), Asia (24), North America (20), Australasia (5), the Middle East (3), South America (1), and Africa (1). Of the ninety-two award winners, twenty-nine were female scientists (32%). Of the fifty-two Iranian winners of the National Award, eighteen were female scientists (35%).

4.5. INTERNATIONAL IDENTITY VS. NATIONAL IDENTITY

Royan's eagerness to collaborate with the international scientific community, regardless of the nationality of the participants, is well-documented. Royan officials have been trying to collaborate with scientists and researchers affiliated with international institutions through various mediums: scientific journals, newsletters, an annual congress, workshops and symposium, and an international award. In addition to these forums, the European Society for Human Reproduction and Embryology (ESHRE), the Middle East Fertility Society (MEFS), Asia Reproductive Biotechnology Society (ARBS), and the British Fertility Society (BAS) have collaborated with the Royan Institute in various capacities in several occasion, including participation in the Royan Award's committee and sponsorship of the congress. The Royan Institute has, too, been trying to have a strong presence of its researchers and scientists—despite all visa restrictions and hassles—in international scientific venues. The Royan newsletters usually feature the flyers of international conferences and announces upcoming scientific events—related

to the activities of the institute—outside Iran. In 2008 representatives of the Institute attended the seventh annual meeting of the International Society for Stem Cell Research (ISSCR) in Barcelona and the twenty-fifth annual meeting of the European Society of Human Reproduction and Embryology (ESHRE) in Amsterdam.

In order to collaborate with foreign scientists and to join the international scientific community, the Royan Institute pursues an open policy to undermine the negative political perceptions of Iran and to portray an apolitical, internationally-friendly picture of the institute. The Royan's attempt to connect to international scientists is nowhere clearer in the 2009 congress president's announcement note:

> "Although the congress is named Royan, it belongs to all scientists and doctors from all around the world working in the field of reproduction and stem cells, especially Iranian scientists and prominent professors from various universities, research centers and clinics, who mostly are pioneers in the Congress fields, and without their support we could not hold it properly."[212]

However, this internationally-friendly vision of Royan-a state institute—in sharp contrast with the ideology of the Iranian State, clearly evident in many post-revolutionary speeches of Iranian officials, particularly in the speeches of the Grand Ayatollah Khomeini. Shortly after the Iranian Revolution of February 1979, in an interview with one of the Iranian leading newspapers, the Grand Ayatollah Khomeini,

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[212] Hamid Gourabi, "Welcome Note," *Royan Institute Newsletter* 1, no. Special Issue for 10th Royan International Award & Congress (January 2009), http://www.royaninstitute.org/cmsen/images/stories/PDF/newsletter-%20special%20issue%205.pdf.

the leader of the Revolution and the first Supreme Leader of the Islamic Republic of Iran, said:

> "They say there is a brain drain. Let these decayed brains flee. Do not mourn them. Let them pursue their own definitions of being. Is every brain with—what you call—science in it honorable? Shall we sit and mourn the brains that escaped? Shall we worry about these brains fleeing to the US and the UK? Let these brains flee and be replaced by more appropriate brains… Don't be concerned. They should escape. [Iran] is not a place for them to live anymore. These fleeing brains are of no use to us. Let them flee. If you know that this is no place for you, you should flee too."[213]

Although operating under the auspices of post-revolutionary, conservative state-run bodies, the Royan Institute has been promoting a vision that is in sharp divergence from the state's post-revolutionary religio-politico ideology. Royan Institute serves as an exemplary case study that reveals the seemingly-paradoxical coexistence of two radically different, if not incompatible, identities: An apolitical, secular, and international-friendly identity rooted in the Persian legacy of the past for international consumption—*the international identity*—promoted by the Royan officials; and a conservative, anti-Western, and religious-based identity for national consumption within the geopolitical boundaries of Iran—*the national identity*. once incorporated into and examined as a single category of analysis, the *double identity* juxtaposes the policies

[213] Ettelaat Newspaper, "Meeting with the Imam Khomeini Relief Foundation," October 31, 1979.

of the Royan institute—a state institution—with that of the Iranian state.

Post-revolutionary Iran has been facing almost four decades of financial and political embargo, which has made the scientific and technological supplies scarce in Iran.[214] Konrad Hochedlinger of the Harvard Stem Cell Institute and Massachusetts General Hospital, who attended the Twin Congress in 2008 and toured the Royan's facilities, told a reporter from the *Scientist Magazine* about his visit:

> "I was surprised to see how they derived their first embryonic stem cell lines with very simple tools…It's very low-tech equipment compared to the technology we have in the United States and in Europe…Because of the sanctions, the Royan scientists couldn't purchase standard cell culture incubators. So, they built an enclosed oven with water pans for humidifiers and tubes to pump in carbon dioxide. [In the US], we just buy it from a vendor… They have to build it from scratch"[215]

Rudolf Jaenisch, too, in his *Nature* commentary, which he published after his trip to Tehran, wrote about his meeting with an Iranian scientist, who had returned home upon completion of a postdoctoral fellowship in Canada, and was in charge of a group of

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[214] The history of U.S. sanctions against Iran goes back to the Hostage Crisis of 1979. The United States' immediate reaction to the hostage crisis was to freeze the total of $12 billion of Iranian government assets in American banks globally. The sanction later fully expanded to a trade embargo until 1981, when an accord was signed and subsequently the embargo was lifted and most assets were unblocked. However, U.S. imposed a new series of economic sanction from 1987 onwards. In the following years the United Nations and the European Union, and other countries followed the patterns of American sanctions . U.N. sanctions have a short history and date back to 2006. Josh Levs, "A Summary of Sanctions Against Iran," *CNN*, January 23, 2012, http://www.cnn.com/2012/01/23/world/meast/iran-sanctions-facts/index.html.

[215] Elie Dolgin, "Iran investing in stem cells," The Scientist, February 23, 2009, available at http://www.the-scientist.com/?articles.view/articleNo/27162/title/Iran-investing-in-stem-cells/ (accessed 2013).

researchers at the Royan Institute studying the proteomics of stem cells:

> They've solved crystal structures and published in international journals. But they do not have access to a mass spectrometer, the standard workhorse of almost all proteomics laboratories. The lack of instrumentation means that they must partner with other labs. Once they've succeeded in making a protein, they send it off to Germany for analysis…this limitation is because the US trade embargo prohibits its import into Iran.[216]

Besides the role of the Twin Congress, Royan Newsletter, and the Research Award in improving the scientific status of the Royan in the international scientific community, they serve as a counter-strategy to ease the consequences of sanctions and international political pressure. By inviting international scientists to the Congress, Royan aims to lure back those who have left Iran and motivates those who have stayed. It also gives an invaluable opportunity to Iranian scientists to meet their international counterparts in their own professional field, whereas they might not have the chance to attend international conferences due to visa restrictions.[217] The annual congress is indeed the best, and for many Iranian scientists, the only way of meeting foreign researchers.

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[216] Jaenisch, "An American Scientist in Tehran."

[217] Obtaining an American visa for an Iranian is a major hurdle as they need to arrange their interview with a US consulate in a third country. Despite the time and money spent, there is no guarantee that the visa will be granted. Another difficulty is that once the visa is granted, the process of visa clearance might take from a few days to several months.

Royan has become the leading stem cell research institute in the Middle East and the Iranian state is certainly eager to support biomedicine and stem-cell science—evident in its patronage of the Institute. However, the Iranian scientists are facing serious logistical hurdles. Moving intellectual capital and material resources between Iran and the rest of the world have hindered Iranian scientific progress. The parallel development of two incommensurable identities—an apolitical, secular, Persian-rooted and progressive identity for international consumption (*international identity*), and an anti-Western, politico-religious identity for national consumption within the geopolitical boundaries of Iran (*national identity*)—is the manifestation of the historical reality that science cannot be done alienated from its social, political and cultural context.

The Royan Institute is patronized by the state, but it has been reluctant to adhere to the ideology of the state. The Mertonian norms of science have encouraged the Royan officials to realize that—in order to succeed in science—they should join the international community. Through publication of international journals and Royan Institute Newsletter, and organization of the Twin Congress and Royan Research Award, the Royan Institute has tried to reach to the international scientific community and to establish itself as an important node in the international map of reproductive medicine, stem cell, and animal biotechnology.

The case of the Royan Institute also shows how the Iranian State has inadvertently helped creating a progressive international, scientific identity—through its patronage of Royan—at the expense of ideological self-censorship and political self-

denial, and by concealing the anti-Western conservative national identity that the state has been promoting for national consumption for almost four decades since the Revolution of 1979.

While Royan officials capitalize on the *international identity* to undermine Iran's scientific, technological and logistic isolation, imposed by other countries, including the United States and the European community, the State officials—based on the achievements of Iranian scientific institutions, including the Royan Institute—reinforce their conservative ideologically-laden national identity. Iranian stem cell research shows how science is not neutral and is not done in a sociopolitical vacuum.

CHAPTER 5. CONCLUSION

Why does it matter to argue that Islam is not the important category of historical analysis in studying the development of a scientific field—i.e. reproductive medicine and stem cell—in a Muslim-majority country such as Iran? What is the point of acknowledging the existence of a growing body of literature on Islamic bioethics and the progressive nature of bioethical frameworks within Islam, and yet denying a key role for Islamic bioethics in the development of biomedical sciences in Iran? Why does it matter to begin writing the history of the Royan Institute from a decade before its physical inception and trace back its germination to the Cultural Revolution of the early 1980s? Why should we be concerned with the current literature on the political history of modern Iran, where the complexity of the Cultural Revolution is reduced to a religio-political ideology? Last, but not least, what can be learned from juxtaposing the identity of a state scientific institution such as Royan—international identity—with the identity of the Iranian state—the national identity.

There is an explanation.

First and foremost, to remind ourselves that Islam is not only one thing, but two. The term "Islamic" in phrases such as Islamic bioethics and the Islamic Republic of Iran, or the term "Muslim" in catchphrases such as Muslim-majority, commonly—but problematically—implies only one thing: Islam as a religion. But Islam is not only a

religion, but also a civilization. The Islamic Civilization, which bears its name from the career of the Prophet Muhammad, rose from its humble origins in seventh-century Arabian Peninsula to become the first global civilization. Through this astonishing journey Islam as a *religion* transformed to Islam as a *civilization*.

Islam as a civilization virtually combines and fully works out all the intellectual, religious, political, cultural, and economic currents of late antiquity, east and west, both harmonizing and diversifying its rich polyphony. Islamic civilization is not static, is not one thing, it is so many different things all in one place, and yet, it varies from one place to another, from one time period to another. Islam is, borrowing from Dr. Matthew Melvin-Koushki, an open-source civilizational software, widely downloadable and adaptable to local circumstances throughout history. The Islamic civilization features a global, modern, and cosmopolitan culture.[218]

The two faces of Islam are not mutually exclusive and Islam in its broad umbrella sense is an amalgam of religion and civilization. Islam can be represented in its guise as religion or in its guise as civilization, but not both at the same time.[219] The examination of the advent of Islam and its development into a civilization deserves its own discussion

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[218] Matthew Melvin-Koushki, "Early Modern Islamicate Empire: New Forms of Religiopolitical Legitimacy," in The Wiley Blackwell History of Islam, ed. Armando Salvatore et al. (Oxford, UK: Wiley-Blackwell, 2018), 351–75.

[219] My discussion of the two faces of Islam is partly influenced by Peter Dear's thesis that argues science has two faces: natural philosophy and instrumentality. Peter Dear, *The Intelligibility of Nature: How Science Makes Sense of the World* (Chicago: University of Chicago Press, 2008).

and certainly it is not the goal of this dissertation, but confining Islam constantly to the boundaries of religion is conceptually reductionist, historically distortive, and has alarming political implications.[220]

If Islam has two faces, what does the term "Muslim-majority" mean in the Iranian context and what does the term "Islamic" in the literature on Islamic bioethics refer to? To what extent does Islam shape a Muslim-majority society such as Iran? If Islam is (not) the most important category of analysis—historical or otherwise—in studying the Iranian society, and if Islam is (not) the most suitable lens through which we should and can examine the social, cultural, political, and economic developments in Iran, which *Islam* has that predominant, paramount place: Islam as a religion or Islam as a cosmopolitan, global civilization?

Once we confine Islam to a religion, then we will be left with only a few tools of historical analysis—a crucial problem at the heart the current literature on the

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[220] A different theoretical framework to approach the complexity of the Iranian society is Lara Deeb's thesis at the intersection of religion and modernity, which she elaborates in her anthropological research on the everyday life of Shi'a women in Lebanon. Deeb argues that not only religion and modernity are reconcilable, but that they are indeed inseparable; that material progress and spiritual achievement are compatible, and in proposing that, she departures from and rejects the mainstream Weberian postulate of *disenchantment* that holds religion and modernity at odds. Lara Deeb, *An Enchanted Modern: Gender and Public Piety in Shi'i Lebanon* (Princeton: Princeton University Press, 2006). Deeb's work, although on Lebanon, can be particularly useful in explaining how the Iranian state articulates Islam as a route to a proper, independent modernity through the Royan Institute, and how the scientific works conducted at the Royan Institute epitomizes the entanglement of modernity with religion.

development of biomedical sciences in Muslim-majority countries such as Iran. Treating Islam exclusively as a religion (mis)guides us to tell the story of the Royan Institute and its scientific accomplishment through the lens of Islamic bioethics, which offers inevitably only a few objects of historical analysis—i.e. Qur'an (the holy scripture of Islam), Hadith (the reports of Mohammad's words and deeds), and fatwas issued by high-ranking religious scholars.

Islam as a religion tempts us to treat ayatollahs as the main historical actors in the story of the Royan Institute, but Islam as a civilization encourage us to acknowledge the role of political leaders as well. Islam as a religion invites us to search for the highest religious authority in Iran, but Islam as a civilization teaches us that there is no central authority in the Islamic world, Iran included. Islam as a religion directs our attention to the ensoulment of embryo, Islam as a civilization draws our attention to the social shortcoming in the aftermath of a devastating war. Islam as a religion persuades us to celebrate the progressiveness of Islamic bioethics, but Islam as a civilization values the ambitions and policies of state builders.

It is not necessarily misleading to refer to Iran as a Muslim-majority country, but it is a grave mistake to assume that Islam—as a religion—is at the center of every story or at the heart of every development in a Muslim-majority country; to assume that religion is omnipresent, and that religion is the driving force behind every action and every development—scientific or otherwise. Islam, as a religion, leaves us with an impoverished theoretical framework, but as a civilization, offers a highly-nuanced

framework to work with. This dissertation discloses the poverty of religiocentrism, rendering it a reductionist conceptual paradigm.

So, why the conventional wisdom is inclined to only see one of the two faces of Islam and overlooks the other? If Islam has such a multifaceted and complicated nature, why some scholars and pundits have tried to put Islam, as a religion, at the center of their historical analysis of Muslim-majority countries such as Iran? The short answer is that it is *convenient* and *tempting* to do so. For instance, let's consider the case of post-revolutionary Iran.

Since the post-Mohammad Arab conquest of the Persian Sasanian Empire in the seventh century, Iran has been the salient cultural hub of the Islamic Civilization. Iran, too, has been a Muslim-majority country for over a millennium. Fast-forwarding to the post-revolutionary Iran, a traveler from Mars who is uninformed about the course of Islamic history will still be tempted to put Islam at the center of his nascent understanding of Iranian society, becasue: Iran was officially renamed to the Islamic Republic of Iran shortly after the 1979 Revolution, pushing aside the advocates of the potentially-alternative title, the Democratic Republic of Iran. While various social and political groups ranging from communists to Islamists contributed to the toppling of the Shah, the Revolution soon came to be known as the Islamic Revolution. Since then the political leader of the country—the Supreme Leader—carries the high-ranking religious title of (Grand) Ayatollah. In addition to the Supreme Leader, many—not all—religious elites hold administrative and political offices in public and private spheres. In the post-

revolutionary Iran, all students—regardless of major—are required to take a number of courses in Islamic teaching and history as part of their curriculum at pre-college and college levels. Many post-revolutionary Iranian coins and banknotes feature Islamic symbols: the obverse of the Iranian 100 Rials banknote depicts Ayatollah Seyyed Hassan Modarres—the leading cleric in support of the Constitutional Revolution of early twentieth century—whose death is annually commemorated as the Iranian Parliament Day and who famously said, "our religion is our politics and our politics is our religion", quoted on the bottom of the bill. The Revolution, besides new coins and banknotes brought a newly-designed flag for Iranians. The Iranian post-revolutionary flag, adopted in July 1980, features the Islamic phrase "there is not God, but Allah" twenty-two times in Arabic script, on the fringe of both the green and red bands. In the center of the white strip in the middle of Iran's three-colored flag, lies the geometrically-symmetric emblem of post-revolutionary Iran. It features the Arabic word for the Islamic God, Allah, in stylized characters, consisting four crescents and a sword, each symbolizes one of the five doctrines of Iranian Shi'ism (oneness of God, Justice, Prophethood, Leadership, and Judgment Day). There are twenty-three words on the flag of Iran, none is in Persian, but in the universal language of Islam—Arabic. The early 1980s, too, witnessed the arrival of the Cultural Revolution which aimed to "Islamicize" the higher education. In August 1983 and amidst the Iran-Iraq war, the post-revolutionary Iranian parliamentary representatives passed a law that made hijab mandatory for women, which has become the most visible public symbol of the religiosity and of the rule by Shari'a in the Iranian society. The compulsory hijab arguably epitomizes the centrality of the Islamic law—not

unprecedentedly though—in the formation of judicial and parliamentary laws in the post-revolutionary era. The construction of religious institutions and places of visitations continued to proliferate in the post-revolutionary Iran: modern-day Iran has over 70,000 mosques, 150,000 students of Islamic sciences in over 450 religious schools, and thousands of shrines across the country. The religio-cultural reformation which followed the Revolution of 1979 added a number of Islamic public holidays to the Iranian solar calendar. Our Martian traveler will not fall short of examples to justify what could seem as the omnipresence of religion in the social fabrics of the post-Revolutionary Iran. Isn't it now convenient and tempting to explain Iranian society through the lens of religion?

In addition to our Martian traveler's observations, the corpse of scholarly accounts that treat Islam as the most important category of analysis, suggestively renders it impossible to study any aspect of Iranian history—especially of the post-revolutionary era—without assigning Islam an imperative agency. But is there any historical development in which religion should not be seen as the central category of analysis? Regarding the Islamic Republic of Iran with an overwhelmingly Muslim population, would it be an inconceivable idea to propose a case study where historical analysis through the lens of religion proves to be problematic, if not misleading? Should we put religion at the heart of (modern) Iranian studies, simply because Iran is a Muslim-majority country and because the (Islamic) Revolution of 1979 led to the creation of the Islamic Republic of Iran, where an ayatollah holds the highest political office? It is certainly expedient to do so, but this study suggests otherwise.

Let's narrow down our focus on fatwas—as a proxy for religion—to further understand the poverty of *religiocentrism*. For instance—if we may adjourn our discussion of Iranian biomedical sciences and Islamic bioethics for a moment—let's take into consideration the current fatwas on issues other than the destruction of embryos, such as fatwas on beard-shaving and fasting in the Muslim-majority Iran. According to the clerical ruling of Iranian religious scholars, a Muslim man should not shave his beard with razor or a shaving machine—unless under special circumstances such as medical situations—and can only cut or trim it, which makes stubble the least amount of facial hair that a Muslim man is religiously allowed to grow. An empirical survey of the ruling of the prominent fatwa-issuing Iranian clerics on bread-shaving reveals that they—either cautiously or assuredly—rule beard-shaving *forbidden*, which makes it an un-Islamic and a sinful act.

A hasty reading of the clerical ruling on beard shaving might (mis)lead one to believe that that in the Islamic Republic of Iran with an overwhelming Muslim population, Muslim men do not shave their beards. Contrary to such misperception, there has never been a legal restriction for shaving beards prior to and after the establishment of the Islamic Republic of Iran in 1979. In other words, the unanimous ruling of clerics which explicitly forbids Muslim men from shaving their beards never transitioned into the socio-legal fabrics of the country. Our Martian traveler would confirm that many Iranian men do shave their beards regardless of the unanimous prohibitive stance of ulama on beard-shaving. Because a consensual religious ruling has

failed to be implemented in the society, one might portray Iran as a secular country where the scope of religious fatwas is confined to the personal lives of pious Iranian Muslims. Nonetheless, such generalization, too, is misleading.

During the month of Ramadan of the Islamic calendar, Muslims fast from dawn to sunset. In Iran, public eating or drinking is legally forbidden, and most restaurants close for dine-ins during the daily fasting period. Fast-breakers, if caught, can be legally penalized. Fasting is considered as one of the pillars of Islam by all Islamic denominations alike. All Muslim clerics see fasting as obligatory for all Muslims who have reached puberty and who are physically able to fast. Unless for health reasons, fast-breaking is a sinful act according to the Islamic tradition and the unanimous ruling of all clerics. Regardless of how a crude religious ruling on fasting—which makes fasting an obligatory Islamic act and public fast-breaking a sin—effectively translates into an elaborate legal ruling in the Iranian judiciary system, one can safely argue—based on the example of fasting—for the un-laic texture of Iran and for the important role of fatwas and clerics in shaping the socio-legal fabric of the society.

Taking fasting and beard-shaving into consideration collectively, our Martian traveler is left with an absolute sense of bewilderment to understand the complex religio-social reality of the Iranian society and the degree to which religion should be factored in explaining such complexity. One can ask to what extent the Islamic teachings and rulings of ulama can inform us about various political, social, cultural and legal facets of the Iranian society? The case of beard-shaving suggests a limited role for

religion and portrays Iran as a secular society; the case of fasting assigns religion a central role. Perhaps, our sense of bewilderment can teach us a lesson—that fatwas are problematic objects of historical study and that we must not reduce our understanding of what's happening in Iran to religion.

Now, let's take a different direction. If Islam as a religion fails to single-handedly explain the social reality of Iranian society, can the everyday social norms and practices in Iran help us understand Islam, given that Iran is a Muslim-majority country? In other words, do present-day social and cultural practices of the Iranian society shed light on what Islam is or what the Islamic tradition prescribes for its followers? For instance, one can look at the extent to which men and women are segregated in various social settings in the Islamic Republic of Iran and see if it can be inferred whether Islam advocates or prohibits public gender segregation—solely by examining the Iranian society and by making social observations.

A constellation of empirical observations will quickly shatter any hope: women are not allowed to enter soccer stadiums, but have entered volleyball stadiums a number of times in the recent past, which raised some criticism from the conservative political camp; Iranian boys and girls attend separate schools from elementary school through the last year of high school, but post-secondary education—public and private alike—is gender-neutral; public buses have two different sections for men and women, where women seat at the back section and men seat in the front, but there is no separation in public minibuses, cabs, trains and plans; gender segregation is practiced in

mosques as men and women pray in different lines, not only in Iran but in the rest of the Islamic world as well, but there is no gender segregation during Ihram—the five-day long Islamic ritual of Hajj when Muslims make the pilgrimage to Mecca—including when they circumambulate around Ka'ba, the black cubic shrine in the courtyard of Masjed al-Haram.

Now, does Islam advocates public gender segregation or prohibits it? If our case study to answer this question is the Islamic Republic of Iran—established in 1979—where a clergy holds the highest political authority and most of the population is (culturally-)Muslim, uncertainty is the most certain answer. Why high-school boys and girls must attend separate classes, but three months after their high school graduation when universities open in September, they can attend the same classes and seat on the same benches? Why men and women must seat separately in spacious buses, but they seat close to each other in a small shared cab, where three people sit in the back seat and one in the front seat? Could we possibly find out what is the Islamic view on gender segregation by examining the Iranian society? Our Martian traveler is left with an unsolvable quandary.

While the two examples of beard-shaving and fasting collectively shows that religion is not necessarily the central determinant behind the social norms of a Muslim-majority country such as Iran, the example of gender-segregation offers that the social settings, too, do not necessarily trace back to Islamic teachings and clerical views. What all three instances collectively offer here is that the relationship between religion and

society in Iran is not as well-established and as straightforward as it is often outwardly expected. What such observations suggest is that we should not be tempted to put Islam—as a category of analysis—at the center of our studies of various aspects of the Islamic Republic of Iran just because the highest political authority happens to be an ayatollah, because the Iranian population is Muslim-majority, or because the official name of the country is Islamic Republic of Iran. Such religion-orientated tendency deprives the scholarship from other relevant analytical lenses through which one can examine and study Iran. Now, let's get back to the case of the Royan Institute and development of biomedical sciences in Iran.

The goal of the SCCR was two-faceted from the beginning: cultural (Islamicization and Westoxification) and scientific (improving the scientific foundation and status of the country). These two aspects of the Cultural Revolution are not mutually exclusive. Indeed, in the eyes of revolutionary state officials, achieving one without the other defeats the purpose of the Cultural Revolution. The Cultural Revolution has been defined and characterized merely based on its cultural facet. Nonetheless, Royan Institute testifies to the existence of the Iranian nation-builders' scientific ambitions. While in the political literature of Iranian leaders, Royan officials and researchers are expected to manifest the twin goals of the Cultural Revolution—in practice as this study suggests—Royan officials have learned that the Islamicization and Westoxification wing of the Cultural Revolution and the political rhetoric of Iran's leaders do not help the institute achieve its scientific goals and to fulfill their missions. It

is based on such understanding that Royan decision-makers have kept the politics at bay and have shied away from the post-revolutionary, religiopolitical, *national identity* and instead have been promoting a secular, Persian-rooted, internationally-friendly *international* identity, hoping that the latter would be more appealing to the international scientific community.

The Iranian state is certainly eager to support stem-cell science, and it has provided substantial funding for the Royan Institute. The Iranian state has provided a platform for the Royan to become the world innovator in the area of stem cell research, but the Institute is in vital need of international collaborations. Iranian scientists are facing serious logistical hurdles. Moving intellectual capital and material resources between Iran and the rest of the world have hindered Iranian scientific progress.[221] Such practical challenges have further consolidated the parallel formation of two seemingly-incommensurable identities: an apolitical, secular, and Persian-rooted identity for international consumption (*international identity*), and an anti-Western, political

[221] The history of U.S. sanctions against Iran goes back to the Hostage Crisis of 1979. The United States' immediate reaction to the hostage crisis was to freeze the total of $12 billion of Iranian government assets in American banks globally. The sanction later fully expanded to a trade embargo until 1981, when an accord was signed and subsequently the embargo was lifted, and most assets were unblocked. However, U.S. imposed a new series of economic sanction from 1987 onwards. In the following years the United Nations and the European Union, and other countries followed the patterns of American sanctions. U.N. sanctions have a short history and date back to 2006. Josh Levs, "A Summary of Sanctions Against Iran," *CNN*, January 23, 2012, http://www.cnn.com/2012/01/23/world/meast/iran-sanctions-facts/index.html.

identity for national consumption within the geopolitical boundaries of Iran (*national identity*). While the Royan officials capitalize on the *international identity* to undermine Iran's scientific, technological and logistic isolation, imposed by other countries, including the United States and the European community, the Iranian state officials capitalize on the country's scientific accomplishments—achieved by institutions such as Royan—to extol the ideologically-laden national identity and to argue that the post-revolutionary policies have been working successfully. The case of Iranian biomedical sciences show how science is not neutral, is not being done in a vacuum and cannot be alienated from its social, political and cultural context.

The Royan Institute runs under the auspices of, and is funded by, the Iranian state, but it does not afford to adhere to the ideology of the state. The Mertonian norms of science have made the Royan officials realize that in order to succeed in science they have to join the international community. Through publication of international journals and Royan Institute Newsletter, and organization of the Twin Congress and Royan Research Award, Royan has tried to reach out to the international scientific community. The Royan officials have tried to stay out of political tensions, eagerly trying to disseminate the news of their scientific accomplishments. They want to be seen and in order to push their agenda forward, they have aggressively adopted a transparent policy. Once the state characteristic of the Royan Institute is highlighted, one can even argue that the Iranian state has—indirectly—assisted the creation of the *international identity* through an ideological self-censorship and political self-denial, and by

concealing the anti-Western conservative national identity that it has been promoting for national consumption for almost four decades since the 1979 Revolution. Whether Iran remains a hub in embryonic stem cell research will be determined in future.

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APPENDIX A: A CHRONOLOGICAL OVERVIEW OF THE ROYAN INSTITUTE'S SCIENTIFIC ACHIEVEMENTS[222]

The first IVF birth in Tehran (1993)
The second ICSI birth in Iran (1995)
Iran second success in open testicular biopsy to treat severe male infertility (1996)
The first frozen embryo birth in Iran (1996)
The first ICSI birth by frozen sperm of a gonadectomized man (1999)
The first celebration of the 1000th birth by the assisted conception treatment in Iran (1999)
The first human embryonic Stem Cell line establishment in Iran and the region (2003)
Establishment of Stem Cells research department (2003)
The first PGD child born in Iran (2004)
The first time use of Adult Stem Cell in treatment of MI during CABG in Iran (2004)
Production of Insulin Producing Cells from Human Embryonic Stem Cells (2004)
Culture of Human Limbal Stem Cells on Chorionic Membrane and use them for corneal injuries (2004)
Establishment of the first Private Cord Blood Bank in Iran (2005)
The first IVM-IVF sheep born in Iran (2006)
The first cloned sheep born in Iran (2006)
The first nuclear transferred, in vitro fertilized sheep born (2006)
Culture and transplantation of fibroblasts (2007)
Establishment of mouse and human induced pluripotent stem cells (IPS) (2008)
Transplantation of melanocytes for patient with vitiligo (2008)
The first cloned goat born in Iran (2009)
The first transgenic goats born in Iran (2010)
The first calves born from vitrified in vitro developed embryos in Iran (2011)
Establishment of cell therapy pre-hospital (2011)
Establishment of Stem Cell Bank (2011)
The first healthy child birth after Molecular PGD for beta-thalassemia in Iran (2012)
Birth of eight cloned goats through the simplified method of SCNT in Iran (2013)

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