Forma Quadrata Britanniae: the case of Londinium

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Abstract

In a previous research on the urban form of Alnwick, in Northumberland, we set out to integrate the well-known urban analysis of M. R. G. Conzen with the method of 'reading' of the Muratorian school (Cataldi, 2013). In particular, we had tried to apply the theory of the *Forma Quadrata* (Cataldi, 2014) to the entire territory of Great Britain, assuming that the origin of the 'square' geographical system, oriented *secundum coelum*, had been placed by the Romans in Dover (*Portus Dubris*), from where in 43 A.D. the occupation of the Island had begun. The verification of this hypothesis , with particular reference to the territory of Roman London, was carried out on the Map Ordnance Survey of Roman Britain at a scale of 1: 625,000, which topographically documents the location of the Roman centers and military fortresses within the entire roman road network, still largely functioning. We are pleased to present a preview of this work, which we are submitting in particular to the attention of the British colleagues, who are more interested in the knowledge of the permanent substrate structures, which have conditioned, and still condition, the territorial structure of Great Britain.

Keywords: Roman Britannia, Maps, Forma Quadrata theory, Permanent substrata structures
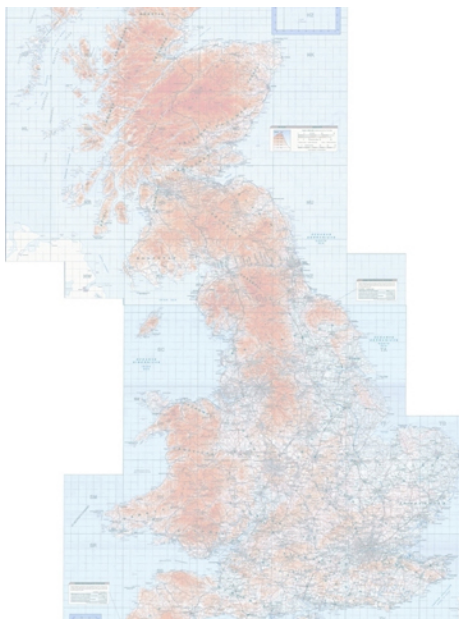
1. Roman Britain, Ordnance Survey Map 1 : 625.000

In a previous research with Gian Luigi Maffei and Nicola Marzot on the urban form of Alnwick in Northumberland (Cataldi, Maffei and Marzot, 2004), we set out to experimentally integrate the famous

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urban analysis of M. R. G. Conzen (Conzen, 1960) with the 'reading method' of the Italian school (Figure 2). The possibility of verifying the Forma Quadrata theory (Cataldi, 1993; 2004) in a Romanized territory outside of Italy had prompted us to hypothesize - for the whole of Great Britain - the existence of a geodesic network made of large square meshes of 12 miles of side as a possible virtual basis for the Roman planning of Britain. At the port of Dover - where the Roman occupation started - we found topographic evidence in support of this hypothesis (Figure 3): the traces of a large square road layout with a side of 12 Roman miles, oriented *secundum caelum* (literally 'according to the sky', following the four cardinal directions) could identify the first modular element of a geodetic grid quite similar to the one found in the Italian peninsula, with Rome at its center. The territorial reading was conducted on the Map Ordnance Survey of Roman Britain at a scale of
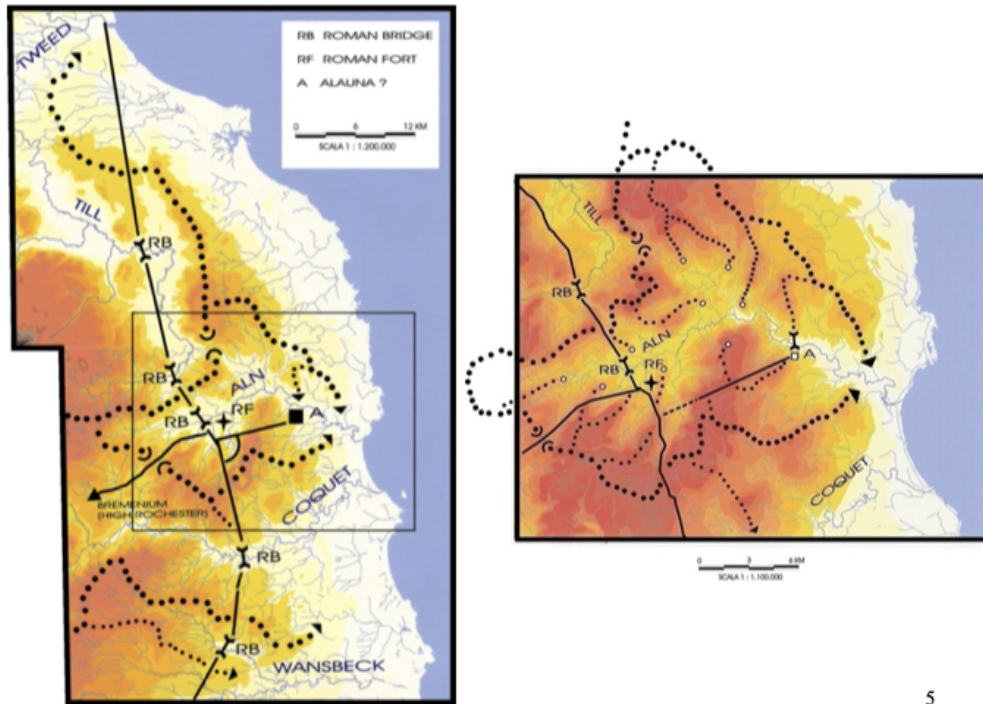
2. Aln Valley, Roman roads

1 : 625.000, redesigned with only the hydrographic network (Figure 1) .
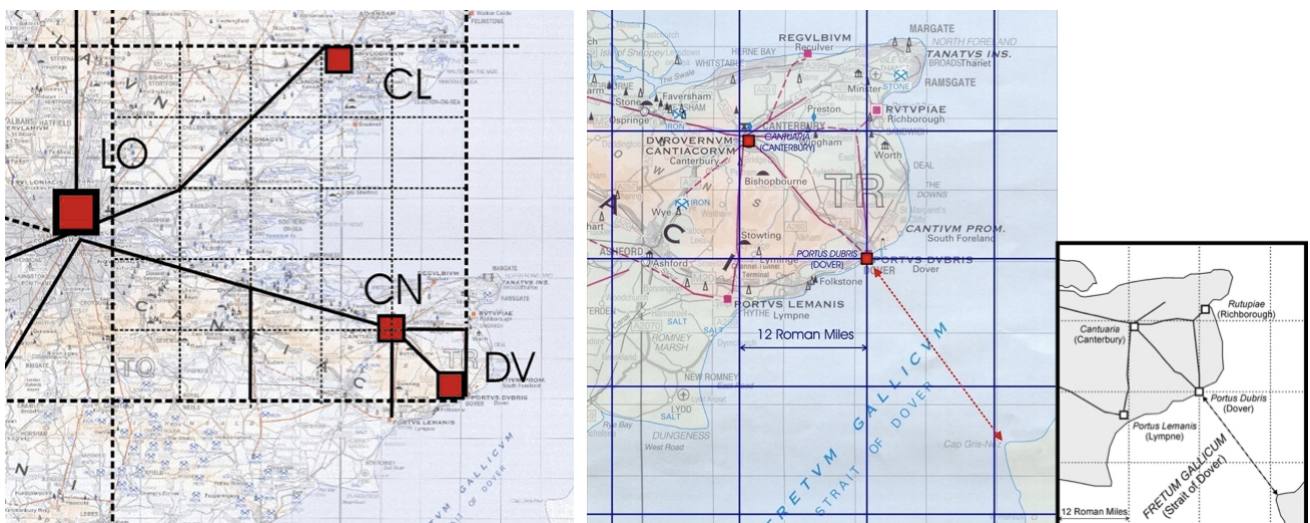
3. The hypothetical origin of Forma Quadrata Britanniae (LO - London, CN - Canterbury, DV - Dover, CL - Colchester)

The Forma Quadrata theory (Square Form theory) can help improve the knowledge of the Roman strategies for the occupation of Britain within the first centuries of the empire (Figure 4). The straight roads converging on London, presumably of Roman origin, seem to have been traced on a large scale as connecting lines between certain vertices of the Forma Quadrata network: their geographical orientation implies, for each road, a certain geometrical ratio in whole numbers (*ratio* in Latin), which had to constitute the main technical reference both in the design process and the building phase. Proceeding counterclockwise from the road to Canterbury:

1. Watling Street to *Durovernum* (Canterbury) (7 : 2);

2. The Great Road to *Camulodunum* (Colchester) (1 : 1);

3. Ermine Street to *Lindum* (Lincoln) (North-South);

4. Watling Street to *Deva* (Chester) Nord-Occidentale (1 : 1);

5. Akeman Street to *Glevum* (Gloucester) (7 : 2);

6. Devil's Highway to *Calleva* (Silchester) (13 : 5);

4. Forma Quadrata Britanniae: the large grid of side 60 miles and the Fosse Way

7. Stane Street to *Noviomagus* (Chichester) (5 : 9).
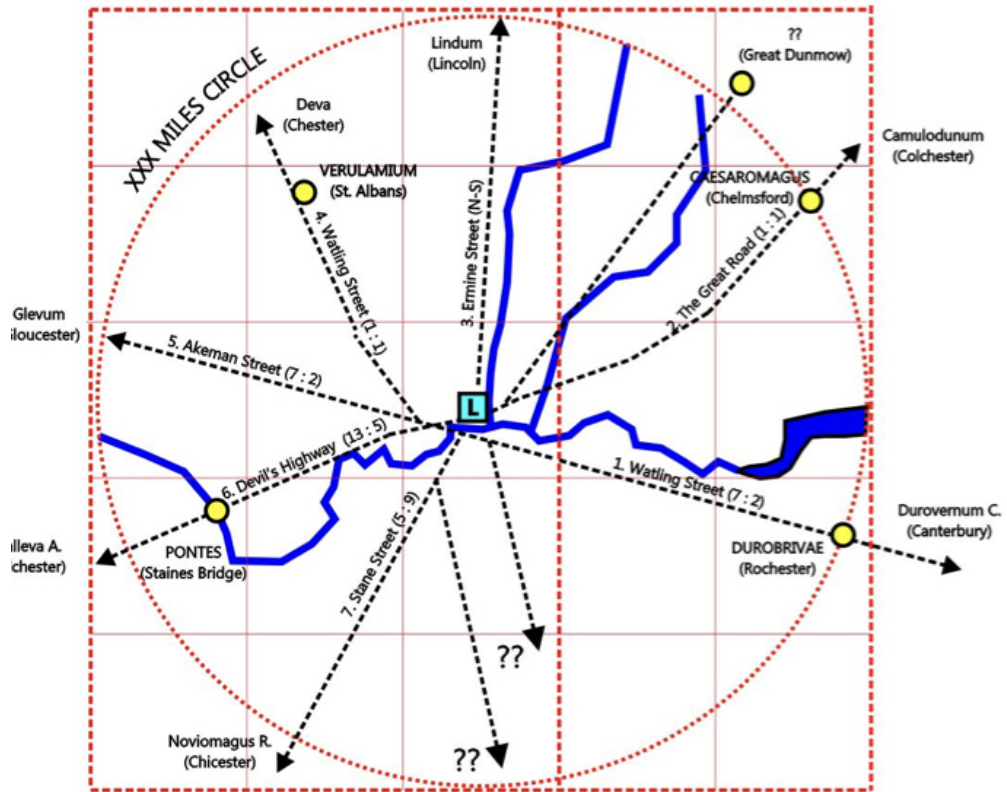
5. The Circle of the Thirty Miles with the Roman roads converging on London

Likewise, the route of the Fosse Way (Figure 4) - which can be considered the first border (*limes* in Latin) of Roman Britain - seems to be determined by a precise design choice made on the Forma: its direction flexes in correspondence of Stow-on-the-Wold, which lies on one of the main East-West axis of the grid system. Through a slight deviation of the 2 : 3 ratio in the southern segment, it assumes a new 1 : 2 direction in the northern segment, probably with the purpose of avoiding waterways. The overall length of the Fosse Way corresponds to the sum of the hypotenuses of the respective right-angled triangles (87 + 107 = 194 Roman miles).

Presumably, the Circle of the Thirty Miles established the boundary of the territory pertaining to the Roman *Londinium* within which the seven converging straight roads take on a more articulated layout, especially in relation to the course of the Thames (Figure 5). What appears immediately noticeable is the need for the two river crossings coinciding with today's London Bridge - on the head of Stane Street - and Westminster Bridge, aligned with Watling Street, the fundamental route of the Roman occupation, coming from Canterbury. Moreover, it is interesting to notice that the fortified settlements of *Caesaromagus* (Chelmsford) and *Durobrivae* (Rochester) are located on the eastern perimeter of the Circle, testifying to the strategic importance of this administrative border.

The Roman *Londinum* (Figure 6), looking like a well defined settlement within the walls and overlooking the Thames, roughly corresponds to the area occupied by the district of the City of London. It is divided in half by the Wallbrook, a tributary of the Thames that runs between the two smaller streams of the Fleet and the Stream. These two protected the flanks of the city, in particular the eastern one, with the inclusion of the triangular Fort that appears, to those who come from the sea, as the first defensive bulwark of the Roman city. The overall structure of the roman town archaeologically does not present problems of interpretation: we can, therefore, identify a possible 'doubling' of the urban structure, which seems to pass from the earliest
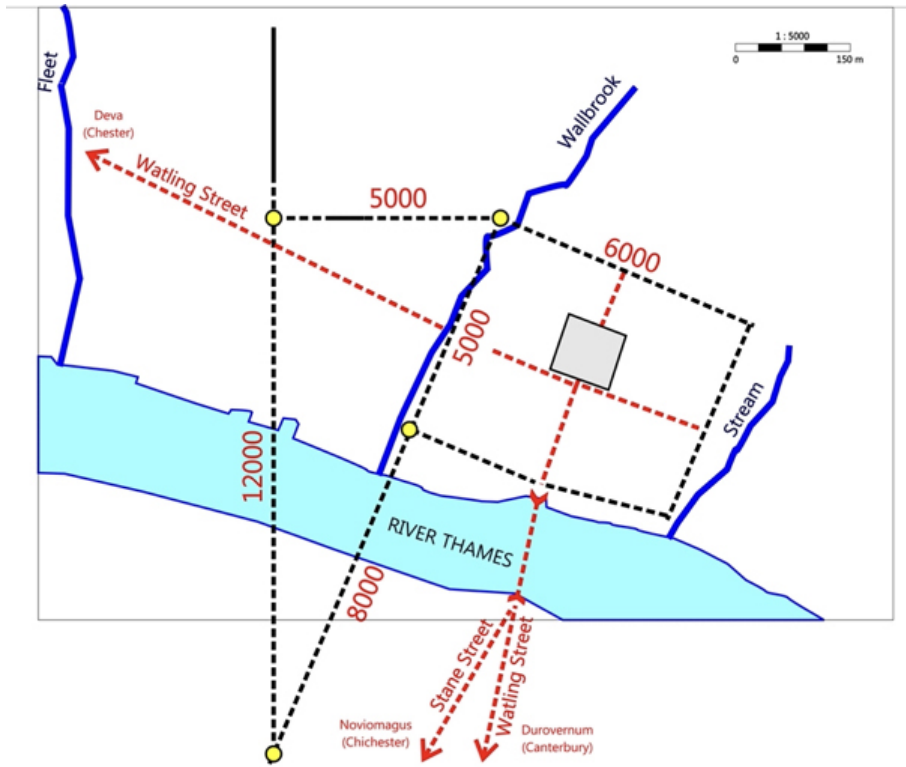
settlement of the roman encampement, the so called *castrum* (45-60 AD), to a more mature (70-120 AD) and above all more extensive urban development (Hingley, R. , 2018).
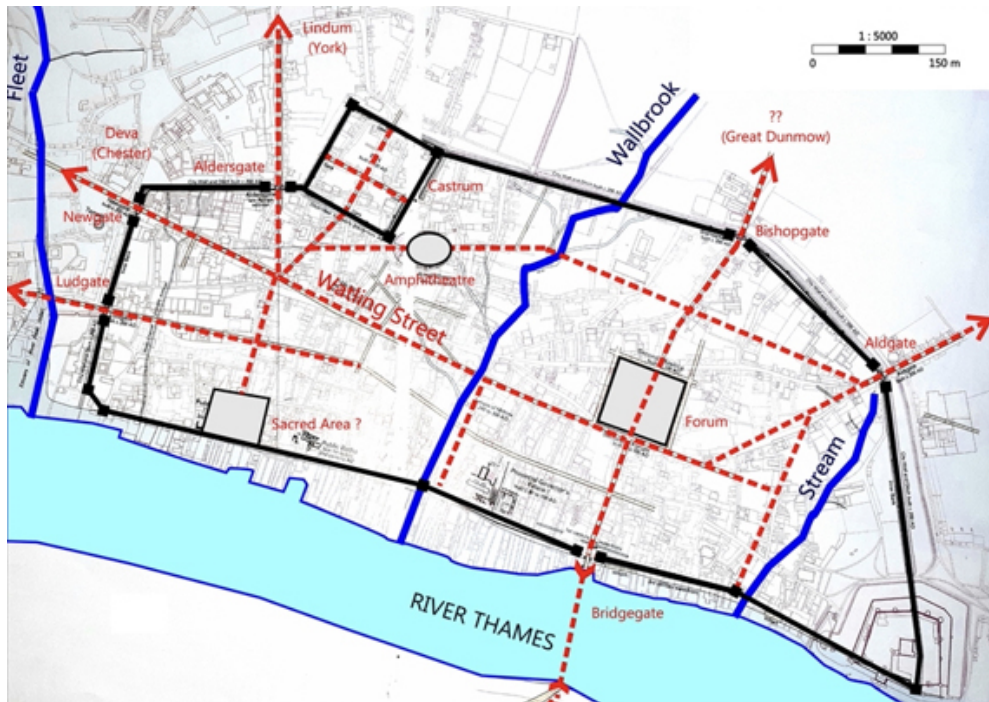
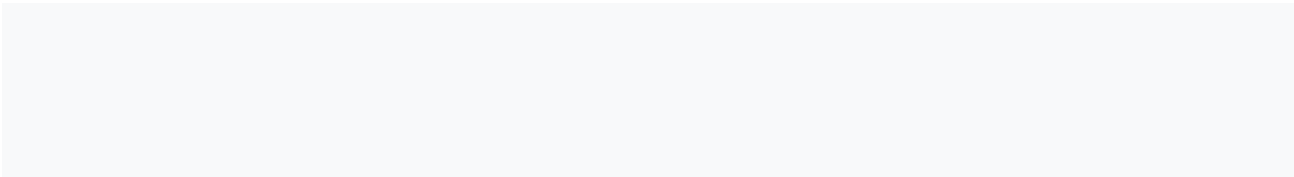
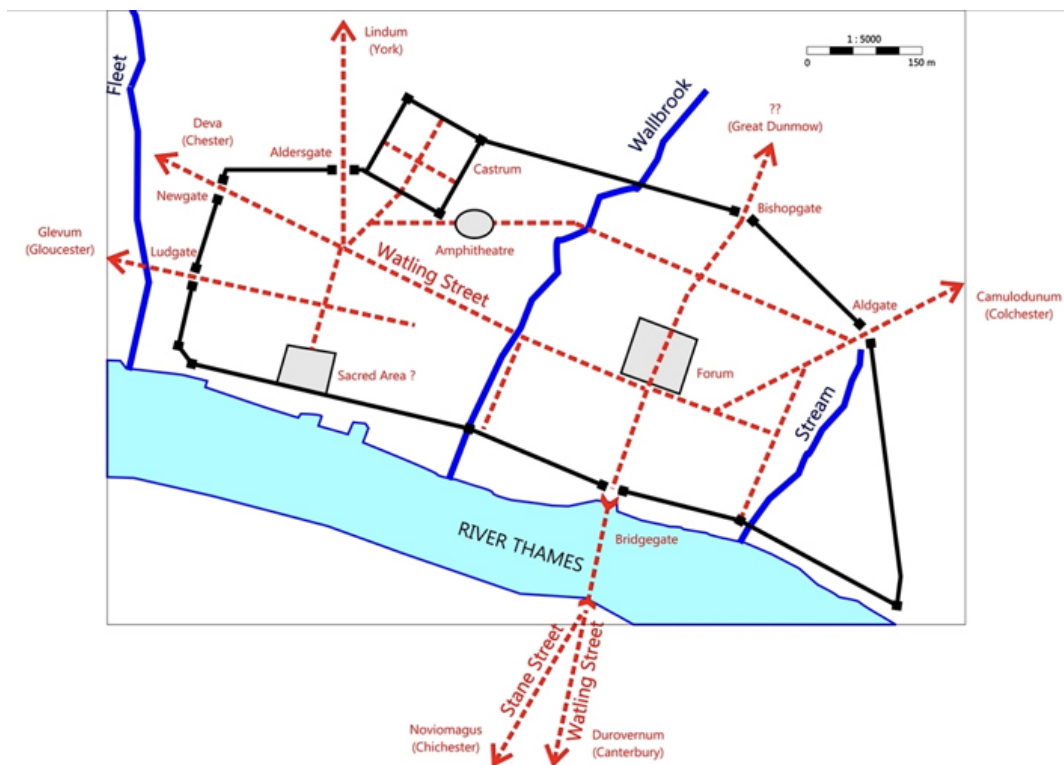6. Roman *Londinium* (Lobel, M. D., *The city of London From Prehistoric Timesto c. 1520*)

7. The hypothetical foundation cross of Roman *Londinium*

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8. The hypothetical 'Pythagorean' triangle that establishes the layout of the original castrum

9. The municipal layout of Roman *Londinium*

Our focus is not to investigate the question from an archaeological point of view, but the off-centered position of London Bridge, aligned with the center of the original *castrum*, allows us, nonetheless, to corroborate this interpretative premise with a more precise geometric theory: from the first rectangular plan to the more complex layout of municipal *Londinium,* this hypothesis arises and acquires consistency on the basis of two important residual traces of paths that were oriented *secundum caelum* ('according to the sky'). The first trace is especially important, coinciding for a long stretch with Aldersgate Street, one of the main streets of the modern City. However, what supports our hypothesis in the most convincing way is the perfect orthogonality of the two paths that, if considered interconnected, could be configured as a real 'foundation cross', the design matrix of the original urban layout (Figure 7). In other words, taking the reasoning on the city and its matrix-generated form a step forward (Figure 8), we can assume that the primitive rectangular layout of the Roman *Londinium* was established, in the upper part of the bank beyond the river, on the hypotenuse of a 'Pythagorean' triangle of sides 5, 12, 13 set on the cardinal-oriented foundation cross (Figures 8, 9).

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