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THE SEMANTIC-STRUCTURAL CHANGES OF ASTRONOMICAL NAMES IN MIEVEAL PERIOD TURKIC SCIENTIFIC WORKS

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Abstract

Historically, the naming of the celestial bodies in Turkic languages is conducted in different ways. In varyosu periods and works, the names of stars, constellations, and planets were different because of dialectological differences as well as under the impact of other languages. These differences also seem in the works belonging to the same periods. Mismatching of the namings in some times in literary and scientific works, as well as changes in the naming between XI-XII and XIV-XVI centuries cast attention during research.

The article analyzes the historical graphic and semantic development of the turkic names of stars, planets and constellations. As a result of the research, it became clear that as we move away from the all-Turkic context the archaization of national words in Turkic languages and the tendency to replace them with foreign words in different micro-styles of scientific styles increased. This is especially evident in the astronomical works written in Turkish in the 15th and 16th centuries.

Keywords: Astronomy, term, names of stars, names of horoscopes, scientific works, Turkic languages, medieval period.

ORTA ÇAĞ TÜRK BİLİMSEL ÇALIŞMALARINDA ASTRONOMİK ADLARIN SEMANTİK-YAPISAL DEĞİŞİMLERİ

Öz

Tarih boyunca, Türk dillerinde gök cisimlerinin adlandırılması farklı şekilde gerçekleştirilmiştir. Farklı dönemlerde ve çeşitli eserlerde yıldızların, takımyıldızların ve gezegenlerin adları, diyalektolojik farklılıklar ve diğer dillerin etkisi altında farklılıklar göstermiştir. Bu farklılıklar aynı dönemlere ait eserlerde de görülmektedir. Bazı dönemlerde edebî ve bilimsel eserlerde astronomik cisimlerin adlarının uyuşmaması, XI-XII. ve XIV-XVI. yüzyıllar arasındaki isimlendirmelerdeki değişiklikler araştırma sırasında dikkatleri üzerine çekti.

Makalede, yıldızların, gezegenlerin ve takımyıldızların Türkçe isimlerinin tarihen sesbilimsel ve sözdizimsel -anlamsal gelişimini inceleniyor. Araştırma sonucunda, ana Türkçeden uzaklaştıkça, Türk dillerindeki ulusal kelimelerde arkaikleşme ve bilimsel üslupların farklı mikroüsluplarında yabancı kelimelerle değiştirme eğiliminin arttığı ortaya çıktı. Bu, özellikle XV. ve XVI. yüzyıllarda Türkçe yazılmış astronomik eserlerde belirgindir.

Anahtar Sözcükler: Astronomi, terim, yıldız isimleri, burç isimleri, bilimsel eserler, Türk dilleri, Orta Çağ dönemi.

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Introduction

Traditional astronomy has developed significantly, since the historical religious views of the Turks are connected with the heavens. Long before the acquaintance with the works of Greek scientists, the Turkic peoples, who were well acquainted with the Indian and Chinese astronomy, had extensive knowledge about horoscopes, stars and planets. Until the writing of professional scientific works, it is possible to see traces of the astronomical worldview in Turkish myths and epics. Ud, Adğır, Ülgü, Oñay, Erentüz, Arzutilek, Qaraquş, Çadan, Çolpan, Sekentir and so on, the names of astronomical objects are deserving attention in Turkish writings up to the Arabic epoch. Y. Unat describes the primary astronomical worldview of the Turks in this way:

The Turks thought that the universe was in the form of a dome. This dome was made of gold or iron, i.e., it rotated rapidly around the North Star. The ecliptic wheel, which is thought to carry the constellations, was placed perpendicular to it. The order in heaven was also reflected on the earth. Just below the North Star was situated the city where Khagan, the ruler of the earth, stayed. The plan of this city, called the Ordug, also reflected the order of the heavens. There were two roads in the center. As the heaven turned around the North Star, so the affairs of society turned around the ruler (2013, p. 15).

The twelve-animal calendar based on the solar year, the expressions related to this calendar in the Orkhon-Yenisei monuments, the terms in the Karakhanids period's fictional samples show that the Turks were deeply interested in astronomy, and astronomy as a medical science has an ancient history as science in Turks. This science with the adoption of Islam through the Arabic language achieved even greater success by combining itself the knowledge obtained by Greek astronomy. It is no coincidence that there are many pretentious astronomers of Turkish origin in Islamic astronomy. The places where the built observatories located also shows that the Turks have a say in this area. Maragha, Samarkand, Tabriz Kazan khan observatories and the scientists worked here such as Muayaduddin al-Urdi, Husamaddin al-Shami, Fakhraddin al-Ahlati, Najmaddin al-Gazvini, Shamsaddin al-Shirvani, Gutbaddin al-Shirazi, Al-Kashi, Gazizadeh Rumi, Ali Gushchu, Muinuddin Kashani, Fakhraddin Ajami, Aladdin Samarkandi have achieved new scientific achievements by combining the valuable knowledge of Indian, Chinese and Greek astronomy with the traditional worldview. The new scientific knowledge acquired by astronomers who have written their names in the history of Islamic Turkey as Kharazmi, Fargani, Biruni, Ibn Sina, Jurjani, Nasreddin Tusi, Ulughbey, Gutbaddin Kashi, Fathullah Shirvani, Mirim Chalabi, Takuyiddin and so on, gave a direction to the world astronomy for many centuries.

1. The Concepts of Astronomy in the Ancient Turks

The oldest astronomical written information is in the "Orkhon-Yenisei" monuments: "üze kök teñri asra yagız yer kılıntukda ekin ara kişi oğlı kılınmış kızı oğlınca üze eçüm apam bumın kagan istemi kagan olurmuş" (KT.e.1). The expressions in given example "üze kök teñri" and "asra yagız yer" reflect the place concepts of heaven and earth in Turkish thought. The words "tugsık" and "batsıg" are expressions in words of the ancient Turkic view of the sun's movement in the sense of sunrise and sunset. "In the pre-Islamic Turkish tradition of thought, it can be said that the philosophy of state administration was created by attributing a metaphysical meaning content to the right-left direction perception created in relation to the rising and setting direction of the Sun" (Pirinç, 2009, p. 435). The Turks, who expressed the eastern and western directions in their speech as "kün tugsıkı", "kün batsıgı" in the form of sunrise and sunset, called the universe

by the term “evren” derived from the word “evürmek”. O. Kabadayı writes that the word “evren” is not seen in the written works of Gokturk and Uygur periods (Kabadayı, 2007, p. 73). As, G. Güneri said, “It is also extremely important to make correct morphological analyzes in etymology studies. The purpose of this stage is to determine the word root, stem and suffixes” (2018, p.654). While researching the origin of the word, it becomes clear that, the root of the word is in the form of “ebir” (to turn) in Orkhon monuments. “Arkiş ıdmaz tiyin süledim... içgertim: kalıñ ... ebirü kelürtüm (Tekin, 2008, p. 58). “I drew troops because he did not send a caravan... I made him obey... I brought back his tribute” (BK, 25). In Old Uyghur Turkic, the word has its derivatives such as “ävirmäk, ävrilmäk, ävriş, ävir”. In the Old Uyghur language, it means ävir-circle, environment, ävrilñsiz- stable, ävrilmämäk- not to turn, ävürmäk- to turn” (Caferoğlu, 2011, p. 78). The combination “ewürgen tewürgen” mentioned by M. Kashgari also means to turn, to spin. The word “evren” itself was explained by M. Kashgari as a tandoor: “It is made as a blacksmith's furnace. Bread is baked inside” (Akkoyunlu and Ercilasun, 2014, p. 53). The use of this word as a term is found in “Kutadgu Bilig”:

Bolu birsü evren tuçı evrilü *Felek hep dönmeye devam etsin*

Kodı bolsu duşman başı kavırlı *Düşmanın başı hep eğik olsun.*

Let the universe keep returning,

Let the enemy always keep his head down (Hacib, 2008, p. 110).

The fact that the word is formed from the verb “evmek, evirmek” in the meaning of turning, rotating, shows that the universe is a moving, rotating mass in Turkish thought.

2. Semantic Development of Star Names in Turkic-Language Works of XI-XVI Centuries

The best information about the star system and planets is Yusuf Khas Hajib's work “Kutadghu Bilig” written in Turkic in the XI. century. In the work, the author conveys the names of the planets and constellations to the reader in literary language:

on iki ükek ol bularda adın *Bunlardan başka on iki burç vardır*

kayu iki evli kayu birge in *Bazısı iki evli, bazısı bir evlidir.*

Besides these, there are twelve constellations

Some are with two homes; some are with one home (Hacib, 2008, p. 138).

The word “ükek” used in this poem means a zodiac. M. Kashgari did not refer to the word “ükek” as a celestial body, but noted the meaning of the tower on the walls of the fortress. In the “Divan”, this word is mentioned as a homonym, and the other meaning is given as a coffin, a chest: “ol tamıg ükekledi” - O şehrin surları üzerinde burçlar yaptı. Bir şey için sandıklar yapılınca aynı şeydir (Kaşgarlı, 2005, p. 134). It is the same thing when boxes are made for something (Kaşgarlı, 2005, p. 134). G. Clauson writes that the original meaning of the word was a box, a chest (1972, p. 105). In our opinion, the root of the word is the verb “üg”, which is also used in “Dīwān Lughāt al-Turk”. M. Kashgari used this verb “ol yarmak ügdi”- he crampled the money. “ügmek” means to crample, to knot, to turn into a ball. The word “ügek” or “ükek” means a ball, a pile. The combination of the stars in the sky as a ball is also called “ükek”. We can note that the expression “kale burçları” (castle towers) is derived from this meaning. The word “ükek” is used

in Rabguzi's work "Qisasul-Anbiya" and in Ibn Muhanna's dictionary "Hilat al-insan, halbat al-lisan" in the meaning of a tower (Taymas, 1997, p. 81).

In the of the Quran belonging to the XII-XIII. centuries, the word "ükür" was used in the meaning of a group, a bunch and in our opinion, this word has the same root with the word "ükek": teki endin ... üç ükür kıldı ... (onları üç gruba ayırdı). The word "üküş" from the same root is used in the interpretation (Tafsir) to mean "many", and the word "üküşleşmek" is used in the interpretation (Tafsir) to mean "to increase" (Borovkov, 1963, p. 338). In the Heratli Tali Imani's Bada al-Lughat, the word "öküşmek" (اوکماک) means "to gather", and the word "ökülgen" (اوکولکان) means "gathered" (Borovkov, 1961, p. 101).

It is impossible to determine the frequency of development of the word "ükek" in later scientific works. In the work "Ajaib al-makhlugat" belonging to the XIV century, the word "burc" was used instead of the word "ükek": "ve ehl-i nücum her *burc*ı kısım eylemişler otuz kısma ve her birisine derece ad komışlar ve her derece kısım eylemişler altmış kısım ve her birisine dakika dirler ve her dakika altmış baxş eylemişler ve her baxşına salise dirler". In general, the astronomical term "ükek" is not found in the scientific works of the XIV-XVI centuries involved in the research.

In the XI. century, we can see that Y.Kh. Hajib used the word "buğday" to express the name of the zodiac constellation in his work:

kör Arslan bile koşni *Buğday başı* *Bak, Aslan'ın komşusu Buğday başıdır. (Başak)*
 basa Ülgü boldi *Çadan Ya işi* *Çadan (Akrep) ve Yay'ın arkadaşı Ülgü (Terazi) gelir.*

Look, Leo's neighbor is Virgo.

Then comes Scorpio and Sagittarius's friend Libra (Hacib, 2008, 140b.).

The constellation given as "buğday başı" (Virgo) in the work is called "başak", which has the same meaning in modern Turkic, and "Qız" in modern Azerbaijani language. However, in "Dīwān Lughāt al-Turk" written at the same time as "Kutadghu Bilig", the word "buğday" (wheat) does not have the meaning of a star or a constellation. In general, the term "buğdaybaşı" is not found in any work written in Turkic except "Kutadghu Bilig". However, G. Clauson notes that the word "burci-sunbula" was used in modern Turkic as its equivalent. (1972, p. 312). Related to this word, the expression "buğday günü" is used in the XIV century's monument "Qisas al-Anbiya". The day when the sun enters the same zodiac is called "buğday günü": "Pes ol kiya alıp buğday gün Minaya vardı, öğleyi ikindiye, ahşamı, yatsıyı buların ile bile kıldı" (Tarama Sözlüğü, 2009, p. 682). Muslihudin Mustafa bin Ali ar-Rumi, al-Muwakkıt who lived in the XVI century, in the work "Kifayatul-waktul marifatid-dair, fazla vas-samt", the term is in the form of "Sünbüle": "Altmışdan toksana varınca sünbüle olur... Eger seretan, esed, sünbüle bu üçde olucak olursa ol hasil olan metaliyi yüz seksen üzerine ziyade eyle" (Yıldırım, 2016, p. 129-142).

Ali bin Abdur-Rahman's work belonging to XIV century "Ajaib al-Makhlugat" gives the following information about this zodiac sign: "Sünbüle yigirmi altı yıldızdur suretde xaricde altı" (Göl, 2008, p. 65);

More information about the star is given in "Khulasat al-Heye" written by Seyid Ali Rais in 1549: "sünbüle, yeni, azra yigirmi altı kövkebdür carıye şeklinde sahibi-cena heyndür ve

gisuların irsal eylemişdür re'si meğrib ile şimala ve ayaqları meşrik ile cenubadur sol elini yanına salıvermişdür ve sağ elini omzına beraber kaldurmuşdur ve elinde bir sünbüle tutmuşdur ve sol elinde olan neyyir simak-ı ezeldür” (Cengiz, 2010, p. 73). Apparently, the term changed from the XI century to the XIV century. The term “buğday başı” used in "Kutadghu Bilig" has been replaced by “burci-sünbüle”. As a name of cosmic objects, “sümbüle” has a wide variety in the modern Kazakh language: Ülken sümbüle, Tekes sümbüle, Aksümbüle, Kişisümbüle, Sarısümbüle (Aronov, 1993, p. 7).

Another term used in “Kutadghu Bilig” is “Ülgü”. The word “Ülgü” means scales in ancient Turkic. The interpretation of the term “Bürçel-mizan” i.e “Ülgü” used as an equivalent to Libra, is given as a measure in M. Kashgari's “Dīwān Lughāt al-Turk”. The root of the word is a verb “ül- üle”. The verb “Ülemek” in “Diwan” means “to distribute, to divide”, and the verb “üleşmek” means “to share, to divide into parts mutually” (Akkoyunlu and Ercilasun, 2014, p. 932). The words “ülüg, ülüglük, ülüş” from the same root are reflected in the work in the meaning of “share, distributed”. In “Kutadghu Bilig”, the verb “ülgülemek” from the same root means “to measure, to weigh”, and the word “ülüş” used to mean “share, portion” (Hacıb, 2008, p. 1265). The meaning of “to divide” of the verb “üleştirmek” is found in written examples of later periods: “Nuh yeryüzün cümle üç oğluna üleştirdi.” (Kıyasül-Enbiya, XIV cc., 95). Bırakmış pare pare itlerine gönlümü ol şux / Üleştirmiş kesip ol eshabi-istihkaka kurbanın (Fuzuli, XVI cc., 183)” etc. (Tarama Sözlüğü, 2009, p. 4064-4065). In Tarama dictionary, it is also possible to see examples using of words with the same root as *üleşik, üleşmek, üleştirilmek, üleşik* in works of different periods. In the dialects of the Turkic language, it is possible to come across completely different meanings of the word “ülgü”. The word that used in Adana to mean “inappropriate, incompatible”, “handsome” in Kirshehir, “attitude, behavior, approach” in Gaziantep in the meaning of “scales” (terazi) is not from the same root as the word “ülgü”. At the same time, in Turkic dialects the word “üleşik” is derived from the verb “üleş-”, which means water scales (su terazisi) in Isparta (Derleme Sözlüğü, 2009, p. 4064). Historically, in the works related to the Turkic languages, the words *ülgü teñ tutmak, ülgüle, ülegülencsiz,, ülgülüg, ülgüsüz* were used (Drevnetjurskij slovar, 1969, p. 624).

However, we cannot say the same thing about the term. Like other terms of Turkic origin, it was replaced by the Arabic equivalent in later scientific works. In the XIV century's monument “Ajaib al-Makhlugat” such information about this star is given: “Mizan yigirmi tokuz yıldızdur suretde ve xaricde tokuz” (Göl, 2008, p. 54).

Mizan: Zöhre'nün evidür ve Zuhal'ün şerefidür ve Güneşün hübutudur ve Merrihin vebalidür. Kaçan kamer bu burcda olsa, deñiz seferi ve esir almak ve cebe giymek ve müşhil içmek ve kan almak ve hacamat eylemek ve bünyad biraħmak ve çeri eylemek ve elçi göndermek ve hediye ve biti göndermek ve sünnet eylemek ve dıvar yapmak eyüdü. Amma padişahlar ve ekabirleri görmek ve iş taleb eylemek ve tavar almak ve satup bazar eylemek ve şirket ve zamin olmak ve hammama girmek ve vilayet emeline meşğul olmak ve mensibde oturmak eyü degüldür (Göl, 2008, p. 56).

The term “Mizan” is used as follows in the XVI century's monument “Kifayatul-vaktul marifatid-dair ve fazla vas-samt”; “Andan sonra notayı maşrikden mizani evvali, mıntıkai-canubiyye üzerine andan akreb andan kavs ki axri xetti sattı sail mıntıkai cenubiyye buluşduğı buçuktur”(Yıldırım, 2016, p. 95). “Hamel mizan ile, sevr akreb ile, cevza kavs ile, sertan cediyle, esed delvle, sünbüle hutuyla birbirine nazirelerdir”(Yıldırım, 2016, p. 96).

In the work “Khulasat al-Heve” belonging to the XVI century it is written about the constellation of “Mizan”: “mizān sekiz kevkebdür terāzū şeklinde keffeleri cānib-i mağribe ve amūdı cānib-i maşrikadur.”(Cengiz, 2010, p. 73).

One of the constellations mentioned in the work “Kutadghu Bilig” by Y.Kh. Hajib is “Çadan”:

yana kördi ülker savılmış başı *Yine baktı Ülker eğmiş başını*
 toğardın çadan kopmuş örlep tuşu *Karşısında doğudan akrep kalkmış yükselmiş.*
 He looked again that Ulker bowed its head

A scorpion rose from the east in front of him (Hacib, 2008, p. 828).

The lexical meaning of the word means scorpion. The author also gives the same meaning of the word in the work:

çadan teg tikerler çibun teg sorarlar *Akrep gibi ısırırlar, sinek kimi sorarlar*
 köpek teg ürerler kayusun urayı *Köpek kimi havlarlar, hangisine yetişeyim.*
 They sting like scorpions and suck like flies

Bark like dogs, which I come up with. (Hacib, 2008, p. 1082).

In “Dīwān Lughāt al-Turk”, written at the same time as the work, also has the word “çadan” and means scorpion:

sende kopar çadanlar
 kudgu sinek yılanlar
 dük miñ kayu tümenler

kudruk tügüp yügrüşür (Akkoyunlu and Ercilasun, 2014, p. 496).

In later works, the word “çadan” was replaced by the word “akreb” (scorpion): “Akreb yigirmi bir yıldızdur suretde ve xarici-suretde üç”; “Akreb: Mirrix’ün evidür ve Ay’ün hübutidur ve Zühre’nün vebalidür. Kaçan Ay bu burca varsa, deñizde sefer eylemek ve müşhil içmek ve sefer itmek ve hammama girmek ve silah dakınmak ve kan almak ve hacamat eylemek ve dırnak kesmek ve elçi göndermek ve getürmek ve evlenmek eyüdü. Amma yazı seferi ve ata binmek ve begler ve ekabirler görmek ve mülk, kul, karavas almak ve tavar hatun almak ve cebe giymek ve bey`ü şira eylemek eyü degüldür” (Göl, 2008, p. 56).

Some of the zodiac’s names used in the XI century are as follows:

qozı yazkı yıldız basa ud gelir. *Kozı bahar yıldızdır, sonra Ud gelir,*
 erentir quçıq birle sançı yorır. *Erentir ile kuçık dürtüşerek yürür.*

Aries is the star of spring, then comes Taurus.

Cancer with Gemini goes by pushing (Hacib, 2008, p. 112).

Let’s take a look at the frequency of the zodiac constellations' names Qozı (Aries), Ud (Taurus), Erentir (Gemini), Quçıq (Cancer) in this verse are used in the following period.

“Quzu” has been used several times by Y.Kh. Hajib as the name of the zodiac constellation:

yaşık yandı bolgay yana orniña *Güneş balığın kuyruğundan, kuzunun*
balık kudrukındın kozi burnuña *burnuna kadar olan yerine yine döndü.*

The sun returned from the Fish's tail to the Aries's nose (Hacib, 2008, p. 102).

M. Kashgari gave the word “hamel” as the Arabic equivalent of the word “kozi”. In later works, the word hamel is used as the name of the constellation: “İbtidah burcul- hameldir ki evvel nokta-i maşrikden çıkup mıntıkai- şimaliye üzerine gitmişdir”(Yıldırım, 2016, p. 95). “Çün bir kevkab hamelden sevre ve cevzāya bu tertib ile hareket eyleye ol harekete tevāli derler ve eger bu tertibe muhālif hareket etse hilāf-ı tevāli derler” (Cengiz, 2010, p. 72).

One of the zodiac constellation's names is “Ud”. Mahmud Kashgari writes that the word “ud” means cow or bull in Chigilja and notes that one of the twelve years in Turkic is called “ud yılı” (the year of ud). The author also mentions a proverb: Süsegen udka Tenri münüz birmez- Süseğen sığıra Allah boynuz vermez (Akkoyunlu and Ercilasun, 2014, p. 21, 495). The word also used in the same meaning in the old Uyghur is in the new Uyghur and in Uzbek and Altaic as in the form of “uy”. In the work “Ajaib al-Makhlugat” belonging to the 14th century, the word “sevr” is used instead of “ud”: “Sevr: Zühre'nüñ evidür ve Ay'üñ şerefidür ve Mirrix'üñ vebalidür” (Göl, 2008, p. 55). In the 16th century's sample work “Kifayatul-vaktul marifatid-dair ve fazla vas-samt” the name of the zodiac constellation of “sevr” is used in the same way: “Otuzdan altmışqa varınca Sevr olur... Şems Sevr burcunuñ evvelinde olsa haytı üzerine getirüp meri' da'ire-i meyli-i a'zam üzerine getirüp nişanladıkdan soñra nazar eylediñ..” (Yıldırım, 2016, p. 110). “Sevr” is an Arabic origin word used in ancient Ottoman, meaning ox or bull. The word in the form of “esvar, sivere” is the name of the constellation, whose Latin name is Taurus, as well as the astronomical term.

The word “Erentir” is given in “Kutadghu Bilig” as the name of the constellation “Gemini”.

yarudı basa yıldrik adğır bile *Aygır ile Yıldruk ulduzu parladı*
tizildi Erentir özin belgüle *sonra Erentir tüzüldü, kendine işare bil.*

The star Ayghir and Yıldruk shone, then Gemini lined up, point to himself (Hacib, 2008, p. 944).

In his work, M. Kashgari presented the name not as “Erentir”, but “Erentüz”, the name of the “Müşteri ulduzu”, as well as the name of the star of Libra (Akkoyunlu and Ercilasun, 2014, p. 365). However, in the “Kutadghu Bilig”, written at the same time, the sign of the Libra was mentioned as “Ülgü”. G. Clauson notes that the word “erentüz” consists of “eren” and “tüz” parts. The word “Eren” is the plural form of the word “er” (a brave man). According to G. Clauson, the word “tüz” means “right, correct” as well as “equal” (1972, p. 571). In our opinion, the explanation given by G. Clauson coincides with the meaning of the word that it expresses. “Erentüz” means the name of Gemini in the meaning of equal, similar persons. However, it is interesting that in the work “Dīwān Lughāt al-Turk” the expression “ikkiz oğlan” (twin boys) is used (Akkoyunlu and Ercilasun, 2014, p. 73). This means that there was a word in the Turkic of the time that meant twins and was used in today's Turkic languages. However, in the form of

“Erentir” or “Erentüz” a new term was used in the form of a compound word. G. Clauson appreciates M. Kashgari’s explanation of the word as a false explanation (1972, p. 237). As for the ending of the word is “tüz” or “tir”, we can say that A. Jafaroglu notes that in the “Old Uyghur Turkic Dictionary” the word “tira” is used in the meaning of equal, joint, all together. If we approach the word from this point of view, the word “Erentir” written by Y.Kh. Hajib is expressed in the form of joint persons. However, it should be noted that the structural form of a word, regardless of its form, indicates that the word was formed by calquing. This is because in Turkic languages, the principle of determiner coming before determined word the is also preserved in word formation. But here the parts “tüz” or “tir” come after the word “eren”.

The name of this zodiac constellation is given in the form of Cevza (جوزاء) in the XIV century monument “Ajaib al-Makhlugat”. “Cevza yigirmi sekiz yıldızdur suretde ve xaricde yidi... Cevza Ütarid’ün evidür ve Müşteri’nün vebalidür, Res’ün ve Zenb’ün hübutıdır” (Göl, 2008, p. 55). “Cevza” is an Arabic word that means the name of constellation Gemini in astronomy. F. Devellioglu explains this word as follows: “İkizler bürcü; göğün kuzey yarım küresinde görünen iki parlak yıldızlı bir burç olup Güneş may ayında bu bürcü dahil olur.” (Devellioglu, 2013, p. 156).

The term “Qucıq” used among the names of the constellations was later replaced by the term “seretan”. It should be noted that the word “qucıq” as a sign of cancer is found only in “Kutadghu Bilig”. The same word was not used in M. Kashgari in the new period. In works and dictionaries belonging to the XIII-XIV centuries, the constellation of cancer was replaced by the Arabic word “seretan”.

One of the constellation names used by the ancient Turks is “Könek”. The name of the old constellation is used in verse 141 of “Kutadghu Bilig” as follows:

basa keldi oğlaq könek hem balıq *Bundan sonra oğlak, könek ve balık gelir*

bular togdı erse yarudı qalıq. *Bunlar doğanda göy üzü aydınlanır.*

Then comes oğlak (Capricorn), könek (Aquarius) and balık (Pisces)

When they are born, the sky becomes clear (Hacib, 2008, p. 112).

The word “könek” is the name of a water pot made of leather in the XI century Turks. The word has evolved from the common word to terminology and has been developed as an astronomical term. In the work of M. Kashgari, only the leather pot meaning of the word is reflected (Akkoyunlu and Ercilasun, 2014, p. 169). In Ibn Muhanna's dictionary the word “könek” is also mentioned as the name of the constellation (Taymas, 1997, p. 46). In Rabguzi’s work “Qisas al-Anbiya”, the name of this constellation is in the form of koğa. And, in the “Badai al-Lughat”, the word in the form of “qobqa” (قوبقا) means both a water pot and the name of a constellation. In Alisher Navai’s work “Leyli and Majnun” the name of this constellation is in the form of *Qobğa*. This is mentioned in the 16th century Niyazi’s dictionary “Al-lughatu-Navaiyya wal-istishhadatu-l-caghatiyya”: “Qobğa- pınardan su çıkaracak kovaya derler ki, “Mecnun u Leyli” de Miracda Burcı- delvi murad edinüp yazarlar ki:

Kopka suyu abi-zindegani

Ol su bile taze hut canı (Kaçalın, 2011, p. 680).

However, belonging to XIV century written in Ottoman-language sphere in the work “Ajaib al-Makhlugat”, the name of this constellation is mentioned as “delv”.

Delv: Zuhal’ün evidür. Kaçan Ay bu bureda olsa, yazı seferi ve mülk almak ve imaret eylemek ve bünyad bırakmak ve kul, karavas ve tavar hatun (almak) ve köpri yapmak ve müşhil içmek be-gayet eyüdü. Amma payendan olmak ve şirket ve cebe giymek ve kan almak ve hacamat eylemek ve çeri arz eyleyüp elçi göndermek ve at koşmak eyü degüldür (Göl, 2008, p. 57).

“...Delvdür ki aña sakibü’l-mai vü dali dahı derler” (Cengiz, 2010, p. 77).

The vocabulary of a language does not only consist of words that come from its own sources. Linguistic exchange, which occurs when the nation, the speaker of the language, interacts with the languages of other nations for various reasons depending on its adventure in history, by taking words from these languages and giving words to these languages from their own language, is an important fact in terms of vocabulary (Güneş, 2015, p. 997).

This also applies to astronomy terms. The transition to Arabic words in the names of stars and zodiac signs over the centuries is related to the results of the interaction between these two languages.

3. Semantic Development of Planet Names in Medieval Turkic Languages

Along with the names of the constellations in the Turkic languages, based on various signs, the naming of the planets has historically been realized. In the XI century, the names of planets and stars were known, such as “Sekentir (Saturn), Oñay (Jupiter), Kürüd (Mars), Yaşık (Sun), Sevit (Venus), Arzıtılek (Mercury), Yalçık (Moon)” (Hacıb, 2008, p. 112); Ay, Bakır Sokım (Mars, The star of Mars) (Akkoyunlu and Ercilasun, 2014, p. 571), Erentüz (Jupiter) (Akkoyunlu and Ercilasun, 2014, p. 642), Kara kuş (Jupiter) (Akkoyunlu and Ercilasun, 2014, p. 685), Ülker (Akkoyunlu and Ercilasun, 2014, p. 932), Yetigen (Akkoyunlu and Ercilasun, 2014, p. 967) Temür Kaznuk (Akkoyunlu and Ercilasun, 2014, p. 868) and so on.

Muwakkıt Mustafa, who lived in the XVI century, in his work “Tuhfetuz-Zaman”, mentioned the names of the planets known for the period in the following way: “dahı yedi kevkeb vardur her birisi bir gökdedür anlara seyyare derler Zühal ve Müşteri ve Merrix ve Zühre ve Utarid Şems ve Kamer bunlardur ve bunların her birisi kankı gökdedür” (p. 91). As seen, the author has almost equated the concepts of kövkeb (star) and seyyare (planet). The Sun and the Moon are also among the planets. In fact, the identification of planets and stars is a common occurrence in medieval works, and is also reflected in this naming.

“Sevit” appears in Kutadghu Bilig as a name for expressing Venus. The root of the word is derived from the verb “sev-”(love). Y.Kh. Hajib also described Sevit as follows:

sevüg yüz urundı bişinçi Sevit *Beşincisi Sevit`dir, sevimli yüzünü gösterir.*

seve baqtı erse sen özni avıt. *Sana severek bakarsa müsterih ol.*

The fifth Venus showed her lover face,

Be good cheer if she looks at you fondly (Hacıb, 2008, p. 135 b).

As it is known, in all beliefs, Venus is called the planet of love, the star of love. After the XI century, in Turkic-speaking sources, this planet is mostly in the form of the name Zuhre, Zöhre. Muwakkıt Mustafa describes this planet as the third planet in the row:

Dahi işbu yedi ke kevkebün her birisi bir gökde karar eylemişlerdür evvelki gökde yeni dünya göğinde Kamer ve ikincide Ütarid ve üçüncide Zöhre dördüncide Şems ve beşincide Merrix ve altıncıda Müşteri ve yedincide Zuhaldür bu yedinciden yukarı olan feleke felek-i kevabit derler ol bir felekdür ki ol yedi kövkebden ğeyri cemia görinen kevakib ki vardur cümlesi ol sekizinci felekedür felekül-büruc dexi derler ehl-i şere işbu feleke Kürsi derler (Türker, 2016, p. 101).

As can be seen, the place of Venus in both authors' rows is given differently. Y.Kh. Hajib ranked fifth after Saturn, Jupiter, Mars and the Sun. Muwakkit Mustafa ranked third according to distance from the Earth. In the XVI century example, In the XVI century "Khulasat al-Heye" it is written about the sign of Libra: the row of Venus is shown as the seventh: "yedinci felek-i zühredür aña sa`dü'l-asgar derler" (Cengiz, 2010, p. 51).

Venus is called karvan yıldızı (caravan star) in Kyrgyz, çulpan yıldızı, çoban yıldızı ker-vankıran in Anadolu, and dan ulduzu (morning star) in Azerbaijani.

The planet Mars, which Y.Kh. Hajib called "Kürüd", was replaced by the word Merrix of Arabic origin in later works. "Kürüd" was a very angry star according to "Kutadghu Bilig":

üçünçi Kürüd keldi köksün yorır Üçüncü Mars gelir, sinirle dolaşır
qayuqa bu baqsa yaşarmış qurur. Nereye baksa yeşermiş olan kuruyar.

The third Mars is coming, wandering in anger

Wherever you look, the bruises dry (Hacıb, 2008, p. 133).

If we look at the origin of the word "kürüd", we can see that its root is "kür". The word "Kür" is explained in "Dīwān Lughāt al-Turk" with the meaning of "brave, courageous, fearless" (Akkoyunlu and Ercilasun, 2014, p. 757). The verb "kürimek", derived from this word, means "to get cranky, to be unable to contain oneself for". The meaning of the word "Kürüd" mentioned by the author is completely clear in terms of the fact that the planet Mars is named after the God of war and the star of disasters.

And in "Dīwān Lughāt al-Turk", Mars is called "Bakırsokım". This is an expression due to the color of the planet. "Bakır", i.e., being the copper-red color planet's name is in the form of a compound word. The second part of the word is explained by the author as follows:

"The name of a piece of wood carved in the shape of a pine cone and pierced on three sides. It is mounted on an arrow and makes a fire-like sound. From this, the star of Marrikh is also called 'Bakırsokım'" (Akkoyunlu and Ercilasun, 2014, p. 171).

In "Ajaib al-Makhlugat" (Wonders of Creation) which is a sample of the XIV century, is written of a planet called Mirrikh: "İttial-i kamer Mirrih ile eger tesdis olsa, dırnak ve sac gidermek ve kan almak ve hacamat eylemek ve kılıc urmak ve cebe giymek ve Alet-i harb hatun almak ve dağlamak eyüdüdür" (Göl, 2008, p. 58).

The information given in "Khulasat al-Heye" states that the planet is also called "ehmerül nesxü- eşger": "beşinci felek-i mirrixdür aña ahmer ü naxsü'l-asğar (12) dexi derler" (Cengiz, 2010, p. 51). Historically called in the form of "Kürüd, Bakırsokım, Merrix, Mirrih, Merih" in Turkic languages, this planet can be seen in fictional works as a protector of evil forces.

The Result

In general, if taking a look at medieval Turkic-language works, it's possible to see that there were differences in the naming of the planets in different centuries, and even different names were given in the works of the same period. The planet Jupiter is called "Oñay", "Qaraquş" and "Erentüz" in two different works in the XI century belonging to Garakhani Turkic language, and as for the XIV century the word "Müşteri" of Arabic origin has already replaced them.

While the planet Mercury is called "Arzutilek" in "Kutadghu Bilig", the monuments of the XIV-XVI centuries this planet is called "Ajaib al-Makhlugat", "Khulasat al-Heye" and Utarid in others. Ali Gushchu wrote a work on this planet called "Faida fi eşğali Utarid", in which he criticized Ptolemy's views on Mercury in his book "Al-Majasti". The expression "kalemi-utaridirakam" used in Ottoman works means "a pen written like Utarid". Saturn, known as "Sekentir" in the XI century, was called "Zuhul yıldızı" (the star of Saturn) in the XIV-XVI centuries.

As can be seen, the difference between the periods in the naming of stars and constellations, as well as in the names given to the planets, is obvious. This is also directly related to the issue of the dominant language of the time. Works written in Arabic created a linguistic and stylistic difference between the Turkic-language works of the 11th and 14th centuries. It is clear from the analysis that most of the lexical units used in astronomical works in the early period were words of Turkic origin. However, some ancient astronomical terms of Turkic origin were forgotten over time and were replaced by either borrowings from Arabic and Persian, or other words belonging to the Turkic languages. Although the vast majority of the names of the constellations analyzed in the article are used as a word in modern Turkic literary languages, either in the same way or with minor phonetic changes, their scope as an astronomical name is not wide. These words, which become archaic in some modern Turkic languages and are still used in one way or another in some languages, reflect the historical development of astronomical names in Turkic languages.

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