

## Cyclical inversion of limits and centres: the formation process of the *Regio quartadecima*, Constantinople

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### Abstract

*The paper reconstructs the topography of Constantinople's fourteenth region (regio XIV) applying the urban morphology analysis methods (Caniggia and Maffei, 1979) and the attractors' theory (Camiz, 2018) to the fragmentary documental sources and scarce archaeological data. The pontem sublicium sive ligneum's location was determined as part of a street network, in analogy with the pons sublicius in Rome, according to the formation process of the territorial organism. This was the starting point for the reconstruction of the topographic mosaic. By redefining the path of the Constantinian walls upon quantitative sources it was possible to localise the monumental buildings of the XIV region, as listed in the Notitia Urbis Constantinopolitanae, with reference to the morphology of the territory described by Dionysius of Byzantium and the Patria Konstantinopoleos. The form of the territory is a permanent element within urban contexts of continuous changes, demolitions and reconstructions. The analysis of the urban tissues, the road network's diachronic attraction and the reconstruction of the territorial organism provided the general methodological framework for the placement of the topographical urban fragments mentioned by historical sources upon a GIS.*

**Keyword:** attractors, morphological process, urban morphology, topography

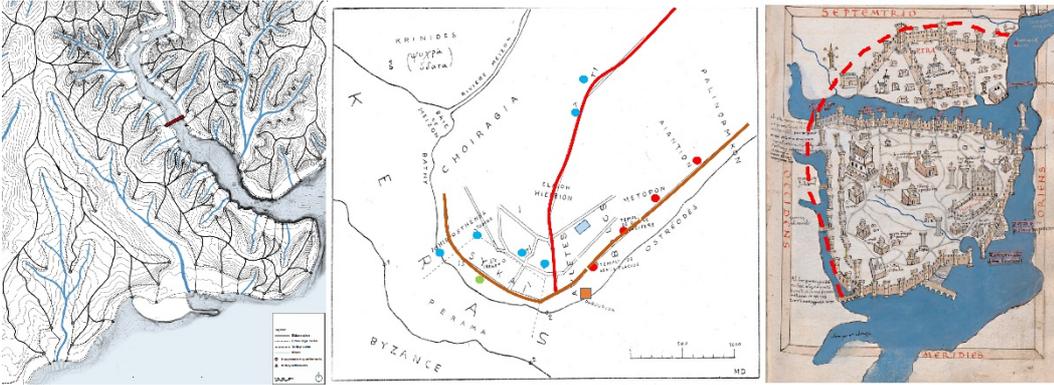
*"Nam urbs ipsa moenia sunt, civitas autem non saxa, sed habitatores vocantur".*  
Isidore of Seville, *Etymologiae*, I, xv, 2.

### Introduction

This paper is part of an ongoing wider research project on the topography of Byzantine Constantinople (Camiz, Özkuvancı and Verdiani, 2019) and is based on the morphological analysis of urban tissues, the attraction analysis of the diachronic evolution of street networks, combined with archaeological data, geological data, historical sources, cadastral plans and numismatic sources in order to create, using a GIS, a predictive model for the localisation of the buildings mentioned in the *Notitia Urbis Constantinopolitana*. The XIII region, also known as Galata or Pera, is across the Golden Horn, the XIV region is instead the territory of the historic peninsula delimited by the Constantinian walls and the Theodosian walls.

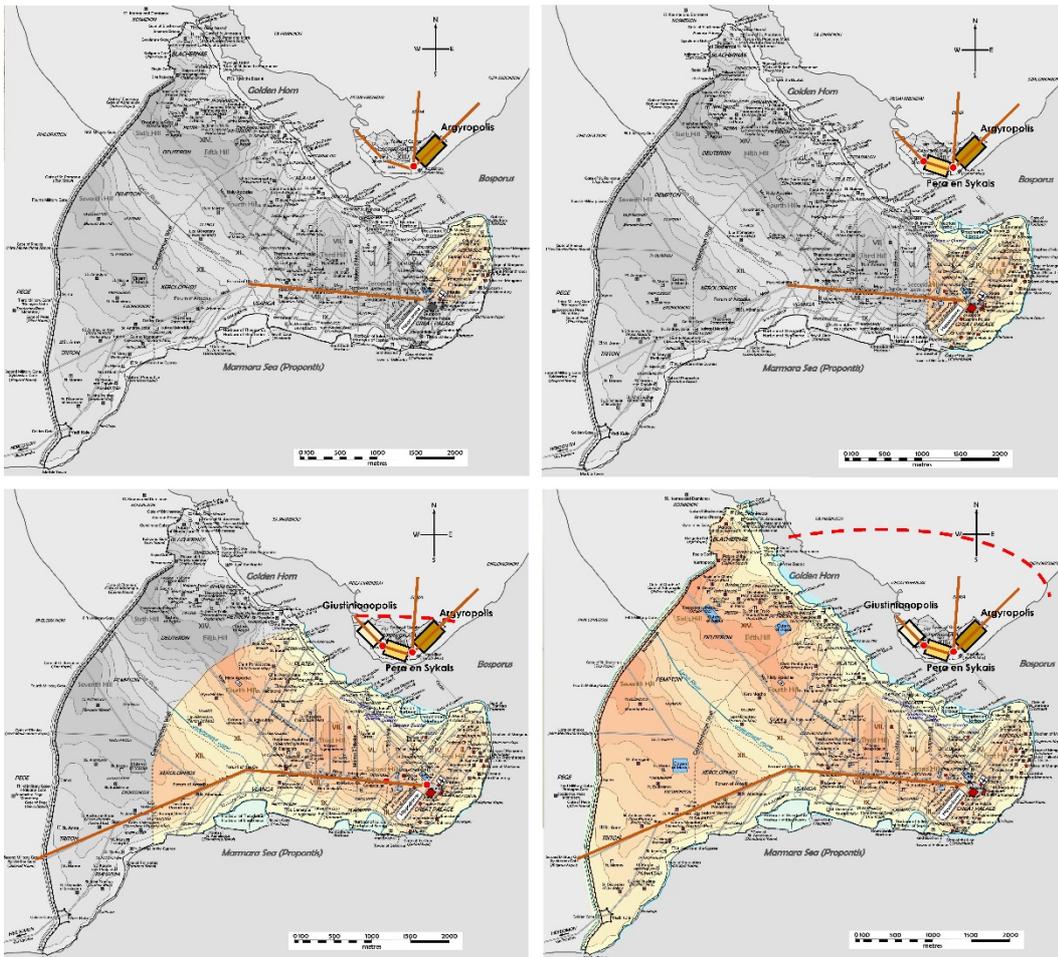
### Methodology

The cyclical limit and centre inversion was theorised by Caniggia and Maffei (1979) and it assumes that the evolution of an urban organism follows different phases and each part is added to the other so that what used to be the limit becomes the centre in the following configuration.



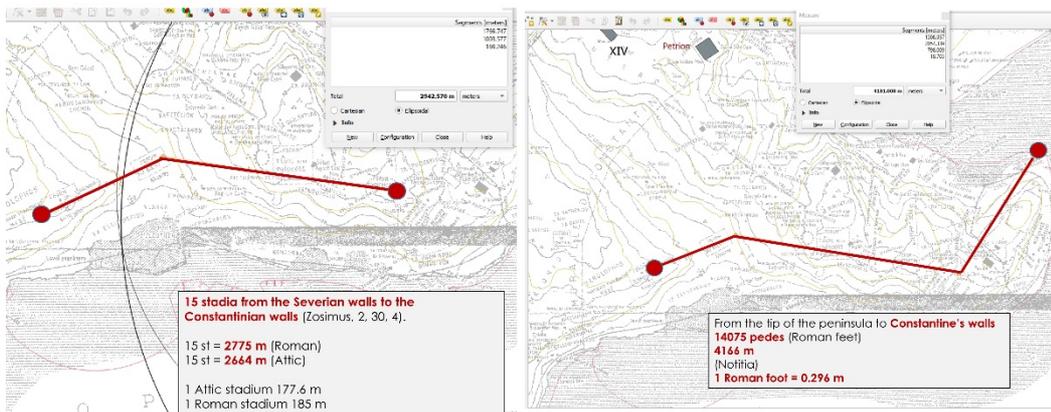
**Figure 1.** Left: Istanbul, formation process of the territorial organism (Özkuvancı, 2021); centre: Galata's plan showing in red the Megarean monuments, in blue the tombs (Dallegio d'Alessio, 1946); right: the curious mistaken alignment of the Theodosian land walls and Galata walls (Buondelmonti, 1470).

The authors illustrated different examples in relation to the site's morphology, in valleys, on the mountains or next to a river's, sea or lake shore. Pera's configuration resembles closely the scheme provided by Caniggia and Maffei (1979) for an urban settlement along the shore. Figure 2 illustrates the formation process of Constantinople through 1500 years in 4 phases, starting from the earliest foundation of Byzantium as a Megarean colony (VII BC). In phase 1 the original walls of Byzantium are outlined, and in the next phase what used to be the gate of the city became the centre. It is the location of today's Hagia Sophia which was built much later. In the following phase that gate became the *Tetrastoon* and later the *Augusteion*. What used to be the limit became the centre. In the III century Septimius Severus built new city walls and gates, and in the following urban enlargement, the main gate along the Mese became the new centre, the forum of Constantine the great. The following step was the construction of the Theodosian walls (404-413), but the location of the new forum of Arcadius does not correspond with the Golden gate along the earlier city limit of the Constantinian walls as we know them (Mango, 1985). So either the theory is wrong or the location of the walls should be updated. The XIII region as depicted in Buondelmonti's city view (fig. 1, right) shows the walls of Pera built in the XIV century as the continuation in plan of the Theodosian walls. This is not true, you can see the real proportion instead in figure 2. Either this plan is a collage of two different plans to fit the drawing or there is something wrong with the drawing itself. Instead, if we continue the Theodosian walls on the opposite side of the Golden Horn we would obtain a limit corresponding to where Taksim square is today. The XIII region is described in the *Notitia Urbis Constantinopolitana* including: 431 houses, 2 porticoes, 5 private baths, a church, the *thermae*, the forum of Honorius, a theatre and the shipyards. Figure 1 (centre) shows in blue the archaeological evidence of some tombs, and in red the location according to written sources of Greek temples dating to the Megarean phase: the temple of Venus Placide, the temple of Diana Lucifera and the Aianton (Dallegio d'Alessio, 1946). These were compared with the population's distribution according the survey established by the Ottomans after capturing Constantinople, showing the location of the Greek community (Eldem, 1993). This overlaps with the position of the early Megarean monuments. We may therefore assume that *Argyropolis* was established in that area as the first colony.



**Figure 2.** Cyclical inversion of limits and centre, comparing the XIII and XIV regions of Constantinole; upper left: Megarean foundation, VII cent. BC; upper right: Severan expansion, III cent. AD; lower left: Constantinian refoundation 324 AD; lower right: Theodosian walls, 404-413 AD (Author's drawings, 2021, on Constantinople in the Byzantine period (2008) [https://en.wikipedia.org/wiki/File:Byzantine\\_Constantinople-en.png](https://en.wikipedia.org/wiki/File:Byzantine_Constantinople-en.png)).

The subsequent growth phases of the XIII region, *Justinianopolis*, follows the Byzantium's evolution with the direction of the streets parallel to those on the opposite side of the Golden Horn. Tentatively we reconstructed the evolution of the XIII region in analogy to what is known on the opposite side. The theory of attractors (Camiz, 2018) has been introduced to explain the diachronic evolution of routes, describing how streets change in time according to the attractors deforming their path in time. The description of the XIV region in the *Notitia* gives important morphological indications: "Est vero progressis a porta modicum situ planum, dextro autem latere in clivum surgente usque ad medium fere plateae spatium nimis pronum; unde mare usque mediocris haec, quae civitatis continet partem, explicatur aequalitas", outside of the gate we have a valley, a flat area and on the right side climbing uphill and reaching the top, we can go to all the way to the other side. The position of this gate and of the flat area is not clear not yet, but our reconstruction provided a coherent interpretation for it. The limits of the XIV region have been discussed in the last 400 years, where Du Cange (1826) believed that the XIV, XII and XI were all included in the area between the Theodosian and the Constantinian walls, but more recently Schneider (1950) has clarified that the XIV region corresponded to the entire territory between the two walls.



**Figure 3.** Above left: Distance between the Constantinian and Severian walls (Zosimus); above right: distance between the Constantinian walls and the peninsula's tip (Notitia), QGIS version 2.18.27. Las Palmas de G.C. (Author's drawing, 2021); below: dashed red line outlining the path of Constantine's walls, Valvassori, G.A. (1479-1490) *Byzantium sive Constantineopolis*, detail.

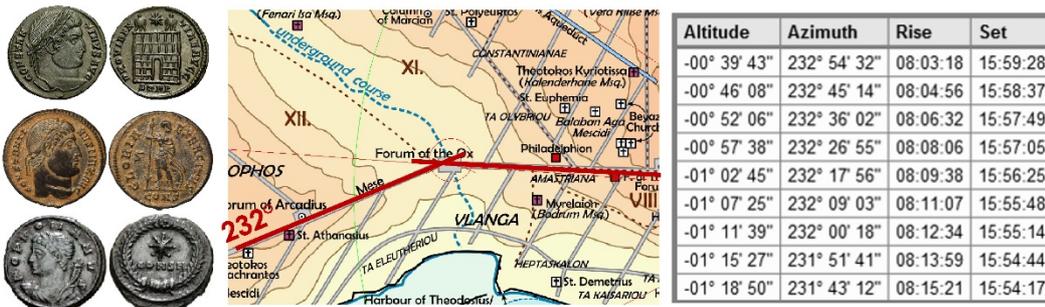
**Table 1. Constantine's walls path according to the editions of the *Patria Konstantinopoleos***

	<b>Patria, 995 AD (Preger, 1901)</b>	<b>Patria, Codinus, XIV cent. (Bekker, 1843)</b>
Sea walls north	Tower of Eugenios	Acropolis
	S. Antonios	Tower of s. Eugenios
Sea walls south		Zeugma s. Antonii
	Topoi	A Topis
	S. Mary of the rod	S. Mary of the rod
Land walls	Rod	
	Exakoinion	Hexacionium et miliario
	Old gate of John prodromos	Old gate of John prodromos
	Monastery of Dios	Monastery of Studii
	Monastery of Ikasia	Monastery of Ikasia
	Cistern of Bonos	Ad cisternam Boni
	S. Manuel and Samuel and Ismael	Templum ss. Martyrum Manuel, Sabel et Ismael
	Ta Armatiou (s. Antonios)	Armari (s. Antonios)

In the XIV region according to the *Notitia*, there was a church (*ecclesiam*) a palace, a *nymphaeum*, *thermas*, *theatrum*, *lusorium* (hippodrome) and a bridge, a wooden bridge, plus 11 streets, 167 houses, two porticoes and five baths. The bridge could only have been across the Golden horn, connecting the XIII and XIV region. It is quite evident that the name *pons sublicius* was meant to be the replica of the Roman *pons sublicius*, the earliest bridge of Rom, also a wooden bridge, on which *Horatius Coclidis* defended heroically the city according to *Titus Livius*.



**Figure 4.** Left: Constantinine's walls (Preger, 1910) in red our proposal including the Golden gate; centre: the rock cuts evidenced (in red), Fener's Geological Map, <https://gis.fatih.bel.tr/webgis/>; right: regular grid and organic tissue (in red), the dividing line (in yellow) interpreted as the path of Constantinine's walls (Alman Mavileri, 1913-1914) <https://gis.fatih.bel.tr/webgis/>



**Figure 5.** Left: Constantinople foundation coins; centre: the Mese changes direction to 232° after the Forum of the Oxen; right: sun ephemeris on the city's refoundation, 26/11/324 AD, 2nd indiction, 5837, 1, CCLXV Olympiad (Patria) (SkyMap Pro v 9.0.9, Copyright 1992-2002 C. A. Mariott).

The exact location of the Roman bridge is still under discussion, with Tucci (2012) as last proposal, anyhow it was connecting the XIV region *Transtiberim* with the XIII region *Aventinus* of Rome, just like the bridge with the same name in Constantinople was connecting the XIII and XIV region. In 330 AD, following the city refoundation by Constantine, a coin was minted in Constantinople depicting a bridge, which has been interpreted as the Milvian Bridge in Rome. This interpretation is very unlikely because the coin shows a wooden bridge whereas the Milvian Bridge is in masonry. It should be interpreted instead as a bridge in Constantinople, more coherently with the foundation: why depict a building of another city in the time of the transformation of Constantinople into the new capital of the Roman Empire? Analysing the description of Dyonisius of Byzantium (Reitemeier, 1784) it was possible to localise the toponyms mentioned therein along the Golden Horn including a bridge, built by Philippus II in 340 BC. According to the reconstruction of the territorial organism (fig. 1, left) we tentatively placed the bridge along the shortest path across the Golden Horn so to connect the territorial routes from either side. Surprisingly that location found correspondence in the bathymetry of the Golden Horn where you can still recognise underwater the 2 submerged piers, also clearly represented in the coin. Moreover Gyllius described the location of the bridge noting that he could still see the foundations of the piers “ubi prope fundamenta pilarum pontis videtur” (Gyllius, 1611: 10) confirming our interpretation. Constantine the great in 324 AD on November 11<sup>th</sup> refounded the city with the construction of new walls. Their path is described in the *Patria Constantinopoleos* by listing the buildings along those walls in the X century, some 600 years after the walls were built. None of those buildings existed

at the time of Roman Constantinople, neither the walls existed anymore at that time as they collapsed following the earthquake of 447 AD, and furthermore none of the buildings listed in *Notitia* exist anymore today. In fact the *Patria* is describing the walls according to the topography of the X century, so it is indeed very difficult to locate the line of the walls today. But Valvassori in his perspective drawing illustrates the walls including gates and towers, providing a hint for their position as a continuation of the western edge of the harbour of Theodosius. The buildings mentioned in *Patria* are listed in table 1, and the previous topographical reconstructions of the walls are all based on the *Isa Kapi* mosque (Jesus gate in Turkish) assuming that this place name corresponded with the Golden Gate's position. If the walls and the Golden Gate were located here, it would not correspond with the position of the forum of Arcadius, contradicting the centre limit inversion theory. By analysing quantitative data from the historical sources we could redefine the location of that Gate. Zozimus (2, 40, 4) mentions the distance between the two sets of walls as 15 stadia (fig. 3, upper left) corresponding to the forum of Arcadius. The *Notitia* indicates 14.075 feet from the tip of the peninsula to Constantine's walls, which measured along the *Mese* also corresponds again to the location of the forum of Arcadius (fig. 3, upper right). Furthermore *Patria* describes the foundation of the city including details about the stonecutters cutting out the side of the mountain along the walls, and the geological map shows (in red, fig. 4, centre) some geometrical cuts in the rock corresponding with that description, and their position is again along the path that other sources suggest. Finally the morphological analysis of the street network on the German map of 1913, (fig. 4, right) shows a regular grid on the inside with a typical Roman block measure of 240 feet (71 m), and a very organic pattern on the outside of a dividing line (in yellow) matching the location given by quantitative data.

## Conclusions

Following these considerations it was possible to relocate the walls (fig. 6, red line) confirming the centre limit inversion theory: the limit given by the walls became the new centre in the next phase with the forum of Arcadius. This interpretation was confirmed by archaeological findings, recently next the western edge of the harbour of Theodosius archaeologists uncovered the junction between the Constantine walls and the Theodosian walls. On this updated information we based a predictive model for the localisation of the buildings listed in the *Notitia* using an algorithm which would require more space to be described in detail. We localised the buildings listed in *Notitia* (fig. 6, in grey): the church of the forerunner next to the gate of the *prodromos*, the *nymphaeum* and the theatre. For the *palatium* we found 4 possible locations, based on the morphological analysis, the orientation, and the probable connection with the water distribution system. The *lusorium* was localised along the longest straight street in Constantinople, along the bottom of the *Lycus* valley in analogy to the location of the Circus Maximus in Rome. The baths have seven possible locations in relationship with the water distribution system, so their position was not determined with certainty. The Sigma, a columned street in the form of the lowercase crescent S in the Greek alphabet which is listed in the *Book of ceremonies*, is clearly still recognisable in the urban tissue. (Berger, 1996).



This paper presents the preliminary results of an ongoing research aimed at the reconstruction of the topography of Byzantine Constantinople, and it was carried out within the premises of the Dynamic Research on Urban Morphology-DRUM Lab at Özyeğin University, Istanbul, Turkey in cooperation with Sercan Sağlam and Özge Özkuvancı.

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