REFLECTIONS OF THE MUSEUM OF THE HISTORY OF SCIENCE AND TECHNOLOGY IN ISLAM ON HIGHER EDUCATION

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Abstract: In this study, the role of "Museum of the History of Science and Technology in Islam" and its founder in developing an education setting, will be discussed and assessed. A copy of the museum named "Science and Technology in Islam" which took years to be established by Goethe University in Germany was established in Istanbul in 2008. In addition to eight hundred objects in the museum in Germany and five hundred objects in the similar museum in Istanbul, research methods of inventors are also displayed. Questioning "Museum of the History of Science and Technology in Islam" and exemplary thoughts of scholars who have works in this museum, their research methods, and professional personalities, the findings are evaluated for the development of science and technology in today's world and betterment of education system.

Prof. Dr. Sezgin, who is an internationally-known and efficient science historian and opinions of chosen scientists in the history of science and technology, their research methods, scientific personalities and their qualities of being a role model will be discussed and assessed. The life of chosen scientist, his works, awards, the museum he established and publications about him will be analyzed; his professional goals and argument of scientific civilization will be discussed and interpreted according to Kuhn's concept of "war of paradigms".

Key Words: history of science and technology, science and technology in Islam, science and technology museum, teacher and engineer training

Introduction

Most of the orientalists, studying current and historical culture of the east, ignore developments in eastern cultures and civilizations and continue making negative assessments. Although they accept a thousand-year dark age between ancient age and renaissance, they disregard the effect and contribution of "Islamic Civilization" to Europe in the dark age (Bayraktar, 2012, p:8-12; Sezgin, 2009, p:9-19; Turan, 2010 p:37-38; Yılmaz, 2009, p:45-52;Yıldırım, 2003).

Turkish intellectuals have difficulty in believing the contributions that their society could have made to today's civilizations, because they don't know and don't investigate the historical contributions our society made to the development of western culture (Sezgin, 2009, p:9-19; Turan, 2010, p:37-38; Yılmaz, 2009, p:45-52). Most of the Turkish intellectuals are shy to produce shared projects with their westerner colleagues or lack self-confidence (Sezgin,2009 p:9-19; Hocaoğlu, 1995 p:425-435). Turkish intellectuals are too far from having a purpose and grief in their hearts and life visions to establish a new civilization (Hocaoğlu, 1995 p:434-435). .

Prof. Dr. Sezgin's academic characteristic, his personal development, the background of the first production process of the cars in his museum and scientific principles of his way of thinking will lead to new developments and new dimensions for education system. The way how we can reflect Dr. Sezgin's historical and outstanding skills, experiences and opinions on today's education system should be discussed.

Method of this Study

The methodology of this study consists of analyses of different publications, including five-volume book "Science and Technology in Islam". In the analyses of documents, distinct features in scientific characteristics of scientists, their important qualifications are reviewed as case studies (Cohen, 2000 p:181-190). Dr. F. Sezgin's life, academic development and works have been chosen as a role model in education. Dr. F. Sezgin's life, works, academic development, characteristics which can be role model, are discussed and evaluated through qualitative method (Creswell, 2014. p:23). Research methods of talented historical figures, whose works are exhibited in this museum, their thoughts, suggestions, their contributions to their own civilizations are investigated, and their reflections on today's education are discussed and assessed (Cohen, 2000 p:181-190).

Parallel similarities between Dr. Sezgin's life, academic pesonality, methodology and historical figures he studied are remarkable. Like his predecessors Biruni and his PhD advisor Prof. Ritter, Dr. Sezgin's principle of learning the language of the field he was studying, similar to archaeological excavations, refers to qualitative research methodology (Creswell, 2014. p:23; Cohen, 2000 p:137-156; Sezgin, 2010, p:9-19; Turan, 2010 p:46, 52; Yılmaz, 2009, p:14-15).

Dr. Sezgin's Biography

F. Sezgin was born in Bitlis, Turkey and came to Istanbul for higher education in science-engineering. One of his friends took him to a seminar given by orientalist Professor Hellmut Ritter. What German professor said in the seminar overwhelmed Fuat Sezgin. Although Turkish intellectuals despised their own history of science, German Ritter claimed the contrary. After this seminar, Fuat Sezgin decided to pursue his field and academic studies with Ritter. However, it wasn't easy to catch up with Ritter's work pace, and his pace of language learning (Yılmaz, 2009. p:14). His advisor Ritter told his student Sezgin that he wouldn't be a scientist with 13-hour work pace and he had to increase this (Yılmaz, 2009. p:13). Fuat Sezgin, who gave a great importance to planning time like his advisor Ritter, stated that he had been late only for three appointments throughout his life and he had never been able to forget the grief (Turan, S. 2009 s:14).

He internalized the virtues and high merits of summit personalities he encountered in "History of Science"; he preferred to understand the article, which he was studying, learning the writer's original language (Sezgin, 2010. p:17-27; Yılmaz, 2009. p:13-14). When needed, there was no country that Dr. Sezgin didn't travel, and there was no language that he didn't learn.

In his PhD, he gave the first signals of his thesis "The Bridge of Islamic Civilization". In opposition to the claims of western orientalists, in his associate professorship thesis "The Sources of Buhari", he proves that the hadiths and their bases are nourished from written sources. He was an associated professor who was suspended from the university in 1960 military coup and was among the professors known as 147s. He was smeared and became unemployed during those times http://www.dunyabulteni.net/haber/134407/147likler-neden-universiteden-atildi-

Dr. Sezgin's Scientific Personality

Dr. F. Sezgin who became unemployed in Turkey chose Germany to continue his research career abroad. With the studies he conducted in Germany, firstly, he renewed his associate professorship, and then became the professor of the history of science. He founded a research institute, a department, a foundation and a museum and so gained an international reputation.

In UNESCO meetings, it was believed that, available "Arabic Handwritings Archive" (Geschichte der Arabischen Schrifttum/GAS), could be renewed only by a commission of experts. Dr. Sezgin published the first volume of his studies that he conducted on this issue and the commission dispersed (Yılmaz, 2009 p:29). Dr. Sezgin's Arabic-German AHA publications, of which 21st volume will be published in 2014, remind of the function of Kasgarli Mahmut's "Divan-i Lugat-i Turk" which was the first Arabic-Turkish book and they are also appreciated by Arabic professors (Turan, 2011, p.8-9; Turan,2010,p.18). (http://ekitap.kulturturizm.gov.tr/Eklenti/10825,123pdf.pdf?0).

After working six months, Dr. Sezgin discovered that his employment in Germany was temporary. With his reply to the administrator of the department, he proved his belief: "Please don't be upset! I have planned all my

career steps respectively and I have achieved all of them. Planning and achieving must have spoiled me; this is why this has happened to me. I don't know what to do tomorrow" (Turan, 2011).

Dr.Sezgin'sMethodology ,Civilization Argument

Parallel similarities between Dr. Sezgin's life, academic personality, research methodology and historical figures he has studied are remarkable. Before commencing a study, Dr. Sezgin, like Biruni, learns the language of the target subject; and supports the principle that original thoughts should stay connected with their essence (Bayraktar, 2012, p:24-37; Sezgin, 2010. p:17-27). This principle indicates that he has adopted ethnographic research methodology in archeological excavations (Cohen, 2000 p: 137-156; Bayraktar, 2012, p:24-37)..

He commemorates prior western scientists who studied the positive contributions of Islam civilization to western culture and referred to these contributions in their publications. Dr. Sezgin states that most of the western scholars disregard Islam civilization as result of the sense of superiority; that scholars in Islam don't know Islam civilization at all and have a sense of inferiority. (http://www.ibttm.org/TR/media/konusma.pdf)..

As being a science historian, instead of "inferiority /superiority argument", he defends "The Bridge of Civilization Argument" in his studies of "Science and Technology in Islam". Sezgin's "The Argument of the Bridge of Islam Civilization" was supported, before him, in the studies of European historians of the science, Herder, Goethe, Humboldt and others with documents (cited from Sezgin, 2010 p 24). The claim which Dr. Sezgin cites from science historian Franz Rosenthal is also remarkable: "If Islam civilization had defined the science only in terms of practical benefit and scientific curiosity, it couldn't have developed so fast and efficiently. The understanding of the science in the beginning of Islam covers the whole life; it is the impulse of the life and in the center." (Cohen, 2000 p:137-156; Sezgin, 2018 Volume-I p: 5).

Dr. Sezgin's "The Bridge of Islam Civilization Argument", at the present time, is also supported by Kuhn's work "The Structure of Scientific Revolutions" and his concept of "war of paradigms" (http://www.theodor-rieh.de/heinrich/Kuhn.pdf).

Before Dr. Sezgin, another successful advocate of the same research method was a German named Eilhard Wiedeman. Five of the tools belonging to Islam civilization which Wiedeman, who had more than two hundred publications, produced are in the inventory of Deutsches Museum, today. (http://www.ibttm.org/TR/media/konusma.pdf).

The Museum of History of Science and Technology in Islam

"Museum of History of Science and Technology in Islam" was opened in Gulhane district by Istanbul Municipality on 26th of May, 2008. It covers an area of 3500 square meters. Approximately five hundred tools from different disciplines, such as astronomy, geography and cartography, medicine and pharmacy, mathematics, physics and technology, chemistry, botanic, mineralogy and hours, are exhibited in showcases in Turkey (eight hundreds in Germany). There are also publications related to research methods of important scholars in history, their advisory thoughts and museum (Cohen, 2000 p:137-156) (http://www.igaiw.de) (http://www.ibttm.gov.tr).

In international famous museums, the models of tools which are considered to be important for the developments in the history of science, are also displayed similarly (e.g. Deutsches Museum, British Museum). In this field, half open-air museum in the famous research institute in CERN in Switzerland was designed for a different function. While huge vehicles retired from the accelerator in the CERN, their functions and services in open-air and their contributions to technological developments (MR and PET in medicine, http://www protocol in communication etc.) are introduced and displayed in open-air, students are allowed to wander through the copy of research tunnel and to conduct experiments inside the facility (Corlu, 2009; tour and observation records, course materials). Schools are encouraged for education trips as groups and they are supplied with the support of education guidance. University students and instructors are encouraged to participate in summer education programs in CERN with expert guides in their own languages (including Turkish) (http://home.web.cern.ch/students-educators/summer-student-programme).

Findings, Results and Suggestions

Explaining the structure of scientific revolutions, Kuhn also criticizes the understanding of research and science in the form of "solving puzzle" (Kuhn, 2014). With their puzzle-solving understanding functioning as "a screw in the machine of western civilization", researchers from the countries, which are outside Europe and aren't regarded within the scope of civilization, couldn't produce a genuine and valid civilization argument and an understanding of shared science-technology, and it seems that they won't be able to.

The ones, who shaped the history of science and the development of technology in eastern cultures, dedicated their lives to the development of science and technology with compassion and high motivation. İbni Batuta, departing from Morocco and traveling to 44 countries (at the present time) in three continents, recorded his tours which lasted 29 years in his book (Al Hassani, 2010 p 256-261; Everett and Reid, 2001 s 4-5; Sezgin, 2012 VI p:61 and VIII p:8). Biruni, Evliya Celebi, Katip Celebi, Khwarizmi conveyed their studies, lifelong observations, findings, problem solutions to today, recording them in their books (Sezgin, 2012; Bayraktar, 2012 p.28-79). Abdus Salam (Salam, 1988) and Franz Rosenthal explain the source of impulse that motivated distinguished, high quality scholars who are famous in the history of science to dedicate all their lives to science working night and day, with the real science paradigm in the beginning of Islam (Sezgin, 2003 volume-I p:5). An advanced civilization argument, a universal science understanding and an education system, which could gain such a high motivation and impulse for scientific research, had borders with Europe and kept in touch with Europe, remaining at the top for eight hundred years (Kuhn, 2014; Sezgin, 2008; Sezgin, 2010; Sezgin, 2012; Salam, 1984; Salam, 1988)..

The genuine copy of the book "Museum of the History of Science and Technology in Islam", which Dr. Sezgin summarizes, consists of five volumes (http://www.igaiw.de). With expertise museums reflecting the developments in the history of science and technology and "education support programs" which they organize, they contribute to the formation of science-technology culture in the society. In the museum established in Istanbul, scientific understandings of these outstanding and talented people who had important contributions in the history, their research methods, techniques of experiment, assessment and observation, their advices on the development of science and science history preserve their actuality for today's education (Cohen, 2000 p:137-156; Sezgin, 2010 p:17-27). .

Scholars, teachers, trainers, engineers, scientists and politicians of the countries, which are not regarded as a part of the culture of western civilization, investigating and learning their own history of science, can look for understanding of shared science and civilization arguments where they lost them.

Note : Subjects in Museum of the History of Science and Technology in Islam were presented as assignments of "History of Science" course by students at Mathematics Department of Istanbul Commerce University.

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Some of the new space housed displays of the Wellcome collections of the history of medicine, acquired in 1976. Among the many special exhibitions held during the 1970s and 1980s were several on broadly-based themes rather than specific subjects. Among these were 'Science and Technology in Islam' (1976), 'Exploration' (1977) and 'Science in India' (1982). Launch Pad, first opened in 1986, was another new development in the understanding of technology.Â The history of the Science Museum over the last 150 years has been one of continual change. The exhibition galleries are never static for long, as they have to reflect and comment on the increasing pace of change in science, technology, industry and medicine. Istanbul Museum of the History of Science and Technology in Islam (Turkish: Ä°stanbul Ä°slam Bilim ve Teknoloji Tarihi MÃ¼zesi) is located in the former Imperial Stables Building in GÃ¼lhane Park. The museum was opened on 25 May 2008 and displays replicas of 9th and 16th century scientific instruments of Muslim scholars. The models were all made at the Institute for the History of Arab-Islamic Sciences of the Johann Wolfgang Goethe University in Frankfurt from descriptions and drawings in contemporary