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XVI, 2025/Supplemento 1



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GENESI E TRASFORMAZIONE DAL RAPPORTO TRA VIABILITÀ E IMPIANTI URBANI NEL LAZIO E IN CAMPANIA  
TRA ETÀ ROMANA E TARDA ANTICHITÀ

Atti della Giornata internazionale di studio, Cassino, 18 aprile 2024

a cura di

Cesare Felici, Roberta Sollo, Caterina Paola Venditti

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ISTITUTO CENTRALE PER L'ARCHEOLOGIA

## THE ROAD AND THE CITY. INTERACTION, CONDITIONING, NETWORKING

CRISTINA CORSI \*

### Riassunto

*Questo articolo esamina la polisemica relazione tra strade e città nel mondo romano, mettendo in discussione le dicotomie tradizionali che privilegiano il fenomeno urbano o i sistemi stradali come motore principale dello sviluppo culturale e spaziale della Romanità. Adottando una prospettiva basata sulle reti, esplora le strade, gli insediamenti urbani e la loro relazione con la divisione del territorio come hub e nodi interconnessi all'interno di sistemi più ampi di comunicazione e scambio. Attraverso casi di studio in tutta la penisola italiana, da Verona e Aquileia a Cosa, Alba Fucens, Ferentum, Cales, Venusia e molti altri, si indaga se la struttura urbana fosse generata da assi stradali preesistenti o adattata ad essi, affrontando la questione "dell'uovo e della gallina" in termini di priorità spaziale. L'analisi incorpora fondazioni coloniali, insediamenti organici e "villaggi di strada", evidenziando l'influenza dei vincoli geografici, delle considerazioni strategiche e delle successive tangenziali o circonvallazioni. Particolare attenzione è riservata ai sistemi integrati in cui le vie navigabili completavano i percorsi terrestri, come ad Altinum e Aquileia, rivelando l'interazione adattiva tra i principi di pianificazione romani e le topografie locali. Rifiutando modelli urbanistici rigidi, lo studio sottolinea l'interazione dinamica e specifica al contesto tra collegamenti a lunga distanza, forma urbana e pianificazione territoriale, sostenendo un approccio olistico che tenga conto delle diverse reti infrastrutturali nella formazione dei paesaggi urbani antichi.*

*Parole chiave: sistema stradale, struttura urbana, interazione*

### Abstract

*This paper examines the multifaceted relationship between roads and towns in the Roman world, challenging traditional dichotomies that privilege either the urban phenomenon or road systems as the primary driver of cultural and spatial development. Adopting a network-based perspective, it explores roads, urban settlements and their relationship with land division as interconnected hubs and nodes within broader systems of communication and exchange. Through case studies across the Italian peninsula, from Verona and Aquileia to Cosa, Alba Fucens, Ferentum, Cales, Venusia and many others, it investigates whether urban layouts were generated by pre-existing road axes or adapted to them, addressing the "chicken or egg" question of spatial priority. The analysis incorporates colonial foundations, organic settlements, and "roadside villages", highlighting the influence of geographical constraints, strategic considerations, and later bypasses or ring roads. Particular attention is given to integrated systems where waterways complemented terrestrial routes, as in Altinum and Aquileia, revealing the adaptive interplay between Roman planning principles and local topographies. Rejecting rigid urbanistic models, the study emphasises the dynamic, context-specific interplay between long-distance connections, urban form, and land-use planning, arguing for a holistic approach that accounts for diverse infrastructural networks in shaping ancient urban landscapes.*

*Keywords: road system, urban structure, interaction*

### INTRODUCTION: THE ROAD AND THE CITY

Scholars of the Roman world have long maintained that the city embodied the essence of Roman culture and that urban development was the driving force behind cultural change. A substantial body of research, however, has also recognised the role of the road system in shaping and modelling the landscape, emphasising communication networks as the most effective conduits for transmitting Roman values, habits, and socio-cultural and economic patterns.

These two perspectives converge in the more innovative concept of the network – a system of hubs and nodes (cities, roads, routes, and intermodal junctions) functioning like beating hearts and the circulatory system that connects them. As Ray Laurence observes, Roman Italy may be seen as «a series of cities that constitute a whole through their interconnection by the road system itself, and the action of travel and transportation»<sup>1</sup>.

<sup>1</sup> LAURENCE 2009, p. 2.

By elevating “connection” to the most decisive factor in the historical development of Roman unity, Laurence shifts and enriches our understanding of the relationship between cities and communication networks, opening new lines of enquiry.

Concurrently, discussion has been reinvigorated by fresh insights into the concept of the urban street. No longer regarded merely as a “thoroughfare for wheeled and pedestrian traffic,” it is now understood as «a very complex urban structure bringing together every elementary component of the urban fabric, such as the road system, the urban plots, the buildings, and the voids between them»<sup>2</sup>.

The study of urban traffic – most often focusing on Rome, Pompeii, and Ostia – is unquestionably a key element of the “road and the city” theme. This approach draws upon sociological literature that has shaped many currents in modern urban planning, tracing directly back to Henri Lefebvre<sup>3</sup>. It interprets streets (and in some cases, roads) as spaces for social interaction and as venues for commercial and even religious activities, in addition to serving as channels for movement and distribution<sup>4</sup>. While an investigation into the nature of traffic in the ancient city (its patterns, limitations, challenges, and solutions) lies beyond the scope of the present study, the topic provides a valuable point of comparison when considering urban crossings by long-distance routes (*infra*).

The relationship between roads and cities can be interpreted in multiple ways, several of which are represented in the articles in this volume. Here, Stefania Quilici Gigli’s general framework for the Appian Way is complemented by case studies from *Latium* and Campania, each addressing different facets of the multifaceted relationship between road and city<sup>5</sup>.

Not all approaches have been adopted here. For instance, the distribution of settlements along road axes in relation to itinerary sources is not examined. Nevertheless, Paola Carfora’s contribution analyses the relationship between principal roads and the settlements that developed along them, revealing an unequivocal dependence of the former on the latter, with particular reference to the *Vicus Novanensis* along the Appian Way, south of *Capua*<sup>6</sup>. This insight into a specific Campanian site is paralleled by the overview that Quilici Gigli offers of the sites that clustered around the Via Appia where, predictably, the road acted as a hinge for the spatial development of the settlement<sup>7</sup>.

In this paper, I approach the relationship between roads and cities from a different, more strictly urbanistic perspective: the “genealogical” – or generative – and chronological, as well as spatial, relationship between the principal road axis and the urban layout. The aim is to determine which element was primary and therefore generative, and to assess how strongly this connection influenced the *forma urbis*, both in its original design and in its subsequent evolution.

To maintain focus within the vast field of potential case studies, this essay does not pursue other promising lines of research concerning the urban plan and its thoroughfares. For example, I do not address the transformation of urban road networks or the phenomenon of the “consumption of planning”, both recently examined by Luisa Migliorati<sup>8</sup>.

#### A “PERSONAL” BRIEF OVERVIEW OF THE STATE OF THE ART

To my knowledge, this approach, focusing on the elements that shape the overall framework of colonial projects, was already outlined in the 1950s by leading scholars examining the relationship between Roman roads and land division<sup>9</sup>.

Within the field of Roman urban studies, it is impossible to summarise the full history of

<sup>2</sup> The study of urban streets as living spaces and the deeper analysis of their circulation, their hierarchy and their role in structuring the urban life have been central to many recent works, starting from those of Laurence (LAURENCE 2008; LAURENCE 2009; LAURENCE, NEWSOME 2011), HARTNETT 2017 and POEHLER 2017; MAINET, MORARD 2021b, p. 1.

<sup>3</sup> LEFEBVRE 1970.

<sup>4</sup> LAURENCE 2008, p. 87; CORSI 2021. For Ostia, see MAR 2008; DELAINE, HORI 2020; MAINET 2021.

<sup>5</sup> QUILICI GIGLI in this vol.

<sup>6</sup> CARFORA in this vol.

<sup>7</sup> A spatial but not topographical approach is adopted to study these “road stations” along the Via Appia in their function of “central places” by TOI, DE HAAS 2016, pp. 11-17.

<sup>8</sup> E.g. MIGLIORATI 2023a.

<sup>9</sup> E.g. CASTAGNOLI 1958, *infra*.

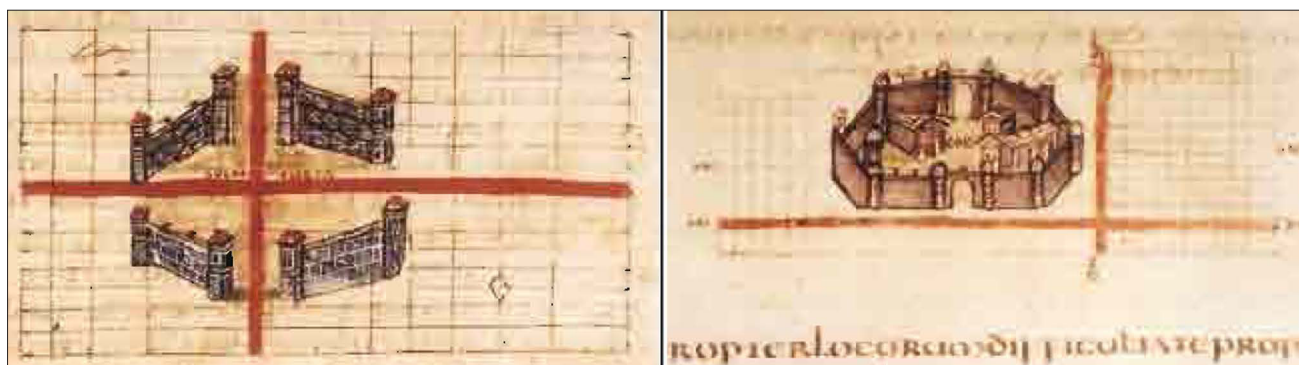


Fig. 1. Illustration of the *optima ratio* from the collection of the *Gromatici Veteres*, the ideal connection between the town layout and the land-division (A), and the alternative, termed the *proxima ratio*, occurring when the intersection of the centuriation axes merely touches the centre on which it depends (B). See HYG. *grom.*, *De limitibus constituendis*, p. 194, 9-13 (ed. Lachmann), manuscript Arcerianus A (after SETTIS 1983, figg. 54, 56, pp. 103-104).

scholarship on this subject here. I will merely observe that the relationship between urban and extra-urban axes is seldom addressed in comprehensive studies of Roman urban planning<sup>10</sup>. Frequently, city plans are presented without their geographical context, thereby detaching the urban layout from the communication network. This is the case, for example, in the influential manual by Pierre Gros and Mario Torelli, first published in 1988 and updated in 2007<sup>11</sup>. Even in works with a regional scope, such as the seminal study by Guido Achille Mansuelli on *Aemilia*, the emphasis is often placed on architectural aspects rather than on the *forma urbis* and its relationship with the surrounding territory<sup>12</sup>.

Conversely, the link between centres and road network is central to many volumes of the *Forma Italiae*, in several volumes of the *Atlante Tematico di Topografia Antica*<sup>13</sup> and the *Latium Vetus* series, edited the first, and authored the second by Lorenzo Quilici e Stefania Quilici Gigli.

Among the works that have personally inspired me the most are the studies by Cairolì Fulvio

Giuliani<sup>14</sup>, Quilici and Quilici Gigli<sup>15</sup>, and obviously by Paolo Sommella, starting from the dense book authored with the contribution of Migliorati<sup>16</sup>. The work of M. Luisa Marchi on *Dauia* moves very much in the direction I adopt here, analysing urban forms in relation to both road network design and extra-urban communication routes<sup>17</sup>. It has therefore become clear how critical it is in urban studies, particularly Roman cities, to analyse the extent to which the relationship between long-distance and urban street networks has influenced – or possibly diverged from – urban planning.

The interplay between roads and a specific category of settlements, namely colonial foundations, has been the focus of considerable research. In the Italian context, these studies often cite Filippo Coarelli's 1988 article on the relationship between *colonizzazione* and *viabilità*<sup>18</sup>. Coarelli underscores the close connection between colonial projects and the consolidation or creation *ex novo* of long-distance roads, designed to ensure links between Rome, towns with deeper and more enduring integration into the Roman sphere, and newly conquered or established centres.

#### ROADS, URBAN PLANNING, LAND DIVISION

The idea that the orientation of centuriation, extra-urban roads, and urban planning were

<sup>10</sup> Here we will limit ourselves to Roman Italy, but among the works produced in the field of modern and contemporary urban planning, I would like to mention the publication of Émilie Clair from 2014. Although focused solely on the French town of Bourg-en-Bresse, it is based on investigating the relationship between roads and cities, also understood as the relationship between mobility and “urbanity”: CLAIR 2014.

<sup>11</sup> GROS, TORELLI 1988; GROS, TORELLI 2007.

<sup>12</sup> E.g. MANSUELLI 1971.

<sup>13</sup> E.g. *Atlante Tematico di Topografia Antica* 3 (1994); 14 (2005); 15 (2006); 29 (2019); 30 (2020); 34 (2024).

<sup>14</sup> E.g. GIULIANI 1964.

<sup>15</sup> E.g. QUILICI, QUILICI GIGLI 2002; QUILICI, QUILICI GIGLI 2021.

<sup>16</sup> E.g. SOMMELLA 1988; see also MIGLIORATI 2023b.

<sup>17</sup> MARCHI 2023.

<sup>18</sup> COARELLI 1988.

closely interconnected can be traced directly to ancient sources. Beginning with the codices of the *Gromatici*, these texts describe the idealised procedures to be followed. The surveyors' manuals, for example, define the *pulcherrima* or *optima ratio* as the exemplary case in which the intersection of the centuriation axes – which in most instances also correspond to roads of particular importance – coincides with the centre of the urban grid<sup>19</sup>. The next-best alternative, termed the *proxima ratio*, occurs when the intersection of the centuriation axes merely touches the centre on which it depends (fig. 1); in this instance, however, the arrangement is not directly relevant to the city itself<sup>20</sup>. The case of *Allifae*, presented in this volume by Giuseppina Renda, corresponds precisely to this second possibility: here, the orientation of the land division and that of the urban grid are consistent<sup>21</sup>. The road – a variant of the main Roman route connecting *Teanum* to *Beneventum* – evidently followed a pre-existing track, as shown by the considerable “effort” required to integrate it into the urban plan. It thus became one of the city's principal axes only after making a pronounced deviation in the suburbs. This recalls the curvature of the Via Latina at the western periphery of *Aquinum* (*infra*) and the bends at both extremities of the Appian Way, which allowed it to serve as the central thoroughfare of ancient *Capua*, modern S. Maria Capua Vetere (fig. 2)<sup>22</sup>. These last two towns also share a comparable land-division scheme, which, in the case of *Capua*, is consistent with an astronomical orientation independent of the long-distance road network.

Indeed, the road is even more central to the projects of land division: excellent case studies come from *Latium* and adjacent regions like Sabina, where the relationship between the main communication axes and the settlement spatial organisation has been investigated by scholars like Giovanni Maria De Rossi and Maria Pia Muzzioli<sup>23</sup>.

This emphasis on the interplay between roads and land division has also been central to more



Fig. 2. Santa Maria Capua Vetere. The setting of ancient Capua in relation to the Appian Way and the land-division (after SAMPAOLO 1999, fig. 3, general map; PAGANO, TOMEO 2021, tav. 3, p. 159; detail of the urban area).

recent work by Pier Luigi Dall’Aglio, Carlotta Franceschelli, and Guido Rosada within Italian scholarship<sup>24</sup>.

The case of Aquileia exemplifies this close connection between the three factors. As more and more documented by excavations and survey, the evidence suggests that its foundation was conceived from the outset around road axes serving as *decumanus* and *cardo*. In the stretch between the northern and southern gates, the *cardo* coincided with the principal road leading north, unjustifiably called *Via Iulia Augusta*<sup>25</sup>. Both the city street grid and the centuriation share the same orientation of 22°

<sup>19</sup> HYG. grom., *De limitibus constituendis*, p. 181, 5-6, ed. Lachmann.

<sup>20</sup> HYG. grom., *De limitibus constituendis*, p. 194, 9-13, ed. Lachmann.

<sup>21</sup> RENDA, in this vol.

<sup>22</sup> SAMPAOLO 1999.

<sup>23</sup> E.g. DE ROSSI 1979; MUZZIOLI 1980.

<sup>24</sup> E.g. DALL’AGLIO 1994; FRANCESCHELLI 2006; ROSADA 2010; DALL’AGLIO, ROSADA 2011.

<sup>25</sup> MUZZIOLI 2005, pp. 24-35.



Fig. 3: Aquileia. Town, roads and land division (after MUZZIOLI 2005, p. 25, fig. 7).

30° (or between 22° and 23°)<sup>26</sup>. Yet, due to the city's decentralised position as a port, it was not traversed by the *decumanus maximus*. The latter corresponded to the *Via Annia* between the Tagliamento and Chiarisacco, but near the city the *Via Annia* ran diagonally to the centuriat grid (fig. 3)<sup>27</sup>.

#### THE CHICKEN OR THE EGG

As noted above, the relationship between a road and an urban plan is not necessarily “generative”. In many cases, roads were adapted to fit pre-existing urban layouts, with varying degrees of integration depending on topographical conditions or strategic considerations.

The following review of case studies addresses the question of sequence: did the road predate the settlement and act as a generative axis for the urban layout, or did an existing settlement attract the communication route, with the connection

subsequently adjusted to optimise their linkage?

At *Castrum Novum* – a maritime colony founded in 264 BC (VELL. I.14.8) along the Tyrrhenian coast north of Rome – recent research has tended to define the perimeter of the ancient colony as that of a *castrum* oriented to an astronomical alignment<sup>28</sup>.

Investigations over the past decade, including geophysical surveys<sup>29</sup>, have enabled a more precise reconstruction of the original foundation. The site is characterised by a rectangular plan, walls in *opus quadratum* (with stratigraphic data confirming a date in the first half of the third century BC)<sup>30</sup>, and two orthogonal road axes. The

<sup>26</sup> MUZZIOLI 2005, pp. 9-10.

<sup>27</sup> MUZZIOLI 2005, pp. 14-15.

<sup>28</sup> As brightly argued by Sommella, the theory of an urban model derived for the military *castra*, leading to the general framework of *urbanistica castrense* is a misunderstanding of modern scholarship. Effectively, the model of a quadripartite regular urban surface can be ascribed to this type of Republican colony, sustaining the idea of a reversed relationship: the *castrum* would have been modelled on the small colonies of citizens, like those framed in the “maritime” type (SOMMELLA 1988, pp. 238-239). The same conclusion was presented in GROS, TORELLI 2007, pp. 162-163.

<sup>29</sup> ENEI 2016, pp. 114-123; fig. 6.18.

<sup>30</sup> ENEI 2021, pp. 98-99.

study of the materials confirms an occupation ranging from the first half of the third century BC (the date reported by recent excavations for the construction of the walls and the barracks located behind the walls)<sup>31</sup> to the fifth century AD. Current research also indicates that the earliest Via Aurelia crossed the colony on a north-west / south-east alignment, with the bypass skirting the inland side of the settlement only being laid out in the second century AD<sup>32</sup>.

The intramural segment of the orthogonal street, excavated between 2018 and 2019, improperly called *decumanus*, crosses the walled area from east to west, exiting the perimeter at a hypothetical maritime gate. The existence of this gate, now in an advanced state of ruin, is inferred from the words of Rutilius Namatianus<sup>33</sup>.

In the case of *Centumcellae*, although its administrative status and urban layout remain unclear<sup>34</sup>, the settlement was founded only in the early second century AD by Emperor Trajan, at a time when the Via Aurelia had been in use for at least four centuries. Here, the urban plan was clearly hinged upon the consular road. As in many other instances, a long section of the main route functioned as the central axis of the settlement, complemented by a ring road skirting the town on the landward side<sup>35</sup>.

When considering whether the city or the road had chronological priority, the nature of the road itself is a crucial factor: whether it originated as a naturally evolved route, such as the Via Salaria, or as a deliberately engineered one, such as the Via Appia. In the former case, it is generally predictable that the settlement preceded the road connection, or at least that the urban plan was independent of it. In the latter case, it is more likely that the city developed as a stop along the long-distance axis and was thus fully integrated with it.

This is particularly evident in the case of roadside villages and, even more so, in the *fora*, i.e. settlements that, in most cases, soon took on an urban character but were initially established

to function as service centres and hubs of exchange. While the present paper does not focus on this type of settlement – aptly described by the French term *villages-routières* for communities that arose along roads and depended heavily on passing traffic – it is worth noting that their spatial organisation, economy, and social composition were profoundly shaped by their connection to the communication network. In *Latium*, *Bovillae*, situated along the Via Appia just south of Rome, provides a clear example<sup>36</sup>.

The question of sequence is also central to Martin Millet's contribution in this volume. Revisiting earlier research, Millet examines the transition from a pre-existing network of routes serving Etruscan, Faliscan, and Umbrian settlements to the territorial reorganisation following the Roman conquest. His reinterpretation hinges on the distinction between pre-Roman connectivity – based on non-engineered routes – and Roman roads, whose more substantial infrastructure exerted a greater impact on the landscape. One possible reading of the *ante/post quem* relationship in the *forma urbis* of *Falerii Novi* is that the generative axis was the original Italic Via Amerina, crossing the plateau almost perfectly north-south in its eastern half, complemented by an orthogonal east-west route already in existence. This overall scheme appears to have been preserved when the Roman Via Amerina regularised the earlier road, which then became the main axis of the urban street grid while maintaining the general alignment established by its predecessor.

#### CASE STUDIES FROM THE ITALIAN PENINSULA

Most of the case studies examined in this paper belong to the category of Roman colonies. Traditionally, these colonies have been somewhat simplistically classified into those endowed with the *ius Latii* ("Latin right") and those inhabited by Roman citizens. Recent critical studies, however, have challenged this rigid typology, especially for the earlier period, as it rests largely on later sources. Moreover, archaeological models drawn from sites such as *Cosa*, *Alba Fucens*, *Fregellae*,

<sup>31</sup> ENEI *et al.* 2020, p. 15.

<sup>32</sup> ENEI *et al.* 2011, p. 9.

<sup>33</sup> RVT. NAM. I.228; see ENEI *et al.* 2020, p. 123; ENEI 2021, p. 92.

<sup>34</sup> GARGIULLI 2022.

<sup>35</sup> CORSI 2025, pp. 103-108.

<sup>36</sup> DE ROSSI 1979; FIOCCHI NICOLAI, SPERA 2018.

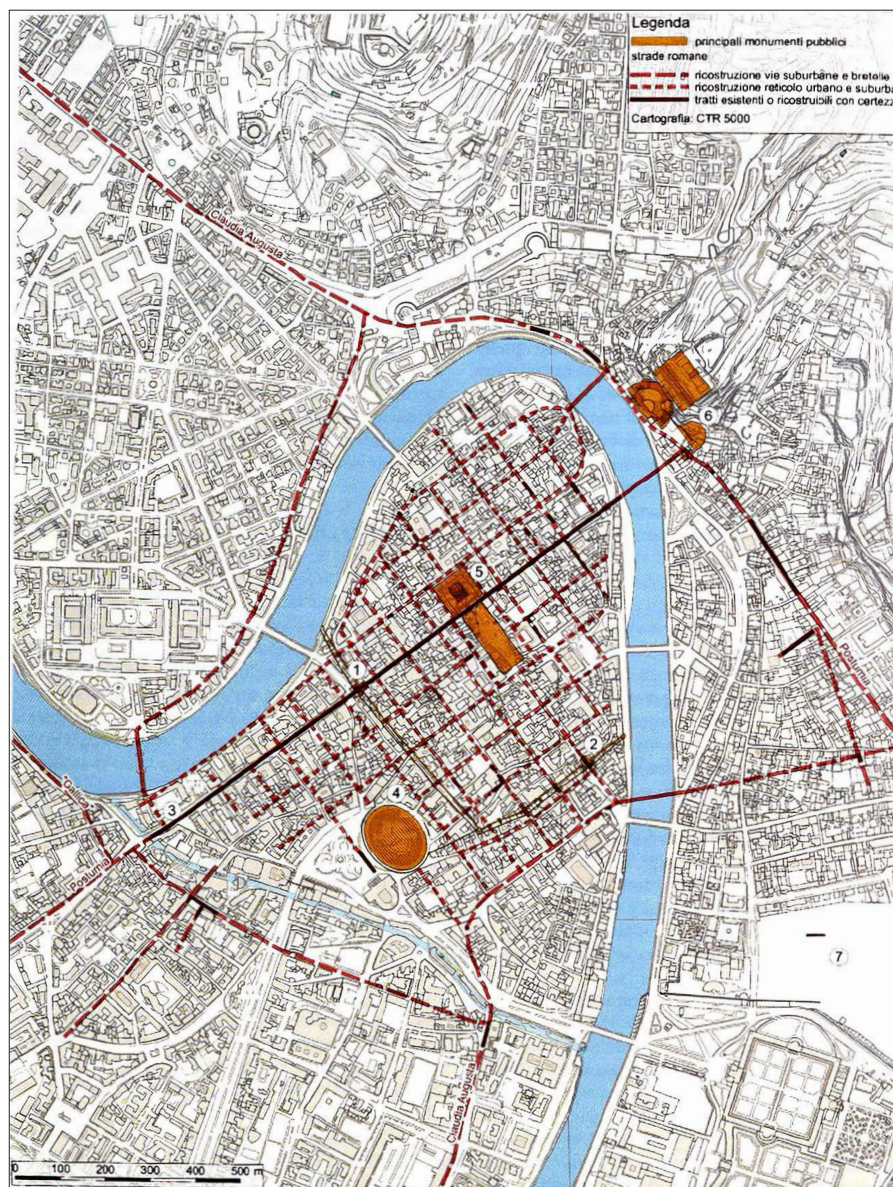


Fig. 4. Verona. Map of the town and the *suburbium*. 1: Porta Borsari; 2: Porta Leoni; 3: Gavius's arch; 4: amphitheatre; 5: *Capitolium* and *forum*; 6: San Pietro hill complex (theatre, temple, odeon); 7: Area of Caserma Passalacqua (after BASSO *et al.* 2019b, p. 26, fig. 7).

and *Paestum* have sometimes led to anachronistic interpretations when applied to earlier phases of colonisation, particularly with regard to spatial configuration<sup>37</sup>.

However, even when stripped of their later monumental and residential developments, towns such as *Cosa* reveal an early layout clearly

defined by their walls and street grids<sup>38</sup>. The initial organisation of these urban spaces demonstrates a clear connection to the extra-urban road network, which not only facilitated trade and movement but also influenced subsequent urban developments. This foundational infrastructure laid the groundwork for later expansions, ensuring that the relationship between internal streets and external routes would effectively shape the town's growth and evolution over time. Understanding

<sup>37</sup> An update on the debate can be found in SILANI 2017, esp. pp. 41-42; relevant research about the original urban layout and the need to distinguish it from the later, dominant late-Republican and Augustan phases is authored by Tesse Stek, especially STEK 2009, p. 27, and STEK 2014. See also SEWELL 2010.

<sup>38</sup> SEWELL 2010, p. 173, *infra*.

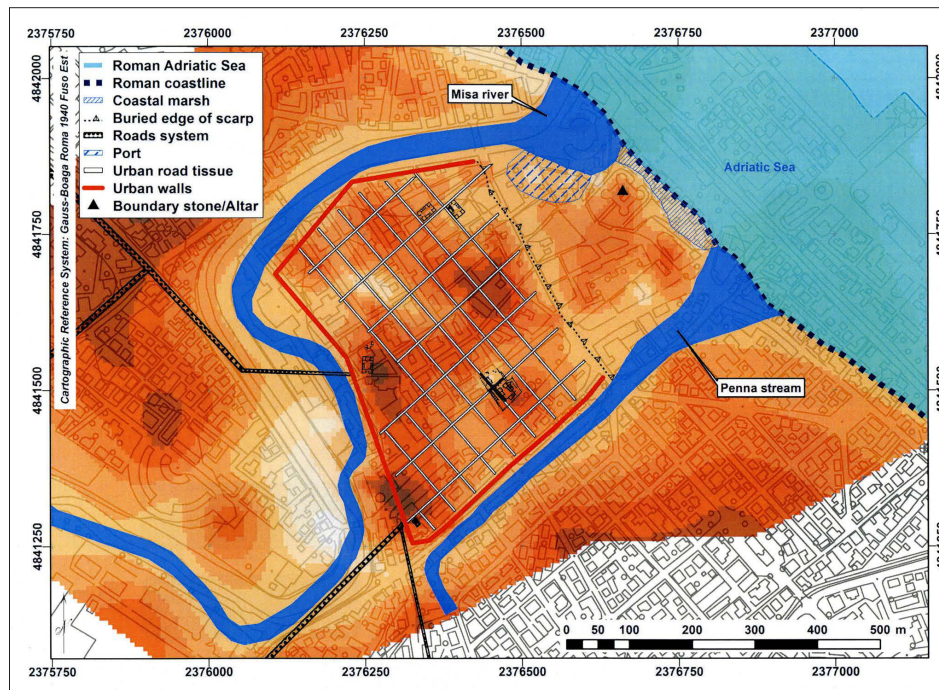


Fig. 5. Senigallia. Hypothetical reconstruction of the urban scheme and the road network of the ancient town of *Sena Gallica* (after SILANI 2017, p. 269, tav. 6).

this interplay is essential to grasping the historical evolution of urban landscapes.

Proceeding north-south, we could start from Verona, aptly described as an “ideal field” for the study of Roman urbanism<sup>39</sup>. Serving as an exemplary “node” of roads and waterways, the Roman city was entirely redesigned within the bend of the River Adige after the ancient *oppidum* on the opposite bank, which controlled the river crossing, was granted municipal status in 49 BC. This reorganisation was wholly dependent on the “consular” *Via Postumia*, laid out in 148 BC<sup>40</sup>. In Verona, the regular street grid was constructed in tandem with sewers and fortifications, indicating that the plan – anchored on the *Via Postumia* and orthogonally intersected by a route linking the Po and Adige rivers – was conceived and implemented at the city’s Roman foundation (fig. 4)<sup>41</sup>. The positioning of gates and the presence of bridges at the tangential points of the walls confirm the existence of a coherent master plan deeply embedded in the communication network.

Other roads built during Rome’s expansion in Italy and adjacent provinces likewise played a

generative role in urban development. *Albintimilium* in Liguria, for instance, developed along the *Via Iulia Augusta*, although it is misleadingly described as the *decumanus maximus*<sup>42</sup>.

In the Marche region, the ancient territory of *Picenum* offers compelling examples of the interplay between urban planning and the extra-urban road network. The town of *Sena Gallica* displays a coherent urban grid strategically located on a river terrace between the Misa and Penna rivers, aligned with a key road linking it to its south-western hinterland (fig. 5)<sup>43</sup>. Similarly, the colony of *Aesis*, modern Jesi, features a regular orthogonal grid, with its parallel streets intersecting at key crossroads along two main roads (fig. 6)<sup>44</sup>. *Suasa*’s urban form also reflects the intersection of two principal axes, though its town planning appears somewhat more organic<sup>45</sup>.

Among the case studies, still in modern Marche, *Ausculum* offers particularly valuable insights, owing to a series of small-scale excavations undertaken during the recent urban expansion of the modern town of Ascoli.

<sup>39</sup> BASSO *et al.* 2019b, p. 25.

<sup>40</sup> BASSO *et al.* 2019b, p. 25.

<sup>41</sup> BASSO *et al.* 2019b, pp. 25-27.

<sup>42</sup> CONVENTI 2004, p. 97.

<sup>43</sup> SILANI 2017, pp. 75-152, tav. 6.

<sup>44</sup> SILANI 2017, pp. 179-188, tav. 10.

<sup>45</sup> SILANI 2017, pp. 213-226, tav. 12.

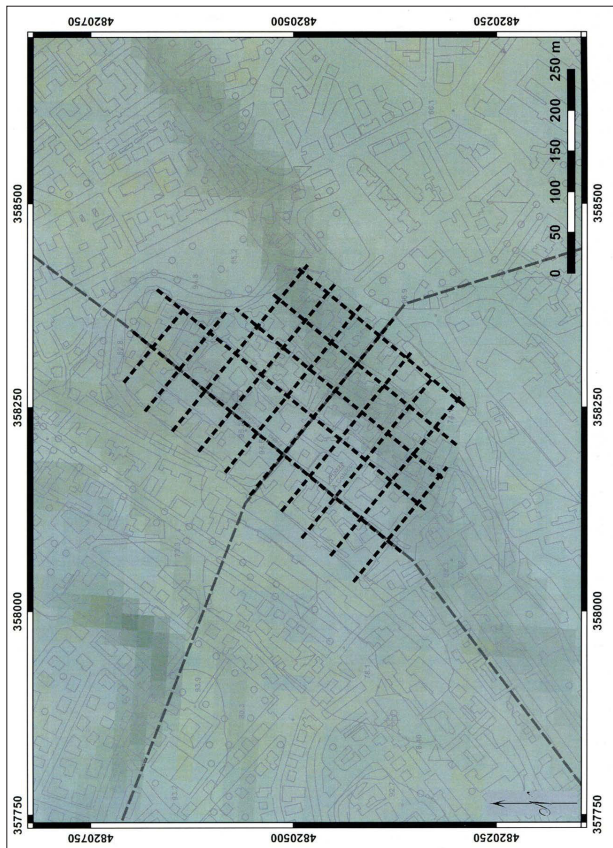


Fig. 6. Jesi. Schematic urban scheme of the ancient town of *Aesis* (after SILANI 2017, p. 273, tav. 10).

These investigations reveal how major urban thoroughfares – traditionally, though somewhat imprecisely, referred to as *decumani* (east-west) or *cardines* (north-south) – can, in fact, be traced back to pre-Roman communication routes. A significant example is the road lying beneath the modern Corso Mazzini, which not only traverses the ancient urban area but also extends beyond its boundaries, assuming the character of an extra-urban route<sup>46</sup>. This alignment likely corresponds to the ancient Via Salaria, a route of protohistoric origin that acted as the “generating axis” for the urban plan.

The metalling of the city’s streets, replacing earlier *glareata* surfaces with *basoli*, took place in the Early Imperial period, possibly in the Augustan age<sup>47</sup>. This project was probably part of a broader programme of infrastructural renewal and urban embellishment typical of the early Empire, which formalised existing routes and reinforced their

<sup>46</sup> DEMMA *et al.* 2017.

<sup>47</sup> DEMMA *et al.* 2017, p. 215.

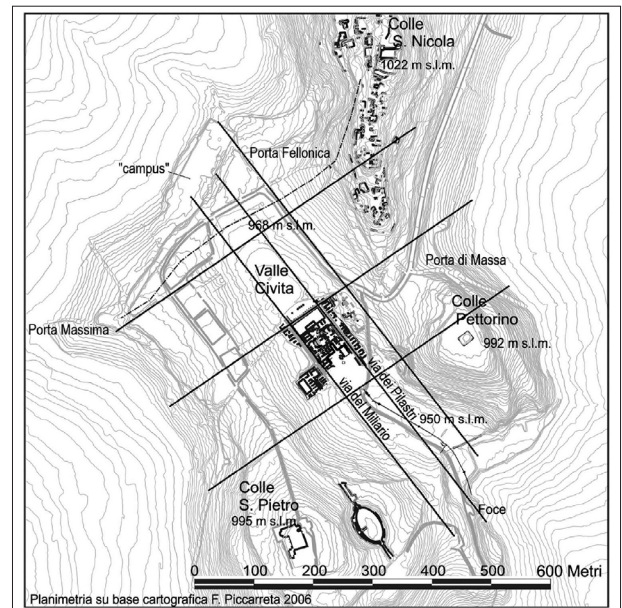


Fig. 7. Massa D'Albe. Map of the town and suburbium of *Alba Fucens* (after DI CESARE, LIBERATORE 2021, p. 59, fig. 3).

monumental and functional roles within the redefined urban landscape.

At *Alba Fucens*, the most recent reinterpretations tend to consider the relationship between the extra-urban road network, consisting of the Via Tiburtina Valeria and the Via Valeria (fig. 7), and the urban layout to be original<sup>48</sup>. Indeed, some scholars have proposed moving the foundation date from 303 BC to 307 BC to align it with the construction of the road by the censor Marcus Valerius Maximus<sup>49</sup>.

In any case, even when a direct relationship between the city and the road network can be hypothesised in an early phase, it is possible that the latter did not influence the layout of the former. This is the case of the above-mentioned *Cosa*, the republican colony of 273 BC established at the base of the promontory of Argentario, not far from modern Orbetello<sup>50</sup>. Although likely the terminus of the first Via Aurelia (the date of which is debated but often placed in 241 BC)<sup>51</sup>, the consular road ascended the promontory and

<sup>48</sup> CONVENTI 2004, pp. 33-35; DI CESARE, LIBERATORE 2021.

<sup>49</sup> DI CESARE, LIBERATORE 2021, p. 61.

<sup>50</sup> It has been convincingly argued that the Republican foundation would have first “doubled”, and finally replaced, the existing homonymous Etruscan centre of *Cusi\**/*Cusia\** to be identified in Orbetello: LIVERANI 2020, pp. 135-137.

<sup>51</sup> CORSI 2025.

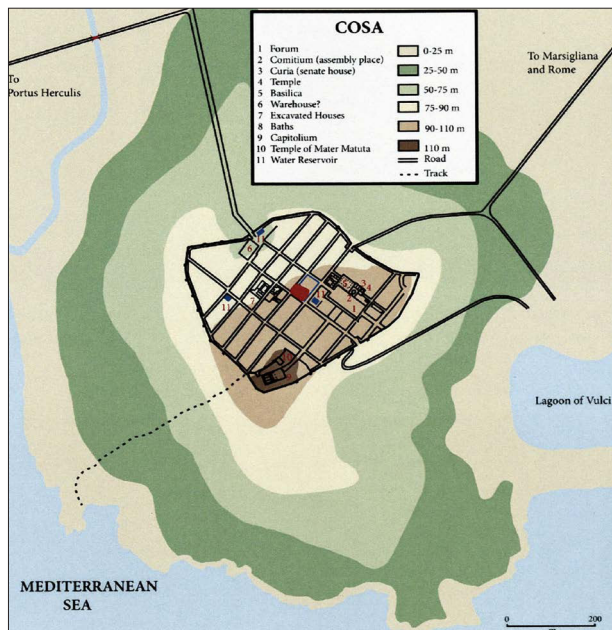


Fig. 8. Ansedonia. Schematic map of the urban scheme of *Cosa* and the road network connecting to the harbour and the *Via Aurelia* (after DE GIORGI 2023, p. 103, fig. 6).

descended again when extended northwards. A shorter connecting road, however, cut across the base of the Ansedonia promontory (fig. 8)<sup>52</sup>. Given the strong orographic constraints, the relationship between the Tyrrhenian route, renamed *Via Aurelia* in 241 BC, and *Cosa*'s street network was necessarily functional rather than generative. Communication was ensured through the north-western gate, *Porta Fiorentina*, and the road designated as no. 5<sup>53</sup>.

Other significant examples in Etruria include *Castrum Novum* (discussed above) and *Ferentum* in the Tiber Valley. At *Ferentum*, the urban layout is structured around a major road axis, traditionally but inaccurately referred to as the *Decumanus*, which runs longitudinally across the plateau and formed part of the *Via Ferentiensis* – an ancient route linking the *Via Cassia* to the River Tiber. This road was undoubtedly the principal access route to *Ferentum*, although additional city entrances, previously noted in earlier studies, also existed<sup>54</sup>. Two gates were located on the northern side, one centrally and

another north of the amphitheatre; other two lay to the south, as suggested by both topography and remnants of basalt paving. Within the urban area, several segments of the so-called *Decumanus* have been uncovered, the longest exceeding 100 metres in length and averaging 3.5 metres in width. Its basalt lava paving is notably worn from vehicular use. In the city's western sector, six perpendicular streets, spaced 35-37 metres apart, were identified, distinguished by projecting paving edges and subsequent stretches of likely gravel surfacing (fig. 9 a-b)<sup>55</sup>. Although it seems impossible at this stage to establish the date for the definition of the urban plan (with Marcello Spanu favouring the Augustan period for the design and the Julio-Claudian phase for the implementation and upgrades)<sup>56</sup>, the set-out of the layout yells for an incontestable relationship with the central axis.

Along the *Via Aemilia*, the generative role of the road in structuring a chain of urban settlements is incontrovertible, though topography and pre-existing features shaped the layouts of individual towns. At *Regium Lepidi* (modern Reggio Emilia), for example, the earliest wall circuit seems to have been aligned with the main thoroughfare, with gates placed at either end<sup>57</sup>. The case of *Fidentia* is an example of how the *Via Aemilia* constitutes the axis around which both the urban layout and the land division are organised<sup>58</sup>, although on a smaller scale, here too the *Via Aemilia* bents southwards at the western exit of the small urban surface, to head again north-west to cross the watercourse Stirone at the bridge.

*Venusia*, founded as a Latin colony in 291 BC, also demonstrates the interplay between urban form, the road system, and territorial organisation<sup>59</sup>. The elongated hilltop was shaped by two parallel axes that followed the long rims of the plateau, and delimited the long series of parallel rectangular blocks. When the Appian Way was extended beyond *Beneventum*, following Pyrrhus' defeat in 268 BC, the city already had a well-defined urban layout and, as clearly demonstrated by urban excavations, the entire plateau had been densely built up since

<sup>52</sup> QUILICI, QUILICI GIGLI 2010, pp. 169-170.

<sup>53</sup> DE GIORGI 2023, pp. 97-98.

<sup>54</sup> Special attention is given to photo interpretation and the various reconstructions of the urban layout derived from it in LANTERI 2014.

<sup>55</sup> SPANU 2014, pp. 127-128.

<sup>56</sup> SPANU 2014, p. 143.

<sup>57</sup> STORCHI 2015, pp. 6-8.

<sup>58</sup> DALL'AGLIO 1997, pp. 47-48.

<sup>59</sup> See MARCHI 2023, pp. 233-236, with earlier references.

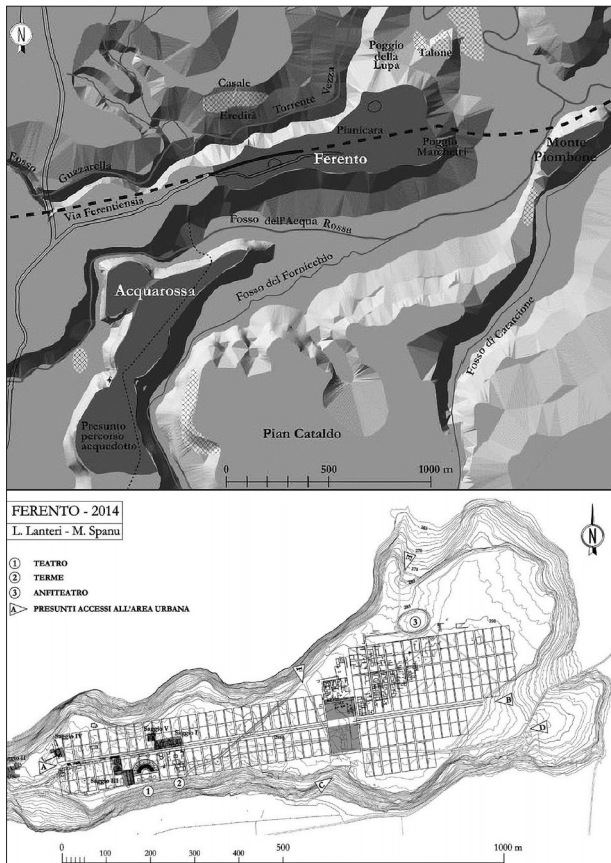


Fig. 9 a-b. Pianicara, Viterbo. A: schematic map of the road network around *Ferentum*; B: *Ferentum*: schematic map of the urban plan (after SPANU 2014, p. 122, fig. 1; p. 141, fig. 21).

the early years of its urbanisation<sup>60</sup>. Although with a few uncertainties, the Via Appia can be traced from its arrival from the northwest to the foot of the plateau, most probably crossed in its south-western tip (fig. 10). In this case, the relationship between the main extra-urban roads and the town street network would have been just ensured by this indirect connection<sup>61</sup>.

The city of *Aesernia*, in the heart of ancient *Samnum*, currently in Molise, is also located on an elongated plateau. Here too, the urban layout is centred on the axis running through the middle of the plateau, the central segment of the road connecting with the Via Latina, characterised by a slightly sinuous course (fig. 11)<sup>62</sup>. Similar to *Cales*, the presence of a ridge path generates a 'fusiform' urban layout<sup>63</sup>. *Cales* has benefitted from a recent

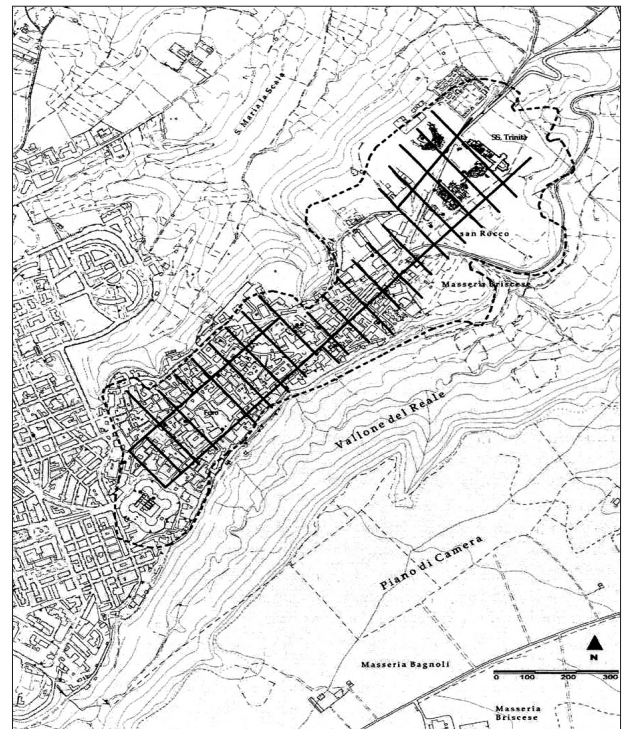


Fig. 10. Venosa. Archaeological map with reconstruction of the urban scheme of *Venusia* (after MARCHI 2023, p. 233, fig. 15).

re-examination of former research, integrated with survey, aerial imagery interpretation and reinterpretation of legacy data<sup>64</sup>, turning into an exemplary case-study for the organisation of the urban grid on an elongated plateau (fig. 12). Most interesting for us is the generating role as central axis of the regional road connecting the *ager Falernus* to the south, orthogonally crossed by at least two roads that ascended from the *suburbium* to the top of the plateau. The Via Latina likely entered at the central narrowing of the plateau, which also marks the change in orientation of the spine axis. It might have continued on the opposite side, descending from the current Via della Forma, or it could have turned sharply to run along the centre of the plateau and exit either at Via delle Formelle to the southwest, or at the south-western gate via a bridge, nowadays known as Ponte delle Monache<sup>65</sup>. In this latter case, the Via Latina would have taken on a 'lightning bolt' shape similar to that documented at *Aquinum*<sup>66</sup>.

The first Via Appia predictably plays a key role in the foundations that line it or are hinged on it.

<sup>60</sup> MARCHI 2023, p. 234.

<sup>61</sup> MARCHI 2023, pp. 235-236.

<sup>62</sup> CEFALOGGI 2014, pp. 164-167; DE BENEDITTIS 2021.

<sup>63</sup> SOMMELLA 1988, pp. 249-250.

<sup>64</sup> QUILICI, QUILICI GIGLI 2021.

<sup>65</sup> QUILICI, QUILICI GIGLI 2021, pp. 35-44, 174-177.

<sup>66</sup> CERAUDO in this conference.

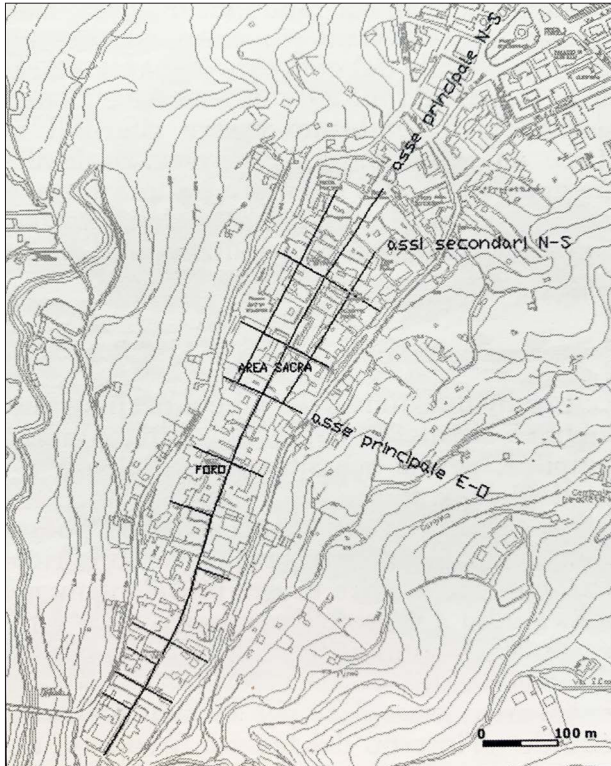


Fig. 11. Isernia. Hypothetical reconstruction of the urban scheme of the Latin colony of *Aesernia* (after CEFALOGGI 2014, p. 167, fig. 20).

A prime example, despite the archaeological interpretation clouded by the uncertainty of incomplete and unsystematic research, is that of *Minturnae*. Here, the early colony was clearly designed as a square bisected by the road, and along the Appia developed the later expansion on the western side of the first settlement (fig. 13)<sup>67</sup>.

Surprisingly, the vignette schematising *Minturnae* in the illuminated code of the *gromatici* (fig. 14), which above we have referred to as a clear illustration of the *ratio* between a centre and its land division, does not highlight the role of the road, emphasising instead other elements such as the presence of the Garigliano River, for which a direct and close relationship with the intramural area is indicated, other geographical elements, such as the mountain range and the lake basin near the sea (the sea, again, does not appear to be a factor that qualifies the urban space) and its land division<sup>68</sup>.

<sup>67</sup> For an update on architectural furnishings, especially those of the temples of the so-called Republican *forum*, see: BANKEL 2015.

<sup>68</sup> I agree with Spanu that the image is not a faithful reproduction of the urban form of *Minturnae*, let alone its walls, but I disagree that these vignettes are merely symbolic (SPANU 2022, pp. 34-35). Despite the many doubts surrounding their dating and even their



Fig. 12. Calvi Risorta. Archaeological map and reconstruction of the urban scheme of the southern urban area of *Cales* (after QUILICI, QUILICI GIGLI 2021, p. 37, fig. 20).

It is again the Appian Way that shapes the urban scheme of the neighbouring Formia. It seems to change slightly orientation but it can be still labelled as the main urban street, traced by the modern Via Rubino – Via Lavanga, orthogonally crossed by what is conventionally defined *cardo*, followed by modern Via Castello – Via Gradoni del Duomo<sup>69</sup>.

The city of *Casinum* on the slope of Monte Cairo presents an intriguing case for the study of urban planning and its infrastructural connections, particularly in relation to the Via Latina, a crucial route within the Roman communication network between Rome, northern Campania and *Sammium*. The understanding of *Casinum*'s urban layout and its relationship with the Via Latina has been significantly informed by the interpretation of an inscription discovered in the early nineteenth

existence in the original text, their function cannot be reduced to mere “decoration”. As is increasingly evident in the *Tabula Pentingeriana*, the presence of figurative elements such as mountain ranges or watercourses serves to make the configuration of the landscape and the relationship between the various natural and anthropic elements that dynamically shape it more “perceptible” (CORSI 2022, pp. 9-10, 70-78).

<sup>69</sup> QUILICI, QUILICI GIGLI 2022, pp. 335-336.

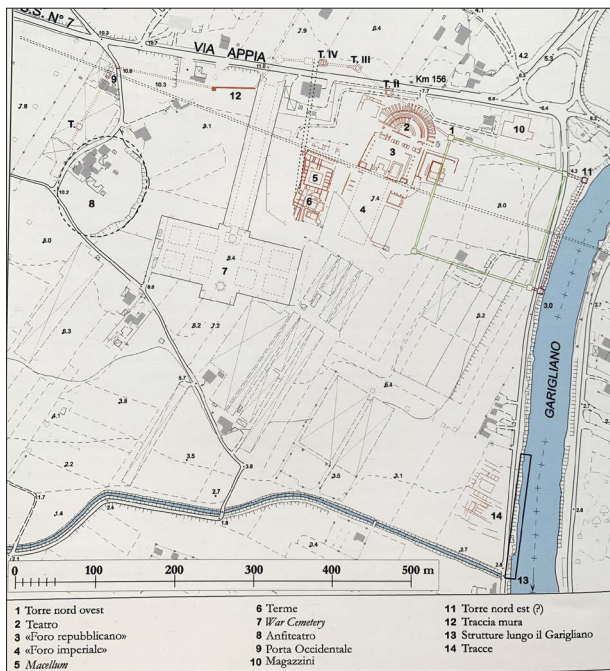


Fig. 13. Minturno. Archaeological map of the town and its *suburbium* (after SPANU 2022, p. 30, fig. 6).

century within the town's vicinity<sup>70</sup>. This inscription, dated to AD 57 by internal references, holds valuable clues about the city's development and monumental refurbishing<sup>71</sup>. It aligns with a local tradition that positions the *forum* of the Roman town at the heart of the medieval settlement of San Germano, particularly in the vicinity of the two churches, Santa Maria delle Cinque Torri and San Salvatore. This association was thought to be supported by the modern toponymy, which includes Via Del Foro and Largo Foro. Thus, it has been hypothesised that the mentioned *via* leading from the *Porta Campana* to the forum corresponds to a route that connects the gate, excavated not far from the museum, to the central area of the contemporary town, rebuilt after the bombing of the II World War, at the foot of the medieval village of San Germano<sup>72</sup>. However, it is essential to note that this tradition lacks confirmation from any ancient references to the presence of a forum in this area in medieval documents. A more logical approach would be to identify the newly

<sup>70</sup> CIL X, 5204 = ILS 5365

<sup>71</sup> Although the inscription is currently housed in the local museum, its condition has deteriorated since its initial discovery, rendering some details less legible. On this and similar examples of inscriptions addressing urban streets see QUILICI GIGLI in this vol.

<sup>72</sup> VALENTI 1995.

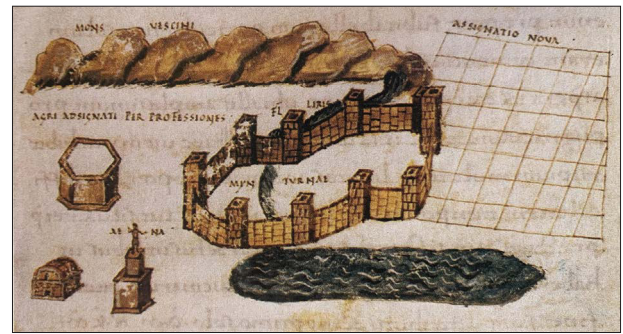


Fig. 14. Illustration from the *Gromatici Veteres* of the town and *suburbium* of Minturnae (after Settis 1983, fig. 75, p. 114).

paved road as an urban street extending from the aforementioned gate, or potentially another gate located to the north, along the eastern side of the walls, towards the hypothetical location of the forum. This location is likely situated where, during the 1970s, a significant section of a square paved with calcareous slabs was uncovered in the area known as Crocifisso, within a modern villa.

This proposed site would adhere to the necessary topographical constraints, as a suitable area for a forum square can only be envisioned in the two terraces behind the theatre scene or in the parcel to the north. In the latter scenario, the south-eastern edge of the forum (where the paving was discovered) would be bordered by the urban street connecting to the gate excavated in the late 1980s by Giuseppina Ghini. Should this gate be identified as the *Porta* from which the road to Campania or Capua departs, it would also serve as a pivotal junction for the urban axes converging along the road currently referred to as Via Del Crocifisso.

This inscription is pivotal to the understanding of *Casinum's forma urbis*, but it can also be of significance in determining its connectivity with the Via Latina. Although this evidence is not conclusive, it is evident that even an urban settlement such as *Casinum*, strongly influenced by the orographic constraints tackled via the terraced layout of the built-up area, had a strong connection with a long-distance road axis, which also served as a link with neighbouring centres<sup>73</sup>, and this connection shaped the urban layout.

<sup>73</sup> VALENTI 1999.

# ENTRER DANS LA VILLE OU LA CONTOURNER?

As noted earlier, often at a stage later than the initial definition of the *forma urbis* and its relationship with the communications network, it became increasingly common to construct “ring roads” to divert long-distance traffic away from urban centres. Building on a stimulating study by Gros<sup>74</sup>, a number of scholars have approached the theme of “the road and the city” precisely from this perspective<sup>75</sup>. For instance, road junctions and ring roads are integral to any discussion of the situation in *Luceria* in Puglia. The subject of intensive studies that have investigated it from the perspective of urban planning and its relationship with the communication system, it has taken on particular importance in studies due to its relationship with the Via Appia, which has been central to a series of recent projects that have also led to the recognition of the *Regina Viarum* as a UNESCO World Heritage Site<sup>76</sup>.

The construction of a ring road typically reflects a conflict between the direct alignment of long-distance routes and the needs of the city, arising when growing traffic volumes begin to compromise urban life. However, as Quilici Gigli and Quilici have observed, in some instances a bypass was created almost simultaneously with the city itself, as in the ancient centre of *Fidenae* or the Etruscan towns of *Blera* and *Tuscania*<sup>77</sup>. Evidently factors such as altitude, rather than traffic intensity, may have led to the creation of alternatives on the plain or halfway up the hillside, sparing those who do not need to go to the centre from having to climb to the top of the plateau.

Verona is again an exemplary case-study<sup>78</sup>, particularly in terms of the integration of bypasses and connecting spurs that link the main roads in the *suburbium*. Here, the management of urban traffic followed a “centrifugal” strategy, explicitly intended to remove through traffic from the city centre<sup>79</sup>. In Verona, this study approach (*supra*) has been applied by Giuliana Cavalieri Manasse, following the thread

of Gros (2008). However, with regard to the latter, I am not convinced by Gros’s argument that if the urban stretch of *Via Postumia* is no wider than the other roads running parallel to it, it must have never functioned as a crossing axis<sup>80</sup>. Some sections do indeed appear to be wider<sup>81</sup>, and it is clear that this argument is not compelling.

The case of Luni, despite its prominence in the literature on later phases of urban development, remains ambiguous. It has been suggested that the Via Aurelia veered north of the city walls instead of running through the centre of the regular street grid<sup>82</sup>. Yet it is equally possible that this deviation was the result of later interventions to limit traffic along the principal urban axis. Originally, the Via Aurelia may well have functioned as the generating axis of the grid. The later creation of a bypass is clearly indicated by the construction of two massive plinths projecting into the pavement of the so-called *decumanus maximus* (corresponding either to the Via Aurelia or to a *diverticulum*), effectively blocking vehicular passage near the forum<sup>83</sup>.

The analysis of Fondi’s urban plan also raises several points of discussion. Its orthogonal grid of quadrangular blocks, inclined slightly north-west / south-east, was once thought to predate the Appian Way, because the latter splits into two branches: one tangent to the city and the other running along a central axis that bends 120° to enter the settlement<sup>84</sup>. However, the dating of the regular urban layout to the middle of the third century BC<sup>85</sup> reverses the interpretation. It is more likely that the road bent independently of the urban layout, or that the route of 312 BC originally bypassed the site, with a branch later diverted to become a central axis oriented to local geographical or environmental factors.

A focus on geomorphological conditions, including microtopography, can yield new insights into urban form even for sites long considered well understood, such as Pompeii<sup>86</sup>.

<sup>74</sup> GROS 2008.

<sup>75</sup> QUILICI, QUILICI GIGLI 2010; CAVALIERI MANASSE 2017, 2018.

<sup>76</sup> VIA APPIA 2023.

<sup>77</sup> QUILICI GIGLI, QUILICI 2010, pp. 167-169.

<sup>78</sup> CAVALIERI MANASSE 1998; CAVALIERI MANASSE 2019, pp. 59-60.

<sup>79</sup> BASSO *et al.* 2019b, p. 29.

<sup>80</sup> GROS 2008, pp. 156-157.

<sup>81</sup> CAVALIERI MANASSE 2019, p. 60.

<sup>82</sup> PASQUINUCCI, MENCHELLI 2023, pp. 193-196.

<sup>83</sup> PASQUINUCCI, MENCHELLI 2023, p. 196.

<sup>84</sup> LUGLI 1957, p. 152.

<sup>85</sup> Which seems to be accepted by most: references in CASSIERI, QUADRINO 2006, nt. 5, p. 178.

<sup>86</sup> GIGLIO in this vol.

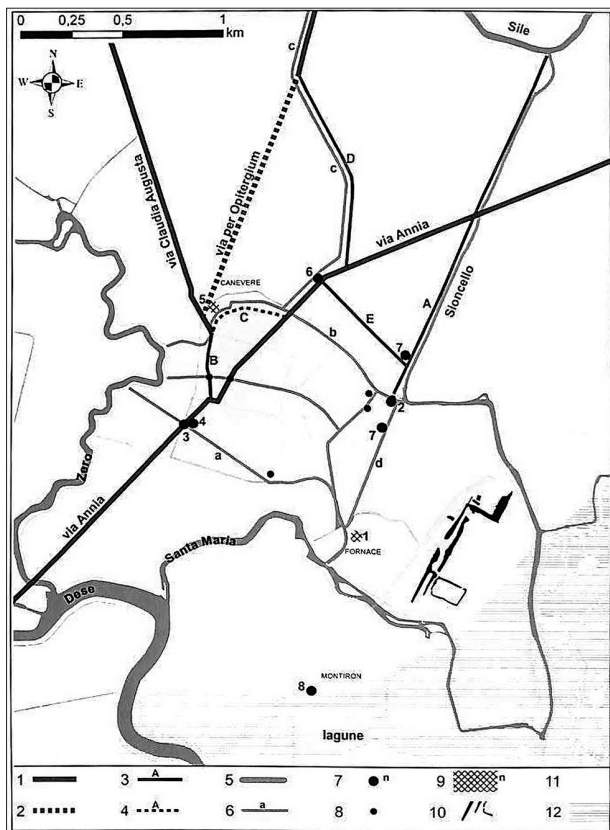


Fig. 15. Quarto d'Altino. The integrated communication network around the town of *Altinum*. 1: Main road axes; 2: hypothetical road axes; 3: connecting roads; 4: hypothetical connecting roads; 5: main watercourses; 6: connecting channels; 7-8: land and water infrastructure; 9: sanctuaries and emporia; 10: undetermined anomalies from remote sensing; 11: urban surface; 12: lagoons (after BUSANA, VACILOTTO 2022, p. 215, fig. 5).

#### BEYOND THE ROAD AND THE CITY: LAND AND WATER

In the context of the analysis of *Latium* and *Campania* carried out in this volume, we have appropriately concentrated our examination on the development and significance of the interaction between urban and road systems. Except for *Puteoli*, where the link between the road network and the urban streets has been investigated in the light of their connections to the maritime transport and the presence of the sea<sup>87</sup>, the case studies discussed here have primarily concerned land transport and paved streets. When considering other geo-historical contexts, however, it becomes evident that a more comprehensive approach must integrate

the study of waterways alongside terrestrial routes. The case of *Altinum*, in the region of *Venetiae*, is particularly instructive. Strategically positioned as a nexus of communication, *Altinum* developed through the interplay of both roads and waterways. While the importance of the *Via Annia*, facilitating overland movement and trade, is well documented, it is equally essential to acknowledge the complementary role of waterways in establishing the city as a key hub within a broader transportation network (fig. 15)<sup>88</sup>. These channels not only enhanced *Altinum's* connectivity with its hinterland and neighbouring centres but also fostered the economic and cultural exchanges that underpinned its prosperity. In the case of *Altinum*, it is evident that the Roman urban layout emerged from a complex interplay between multiple pre-existing elements<sup>89</sup>. Chief among these was the *Via Annia*, a major infrastructural axis whose course significantly influenced the orientation and organisation of the urban grid. However, the planning of the Roman town did not simply impose a rigid scheme upon the landscape; rather, it appears to have incorporated earlier settlement patterns and responded sensitively to the presence of natural and artificial waterways<sup>90</sup>. The integration of channels into the urban fabric was not only functional but also spatially coherent, suggesting a deliberate, harmonious adaptation of the environment within the framework of Roman planning. Particularly noteworthy is the south-western sector, where a bridge monumentalised the crossing of the *Via Annia* over one of the canals at the city's southern entrance<sup>91</sup>. Aquileia, discussed above, provides another instructive example. Recent geoarchaeological research has reconstructed in detail its intricate network of roads and waterways, demonstrating their close interconnection with the urban centre (fig. 16)<sup>92</sup>.

Similarly, *Iulia Concordia*, which attained colonial status only in the first century BC, displays an urban scheme adapted to a dense

<sup>88</sup> E.g. DELPOZZO *et al.* 2024.

<sup>89</sup> BUSANA, VACILOTTO 2022, pp. 214-218.

<sup>90</sup> DELPOZZO *et al.* 2024, p. 315.

<sup>91</sup> DELPOZZO *et al.* 2024, pp. 316-317.

<sup>92</sup> BUSANA, VACILOTTO 2022, pp. 210-214.

<sup>87</sup> SILANI in this vol.

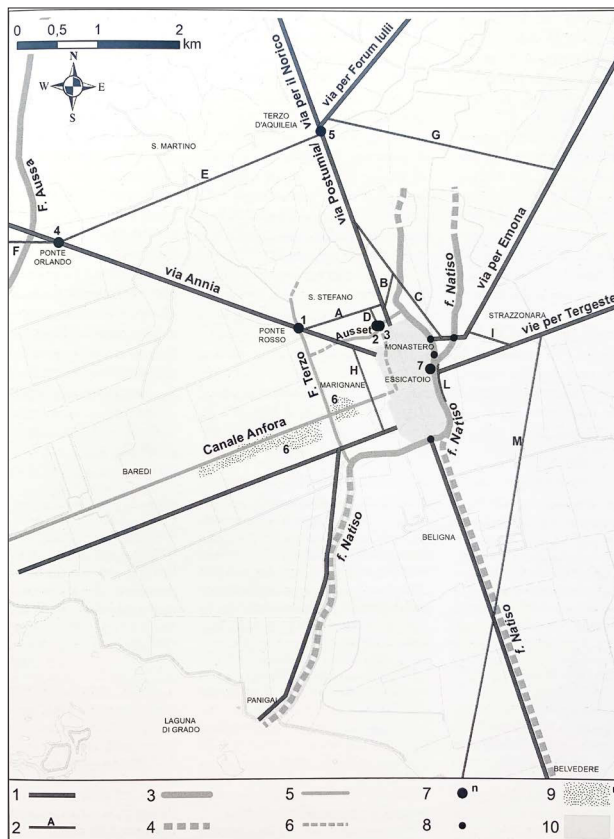


Fig. 16. Aquileia. The ancient town inserted in the land-division and communication network. Legend: 1: main road axes; 2: connecting roads; 3: watercourses; 4: hypothetical watercourses; 5: connecting channels; 6: hypothetical connecting channels; 7-8: land and water infrastructure; 9: urban surface (after BUSANA, VACILOTTO 2022, p. 211, fig. 3).

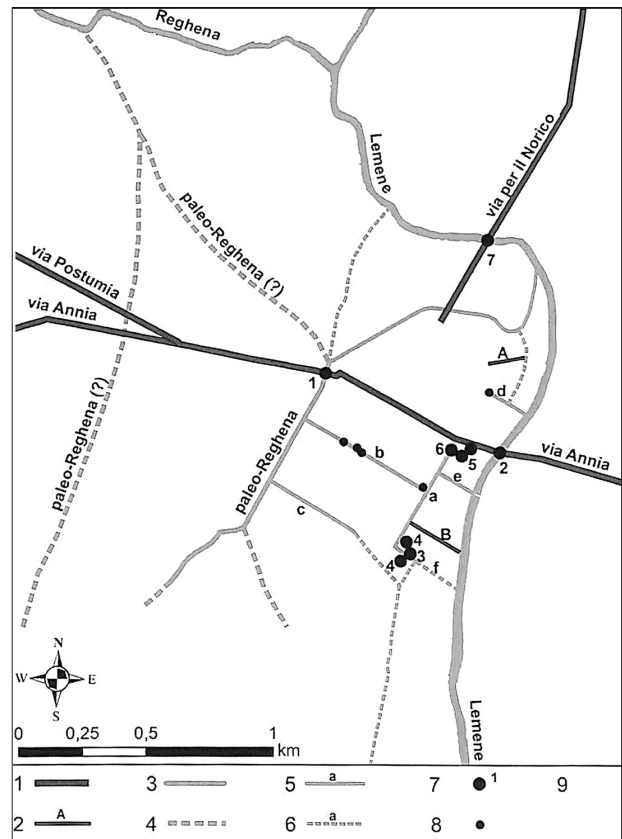


Fig. 17. Concordia Sagittaria. Integrated communication network around *Italia Concordia*. 1: main roads; 2: connecting roads; 3: watercourses; 4: hypothetical watercourses; 5: connecting channels; 6: hypothetical connecting channels; 7-8: land and water infrastructure; 9: urban surface (after BUSANA, VACILOTTO 2022, p. 219, fig. 7).

network of roads, rivers, and canals (fig. 17). Situated at the junction of two of northern Italy's most important roads, the *Viae Annia* and *Postumia*, it developed into a major communications hub<sup>93</sup>.

#### THE ROAD AND THE CITY: A POLYSEMIC RELATIONSHIP

It is evident that the role of principal thoroughfares, when aligned with a city's main urban axes, extended beyond simply generating the urban layout. These routes also provided a stage for the display of major monuments and the most lavish architectural complexes. Quilici Gigli, for instance, offers an overview of the facilities positioned along such thoroughfares, intended for the benefit of citizens, visitors, and, of course, the benefactors themselves<sup>94</sup>.

The perspective adopted here opens numerous avenues for further investigation: the relationship between towns and their hinterlands; their connectivity to both short and long-distance destinations; the role of the urban street network as a structural component in the spatial configuration of the city centre; its adaptability to geographical constraints; and the alternation of built spaces and voids as a determining factor in the volumetric perception of the city<sup>95</sup>.

In line with Migliorati's invitation to prudence, this study avoids imposing rigid urbanistic models. Instead, it seeks to elucidate the dynamic interplay between communication routes and urban form, underlining their mutual influence in shaping the built environment.

<sup>93</sup> BUSANA, VACILOTTO 2022, pp. 218-222.

<sup>94</sup> QUILICI GIGLI 2023 and QUILICI GIGLI in this vol., with specific

regard to the Appian Way.

<sup>95</sup> See, for example, MIGLIORATI in this vol.

In summary, the close relationship between extra-urban road networks, urban morphology, and land-use planning through centuriation is evident in many cases from the very origins of a settlement. While later changes may occur, these are unlikely to alter the fundamental nature of this connection<sup>96</sup>.

As demonstrated by the examples of *Alinum*, *Aquileia* and *Iulia Concordia*, among others, an integrated approach to the study of communication networks - one that encompasses both roads and waterways - not only enriches our understanding of the intricate relationships between towns and their transport systems but also offers deeper insights into the functioning of ancient communications across diverse

landscapes. While the analysis of roads in *Latium* and Campania has provided a solid foundation for understanding the tight correlation between the *forma urbis* and regional infrastructure, it is clear that a comprehensive view must also consider waterways, as the case of *Alinum* illustrates. Only such a holistic approach can capture the complex interplay of different transport modes and their collective influence on the spatial configuration of ancient urban centres.

\*Università degli Studi di Cassino  
e del Lazio Meridionale - ECT Lab,  
European University of Technology  
[c.corsi@unicas.it](mailto:c.corsi@unicas.it)

<sup>96</sup> CONVENTI 2004, pp. 19-21.

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