

Presentation

of the traditionnal Arabian sky

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There are two Arab skies. Alongside the sky that Arab astronomers and astrologers inherited from the Greeks in the 9th century, which will be called *Greco-Arabian sky*, there is a *traditional Arabian sky*. We can know it from the numerous *kutub al-anwā'*, or “books of star risings”, which were a classic reference for any polygraph and for the vast majority of Arab astronomers, and were part, until the submersion of classical culture by European culture, of the *adab*, the baggage of any cultivated Arab, and then Muslim. We have direct and completely access to it through its detailed description, made in comparison with the sky of Ptolemy in the *Kitāb Šuwar al-kawākib al-tābita* or “Book of the figures of fixed stars”, by ʿAbd al-Raḥmān al-Šūfī (964). These books actually translate the last stage of the formation of the traditional sky, structured by the *manāzil al-qamar* or “lunar stations”^{*}.

^{*} These are indeed “stations” and not “mansions”, as has been written for too long. This error comes from Arab philologists who believed they saw in the expression *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.

Formation of the traditional Arabian sky

1. The ancient comput of the *anwā'*

The first stage of the formation of the traditional sky is more or less the Arabic equivalent of the *παράπηγμα* or “parapegms”, that is to say, sidereal calendars punctuated by the heliacal risings, culminations or settings of characteristic stars which we know in particular from Geminus : this is the comput of *anwā'**. This calendar begins with *al-Turayyā*, which is the Arabic name for the *Pleiades*. One difference is that the parapegms mainly use constellations or parts of constellations as time markers, while the Arabs use individual stars. About fifteen traditional stellar names, all of which belong to the strictly Arabian heritage, probably come from these *anwā'* calendars, which are the basis of ancient Arabian comput, some of which have passed into the current international stellar nomenclature: thus *al-Dabarān*, from which *Aldebaran* comes, *al-Ġawzā'*, which we find as an element of certain names such as *Betelgeuze* (α Ori), or *Sa'd*, which provided the basis for several names of *Aquarius* stars such as *Sadalasuud* (β Aqr). In this ancient comput, that of the calendars of the *anwā'*, certain stars translate privileged moments in time, like that of β Leo, *al-Šarfa*, which means “the Change [of Weather]”, or a particular quality, like that of α Hya, *al-Fard*, which can be translated as “the Solitary One”. But most of them bear the names of divinities. Just like the Mesopotamians, the Arabs of Antiquity established in fact a close relationship between the gods and the stars.

* For an essay on the reconstruction of ancient computing, see RL, *Le Ciel des Arabes*, Tab. 1, 42-43.

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 astronomical object dividing the ecliptic zone traveled by the Sun and the five real planets known at the time but in their modern definition, *δωδεκάτημόριοι* or “dodecatemories”, as the Greeks called them, that is to say equal “twelfth parts”, of 30 degrees each, was transmitted in this way 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 major deformations. We have an example of this in the Safaitic zodiac calendar**, probably dated from the very beginning of our era and whose definitive form.

3. The comput of the *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 comput draws on the two preceding sources***. This comput, which begins probably to be formed around the 6th-7th centuries, seems anyway perfectly constituted towards the end of the 8th century. It only preserves the stars of the ancient Arabiāb 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 equinox]”,

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

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

*** See RL, “Le comput des *manāzil al-qamar* ou “stations lunaires”, 2012.

which corresponds to the vernal point considered at the time of the beginnings of its elaboration, which belongs to the figure of *al-Ḥamal*, the “Lamb”, it crosses in fact those of *al-Asad*, “the Lion”, and ends with that of *al-Ḥūt*, “the Fish”.

Surveying of the traditionnal Arab 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, then Greco-Arabian 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, because certain asterisms were not yet autonomous in his work: *Ἰππόριον*, or *Equuleus* according to the nomenclature of the International Astronomical Union (IAU), *Κόραξ* or *Corvus*, *Νότιος Στέφανος* or *Corona Australis* and *Θηρίον* or *Lupus*.

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

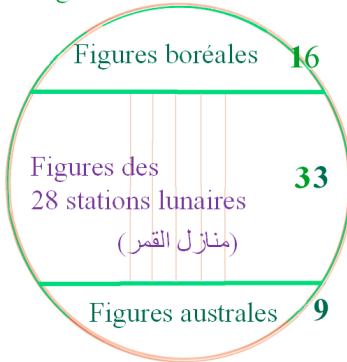
* The fact that the ecliptic line crosses the space of 13 constellations, defined in 1930 by the IAU has given rise to many completely sterile discussions on the number of “zodiacal constellations” due to the vague nature of this notion, the zodiac not being made up of constellations, in the sense of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

** See al-Šūfī, *Kitāb Šuwar al-kawākib...*, éd. Schjellerup, 35, and “Le comput des *manāzil al-qamar* ou ‘stations lunaires’”, in RL, *Le Ciel des Arabes*, 51-60, and on the website *Uranos*.

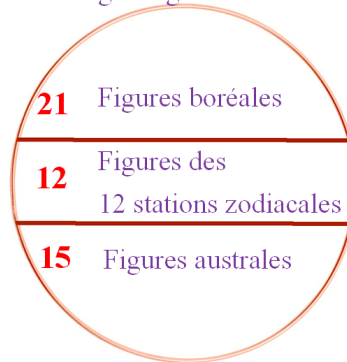
which has 14. The first station coincides with the spring equinox. The different stations take from the old sidereal comput of the *anwā'* the asterisms located on the ecliptic by considering their setting on the western horizon or acronyque setting and the simultaneous rising of their opposite in the East, but most of the time replace the bright stars far from it by what the Greeks called each of them a *παρανατέλλων*, or « parantelleon », *i.e.* a say star whose heliacal risings is simultaneous to the star in question. The missing points are finally held by new stars, as confirmed by the name of the XXI station, al-Balda, literally “the Uninhabited Place”, meaning “which does not contain stars”.

Comparative surveys of the two Arabian skies

58 figures arabes traditionnelles



48 figures gréco-arabes



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 zone 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 comprises roughly 33 figures, three times more than the Greek ecliptic zone. Then comes the boreal circumpolar zone with some 16 figures, or half of Ptolemy's boreal figures, then the southern circumpolar

zone with only 9 figures compared to 12 for the Greeks. As we can see on the figure above, this gives about 57 constellational figures and groupings or associations of unistellar figures, not to mention the individual stars outside the figures. This gives about 58 figures, of which few are unistellar figures, the vast majority being generally constellar, whether they are real constellations, as we understand them in the Greek sky, or the association of unistellar figures in real celestial scenes, knowing that some of these figures may occupy the same space in the celestial sphere.

Precisions on the establishment of the present Catalogue

In his *Untersuchungen sur Nomenklatur der Araber*, Paul Kunitzch presented in 1961 the traditional Arab sky from the following sources:

* the oldest Arab astronomer, al-Farġānī (d. 870), who lists his 28 manāzil al-Qamar in his *Ĝawāmi' ilm 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-°Arabī (d. 846), Abū Ḥanīfa (d. 896) and Ibn Durayd (d. 933) whom we know indirectly through al-Marzūqī (d. 1030) and through *al-Muḥaṣṣaṣ* of Ibn Sīdah (d. 1066).

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

* the texts of later classical astronomers such as al-Battānī (d. 929), al-Bīrūnī (d.1048), al-Marrākušī (d. late 13th century), al-Qazwīnī (d. 1283), Ulūġ Bēġ (d. 1449) and al-Tīzīnī (d. 1539).

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

* Classical Arabic dictionaries: not only *al-Šihāḥ* by al-Ġawharī (d. 1002-1008), *al-Muḥaṣṣaṣ* by Ibn Sīdah (d. 1056), the *Lisān al-ʿArab* by Ibn Manzūr (d. 1311), but also authors mentioned in the *Arabic-English Lexicon* of 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 had pointed out in this *Sternomenklatur der Araber* that certain names resulted from insertions of the Greco-Arabian sky in the properly Arabian sky. It seems normal to exclude them from the present *Calatalogue*. These deletions are explained in detail in the note *Remarks on Kunitzsch's Sternomenklatur*, in this folder.

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

B1. Certain names of stars used in pre-Islamic poetry, moreover mentioned systematically by Ibn Qutayba himself, which allows us to go back a long way in time to their first occurrences*.

B2. A list of the *manāzil al-Qamar* older than those of al-Fargānī (mid-9th century) and Ibn Qutayba: this is that of Mālik b. Anas

** See RL, *Le ciel des Arabes*, 208.

(d. 796) reported by °Abd al-Mālik b. Ḥabīb, and also published by Paul Kunitzsch in 1994.

B3. Names drawn from the contributions of the work of the translators of the *Almagest*, such as al-Ḥaḡḡāḡ (812), in whom the names of stars 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 such as Yaḥya b. Abī Manzur (d. c. 832).

C. Names drawn from new lists concerning documents subsequent to the basic documents used by Kunitzsch have been brought to the attention of the public 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-Aḡḡābī (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 catalogues of astronomers and astrolabists providing new names such as Abū Bakr (1216-1218), al-Miṣrī (14th century), al-Aḡḡāṣī (c. 1650), and many others.

In these lists emanating from navigators and astronomers, the new names are of two kinds:

Ca. They may involve the individualization of stars belonging to groups already named. Example: in the group *al-Han'a*, "the Brand on the neck of the red camel", the name of the couple γ Gem is the VIth lunar station, the astronomer al-Miṣrī designates γ Gem in the 14th century by *Nayyir al-Han'a*, "the Brighet Onet of the Brand." This individualization, which is practically systematic among certain astronomers such as al-Marrākusī (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. They can also be synonyms or names given to new stars. Paul Kunitzsch himself takes this into account for the documents he consulted, although not systematically, and it is logical to apply the same conduct for new documents. But the most interesting thing is when these new names specify the figures of the stars of the traditional Arab sky. This is how the navigator Ibn Mājid (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*. For example, those of Khalid Al-Ajaji for the Arabian Peninsula, Daniel Martin Varisco for Yemen, Vincent Monteil for the Western Sahara, or names indicarted by 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 in fact built on the manāzil al-qamar that they take up as is, and we sometimes find, outside of lunar stations, identical names from the Persian Gulf to the Atlantic Ocean.

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Several points distinguish the content of this *Catalogue* from the list entitled *Arabic (Indigenous)* by Khalid Al-Ajaji in the “Celestial Culture section” of *Stellarium*. On the one hand, Khalid Al-Ajaji does not take into account the documents published since those used by Paul Kunitzsch in 1967 but he is also more restricted than him 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 it does for the list *Arabic (Arabian Peninsula)* in the “Celestial Culture” section of *Stellarium*.

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The present *Catalogue* is therefore based on the “Catalogue1. Arabic star names formed within the traditional framework” published in 2012*. But he rearranges it, while remaining as close as possible to Ibn Qutayba’s presentation, completes it by integrating the results of new work, sometimes corrects some errors, and simplifies the list of named stars. He also presents in a systematic way the diagrams and images of the different figures.

A remark now, concerning the form: the term "indigenous", used in the IAU working group (WGSN) and in *Stellarium* does not really seem appropriate insofar as it carries very devaluing connotations which constitute an inertia of the imperial-colonial historical period, moreover noted by the United Nations.

The present Catalogue thus refers expressly to *the traditional Arab sky*.

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