Notes on the orientation of the town-planning of Nicopolis, the capital of Old Epirus

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05 May 2024

# Notes on the orientation of the town-planning of Nicopolis, the capital of Old Epirus

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Here we will consider the town-planning of Nicopolis, that is the City of the Victory, founded by Augustus and capital of the Old Epirus. We will consider in particular the orientation of its main street, the decumanus. The varatio, that is the geometry based on right triangles used to determine the orientation of the town-planning, has a ratio of 1:3. No astronomical orientation seems to be evident for the town. It exists just a faint link to the beginning of the spring at Roman time, that is to the sunrise on 7 February.

Nicopolis, the City of the Victory, also known as Actia Nicopolis, was the capital of the Roman province of Epirus Vetus. The city was founded by Gaius Julius Caesar Octavianus, to commemorate his victory at the Battle of Actium in 31 BC over Antony and Cleopatra. The town is located on the promontory of Epirus, close the harbour of the ancient town of Actium. This foundation of a town for the commemoration of a victory echoed a tradition dating back to Alexander the Great. Detailed information about Nicopolis are available in [1].

Here in the following, two passages from Suetonius and Cassio Dio on the foundation of the town.

Suetonius: "*He reduced Egypt to the form of a province, and then to make it more fruitful and better adapted to supply the city with grain, he set his soldiers at work cleaning out all the canals into which the Nile overflows, which in the course of many years had become choked with mud. To extend the fame of his victory at Actium and perpetuate his memory, he founded a city called Nicopolis near Actium, and provided for the celebration of games there every five years; enlarged the ancient temple of Apollo; and after adorning the site of the camp which he had occupied with naval trophies, consecrated it to Neptune and Mars.*"

http://penelope.uchicago.edu/Thayer/E/Roman/Texts/Suetonius/12Caesars/Augustus*.html

Cassio Dio: "*1 Such was the naval battle in which they engaged on the second of September. I do not mention this date without a particular reason, nor am I, in fact, accustomed to do so; but Caesar now for the first time held all the power alone, and consequently the years of his reign are properly reckoned from that day. In honour of the day he dedicated to Apollo of Actium from the total number of the captured vessels a trireme, a quadrireme, and the other ships in order up to one of ten banks of oars; and he built a larger temple. He also instituted a quadrennial musical and gymnastic contest, including horse-racing, — a "sacred" festival, as they call those in connexion with which there is a distribution of food, — and entitled it Actia. 3 Furthermore, he founded a city on the site of his camp by gathering together some of the neighbouring peoples and dispossessing others, and he named it Nicopolis. On the spot where he had had his tent, he laid a foundation of square stones, adorned it with the captured beaks, and erected on it, open to the sky, a shrine of Apollo.*" https://penelope.uchicago.edu/Thayer/E/Roman/Texts/Cassius_Dio/51*.html

For what concerns the year of the foundation of the town, here in the following some discussions.

"*In the summer of 30 BC Octavian made for Egypt by way of Asia and Syria. He captures Alexandria on 1 August 30. Suetonius (Aug.18) informs us that Octavian in 30 BC, after his visit to Alexander's tomb in Egypt, founded Nikopolis (=Actium) and initiated the Actian Games: Quoque Actiacae victoriae memoria celebratior et in posterum esset, urbem Nicopolim apud Actium*

*condidit Iodosque illic quinquennales constituis et apmliatio vetere Apollinis tempo locum castrorum, quibus fuerat usus, exornatum navalibus spoliis Neptuno ac Marti consecravit."* [2].

"*Previously to the death of Herod, Quinctilius Varus succeeded Caius Sentius Saturninus as governor of Syria. Three coins have been discovered with a figure representing the city of Antioch, ... It was for some time unknown from what epoch or event these numbers were to be calculated. They might have had reference to the Actiac victory itself, or to the ara, or games, instituted in celebration of it. In Egypt the Actiac aera was computed from its reduction by the Romans, or nearly a year after the battle. It commenced on the first day of the month Thoth (29th August), which was the beginning of the Egyptian year. In this year also, according to Cassiodorus, Nicopolis was founded, and games were there instituted in commemoration of the Actiac victory. But after Cleopatra's death Augustus remained some time in Egypt, and then passing through Syria, returned to the isle of Samos for the winter. During the first half of the following year, a.u. 723-4, or BC 29, he lingered on the further side of the Aegean; and could scarcely have visited the scene of his great contest with Antony, or founded Nicopolis, the site of which lay on the western side of Greece, until the autumn of B.C. 29, when he was on his way to Italy. Among the honors decreed to Augustus during his absence was a festival in commemoration of the Actiac victory. After his return, this festival was held for the first time at Rome in B.C. 29; and was subsequently celebrated every fifth year.*" [3].

Let us consider the town-planning of Nicopolis (the town-planning of ancient towns is discussed in [4]). As told in [5], the "city grid follows a Hippodamian system with a cardo maximus and decumanus maximus crossing at the centre of the city. The city was composed of four land districts, each measuring twenty per twenty actus allowing the construction of twelve cardines (North-South roads) and four decumani (East-West roads) (TEICHMANN, 2009:12; ZACHOS, 2007:161)." In [5], References [6] and [7] are given.

In Livius (https://www.livius.org/articles/concept/hippodamian-plan/), the Hippodamian Plan is discussed in the following way. "The Hippodamian Plan is, essentially, a city plan that looks like a gridiron [that is, a frame of parallel bars or beams, typically in two sets forming a grid]. An early example is Tell el-Amarna in Egypt, dating back to the fifteenth century BCE; Enkomi is a bit younger. The idea was introduced in the Greek world by Hippodamus of Miletus, who designed the new port of Athens, Piraeus, in the mid-fifth century BCE." Actually, Hippodamus probably was not the first Greek "to base a city on a gridiron plan. His hometown Miletus," had a gridiron plan too. Consequently, "we must assume that "Hippodamian Plan" is something of a misnomer."

Examples of ancient cities having the Hippodamian plan are "Pella and Olynthus in Macedonia, Halicarnassus in Caria, Alexandria in Egypt, Apamea and Dura Europos in Syria, Seleucia in Babylonia, Acragas on Sicily, Priene in Ionia, Laodicea in Phrygia, Byllis in Illyria, and Taxila in the Punjab, and Emporiae in Catalonia. The Romans would use this design as well, using it when they expanded existing cities (e.g., Pompeii) and founded new cities (e.g, Augusta Emerita). They called the housing blocks insulae, "islands"."

In the case of Nicopolis, Ref. 5 is telling the following. "Having evidence of some city gates and roads, and based on the geophysical results which indicated the location and projection of decumanus and cardo maximus, the street grid of the ancient city can be reconstructed, based on a plan of Zachos (2007). In order to achieve this task, the particular plan was georeferenced on the rectified Quickbird satellite image (from Google Earth) and topographic plans that indicated in detail the surface and excavated monuments of the site. Similarly, rectification of all the geophysical maps helped to overlay the interpretation results on the above cartographic layers and study the validity of the plan. Reconstruction of the city grid and suggested a few corrections of the suggested plan (Fig. 11)." [5].

A plan of the town is given in the Figure 1, according to Zachos. The decumanus is partially running under the Byzantine Walls. By means of Google Earth (Figure 2) we can have the azimuth of the decumanus, which is equal to 108.5°.
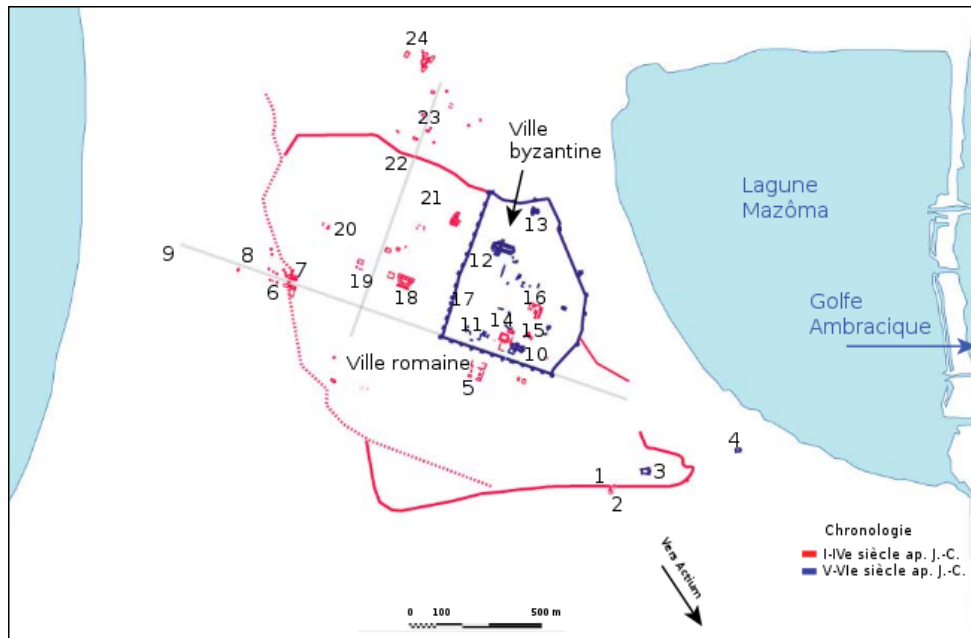
Figure 1. This is a map created in 2005 by Marsyas for Wikimedia (available at the web page https://commons.wikimedia.org/wiki/File:Overall_plan_Nicopolis-fr.svg). Caption tells "Dessin personnel exécuté avec Adobe Illustrator (d'après la carte de L. Zachos, dessinée par D. Kalpakis, et éditée par le Comité scientifique de Nicopolis, Nicopolis. Archaeological Map (s.l.n.d.).".
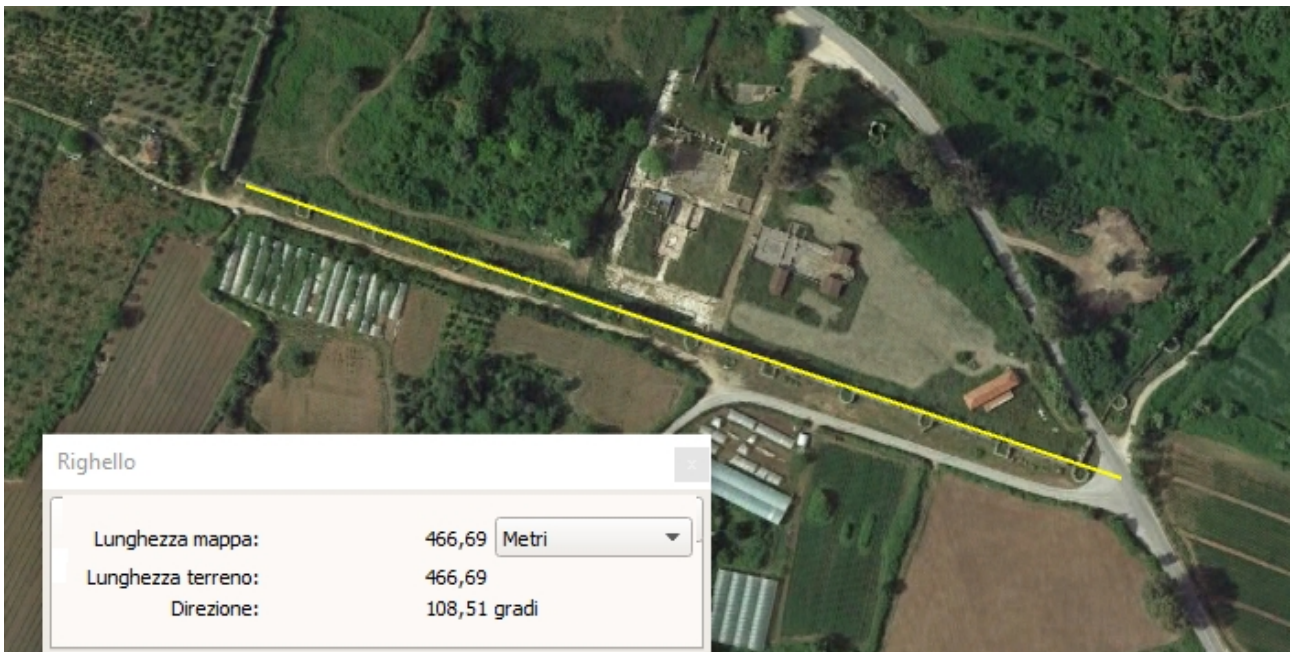


Figure 2. This is an image obtained by means of Google Earth (many thanks for the precious tools that we can use for studying ancient towns). It is showing the walls. The azimuth of the decumanus is 108.5°.

In [8], an article which is discussing a possible astronomical orientation of Augusta Salassorum according the sunrise on winter solstice, Nicopolis is mentioned. In [8], it is told the following "In any case, interestingly, the solstitial tradition might have been continued by Octavian at Nicopolis, founded in 31 BC in commemoration of the victory at Actium. Indeed, in spite of the clear east–

west topography of the narrow isthmus where the town was built, based on geophysical survey and analysis of the site (Sarris et al. 2010) the Decumanus of Nicopolis appears to be skewed at an azimuth not far from that of midwinter sunrise."

It seems then that Bertarione and Magli consider Nicopolis linked to the sunrise on winter solstice. Actually, if we consider the azimuth of the decumanus and compare it to the sunrise azimuth, we find dates of 2 November and 7 February (Figures 3 and 4). Then, it is not true that Nicopolis has "an azimuth not far from that of midwinter sunrise". If we use software Suncalc.org for instance (see Figure 3), we see that the difference is of 12 degrees.
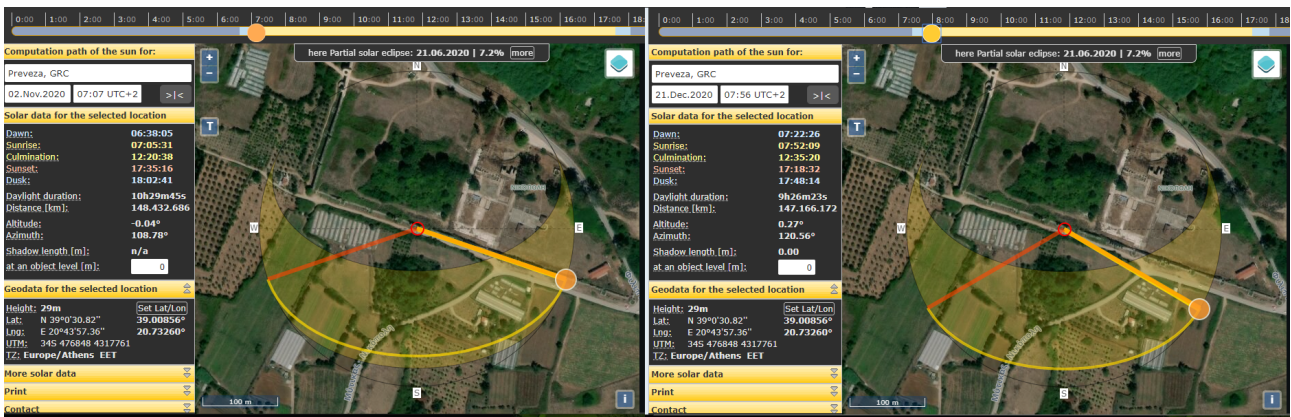


Figure 3. Many thanks to Suncalc.org which allows to evaluate on satellite images the direction of sunrise. The direction of the decumanus has the same azimuth of sunrise on 2 November. The sunrise azimuth on the winter solstice is 12 degrees larger.
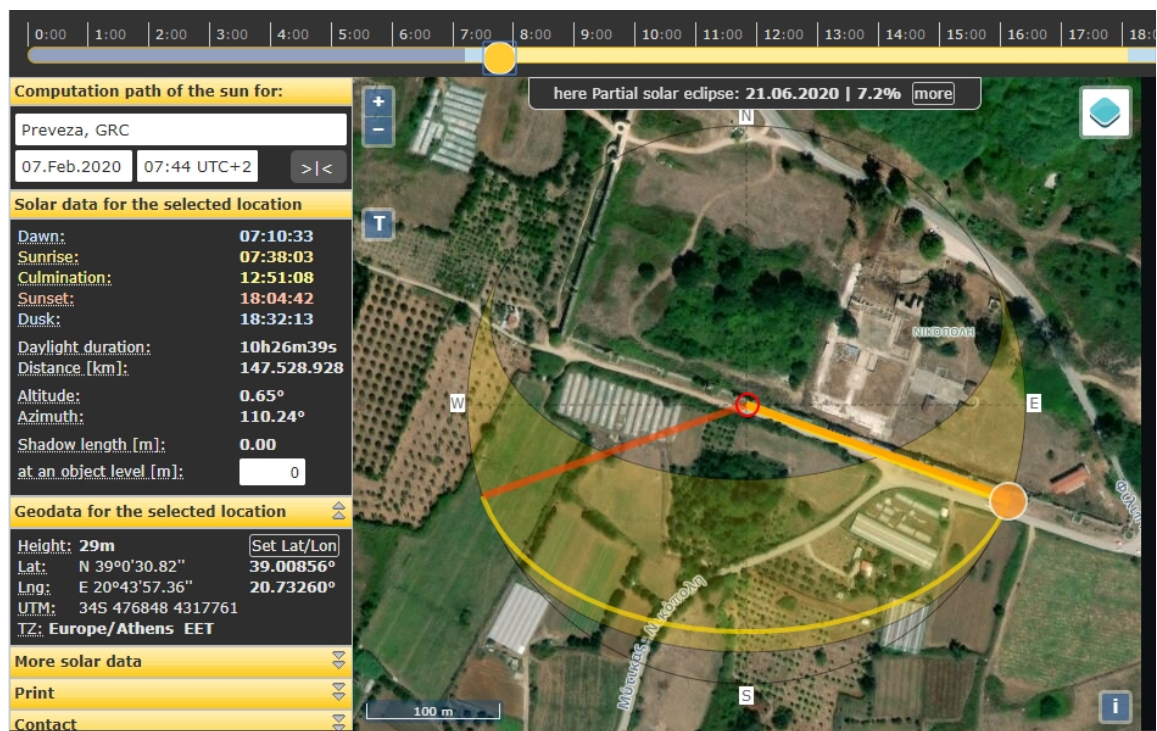


Figure 4. Many thanks to Suncalc.org which allows to evaluate on satellite images the direction of sunrise. The direction of the decumanus has the same azimuth of sunrise on 7 February too.

In any case, the coincidence of the directions of sunrise and decumanus are giving dates which are different from that of the battle (2 September). It seems therefore that no specific astronomical orientation had been decided for this town. However a faint possibility exists, that the direction of the decumanus was given astronomically according to the beginning of the spring at Roman time [9]. In fact, the four seasons of the Roman calendar were different from our seasons, in the sense that they started on days which differed from those that we are using today. In his Books on Agriculture, Varro shows that the Roman seasons started on the Cross Quarter-days instead than on the Quarter-days of the year as it happens today. The spring began on February 7, sun entering Aquarius.



Figure 5. Many thanks to ACME Mapper for the satellite image. The orange line has the direction of the decumanus of Nicopolis. As we can easily see, it is representing a line of "best fit" in the landscape.

Then, the astronomical orientation does not seem so strong to be claimed for the foundation of the town. A topographical orientation, according to a long axis of the land, seems to be more appropriate as we can see from the Figure 5. If we use the "varatio", that is the geometry of right triangles underlying the Roman land surveying methods (see the discussions in [10-18]), we find that Nicopolis was planned according to a right triangle having catheti with ratio 1:3.

As a conclusion, after the examination of possible astronomical orientations, it seems being the topographical orientation of the town-planning the one which makes more sense.

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