Science and modern education in the Safavid era

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Abstract: Education and attention to science in Iran was considered as important in ancient period, and was exclusive to nobles. However, after Islamic, it became public, and all groups gained access to it. Education and its expansion in Iran were affected by political and military fluctuations and were used as a tool to establish and expand power by government. Formation of The government of Safavid by Shah Ismail I in 907 hijri is of great importance in history. During rule of Safavid over Iran, by establishing peace and widespread relation with European states, proper ground was provided for expansion of education and attention to modern sciences. The paper examines education of the Safavid. This paper also focus on view of society and rulers of Safavid regarding modern science and propagation of it in society and its place in Iran considering wide relation of Safavid government with European states.

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1. Introduction

Education, science and technology have a long history in Iran in periods in which social and political stability existed, knowledge expanded, and during chaos and unrest, there was recession and destruction of science. Oldest university in the world, "Gondi Shapur" is attributed to Shahpur first, came into existence and gained international fame in the Sassanid era. With the rise of Islam and the growth of Islamic Sciences, scientific centers were established as Nizamiyya madrassas, in about fifth century, by Nizam al-Mulk in Baghdad in the year 459 hijri and then in other Iranian cities such as Nishapur, Balkh, Herat, Isfahan and Amol. However, educational and political purposes should not be ignored in the establishment of madrassas. Also attack of Mongols on Iran in early 7th century brought an era of hardship and destruction to Iranians such that science was forgotten and scientific centers experienced stagnation and destruction.

The establishment of the Safavid state in the early sixteenth century is a turning point in history of Iran. Safavid established an independent government acroos Iran plateau, established religious union, and thereby established political uniformity across this wide country. Establishment of Safavid dynasty on the other hand was simultaneous with end of renaissance era and entry of Europe to new era, as a result of scientific and industrial advancement resulting from it, European states gradually started to gain an effective role in politics and economics of the world. In that period, competition for access to the East European countries market led to the presence of Europeans in Iran.

2. Education in the Safavid period

During the Safavids, the education received attention from all social classes and many madrassas and houses of writing were established in this period. Safavid trying to establish educational institutions in particular had the political and religious purposes. Safavid government sought to use Unity of religion (twelve Shiite) to strengthen their governance and by supporting Shiite scholars, establishing educational - religious and theological institutions, and translation of religious books translated from Arabic into Persian, to prepare ground for the enforcement of religious laws, and Shiite theoretical doctrine in social and political activities. To reach this goal, the Safavid kings called themselves "servants of twelver religion" and "Kalb of Ali shrine" and called great mujtahids as deputy of Imam Zaman. Also, for more influence in the society, religious books that were written in Arabic until just after it was written in society, religious books which were in Arabic by then were written also in Persian and jurisprudence was limited to Shiite one.

In the Safavid period, education occurred in madrassas and houses of writing, and in the religious dimension of education, education was aimed at education of believers in Jafari religion. Given those efforts to educate believer people, important books were written in the field of education adapted from the Quran and Hadith, among them were the thesis "Adab al-motealemin" and “Maniayat al-mord fi adab al-mofid u. al-mostafidh”. Adab al-motealemin was in Arabic and its subject was manner of teaching, importance of studying, the relationship between professor and student, health, and strengthening memory in 12 chapters written for scholars of

religion, especially theology. The book Maniayat al-mord fi adab al-mofid u. al-mostafidh was written in Arabic and included topics related on teaching, preparation of book, and custom of relation of teacher and the student. Moreover, in the other books such as Bihar al-Anwar, Ain al-hayat, and Heliyat al-motaghin, issues related to education of scholars of religion were introduced.

Education centers in the Safavid period divided into two houses of writing (elementary) madrassas (higher education):

Elementary education was houses of writing. During Safavids, government didn't intervene in affairs of houses of writing, anybody could run a house of writing in any point of the city, and given his personal beliefs. Education in houses of writing started from the age of six individually, and holder of house of writing taught students according to their wishes, whatever they wanted. The madrassa curriculum comprised the Quran and the Persian language and the introductory Arabic books such as amthalah, tasrif, kafiah Ibn Hajib and Jami Sharh, and Alfiah Ibn Malik, etc.

During this period, the method of education was very tough, and from an early age children were deprived of play and were forced fun to read Arabic books difficult to tackle. The main objectives of teaching were reading and writing, learning, religious rituals, prayers and reading Quran and daily living needs.

In houses of writing, students are usually from the lower classes of society, they study with a loud voice, and children of elites and nobles were taught reading and writing at home by teachers. Tavernier wrote about the activities of the Safavid houses of writing: "they are sent to house of writing from childhoold, and several houses of writing are opened in each neighborhood, in which they hum strangely, all of them repeat lessons with loud voice which a strange and if any of them stop reading loud he will be punished by teacher. However, children of respectable families are not schooled like that, rather, they are home schooled."

Madrassa: having completed house of writing, those who wished to continue with their studied and learning higher education lessons went to madrassa. During Safavid, there were many religious schoolds such as Isfahan Chahar Bagh Madrassa, which was established on large endowments. Other Safavid madrassas are "Madrassa Mullah Abdul" (d. 1022 AH) built upon order by Shah Abbas, "minor Madrassa Jeddah" and "major madrassa Jeddah" which were established in the years d. 1057 AH and d. 1058 AH during shah Abbas II, "Madrassa Nawab 'in Mashhad, established in the era of King Solomon the year d 1086 AH," madrassa Sultani in d 1116 AH and "Madrassa Jalaliye" in d 1114 AH, which were built under Shah Sultan Hussein.

Higher education dedicated to scholars of religion and usually was present in boarding madrassas. After houses of writing, madrassa was the only place where science and literature in high levels was presented by clergy, scholars and jurists. In this course, students study the lessons in Persian and Arabic literature, and discussed the course of works of scholars, and sultans, a little math, then jurisprudence, principles of rhetoric, theology and religious laws. The most important books studied in madrassas were: Kafi (Muhammad ibn Ya'qub Kolayni – Min La Yahzarah al-fiqhiah (Ibn Babooyeh) - Istibsar u. tahdhib al-Ahkam (Muhammad Ibn Hassan Tusi) – wasa'el (Muhammad ibn Hassan Hor Ameli) - Wafi (Molla Mohsen Faiz) - Bihar al-Anwar (Mulla Muhammad Baqir Majlisi)

Chardin writes about education and madrassas in Safavid Era: "the number of madarassa in Iran is high. Iranian students study in various disciplines of knowledge at the same time. I am not sure if this style of teaching and learning is good. The said method is one used in antiquities. Fields of medicine and science, debate and public courses Expertise do not exist, as do in like Europe. »

As a result of religious union policy under Safavid, Shiite theologist and Mujtaheds gained extraordinary power, students of theology multiplied, science became almost limited to fiqh and religious principles, and title of scientist was only given to jurists. As a result of this policy, other sciences such as natural sciences, mathematics, philosophy, etc. did not receive so much attention and only few studied them. Of these, only Hikmah and Philosophy somewhat received attention, and save for some exceptions, such as Mir Damad, Mulla Sadra, Sheikh Baha'i Ghiyathoddin Mansour Dashtoki, book authored in this period were devoid of innovation and simply described, interpreted and replicate the effects of past.

3. Safavids and the New Science

During the Safavid, widespread relations between were established between Iran and Europe. Friendly relations between the Safavids and European governments were based on mutual needs' European governments were powerless against the Ottoman Empire's expansionist policies and well received the establishment of a powerful Shiite Safavid Dynasty in eastern borders of this Empire, and the Safavid state sought to find allies in European powers to encounter the occasional invasion of the Ottoman government. With increased contact with Europe, gradually, several groups of Europeans in

form of political representatives, religious and business delegation were dispatched to Iran and some of them obtained prominent status in the Safavid court. As during Sultan Mohammad Khodabandeh, viceroy of India's ambassador to Portugal, called "Persimmon Morales" who knew Farsi, gained confidence of Safavid Shah that asked him to taught math and astronomy to his son, Hamza Mirza. Through these people, Iranians were acquainted with some sciences and new European achievements and sought to gain some of them.

Making new weapons: the most important needs of Safavid government in the military arena was acquiring "western knowledge of weapons and war " to preserve the territorial integrity of the country and resisting the invasion of the Ottoman and Uzbek. These needs, especially after the defeat of the Safavids in Chaldiran in 920 AH was considered and therefore the Shah Tahmasp I (930 AH -984 AH) with the help of Portuguese efforts were made to acquire new weapons: "The Iranians have to learn from the Portuguese how to use canon and during Shah Tahmasp a number of Portuguese militaries were in forces of Iran, who warred Turks and it was at this time that Iranians first used gun. Considering this efforts, use of gun became common in Iran.

Under Shah Abbas I (996 AH -1038 AH), and considering the wide battles with ottomans to regain areas seized by the Ottoman Empire, equipping troops with guns and artillery became important. Shah Abbas sought the help of Europeans such as Shirley brothers to strengthen its armed forces. Therefore, with follow up by the king, gunman legion who were among the most important legions in Safavid army was formed. Vale wrote on this: "In fact, it has been a while that the king intends to form a new army of gunmen armed with rifles But there has been no success so far".

Among the most influential people in the country in terms of developing and using new weapons were Shirley brothers, Anthony and Robert. Shirley brothers went to Iran in the year 1006 AH and considering desire of Shah of Iran to equip their troops, they were highly welcome. There were several war experts in the envoy including cannon maker, and Shirley himself had with him several books about the technique of castles making and fortifications". Anthony Shirley and his associates made acquainted Safavid troops with use of new military techniques in cooperation with Allah Verdi Khan, the generalissimo of Iran, equipping them with new artilleries.

Manufacturing new weapons and equipment of troops received attention after Shah Abbas Safavid as well. As Shah Safi (1038 AH -1052 AH) wrote a letter to the King of England, and asked him to dispatch "a gunsmiths" and "one firing squad" to Iran and at the time of Shah Sultan Husayn (1105 AH - 1135 AH) he wrote a letter to King Louis XIV of France asking him to "provide that a Master canon maker and gun maker, and makers of other artilleries are sent to the court of his Excellency".

Although it was considered necessary during the whole Safavid period to renovate and reconstruct military organization and to use new artilleries, it took a new form under requirements of each period and desires of Shah and his associates, lacking fundamental and long term planning. On the other hand, Safavid troops also were not so willing to use modern and new artillery and some ghizilbashes considered use of gun as being incompetent with fairness and courage. Considering these issues, no serious and practical attempt was made to learn how to use new artilleries. Kaempfer who lived in IRAN from 1095 AH to 1097 AH noticed that considering the establishment of peace and tranquility in the border, military forces were gradually neglected: "almost it can be said that there is no sign of the portable and moving canon. Canons also are used as decoration of castles today after conquest of Portuguese by union of Iranian and English forces in Hormuz, Gang and Lar.

Creation of Printing House: In the Safavid period, in addition to the military, some European industries such as the printing industry also received attention from Safavid kings. Modern printing industry made its way into Iran thank to efforts by Shah Abbas I, 1020 - 1030 AH, Della Valle has said on this: "... King, who is very interested in such things, wants to establish in Iran a printing house which uses Persian and Arabic letters ... Holy Father has appointed a (Spanish resident of Isfahan) to procure from Rome a printing house for him". However, establishment of printing house in Isfahan was contrary to the interests of calligraphers and the prescriber, they found it as their rival because printing industry would make jobless many who made living by calligraphy".

"when Muslim Iranians refused using printing industry, it was assigned to the Armenians. But the Armenian also didn't consider printing in line with their goals and in terms of technical weakness, they never could prepare a good ink for printings ". As a result of non-welcoming and improper use, printing industry in Iran did not develop properly.

Attention to art and technology of Europe: with gradual expansion of relation with Europe, some of Europe's scientific innovations such as painting, watch making, jewelry, etc, also received attention, and some Safavid Shahs sought to acquire them. Shah Safi sent a letter of the King of England (Charles I) requesting him to sent artist workers and

the last Safavid King, Shah Sultan Husayn sent a letter to the king of France and requested him to dispatch a number of industrialist and French artists in the field of watch making, masonry and even "alien technology" to Iran.

One of the European arts which received attention of Safavid kings under influence of desires of Safavid kings and mutual relations with European countries was painting. At the end of the reign of Shah Abbas I, and because of dispatch of Musa Beig, the first Iranian Ambassador, to the Netherlands from the year 1036 AH / 1627 AH, Persian painters were influenced by the school of painting of Flanders in terms of color and theme, and reciprocally, Iranian motifs appeared in works of Dutch painters. During Shah Abbas II, due to strong passion of Shah for painting, some individuals were sent to Rome to learn this art, including Muhammad Zaman son of Hajji Yusuf who went to Europe in 1052 AH where he converted to Christianity and took the name Paulo and became known as Paulo Zaman.

In addition, some European inventions and innovations such as watch making, cameras, eyeglasses, glass objects and the like entered Iran during Safavid period. Some of these, such as the watchmaking, Iranian made no progress. According to Chardin, "watch making industry is still unknown to Iranians. When I was in their country, there were only three or four watchmakers, who, however, were from Europe. You could find even one person from Iran who could set and fix a watch". Among other works of new European civilization which was introduced to Iran in about the year 1665 during King Solomon was astronomical telescope, which was mostly held by European residents of Iran. Mohammad Saleh Qazwini in his book Navader al-Ulum described structure and working of the camera as follows:

"In our time, a learned European man called Zolfunun has made an apparatus wjocj if you see through you will see many stars in the night, which you can not see otherwise. It is made of paper cardboard, and on two sides of it, two circular glass like eye glasses are installed. When your eye is placed on one of the glasses, and look through it, surprisingly, the effect on both glasses will coincide. A glass is placed on the eye".

Unfortunately, process of attention to and entry of modern sciences to Iran experienced pause and stagnation in last years of rule of Safavid due to political instability and conflict between power seekers. Political weakness and economic corruption of Iran, which started after death of Shah Abbas I, led to sudden fall of Safavid government during Shah Sultan Hussein in 1134 AH. Although rule of Safavid over Iran was associated with success in military, political and economic fields, by providing ground for the dominance of the "superficial scholars" it started a new era of intellectual stagnation, the period in which scholars and thinkers, being ignorant of rational sciences and without knowledge of principles of modern science in the Europe, invited Iranian to avoid Europeans and their achievements. This had many effects in non-acceptance of modern science and knowledge by people, and as long as old and traditional methods would meet their needs, they were reluctant to learn and apply new science and technologies.

4. Conclusions

Establishment of Safavid government in the early sixteenth century revived national unity and centrality of Iran for the first time after conversion into Islam, and Iran gained successes in military, political and economic areas. However, in the field of science and culture, considering adoption of religious union policy, and inattention to nonreligious sciences, this gradually prepared ground for scientific and educational stagnation in Iran. In this period, with formation of public passion for learning and rise of Shiite mujtahids to power, science was limited to fiqh and religious principles, and such sciences as interpretation, fiqh and Hadith grew strongly, while in other scientific fields such as the natural sciences, mathematics, etc., no new innovation was made and no new authorization occurred.

On the other hand, the formation of Safavid rule coincided with beginning of the scientific revolution in the western world and the associated dramatic changes. In this time, considering suitable economic and political conditions, wide relations between Iran and Europe were established. As a result of these mutual relations, Iranian community in Safavid period gradually became acquainted with scientific achievements and new techniques in Europe. However, due to the dominance of the traditional thinking and intellectual bias, there was no will to learn and to apply new sciences and industries in Iran.

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