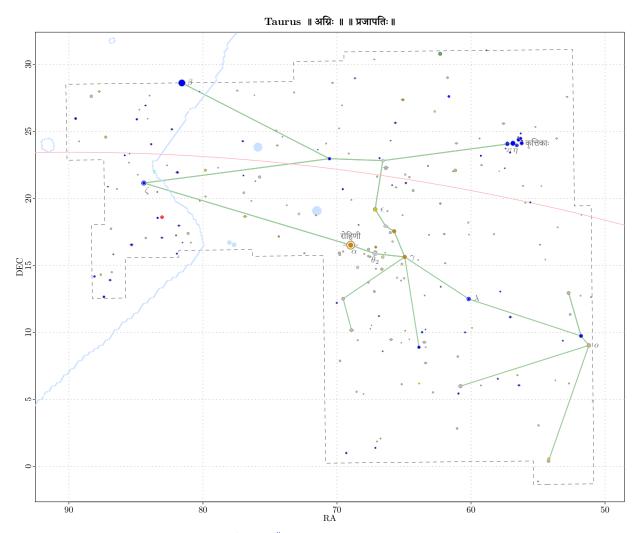
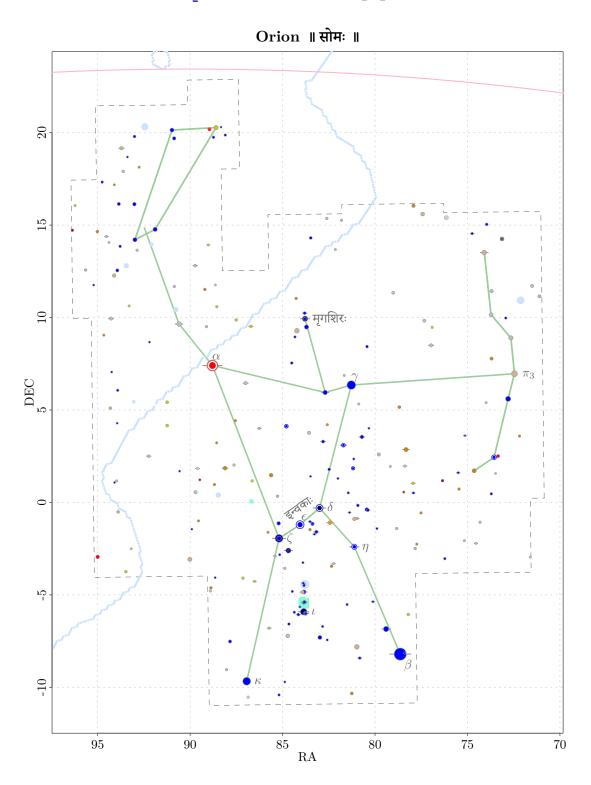
#### ॥ तैत्तिरीय ब्राह्मणे नक्षत्र-सूक्तम् ॥

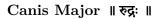
॥ ॐ ॥
अग्निर्नः पातु कृत्तिकाः । नक्षत्रं देविमिन्द्रियम् ।
इदमासां विचक्षणम् । ह्विरासं जुंहोतन ।
यस्य भान्तिं रूष्मयो यस्यं कृतवंः । यस्येमा विश्वा भुवंनानि सर्वां ।
स कृत्तिंकाभिर्भिसंवसांनः । अग्निर्नो देवःसुंविते देधातु ॥ १॥

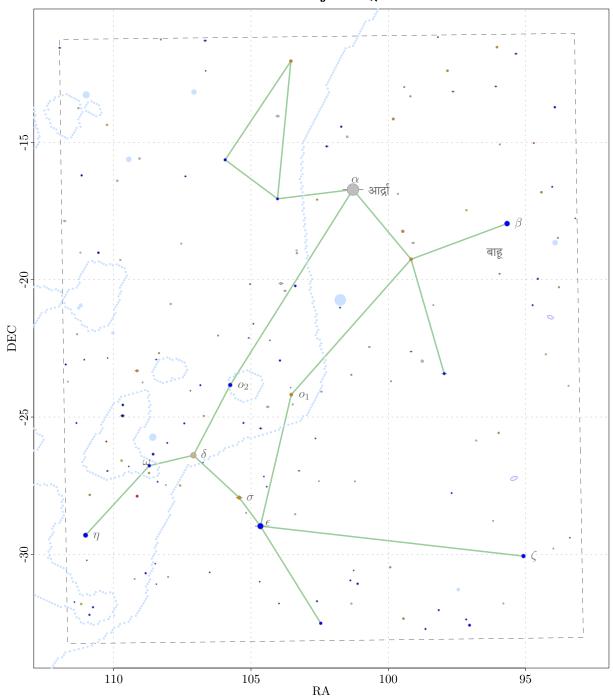


प्रजापंते रोहिणी वेंतु पत्नी । विश्वरूपा बृह्ती चित्रभांनुः । सा नो यज्ञस्यं सुविते दंधातु । यथा जीवेम श्ररदःसवीराः । रोहिणी देव्युदंगात्पुरस्तात् । विश्वां रूपणिं प्रतिमोदंमाना । प्रजापंति र ह्विषां वर्धयंन्ती । प्रिया देवानामुपंयातु यज्ञम् ॥२॥ सोमो राजां मृगशीर्षेण आगन्नं । शिवं नक्षंत्रं प्रियमंस्य धामं । आप्यायंमानो बहुधा जनेषु । रेतः प्रजां यजमाने दधातु । यत्ते नक्षंत्रं मृगशीर्षमस्तिं । प्रिय॰ राजन् प्रियतंमं प्रियाणाम् । तस्मै ते सोम हुविषां विधेम । शं नं एधि द्विपदे शं चतुंष्पदे ॥३॥

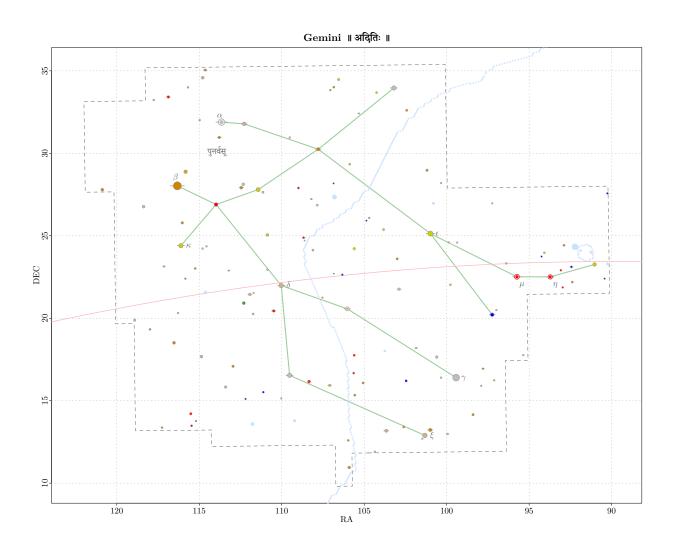


आर्द्रयां रुद्रः प्रथंमान एति । श्रेष्ठों देवानां पतिरिघ्वयानांम् । नक्षंत्रमस्य ह्विषां विधेम । मा नः प्रजार रीरिष्नमोत वीरान् । हेती रुद्रस्य परिणो वृणक्तु । आर्द्रा नक्षंत्रं जुषतार ह्विनः । प्रमुश्रमानौ दुरितानि विश्वां । अपाघशरसन्नुदतामरांतिम् ॥४॥

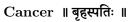


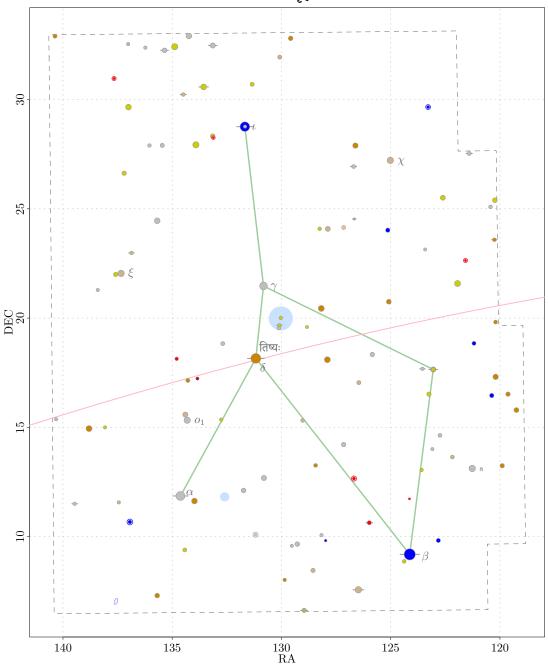


पुनंनी देव्यदितिस्पृणोतु । पुनंवसू नः पुनरेतां यज्ञम् । पुनंनी देवा अभियंन्तु सर्वे । पुनः पुनर्वो हिवर्षा यजामः । पुवा न देव्यदितिरन्वा । विश्वस्य भूत्री जगंतः प्रतिष्ठा । पुनंवसू हिवर्षां वर्धयंन्ती । प्रियं देवानामप्यंतु पार्थः ॥५॥



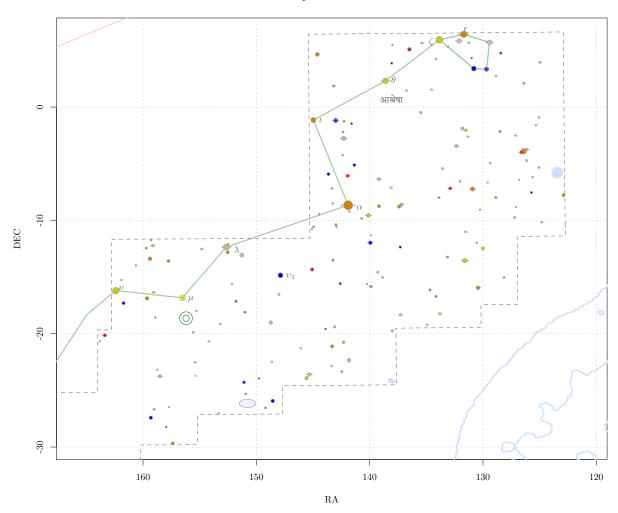
बृह्स्पतिः प्रथमं जायंमानः । तिष्यं नक्षंत्रम्भि संबंभूव । श्रेष्ठों देवानां पृतंनासु जिष्णुः । दिशोऽनु सर्वा अभयन्नो अस्तु । तिष्यः पुरस्तांदुत मध्यतो नः । बृह्स्पतिर्नः परिपातु पृश्चात् । बाधेतां द्वेषो अभयं कृणुताम् । सुवीर्यस्य पतंयस्याम ॥६॥



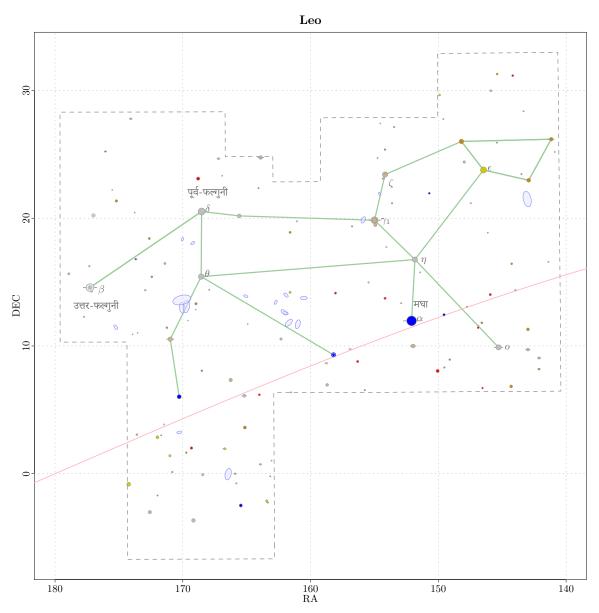


इद स्पॅम्यों ह्विरंस्तु जुष्टम् । आश्रेषा येषांमनुयन्ति चेतंः । ये अन्तरिक्षं पृथिवीं क्षियन्ति । ते नः सप्पांसो हवमागंमिष्ठाः । ये रोचने सूर्यस्यापि सपाः । ये दिवं देवीमनुंसंचरन्ति । येषामाश्रेषा अनुयन्ति कामम् । तेभ्यः स्पॅम्यो मधुंमज्जहोमि ॥७॥

Hydra ॥ सर्पाः ॥

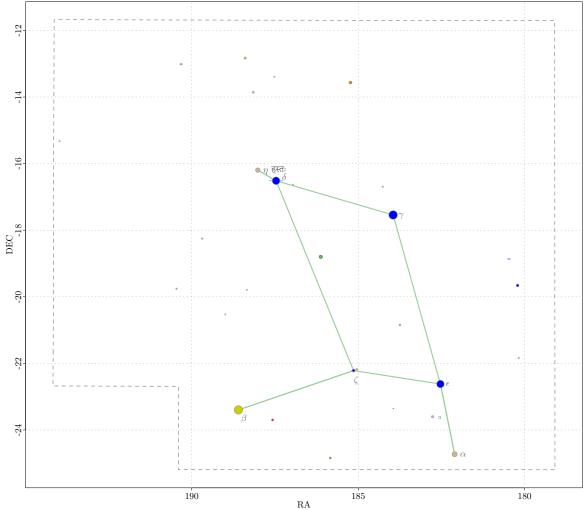


उपंहूताः पितरो ये मुघासुं । मनोजवसः सुकृतः सुकृत्याः । ते नो नक्षेत्रे हवमागंमिष्ठाः । स्वधाभिर्यज्ञं प्रयंतं जुषन्ताम् । ये अग्निद्ग्धा येऽनंग्निदग्धाः । येऽमुं लोकं पितरः क्षियन्ति । यारश्चं विद्ययार उं च न प्रं विद्य । मुघासुं युज्ञर सुकृतं जुषन्ताम् ॥८॥

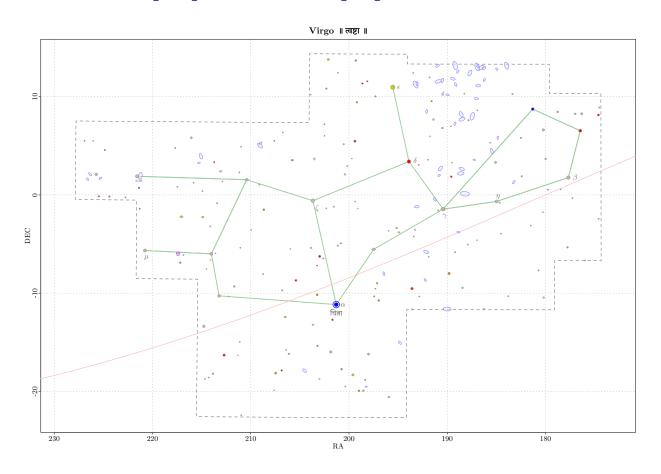


गवां पितः फल्गुंनीनामिस् त्वम् । तदंर्यमन् वरुणिमत्र चारुं । तं त्वां वयः संनितारः सनीनाम् । जीवा जीवंन्तमुप संविशेम । येनेमा विश्वा भुवंनािन सञ्जिता । यस्यं देवा अनुसंयन्ति चेतः । अर्यमा राजाऽजरंस्तुविष्मान् । फल्गुंनीनामृष्भो रोरवीित ॥९॥ श्रेष्ठों देवानां भगवो भगासि । तत्त्वांविदुः फल्गुंनी्स्तस्य वित्तात् । अस्मभ्यंं क्षत्रमृजर्रं सुवीर्यम् । गोमृदर्श्वंवदुप्संनुदेह । भगों ह दाता भग इत्प्रंदाता । भगों देवीः फल्गुंनी्राविवेश । भगस्येत्तं प्रंसुवं गमेम । यत्रं देवैः संधुमादं मदेम ॥१०॥ आयात् देवः संवितोपंयात् । हिर्ण्ययंन सुवृता रथेन । वहन् हस्त स् सुभगं विद्यनापंसम् । प्रयच्छंन्तं पपुंरिं पुण्यमच्छं । हस्तः प्रयंच्छत्वमृतं वसीयः । दक्षिणेन् प्रतिगृभ्णीम एनत् । दातारंमुद्य संविता विंदेय । यो नो हस्तांय प्रसुवातिं युज्ञम् ॥११॥

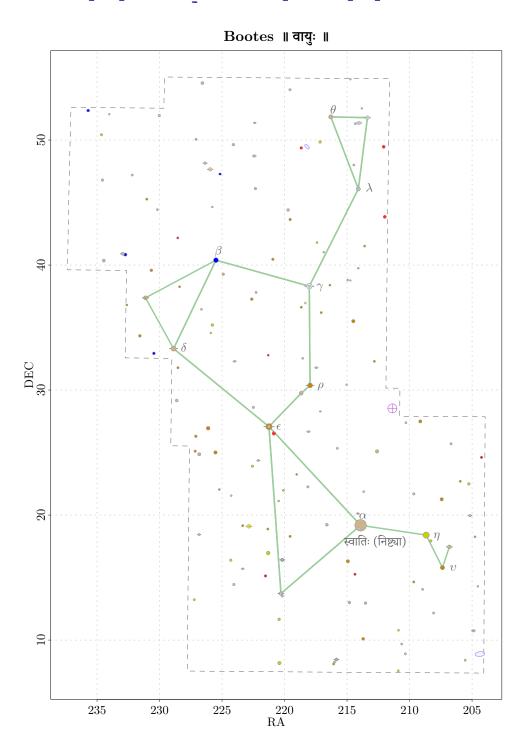




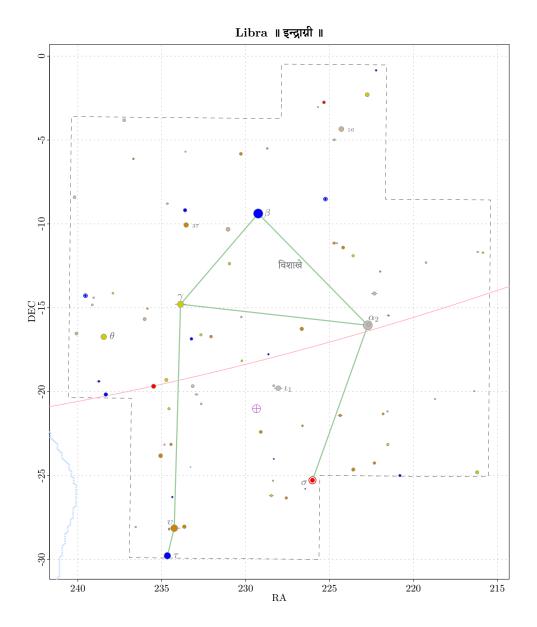
त्वष्टा नक्षंत्रम्भ्यंति चित्राम् । सुभः संसं युव्तिः रोचंमानाम् । निवेशयंत्रमृतान्मर्त्याः श्रेश्च । रूपाणि पिर्शान् भुवंनानि विश्वा । तत्रस्त्वष्टा तदुं चित्रा विचंष्टाम् । तत्रक्षंत्रं भूरिदा अंस्तु मह्मम् । तत्रः प्रजां वीरवंतीः सनोतु । गोभिन्तें अश्वैः समनक्तु यज्ञम् ॥१२॥



वायुर्नक्षंत्रम्भ्येति निष्ट्याम् । तिग्मशृंगो वृष्भो रोरुंवाणः । समीरयन् भवंना मात्रिश्वां । अप द्वेषार्श्स नुदतामरांतीः । तन्नो वायस्तदु निष्ट्यां शृणोतु । तन्नक्षंत्रं भूरिदा अस्तु मह्यम् । तन्नो देवासो अनुंजानन्तु कामम् । यथा तरेम दुरितानि विश्वां ॥१३॥

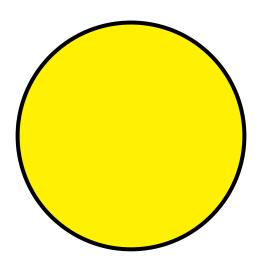


दूरम्सम्ब्छत्रंवो यन्तु भीताः । तदिन्द्राग्नी कृंणतां तद्विशांखे । तन्नो देवा अनुमदन्तु यज्ञम् । पश्चात् पुरस्तादभयं नो अस्तु । नक्षंत्राणामधिपत्नी विशांखे । श्रेष्ठांविन्द्राग्नी भुवंनस्य गोपौ । विषूचः शत्रूनप्बाधंमानौ । अपक्षुधं नुदतामरांतिम् ॥१४॥



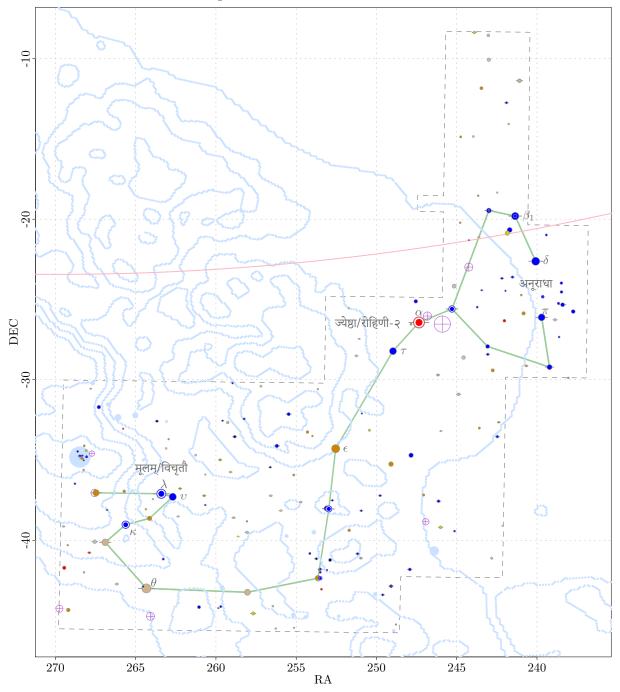
पूर्णा पृश्चादुत पूर्णा पुरस्तांत् । उन्मंध्यतः पौर्णमासी जिंगाय । तस्यां देवा अधिसंवसंन्तः । उत्तमे नाकं इह मांदयन्ताम् । पृथ्वी सुवर्चा युवृतिः सजोषाः । पौर्णमास्युदंगाच्छोभंमाना । आप्याययंन्ती दुरितानि विश्वां । उरुं दुहां यजमानाय युज्ञम् ॥१५॥

Full Moon ∥राका ॥



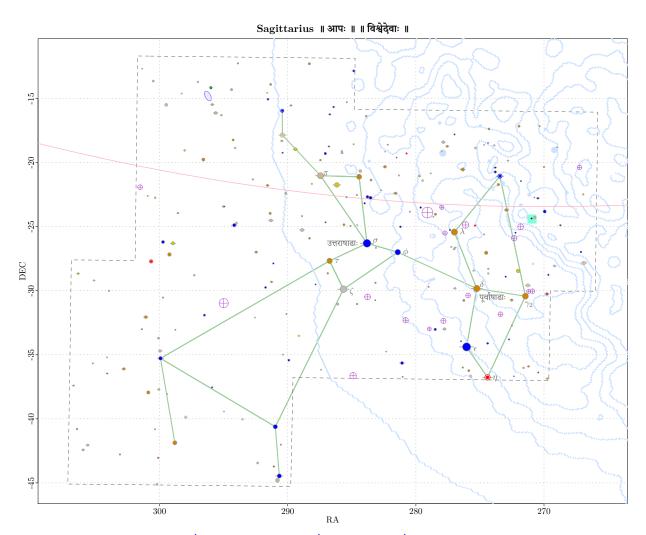
ऋष्ट्यास्मं हुव्यैर्नमंसोपसद्यं । मित्रं देवं मित्र्धेयं नो अस्तु । अनूराधान् हुविषां वर्धयंन्तः । शृतं जीवेम शृरदः सवीराः । चित्रं नक्षेत्रमुदंगात्पुरस्तात् । अनूराधा स् इति यद्वदंन्ति । तन्मित्र एति पृथिभिर्देवयानैः । हिर्ण्ययैर्वितंतैर्न्तरिक्षे ॥१६॥

Scorpius ॥ मित्रः ॥ ॥ इन्द्रः ॥ ॥ निर्ऋत्तिः/पितरः ॥



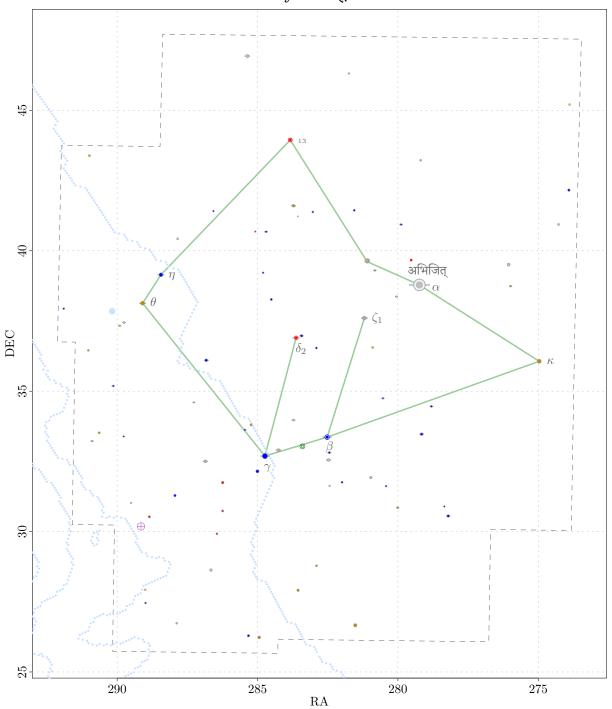
इन्द्रों ज्येष्ठामनु नक्षंत्रमेति । यस्मिन् वृत्रं वृंत्रतूर्ये ततारं । तस्मिन्वयम्मृतं दुहानाः । क्षुधंन्तरम् दुरितिं दुरिष्टिम् । पुरन्दरायं वृष्भायं धृष्णवे । अषांढाय सहंमानाय मीदुषे । इन्द्राय ज्येष्ठा मधुंमृदुहाना । उ्रुं कृणोतु यजमानाय लोकम्। ॥१७॥

मूलं प्रजां वीरवंतीं विदेय । पराँच्येतु निर्म्हतिः पराचा । गोभिर्नक्षंत्रं पृशुभिस्समंक्तम् । अहंभूयाद्यजमानाय मह्यम् । अहंनी अद्य सुविते दंधातु । मूलं नक्षत्रिमिति यद्वदंन्ति । परांचीं वाचा निर्म्हतिं नुदामि । शिवं प्रजयै शिवमंस्तु मह्यम् ॥१८॥ या दिव्या आपः पर्यसा सम्बभूवः । या अन्तरिक्ष उत पार्थिवीर्याः । यासामषाढा अनुयन्ति कामम् । ता न आपः श र स्योना भवन्तु । याश्च कूप्या याश्च नाद्याः समुद्रियाः । याश्च वैशन्तीरुत प्रांस्चीर्याः । यासामषाढा मधुं भक्षयंन्ति । ता न आपः श र स्योना भवन्तु ॥१९॥

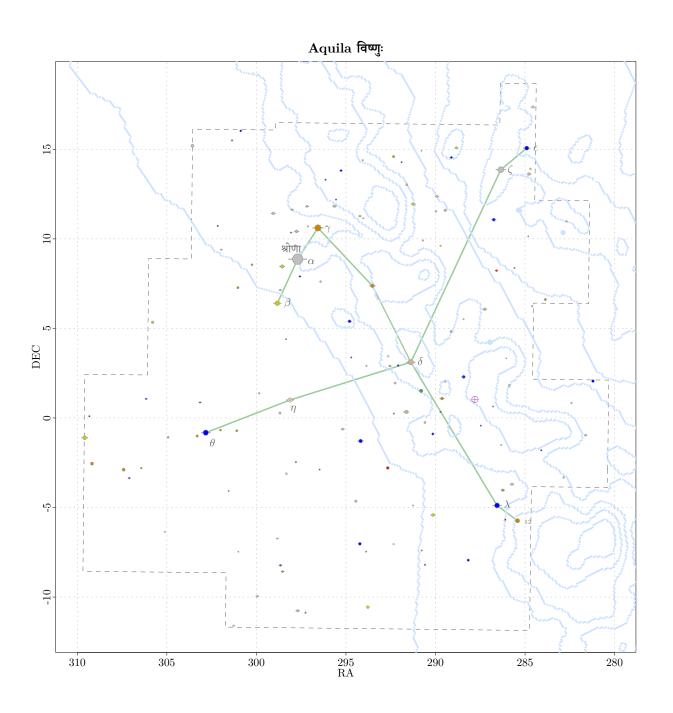


तन्नो विश्वे उपं शृण्वन्तु देवाः । तदंषाढा अभिसंयंन्तु यज्ञम् । तन्नक्षेत्रं प्रथतां पृश्भ्यः । कृषिर्वृष्टिर्यजंमानाय कल्पताम् । शुभ्राः कुन्यां युवृतयः सुपेशंसः । कुर्मृकृतः सुकृतों वीर्यावतीः । विश्वान् देवान् हृविषां वर्धयंन्तीः । अषाढाः कामुमुपायन्तु यज्ञम् ॥२०॥ यस्मिन् ब्रह्माभ्यजंयत्सर्वमेतत् । अमुं चं लोकमिदमूंच सर्वम् । तन्नो नक्षंत्रमभिजिद्धिजित्यं । श्रियं दधात्वहृंणीयमानम् । उभौ लोकौ ब्रह्मणा संजितेमौ । तन्नो नक्षंत्रमभिजिद्धिचंष्टाम् । तस्मिन्वयं पृतंनाः संजेयेम । तन्नो देवासो अनुं जानन्तु कामम् ॥२१॥

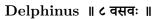
Lyra ॥ ब्रह्मा ॥

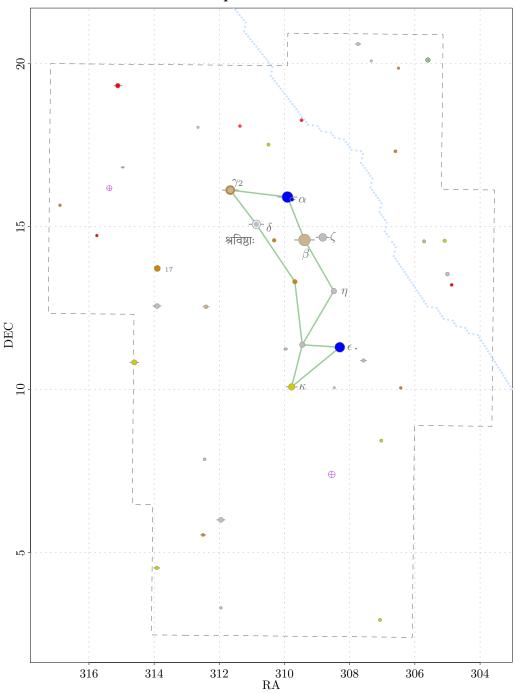


शृण्वन्तिं श्रोणाम्मृतंस्य गोपाम् । पुण्यांमस्या उपं शृणोमि वाचम् । मृहीं देवीं विष्णुपत्नीमजूर्याम् । प्रतीचीं मेना हिवषां यजामः । त्रेधा विष्णुं रुरुगायो वि चंक्रमे । मृहीं दिवं पृथिवीम्न्तिरक्षिम् । तच्छ्रोणैति श्रवं इच्छमाना । पुण्य श्रोकं यजमानाय कृण्वती ॥२२॥

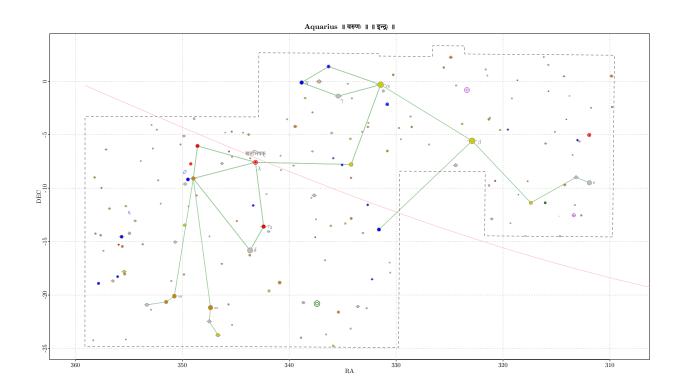


अष्टौ देवा वसंवः सोम्यासंः । चतंस्रो देवीर्जराः श्रविष्ठाः । ते यज्ञं पान्तु रजंसः पुरस्तात् । संवथ्सरीणम्मृतर् स्वस्ति । यज्ञं नेः पान्तु वसंवः पुरस्तात् । दक्षिणतोऽभियंन्तु श्रविष्ठाः । पुण्यं नक्षंत्रम्भि संविष्ठाम । मा नो अरांतिर्घशुरसाऽगन्नं ॥ २३ ॥

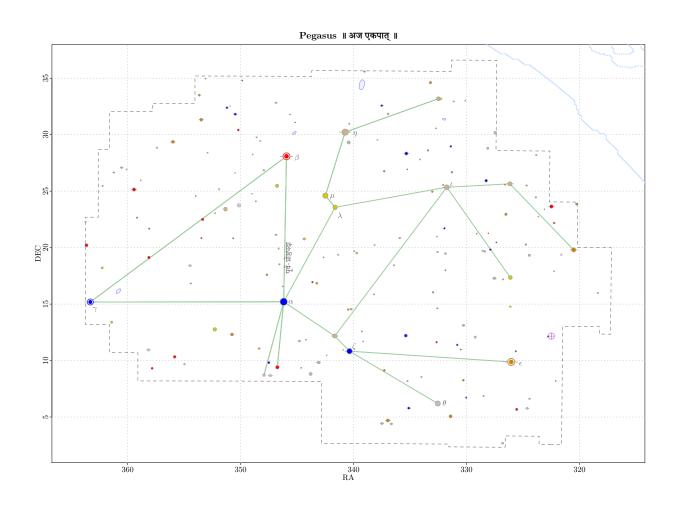




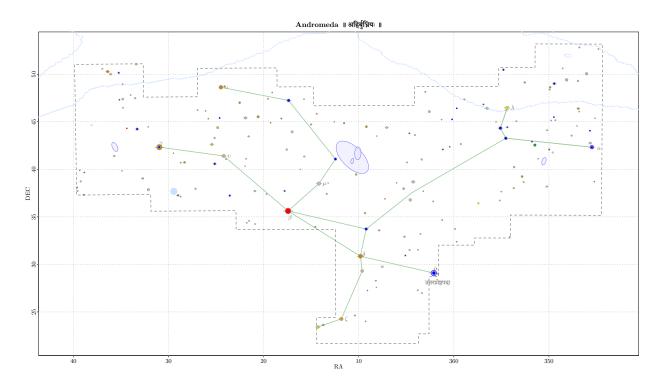
क्षत्रस्य राजा वर्रुणोऽधिराजः । नक्षत्राणाः शतिभेष्यवसिष्ठः । तौ देवेभ्यः कृणुतो दीर्घमायुः । शतः सहस्रां भेषजानि धत्तः । यज्ञं नो राजा वर्रुण उपयातु । तन्नो विश्वे अभि संयन्तु देवाः । तन्नो नक्षत्रः शतिभेषग्जुषाणम् । दीर्घमायुः प्रतिरद्भेषजानि ॥२४॥



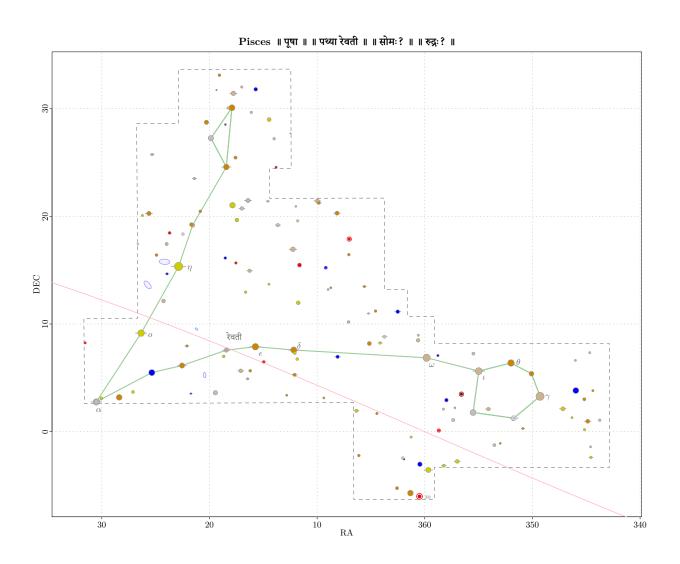
अज एकंपादुदंगात्पुरस्तांत् । विश्वां भूतानिं प्रति मोदंमानः। तस्यं देवाः प्रंस्वं यंन्ति सर्वें । प्रोष्ठपदासों अमृतंस्य गोपाः। विभ्राजमानः समिधा न उग्रः । आऽन्तरिक्षमरुहृदगुन्द्याम्। तर सूर्यं देवमुजमेकंपादम् । प्रोष्ठपदासो अनुयन्ति सर्वें ॥२५॥



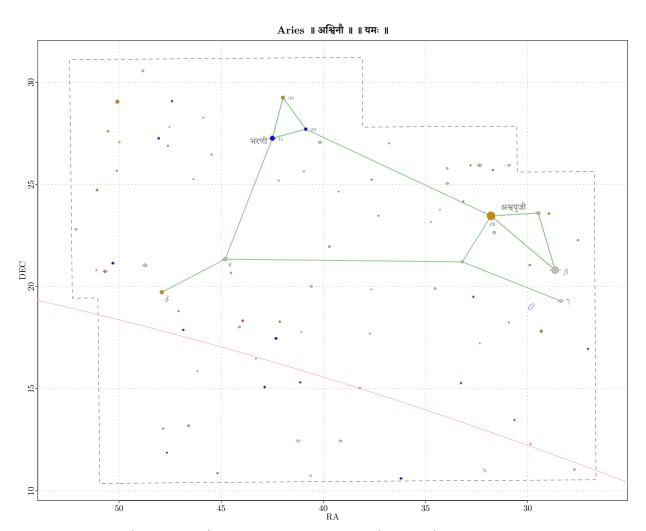
अहिं बुंध्रियः प्रथंमान एति । श्रेष्ठां देवानांमुत मानुंषाणाम् । तं ब्राँह्मणाः सोंम्पाः सोम्यासः । प्रोष्ठपदासों अभिरंक्षन्ति सर्वें । चत्वार् एकंम्भि कर्म देवाः । प्रोष्ठपदास् इति यान् वदंन्ति । ते बुंध्रियं परिषद्य र स्तुवन्तः । अहि र रक्षन्ति नमंसोपसद्यं ॥ २६ ॥



पूषा रेवत्यन्वेति पन्थांम् । पृष्टिपतीं पशुपा वाजंबस्त्यौ । इमानि ह्व्या प्रयंता जुषाणा । सुगैर्नो यानैरुपंयातां यज्ञम् । क्षुद्रान् पृशून् रंक्षतु रेवतीं नः । गावों नो अश्वार् अन्वेतु पूषा । अञ्चर् रक्षंन्तौ बहुधा विरूपम् । वाजर् सनुतां यजंमानाय युज्ञम् ॥२७॥

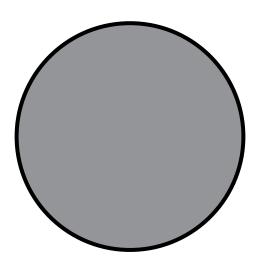


तद्श्विनांवश्वयुजोपंयाताम् । शुभुं गिमष्ठौ सुयमेभि्रश्वैः । स्वं नक्षेत्र १ ह्विषा यजंन्तौ । मध्वा सम्पृंक्तौ यजुंषा समंक्तौ । यौ देवानां भिषजौ हव्यवाहौ । विश्वंस्य दूतवृमृतंस्य गोपौ । तौ नक्षेत्रं जुजुषाणोपंयाताम् । नमोऽश्विभ्यां कृणुमोऽश्वयुग्भ्यांम् ॥२८॥



अपं पाप्मानं भरंणीर्भरन्तु । तद्यमो राजा भगंवान् विचंष्टाम् । लोकस्य राजां महतो महान् हि । सुगं नः पन्थामभंयं कृणोतु । यस्मिन्नक्षंत्रे यम एति राजां । यस्मिन्नेनम्भ्यिषंचन्त देवाः । तदंस्य चित्र १ हिवषां यजाम । अपं पाप्मानं भरंणीर्भरन्तु ॥२९॥ निवेशनी सङ्गर्मनी वसूनां विश्वां रूपाणि वसून्यावेशयंन्ती । सहस्रपोष स्पुभगा रर्गणा सा न आगुन्वर्चसा संविदाना ॥ यत्ते देवा अदेधुर्भागुधेयममावास्ये संवसन्तो महित्वा । सा नो युज्ञं पिपृहि विश्ववारे रुयिं नो धेहि सुभगे सुवीरम् ॥

New Moon ∥कुहू ∥



# A note on the asterisms forming the nakṣatra-s

In Hindu tradition the ecliptic is divided into 27 parts of  $13\frac{1}{3}^{\circ}$  that correspond to 27 asterisms known as the nakṣatra-s. Each nakṣatra approximately corresponds to the part of the ecliptic covered by the moon in a day in course of the sidereal month of 27.322 days. In multiple earliest extant lists of our tradition the number of nakṣatra-s is specified as 28. This either implies a division into sectors of  $12\frac{6}{7}^{\circ}$  or insertion of a nakṣatra with adjacent compressed sectors. The latter seems more plausible given that the number 28 was made up with the special nakṣatra Abhijit ( $\alpha$  Lyrae), which might have been used for determining a specific (eponymous) ritual day in the annual sattra. In support of this, coeval with the 28 nakṣatra lists, we see the standard 27 nakṣatra list in Taittirīya Saṃhitā 4.4.10 that drops Abhijit.

The earliest complete nakṣatra lists are found in the Taittirīya-śruti and the Atharvaveda, where they are recited as part of the nakṣatraṣṭi/nakṣatra-homa ritual, which places the deities of pantheon in these celestial compartments. Indeed, ever since it has been common practice in Hindu astronomy to use the names of the deities corresponding to a given compartment alternatively for the nakṣatra itself. The old nakṣatra-lists in the TS, Laugākṣi's sūtra-s and the Atharvaveda begin with Kṛttikā i.e., the Pleiades, suggesting that the system as described in these texts was put in place sometime in the interval of 4500-4000 years before present. However, we hold that the nakṣatra system did not begin with these texts. These texts are mostly predated by the R̄gveda, where we find stray references to specific nakṣatra-s and also the term itself in its generic sense. Thus, we believe a form of the system was already in place even in the days of the R̄gveda. Further, there are some homologies between nakṣatra-s and Iranian asterisms suggesting that some form of the system might have existed even in the Indo-Iranian past on the Eurasian steppes.

An often-asked question is whether there is a way of knowing precisely how nakṣatra-s were defined in the Vedic period? In classical Indian astronomy each nakṣatra is defined by giving the latitude and longitude of a star called the yogatārā. The yogatārā was defined by the scientist Brahmagupta in 665 CE as the brightest star in the asterism. This makes the nakṣatra quite unambiguous but then there are nakṣatra-s, which are far away from the ecliptic in the Vedic reckoning raising the question if the later definitions differ from the Vedic ones. The best way to start answering this is by using the earliest surviving list in tradition that gives the number of stars in each nakṣatra from the Nakṣatra-kalpa (NK) of the Atharvan tradition:

षट् कृत्तिका एका रोहिणी तिस्रो मृगशिर एकार्द्रा द्वे पुनर्वसू एकः पुष्यः षड् आश्लेषाः षण् मघाः चतस्रः फल्गुन्यः पश्च हस्त एका चित्रा एका स्वातिर् द्वे विशाखे चतस्रो ऽनुराधा एका ज्येष्ठा सप्त मूलम् अष्टाव् अषाढा एको ऽभिजित् तिस्रः श्रवणः पश्च श्रविष्ठा एका शतभिषा चतस्रः प्रोष्ठपदौ एका रेवती द्वे अश्वयुजौ तिस्रो भरण्यः । इति संख्या परिमितं ब्रह्म ॥ (NK2)

**Kṛttikā-s:** 6. This clearly coincides with the traditional understanding of the 6 Pleiades being this asterism. However, an older text the Taittirīya saṃhitā names seven of them explicitly:

#### अम्बा दुला नित्तिर् अभ्रयन्ती मेघयन्ती वर्षयन्ती चुपुणिका नामासि ॥

Likewise, in Greek tradition there was an older record of 7, with Aratus claiming that one of them had faded away. This is generally believed to be Ambā (Greek Pleione). This has led to the debate that originally the 7 were of comparable brightness with 28 Tauri fading away later. The parallel between the arya and yavana records suggests that indeed such a fading might have happened within collective human memory.

**Rohinī:** 1. Hindu tradition has always identified Rohinī with  $\alpha$  Tauri (Aldebaran); hence, the single star assigned to Rohiṇī should be taken as this one. The name is also indicative of the redness of he star.

**Mṛgaśiras:** 3. Some take this to be the 3 stars on the head of Orion  $(\phi_1, \phi_2, \lambda \text{ Orionis})$ , which is how they are denoted in classical astronomy. This remains a possibility even in the Vedic reckoning. In Vaidika reckoning the core of Mrga was Orion with the arrow of Rudra shot through it (See below). The arrow is identified with the three stars of the belt of Orion ( $\zeta, \epsilon, \delta$  Orionis), known in the Veda as the Invaka-s. Hence, we should entertain the possibility that originally the 3 could have meant the Invaka-s. In support of this proposal we note that the Taittirīya Brāhmana 1.5.1.1 states:

#### सोमस्येन्वका विततानि ॥

Soma's are the Invaka-s [which are] drawn [from the bow to be fired].

This explicitly identifies Mṛgaśiras with the Invaka-s. In the Katha tradition the nakṣatra is identified with the Marut-s. The Marut-s are the one major class of deity not associated with a naksatra in the Taittirīyaśruti. This makes sense given that they are the sons of Rudra and flank him in the sky (see below). However, it should also be noted that Somarudrā is ancient coupling found throughout the śruti.

Ārdrā: 1. The Taittirīya, Katha and Atharvana-śruti-s are all consistent in identifying Ārdrā with the god Rudra. Going by classical astronomy, the coordinates of the yogatārā of Ārdrā would indicate  $\gamma$  Geminorum. There is another commonly held view that  $\alpha$  Orionis is  $\bar{A}$ rdra. The Vedic text says there is a single star associated with it and the evidence within the Veda suggests that it was not  $\gamma$  Gem. The Taittirīyas-śruti states:

#### आर्द्रया रुद्रः प्रथमान एति ।

With Ārdrā, Rudra goes forth luminescent.

This means that he original  $\bar{A}$ rdra was likely seen as a bright star. Now, while both  $\alpha$  Ori and  $\alpha$  Canis Majoris are bright stars,  $\alpha$  Ori is too close to Mrgasiras making  $\alpha$  CMa more likely. It is also closer to the position of the later yogatāra when projected on to the ecliptic. In the brāhmana on the naksatra ritual in TB 1.5.1.1 the name Ārdrā is replaced by Mrgayu which is always understood as Sirius:

रुद्रस्य बाहू मृगयवः । The two arms of Rudra are the Mṛgayu-s (The "hunters"- i.e. stars in CMa).

Further, this is supported by the evidence of the Aitareya Brāhmana on the famed Āgnimāruta-śastra recitation, which we provide in full:

## प्रजापतिर् वै स्वां दुहितरम् अभ्यध्यायद् । Prajāpati desired his own daughter.

## दिवम् इत्य् अन्य आहुर् उषसम् इत्य् अन्ये । The sky some say and others the Usas.

#### ताम् ऋश्यो भूत्वा रोहितम् भूताम् अबुयैत् ।

Having become a stag he approached her as a red deer.

#### तं देवा अपश्यन्: आकृतं वै प्रजापतिः करोतीति ।

The gods saw him: "Prajāpati is doing something that is not done".

#### ते तम् ऐछन् य एनम् आरिष्यत्य् एतम् अन्योन्यस्मिन् नाविन्दंस्

They wished to punish him. They did not find find him among one another.

#### तेषां या एव घोरतमास् तन्व आसंस्, ता एकधा समभरंस्

Whatever most terrible forms exist they brought together in one place.

#### ताः सम्भृता एष देवो ऽभवत्, तद् अस्यैतद् भूतवन् नाम ।

Brought together they became this god; hence, his name has the word "bhūta" (Bhūtapati)

#### भवति वै स यो ऽस्यैतद् एवं नाम वेद ।।

He who knows his name thus prospers.

#### तं देवा अब्रूवन्नः अयं वै प्रजापतिर् आकृतम् अकर्, इमं विध्येति ।

The gods told him: "this Prajāpati has verily done a deed that is not done; pierce him."

#### स तथेत्य अब्रवीत्, स वै वो वरं वृणा इति । वृणीष्वेति ।

He said: "So be it" He also said: "let me choose a boon from you." They said: "Choose".

#### स एतम् एव वरम् अवृणीतः पशूनाम् आधिपत्यं ।

He chose this boon: "The overlordship of animals".

#### तद् अस्यैतत् पशुमन् नाम पशुमान् भवति यो ऽस्यैतद् एवं नाम वेद ।

Hence, his name contains the word animal (Paśupati). He who knows this name thus becomes rich in cattle.

#### तम् अभ्यायत्याविध्यत्, स विद्ध ऊर्ध्व उदप्रवत ।

He took aim and pierced him [Prajāpati]. Pierce thus he flew upwards.

#### तम् एतम् मृग इत्य् आचक्षते ।

They know him as the [constellation of the] deer.

#### य उ एव मृगव्याधः स उ एव स, या रोहित् सा रोहिणी,

He who is the piercer of the deer [is the asterism] known as that, she who is red is [is the star] Rohi $\eta$ ī.

#### यो एवेषुस् त्रिकाण्डा सो एवेषुस् त्रिकाण्डा ।

That which is the 3-pointed arrow is the [asterism] of the three-pointed arrow.

#### तद् वा इदम् प्रजापते रेतः सिक्तम् अधावत्, तत् सरो ऽभवत् ।

The semen of Prajāpati spilled out and ran; it became the lake [the Milky Way].

#### ते देवा अब्रुवन्: मेदम् प्रजापते रेतो दुषद् इति ।

The gods said let this semen of Prajāpati not get ruined.

#### यद् अब्रुवन्ः मेदम् प्रजापते रेतो दुषद् इति, तन् मादुषम् अभवत् ।

As they said: "let the semen of Prajāpati not be spoiled" it became "not spoiled"

#### तन् मादुषस्य मादुषत्वम् ।

The state of not being spoiled is of not spoiled.

#### मादुषं ह वै नामैतद् यन् मानुषं।

From "not spoiled" is the name which is "man".

#### तन् मादुषं सन् मानुषम् इत्य् आचक्षते परोक्षेण,

That which is "not spoiled" they know by metaphorical meaning to be linked to man.

#### परोक्ष-प्रिया इव हि देवाः

For it is as if the gods like the mysterious.

This narrative clearly identifies Rudra with the killer of Prajāpati. Prajāpati is unambiguously identified with the constellation of Orion and positioned with respect to Rohiṇī. Moreover, he himself becoming a red deer to pursue Rohiṇi could be related to the red star,  $\alpha$  Ori, being in the constellation of the Mṛiga. Further, he is described as "flying above" his hunter when pierced. Together these identify the constellation of Rudra his hunter with CMa. Hence, we may conclude that originally  $\alpha$  CMa was Ārdrā. Further, the name Ārdrā means moist indicating a link with the wet season. The Iranian equivalent of Sirius, Tishtrya is also associated with rain suggesting that Ārdrā inherits this ancestral association. This identification is retained in medieval Indian astrolabes and celestial globes, where  $\alpha$  CMa is labeled as Ārdrā-Lubdhaka (meaning Ārdrā the hunter). We may also not the the appearance of the Marut-s later in this brāhmaṇa explaining the Āgnimāruta-śastra might provide the link between the Marut-s and Mṛgaśiras seen in the Kaṭha-śruti.

**Punarvasū:** 2. There is a fairly uniform agreement that the two stars of Punarvasū are  $\alpha, \beta$  Geminorum (Castor and Pollux). The simile of these two stars is frequently encountered. In the Rāmāyaṇa (1.29.25; Gita Press edition):

#### प्रविशन् नाश्रम-पदम् व्यरोचत महामुहिः । शशीव गत-नीहारः पुनर्वसु-समन्वितः ॥

The refulgent great sage (Viśvāmitra) entered the path of the āśrama, even as the moon free from fog accompanied by the two stars of Punarvasū (i.e. Rāma and Lakṣmaṇa.

Vedic tradition associates Punarvas $\bar{u}$  with the goddess Aditi. Under this association the simile of the moon in Punarvas $\bar{u}$  is again seen in the Rāmāyaṇa (6.67.161):

#### कुम्भकर्ण-शिरो भाति कुण्डलालङ्कृतं महत् । आदित्येऽभ्युदिते रात्रौ मध्यस्थ इव चन्द्रमाः ॥

The giant head of Kumbhakarna adorned with earrings shone forth even as the moon having arisen at night in the midst of the constellation of Aditi (i.e. between Castor and Pollux).

The Taittirīya Saṃhitā has an incantation in the Soma procurement ritual (in 1.2.4):

### अदितिर् अस्य उभ्यतः शीर्ष्णी सा नः सुप्राची सुप्रतीची सं भव ।

You are Aditi, she is two-headed, be good to us together eastward and westward.

The Śatapatha Brāhmana (3.2.4.16) states:

अदितिर् अस्य उभयतः शीर्ष्णीति स यदेनया समानं सिद्वपर्यासं वदित यदपरं तत्पूर्वं करोति यत्पूर्वं तदपरं तेनोभयतः शीर्ष्णी तस्माद् आहादितिर् अस्य उभयतः शीर्ष्णीति ॥

You are Aditi, the two-headed. Because he speaks the right in an inverted manner

and makes what comes first come last, and what comes last first by her, therefore she is double-headed. That is why he says: "You are Aditi, the double-headed".

These allusions indicate that the two-headed nature of the constellation of Gemini was transposed on to the presiding deity Aditi and the inversion associated with the two heads along with the eastward and westward paths might indicate an old memory of the start of the ecliptic at Aditi in prehistoric times (>7000 years BP). It is also clear from the incantation "sahasra-vṛd iyam bhumiḥ..." used in the Aruṇaketuka ritual that originally this constellation also represented the Aśvin-s, just as it represented the Dioscuri in the Greek tradition.

**Puṣya/Tiṣya:** 1. This single star is generally taken to be  $\delta$  Cancri, which was close to the ecliptic. However, we have evidence from the Rgveda that originally it meant the Praesepe open cluster (M44). The great ṛṣi Śyāvāśva Ātreya:

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युष्मादंत्तस्य मरुतो विचेतसो रायः
स्याम रथ्यो३ वयंस्वतः ।
न यो युच्छति तिष्यो३ यथां
दिवो३स्मे रारन्त मरुतः सहस्रिणम् ॥ RV 5.54.13c
May we bear as charioteers of the great wealth
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given by you, discriminating Maruts. That which does not depart, even as Tiṣya does not from the sky, to us in thousands, Marut-s rejoice.

The comparison of great riches, in thousands, is indicative of the great mass of stars in the open cluster supporting the identification of the old Tiṣya with M44. The name Tiṣya seems homologous to the Iranian Tishtrya. In later Iranian tradition, the asterism is equated with Sirius. The Iranian tradition associates Tishtrya with an archer deity comparable to Rudra, the archon of Ārdrā, which as noted above is also associated with moisture. Thus, the later Iranian Tishtrya conceals a Rudra-class deity under the patina of the Zoroastrian counter-religion. It is possible that this shift of the name Tishtrya to Sirius was a secondary development under Mesopotamian influence, which went along with the Zoroastrian demonization of overt Rudra-class deities.

 $\bar{\mathbf{A}}$ śleṣā: 6. This constellation is associated with the snakes in Vedic tradition. It corresponds to the head of the Greek constellation of Hydra, suggesting that the link to a snake goes back to early Indo-European times or earlier (given Mesopotamian serpentine associations of the constellation).  $\bar{\mathbf{A}}$ śleṣā is specifically associated with the head of the snake. Hence, the 6 stars should correspond to  $\theta, \zeta, \epsilon, \delta, \sigma, \eta$  Hydrae. The Vedānga Jyotiṣa states that the summer solstice began in the middle of this constellation suggesting that it was composed around  $\approx 3350$  YBP. The Maitrāyaṇī Brāhmaṇa Upaniṣad (a text with explicit knowledge of the precession of the Pole Star) again mentions a similar configuration, with the solsticial colure passing in between  $\bar{\mathbf{A}}$ ślesā and the Magha-s on one side and bisecting Śravistha on the other ( $\approx 3500$  YBP)

**Maghāḥ:** 6. While today Magha is associated with  $\alpha$  Leonis, the Vedic tradition indicates 6 stars for this asterism. This would mean it included the entire sickle of Leo:  $\epsilon, \mu, \zeta, \gamma 1, \eta, \alpha$  Leonis. The Atharvaveda Nakṣatra sūkta states that the summer solstice happened in this asterism pointing to an earlier period than above ( $\approx 4350 \text{ YBP}$ ).

**Phalgunyaḥ:** 4. There are 2 Phalguni-s Pūrva and Uttara together with 4 stars. These can be identified with  $\theta$ ,  $\delta$  Leonis (pūrva) and  $\beta$ , 93 Leonis (uttara). There is a persistent tradition seen across the TS and various Brāhmaṇa texts such as, Taittirīya, Śatapatha, Kauśītaki and Pañchaviṃśa that the year-beginning corresponded with the Phālguna full moon. The TB, KB and ŚB even state that the last night of the year is

in Pūrva-Phalguni and the first night of the next year is in Uttara-Phalguni. The KB further states that the yajamāna should take dīkṣa for the Somayāga on the prathamī after the Taiṣa or Māgha new moon. It adds that while Taiṣa new moon is more current, it or the Māgha new moon mark the time just before when the sun embarks on its northern journey. This would correspond to the memory of an even earlier period than above of  $\approx 5000$  YBP. This is also consonant the statement in the Vivāha-sūkta (RV 10.85.13) which states that for the marriage of the solar goddess Sūryā, the oxen are whipped up in the Agha (=Magha) [month] and the procession sets forth in the Phālguna (=Arjuni) [month].

**Hasta**: 5. Tradition unequivocally identifies Hasta with Corvus. Hence the 5 principal stars of Corvus are the 5 listed for Hasta:  $\alpha, \beta, \gamma, \delta, \epsilon$  Corvi.

Citrā: 1. Spica ( $\alpha$  Virginis) in Virgo. According to us the nakṣatra-s is mentioned in the RV (contra white indological opinion). In the TB 1.5.1.3 Citrā is described as an additional star of the god Indra. The fifth layer of the altar for the Somayāga has a set of 27 bricks known as the Nakṣatra bricks. These are laid down with the incantations provided in TS 4.4.10. Here again Indra is specified as the deity of 3 different nakṣatra-s, the first of these being Citra.

Svāti: 1. Arcturus in Bootes. Also known as Niṣṭyā in the Yajurveda.

**Viśākha:** 2.  $\alpha, \beta$  Librae. The asterism of the Ikṣvāku-s according to the Rāmāyaṇa. They are specified with a dual ending as Viśākhe, suggesting that, as with Purnarvasu, the two start forming the nakṣatra were an important aspect of it. The name implies a branching fork. We will see below that the early Indo-Aryans probably conceived this asterism as part of a large constellation of a tree with branching forks.

Anurādhā: 4.  $\beta, \delta, \eta, \rho$  Scorpii.

**Jyeṣṭhā:** 1. Antares. The TB/TS 4.4.10 describes this star as a second Rohiṇī keeping with the red color of the star. It is the second of the Indra-nakṣatra-s in the reckoning used in the TS incantation of the piling of the naksatra bricks.

 $M\bar{u}la/Vicrtau$ : 7. These seven stars are in the tail of Scorpio. Which stars exactly were identified with the asterism is hard to say but most likely were:  $\zeta, \eta, \theta, \iota, \kappa, \upsilon, \lambda$ . TS 4.4.10 specifies these a dyad of stars termed the Vicrtau (the releasers) and assigns them as the second nakṣatra of the Pitaraḥ. The more common assignment of the asterism is to the goddess of the nether regions, Nirṛti. In the Rāmāyaṇa, it is associated with Rākṣasa-s who are supposed to have emanated from Nirṛti. The late NK Nakṣatra-sūkta of the AV tradition also identifies it as the constellation of Mother Pṛthivī along with (or as) Nirṛti.

It should be noted that if Mūla is the root and twin Viśākha-s the dual branches, Jyeṣṭhā could mean the great one/the foremost and signify the trunk. Thus it is possible that in old Aryan uranography, the whole Scorpius-Libra complex was seen as a tree rooted at the nether end of the ancient equinoctial colure. This probably gave rise to the Vaiṣṇava concept of the viśākha-yupa mentioned in the Pañcharātra texts and illustrated in some of the early Vaiṣṇava iconography in the form of images and coinage from the Kuṣāṇa age.

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**Aṣāḍhā-s**: 8. These eight stars are in the two Aṣāḍhā-s: The pūrva group may be identified with the 4 stars associated with the spout of the teapot of Sagittarius:  $\delta, \gamma, \epsilon, \eta$  Sagittarii. The uttara group may be identified with the handle of the teapot:  $\phi, \sigma, \tau, \zeta$  Sagittarii. The Taittirīya Brāhmaṇa's nakṣatra-sūkta identifies the Pūrva group with divine waters (yā divyā āpaḥ payasā sambabhūvuḥ ) and see all other waters as emerging from it. We take this identification as an allusion to the bright center of the Milky Way just next to the

Pūrva group. The late NK Nakṣatra-sūkta of the AV tradition identifies these waters as being generated by the god Parjanya and belonging to Varuna (Vārunī).

Abhijit: 1, Vega. This star is way off the ecliptic and is omitted in latter lists. However, its name meaning the all conquering is equivalent to the Iranian name for the same star Vanant. This suggests that it might have been an ancient asterism associated with victory. The Aitareya brāhmaṇa indicates that it was used to mark the day just before the svarasāman days during the annual sattra. We believe Tilak rightly realized that this was the reason why Abhijit was important in the early period to mark this ritual day. This was in turn is critical for marking the days leading up to the Viśuvān day. However, due to precession this role of Abhijit became superfluous in later times resulting in it no longer being useful in the nakṣatra list.

The Mahābharata preserves a curious tale regarding Abhijit's fall and also involves other asterisms pointing to a precessional legend. The great god Indra tells the god Skanda:

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अभिजित् स्पर्धमाना तु रोहिण्या कनीयसी स्वसा ।
इच्छन्ती ज्येष्ठतां देवी तपस् तप्तुं वनं गता ।।
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Abhijit, the younger sister, contested with Rohiṇī

The goddess desiring seniority, she went woods to perform austerities.

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तत्र मूढो ऽस्मि भद्रं ते नक्षत्रं गगनाच् च्युतम् । कालं त्व् इमं परं स्कन्द ब्रह्मणा सह चिन्तय ।।
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I am dumbstruck by the fall of that auspicious star from the sky.

O Skanda, you with Brahmā should think about this important [issue] regarding time [i.e. the calendar].

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धनिष्ठादिस् तदा कालो ब्रह्मणा परिनिर्मितः ।
रोहिण्याद्यो ऽभवत् पूर्वम् एवं संख्या समाभवत् ।।
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Time was specified by Brahmā starting with Dhaniṣṭhā around [the ecliptic]. Formerly, they started from Rohini and thus their number was complete around [the ecliptic].

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एवम् उक्ते तु शक्रेण त्रिदिवं कृत्तिका गताः ।
नक्षत्रं शकटाकारं भाति तद् वह्नि-दैवतम् ।। Mbh 3.219.8-12 ("Critical edition")
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Thus told by Indra, Krttikā-s went to the third heavenly realm.

There they shone forth in the shape of a cart presided by the god Agni.

While several authors have attempted to decode this legend, it remains rather obscure. The only clear parts are the memory of a transition from the Rohini period to the Kṛttikā period and an allusion to the loss of Abhijit from the nakṣatra reckoning. This might relate to Abhijit having lost its utility as a marker of important rituals close to the solstices due to precession.

Śravaṇa/Śroṇa: 3. These are quite unambiguously identified as  $\alpha, \beta, \gamma$  Aquilae. It is possible that it was associated with the celestial footprint of Viṣṇu in his three strides.

Śraviṣṭhā/Dhaniṣṭhā: 5. While the Nakṣatra-kalpa gives 5 stars for this asterism the older Taittirīya-śruti seems to indicate that there were 4. In any case this group is unambiguously identified with Delphinus. The older reckoning likely took 4 of the brightest stars,  $\alpha, \beta, \gamma, \delta$ . The NK included one further the star. Corresponding to what was noted above for Āśreṣa, the Vedāṅga Jyotiṣa notes that the sun starts its northern movement in the first part of Śraviṣṭhā (i.e. the solsticial colure passes through it). This would imply a period of  $\approx 3300$  YBP. The NK sūkta of the AV tradition associates this constellations with the 108 comets (Śvetaketu-s), whose significance remains entirely unclear.

Śatabhiṣā: 1 This is today taken to be  $\lambda$  Aquarii. Given the predilection for bright stars, even is farther away from the ecliptic, in the early nakṣastra system, it remains unclear if this was the star meant in the Vedic texts. Hence, Fomalhaut ( $\alpha$  Pisces Austrinisis) originally being this star is not implausible. There is an asterism of Iranians known as Satavaēsa, which we hold to be the equivalent of the Vedic one. The Iranian asterism was associated with the sea while the Vedic one with Varuṇa.

**Prosthapada-s:** 4. The two Prosthapada-s are given 2 each. Identifying each pair with the two vertically adjacent stars of the 4 stars comprising the square of Pegasus seems the most likely for these. The NK sūkta of the AV tradition identifies the first two stars with the twin Śunāsīra-s. Evidence from other texts suggests that Śunāsīra-s were more likely to have originally meant the Sirius and Procyon. The same sūkta sees the first of these asterism as feeding the ancestors as a pair of breasts. However, the name Prosthapada means a stool. This indicates that the square of Pegasus was conceived as a four-legged stool. From the references in the RV we may infer that Dadhikra, the flying horse, probably stood for a constellation whose rising before dawn was significant to the ārya-s. Hence, the possibility of a mapping of Dadhikra onto Pegasus needs deeper exploration.

Revatī: 1. Classical astronomy identifies it with  $\zeta$  Piscium. While close to the ecliptic, at mag 5.2 it is a really undistinguished star. Given the preference for bright stars, it looks unlikely that the Vedic system intended  $\zeta$  Piscium to be Revatī. It is quite possible that originally a brighter star like  $\beta$  Andromedae was used. Narahari Achar holds that the goddess Pathyā Revatī mentioned in the Svastisūkta (RV 5.51.11) of the Atri-s implied this asterism. While the asterism and the goddess seem to have a real connection, it is not entirely clearly if this was intended in the said sūkta. While NK2 indicates a single star for Revatī, the Nakṣatrasūkta of the TB assigns of dual deities to it – Puṣṭipati Paśupā. One of those is transparently named as Pūṣan but who is the other one? Most likely it is the goddess Pathyā Revatī, whom the Gopatha Brāhmaṇa of the AV holds to be the wife of the goat-riding Pūṣan. Together they are the guardians of paths, and also of horses, cows, other domesticates and food. Pūṣan is also coupled with Soma and Rudra, who is also the protector of cattle. Hence, they could also be the second deity coupled with Pūṣan. However, Pathyā Revatī seems more likely given other evidence: The Aitareya Brāhmaṇa mentions the sun following the path laid out by Pathyā (Revatī). Given the solar connections of Pūṣan, it is quite possible that this was the intended coupling.

**Aśvayujau:** 2.  $\alpha, \beta$  Arietis. Concerning this asterism there is a problematic issue concerning the the Yajurvaidika incantation known as the Uttaranārāyaṇa (Found in both KYV and SYV traditions). This text describing the cosmic Viṣṇu bearing a special name Nārāyaṇa states:

अहोरात्रे पार्श्वे । नक्षंत्राणि रूपम् । अश्विनौ व्यात्तम् ॥

His sides are the day and the night. His form [is comprised of] the asterisms. The two Aśvin-s his jaws.

Here Nārāyaṇa is identified with the constellations, even as Prajāpati was earlier identified with them in the ritual of the Nakṣatra-rūpin Prajāpati specified in the Yajurveda (Taittirīya Brāhmaṇa 1.5.2.2). This identification continues through later Vaiṣṇava tradition. The ritual itself has further continuity going down to the Gupta age where it is described by the naturalist Varāhamihira. He states that by performing it a man becomes attractive to women and women attain beauty. Now the question is whether the account of the Aśvayujau at the mouth of Nārāyaṇa have some significance for the date of this text. The text is clearly a late one clinging to the edge of the Vaidika productions but when exactly was it composed. If one takes Aśvayujau sensu strictu to imply the start of the nakṣatra cycle having shifted to this asterism it would yield a date of around 2300 YBP. This date resonates with the ideas of the white indologists who ascribe late dates to all Vedic texts. However, we do not think the mouth should be taken as the beginning of the nakṣatra cycle. Rather, that position is usually reserved for the top of the head. Hence, the mouth likely implies the nakṣatra after it which might imply the equinoctial colure passing before Aśvayujau suggesting a date of around 3300-3000 YBP. Alternatively, a shift in the reckoning of the first nakṣatra to Aśvayujī might have been registered around 800 BCE in line with the very late composition of the text.

One also wonders if the tale of Prajāpati being fitted with a goat's head after his beheading by Rudra's agent Vīrabhadra alludes to the transition of the equinoctial colure to somewhere in Aries, with the Prajāpati's new goat/ram's head representing Aries. One could object that the constellation of Aries as a ram came from the Mesopotamian tradition and was not known to the Indians until the Yavana invasion. However, in earlier Mesopotamian tradition the constellation stood for a farmer or a servant and the ram assignment came much later. Hence, it cannot be ruled out that the ram identification was prevalent elsewhere and secondarily came to Mesopotamian. If the original source was not India, then it could have been acquired by Hindus from the same source as the Mesopotamians.

Bharanī: 3. This triad is understood to be the compact triangle formed by 41, 39, 35 Arietis.

By the early medieval period, Hindu asterism-reckoning had changed to a degree from the Vedic period with the choice of stars closer to the ecliptic. Brahmagupta says in his Khaṇḍakhādhyaka (1.9.1-2):

ब्रह्म+इन्द्र-यम-हरि+इन्दु-त्रितयम् षड्-विह्न-भुजग-पित्र्याणि । मैत्राषाड-चतुष्कम् वसु-रवि-रोहिण्य इति पश्च ॥

Brahmagupta gives the number of stars in each asterism as (rather economically):

Kṛttikā: 6; Rohiṇī: 5 (likely whole Hyades+Aldebaran); Mṛgaśiras: 3; Ārdrā: 1; Punarvasū: 2; Puṣya: 1; Āśleṣā: 6; Maghā: 5; Phalguni-s: 2 each; Hasta: 5; Citrā: 1; Svāti: 1; Viśākha: 2; Anurādhā: 4; Jyeṣṭhā: 3; Mūla: 1; Aṣāḍhā-s: 4 each; Abhijit: 3; Śravaṇa: 3; Śraviṣṭhā: 5; Śatabhiṣā: 1; Proṣṭhapada-s: 2 each; Revatī: 1; Aśvayujau: 2; Bharaṇi: 3.