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Astronomy and religion in the Roman temples of *Qsar Naous* (Ain Akrine, Lebanon)

Rodríguez-Antón, Andrea
andrea.rodriguez-anton@incipit.csic.es
INCIPIT-CSIC (Santiago de Compostela, Spain)

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Resumen

A unos 30 kilómetros al norte de Biblos, los dos templos romanos de Qsar Naous (Ain Akrine, Líbano) están situados en la cima de una colina a 700 metros sobre el nivel del mar, en la cresta del monte Líbano, con vistas al valle de Al-Koura al este y al Mediterráneo al oeste. Los templos de Qsar Naous, que probablemente se desarrollaron sobre un lugar de culto anterior, comparten características arquitectónicas con varios santuarios de la misma época presentes en otras regiones del Líbano. Además, los dinteles de los propileos (puerta de entrada) de ambos templos de Qsar Naous incorporan simbología celeste. Presentan decorados con relieves de discos solares, que aparecen en otros templos romanos del Líbano como el de Chhim y que sugieren una advocación solar.

Aunque la ubicación elevada y una buena visibilidad debieron ser factores clave para la creación de este paisaje sagrado, el análisis arqueoastronómico ofrece resultados interesantes que podrían relacionar el complejo sagrado con fenómenos astronómicos vinculados a acontecimientos religiosos o productivos relevantes en esta región en la Antigüedad. Este trabajo muestra un estudio sobre las orientaciones de los dos templos romanos de Qsar Naous y su relación con el paisaje circundante. Los datos fueron tomados in situ en la primavera de 2018 y presentan interesantes conexiones entre el diseño y la ubicación de estos templos con elementos topográficos sobresalientes y momentos relevantes del ciclo solar, el calendario religioso y las actividades productivas.

En concreto, estos templos siguen la pauta general de orientaciones encontradas en los monumentos griegos y romanos hacia el este y se orientan hacia acontecimientos astronómicos importantes, como la salida del sol en el solsticio de verano y, probablemente, la primera visibilidad de las Pléyades. Las menciones a las Pléyades aparecen en las fuentes griegas, así como en otras referencias de Oriente Próximo, y el solsticio de verano representaba un momento general de renovación en todo el Mediterráneo. Curiosamente, estos resultados concuerdan con orientaciones halladas anteriormente en monumentos antiguos del Mediterráneo y en otros templos romanos del valle libanés de la Bekaa, como el templo de Baco y Júpiter Heliopolitanus en Baalbek y el gran templo de Niha, al sur de Ain Akrine. Además, estudios anteriores realizados en el Monte Líbano revelan diversas formas de continuidad cultual desde el periodo helenístico hasta el romano y que los monumentos romanos pueden haber sido construidos sobre restos anteriores. En este sentido, los resultados de este estudio aportan claves sobre la naturaleza, pero también sobre el origen, de los cultos realizados en Qsar Naous, las diferencias entre las divinidades adoradas en cada templo o los procesos de transformación de los ritos y creencias anteriores. En conclusión, se ofrece una aproximación local para comprender mejor el complejo contexto religioso del Oriente Próximo romano.

Palabras clave: arqueoastronomía, Oriente Próximo romano, templos Romanos, religión romana, arqueología del Líbano.

Abstract

About 30 kilometres north of Byblos, the two Roman temples of Qsar Naous (Ain Akrine, Lebanon) are situated on a hilltop 700 meters above the sea level along the ridge of Mount Lebanon, overlooking the Al-Koura Valley to the east and the sea to the west. Probably developed over a previous cultic site, the temples of Qsar Naous share architectonical features with several sanctuaries from the same period in modern Lebanon. Furthermore, astral symbology is present in the lintels of the *propylaea* (entrance gate) of both temples of Qsar Naous, decorated with reliefs of sun disks, are present in further Roman temples in Lebanon like the one at Chhim and could suggest a solar advocation.
Although the high location and a good visibility should have been key factors for the creation of this sacred landscape, an archaeoastronomical analysis suggests interesting results that could relate the sacred complex to astronomical phenomena connected to relevant religious or productive events in the region in Antiquity. This work shows a study on the orientations of the two Roman temples of Qsar Naous and their relation to the surrounding landscape. The data were taken on site in the spring of 2018 and they present interesting connections between the design and location of these temples with conspicuous topographic features and relevant moments of the solar cycle, the religious calendar and the productive activities.
In particular, these temples follow the general pattern of orientations found in Greek and Roman monuments towards the east and face important astronomical events, such as the sunrise in the summer solstice and, tentatively, the first visibility of Pleiades. References to Pleiades appear in Greek sources as well as in other Middle East references and the summer solstice represented a general moment of renewal across the Mediterranean. Interestingly, these results agree with orientations previously found in ancient monuments in the Mediterranean and other Roman temples in the Lebanese Bekaa valley, such as the temple of Bacchus and Jupiter Heliopolitanus in Baalbek and the great temple in Niha, south of Ain Akrine.
In addition, previous surveys in Mount Lebanon reveal various forms of cultic continuity from the Hellenistic to the Roman periods and that Roman monuments may have been built on previous layers. In this sense, the results of this study could provide hints about the nature, but also about the origin, of the cults performed in Qsar Naous, the differences among the divinities worshipped in each temple (if any) or the processes of transformation of the previous rites and beliefs. In conclusion, this is a local approach to better understand the complex religious context of Roman Near East.

Keywords: Archaeoastronomy, Roman Near East, Roman temples, Roman religion, archaeology of Lebanon.

Introduction

Since the annexation of the territory of present-day Lebanon to the Roman Republic in 64 BCE by Pompey, a great amount of temples were built with an appreciable similar design. This happened mostly in a relatively narrow time span of 250 years, from Augustus to Philip the Arab rules, transforming the natural and religious landscapes by creating new or reusing previous sacralized spaces. This was a prosperous period in what became Roman Syria province, an intellectual and economic hub in the eastern Empire where numerous majestic architectural projects were developed, such as the temples of Niha, Baalbekand several structures in Lebanese Roman and Phoenician towns. Given the multilingual and cultural diversity of this territory prior to the Roman presence, the religious life in this context was also complex and still remains relatively unknown.

Even though the temples represented some break with previous local religious structures, the appearance of new buildings did not necessarily entail a rupture with the past traditions. Instead, they may represent an element of religious continuity (Butcher, 2013). In this sense, various ritual elements must have been preserved or assimilated to the Roman practices, as well as new traditions invented, producing symbols or changing the meaning of the old ones in this strongly dynamic region in Antiquity.

This paper presents an archaeoastronomical study of the Roman temples of *Qsar Naous*, in the Lebanese Maronite town of Ain Akrine, which explores their potential religious significance. Attending to features in the surrounding landscape and the design of these temples, the aim is to determine whether astronomy played a role in their architecture at the time of construction. If so, the astronomical features observed could provide valuable information about the use of these spaces, the deities worshipped or when the rituals were performed. It is also fundamental to consider further additional aspects, such as how Roman and indigenous religions interacted. Finally, even though this analysis only includes two of the hundreds of temples in Roman Syria, a local approach is fundamental to understand different kinds of processes and connectivity networks in this complex cultural scenario.

Qsar Naous temples: landscape and structure

About 30 kilometres north of Byblos, the two Roman temples of *Qsar Naous* (Ain Akrine, Lebanon) are situated on a hilltop 700 m above the sea level along the ridge of Mount Lebanon, overlooking the Al-Koura Valley to the east and the sea to the west, in an area with the most extensive olive orchards in Lebanon.

The complex consists in two temples, one smaller and better preserved to the east (Temple 1), in which the whole platform is still appreciable, two columns with Corinthian capitals and part of the walls. The second is in the west side of the area (Temple 2), which should have been more imposing but that suffered intensively the vicissitudes of history (Figure 2). The two of them are surrounded by a *temenos*, or sacred precinct, and they had monumental

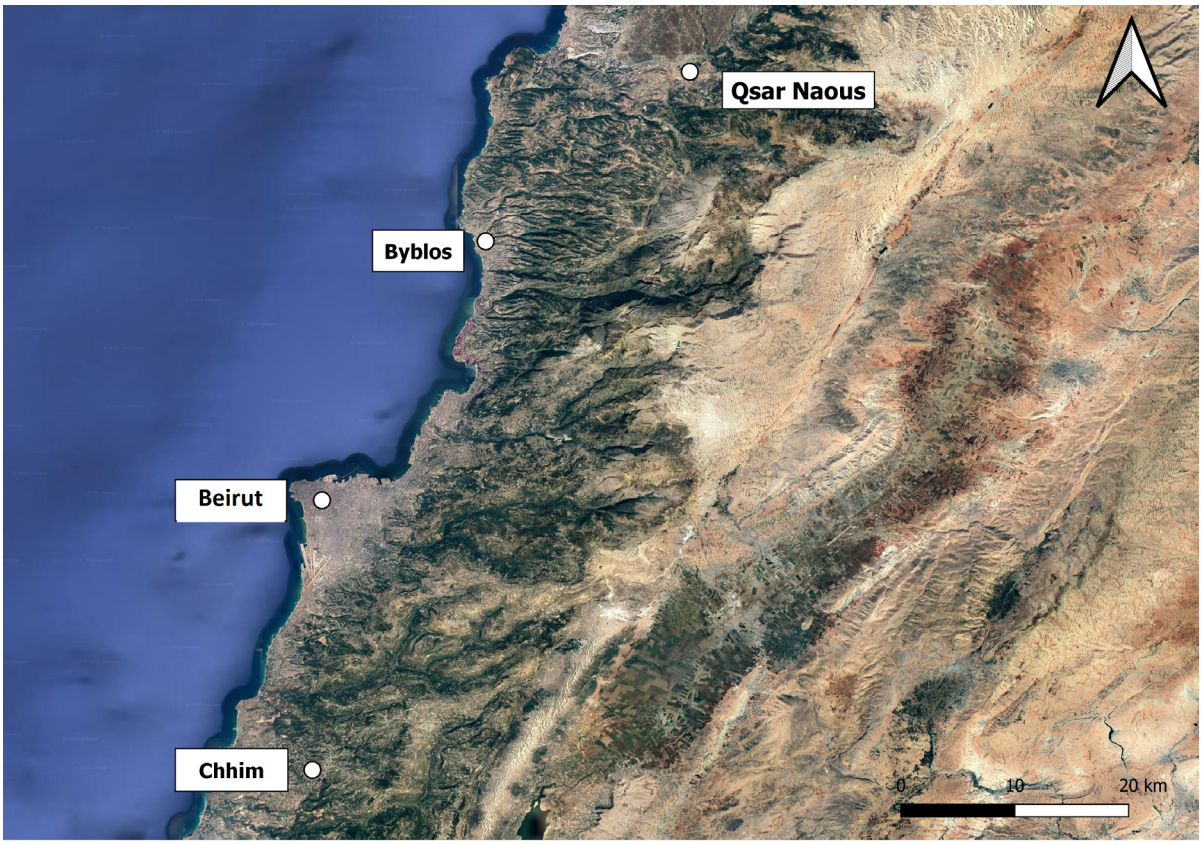

Figure 1. Map with the location of Qsar Naous temples and other sites in Lebanon.

Figure 2. Roman temples of Qsar Naous (Ain Akrine, Lebanon). In particular, East temple (left) and entrance to the West temple (right). Sun disk, probably from the tympanum of the West temple in Qsar Nous. Credits: Images of the temples by Andrea Rodríguez-Antón and Sun disk from Taylor (1967, Fig. 112).

entrances with rich decorations and staircases, like the ones of the large temple in Niha and the Bacchus temple in Baalbek (Taylor 1967, 114-117).

Probably developed over a previous cultic site, the monumentalization and location of the *Qsar Naous* complex at relatively high altitude should have made them visible from great distances as well. The lack of proper excavations made difficult to stablish an exact chronology for their construction, although it was estimated around the first half of the 2nd century CE, as inferred by the observation of structural and decorative parallels with other Lebanese temples such a that in Chhim (Butcher 2013; Aliquot 2008, 233-238). Some authors suggest that they may have been in use at least until Byzantine era, in the 4th century CE (Jakubiak 2020), mostly inferred by the presence of a necropolis and remains of a later settlement, attesting a transformation of the uses of the space and the cults performed in Late Antiquity (Aliquot 2008, 233-2, 253). Interestingly, the lintels in both temples were decorated with floral motifs and winged sun disks, which are not currently at their original site (Aliquot, 2008)(Figure 2, right). Similar solar decorations appear in the Lebanese Roman temples of Chhim, Large Temple of Niha, Bachus temple in Baalbek, Sfire or in Byblos and were common in Phoenicio-Punic architecture and Egyptian funerary constructions during the Hellenistic and Roman periods. In general, this imagery was present in the Syro-Palestinian region at least from the 9th to the 7th centuries BCE, as attested by two *naiskoi* found in Sidon (Gubel, 2002; 71-2, 82-3).

Previous works:

As previously mentioned, religion in Roman Near East was not homogeneous but had a wide myriad of symbols, habits and cults coexisting. Therefore, when studying the religious phenomenon in this region, one should consider the diversity of these elements. A possible role of the sun in the orientation of Roman Lebanese temples was firstly suggested for those around Mount Hermon by G. Taylor (1967). This author proposed that the monuments should have faced the sunrise on the day of the ritual celebration to ensure the direct illumination of the statue of the divinity. More recently,astronomical patterns have been found in a number of Roman towns and military sites in modern Jordan (Rodríguez-Antón et al. 2016) and in various Roman-dated sanctuaries in the Lebanese Bekaa Valley (Magli, 2019; Magli 2021), mostly developed in mountainous territories with Phoenician influences.

Even though there are a variety of studies exploring celestial elements in the Phoenician religion and architecture, these have been done mostly out of their homeland in modern Lebanon, since sometimes they are better known by their remains in the diaspora. Interesting astronomical elements are found in the Pre-Islamic temples of North Africa, where Phoenicians arrived approximately in the 1st millennium BCE founding several colonies (Esteban et al. 2001), as well as in the Iberian Peninsula. Here, most of the Phoenician-Punic sanctuaries present predominantly orientations towards the solar rising arc and are mainly advocated to solar deities, such as Punic

Baal Hammon, Roman Saturn (Esteban and Escacena2013; Escacena 2015). Luni-solar rising orientations were also identified in a wide sample of sacred ancient buildings along the Mediterranean, from the Iberian Peninsula to the Near East, with regional similarities within culturally related areas (González-García and Belmonte 2014).

Methodology and data analysis

The archaeoastronomical data here analysed were obtained *in situ* in 2018 by using a Silva tandem with compass and clinometer, in order to obtain the azimuth and the altitude of the horizon. The instruments allow accuracies of ±0.25º and ±0.5º, respectively, and the values of the compass were corrected of magnetic declination. This magnitude was obtained considering a recent World Magnetic Model (WMM)[1].

The structures measured were the sides of both temples, mainly the main axes and the line towards each temple face to. The altitude of the horizon was considered in those directions, since it affects appreciably the visibility of the astronomical objects observed from the site, and the astronomical declination (δ) was calculated. This magnitude allows the direct comparison with the position of a celestial body independently of the location on the Earth of the observer and the error estimated is ±0.75º. The present horizon from the temples is blocked by the iconic cedars, so the altitudes were taken from various points around and compared with values measured on digital terrain models.

Orientation of Qsar Naous temples

Both temples face the eastern horizon towards the mountains of Mount Lebanon, with declination values within the lunisolar range, coinciding with position of the rising sun in the first days of May and November for the east temple (1) and the summer solstice for the one at the west (2) (Table 1).

Together with the orientation of the buildings, attention was paid to the most prominent topographic features around. As mentioned, their location in such a high spot not

Structure	Coords.	A (º)	h (º)	δ (º)	Features
Temple 1	34.28,35.84	72.5	4	16.71	11th May/ Nov Pleiades?
Temple 2	34.28,35.84	64.0	4	23.57	Summer Solstice

Table 1. Orientation data of the Qsar Naous temples, indicating azimuth of the main axes (A), the altitude of the horizon in the direction the temples open to (h), astronomical declination (δ) and possible astronomical features according to the data. Temple 1 is the one a the east and Temple 2 at the west of the complex.

[1] https://www.ngdc.noaa.gov/geomag/calculators/magcalc.shtml (Accessed on 15/03/2023)

only should have favoured their visibility from long distances but allows the observation of a majestic 360º panorama of the landscape. Curiously, the sun rises in the winter solstice over the highest peak as observed from the temples, possibly mount *Deiroune*, but in the absence of more evidences or similar patterns observed in other nearby sites is not possible to ensure whether this was intentional or a mere coincidence.

Discussion and conclusions

The results of the archaeoastronomical study of this sanctuary complex possibly reflect the role of specific celestial bodies in the religious practices performed in those sites. First, the location of sacralized spaces on such a high spot could be motivated to favour the communication with celestial deities (possibly locals), an idea reinforced by the relation between both orientations to suggestive astronomical phenomena compatible with the indigenous religious context. In addition, the preference for the eastern horizon towards lunisolar-rising directions agrees with patterns previously identified in Roman and Phoenician temples in Lebanon (Magli 2021) and in other areas of the Near East and the Mediterranean. One example is the Muses temple in Baalbek, orientated towards the summer solstice sunrise (Magli, 2019; Magli, 2021) and, out of Lebanon, the same pattern appears in various Phoenician and Roman monuments in North Africa or the Iberian Peninsula (Escacena 2015; Esteban 2002; Esteban and Escacena 2013; González-García et al. 2015).

Observing Temple 2, it is noteworthy that in the Maghreb all of those that faced the rising sun in the summer solstice were mainly devoted to Punic god Ba'al Hammon, or Apollo and Saturn in Roman times, deities with strong solar and fertility attributes (Esteban et al. 2001) and commonly represented by solar disks. Furthermore, the summer solstice was a relevant moment of the year in the Near East, incorporated in the architecture of various Mediterranean cultures (Belmonte et al. 2012,Esteban 2002, González-García and Belmonte 2011), and was a moment in which rituals of the death and resurrection of solar deities were celebrated, particularly in the Caananite and Phoenicio-Punic context (Escacena 2009).

Secondly, similar orientations to the one of Temple 1 (c.16.7º) have been also identified in Roman Lebanese sanctuaries (Magli 2021) as well as in Phoenician, Punic towns and monuments in North Africa (Esteban 2001), commonly associated to fertility rites. Although Phoenicians were not under a unified state, they shared cultural and organizational aspects such as the calendars, which inherited many elements from the Caananites (Escacena 2009,Stieglitz 2000). Specifically, in one of these calendars the month that may have fallen in May approximately is MTN, probably assimilated to the term *matan* that means 'await ripening' (Stieglitz 2000). This date, which could later have been adapted to the Roman Julian calendar, is highly suggestive since this period should have coincided with such a fundamental ephemerid in the agrarian cycle as the harvest. Furthermore, an alternative interpretation for the orientation of Temple 1 is in the stars, specifically in the

Pleiades, whose declination in the 2nd century BCE coincided with c.14.8º. However, its heliacal rising occurred in the first half of the second century BCE around 11th May, coinciding with a solar declination of c.16.9º. This event was associated in previous Greek times with the harvests (Boutsikas and Ruggles 2011) and Pleiadic orientation has been also suggested for the *Iupiter Heliopolitanus* temple in Baalbek (Magli, 2019; Magli 2021).Given these evidences, a combination of both stellar and solar phenomena could have determined the orientation of Temple 1, coinciding with such an important moment in the productive cycle, that was probably accompanied by some kind of rituals and celebrations.

In this scenario, it seems reasonable that the patterns found in Qsar Naous reflect the existence of some kind of shared conceptions of time across the Near East and regions further west regulated by the observation of the sky, connected to the productive activities and particular fertility rites that involved celestial, especially solar, deities from the Phoenician Pantheon (Azize, 2005). In addition, the results agree with the incorporation of particular astronomical features in the constructive patterns previously observed for many ancient Mediterranean cultures.

Despite the interpretation of sun disks as solar deities is matter of controversy (Waliszewski and Wicenciak 2015), the construction on such a high place and the coincidence of the orientations with the rising sun on such special moments of renewal in the ancient Near East, such as the summer solstice and the harvests, may reinforce the solar nature of the divinities worshipped in Qsar Naous. Furthermore, the solar iconography at this site has been attributed to representations of god Baal-Helios −more common in the coastal and Lebanese mountain regions rather than in the Bekaa valley−, similar to those in Sfire, Ain Harsha and, especially, Chhim (Jakubiak, 2020, 296-7).

In conclusion, whether non-equivalent orientations of both temples correspond to the same worship, to a coexistence of different beliefs or to different expressions of a similar cult cannot be ascertained at this stage, but these results strongly suggest the devotion to solar deities in this place, likely with fertility attributes. And all this undoubtedly offer clues about the productive practices, the creation and transformation of sacred spaces, the tutelary divinities worshiped, the reckoning of time and, in general, how these activities were managed through the observation of the sky.

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