

Presentation of the traditional Arabian Sky

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There are two Arabian skies. Alongside the sky that Arab astronomers and astrologers inherited from the Greeks in the 9th century, which would be called the Greco-Arabian sky, there is an traditional Arabian sky. We know it from the *kutub al-anwā'*, or “books of star risings.” These were a classic reference for any polygraph and for the majority of Arab astronomers, and they were part, until the submersion of classical culture by European culture, of the *adab*, the baggage of every cultivated Arab, and then Muslim. We have direct and entirely educational access to it through its detailed description, made in comparison with Ptolemy’s sky, constellation by constellation, in the *Kitāb Šuwar al-kawākib al-tābita* or “Book of Figures of Fixed Stars” by ʿAbd al-Raḥmān al-Šūfī (c. 964). All these works reflect the establishment of the solid framework of the traditional sky, structured by the *manāzil al-qamar* or “Lunar Stations”*.

Formation of the traditional Arabian Sky

1. The antique computus of *anwā'*

The first stage in the formation of the traditional Arabian sky is more or less equivalent to the Greek *παράπηγμα* or “parapegms”,

* These are indeed “stations” and not “mansions”, as is often written. This error comes from Arab philologists who believed they saw in *manāzil al-qamar* the term *manzil* (pl. *manāzil*), formed from the Arabic verb *nazala*, and which means “place where one descends”, from which in Latin *mansio*, “habitation, house”. It is in fact a borrowing from Akkadian *manzalu* / *mazaltu*, formed from the verb *uzuzzu* “to stand”, “to stop”, via the Aramaic *mawzalta*, which also gave the Hebrew *mazzālōt*, see RL, “Éléments de terminologie astrale...”, 18-20.

that is to say sidereal calendars punctuated by the risings, culminations or heliacal settings of characteristic stars that we know in particular from Geminus: this is the computus of the *anwā**. This begins with *al-Turayyā*, which is the Arabic name for the *Pleiades*. A difference with the parapegmas, which mainly use constellations or parts of constellations as time markers, is that this properly Arabian computus makes use of individual stars. Around fifteen traditional stellar names, all of which belong to the strictly Arabic heritage, probably come from these *anwā*' calendars, at the basis of ancient Arabic computing, some of which have passed into the current international stellar nomenclature: thus *al-Dabarān*, from which comes *Aldebaran*, *al-Ġawzā*', which we find as an element of certain names like *Betelgeuze* (α Ori), or *Sa^cd*, which provided the basis for several names of *Aquarius* stars like *Sadalsuud* (β Aqr).

In this antique computus, which can be called the calendar of *anwā*', certain stars represent privileged moments in the year, such as that of β Leo, *al-Şarfa*, which means "the Change [of Time]," or a particular quality, such as that of α Hya, *al-Fard*, which can be translated as "the Solitary." But most of them bear the names of the deities to which they are linked. Just like the Mesopotamians, the ancient Arabs established a close relationship between the gods and the stars**.

2. The legacies of the Babylonian zodiac among the Arabs

The relationship between the Arabian sky and the Mesopotamian sky has been very little studied. The Babylonian zodiac, as an

* For an essay of reconstitution of the antique computus, see RL, *Le Ciel des Arabes*^B, Tab. 1, 42-43.

** See « Des étoiles et des dieux », in RL, *Le Ciel des Arabes*^B, 35-43.

astronomical object dividing the ecliptic zone traversed by the Sun and the five and real planets known at the time but in their modern definition, *δωδεκάτημόριοι* or “dodecatomories”, as the Greeks called them, that is to say equal “twelfth parts”, of 30 degrees each, was transmitted as such to the Arabic language by Aramaic languages such as Syriac and Mandaic, as evidenced by the horoscope of the formation of the city of Baghdad in 762*. But the Babylonian zodiac also passed to the Arabs as a calendar by multiple routes, undergoing more or less significant deformations. We have an example of this in the Safaitic zodiacal calendar**, probably dated to the very beginning of our era and whose definitive form.

3. The computus of *manāzil al-qamar* or “lunar stations”

We can leave aside here the questions of the origin and appearance of the *manāzil al-qamar* or “lunar stations”. It is enough to say that this computus draws on the two previous sources. This computus, which begins to form at an undetermined date but probably around the 6th-7th centuries, is in any case perfectly constituted at the end of the 8th century***. It only retains the stars of the ancient Arabian calendar of the *anwā'* located on the ecliptic, but adds other markers which testify to their Mesopotamian lineage. Beginning with the naw' of *al-Šaratān* (*αβ Ari*), or “the Marks [of the equinox]”, which corresponds to the vernal point at the time of the beginnings of its elaboration, which belongs to the figure of *al-Ḥamal*, the “Lamb”, it passes in

* See RL, “Les Noms sémitiques des signes du zodiaque”, 2001.

** Seer Al-Jallad, “An Ancient Arabic Zodiac...”, 2014, and RL, “Sur la découverte d’un calendrier zodiacal arabe ancien”, 2015.

*** See “Le comput des *manāzil al-qamar* ou “stations lunaires””, in RL, *Le Ciel des Arabes*^B, 51-60, et sur le site *Uranos*.

fact through that of *al-Asad*, “the Lion”, and ends with that of *al-Hūt*, “the Fish” which are indeed figures of the Babylonian zodiac.

Surveying of the traditional Arabian Sky

We are accustomed to the surveying of the sky established by the Greek and Hellenistic tradition in its completed Ptolemaic form, at least before the contributions of modern European astronomy. The Greek, and later Greco-Arab, sky comprises three zones: on either side of the zodiacal zone, which has 12 constellations*, the boreal zone contains 21, and the southern zone, 15. These 88 constellations are all ordered according to the classification made by Ptolemy, which differs from that of Eratosthenes, who only counted 44, due to the fact that certain asterisms were not yet autonomous in his work: *Ἰππάριον*, or *Equuleus* according to the nomenclature of the International Astronomical Union (IAU), *Κόραξ* or *Corvus*, *Νότιος Στέφανος* or *Corona Australis* and *Θηρίον* or *Lupus*.

The Arabs, according to al-Šūfī, “divided the ecliptic by the number of days that the Moon takes to travel around it, about 28 days, and they looked, in each division, for remarkable signs [*the anwā*’, Ndla] sufficiently spaced so that the interval of one appeared to the human eye equal to the path taken by the Moon in a day and a night”**. This leads to the division of the 365-day year into 28 parts of 13 days, with the exception of one of them, which

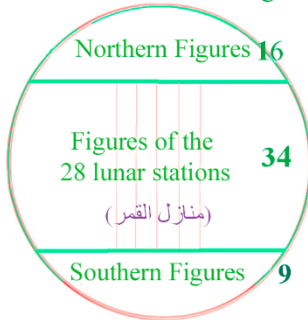
* The fact that the ecliptic line crosses the space of 13 constellations, defined in 1930 by the IAU, has given rise to many completely sterile discussions on the number of “zodiacal constellations” due to the vague nature of this notion, the zodiac not being made up of constellations, in the sense of celestial figures in which the stars are named by their position in them, but by dodecatomories see above, page 3.

** See al-Šūfī, *Kitāb Šuwar al-kawākib...*, ed. Schjellerup, 35, and “Le comput des *manāzil al-qamar* ou “stations lunaires””, in RL, *Le Ciel des Arabes*^B, 51-60

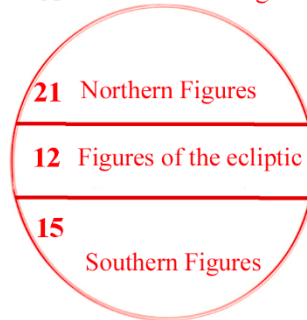
has 14. The first station coincides with the spring equinox. The different stations take from the old sidereal calculation of the *anwā'* the asterisms located on the ecliptic, considering their setting on the western horizon or acronycaal setting and the simultaneous rising of their opposite in the East, but most of the time replace the bright stars far from it with what the Greeks called each of them a *παρاناτέλλον*, “paranatellon”, i.e. “which rises next to”, that is to say stars whose heliacal risings are

Comparative surveys of the two Arabian skies

59 Traditional Arabian figures



48 Greco-Arabian Figures



simultaneous. The missing points are finally held by new stars, as confirmed by the name of the XXI station, *al-Balda*, literally “the Place”, meaning “which contains no stars”. The figures of the different types that we have inventoried are divided into three zones, as in the Greek sky but with very different sizes.

The most important area is made up of the 28 bands perpendicular to the ecliptic formed by the *manāzil al-qamar* or “lunar stations” which extend, to the north and south, well beyond the Greek zone of the ecliptic constellations, and which includes approximately 34 retained figures, almost three times more than the Greek ecliptic zone. Next comes the boreal circumpolar zone with about 16 figures, or 2/3 of the number of Ptolemy’s boreal figures, then the southern circumpolar zone with only 9 figures compared to 12

for the Greeks. This gives about 59 figures, of which few are unistellar figures, the vast majority being generally constellar, whether they are true constellations, in the sense that we understand them in the Greek sky, or the association of unistellar figures in true celestial scenes, knowing that some of these figures can occupy the same space in the celestial sphere.

Precisions on the establishment of this *Catalogue*

In his *Untersuchungen sur Nomenklatur der Araber*, Paul Kunitzch presented in 1962 the traditional Arabian sky based on the following sources:

* the oldest Arab astronomer, al-Fargānī (d. 870), who lists his 28 *manāzil al-qamar* in his *Ĝawāmi' ʿilm al-nuġūm*.

* the classical authors of *kutub al-anwā'*, including Ibn Qutayba (d. 889), who serves as the primary reference and whose *Adab al-kātib* is also used. But there are also notably: Ibn Kunasa (d. 824), Ibn al-ʿArabī (d. 846), Abū Ḥanīfa (d. 896) and Ibn Durayd (d. 933) whom we know indirectly through al-Marzūqī (d. 1030) and through the Muḥaṣṣaṣ of Ibn Sīdah (d. 1066).

* al-Šūfī's (d. 986) description of the sky of the Arabs in his *Kitāb Šuwar al-kawākib*, which is the second major source after Ibn Qutayba, and which is also quoted from its Spanish translation by Yehūda b. Moše (c. 1285)

* texts by later classical astronomers such as al-Battānī (d. 929), al-Bīrūnī (d. 1048), al-Marrākušī (d. late 13th century) or al-Qazwīnī (d. 1283) and al-Tīzīnī (d. 1539).

* Arab navigators like Aḥmad Ibn Mājid (d. c. 1500), and Sulaymān al-Mahrī (d. 1550), which seems entirely legitimate insofar as their names are firmly placed within the framework of the traditional Arabian sky, even if we find among them some

interferences from the Greco-Arab sky and some names from Persia which it is important to note.

* classical Arabic dictionaries: not only *al-Šihāh* by al-Ġawharī (d. 1002-1008), *al-Muḥaṣṣaṣ* by Ibn Sīdah (d. 1056), the *Lisān al-ʿArab* by Ibn Manẓūr (d. 1311), and even authors listed in the *Arabic-English Lexicon* William Lane (1873).

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The question that arises today is how to continue the work presented more than fifty years ago by Paul Kunitzsch, whose spirit must be preserved.

A. Paul Kunitzsch himself pointed out in his *Untersuchungen zur Sternomenklatur der Araber* that certain names resulted from the incidences of the Greco-Arab sky in the strictly Arab sky. It seems normal to exclude them from the present Catalogue. These deletions are explained in detail in the note *Remarks on Kunitzsch's Sternomenklatur* included in this folder.

B. It is now possible to highlight occurrences older than those given in the *Untersuchungen*.

B1. By indicating, for certain star names, their use in pre-Islamic poetry, moreover systematically mentioned by Ibn Qutayba himself, which allows us to go back a long way in time to their first occurrences**.

B2. Taking into account a list of *manāzil al-qamar* older than those of al-Farġānī (mid-9th century) and Ibn Qutayba. This is that of Mālīk b. Anas (d. 796) reported by ʿAbd al-Mālīk b. Ḥabīb, and moreover published by Kunitzsch in 1994.

B3. Considering the contributions of the work of translators of the *Almagest* such as al-Ḥaġġāġ (812), in whom the names of

** *Ibid*, 208.

stars already existing among the Arabs are well noted, or of astronomers such as Naṣṭūlus (827) – these two authors being moreover edited by Paul Kunitzsch –, or of other astronomers still such as Yaḥya b. Abī Manzur (d. c. 832).

C. By examining new lists concerning documents subsequent to the basic documents used by Paul Kunitzsch, they have been brought to the public's attention since 1967, and they present new star names. Thus:

C1. New *kutub al-anwā'*, such as those of Ibn Fāris (d. 1005), Ibn Mammātī (d. 1209), Ibn al-Aḡḏābī (d. 1250), or those of anonymous authors, also published by Paul Kunitzsch in 1983.

C2. New studies concerning Arab navigators, such as those of Gerald Randall Tibbetts (1965), Paul Kunitzsch (1974), and most recently Juan Acevedo & Inês Bénard (2021).

C3. New catalogs of astronomers and astrolabists reveal new names such as Abū Bakr (1216-1218), al-Miṣrī (14th century), al-Aḥṣāṣī (c. 1650), and many others. In these lists from navigators and astronomers, the new names are of two kinds.

Ca. This may involve the individualization of stars belonging to groups already named. Example: in *al-Hanʿa*, “the Mark on the camel's neck”, the name of the couple $\gamma\zeta$ *Gem*, which is that of the 6th lunar station, the astronomer al-Miṣrī in the 14th century designates γ *Gem* by *Nayyir al-Hanʿa*, “the Brilliant of the Mark”. This individualization, which is quite frequent among astronomers such as al-Marrākuṣī (13th century) or al-Tīzīnī (16th century), concerns the majority of new names and does not add much, so much so that it is possible, in many cases, to ignore them, which is what Paul Kunitzsch himself does.

Cb. These can also be synonyms or names given to new stars. Paul Kunitzsch takes this into account for the documents he consulted and it is logical to apply the same approach to new documents. But the most interesting thing is when these new names specify the figures of the stars in the traditional Arab

sky. Thus, the navigator Ibn Māğid (15th century), provides several names that largely specify the contours of the figure of *al-Nāqa*, “the Camel”, whose *al-Sanām*, “the Hump”, occupies the Ptolemaic space of the */W/* of Cassiopeia.

D. It seems useful to include the regional lists that Paul Kunitzsch ignores in his *Untersuchungen*. These include those of Khalid Al-Ajaji for the Arabian Peninsula, Daniel Martin Varisco for Yemen, Vincent Monteil for the Western Sahara, and travelers like Bertram Thomas, also for Yemen, Clinton Bailey for the Naqab/Nequev Desert, and Bernard Vernier for the Syrian Desert. All these lists are indeed based on the *manāzil al-qamar* or “lunar stations,” which they reproduce verbatim, and we sometimes find, outside of the lunar stations, identical names from the Persian Gulf to the Atlantic Ocean*.

Several points distinguish the content of this *Catalogue* from that of the list entitled Arabic (Indigenous) by Khalid AlAjaji in the Celestial Culture section of the Stellarium website. On the one hand, Khalid AlAjaji does not take into consideration the documents published since those used by Paul Kunitzsch in 1967, but his list is also more restricted than that of the *Untersuchungen* since it ignores the Arab navigators. On the other hand, he excludes the names given by the regional lists that he wishes to set aside, as he does for the list Arabic (Arabian Peninsula) in the Celestial Culture section of the *Stellarium* website:

This Catalogue is therefore based on “Catalogue 1. Arabic Star Names Formed in the Traditional Framework” published in 2012*. However, it reorganizes it, while remaining as close as possible to Ibn Qutayba's presentation, supplements it by incorporating the results of new work, occasionally corrects a few errors, and simplifies the list of named stars by removing many individual star names. It also systematically presents the diagrams and images of the various figures.

* RL, *Le Ciel des Arabes*, 2012, 85-122.

PRESENTATION

An important note regarding the form: the term “indigenous” used within the framework of the IAU and in *Stellarium*, is truly inappropriate because it carries demeaning connotations, also noted by the United Nations, and which constitute an inertia of the imperial-colonial historical period.

This Catalogue thus refers expressly to the traditional Arabian sky.