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Original
Alexandria of Egypt and the Archaeoastronomy / Sparavigna, Amelia Carolina. - In: SSRN Electronic Journal. - ISSN 1556-5068. - ELETTRONICO. - (2021). [10.2139/ssrn.3138100]

Availability:
This version is available at: 11583/2956447 since: 2022-02-26T10:18:27Z

Publisher:
SSRN Elsevier

Published
DOI:10.2139/ssrn.3138100

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12 October 2024

Alexandria of Egypt and the Archaeoastronomy

Amelia Carolina Sparavigna

Department of Applied Science and Technology, Politecnico di Torino, Torino, Italy

Email: amelia.sparavigna@polito.it

Torino 05/06/2021

Abstract

Alexandria of Egypt was founded by Alexander the Great. The layout of the town was based on a grid of streets, crossing at right angle. The main street was the Dromos, also known as Canopic Road. Here we consider this road and the astronomical orientations of it, as given by literature. Solar orientations had been considered by Martin Erdmann in 1883, in the framework of a theory proposed by Heinrich Nissen in 1869. Nissen, defined by Clive Ruggles as one of first modern archaeoastronomers, answered proposing an orientation according to the rising of Canopus and Regulus, the heart of the Lion. More recently, the orientation of the Canopic Road was linked to the sunrise on Alexander's birthday. However, in this case, chronology becomes relevant for the conversion from a lunisolar calendar to the proleptic Julian calendar. Actually, it is impossible to give the precise date of Alexander's birthday.

Keywords: **Alexander the Great, Alexandria of Egypt, Dromos, Canopic Road, Agathos Daimon, Tetrapylon, Alexandrian festival, Sirius, Canopus, Regulus.**

Subject Areas: **Archaeoastronomy.**

1. Introduction

Reading the book entitled Ancient Town Planning, published in 1913 and written by Francis John Haverfield, eminent British historian and archaeologist, we find mentioned Alexandria of Egypt as the most famous town founded by Alexander the Great himself. By the ancient writers - Haverfield tells - Alexandria was definitely recorded to have been laid out having a chess-board planning, with a long street, the Canopic Road, "running through it from end to end for something like four miles" [1]. A chess-board town-planning means that Alexandria was based on a regular grid of streets, crossing each others at right angles, and parallel to two main streets, which were the main orthogonal axes of the town.

Such a regular planning was displayed by many other towns of the Macedonian Age. The regular grid planning was also used by the Romans for their towns and colonies. In the book written

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by Haverfield and in the case of the Roman town of Timgad, we can find mentioned that a possible orientation of its Decumanus according to the sunrise had been proposed. The Decumanus is the main road of the Roman land subdivisions or towns. Then, we could ask ourselves, had Alexandria of Egypt and its main street an astronomical orientation too? Here we show some contributions from literature about the archaeoastronomy of Alexandria, including the first works made by Martin Erdmann, the stars proposed by Heinrich Nissen and other recent publications on the subject.

2. The Macedonian Age

It was the Macedonian Age that brought with it, besides the foundation of many towns, a more systematic, if not new, method of town-planning. According to Francis Haverfield, "no architect or statesman is recorded to have invented or systematically encouraged it". However, it is clear that Alexander himself and his architect, Dinocrates of Rhodes, employed it at Alexandria in Egypt, "and this may have set the fashion" [1].

After Alexander and his army conquered a large part of the western Asia and the Egypt, over this newly-opened world for the Macedonians, and for the Greeks in general, the Alexander's successors ruled for many generations. "Graeco-Macedonian cities were planted in bewildering numbers throughout its length and breadth. Most of these cities sprang up full-grown; not seldom their first citizens were the discharged Macedonian soldiery of the armies … [These towns] are easily recognized by their names, which were often taken from those of Alexander and his generals and successors, their wives, daughters, and relatives" [1]. Actually we find several towns called Seleucia, afterwards Seleucus I Nicator, one of the Diadochi, that is, one of the Alexander's friends and generals. Moreover we have at least three Apamea, and others towns named Laodicea and Antiochia. In this manner, the Nicator recorded himself, his wife Apama, his mother Laodice and his father Antiochus for the centuries in the future. "Indeed, two-thirds of the town-names which are prominent in the later history of Asia Minor and Syria, date from the age of Alexander and his Macedonians" [1].

Like Alexandria of Egypt, the towns founded by the Macedonians were laid out with the above mentioned regular planning. Let us report a fundamental observation that Haverfield is giving in his book. First, we have to note that some town-planning approximating a chess-board planning “had been here and there employed in the century before Alexander”. However, “When his conquests and their complicated sequel led, amongst other results, to the foundation of many new towns, it was natural that the most definite form of planning should be chosen for general use”. Probably, the adoption of this form of planning was helped by the military character of the founders, Alexander’s generals, and of the discharged soldiers, who were the first inhabitants of a large part of these towns. Moreover, as noted by Haverfield, when the chess-board town-planning came into common use in the Roman Empire, it was applied to many of the new Roman towns, the 'coloniae', which were populated by “time-expired soldiers" [1]. One of the best example of a Roman colonia, as told in [1], is Torino, which has perfectly preserved its original layout till today. The town has extended the Roman grid in its modern parts.

3. Mahmud Bey

For what concerns Alexandria of Egypt, Haverfield continues telling that, at the time he was

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writing, the details of the plan were not known with any certainty. "Excavations were conducted at the instigation of Napoleon III in 1866 by an Arab archaeologist, Mahmud Bey el Fallaki". According to this archaeologist, the town had a regular, rectangular plan, with a grid of seven streets which ran east and west and thirteen streets which ran north and south. The house-blocks were probably varying in size about a general measure of 300 x 330 metres. More recent research, however, - tells Haverfield - has not confirmed Mahmud's plans. "The excavations of Mr. Hogarth and M. Botti suggest that many of his lines are wrong and that even his Canopic Street is incorrectly laid down." And that it is better to ignore his work and start 'de novo' [1]. Other excavation, carried out by Dr. Noack in 1898-9, seemed to show "that the ancient streets which can now be traced beneath Alexandria belong to a Roman age, though they may of course follow older lines, and that, if some items in Mahmud's plans are possibly right, the errors and omissions are serious" [1]. Refs. 2-5 are the references given by Haverfield, concerning Alexandria's planning. The conclusion given by Haverfield is that we may agree that Alexandria was laid out with a rectangular town-plan, but we "cannot safely assume that Mahmud has given a faithful picture of it" [1].

For what concerns the orientation of the towns of Macedonian foundation, in [6,7], we have discussed Apamea and Gerasa, showing that they have an astronomical orientation. In the case of Apamea, the town is aligned with the two main axes parallel to the cardinal directions. In the case of Gerasa, the town has the main axis aligned along the direction of the sunrise on winter solstice. The fact that an ancient town could have been oriented according to the direction of the sunrise was noted also by Haverfield in his book, when he discusses the town of Timgad [1,8]. When Haverfield was writing, it was known that the emperor Trajan founded in 100 AD a 'colonia', "on ground then wholly uninhabited, and peopled it with time-expired soldiers from the Third Legion which garrisoned the neighboring fortress of Lambaesis … [the town had four gates and] According to Dr. Barthel, the street which joins the east and west gates was laid out to point to the sunrise of September 18, the birthday of Trajan" [8-10]. Walter Barthel was a scholar that followed the assumption proposed by Heinrich Nissen of the roman towns oriented to sunrise on the foundation day, the day that - according to Nissen - was celebrated by a festival. As we will see in the following, Nissen analyzed Alexandria too.

It is seems a remarkable fact that Timgad was planned to celebrate the birthday of a Roman emperor. We could ask ourselves whether previous examples existed or not of such a practice. Actually, from literature, the answer seems being positive because at least an example existed: Alexandria of Egypt. And then, let us see what we know about the astronomical orientation of this town.

4. Alexander the Great and the sun

In [11], Robert Bauval discussed the hypothesis that he made about the orientation of Alexandria of Egypt, in a book that he and Graham Hancock wrote in 2004 (the alignment of Alexandria was proposed by Bauval as from the "Note on Authorship" at the front of the book) [12]. According to Bauval, the layout of the new city founded by Alexander, "shows an Egyptian influence that, for lack of better words, can be termed 'solar', a sort of 'City of the Sun' to emulate perhaps in some ways [the ancient Egyptian town of] Heliopolis" [12]. To stress the link between astronomy and the orientation of Alexandria, Bauval notes that the Canopus Street (Canopic Street in Haverfield's book), which headed towards the town of Canopus, had at its

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ends a west gate that was called the Gate of the Moon (Selene), and an east gate that was the Gate of the Sun (Helios). Then Bauval continues with remarkable observations.

In Egypt, Alexander was proclaimed “pharaoh”; in this role, he was associated to the sun god, Amun-Re. "As pharaoh, Alexander was regarded as the reincarnation of Horus", becoming in this manner an Egyptian solar Horus-king. In Egypt, the birth of a Horus-king was linked to the heliacal rising of Sirius, "which in antiquity took place near the time of the summer solstice” [13]. At the epoch of Alexander, the heliacal rising of Sirius seen from Alexandria, happened on the 20 July (Julian calendar), “and it cannot be a coincidence” - Bauval stresses - that many classical authors fixed the date of Alexander’s birth, now himself a ‘solar’ king of Egypt, also on that same date".

A simulation of the heliacal rising of Sirius is given in the Figure 1.

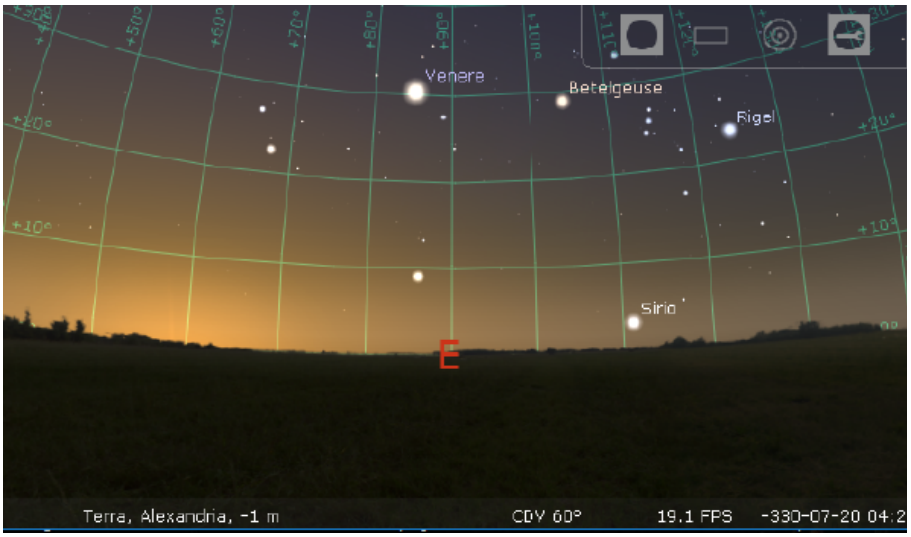

Fig.1: Stellarium software can be used for the simulation of the heliacal rising of Sirius at Alexandria in 331 BC.

Let us mention another sentence from [11], which is telling that, “knowing the mystical aspect of Alexander’s birth and his coronation as a divine Horus-king of Egypt”, and considering the fact that many temples in Egypt were aligned along the direction of the sunrise on some important day of the year (for instance, the Karnak temple which is aligned to the sunrise on winter solstice), it is highly probable that the Canopus Way, the main axis of Alexandria, “which was probably decided by Alexander himself”, had a solar alignment fixed on the sunrise of the day associated to Alexander’s birth as a solar divinity [11]. That is, let us tell, to the birthday of Alexander as a sun-god.

In Plutarch’s Life of Alexander, the author tells us that Alexander was born the 6th of Hecatombaeon. In the ancient Attic calendar, the Hecatombaeon was the first month, starting on the first new moon immediately following the summer solstice. Bauval in [11] tells that it “has

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been calculated that in 356 BCE the year of Alexander's birth, the new moon after the summer solstice was on 14 July (Julian), thus Alexander's birth fell six days later on 20 July". Let us stress that Bauval is mentioning a Julian date. Bauval is also telling that, at the time, the sun was in the sign of Leo, and this can explain "the leonine attributes that ancient writers associated with Alexander". As concluded by Bauval, Alexander himself probably determined the alignment of the Canopus Way with a direction of about 24 degrees north of east, "targeted the rising sun on the 20 July Julian" [11].

The alignment of the Canopus Way has been determined to be 24 degrees north of east, within half a degree of accuracy [11], in the 1860s by astronomer Mahmoud El Falaki Bey, who carried out excavations [11]. Let us therefore consider the date of 20 July (Julian). From the conversion table given in the link en.wikipedia.org/wiki/Conversion_between_Julian_and_Gregorian_calendars, at the time of the foundation, the date was of 15 July (Gregorian). Today, if we use suncalc.org software for instance, we find a sunrise azimuth of 64 degrees. Curiously, due to a small change in the tilt of the Earth axis, we can see today, on 20 July, the same alignment that existed at the time Alexandria was founded (Figure 2).

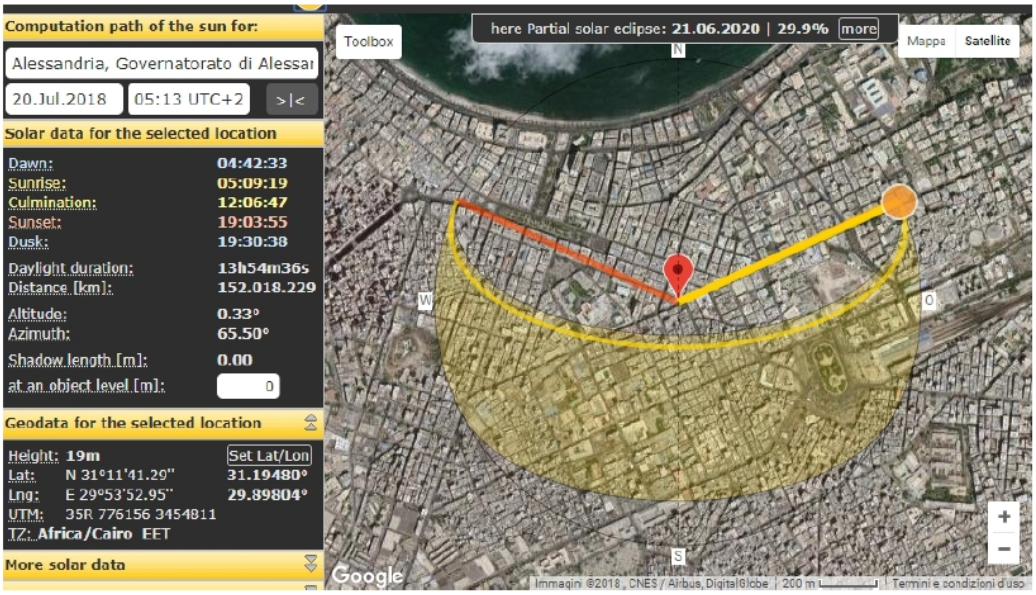

Fig. 2: Alexandria and the solar azimuth on 20 July (Image Courtesy: Suncalc.org). The yellow line represents the sunrise direction, the red one the sunset direction. The yellow-shaded area is representing the apparent motion of the sun in the sky during a year. The sunrise azimuth is of about 66 degrees, in the same direction of the Canopus way.

Julian dates are also used in [14], as told by the authors Luisa Ferro and Giulio Magli, who considered an astronomical orientation according to Alexander's birthday. In [14], we do not find the Alexander's birth as a solar divinity, as previously proposed by Bauval in 2004 [11]. Let us

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stress that Bauval's proposal was made in the framework of an Egyptian solar year, that is a solar calendar, and was linked to the heliacal rising of Sirius. In [14], Ferro and Magli examined the orientation of the town orthogonal grid, based on a main longitudinal axis, and showed this axis orientated to the rising sun on the day of Alexander the Great's birth (the authors considered the effect of a small change of the Earth's axis too by means of software @StarryNight Pro 6.0). In [14], for what concerns the date of July 20, for Alexander's birth, the authors are mentioning Ref.15. The same author of [15] is giving a detailed discussion of the date of the foundation of Alexandria, in [16].

5. A lunisolar calendar

Let us note that in [11,12] and in [14], the concern of Haverfield about the true direction of Canopic Road is not considered. The discussion in [14], like discussions in [11,12], is based on the date of Alexander's birthday. In [14], it is told this date was given by Plutarch. In [11,12], it is the date of the birth of a solar divinity, determined by the heliacal rising of Sirius.

As in the case of Timgad, the hypothesis is that the alignment of the town was based on the sunrise of the day on which the founder was born. The town of Alexandria was, therefore, celebrating forever the birthday of the founder. In the case of [11,12], it is the symbolic birthday of Alexander as a solar Horus-king. It is possible that this fact was known by the ancient world and that, for this reason, the Roman emperor Trajan desired to emulate Alexander the Great, when he founded his new town of Timgad. However, some problems exist.

A problem concerns the date mentioned by Plutarch. In fact, we could ask ourselves, when was Alexander born? Alexander the III, that is Alexander the Great, was born in Pella, Macedonia. Plutarch is giving the day and month in the Attic or Athenian calendar. However, in the Athenian calendar, and in other ancient Greek calendars, the number of days was based on the cycle of the phases of the moon. To have agreement of the lunar months to the season cycle, every three years a month was added to have the calendar in line with the seasons.

"Be that as it may, Alexander was born early in the month Hecatombaeon, the Macedonian name for which is Loüs, on the sixth day of the month, and on this day the temple of Ephesian Artemis was burnt. It was apropos of this that Hegesias the Magnesian made an utterance frigid enough to have extinguished that great conflagration. He said, namely, it was no wonder that the temple of Artemis was burned down, since the goddess was busy bringing Alexander into the world. But all the Magi who were then at Ephesus, looking upon the temple's disaster as a sign of further disaster, ran about beating their faces and crying aloud that woe and great calamity for Asia had that day been born. To Philip, however, who had just taken Potidaea, there came three messages at the same time: the first that Parmenio had conquered the Illyrians in a great battle, the second that his race-horse had won a victory at the Olympic games, while a third announced the birth of Alexander. These things delighted him, of course, and the seers raised his hopes still higher by declaring that the son whose birth coincided with three victories would be always victorious". Plutarch penelope.uchicago.edu/Thayer/E/Roman/Texts/Plutarch/Lives/Alexander*/3.html

In fact, scholars have deduced Alexander's birthday (day and year), which is not given by any document on his actual birth, from the fact that, on that day, his father's horses won a victory at Olympic games. As observed by Costas Paphitis, engineer, in a Quora discussion taking into

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consideration that it would have taken more than one day for the news to reach Philip from Olympiad, "please feel free to accept or reject the accuracy of the dates".

From Plutarch, we can see that the calendar was the Macedonian one, and it was a lunisolar calendar. Then, how can we determine the sunrise azimuth on the day Alexander was born? The Macedonian calendar was composed by days which were all like our Easter Day and had a corresponding sunrise azimuth changing cyclically year by year, as in the case of Easter Day indeed. This means that the sunrise azimuth corresponding to Alexander's birthday was changing cyclically. Let us suppose that, at Alexander's time and in spite of the fact that Macedonians were using a lunisolar calendar, it had been determined the specific sunrise azimuth of the precise year of Alexander's birth for the latitude of Alexandria. Let us suppose that this specific azimuth was used for the azimuth of Canopic Road. Using a lunisolar Greek calendar, the Alexandrians would have observed the alignment only cyclically, and not every year. In [14], after mentioning the fact that calendar was lunisolar and festivals were like our Easter Day, it is told that methods have been proposed in recent literature, based on counting the days with the help of a star, Regulus. In [14], it is concluded that Alexandria's axis "is orientated to the rising sun on the day of birth of Alexander the Great. At the time of foundation". Moreover, "the “king’s star” Regulus was rising, as well, along the same direction".

The fact that the date of Alexander's birthday had a solar azimuth changing year by year remains. And, on July 20, 331 BC, Regulus was not visible, if we simulate the sky by means of software @Stellarium, because it was rising about half an hour after the sun.

6. The timing at Olympics

Old books are very cautious about giving the day of the birth of Alexander the Great, because of problems concerning chronology.

First, let us remember a fact about Olympic Games. "Of all the games held throughout Greece, the Olympic Games were the most famous. Held every four years between August 6 and September 19, they occupied such an important place in Greek history that in late antiquity historians measured time by the interval between them - an Olympiad. The Olympic Games, like almost all Greek games, were an intrinsic part of a religious festival. They were held in honour of Zeus at Olympia by the city-state of Elis in the northwestern Peloponnese". https://www.britannica.com/sports/Olympic-Games

Then, let us consider some discussions proposed by Anthony Louis in 2013[1]. In "A Possible Birth Chart of Alexander the Great", we can find information. Of Alexander the Great "the date of birth is not known with any certainty and many speculative natal charts exist. Almost all sources agree that Alexander was born in 356 BC". The ancient year of Macedonians began at the summer solstice, occurring on 28 June in 356 BC. Then, Anthony Louis tells, Alexander must have been born on or after that date. "Perhaps more correctly, the year began at the first new moon after the summer solstice, which occurred on July 14 of 356 BC". Louis continues telling that "according to wikipedia.com, Alexander was born on the 6th day of the ancient Greek month of Hekatombaion, which some sources convert to 20 July 356 BC although there is no certainty about the conversion of dates from this ancient calendar, partly because it was a soli-lunar calendar that required the periodical insertion of intercalary months and different re-

[1] https://tonylouis.wordpress.com/2013/05/06/the-birth-chart-of-alexander-the-great/

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gions used different calendars at the time. Conversion from these ancient calendars to the one we use today is a difficult and often uncertain task".

As previously told, the months in the ancient Macedonian calendar were beginning according the phases of the moon. During the summer of 356 BC, new moons were: "July 14 – first month of summer (6th day = July 19), August 13 at 6:01 a.m. – second month of summer (6th day = August 18), September 11 – third month of summer (6th day = September 16)".

Alexander was born in Pella, the capital of ancient Macedonian Kingdom. His father, Philip II, was not present at the birth and received news by a messenger.

"Legend has it that Philip received several important bits of news on the same day that he learned Alexander was born: A son, Alexander, had been born. His general had defeated the armies of his enemies. His horses had won at the Olympic games. Horse races took place on day 2 of the five-day Olympics. Day 3 was the day of the full moon (Aug. 28, 356 BC). The Olympics were apparently scheduled during the full moon of the 8th lunar month following the previous winter solstice. The temple of Artemis was destroyed by arson while Artemis was away attending the birth of Alexander". Louis tells that it is possible that "Alexander himself propagated this legend to enhance his reputation as a divine entity. In any case, the birth of an heir to the throne would be widely known in the society, which implies that the dates of these events are close to Alexander's actual birth. So what can we deduce about his birth date?"

So we have that Alexander was born around the time of the 356 BC Olympic games. "The Olympics were a 5-day event held every four years during the full moon of midsummer, which was chosen so that the games could last into the night". Then Louis considers distances. "The horse races took place on day 2 of the Olympics, which would have been Aug 27, 356 BC, and a messenger had to travel from Olympia, Greece, to King Phillip's location in northern Greece where he was preparing a siege on the city of Potidea on the peninsula of Chalcidice, some 200 or so miles from Olympia. Another messenger had to travel from Pella to King Phillip, a distance of some 70 miles. I don't know how long it took messengers to travel in ancient Greece, but it must have been a matter of days for the news to reach the King. If we assume that it took no more than ten days for news of the Olympic victory to reach King Philip, then Alexander was probably born before the end of August or at the latest during the first week of September. If it is true that Alexander was born on the 6th day of the ancient Greek month of Hekatombaion, then a likely date of birth is on or shortly after August 18th. If we allow a two-week span either side of the date of the Olympics, then the range of possible birth dates extends from August 14th to September 11th".

Louis continues the discussion[2], telling that some interesting facts about ancient calendar systems and the timing of Olympics can be pointed out. Louis is also stressing that there is no consensus about "how to correlate the ancient Greek calendar with the modern one, partly because intercalary months were added to make the soli-lunar calendar match the seasons of the year". "The year began with the first new moon after the summer solstice. In 356 BC, the first new moon occurred at 6:55 PM LMT on July 14th, so scholars add 6 and come up with a date of July 20th for Alexander's birth. They ignore the fact that it was the summer of the Olympic games, which occur every four years, so that since the last Olympics one or two intercalary months would have been added, making Hekatombaion start in August or September rather than July. Lunar months are 29.53 days long, so 29.53 (perhaps rounded to 30) would have to

[2] https://tonylouis.wordpress.com/2013/05/13/rectifying-the-chart-of-alexander-the-great/

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be added to July 20th to get a more likely date of Alexander's birth. This implies that he was born about August 19th (July 20th plus 30) or possibly September 18th or 19th."

Another question concerns "how the starting of the Olympic games was timed. Sources differ on this question". The source Louis quoted previously told that the Olympic games "were scheduled to coincide with the mid-summer full moon, which meant that the Olympics were typically held in August. Yet historical records show that the Olympics sometimes took place in July or September, that is, during the first or third months of summer rather than the middle one". Louis notes that in The Journal of Philology, Volume 24, edited by William George Clark, John Eyton Bickersteth Mayor, William Aldis Wright, Ingram Bywater, Henry Jackson, on p. 82, it is told that it was required to "count 1308 days from New Moon following the winter solstice after the last Olympics to get the date of the new one. The winter solstice four years before the 356 BC Olympics occurred on Dec 25, 360 BC, and the first new moon following it took place on January 22, 359 BC at 8:44 AM. Adding 1308 to Jan 22nd of 359 BC, [Louis] get[s] Aug 22, 356 BC as the date for the next Olympics after 360 BC. Using this method, Alexander could not have been born in July but must have been born in August around the start of the Olympics. In other words, he was born within a few days of August 18th or September 20th of 356 BC, depending on when the month of Hekatombaion fell that year, which in turn depends on whether one or two months was inserted since the last Olympics. A July date does not match the historical records".

7. The Pseudo-Callisthenes

In the following, the reader can find mentioned an ancient book about the life of Alexander.

"The Alexander Romance is an account of the life and exploits of Alexander the Great. Although constructed around a historical core, the romance is largely fictional. It was widely copied and translated, accruing legends and fantastical elements at different stages. The original version was composed in the Greek language before 338 AD, when a Latin translation was made. Several late manuscripts attribute the work to Alexander's court historian Callisthenes, but the historical person died before Alexander and could not have written a full account of his life. The unknown author is still sometimes known as Pseudo-Callisthenes.

Between the 4th and the 16th centuries the Alexander Romance was translated into Coptic, Ge'ez, Byzantine Greek, Arabic, Persian, Armenian, Syriac, Hebrew and most medieval European vernaculars. The romance was also put into verse, as in a Byzantine recension of 1388. Owing to the great variety of distinct works derived from the original Greek romance, the "Alexander romance" is sometimes treated as a literary genre and not a single work". en.wikipedia.org/wiki/Alexander_Romance

As we will see, in Pseudo-Callisthenes we can find that Alexandria had a great festival in honor of the Genius Loci (on 25 Tybi), the Agathos Daimon, celebrated by the Alexandrians to remember the town foundation.

Then, Pseudo-Callisthenes is mentioning a popular festival, which existed until the fourth century AD. So, a question could be: if Alexandria had been oriented with the Canopic Road according to the sunrise of Alexander's birthday, why is it not existing any tradition or legend about this fact?

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8. Tetrapylon e Agathos Daimon

"Il dott . G. Lumbroso propose la seguente questione di archeologia cristiana, che si riferisce al Magnum Tetrapylon o grand'arco quadrifronte dell'antica Alessandria d'Egitto; accennando, prima di entrare nell'argomento, che la più antica memoria di quell'edificio è del quarto secolo entrante e che l'edificio era indubitatamente situato nel punto d'incrociamento delle due strade maggiori d'Alessandria, le quali si tagliavano ad angolo retto. Due scrittori del secolo settimo, Mosco e Sofronio, parlano del Tetrapylon, come di edificio o luogo sacro e religioso presso gli Alessandrini. Il primo riferisce la tradizione, giusta la quale Alessandro avrebbe quivi deposto le ceneri del profeta Geremia, e dal secondo impariamo che vi era dentro un'immagine del Salvatore, detta l'Immagine per eccellenza; dinanzi alla quale ardeva una lampada, e che i fedeli dormivano a digiuno nel Tetrapylon e raccoglievano da quella lampada l'olio benedetto efficacissimo contro le infermità. Venendo alla causa ricercata di siffatta consacrazione cristiana, il riferente propose di ravvisarvi un ricordo dei martiri, una pia trionfante memoria delle vittime della fede; giacché i Tetrapili maggiori di altre città, sorti nell'era della persecuzione in luoghi centrali, spaziosi ed affollati, furono prescelti non solo dai presidi pagani per la cognizione delle cause in genere, quindi per i dibattimenti e giudizi contro i seguaci di Cristo, ma anche dalla plebe furibonda per l'esposizione e il pubblico vituperio di quei cadaveri. Senonché l'apparizione del dragone all'infermo addormentatosi nel Tetrapylon, di cui parla Sofronio, e la virtù fugatrice dei serpenti attribuita alle ceneri di Geremia trasferite in quel luogo, e il tempio già eretto da Alessandro al dragone che era apparso, durante la fondazione della città, in quel punto d'incrociamento delle due strade maestre, suggeriscono un'altra spiegazione: ed è che la consacrazione cristiana di cui si tratta, abbia simboleggiato la vittoria e la sostituzione di Cristo al Genio pagano del luogo, all'Agathos Daimon degli Alessandrini. Al qual proposito il riferente cita la memoria del Gerhard, su i Genii locali serpentiformi degli antichi, ed Angerona uno dei nomi del Genio di Roma sive mas sive femina. Intorno agli archi quadrifronti, il riferente ricorda l'illustrazione dell'arco di Thebessa pubblicata dal Letronne nella Revue archéologique del 1847, ed una recente memorietta del sig. Carlo Wachsmuth, nel Museo renano, 1873, consacrata al Tetrapylon alessandrino". Dal Bullettino di archeologia cristiana, Giovanni Battista de Rossi. Jan 1876. Tipi del Salviucci. Pagine, 53-54.

9. Topography of Alexandria

In [17], we can find a detailed description of the topography of Alexandria in the local tradition, as made by Giacomo Lumbroso. Here a concise translation.

Sailing on the Nile, in the year 1721, a traveler whose name seems to have been Charles De Sainte Maure, found himself in the company of a certain abbot of a Greek monastery, who instead of a breviary had with him a quite used Homer and an all new Quintus Curtius. Of Quintus Curtius he held little esteem and maintained that the Latin author's work was just a novel. The abbot added, the true father of Alexander the Great was a king of Egypt, the magician Net tanebo, a refugee at the court of Philip and lucky in love with Queen Olympias. The unpublished material to which the abbot alluded, today is part of the printed work, which is nothing other than that fabulous life of Alexander the Great, published by Mai in 1817; from a Latin translation and the entire Greek text by Pseudo - Callisthenes, we can find arguments that can serve to demonstrate its Greek-Egyptian origin.

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Actually, this book seems to be the product of a people rather than of a single individual, since it bears the traces of variants and perpetual interpolations, and here and there it mixes up Christian and Jewish things with the pagan ones and, in short, it is not a single layout from a single hand. It is not possible to precisely determine its age; from references to the pagan world, the book was composed before the fourth century. But nobody doubts that Egypt is its homeland and cradle. Moreover, sometimes it is baptized according to the Alexandrian style. But I [Lumbroso] believe that there is, in the present text, the latter and more Egyptian layout that the novel has received, while the oldest Alexandrian one, of which some vestiges remain here and elsewhere, has been overwhelmed and obliterated.

When the Mai edition came out, it was welcomed by Letronne, the future master in Greco-Roman Egyptology, with the most bitter criticism and the most bitter sarcasm (Journ. Des sav. 1818, p. 609-620). Today, it is recognized that the novel's manipulators probably have toujours vu Alesandrie, but one can, or must, take a step further and recognize its accuracy and value, in particular for the topography of ancient Alexandria. According to the novel, the stones in that city where placed by no one but Alexander the Great. It was he who determined where the Agora had to be formed, where the temples had to be placed, and how many for the Greek and Egyptian gods. He was the one who cut the roads, who founded the Acropoli, and so on ... Sometimes, the legend remembers Ptolemy I; sometimes, when it becomes Latin, it remembers Julius Caesar, Pompey, Marc Antony, more often Cleopatra, whose name, as the generic Pharaoh, remained for a long time on the lips of common people. But no name is more beloved and obvious than that of Alexander. Here is the vice and pitfall of the legend and also its quick triumph over history. Where the legend cannot and does not want to invent, it is in the material description and denomination of things, which are before our eyes, which are the starting points, the essential loom for its whimsical work. It is here, where we can surely trace some vestiges of truth.

The book attributes two foundation projects to Alexander: the first is gigantic and romantic, it would have been that the new city had to cover the whole region. However, persuaded by his architects to restrict its too vast circuit, he approved a second project with these limits: ... and the Lumbroso's book continues with a detailed description of Alexandria's plan.

We are also indebted - Lumbroso tells - to the novel for some information on the cycle of commemorative festivals of the foundation and building of the city, of which the proper Natalis Dies, according to the uncertain and corrupted text, fell on the first of January. On the 21st of the month then (25 of Tybi), there was a great celebration in honor of the Agathos Daimôn, the Good Genius of the city, who appeared in the form of a majestic and terrible Dragon on the very place and beginning of the foundation. The Macedonians, at first terrified by this fearful and sacred impediment, reassured by their leader, attacked and killed the dragon. This Genius Loci had, by order of Alexander, a sepulcher and temple and divine worship: therefore, every year on the 25th of Tybi, noticeable people of the city went up, crowned, to that temple and performed a solemn sacrifice. However, it was all the town which honored the Genius Loci. This cult was flourishing and dear to Alexandrian pagans in the first half of the fourth century. A fifth-century Christian writer, Moise of Corene, says that, at that time, Christianity fully triumphed in Alexandria and all these pagan ceremonies and customs were abolished.

Therefore, Pseudo-Callisthenes is reporting about a festival in honor the Genius Loci, not of Alexander's birthday.

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10. Martin Erdmann and the solar orientation

In [18], we can find a detailed discussion, about possible solar orientations of the town. Martin Erdmann (Protestantisches Gymnasium, Strasburg) wrote his discussion in 1883.

Alexandria, the famous metropolis "hub of the world", owes its existence to the presence of Alexander the Great in Egypt. It was on the border of years 332 and 331, when the great king laid the foundation stone for his new capital on the spot of Rhakotis, between Mediterranean sea and Mareotis lake. A huge artificial dam had to connect the island of Pharos to the mainland. He employed Dinocrates as master builder, the same Dinocrates who had once made the adventurous proposal to convert Mount Athos into a statue of the king. The basic plan and the surrounding walls, designed by him, remained through ancient times. Since nothing else was at hand, it was said, barley was used to mark the perimeter of the walls on the ground, according to Alexander's orders. This was observed by fortune tellers as a good omen for the city's prosperity.

For ancient Alexandria, among the ancient writers, our best sources are Diodorus and Strabo.

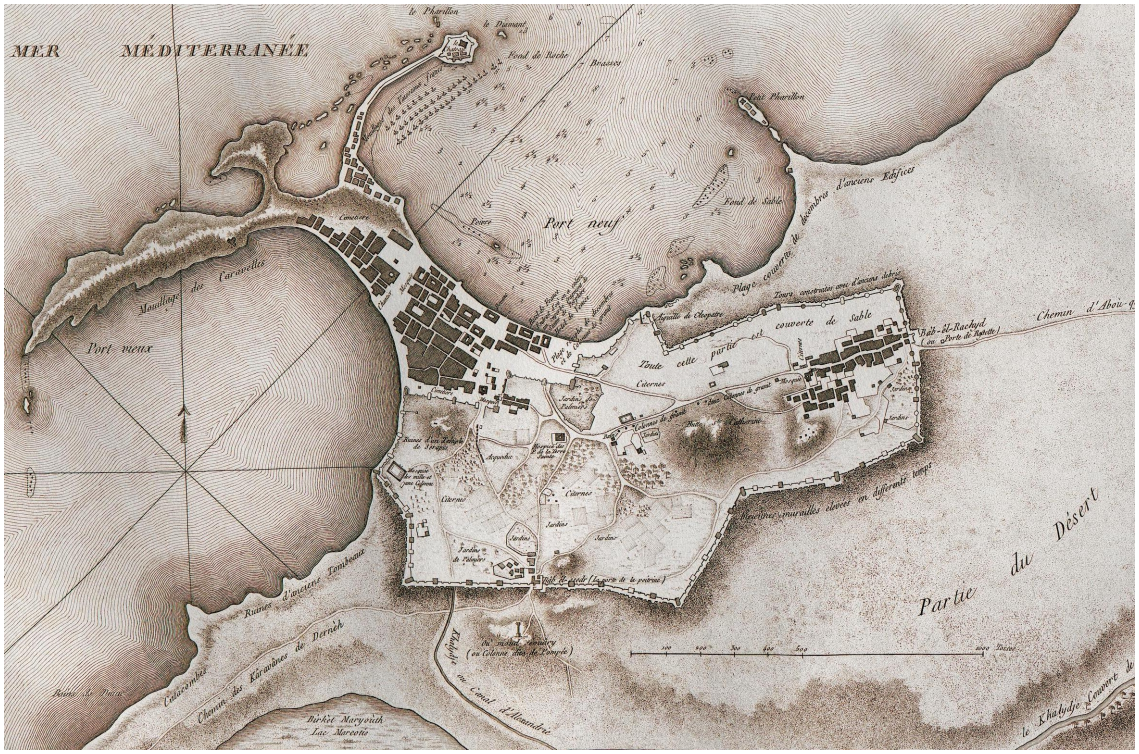

Fig. 3: Map of the city in the 1780s, by Louis-François Cassas, Voyage pittoresque de la Syrie, de la Phoenicie, de la Palaestine et de la Basse Aegypte: ouvrage divisé en trois volumes contenant environ trois cent trente planches 1799/1800 https://doi.org/10.11588/diglit.4571 https://doi.org/10.11588/diglit.4572 https://doi.org/10.11588/diglit.4573 - Courtesy Wikipedia.

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As for its form, the former reports that the layout of the city resembles a chlamys; it had a street which cut the city roughly in the middle and was admirable in size and beauty, running forty stades from gate to gate. The road was a plethron wide and richly adorned with temples and other buildings. Strabo gives much more detail, from which we infer, above all, that he gives the length of the city to only thirty stades, the width of seven to eight. The city had streets that intersect at right angles. The modern city does not coincide with the old one. The new urban terrain is formed by the Pharos, because the dam gradually enlarged into a wide isthmus. Outside the new walls built by the Arabs, one could have noticed the ruins of the ancient city for a long time (see Figure 3, and Figure 4 for topography).

Fig. 4 : Topographic map. Many thanks to https://it-ch.topographic-map.com for the fundamental tool, here used for study and research. Many thanks to Yamazaki D., D. Ikeshima, R. Tawatari, T. Yamaguchi, F. O'Loughlin, J.C. Neal, C.C. Sampson, S. Kanae & P.D. Bates [19] for their fundamental work on digital elevation data and models.

Today we have - Erdmann tells - a precise, scientifically established plan for the ancient Alexandria. Surveys and excavations for this plan were made by the court astronomer of the Khediv Ismaïl, the Arab Mahmûd Bey, who was educated in Paris. Emperor Napoleon, who was very keen on the topographical investigation of Alexandria for the prosecution of his Caesar's life, had given the viceroy a hint in this direction. The result was a plan, worked out with admirable accuracy, handwritten and sent to Paris. Mahmûd Bey accompanied the plan with a detailed memorandum in French. However, this publication does not contain a map, which is absolutely necessary for understanding. In order to bring Mahmûd Bey's results to wider circles,

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Professor Kiepert, who had the text and plan at his disposal, gave an excerpt from that work in the Zeitschrift für Erdkunde, with the addition of a lithography which shows the original and it is omitting the modern city. In addition to this publication, after various unsuccessful efforts, I [Erdmann] was able to obtain an exact facsimile of the original plan. The following explanations are based on the original publications (and Erdmann continues with a detailed discussion).

Let us turn back to the main streets. The uncovered part of both the longitudinal and the cross street had a moderate width of 50 feet, with portici on both sides, which together were wider than the road. Like the other streets, they were paved, but only since Roman times. Both had under them a water pipe. ... The cross street led to the royal palace, a factual element which seems to have been regularly used in the layout of the Hellenistic city complexes. Achilles Tatius tells that the colonnaded road was leading from the Sun Gate (on the canal) to the Moon Gate (on Lochias). The names are authentic because, as Lumbroso proves, they have been quoted several times by the chronicler Malalas and in his Legends of Saints. The street bore the name Dromos, which we can reproduce through the modern Corso. It seems that the name Pedion was also common, perhaps popularly used for it. Dromos seems to have been a generic name for all cross streets, so that the colonnaded street par excellence was called.

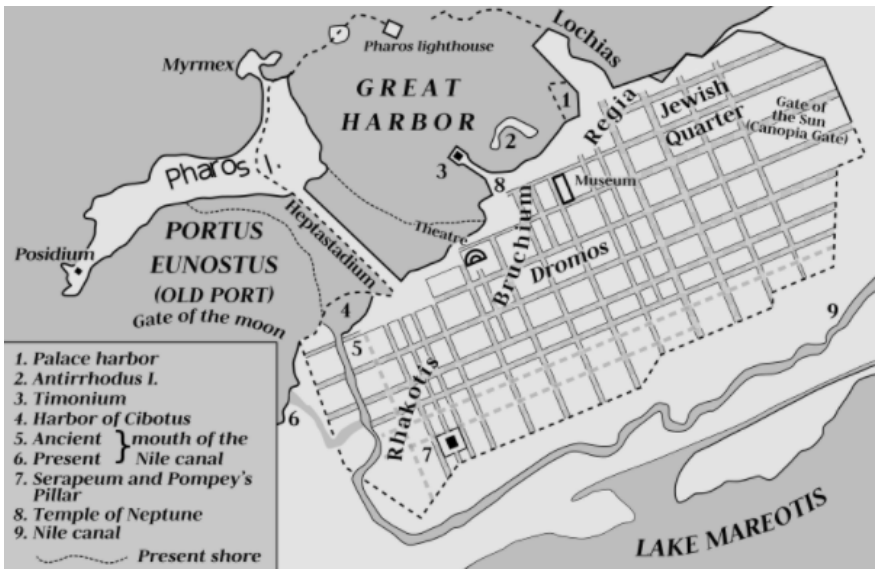

Fig. 5: Plan of Alexandria c. 30 BC (Courtesy Philg88 for Wikipedia). Based on: Shepherd, William (1911) Historical Atlas New York: Henry Holt & Co. p. 34-35. Courtesy of the University of Texas Libraries, The University of Texas at Austin. Perry-Castañeda Library Map Collection.

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Achilles Tatius also tells of intersection of the two streets, which deserves to be considered as the cardinal and central point of the entire city. After what I (Erdmann) set out in my essay on Hippodamus (of Miletus), one would be inclined to place the Agora there. And in fact I am of the opinion that in this city plan, which was designed according to Alexander's statement, there was the market, but later a square was built on, and in the middle it had been imposed and erected the magnificent Tetrapylon. ... For the Agora at the city center, however, the evidence by Arrian is particularly important, who primarily says that Alexander indicated where the market should be set up. ...

So much for topography. In the following, Heinrich Nissen's theory [a theory which proposed the main street of a town oriented towards sunrise on the foundation day; we will discuss further in next section] will now be applied to Alexandria, i.e. whether the city was laid out in relation to the position of the sun on the day of its foundation.

Mahmûd Bey specified, and very precisely, the direction of the streets. The longitudinal roads extend from east-northeast to west-southwest with a deviation of 24° 15' from the east-west line. Then, if Alexandria were oriented towards the point of sunrise, it could have only be established in summer, that is, between spring and autumn equinox. However, according to historical tradition, as will be shown later, this is quite impossible. Rather, tradition points us decisively to the winter of 332/1. Orientation according to sunset would also have to be taken into account. This is how Nissen has shown from the Italian Gromatici, the Roman surveyors. This is attested by gromatici and has been proven in various Italian temples; it would be very conspicuous for Greek soil, since the Greek temples generally face eastward (with a notable exception). Nevertheless, on the basis of Tiele's tables [from Nissen's book, Das Templum, 1869], I [Erdmann] calculated the days on which the sun set with this deviation in those years. The azimuth for Alexandria of 294° 15' corresponds to the azimuth of 297° 32' for the latitude of 40°. For this value I get November 29 and January 20. ...

Now, can Alexandria have been founded on either of these two dates? The question would be easily resolved if we could trust the statement of Pseudo-Callisthenes that Alexandria was built on the 25th Tybi, which is why Alexandrians celebrated this day. The chronology of the Egyptians can be reduced with total certainty. According to Ideler's method [Ludwig Ideler], we get the 1st Thoth of year 417 of Nabonassarian era equal to the 318th day of the year 4382 of the Julian period, or equal to November 14, 332 according to the Julian calendar. The 25th Tybi falls on April 7th, 331. However, we have no reason to distrust such a dishonest source, in relation to the feast of the Alexandrians, which may very well have fallen on this day, but in the interpretation of this feast as the day of the town foundation. Rather, we obtain the following chronological sequence of events from reliable sources.

The last reasonably certain date is the capture of Tyre on August 20, 332. Arrian reports that it took place in the month of Hekatombaion. This combines with the Plutarch's statement, telling that the city was conquered on the last day of the month. According to Ideler's Tables of Metonic cycle, it can be found, for year 332, the beginning of Hekatombaion on July 22nd, the length of the month of 30 days, i.e. the last Hekatombaion on August 20. This date can contain an error of a few days because one does not know whether the Macedonian and the Attic months exactly coincided, and whether the Callipean canon has to be applied. This would be irrelevant for our calculation.

Alexander moved from Tyre to Gaza, which he besieged for two months. On the seventh day he

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reached Pelusium from Gaza. Then he marches over Heliopolis to Memphis. There, he sacrifices and organizes an agon that had to take some time. Finally he travels down the Nile and founded Alexandria. Later, he takes the march to the Ammonion, returns to Memphis, arranges in this place some Egyptian administrative affairs and set off for Phoenicia at the onset of spring. In this case, the foundation could have been on November 29th.

After Droysen, however, the army arrives at Gaza at the end of September; the city is taken within the end of November. At the beginning of December, Alexander set off for Egypt. The first calculated date therefore turns out to be hardly correct. The second is better fitting. If Alexander founded Alexandria on January 20, 331, he could very well move to Ammonium in February and then, after his stay in Memphis, to Phoenicia with the beginning of spring. Nevertheless, I do not believe that the lines of Alexandrian roads are related to the sun in the way I have already mentioned; I am rather of the opinion that the deviation from the exact east-west line has a practical - hygienic reason. It will be the consideration of the winds, especially the annoying north wind, that induced the architects to avoid the streets having the precise cardinal orientation.

The unanimity of the old writers in praising the good air of Alexandria, and Diodorus' explicit attestation that the winds were taken into account in the construction, can lead to this view. But it becomes almost a certainty when we look at Vitruvius's passage, where he states how one should draw attention to the cardinal points when marking the layout of the roads. He starts from the determination of the noon line and then cuts off from it, on the circle of the compass rose, several sectors. According to his method, for avoiding the prevailing winds to tunnel through the streets, we would get 1/4 of a right angle, i.e. a deviation of 22° 1/2°. Nobody will want to urge that it is actually of about 1% larger in Alexandria.

Then, Martin Erdmann tells that the orientation of Alexandria's plan was decided on the base of a practical - hygienic reason. Moreover, in [18] Erdmann is criticizing in general the theory proposed by Heinrich Nissen, a theory where the decumanus, the main road of a town, was - as the main axis of a temple - oriented towards the sunrise (or sunset) on the day of the foundation. Nissen linked that day to the foundation festival.

Let us stress once more what Erdmann tells. It is not a problem when it was the feast of Alexandrians. It may have fallen just on the 25th Tybi, of course. It is the interpretation of this feast as the day of the town foundation according to Nissen's theory, that Erdmann is criticizing. To Nissen, the sunrise azimuth on the foundation day was establishing the direction of the main street. This means that the foundation was fixed by the planning of this main street (the roman decumanus). However, no ancient document is telling us what was the Dies Natalis, that is, the birthday of a town (see for instance [20]).

We can find Heinrich Nissen answering in the Rheinisches Museum für Philologie, 1885, and in a book of 1906 [21], about the orientation of Alexandria. Heinrich Nissen knew, from Erdmann, that a solar orientation, matching the date of the festival, had some problems. Of course, besides the sun, we have the stars.

11. Sirius, Canopus and Regulus, the Lion's Heart

In some previous discussions [22-24], we have considered Heinrich Nissen (1839-1912), German scholar of Ancient History, and his contributions about the orientation of the decumanus,

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the main axis of Roman land subdivision of a colony or a town. Nissen considered only a solar orientation, that is, an orientation of the decumanus, which was - as previously told - along the direction of the sunrise on the foundation day. To Nissen, as proposed in his Das Templum (1869) [25], the town was like a temple, and the decumanus like the temple's long axis. However, in [26], we can find Ferdinando Castagnoli telling us that it was not so. That is, the town was not a "templum", and, consequently the Nissen's theory was an ill-posed theory.

After the publication of Das Templum, as we have seen, Martin Erdmann considered the orientation of the decumanus according to sunrise/sunset, and using the Tables in the Nissen's book, applied the theory to Alexandria of Egypt. Now, let us see what Nissen is telling in [21].

Alexandria formed the center of a new settlement; in this city the Hellenic genius was fertilized by the ideas of the Orient. We know that their main temples were carefully oriented. It is obvious - Nissen is telling - to assume the same for the whole city, especially since, according to the writers, the foundation was surrounded by signs and wonders. The meritorious investigations carried out by the astronomer Mahmud Bey on behalf of Napoleon III reveal the plan in a completeness that can be achieved in a few Greek cities. He expresses Alexandria's strict rules: longitudinal and cross streets intersect at right angle and enclose certain land areas. M. Erdmann considered up the plan theoretically and discussed the question of whether the direction of the streets had been influenced by religious considerations. His answer denies religious reasons; this negative position is coming because he confused the fixed Alexandrian with the ancient Egyptian change of the year, and also because he could not adequately know the national orientation of Egyptians. Erdmann ends with the statement that the road network has only been planned on the basis of practical and hygienic considerations. Certainly, the whole complex was determined by the design of the ground, the prevailing wind direction and similar practical considerations.

Then Nissen continues in the following manner. A peculiarity of ancient existence and thought lies in the fact that material needs were clothed with religious forms and ennobled by them. When the ancients wanted a roast, they sacrificed to the gods; if they wanted to join a cooperative assembly, a religious community was founded. Alexandria presented itself to our eyes as the creation of a single will. Should the sensitive landmarks, which showed the conformity of a creative will with the order of the world, have been really missing a religious form? Sun and Moon are the names of the gatekeepers, the main gates of the city are named after them. Should the rise of such a rulers of heavens really have been without any visual reference to the festivals? It is worthwhile to dwell longer on this subject. The 5 km long main road, where the Road [to Canopus] began as told by Pseudo-Kallisthenes I 32, runs from ONO to WSW, more precisely 245° 45 '- 65° 45'. The rays of the rising sun coincide with the direction of the road according to the old country's new year, when Sirius becomes visible and the Nile begins to rise [and we have seen Sirius mentioned in [11-13]]. This has been a very excellent festival period for ages. For the parallel of Alexandria, Ptolemy correctly places the early rise of Sirius between 28 Epiphi and 4 Meson (= July 22-29). When Alexandria was founded, the sunrise azimuth corresponded to 30 Epiphi (= 24 July), of which Plutarch reports Is. 52 ... If we now remember the old teaching of the Roman surveyors, according to which the decumanus of a city to be founded was marked out after sunrise happened (posita auspicaliter groma ipso forte conditore praesente proximum vero ortum conprehenderunt, et in utramque partem limites emiserunt, Hyginus p. 170), we get into an apparent embarrassment at first. Alexander was not present in Egypt in the summer, and the Alexandrians celebrated the 25th Tybi (= 21 January)

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as the birthday of their city; hence the directional axis cannot have been determined after sunrise on July 24th.

However, this was neither necessary nor appropriate to the customs of the country. We are on Egyptian soil, and the Egyptian priests were active in the foundation; and the inscriptions tell that Ptolemy and Caesars had the rope, denoting that the axes of the temples were stretched according to the rising of stars, and stars must have been observed too. Let us try to identify these stars; so the calculation results with alpha = 65 ° 45', phi = 31° 13', delta = + 20° 34 '- 51° 14'. The first datum applies to Regulus, whose declination at the founding year was 21° 14' 9 "; its late rise is set by Ptolemy to 22 Tybi, i.e. shortly before the founding day. Its significance in the national cult was already discussed in p. 52. This star is usually called the cardia leontos, later occasionally basiliskos regia in honor of some prince who was born under this star (Ideler, origin of the star names, p. 164).

In the same days of the Lion, Canopus also rose in the evening sky: the late rising in Alexandria occurred, according to Ptolemy, between the 7th and 23rd of Mechir (2-18 February). Its declination was approximately ... Then, some measurements correspond to the required ones. But with this star creeping low on the horizon, the refraction of rays is a major factor. Schönfeld calculated ascending azimuth, without and with refraction. ... Of course, such subtleties can only be dealt with by on-the-spot investigations. Anyway, the relationship of the second brightest star of all Egyptian stars to the city of Alexandria is evident: a main gate bears his name, consecrated to the city god Osiris-Serapis. The rise of Canopus gave the direction to the cross-axis, the rise of Regulus that of the long axis. We cannot guess how the surveyors used and conveyed these elements in practice, but a mere coincidence can be excluded because of the given circumstances.

The 25 Tybi named by Psendo-Kallisthenes as Alexandria's birthday is therefore confirmed by the plan itself. Since the date, as from Erdmann, proves that it fits perfectly with the historical tradition, we can claim without hesitation that Alexandria was born on January 21, 331 BC. From Alexandria, festivals that were linked to the celestial phenomena of Egypt and which can only be understood on its soil spread across the Mediterranean Sea. In Pompeii for instance, it was located, in the second century BC, a Temple of Isis, oriented 239° 30' and directed towards the sunrise on July 20th, that is to the ancient Egyptian New Year. Then, the Egyptian New Year, which is directly related to the founding of Alexandria, had an even more significant effect in all the world.

The real star of Alexandria is Canopus, who has always been considered the strangest or one of the least worthy stars in the Orient. Standing deep in the south, visible only for a short time during the night, it had seized the imagination of people. Mysterious news reached the Romans: Stella Canopi - writes Vitruvius IX 7, 4 - his regionibus est ignota, renuntiant autem negotiators qui ad extremas Aegypti regiones proximasque ultimis finihuft terrae terminationes fuerunt. According to the usual view (Manil. I 217 Mart. Cap. VIII 838 Lucan VIII 181) the star was seen at the mouth of the Nile. In addition to the name of the port city, it also bore the name of the last king: stellam quam quidam Canopon quidum Ptolemaeum appellant, quae superioribus inconspicua in confinio Alexandriae incipit apparere (Mart. Cap. A. O,).

On the Nile, the connection between the kings of the country and the supreme gods is an ancient one. In addition to Amon-Ra the god of the sun, Isis the goddess of Sirius, Osiris as god of Canopus was particularly suitable for such humanization. ... And Nissen continues with a long

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discussion on stars. Among the several observations, let us note that Nissen is mentioning the fact that the old Egyptian New Year was based on Sirius, whereas the Ptolemaic New Year was based on Canopus, when it appeared above the horizon of the capital of the Hellenistic world. Nissen notes the following: the fact that the beginning of the Alexandrian calendar was determined by the early rise of Canopus just as the beginning of the ancient Egyptian calendar was determined by the early rise of Sirius is striking. ... In all likelihood, the main temple of Alexandria was directed, as the city itself, to the rise of Canopus. When this star was consecrated as kaisaros thronos, it was an expedient for merging the epoch of the newly established order with the old existing religious epoch. In Alexandria the worship of the emperor was connected with Serapis, in other places with the worship of other gods. This epoch has continued in by Coptic ecclesiastical life to the present day. On the ruins of the temple of Serapis rose the church of John the Baptist, the first martyr of the new faith, and on 1 Thoth was sanctified. In connection with this, it seems that the old Churches in Rome, such as San Giovanni al Laterano was oriented according to the Alexandrian New Year. And then, after some further considerations, Nissen concluded that a historical analysis of festivals in calendars can open new views in several directions.

12. Sights of Alexandria

"After a voyage lasting for three days, we arrived at Alexandria. I entered it by the Sun Gate, as it is called, and was instantly struck by the splendid beauty of the city, which filled my eyes with delight. From the Sun Gate to the Moon Gate — these are the guardian divinities of the entrances — led a straight double row of columns, about the middle of which lies the open part of the town, and in it so many streets that walking in them you would fancy yourself abroad while still at home. Going a few hundred yards further, I came to the quarter called after Alexander, where I saw a second town; the splendour of this was cut into squares, for there was a row of columns intersected by another as long at right angles. I tried to cast my eyes down every street, but my gaze was still unsatisfied, and I could not grasp all the beauty of the spot at once; some parts I saw, some I was on the point of seeing, some I earnestly desired to see, some I could not pass by; that which I actually saw kept my gaze fixed, while that which I expected to see would drag it on to the next. I explored therefore every street, and at last, my vision unsatisfied, exclaimed in weariness, “Ah, my eyes, we are beaten.” Two things struck me as especially strange and extraordinary — it was impossible to decide which was the greatest, the size of the place or its beauty, the city itself or its inhabitants; for the former was larger than a continent, the latter outnumbered a whole nation. Looking at the city, I doubted whether any race of men could ever fill it; looking at the inhabitants, I wondered whether any city could ever be found large enough to hold them all. The balance seemed exactly even. It so fortuned that it was, at that time, the sacred festival of the great god whom the Greeks call Zeus, the Egyptians Serapis, and there was a procession of torches. It was the greatest spectacle I ever beheld, for it was late evening and the sun had gone down ; but there was no sign of night — it was as though another sun had arisen, but distributed into small parts in every direction; I thought that on that occasion the city vied with the sky for beauty. I also visited the Gracious Zeus and his temple in his aspect as god of Heaven; and then praying to the great god and humbly imploring him that our troubles might be at last at an end, we came back to the lodgings which Menelaus had hired for us". Achilles Tatius, The Adventures of Leucippe and Clitophon. II Century AD.

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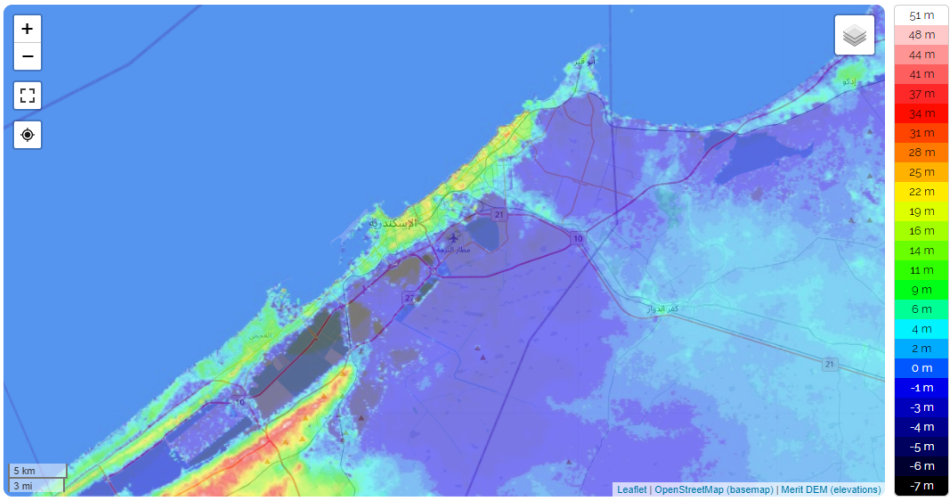
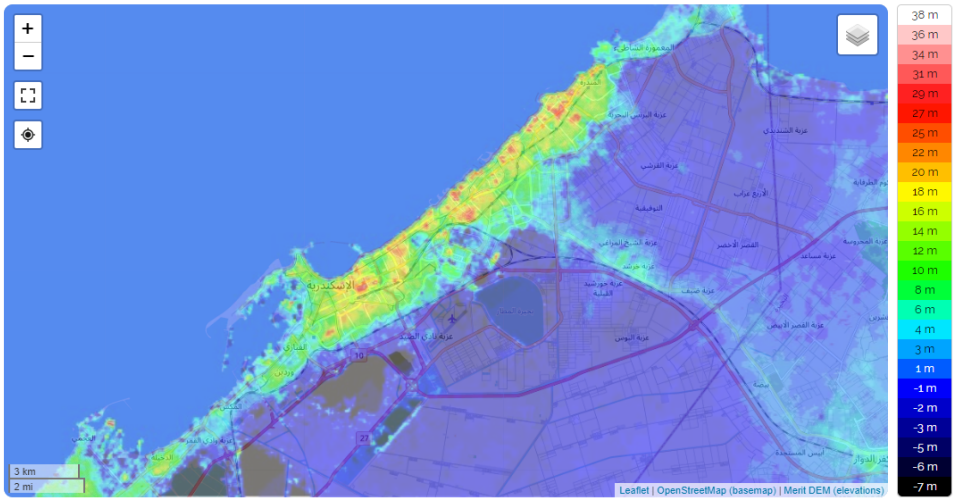
13. Discussion

In [14], the authors tell that they are sure that Alexandria had an astronomical orientation according to the sunrise on Alexander's birthday. However, this orientation is not coincident with the sunrise azimuth of the foundation day of the town, Tybi 25. We have already told that Tybi 25 was the festival of the Agathos Daimon. In [26], some discussions are given about a possible coincidence of the festival of Agathos Daimon and of Alexander as a god.

Moreover, in [14], it is claimed that "Examining the topography of the city today allows the identification of the essential elements of the original urban system, and shows that the choice of the site was mainly due to religious and symbolic reasons". So let us see, once more topographic maps from https://it-ch.topographic-map.com .





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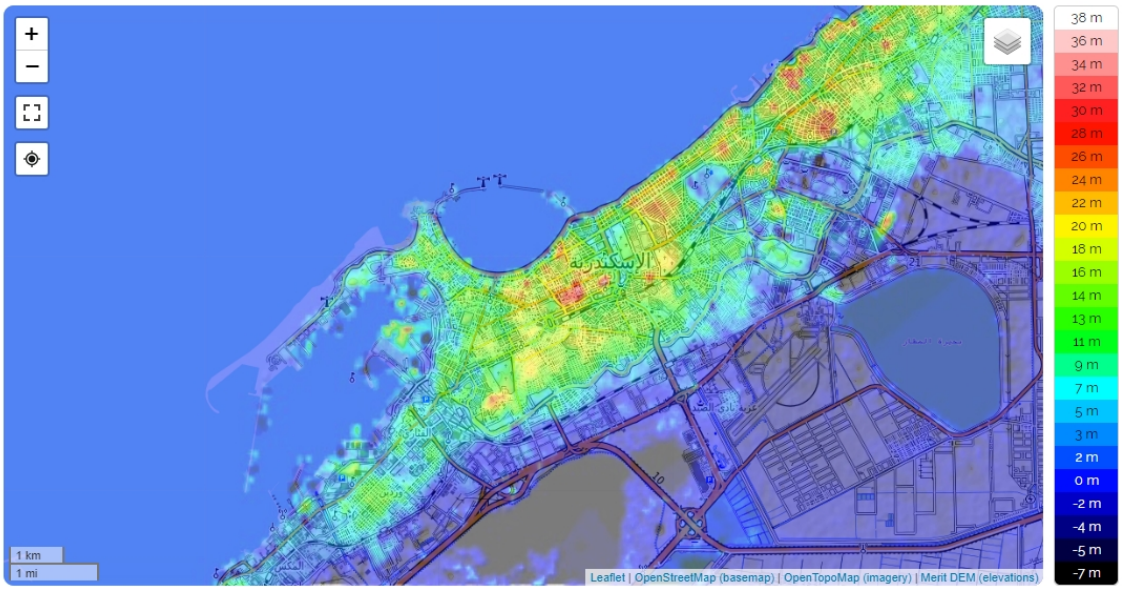

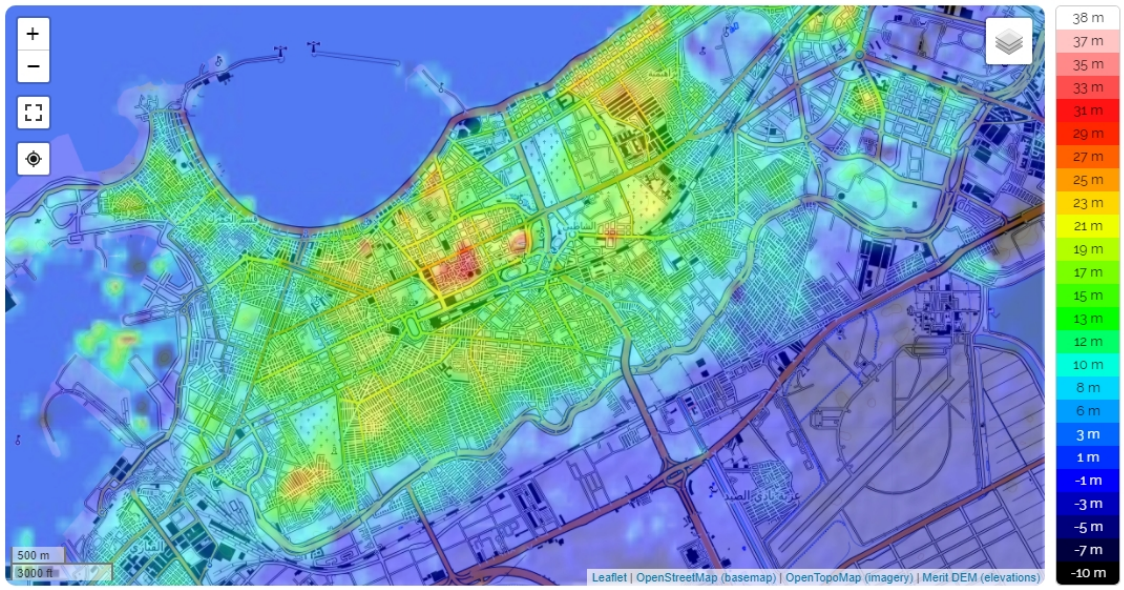

Fig. 5 : Sequence of topographic maps. Many thanks to https://it-ch.topographic-map.com for the fundamental tool, here used for study and research. Many thanks to Yamazaki D., D. Ikeshima, R. Tawatari, T. Yamaguchi, F. O'Loughlin, J.C. Neal, C.C. Sampson, S. Kanae & P.D. Bates [19] for their fundamental work on digital elevation data and models.

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From the sequence given above, we can see that the orientation is perfect for the site. The direction of the Dromos is not parallel to the coastline of the Mediterranean sea, of course, but it is parallel to the Mareotis depression. However, in [14] it is told that "the choice of the site was mainly due to religious and symbolic reasons". For what concerns the astronomical orientations, Heinrich Nissen has proposed different links to stars, which exist besides an orientation to sunrise on the day of birth of Alexander, whatever it was. Martin Erdmann and Heinrich Nissen did not considered such a day, probably because of chronological problems.

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