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Research

Non-Orthogonal Features in the Planning of Four Ancient Towns of Central Italy

Abstract. Several ancient towns of central Italy are characterized by imposing circuits of walls constructed with the so-called polygonal or “cyclopean” megalithic technique. The date of foundation of these cities is highly uncertain; indeed, although they all became Roman colonies in the early Republican centuries (between the fifth and third centuries B.C.) their first occupation predates the Roman conquest. It is the aim of the present paper to show – using four case-studies – that these towns still show clear traces of an archaic, probably pre-Roman urbanistic design, which was *not* based on the orthogonal “rule”, i.e., the town-planning rule followed by the Greeks, Etruscans and Romans. Rather, the layouts appear to have been originally planned on the basis of a *triangular*, or even star-like, geometry, which therefore has a center of symmetry and leads to radial, rather than orthogonal, organization of the urban space. Interestingly enough, hints – so far unexplained – pointing to this kind of town planning are present in the works by ancient writers as important as Plato and Aristophanes, as well as in the comment to the *Aeneid* by Marius Servius.

1 Introduction

At the end of the Hellenic Dark Age (around the eighth to seventh centuries B.C.) the Greeks began the expansion which soon led to the foundation of several towns (“colonies”) in a wide area of the Mediterranean Sea. *All* such towns have been planned on the basis of an orthogonal grid, which divides the urban space in equal rectangular blocks. This is true, for instance, for the oldest colonies (e.g., Selinunte) already in the early sixth century B.C., while in the fifth century, with the reconstruction after the Persian War (e.g., of Miletus, fig. 1) the orthogonal grid became a rule, theorized, at least according to what has been referred by Aristotle, by the architect Hippodamus [Castagnoli 1971].

The organization of the streets on the basis of orthogonal sectors was developed, more or less simultaneously with the Greeks, by the Etruscans. We can be certain of this because, although most of the Etruscan towns were reorganized, or even completely rebuilt by the Romans (so that their original urbanistic design is uncertain), one Etruscan town was destroyed by the Celts before the Roman expansion: Misa (today Marzabotto). The archaeological excavations at Misa have shown that the town was planned on the basis of an orthogonal grid oriented to the cardinal points within 2° of error [Mansuelli 1965]. Many of the blocks of the grid were traced on the ground but never edified, showing that the planners were foreseeing a wide development of the town (fig. 2).

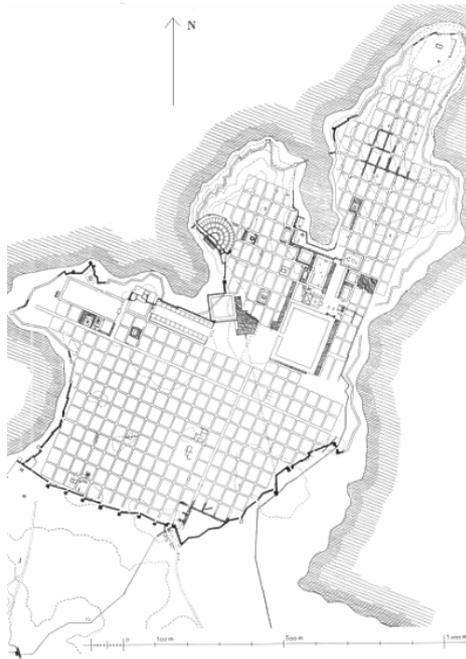


Fig. 1. The layout of Miletus, based on a rigid orthogonal grid

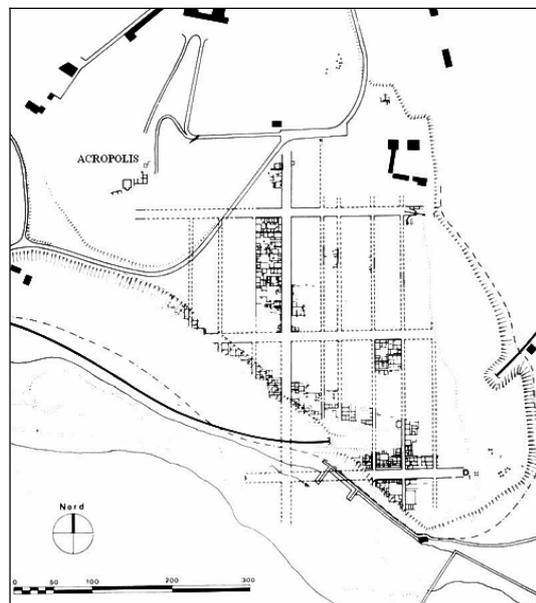


Fig. 2. Plan of Misa (Marzabotto)

It should, of course, be noted that the Etruscans were in close trading contact with the Greeks, so that the degree of the cultural interchange in the process which led to orthogonal town planning is unclear. In any case, Misa shows, *in addition* to the orthogonal grid, the orientation of the streets system to the cardinal points, a thing which is barely visible in Greece. This is a reflection of the complex foundation ritual (to be discussed in section 2) which, at least according to many Roman historians, was elaborated by the Etruscans and directly inherited by the Romans, who combined the orthogonal grid with the inspiring principle of the so-called *castrum* (military camp) criss-crossed by two main roads. The structure of the Roman grid was thus based on two main orthogonal axes, the *Cardus*, oriented (at least in principle) north-south, and the *Decumanus*, oriented east-west, corresponding to four main gates at their ends [Rykwert 1999]. Layouts based on this principle can be seen in *all* the towns of Roman foundation from the middle of the third century B.C. onward (see for instance the plan of Augusta Praetoria, today Aosta, founded around 25 B.C., fig. 3).

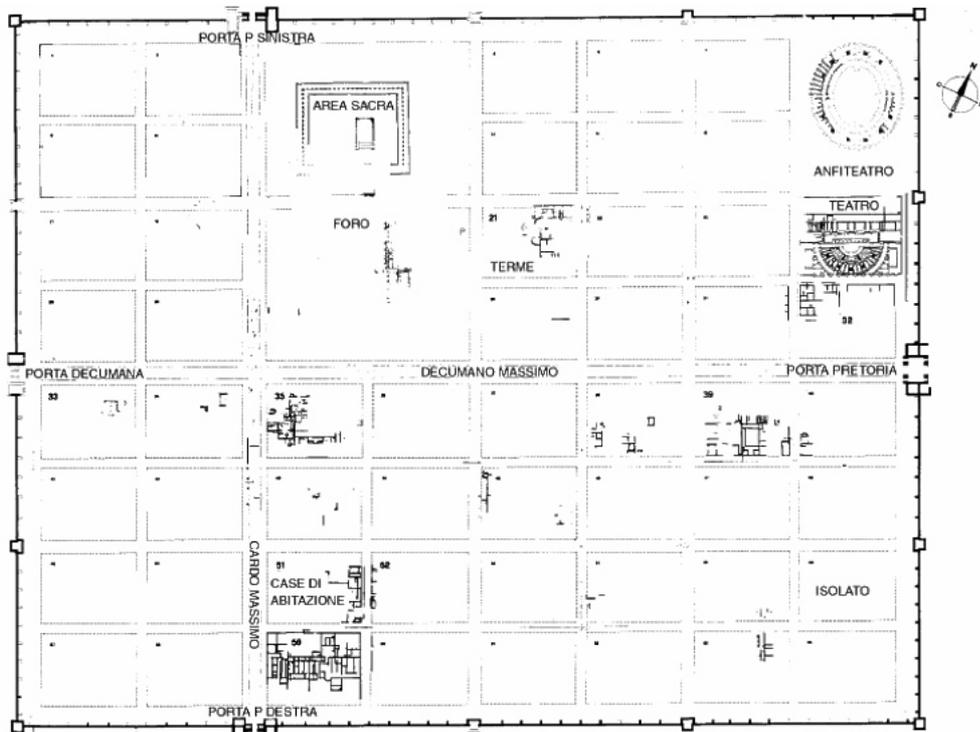


Fig. 3. Plan of Roman Augusta Praetoria, today Aosta

Sometimes the disposition of the grid followed health criteria, such as those recommended by Vitruvius in function of the winds; in some other cases it was rather dictated by symbolic reasons, as shown by the astronomical alignments observed in towns such as Augusta Bagiennorum [Barale et al. 2002] and Bologna [Incerti 1999].

It is worth mentioning that orthogonal town planning remained the rule up to the beginning of the twentieth century, and it is still today considered the best method of town

planning, at least in the cases of heavy car circulation [Southworth and Ben-Joseph 1997]. Throughout the world there have been very few exceptions to this rule in the last 2500 years, a notable one being the radial organization of the human space which was a fundamental characteristic of the Inca, as shown by the radial sectors in which the capital of the Inca empire, Cusco, was symbolically divided (see [Magli 2006a], and complete references therein).

All in all this is, briefly, what can be observed in the layout of Greek and Etruscan towns, as well as in the plan of all those towns whose Roman foundation is certain. However, there exist enigmatic and never explained passages of ancient Greek authors as important as Plato and Aristophanes, as well as a somewhat famous comment to the *Aeneid* written by Marius Servius, in which these authors seem to refer to a completely different kind of town planning, which is triangular or even radial; up to the present, no convincing explanation of such passages is available. As far as the present author is aware, however, nobody has ever tried to verify if there actually *are* ancient towns showing the traces of a planning based on a triangular, rather than orthogonal, symmetry. The aim of the present paper is to carry out such an analysis, considering as case-studies four among the most beautifully preserved settlements of central Italy, characterized by imposing circuits of walls constructed with the so-called polygonal or “cyclopean” megalithic technique.

2 The Etruscan-Roman foundation ritual

Before entering into the characteristics of the layouts of these towns, it is worth making a brief discussion of the symbolism associated with the town foundation and planning, at least according to the texts which have survived. Indeed, Roman historians such as Varro, Plutarch and Pliny the Elder report that the foundation of towns was governed by a ritual which was directly inherited from the Etruscans and governed by the rules written in the sacred books called *Disciplina*. The *Disciplina* was the collection of writings of the Etruscan religion, which was thought of as having being revealed to humanity by the gods. These books are long lost, but accounts on them have survived (for instance the work *De Divinatione* by Cicero) so that we know that they were composed of three parts. First of all, the *libri haruspicini*, which dealt with divination (the interpretation of God’s will) made by the priests called *Aruspexes* by “reading” the flight of the birds and the livers of sacrificed animals, especially sheep; second, the *libri fulgurales*, on the interpretation of thunders, and finally the *libri rituales*, dedicated to all aspects of life, such as the consecration of temples, the division of the people into tribes, and the foundation of towns. The latter consisted in observing the flight of the birds and in tracing the contour of the town by a plough, steps which everybody will recognize in the worldwide famous legend of the foundation of Rome as well. A fundamental part of all the rituals of the aruspexes was the individuation of the *auguraculum*, a sort of terrestrial image of the heavens (*templum*) in which the gods were “ordered” and “oriented”. A key “document” about this complex symbolic structure is the so-called *Piacenza Liver* (fig. 4).

The Piacenza Liver is a first century B.C. bronze model of the liver of a sheep, in 1:1 proportions, found in a field near Piacenza in the nineteenth century. The upper surface presents three protuberances (one of them corresponds to the gallbladder); the external perimeter is divided into sixteen sectors, while the surface shows six sectors disposed in a circle, and eighteen further regions; each sector or region contains the name of an Etruscan deity, with some of them repeated (many of these have been identified with the

corresponding Roman deities, such as Jupiter or Mars). The lower surface is divided into two regions, having the name of the Sun and of the Moon respectively [Pallottino 1997].



Fig. 4. The Piacenza Liver

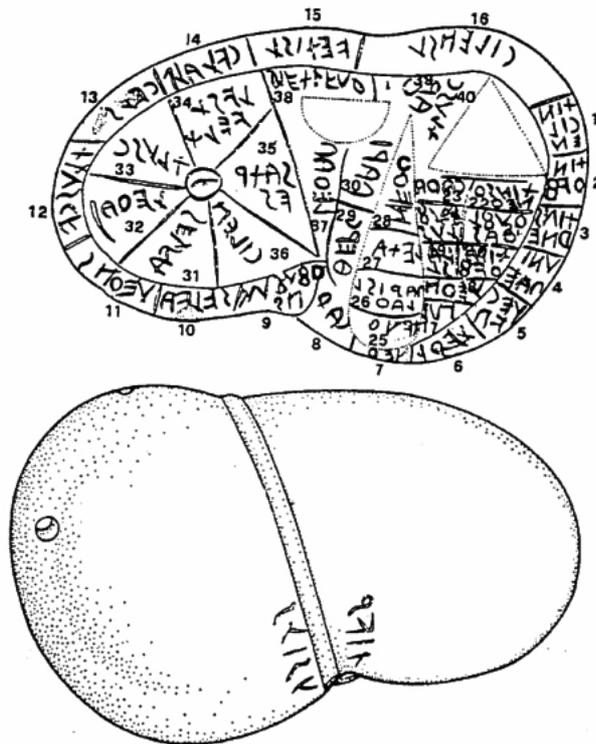


Fig. 5. The inscriptions on the Piacenza Liver (from [Aveni and Romano 1994])

The owner of the Piacenza Liver was certainly an aruspex, and the object was probably used to teach divination, and/or as a help to the memory when doing the exam of the sacrificed animals. It is an extremely important find because its sixteen external divisions show the structure of the Etruscan cosmos (fig. 5).

The deities in each sectors are *ordered* from the most important/benign to those of the underworld; since we know from independent sources that these deities were arranged also in a “geographical” order starting from the north and moving in what we would call the clockwise direction, it follows that the Piacenza Liver was also meant to be “oriented” to the cardinal points [Aveni and Romano 1994, Pallottino 1997]. Once oriented, the liver itself was to become an image of the cosmos reported on the earth, and, by analogy, so was the temple, or the city, that the aruspex was ritually founding. The “center” of the city, called *mundus* by the Romans, was therefore an icon of the center of the world, and contained a “deposit of foundation” in which the first produce of the fields and/or samples of soil from the native place of the founders was buried. Archaeological proofs of the foundation rituals have been discovered in the excavations of the Etruscan towns Misa [Mansuelli 1965] and Tarquinia [Bonghi-Jovino 1998, 2000]. From the Roman period (around the first century B.C.) an example of *auguraculum* is known from the city of Bantia [Torelli 1966]. It is composed by nine stone cylinders (*cippus*) which were disposed on the ground to identify the eight main divisions of the cosmos (a simplified version of the sixteen Etruscan divisions) and the center. The center itself was dedicated to the sun, while the other cylinders carry inscriptions which recall the role of the birds which come from the corresponding direction; for instance, the north-east one says BIVAV that is B[ENE] IU[VANTE] A[VE] (bird bringing a good omen) while the north-west cippus has the inscription CAVAP, that probably means C[ONTRARIA] AV[E] A[UGURIUM] P[ESTIFERUM] (bird who comes from a bad place, bringing a pestiferous omen). Finally, very interesting traces of the foundation ritual, to be discussed in detail below, have been found in the city of Cosa.

The profound relationship between divination, cosmos and foundation ritual is thus indubitable. However, the *radial* division of the Cosmos, reported on the Piacenza Liver, seems to conflict with the *orthogonal* organization of the Etruscan-Roman town space; as mentioned in the introduction, there is also a written text, an enigmatic passage of the Latin writer Servius Marius Honoratus, who describes the town prescribed by the *Disciplina* in a way which it is hard to reconcile with the “squared” town. Servius wrote a important commentary to Virgil’s *Aeneid* in the fourth century A.D. When commenting on the marvellous verses of the poem in which the hero is urged to admire the construction of the newly founded city of Carthage¹ (in the reality the city was founded by Phoenicians at the end of the ninth century B.C.), Servius writes:

The experts of the *Etrusca Disciplina* state that those founders of towns who do not plan the layout with three gates, three main streets, and three temples dedicated to Jupiter, Juno and Minerva, cannot be considered as people who obey the rules [author’s translation].²

Thus, we have here the description of a sort of radial, or at least *triangular* town, with three temples dedicated to the three main gods. The dedication to three gods can be easily explained in the Roman context because Jupiter, Juno and Minerva formed the *Triade Capitolina*, to which usually the main temple was dedicated (although it usually was a *single* temple with *three* cells); however, the town’s layout described by Servius, based on

the number 3, can hardly correspond to a town planned on an orthogonal grid or, even less, to the Roman Castrum with four main gates and two main streets. As a consequence, this passage has generated much confusion in the scholars who have tried to interpret it. For instance, Bloch [1970] noticed that in Misa (fig. 2) the Acropolis is located in the north, and therefore, one can conceive the idea that, *from* the Acropolis, the quadripartite town would have looked as tripartite, as described by Servius; however, this is quite an *ad hoc* explanation, which holds, if it does at all, only for a specific case. We shall instead see that there are towns in Italy – evidently *more ancient than Misa* – which might have been originally planned in accordance to the rules recalled by Servius.

3 The layouts of four cyclopean towns in central Italy

In a wide area of west-central Italy, which extends from Tuscany to Campania, there exist several towns whose walls were built with the so called *cyclopean* or *polygonal* technique. These walls are constructed of enormous (from one up to twenty tons of weight) stone blocks, cut in polygonal shapes and fitted together without mortar to form a sort of giant puzzle. Such a spectacular technique makes its first appearance during the Bronze Age (around 1500-1300 B.C.) among the Mycenaean, and indeed the attribute “cyclopean” comes from Pausania’s description of the walls of Mycenae and Tyrins. Although much less famous, the Italian cyclopean towns also achieve the same magnificence and impression of power and pride which characterize the world-famous Mycenaean sites; usually, however, the dimensions of the Italian towns are much *wider* (the perimeter can be as long as 3 km) and the most striking similarity to the Mycenaean buildings is reached in the so-called Acropoli. These are imposing megalithic buildings, situated in a dominant position with respect to the landscape, very similar to the Mycenaean’s citadels in dimensions (of the order of some tens of thousands of square metres), form (polygonal, like that of the blocks), accesses (they usually have only one main gate and one postern gate on the opposite side), contents (the interior usually contained a megalithic basement, perhaps a temple or a palace), and in their relationship with the landscape, being visible from very far; last but not least, they are nearly identical in construction technique and show astronomical alignments which can hardly be attributed to the Romans (for more details on the Acropoli of Central Italy see [Magli 2006b, 2006c] and references therein). In spite of all this, almost all polygonal walls in Italy, both in the case of the town walls and in the case of the Acropoli, are currently dated by the archaeologists many centuries after the Mycenaean, that is, to the first centuries of the Roman expansion, between the end of the sixth and the third century B.C. (see e.g., [Lugli 1957]). However, with few exceptions no stratigraphy is actually available to date the walls in their own right, and therefore this dating is essentially based on the fact that all such places make their first appearance into *written* history through the works of the Roman historians (for instance, Livius) who mention the “deduction” of a Roman colony in the same sites. It is, therefore, assumed that the Romans were responsible for the construction of the walls after the conquest of the towns. Before the expansion of the Roman control, however, the ethnic scenario in central Italy was extremely complicated: the Romans were indeed only one among several Latin tribes, and the region was inhabited by many other people as well, such as the Hernics and the Volsceans, each one with their own culture, in active cultural and trade exchanges (or war) with the Latins, the Etruscans and the Mediterranean area. Thus, most, if not all, the settlements pre-date the Roman period, and the dating of their walls is actually uncertain, leaving us with the possibility that the original layout of the towns was conceived before the “orthogonal grid rule”, during the first centuries of the Iron Age (from the ninth century onward).

In what follows, we shall investigate this possibility, considering, as said, four cities as case-studies. I hope, however, to extend this analysis in the future to many other towns in which the “topographical stratigraphy” is more complicated and deserves further investigation (towns which certainly deserve further attention are, for instance, Segni, Amelia and Alba Fucens). Our four “laboratories” here will be two Hernic towns which have been continuously inhabited up to the present, Ferentino and Alatri, and two towns whose original foundation is not certain (current opinion is that it is of early Roman age), which were already abandoned in Roman times, Norba and Cosa.

3.1 Ferentino

Ferentino was certainly inhabited since the seventh century B.C., perhaps earlier. Nobody, however, knows when the town walls were first constructed, although many archaeologists place them fully in the Roman period [Quilici and Quilici Gigli 1994]. The walls are in any case virtually intact, and show, superimposed over the megalithic structure, an elevation made out of squared blocks which is certainly Roman (fourth-third century B.C.) (fig. 6).

The same can be seen on the Acropolis, which is an imposing building constructed on a megalithic basement that is fifteen meters high (fig. 7).

The plan of the town can be seen in fig. 8a. It has *five* main gates. Among them, however, only *three* gates, A1-A2-A3, correspond to the original layout (in particular, the most important gate, denoted by A1, is the famous *Porta Sanguinaria*, shown in fig. 6), while gates B1 and B2 were added in late Republican times (end of the second century B.C.). It is therefore clear that the original town planning – whether it was Roman or not – was conceived on the basis of a *tripartite* structure. Connecting the three original gates one obtains a isosceles triangle (fig. 8b); it can be readily seen that the Acropolis lies in the center of this triangle.

The city plan was, therefore, based on just one main axis, oriented roughly north-south; when the Romans, after the conquest, decided to adapt the urban plan to their “squared” mentality, this axis became the *Cardus* of the city. They then opened the two new gates and the street – roughly oriented east-west – which connects them, playing the role of the *Decumanus*. The ideal, commercial, and social center of the city then became the point of intersection between the two main axes, and at this point was built the forum. What happened is thus very clear: a triangular city with the Acropolis at the ideal center was remodelled as a “castrum” city with its center in the Forum. Interestingly enough, during the medieval age the Ferentino cathedral was built on the pre-existing Acropolis. As a consequence, the symmetry of the Roman *castrum* was broken again, since the cathedral was the “center” of the medieval social life. The people thus felt – perhaps unconsciously – the necessity of “restoring” the original symmetry of the town, and it was probably for this reason that two new churches were constructed near the two old city gates A2 and A3. The new churches, together with the main gate of the city, somewhat reconstructed the triangular symmetry [Montuori 1996].



Fig. 6. Ferentino: the south-east sector of the polygonal walls with the gate called *Porta Sanguinaria*



Fig. 7. Ferentino: the south-west bastion of the Acropolis

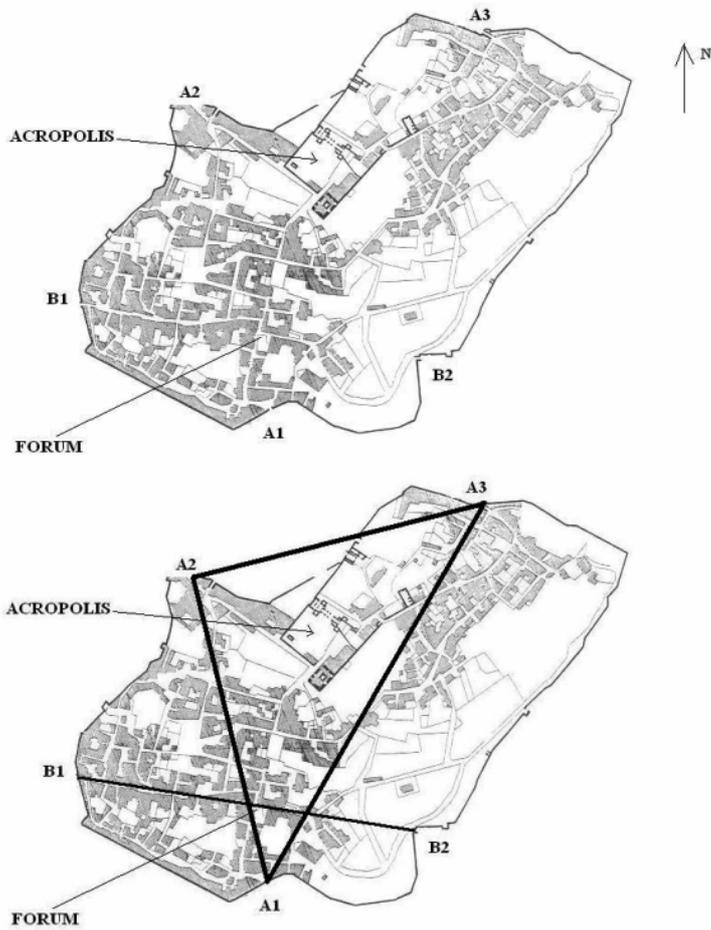


Fig. 8. a, above) Plan of Ferentino; b, below) Plan of Ferentino with the original triangular layout indicated

3.2 Alatri

Among the cyclopean towns in Italy, Alatri is perhaps the most enigmatic. The city was built around a small hill, and the town was surrounded by megalithic walls, of which many remains are still visible today. The Acropolis is placed on the hill, and it is a gigantic construction, a sort of huge “geometric castle” dominating the center of the town; although generally not well known, it is one of the most impressive megalithic buildings in the entire world, and the famous German historian Gregorovius (1821-1891) reported that it made “an impression greater than that made by the Coliseum” (fig. 9). On the top of the hill there existed a second megalithic structure, perhaps a palace or a temple, whose giant basement was used in the Middle Age as the foundation for the Cathedral (some of the blocks still visible on the right end side of the church reach dimensions of the order of 2 x 2 x 1.5 meters and weigh around 12 tons; in spite of this they are perfectly cut and joined together at several – up to nine – corners) (fig. 10).



Fig. 9. Alatri: the north-west sector of the megalithic walls of the Acropolis



Fig. 10. Alatri: the point O, the megalithic basement and the *mundus*

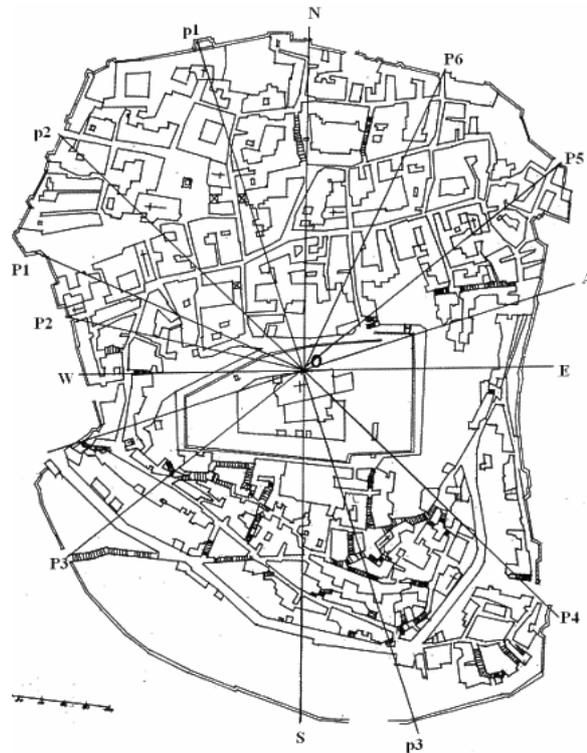


Fig. 11. Plan of Alatri. The layout is centered at point O, on the Acropolis

It is already well known that Alatri and its Acropolis were planned in accordance with rigorous mathematical and astronomical references [Capone 1982; Aveni and Capone 1985; Magli 2006b] and, in particular, it has been shown that the original layout of the city is based on a radial geometry. The center lies on the Acropolis, near the megalithic basement (in the point indicated by O in fig. 11), which therefore plays the role of ideal “focus” of the town.

The walls have six main gates (indicated by P1-P6) and three posterns (p1-p3). All the main gates, excluding P2, are equidistant from O, and therefore lie on a circle centered in O. The radius of the circle equals three times the value of the segment OH (which is about 92 m long) connecting the center with the north-east corner of the Acropolis and indicating the summer solstice sunrise. In addition, the town also shows a sort of curious quadripartite “symmetry”. Indeed, the north-west sector has two main doors and two small ones, while the north-east sector two main doors. “Symmetrically dividing by two” with respect to O, the south-west sector has one main door and the south-east sector one main door and one small door. It is difficult to attribute all this to chance, because the lines connecting the pairs of doors, p1-p3, p2-P4, P3-P5, all intersect each other in O. Finally, near this point is visible a narrow and deep cleft in the rocks, which perhaps indicated the *mundus* of the city.

There can be little doubt about the fact that such a complex geometric layout predates the Roman period. Interestingly enough, archaeological excavations have shown that the Roman forum of the city was situated where the main square is located today, in the northern part of the town. Since in Alatri it was simply impossible to re-convert the urbanistic design to the “squared” conception, because of the presence of the huge hill of the Acropolis at the very center, the “social center” of the town was translated to the northern sector, while the southern one remained a residential quarter without centers of social aggregation, a role which is still preserved today [Ritarossi 1999].

3.3 Norba

Norba lies at the very end of the Lepini mountains, on a steep ridge which looks towards the sea, some 80 km south of Rome. The area surrounding the city was inhabited at least from the fourth century B.C., and, as in Ferentino, at Norba there are strong hints pointing to a peopling of the town itself at least from the eighth-seventh century B.C., although, again, the town walls are usually attributed to the Romans and dated to the fourth century B.C. [Quilici and Quilici Gigli 2001].

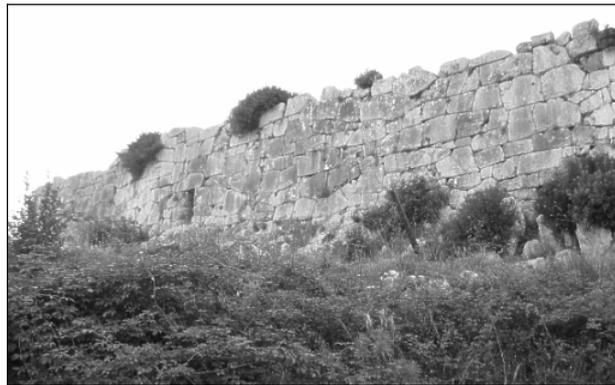


Fig. 12. Norba: the south-west front of the ramparts.



Fig. 13. Norba, the main gate or *Porta Maggiore*

The city is very big, with a perimeter of some 3 km, and the megalithic walls comprise three small hills, or Acropoli, each one with temples built on the top. The town was besieged and all its habitants killed during the Mario-Silla war (around 82 B.C.); since then the site was never again inhabited, so today it is one of the most beautifully preserved cyclopean towns of Central Italy (figs. 12,13).

The original layout of Norba was clearly inspired by the number 3: there are indeed three Acropoli (small hills) and, originally, three main gates A1, A2, A3 (fig. 14a). The contour of the walls was vaguely circular, but on the south-west side the builders strictly followed very steep cliffs, giving the town quite irregular boundaries. The interior of the city exhibits a rigid orthogonal grid which, however, at least in my opinion, cannot be contemporary with the construction of the walls but must be more recent. Indeed, the spectacular main gate on the east side, *Porta Maggiore* (fig. 13), does not lead to any of the east-west axes of the grid. Conversely, the paved Decumanus, which still today crosses the entire town, leads not to a gate but to the hill (called *Acropoli Minore*) located to the south of the main gate; at the other end the Decumanus enters into the city through gate B1, which in turn was almost certainly added after the initial construction of the walls [Quilici Gigli 2003]. The whole internal layout of the town is therefore attributable to a re-organization of the urban space made by the Romans in the second century B.C., and at this time the east-west axis became the main axis of the city (fig. 14b).

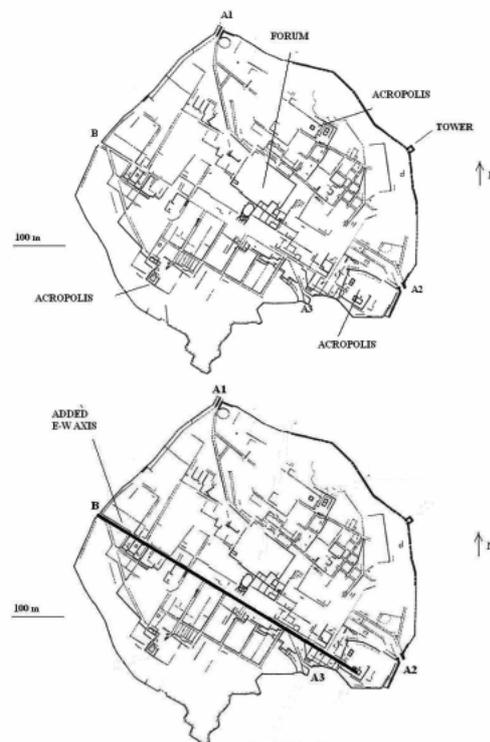


Fig. 14. a, above) Plan of Norba; b, below) Plan of Norba with the east-west axis highlighted

The view from the Decumanus was (and still is) really stunning: looking out, the eye goes to the horizon, while, looking in, one is directly in front of the spectacular ramp that ascends to the two temples on the top of the hill. One of them is parallel to the axis, while the orthogonal one was conceived to be viewed from the exterior of the town. Interestingly enough, the guideline of the Decumanus was fixed in accordance to an astronomical alignment: it is indeed easy to check that it points to the summer solstice sunset.

3.4 Cosa

The city of Cosa lies directly on the sea, on the Ansedonia promontory in southern Tuscany. The position of the town, high on the promontory, appears to be ideal for control of the sea behind, which was very important from the commercial point of view, due to the mines which are present on the coast above, from the Argentario peninsula to the island of Elba.

At the base of the hill, at less than 3 km from the town existed an ancient port, equipped with complex artificial structures. In particular, an impressive channel, the *Tagliata Etrusca*, still visible today, is carved out of the rocks; eighty meters long, twelve meters high and two meters wide, it was probably constructed as part of the works required for managing the port. However, this work is not mentioned in written sources, and nobody really knows for certain who built it, when, and why. Although a city named Cosa is mentioned as an Etruscan settlement by several ancient authors, including Virgil, today most archaeologists believe that the town was entirely a Roman colony, founded from scratch in the first half of the third century B.C. [Brown 1951, 1980]. The city was abandoned in the early Imperial age and therefore, like Norba, it appears as it was two thousand years ago.

The walls of Cosa are masterpieces of polygonal masonry (figs. 15,16) and are equipped (the only example in Italy) with several towers. These, however, were probably added in later times with respect to the original construction, since there is no joint between the blocks of the walls and those of the towers.



Fig. 15. Cosa: the north-west gate



Fig. 16. Cosa: the north-east gate

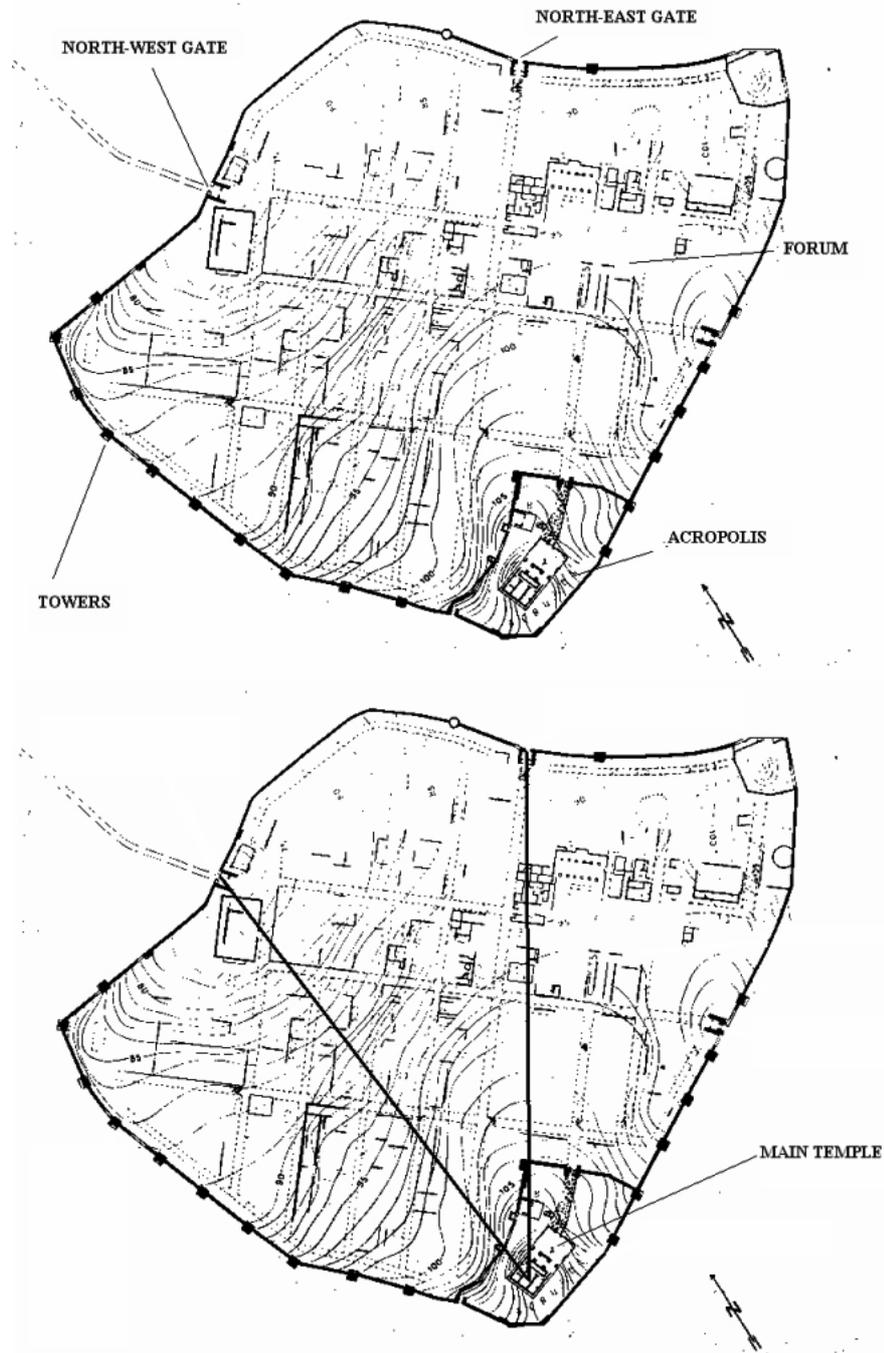


Fig. 17. a, above) Plan of Cosa; b, below) Plan of Cosa: two solid lines have been drawn to connect the *mundus* of the city, in the central cell of the Capitolium, with the two north gates

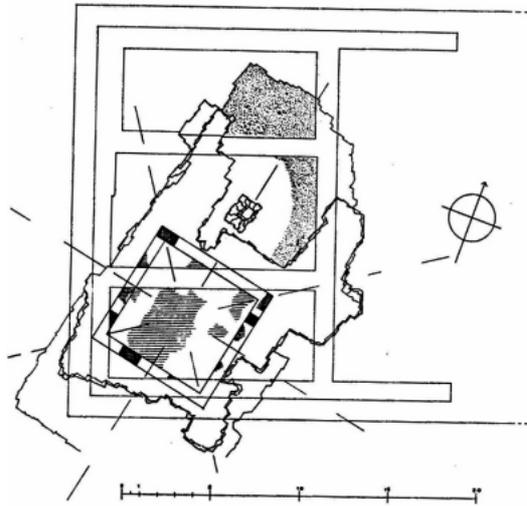


Fig. 18. Cosa: plan of the structures under the Capitulum (after [Brown 1980])

The interior of the city was planned on the basis of a rigid orthogonal grid, and this grid is in accordance with the disposition of the gates, so that – although no internal axis can be defined *Cardus* or *Decumanus*, because none of them connects two gates – the hippodamean layout might reasonably be considered contemporary with the construction of the walls (fig. 17a). Curiously enough, however, it seems that the design was inspired from its very conception by a *tripartite* division of the urban space. First of all, the city had only three main gates (further to these, there is only one postern, located near the Acropolis). Second, during the excavation of the main temple on the Acropolis, the Capitulum dedicated to the *Triade Capitolina*, a squared basement, roughly oriented to the cardinal points, was discovered (fig. 18). The basement is of course more ancient than the temple above it, and it almost certainly refers to the first phase of construction of the town. At a few meters behind the basement, on axis with it and at the very center of the temple's cells, a natural rocky cleft was found; this probably contained a foundation deposit of first produce [Brown 1980]. Thus, the archaeologists probably found in this the *mundus* of the city, but *it does not correspond to a geometrical center of the town's orthogonal grid*, since the Acropolis lies in a spectacular position at the southern corner of the city walls, dominating the sea behind. Thus, how should it be interpreted? If we ignore for a moment the orthogonal grid on which the streets of Cosa were laid out, the *mundus* actually turns out to have a geometrical function: the lines connecting it with the two northern doors divide the city in *three* quarters which are very similar in size, and, in addition, the line pointing to the north-west gate is oriented on the meridian (fig. 17b).

4 Discussion and conclusions

We have thus seen that the layouts of four of the ancient towns of central Italy show urbanistic features based on the number 3 (three gates, three Acropoli, tripartite or even radial division of urban space) which can hardly be attributed to the Roman period (or, at least, they do not correspond to what we know about this period). These features appear to make reference to an older tradition, one perhaps contained in the lost Etruscan books. As a

matter of fact, the Piacenza Liver is radially divided and exhibits three “hills”, and Servius states explicitly that the rules for the foundation of cities, which were contained in the books, were governed the number 3. If this tradition really existed, it would have pre-dated the period in which the orthogonal grid became the rule, around the early sixth century. This proposal is independently supported by other data, such as astronomical alignments (see also [Magli 2006b, 2006c]); and, in view of the new excavations on the Palatino hill, we know that the first fortification of Rome itself must also be retro-dated from the standard period – beginning of the sixth century – to the *traditional* one indicated by the Roman historians, around the middle of the eighth century B.C. (by the way, due to the enormous amount of archaeological stratifications, the layout of the archaic town of Rome remains uncertain, see [Carandini 1997]).

A problem now arises, namely, how are we to understand in which cultural horizon the “radial” or the “tripartite” geometrical planning should be collocated? It is possible that this tradition originated in Greece. In fact, as mentioned in the introduction to the present paper, although *no* classical Greek city was ever laid out radially, there are some enigmatic passages by Greek writers that mention a radially planned town [Cahill 2002]. First of all, one could cite Plato’s famous description of Atlantis in the *Critia*, in which a circular town surrounded by concentric water channels is depicted. Secondly, leaving aside the many controversial questions about this “ideal” city, in his last dialogue, *The Laws* (written around 460 B.C.), Plato states the way in which *all* new cities should be planned by saying:

We will divide the city into twelve portions, first founding temples to Hestia, to Zeus and to Athena, in a spot which we will call the Acropolis, and surround it with a circular wall, making the division of the entire city and country radiate from this point (transl. Benjamin Jowett).

A star-like town also appears in the comedy *Birds*, written by Aristophanes around 415 B.C. In this comedy, a person called Meton (probably a caricature of the astronomer Meton of Athens) proposes planning a city in this way:

With the straight ruler I set to work to inscribe a square within this circle; in its center will be the market-place, into which all the straight streets will lead, converging to this center like a star, which, although only orbicular, sends forth its rays in a straight line from all sides (anonymous transl., 1917).

The passage is clearly satiric but, even if Aristophanes was attempting to *criticize* Meton (an intention which is far from clear), in any case he depicts an urban plan which is, once again, star-like. This “theoretical” star-like town has generated much debate, and there is no satisfactory interpretation available. For instance, the authoritative scholar Francesco Castagnoli wrote:

If the comparison is taken literally, the vision of a “Place de l’Étoile” arises. But such a plan was not employed until the seventeenth century; it was totally unknown to the ancient world. Though it is true that the poet can create before the architect, a less literal interpretation of the passage would be appropriate: the rays are the four streets which, spreading from the agora, define the quadripartite city.

Thus, the “rays” should be the four main streets of the squared town, an interpretation which is at least questionable. However, it is not true that a radial plan was totally

unknown to the *ancient* world: it was unknown (or, better, unrealised) in the *classical* world, but the radial organization of the inhabited space *is* present in Greece before the classical period: it is indeed attested to, for instance, by the Neolithic site of Dimini (fig. 19) and in the Mycenaean citadel of Aghios Georgios near Chalandritsa; further, it should be noticed that the radial planning of settlements was the rule in Palestine during the Iron Age [Finkelstein 1988]; see, for example, the layout of the site of Nasbeh, dating around the ninth century B.C. (fig. 20).



Fig. 19. Plan of the Neolithic settlement of Dimini

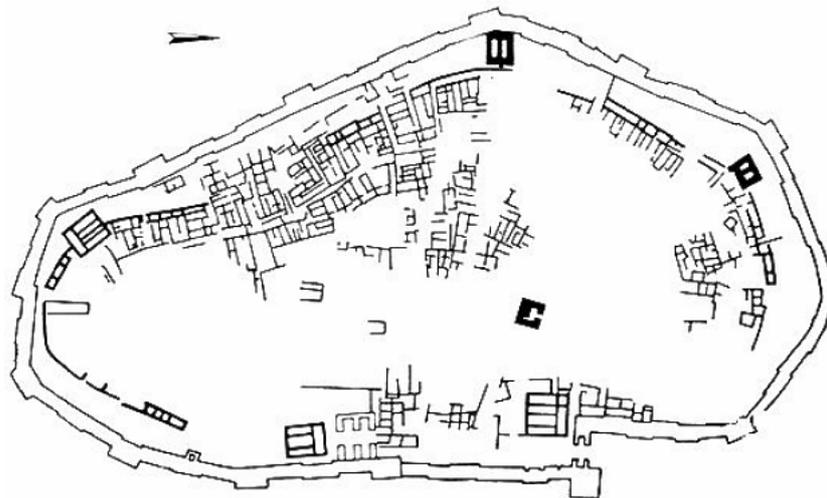


Fig. 20. Plan of the Iron Age settlement of Nasbeh, Palestine

Therefore, it might be that Plato and Aristophanes, like Servius, were referring to old Mediterranean traditions, filtered during the Hellenic Middle Age, and thus it might well be that the building techniques and the layouts which are visible in the Italian cyclopean towns originated in Greece, during the Hellenic Dark Age, or, even before, in the Mycenaean period.

Note added in proofs:

After the completion of this work, the author became aware of a new, very important discovery in southern Lazio.

Indeed, archaeologists Lorenzo Quilici and Stefania Quilici Gigli have discovered the remains of a previously-unnoticed archaic town located on the steep hill called Pianara, near Fondi. This town, certainly inhabited from the sixth to the fourth centuries B.C., is probably the one called "Amyclae" by the Roman historians. The town is fortified with a imposing polygonal wall, and it turns out that the circuit of the walls comprises three hills and three main gates.

Notes

1. *Miratur molem Aeneas, magalia quondam – miratur portas strepitumque et strata viarum*, which roughly means "Look at the size (of the town) Enea, where before was only rubbish – look at the gates, the street traffic and the industrious people."
2. *Prudentes Etruscae disciplinae aiunt apud conditores Etruscarum urbium non putatas iustas urbes, in quibus non tres portae essent dedicatae et tot viae et tot templa, Iovis Iunonis Minervae.*

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