

THE EMINET AZERBAIJANI SCIENTIST

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1. FROM THE EDITOR

For many years, prominent Azerbaijani scientist - astronomer, mathematician Muhammad Nasiraddin Tusi is mentioned in different sources as a Persian, Arabic, and Iranian scientist. The reason is that most of the important scientific articles of an eminent scientist H.J. Mamedbeyli, who was an employee of the Shamakhy Astrophysical Observatory named after N. Tusi of the National Academy of Sciences of Azerbaijan since 1981, were published in journals of republican scale, from the 50-years of the 20th century. Most of the books published by the author are written in the Azerbaijani language, and his relatively significant work "Founder of Maragha Observatory Nasiraddin Tusi" (Publishing House of the Academy of Sciences of the Azerbaijan SSR. 1961), although was published in Russian, but was not widely distributed. The author collected scientific facts about the work of N.Tusi from 32 countries to publish this book. The publication of the article "Prominent Azerbaijani scientist" (*Izvest. ANAS of Azerbaijan SSR*, No.9, 1951), in journals respected in limited circles, in which the valuable results of the extensive and serious search of H.J. Mamedbeyli, served the interest of pretenders. Besides, the non-publication of works of Mamedbeyli in international scientific languages led to the oblivion of all his studies. Great irresponsibility and preconception is the mention of N.Tusi mainly as a Persian, partially as Arabian, Iranian and Mongolian scientist, in encyclopedic sources published at the end of the 20th century. Azerbaijan was under the authority of Persian, Arabian, Mongolian, and other empires for many years, where a rigorous regime was applied. In this case, how could N.Tusi write that he is a Turk or an Azerbaijanian. Despite that 820 years have passed since his birth, the Persian regime does not permit the opening

of Azerbaijani-language schools in Iran, still. Disseminating the crux of scientific researches of H.J. Mamedbeyli on the national origin of N.Tusi in wide circles, we can convey the truth to those who irresponsibly distort the truth about the nationality of N.Tusi.

2. INTRODUCTION

The study of the history of science and culture in Azerbaijan shows that the Azerbaijani people had a high cultural level in the distant past for its time. Many eminent personalities came out from the Azerbaijani people - philosopher Bahmanyār, poets Khagani, Nizami, astronomers and mathematicians Abdulla Ganjavi, Falaki Shirvani, Abul Fazl Tabrizi, Nasir ad-Din al-Tusi (Nasiraddin), Fakhr ed Din (Fakhraddin) Maraghi, Shams ad Din (Shamsadin) Shirvani, Fakhr ad Din Ihlati, architect Ajami Nakhchivani and others. There were several large towns in Azerbaijan, which were famous as scientific and cultural centers not only in Azerbaijan but also in the entire Middle East in the middle of the 13th century. Among them, the cities of Ganja, Tabriz, Maragheh, Shamakhi, Nakhchivan and others stood out. In these towns there were a large number of schools, with many scientists. When the Mongol conquerors oppressed the country, many cities of Azerbaijan destroyed and ransacked, and their population killed. However, despite all this, Azerbaijani thinkers and scientists in the most unbearable and hard conditions continued their productive work. With their creations, they made a valuable contribution to the world culture. However, "the long-suffering, but freedom-loving Azerbaijani people, in unequal battles with numerous enemies, defended their existence, managed to preserve their national identity, national culture, their native language." The wrong term "Arab culture" or "Arab science" still exists today. Under this term completely independent cultures of many nations, once under the rule of the Arabs, bring, whereas the "Arab culture" should be understood only as of the culture of the Arab people themselves. As early as the 14th century, the famous historian Ibn Khaldun pointed out the incorrectness using this term. The Turkish historian Kopryulyu in the article "Some remarks about Maragheh observatory of the 13th century", gives this observatory and the observatory of Ulugh Beg, (in Samarkand), as the scientific centers of "Turkish-Islamic culture." In turn, the Iranian scientists arrogate to themselves the scientific fame of the Maragheh Observatory, giving out this observatory as the center of Iranian culture. Based on this, they deliberately downplay the importance of such largest scientific institutions as the 13th century Maragheh observatory in Azerbaijan and the 15th century Samarkand Observatory in Uzbekistan. In the same cases, when bourgeois falsifiers of the history of science under pressure are compelled to talk about the Maragheh or Samarkand observatories, they give out

them as centers of Arabian culture. We give the words of the author of the book "The History of Mathematics in ancient and in the Middle Ages"-Hieronymus Georg Zeuthen as an example, about Nasir al-Din al-Tusi and Ulugh Beg: "For a long time after the Abbasid, Baghdad remained the center of Arabian mathematics; the greatest of the later mathematicians associated with it. The astronomer and mathematician Nasir ad-Din al-Tusi managed to achieve a privileged position for his research in Baghdad after the Mongols conquered it (1258). The last of the Arab mathematicians, whom we should call, the Tatar Ulugh Beg, after a new invasion of barbarians in the 15th century, likewise lived in Baghdad. The deliberate distortion of historical facts by bourgeois scientists clearly manifested in this small quotation. The assertion that Baghdad after its destruction by the Mongols continued to be a scientific center is a conflict to historical facts. It is also quite wrong to assert that Nasir ad Din al-Tusi and Ulugh Beg were Arabian mathematicians and astronomers. Finally, it is incorrect to state that Nasir ad-Din al-Tusi and Ulugh Beg allegedly lived in Baghdad. It is well known, that neither Nasir ad-Din al-Tusi nor Ulugh Beg ever lived in Baghdad. It is impossible to read, without anger and disgust, the book of the French academician Arago "Biography of famous astronomers, physicists and geometers." In this book, the author, who considered the revolution of 1789-1793 a disgrace in the history of France, declares the scientist, Abbasid caliph al-Mamun, and Nasir ad-Din al-Tusi, just the copyist of the catalogue of Ibn Yunis. Vainly to seek the surname of at least one Russian scientist in this trashy book. However, even unimportant French scientists are issued in this book, as very prominent.

One of the largest cultural monuments of the Azerbaijani people, as already mentioned above, is the Maragheh astronomical observatory.

It was built in 1258-1259. The initiator of the construction of the astronomical observatory and its scientific head was Nasir ad-Din al-Tusi. Nasir al-Din al-Tusi managed to assemble around him well-known Azerbaijani scientists, saving them from Mongolian swords and poverty. Nasir ad-Din al-Tusi in the introduction of "Zij-i Ilkhani" (Ilkhanic Tables) highlights the following his scientific astronomer-employee: Muhyiddin Urzi, who worked in Damascus before the building the observatory; Fakhreddin Maragi, who worked in Mosul before Maragheh; Najmeddin Dibirani, who previously worked in Tiflis. The names of other scientists who worked at the Maragheh Astronomical Observatory listed in one of the works of Urzi. Besides the listed astronomers, Shamseddin Shirvani, Damian Hakim Ali ben Mahmud (Najm ad Din) Najmeddin Usturlyabi, Qutb al-Din al-Shirazi, the sons of Nasir ad-Din al-Tusi - Sadreddine and Asileddin and other scientists also worked at the Maragheh Astronomical Observatory. Besides the Azerbaijanis, astronomers from neighboring countries also worked at the Maragheh observatory because its renown widely was spread around the world. Among those who worked

at the Maragheh observatory was the Chinese astronomer Fao Mun-Chi. According to Rashid-al-din, over a hundred scientists altogether worked at the Maragheh Astronomical Observatory. These scientists were engaged in the construction of the astronomical instruments, astronomical observations and calculations, study of the ancient manuscripts. The Maragheh Astronomical Observatory, well known for its prominent scientific investigations, has been and remains a symbol of the high culture of the Azerbaijani people. The scientific legacy of the Maragheh Observatory has not completely studied yet. However, the available data indicate the enormous, global importance of this scientific institution. Even sober bourgeois scientists do not dare deny the great scientific significance of the Maragheh Observatory. Here - one of them writes, - the mass of astronomers worked under the general supervision of Nasraddin. The instruments they used differed in their size and solidity their designs were in probability, better than those used in Europe in the days of Copernicus only Tycho Brahe's instruments surpassed them for the first time. A valuable contribution to astronomical science is the astronomical tables ("Zij-i Ilkhani") prepared at the Maragheh observatory, generalized the results of astronomical observations of the whole collective of that researchers. The founder of the Maragheh Astronomical Observatory was the greatest scientist and thinker of the 13th century Muhammad ibn al-Hasan al-Tusi (1201-1270). Historical documents speak very little about Nasir ad-Din al-Tusi's personal life. Two major historical events took place before the construction of the Maragheh astronomical observatory. The first event was that Mongolian troops under the leadership of Hulagu Khan invaded the territory of Iran and Azerbaijan. At that time, the Assassins, a secret religious-political organization founded by Iranian feudal lords, held Nasir ad-Din captive. Hulagu went on his hike in the autumn of 1253, accompanied by numerous Chinese masters and scientists, who partly served as builders of military equipment and managed them, partly as geographers and engineers; he goes through Samarkand to the Caspian Sea, occupies possession of the mountainous areas which located there, invites the princes of the former Sultanate of Iconium to bring submissiveness, penetrates to Hamadan, demands submission from the doyen of the Persian Assassins in the Deylam country; the then elder of mountain Ruknaddin rejected it; Hulagu ... Demolishes all robber nests, destroys Assassins - writes Marx. Suppressed the Assassins, Hulagu liberates Nasir ad-Din from captivity, and shortly, in view of his great fame, makes him one of his confidants. After the destruction of the Baghdad Caliphate by the troops of Hulagu Khan, Nasir ad-Din al-Tusi began construction of an astronomical observatory in the Maragheh city. After the destruction of the Baghdad Caliphate by the troops of Hulagu Khan, Nasir al-Din al-Tusi began construction of an astronomical observatory in the Maragheh city. Nasraddin had to overcome considerable difficulties to implement his plans. Make the Mongolian khan use a

large sum to build an astronomical observatory was not an easy task. However, Nasraddin managed to make Hulagu Khan relate to this case as a, particularly important state event.

Mustafa al-Halabi Chalabi (Haji Khalifa), tells in his book "Jahan Name": "At that time, when Nasir al-Din al-Tusi wanted to start building an astronomical observatory in the Maragheh city and declared the prospective expenses to Hulagu, he asked: Does the science of stars so useful that it is worth spending an enormous sum on an observatory? In reply, Nasir al-Din al-Tusi said: Let me do such: Let someone in absolute secret climb this mountain and dropped a large empty bowl from there, but no one should know about it. They did so. When the bowl dropped from the top of the mountain, it made a lot of noise. Panic arose among the army of Hulagu Khan because of this. Nasir ad-Din watched it all, together with Hulagu, and they remained calm. Then Nasir ad-Din addressed Hulagu with the following words: we are calm because we know the reason of this noise, but the troops do not know, and they worry, also if we know the reasons of the celestial phenomena we will be calm on earth. This had an impression on Hulagu, and he allowed spent 12,000 dinars to the construction of the observatory.

Hulagu Khan Consent to allocate a very large sum to the construction of the observatory could be explained by the following reasons: first, the construction of the observatory on the conquered land, had promised great political authority to Hulagu Khan; secondly, confident in great abilities of Nasraddin, Hulagu hoped to memorialize his own name, by creating an observatory. The last circumstance, apparently explains the fact that Nasir ad-Din ascribes his merits to Hulagu Khan, to please him. The scientific merits of Nasir al-Din al-Tusi are enormous.

He wrote more than thirty scientific works, which to date have not lost their importance. His attempt to prove Euclid's fifth postulate played an enormous role in the development of Non-Euclidean geometry.

Professor Veniamin Kagan, noting the impact of Nasraddin in the development of Non-Euclidean geometry, writes that, the proof of Nasir al-Din al-Tusi played a great role in the further development of the theory of Parallel lines. The remarkable work of Nasir ad-Din al-Tusi "Tahriri Eglidis" - a textbook on elementary geometry - is a truly classic work. In 1594, the Arabian text of this work was printed in Rome. Equally, valuable work written by Nasraddin on flat and spherical trigonometry.

The above-mentioned Zeuthen, who considered Nasraddin and Ulugh Beg as Arabs, faced the incontrovertible facts and had to admit that the overall outcome of the Arabs work in this direction (i.e., in the development of trigonometry - M.G) gave to us, in one essay of Nasraddin on the flat and spherical trigonometry, which became known in Europe recently thanks to French translation. Its Name "Treatise on the Quadrilateral" explained by the fact that the initial point of

entire work is the complete Menelaus's triangle. However even more remarkable, is the way in which Nasiraddin defines by three angles of the side; he solves this problem, as we do now, leading it to the previous one by constructing a polar or medial to a given triangle, i.e. triangles whose sides have the bands of the vertices of a given triangle. As is known, each top of one triangle is a pole of a determined side and the angles of the first are the midpoint of the sides of other, in this case. Nasir ad-Din al-Tusi's work proves that the Arabs first discovered this theorem, later re-discovered by Europeans. Historian of mathematics Cajori writes about this: "We would not like to go into great details, but we must highlight the fact that Nasiraddin, in the Far East, during the temporary suspension of the military conquests of Tatar rulers, developed to a large extent both flat and spherical trigonometry. One of the famous works of Nasir al-Din al-Tusi is his treatise "Nasirean Ethics". Nasiraddin wrote a number of interesting thoughts in this work. In the first chapter, he writes: "If anyone is familiar with the science of natural history and if he will pay particular attention to the state of the matter, their composition and opposite, then he will understand that none matter was created and neither destroyed. It is only changing its volume, composition, type, form and quality; it varies from one substance to another, but always circulates and remains in nature.

This citation shows that elements of dialectical thinking were characteristic to Nasiraddin.

In this tractate, Nasiraddin, although in a quite simple form, develops his thoughts about the ideal society or as he puts it about the "city of freedom". City of liberty - writes Nasiraddin, so-called the people's city this is a city every face of a society which has its own rights. Residents of this city have equal rights. Here, no one thinks to exceed another. The entire population consists wholly of freedom-loving people. In this city, the population placed above its rulers, because it elects all its rulers. Just think that there is neither chief nor subordinate.

In this city, those who work in favor of the freedom of the people, protect it from enemies and are not ambitious considered the best people.

People come here from all sides when a culture develops in this city. The city is growing and its population is rising. In this city, there is no difference between the indigenous people and the newcomers.

Further, voicing his thoughts on parenting kids, Nasiraddin writes: "Children should know that food serves not to enjoy different tastes but to sustain them from famine and disease. Caregivers of kids in the presence of the latter should downplay the significance of food. They have to criticize Gluttony in front of them. Children should be weaned from blank boasting, should not be prideful of their rich parents, their clothes and wealth. It is necessary to disparage the value

of gold and silver in front of kids because gold and silver do more harm than the most poisonous snake.

More than thirty scientific works devoted to issues of mathematics, astronomy, philosophy and other sciences had written by Nasiraddin. These works have been copied and printed many times in different languages, during the 700 years that have passed since his death. Works of Nasir al-Din al-Tusi are in libraries around the world. Many generations of scientists learned on them. Lastly, let us say a few words about the national origin of Nasiraddin. Some authors consider Nasiraddin an Arab, and others a Persian. A detailed and thorough study of historical documents completely refutes these affirmations.

The study of historical documents gives us all basis to talk about the Azerbaijani origin of Nasiraddin. Nasiraddin comes from the most ancient Azerbaijani town - Hamadan. About the origin of Nasiraddin from Hamadan clearly and definitely said in the book of the historian Rashid-al-Din: "When it became clear and proved origin of Nasir al-Din al-Tusi and the sons Rais and Muvaffik from Hamadan, who were great honorable doctors, Hulagu Khan render kindness to all of them, caressed and gave conveyances, so that they would take out all their families, relatives and households with all the subordinate people, followers and put them in the service of His Highness. " Rashid-al-Din lived in the late 13th and early 14th centuries. There is no doubt about the truth of the information reporting by him because he personally knew Nasiraddin."

We have many other data on the origin of Nasiraddin, although they are from a later time. The historian Muhammad Khwandamir (died 1534), in his book *Habib al-Siyar*, writes: "Nasir al-Din Tusi Muhammad ibn al-Hasan, nicknamed Abu Jafar, comes from Saveh but was born and developed in Tus. Consequently, he is known as Tusi." Although this statement by Muhammad Khwandamir is at variance with the message of Rashid-al-Din, it also testifies about the Azerbaijani origin of Nasiraddin, because the Saveh is also Azerbaijani town.

Nasir al-Din al-Tusi lived and worked in Azerbaijan, developed the culture of the Azerbaijani people. He, his sons and grandchildren lived in Azerbaijan. The direct descendants of Nasiraddin live nearby from Ordubad until now. In the book of Iskandar Beg Munshi "History of Alam Aray Abbasi," it is emphasized, that the descendants of Nasiraddin thought Ordubad their true homeland. The descendants of Nasiraddin Tusi were very enlightened people and lived in Ordubad and its environs, we learn from this book. All known scientists and poets - the descendants of Nasiraddin are considered Azerbaijanis in the famous book of Muhammad Ali Terbiyet "Azerbaijani scientists". Famous descendants of Nasiraddin were: Mirza Kafi - poet, Mirza Zeynalabdin Munshu Ordubadi - poet, Safi Khoja Hatem bek - the poet and statesman, Mirza Sadig Ordubadi - poet, (PS) Seyidaga Onullahi – candidate of historical sciences, professor- and

many others.

The Azerbaijani people are legitimately proud of their prominent son - Muhammad Nasir al-Din al-Tusi. His name is mentioned among scientists and thinkers, poets and writers who have enriched the culture of our people with their creations.

In 1951, the 750th anniversary of the birth of the eminent Azerbaijani scientist Muhammad Nasir ad-Din al-Tusi was celebrated. People over the world widely celebrated this meaningful date in the history of the Azerbaijani people, in the history of science and culture.