Satricum in the Post-Archaic Period. A Case study of the Interpretation of Archaeological Remains as Indicators of Ethno-Cultural Identity

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2 SATRICUM IN THE ARCHAIC PERIOD: NEW DISCOVERIES IN THE LOWER SETTLEMENT

Introduction
Due to its exceptionally rich and varied archaeological record, ancient Satricum is commonly regarded as a key-site for the study of Latial settlements.17 The evidence it has yielded presents a unique range of features which document life, death and worship in a Latial community for a continuous period of more than three centuries. From its beginnings as a modest hut compound on a tufa plateau beside the river Astura somewhere in the ninth century, Satricum developed during the eight and seventh centuries into a rich and flourishing centre. At its peak it was one of the major urban settlements in Archaic Latium. Its favourable position at the crossing point of the region’s main communication routes can be regarded as one of the main reasons for its prosperity and growth.

Satricum was at its largest in the sixth century, when it covered an area of approximately 40 ha. Apart from the tufa plateau (which is commonly identified as the acropolis of the site) the settlement area then extended to the adjacent lower plateaus of the Poggio dei Cavallari and the Macchia Santa Lucia. The area was presumably surrounded on all sides by natural or artificial defences (Figs. 1, 3).

Until recently, our knowledge of Satricum during the Archaic period was based solely on archaeological evidence from the acropolis. The rest of the urban area had been thoroughly ploughed and levelled in the 1960’s, probably destroying most of the ancient remains. Besides the impressive tufa foundations of three successive temple buildings, the acropolis has yielded numerous other foundations (Fig. 2). These indicate a large number of structures with a variety of ground plans. The majority of these were discovered in the western part of the acropolis; that is, in front of the central sanctuary.18 Systematic excavation of this area, conducted by the University of Groningen between 1979 and 1989, greatly extended the discoveries made at the end of the nineteenth century.19 The plans of several buildings could now be completed. A reconstruction of the building history of the Archaic period was proposed in three distinct phases, each of which was linked to one of the successive structures of the central sanctuary. These in turn were

17 See, most recently, Smith 1999, 453-475, reviewing five of the recent publications on Satricum.
18 In reality the area in front of the sanctuary is situated in the SW segment of the compass but, for convenience sake, it is usually referred to in cartographical terms. Unfortunately, the orientations used in the various publications do not correspond. The front side of the sanctuary is indicated either as the west side or as the south side. I follow the orientations used by the excavators from the Dutch Institute: i.e. west for the area in front of the sanctuary.
19 On the excavations conducted at the end of the nineteenth century, see Barnabei 1896, 99-102; Barnabei/Cozza 1896, 23-48, 69; Barnabei/Mengarelli 1896, 190-200; Mengarelli 1898, 166-171; for the results of the recent research in front of the sanctuary, see Maaskant-Kleibrink 1987; eadem 1991; eadem 1992.
provided with a new chronology,\textsuperscript{20} which was fundamentally different from those previously proposed and which remains controversial.\textsuperscript{21}

Archaeological research of the acropolis is now largely focussed on the area behind the sanctuary, where the first excavation was begun in 1980 by the Dutch Institute in Rome.\textsuperscript{22} The project was taken over by the University of Amsterdam in 1991. A substantial part of this area has since been uncovered, revealing the stone foundations of several new buildings.\textsuperscript{23} Broadly speaking, these appear to be much better preserved than the remains in front of the sanctuary, thanks to the fact that the modern ground level is higher here. They also appear to differ in plan and/or building technique from the buildings excavated in the western part of the acropolis. As matters stand, the remains behind the sanctuary do not fit easily into the rather schematic reconstruction of the building history of the acropolis, based as it is upon the remains in front of the sanctuary.\textsuperscript{24}

The excavation behind the sanctuary is still going on and will probably reveal new structures.\textsuperscript{25} A revision of the building phases (and of their chronology) is therefore to be expected in the near future.

Despite the disagreement surrounding the building history of the acropolis and its chronology, there is general acceptance that the sixth-century settlement demonstrated a range of urban features. The monumentality and embellishment of the main sanctuary, the organized lay-out of the hill, the defensive system surrounding the settlement area, are all enterprises which require collective effort and presuppose a central political authority. This, in turn, is widely regarded as a characteristic feature of urban organization.\textsuperscript{26} Lately, this list has been supplemented by new evidence of sixth-century infrastructural organization. For example, the remains of a monumental road were discovered in the Poggio dei Cavallari, to the northwest of the acropolis, probably connecting the lower

\textsuperscript{20} For the seven building phases distinguished on the acropolis, see Maaskant-Kleibrink 1992, 13-17. Phases IIIA (590-580/70), IIIB (580/70-540/30) and IV (540/530-510/490) correspond to the three successive stone phases of the sanctuary. Phases I (830-725), II (725-650) and IIIB (650-600/590) cover the previous hut settlement.

\textsuperscript{21} For a survey of the architecture and the proposed chronologies of the temples of the sanctuary see, most recently, De Waele 1997, 67-83. The most striking departure from earlier proposals, which is worth mentioning here, is the updating of the chronology of the first monumental temple (Temple I) by at least 40 years to 580-540. The new chronology is coupled to a drastic shortening of the ground plan of the same temple. Both changes are directly related to a new interpretation of the Archaic Votive Deposit as a primary, open deposit (see below, Ch. 3.1.1). The architectural improbability of the new reconstruction of Temple I has been convincingly demonstrated by De Waele, 1997, 77-79. For stratigraphical arguments against the new chronology, see the short discussion below, Ch. 3.1.1.

\textsuperscript{22} For the excavations behind the temples, see Stibbe 1981, 306; idem 1983a, 52-53; Heldring 1984, 98; eadem 1987, 285-287.

\textsuperscript{23} Gnade 1997a, 42-48.

\textsuperscript{24} For a first presentation of these remains in relation to those in front of the sanctuary, see Gnade 1997a, 42-48.

\textsuperscript{25} So far only about 20% of the area behind the sanctuary has been excavated. Given the density of the wall remains discovered in front of the sanctuary, as well as the number of newly discovered remains behind it, we can legitimately assume that this pattern of occupation is continued in the remaining area.

\textsuperscript{26} For the problems connected with the process of urbanization in the ancient Mediterranean world and for the wide range of criteria which are variously used for the definition of the urban centre, see the publication of the conference on urbanization held in Copenhagen in 1994, "Urbanization in the Mediterranean in the 9th to 6th Centuries BC", Acta Hyperborea 7, 1997. Forthcoming, Proceedings of the Congress "From Huts to Houses" held at the Danish Institute in Rome in 1998. For a discussion on the issue of the transition from hut to house, or from village to urban centre, see C. Ampolo, MEFRA 92, 1980, 567-576; see idem, Periodo IVB (640/630-580 a.C.), in La formazione della Città nel Lazio, DialArch n.s. 2, 1980, 165-192; idem, La città antica, Opus 2, 1983, 425-430. For a synthesis of the Latial urban centres, see Guaitoli 1984, 364-381.
settlement with the acropolis. To date, this road is the only one of its kind known in ancient Latium. In the following section we will present its remains in some detail, since the relatively good state of its preservation provides insight into various aspects of a large-scale public work. Furthermore, the stratigraphical picture presented by the Poggio dei Cavallari is of great value to the reconstruction of the broader building history of ancient Satricum. In contrast to the acropolis, which has so far failed to yield any evidence of building activity in the Post-Archaic period (see below), the Poggio dei Cavallari offers a stratigraphical sequence which bridges the implausibly sudden break between the Archaic and Post-Archaic periods. Close study of the remains encountered there may therefore help to distinguish the differences and the resemblances between the two periods.

It is no exaggeration to say that the road makes a major contribution to our (limited) understanding of Satricum as an urban settlement. All our previous estimates of the extent of the urban area, as well as our knowledge of its features (such as the road system and fortifications), were based on the drawings and photographic documentation of the remains excavated at the end of the nineteenth and beginning of the twentieth centuries, supplemented by descriptions of whatever could still be seen of those remains in the early 1960’s.27 Unfortunately, with the large scale topographical transformation of the area and the destruction of more than 80 percent of ancient Satricum by agricultural activity, all hope of a better understanding of its urban organization appeared to have been lost.28 The same regrettable situation pertains to many Latial sites. The excavations in the Poggio dei Cavallari provide a small opening in this archaeological impasse. At the same time, they also supply much new data which will contribute to the discussion about the Post-Archaic continuation of the settlement (see Ch. 3.2).

2.1 THE ROAD IN THE LOWER SETTLEMENT (POGGIO DEI CAVALLARI)

Introduction
One of the very few parts of the urban settlement which has remained partly 'intact', and the only one yet to have yielded a stratigraphical continuity covering the Archaic and the Post-Archaic periods, is the 'Poggio dei Cavallari'. Today it is locally referred to as the 'proprietà Santarelli', after its owner.29 This terrain (of almost 4 hectares) is situated about 200 m to the northwest of the acropolis (Fig. 1). It lies along the northeastern edge

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27 On the lower settlement of Satricum: Barnabei/Mengarelli 1896, 197-200; Mengarelli 1898, 166-171; on the agger and the various entrances, the road system in the necropolis and the urban area of Satricum see the map of Mengarelli; cf. aerial photograph of Satricum taken in 1936 (Castagnoli 1963, fig. 1; Schmiedt 1970, pl. 21; Waarsenburg 1995, pl. 6). Further, Castagnoli 1963, 505-518 (with, among other things, descriptions and photographs of the agger, 511-512, figs. 7-9; on the road-system, 515-516); cf. also CatLazio primitivo 1976, 325; Stibbe 1981, 305-309; Guaitoli 1984, 370; CatGrande Roma 1990, 231.

28 The enormous extent of the destruction wrought in the nineteen-sixties has been noted on various occasions; e.g. Castagnoli 1963, 505, 516; Guaitoli 1984, 370, n. 49, 'la totale cancellazione dell’area urbana, ad eccezione del settore sud-est dove è stata recentemente scavata una necropoli'. Recent research in the presumed area of the agger confirmed its destruction. The only sign of its former existence is provided by a large ditch, which probably formed an integral part of the defense work, see Gnade 1999.

29 Parts of this text have been published earlier in the preliminary publication of the 1996 excavations; see Gnade 1997b, 93-103.
of the Satricum tufa table and is bordered on the south by the modern road between Nettuno and Cisterna. Unfortunately, when the land was levelled for the planting of vines in 1983, more than a metre of earth was removed from the surface. With it, undoubtedly, went a wealth of archaeological information, including part of a Roman villa which had been long known about. Only a very small section was left untouched: a heap of ground located next to the modern road, containing ancient tufa blocks which projected from all sides.

The area was investigated in three excavation campaigns, which more or less established the extent, character and date of the surviving ancient remains. In 1984 an emergency excavation was carried out, which resulted in the documentation of some 1000 m² of the Roman villa and the discovery of a series of long parallel walls constructed of large rectangular blocks of tufa. The walls were traced in an east-west direction for a distance of at least 140 m, which included an interruption of about 50 m. A few other, shorter walls were also identified. At least two building phases could be established on the basis of the colour and size of the tufa blocks. Pottery finds indicated a long period of use, from the sixth to the fourth centuries. Two hypotheses were then put forward as to the function of the walls: being long, parallel and monumental, they were either part of a fortification situated along the northern side of the urban area or they belonged to a major road (like the one excavated between Cerveteri and its harbour Pyrgi). Unfortunately, following the first excavating season further access to the land was denied. For the next ten years it was referred to as 'the area of the long walls'.

In 1996 the excavation was resumed. The primary objective was now to explore this very large area as quickly and efficiently as possible in order to establish the presence and the extent of the ancient remains. To this end, thirteen long trial trenches were dug in various directions using a bulldozer (Fig. 3, nos. 1-13). The secondary objective was to acquire information which would throw light on the relationship, chronology and function of the walls excavated in 1984. These were uncovered for as much of their length as was feasible. To obtain detailed stratigraphical information, three large transverse trenches were dug (labelled sections I-III).

In 1997 the third and (presumably) final excavation was carried out. Sections I-III of the previous year were continued, two new sections were set out (sections IIA and VI) and some new, larger units were explored (area IV and V) (Fig. 3).

In total, about 800 m² of the area has now been investigated. On the basis of the stratigraphical information thus gathered, at least three (successive) building phases have been identified: an Archaic (or possibly Orientalizing) phase represented by the remains of a pavement which probably belonged to a road running towards the acropolis; a Late-Archaic phase, dating to the last quarter of the sixth century and the early years of the fifth century, represented by a monumental rebuilding of the road, its destruction and subsequent restoration; and a Post-Archaic phase, represented by graves dug next to the road and by a raising of the road level, together with a rampart-like construction on the southern side (see Ch. 3.2.1).

30 The Roman villa was discovered during the Italian excavations at the end of the nineteenth century; see Barnabei/Mengarelli 1896, 199.
31 For the reports of these excavations, see Heldring 1985, 72-75; Heldring/Stibbe 1987, 234-238. For the Roman villa, see also CatSatricum 1985, 173-175.
33 Gnade 1997b, 93-103.
Apart from two interim reports, the discoveries in the Poggio dei Cavallari have not yet been published. The definitive publication is still in preparation, and therefore only a general survey of the excavation results will be presented here, illustrated by a selective sample of relevant finds. This chapter will deal with the history of the road in the Archaic period; i.e. its original lay-out and the monumental rebuilding. In Chapter 3, which deals with the Post-Archaic history of Satricum, the later history of the road and its surroundings will be discussed.

**Late-Archaic phase**

The remains associated with the Late-Archaic rebuilding of the road are the most impressive and are therefore described first. They consist of two long parallel walls running east-west and following a slightly curving course (c-d) (Fig. 4). These are constructed of large rectangular blocks of red-brown tufa of very regular size. They are of the type used to build the second temple of Mater Matuta. The walls were traced over a total distance of 140 m, which included an interruption of about 50 m. They are located between 5 m and 6 m apart and appear to have been constructed at the same time. They stand in a wide and probably natural depression in the virgin soil and are adapted to its sometimes irregular course. Towards the east they follow the incline downwards, while towards the west they correspondingly rise. The walls generally consist of two neat courses of red-brown tufa blocks with a total height of about one metre (Fig. 8a-c, e-h; Pls. 3-4). A third course of blocks has sometimes been added, clearly reflecting the irregular lie of the land and ensuring that the tops of the walls run at a constant height (Fig. 8e; Pls. 1-2). The blocks are regular in size: 0.55 by 0.80 by 0.40 m. Most are laid as stretchers, interrupted at regular distances by a header projecting on the inner sides of the walls, obviously to give the wall more strength. At the bases of the inner sides of the lowest blocks, at the junction with the virgin soil, there is a very compact and tough stratum of compressed tufa chips, which probably acted as a kind of concrete laid to stabilize the walls at the point where they rest on the soil (Pls. 3-4). At the same time it may have served to protect the bottoms of the lowest blocks from damage by water. The tufa stratum probably consists of fragments chipped from the blocks, which were worked in situ. This is demonstrated by the continuous chisel marks found on adjacent blocks. (Pl. 4). The space between the walls and above the tufa stratum contained a filling consisting of mixed layers of clay and sand, sometimes with intentional layers of pottery sherds - often from large storage jars - and roof-tile fragments, mixed with chunks of tufa. The filling was laid on top of a thick, distinct and remarkably clay-like bottom layer. A pavement, more or less corresponding to the top of the walls, covered the filling. This is only sporadically preserved and differs from place to place. In the largest preserved parts it consists of small chunks of white tufa stuck together, covered in places by small blueish pebbles. Such remains were recorded in section I (Pl. 6), along and partly on top of road wall d and in section II. In the latter a strip of similar (but burned) pavement was recorded for about 0.50 m along the inner side of wall c.

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34 See preceding notes.
35 Cf. Lugli 1957, 189-193, on the measuring standard in the Archaic and early Republican periods of the Osco-Italic foot of 0.275 cm. The general size of the tufa blocks in this period is 2 x 3 feet (0.54-0.58 x 0.80-0.88).
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In other places the pavement consisted of a thick layer of densely packed pebbles (c. 0.10 m) covering half of the uppermost tufa block and lying on top of a thick sandy underlayer. This situation was recorded in section III, in relation to wall c (Pl. 5). Section IIA was deepened just enough to reach the top of wall c, and revealed the surface of a similar pebble paving which again ran along the inner side of the wall.

It was thus established that the walls acted both as the lateral limits of the road (or rather of its filling) and as foundations supporting a pavement. The builders seem to have made use of a natural depression in the virgin soil (or perhaps a ditch) about 10 m wide. The foundation walls were built along the sides of the depression and the space between them was filled with different layers of materials, probably chosen to facilitate drainage. The whole construction was finally paved. On the basis of the general character of the pottery sherds, the filling between the walls can be assigned to the Archaic period.

The road also appears to have been provided with a drainage system. A large gutter was identified along the south side of the southern wall. In three different places in the western part of the excavation (sections II, IIA, III), a stratum of (originally) complete red Archaic roof-tiles was recorded. It appeared that the roof-tiles were lying in their original position, probably side by side in pairs, with their top sides up, covering the trench between the wall and the edge of the depression. Due to the pressure of the earth above, the tiles were found broken in situ (Pls. 16, 32).36

Structures beside the road

Stretches of other walls were also identified alongside the road. These, like walls c and d, are constructed of identical blocks of red-brown tufa and probably date from the same period. In one case (in the western part of the excavation, north of wall d) they form part of a rectangular structure, with three walls creating a U-shape and an open side to the north (e-f) (Figs. 5, 7). The walls of this structure are also two blocks high. A similar (but larger) structure appears immediately to the west (i/g). Although the long E-W wall of this structure (g), which can be followed for a length of at least ten metres, appears to be a continuation of wall e, this is not in fact the case.37 The walls i/g rather appear to be part of another structure that, unlike that formed by e-f, has walls only one block high, resting on a thick sandy layer (Pl. 17). As will be shown below, this structure presumably belongs to a later phase, probably a restoration of the road (see Ch. 3.2.1). Structure j can also be attributed to this phase and will therefore be dealt with in the next chapter.

The chronological connection between structure e-f and the Late-Archaic road is suggested not only by the equal heights of their respective walls, but is also suggested by the substantial remains of a pavement recorded on top of walls e-f and covering their intramural space (Figs. 7, 10, 12; Pl. 6). This pavement consists of a thick and very hard

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36 Cf. Gnade 1997b, 96, where a concentration of tiles, recovered in section II and covering road wall c, were mistakenly interpreted as part of a collapsed roof datable to the end of the sixth or the beginning of the fifth century.

37 This suggestion was made in the preliminary report of the 1996 campaign (Gnade 1997b, 96). However, during the 1997 excavation a new stretch of wall (f) was brought to light. This appeared to form a right angle with wall e. The deepening of the excavation trench at the same time revealed that the presumed continuation of wall e was only one block high and was resting on earth, rather than on the sandy virgin soil like wall e. For this reason I have assigned the wall to another structure from a subsequent building phase and renamed it wall g (see below Ch. 3.2.1, for the discussion of wall g).
layer of densely packed white tufa chunks covered with pebbles. About 20 m² appear to be preserved. The fact that the pavement covers walls e and f suggests that they were an integral part of the road's lay-out and served as the foundations of the pavement.

On the other hand, it is also possible that the pavement belonged to the succeeding building phase associated with wall i of structure g/i (see above and Ch. 3.2.1). A small sounding taken through the highest point of the pavement, next to wall i, revealed a very thick and hard layer of closely packed white tufa lumps (c. 0.50) which could have belonged to two pavements laid one on top of the other (Fig. 12). Furthermore, the greyish layer underneath the sectioned pavement in section I revealed a concentration of closely packed fragments of storage jars and small tufa lumps which seemed to have been laid down intentionally (Fig. 7; Pl. 6). This layer may have acted as a substratum to the pavement which actually covers the walls, but it may equally be the remains of the pavement belonging to the walls. Its surface was more or less at the same height as the top of the walls.

Either way, side-structure e-f must have been part of the same lay-out as the Late-Archaic road on its south side and may be tentatively identified as the foundation of a side walk.\(^{38}\)

A structure that can also be ascribed to the Late-Archaic phase is a stretch of high wall (h), laid out diagonal to the north side of the road and constructed of red-brown tufa blocks (Fig. 5; Pls. 7-8). It is situated in the centre of the excavation area, at the end of the preserved western section of the road, and has at least five courses of tufa blocks measuring c. 0.40 m in height and c. 0.80 m in length. The blocks are laid as headers and, on the north side, each course slightly projects beyond the one below. At first sight it looks as if the blocks may simply have shifted over time, but their regularity indicates that the projections were probably part of the original construction. The scale of the wall, its orientation and its position in the terrain (which is steeply inclined at this particular point) suggest that the wall acted as a kind of *contraforte* to the road. On the other hand, it could be argued that this wall too functioned as a side wall, retaining the fill of a possible side road bridging the deep hollow in the ground.\(^{39}\) In any case, the lowest blocks of wall h had not yet been reached by the end of the excavation campaign in 1997.

In the eastern part of the excavation, south of wall c', two other walls were identified. One ran parallel and at 0.50 m distance to wall c', while the other was connected to it at a sharp angle (c. 50 degrees) (Fig. 6; Pl. 9). Together the two walls form a triangular structure. Although this structure appears to have been constructed at the same time as the road, a plausible theory for its function is not yet to hand.

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\(^{38}\) A similar type of construction has been identified in the road between Cerveteri and Pyrgi (see below).

\(^{39}\) For a similar (but much later) type of construction, with blocks projecting on one side, see the section of the viaduct of the Via Flaminia which bridges the valley of the Treia, Quilici 1989, 501, fig. 19.
Archaic phase
An earlier, probably Archaic phase was recorded in the last year of research in places where the excavation between and beside the road walls reached the virgin soil. In two of the transverse sections dug across the road, the remains of earlier pavements came to light (sections I and III). A thin stratum of very small tufa chunks mixed with small blueish pebbles was unearthed beneath the lowest clay-like layer of the filling between walls c and d in section I (Pl. 3; Fig. 10). It also appeared immediately under the tufa stratum against the lower blocks of these walls, directly on top of the virgin soil. In some places this stratum was more substantial, consisting of densely packed brownish tufa chunks and concentrations of large, blueish pebbles (section III; Pls. 5, 13).

In one area (at the far end of the preserved western section of the road, south of the contraforte wall h) this stratum was covered by another (thicker) pavement of white tufa chunks (Pls. 10-11). This strongly resembles that found between and on top of walls e and f, but given its much lower level (about 0.50 m below the lowest blocks of walls c and d) it must belong to an earlier phase. This pavement was found very well preserved and covering a large area of about 25 m². The depression of the original cart-track running east-west was still visible. Like the pavement of the road above, this stretch was also bordered by a row of tufa blocks (Pl. 12). Here, however, they were irregular, much smaller in size and of different types and colours.

The remains of pavement of the earlier road in section III, were found on either side of wall c. To the north, underneath the compressed tufa stratum (see above) against the lowest blocks of the wall, a large concentration (c. 0.30 wide) of irregularly shaped tufa lumps was recorded (Pls. 5, 33, 36). To the south, in the space between the wall and the edge of the depression, halfway down the lowest block, a stratum of large, blueish pebbles mixed with a considerable amount of pottery and tile fragments (c. 130 fragments) was brought to light (see below on these finds) (Fig. I, nos. 3-12; Pls. 13, 43). This stratum was probably lying on top of the same tufa lumps as were found on the other side of the wall. Although it was not possible to reach this level by the end of the excavation campaign in 1997, the situation clearly resembles the pavement recorded in the area south of wall h.

Chronology
With regard to the chronology of the different road phases we have little hard data. There is, for example, no clue as to the date of the lay-out of the early road, the paving of which seems to have been laid directly on top of the virgin soil. Although only a few datable artifacts have been found on top of the paving, these may still help us to estimate the length of time over which the road was in use. At the very least, they may supply a date for the last moment of its existence.

The best information so far comes from section III, where the earlier mentioned concentration of pottery and tile fragments was found amongst the pebbles to the south of wall c (Pls. 13, 43). Leaving aside many undiagnostic fragments such as Archaic coarse ware pottery and c. 40 red Archaic roof-tile fragments, these finds comprise a dozen Iron Age impasto fragments, a large fragment from the wall of an Etrusco-Corinthian jug and 11 buccher o sherds of different quality (among them a kantharos handle) and 7 fragments of so-called Campanian roof-tiles. Apart from the impasto fragments, the general impression given by the finds is Archaic. If we assume that the finds were indeed related
to the earliest road, either as an integral part of its pavement or as incidental fragments scattered over its surface in the course of time, we can safely assume that the road was used during the larger part of the sixth century. As said above, the most recent finds also supply a date for the last moment the road was in use. At the same time they provide a *terminus post quem* for the lay-out and construction of the road on top.

The pottery fragments cannot be dated precisely as they occur throughout the whole sixth century. For the moment, therefore, the Campanian tiles appear to be the most helpful dating tool. In Satricum, roof-tiles of Campanian fabric are associated with the first monumental temple (Temple I), which is generally dated 540/530.\(^4\) Thus, the presence of the Campanian fragments on the surface of the earliest road implies that the road was still in use around 540/530 and presumably for some time after that (allowing for a reasonable time-lapse between the original use of the tiles on the roof and their secondary appearance on the road). Given the absence of the Late-Archaic roof-tiles associated with the next monumental temple (Temple II), a date of 500/480 can here be cautiously proposed as the lower limit of the period during which the road fell out of use and was subsequently rebuilt. The Late-Archaic terracottas have been firmly dated on stylistic grounds to 500/480.\(^4^1\)

The stratigraphy and finds related to the second road appear to support the proposed chronology. No Late-Archaic terracottas have been documented in its layers.\(^4^2\) Furthermore, the fill between the side walls revealed predominantly Archaic coarse ware pottery and very worn fragments of red Archaic tiles.

An important find with regard to the chronology of the second road was encountered in the foundation trench of wall c, in section I. A nearly intact carinated buccher o bowl was here found against the outer side of the lowest block in the wall (Fig. I, cat. no. 2; Pls. 14-15).\(^4^3\) Many parallels for this rather common type of bowl can be cited. The best, so far, are found in Rome and in Acquasparta (Etruria), both dated to the second half of the sixth/beginning of the fifth centuries.\(^4^4\)

The bowl supplies a *terminus post quem* for the construction of the second road. It had clearly ended up in the foundation trench before this was covered by the roof-tiles of the gutter. Because of its position and its relatively intact state, we might suspect that the bowl had some special significance, perhaps as a propitiatory sacrifice to safeguard the

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\(^4\) This date is linked to the closing date of Votive Deposit I, which was enclosed in the substructures of Temple I. See Knoop 1988, 205-207, 214-216, for the attribution of the Campanian roof-system to Temple I. *Ibidem*, 196 and 228-229 (Appendix B, 'Fabric 2'), for a description and petrographical analysis of the clay of the Campanian terracottas.

\(^4^1\) See Lulof 1996, 207-208, on the dating of the Late-Archaic decorative terracottas.

\(^4^2\) As will be shown in the next chapter, some Late Archaic tiles and many vessels manufactured in a similar Late-Archaic fabric do occur in the dump stratum on top of the road (Ch. 3.2.1).

\(^4^3\) For the first publication of the find, see Gnade 1997b, 96. The bowl is of a quite common type which occurs in Rome and in southern Etruria throughout the sixth and early fifth centuries. See Rasmussen 1979, 124, pl. 41, 248 (bowl type 1) (from S. Giuliano) with a date in the first or second quarter of the sixth century. Cf. specimens from S. Giovenale (I. Berggren, S. Giovenale I.5). On the carinated buccher o bowls, see *Catena nel Lazio* 1981, 183 (Lavinium), with parallels.

\(^4^4\) For Rome, Via Sacra, see Gjerstad I, 93, 97, figs. 122a, 142 (a complete specimen associated with a Italo-Corinthian kylix; size of bowl: Diam. 15.5; H. 6); for other parallels in Rome, *ibidem*, 99, fig. 82; Votive Deposit at S. Maria della Vittoria, Gjerstad III, 147, figs. 96, 37; Diam. 15; Gjerstad IV.2, fig. 115, 10. For Acquasparta, see D. Monacchi in *NSc* 1988-89, 91-92, figs. 5.3, 6.3 (Diam 16.5; H. 5.2, tomb 1).
foundations of the road.\textsuperscript{45} A comparable ritual function can perhaps be attributed to another find recorded in the same foundation trench (this time in section III). Immediately under the stratum of broken roof-tile fragments which originally formed the gutter, the upper part of a jar was found. The jar is made of a densely tempered orange coarse ware (the filler of which contains many augite particles) and has a flaring rim decorated with two concentric grooves. (Fig. I, cat.no. 1; Pls. 16, 43). This type of jar and decoration have a long tradition covering the late seventh and sixth centuries. However, the combination of the shape with this particular fabric points to a date in the last quarter of the sixth century.

The jar was found broken in fragments but, like the buccher o bowl, constitutes a remarkably large artifact in the predominantly empty upper layers of the filling of the foundation trench. A similar phenomenon has been recorded in the foundation trench to the north of wall $d'$, in the eastern part of the excavation. Here several small clusters of pottery (mostly large pieces of small jars) were found at regular distances, level with the top of the road’s foundation wall.

Additional support for a construction date for the second road in the last quarter of the sixth century is offered by the roof-tiles used in the gutter encountered along the south side of wall $c$. All the tiles belong to type II, whose first appearance in Satricum and other places (such as Acquarossa) has been set at 550, after which they are manufactured continuously for more than fifty years.\textsuperscript{46} Again assuming that the tiles were reused after spending some time on the roof (an average of one or two generations has even been suggested) the date of their secondary disposal can safely be set in the last quarter of the sixth century.

The evidence presented above supports the conclusion that the monumental rebuilding of the road took place in the last quarter of the sixth century. It can be argued, however, that this period should be narrowed towards the end of the century and that the construction of the road was closely linked to that of Temple II. In my view the large-scale rebuilding of the road is best explained as part of the town’s Late-Archaic building programme, which was centered around the second monumental temple. Such a building required a proper and worthy approach.

Quite apart from the clear correspondence in their monumental appearance, the road also matches the Late-Archaic temple from a technical standpoint. Similar red-brown tufa blocks were used in both projects, for example. It is also clear, based on what has so far been discovered, that the ancient road was constructed with the same degree of care as the temple. This is visible, for example, in the almost equal heights of the foundation walls, their neatly hewn blocks of very regular size (c. 0.60 x 0.80 x 0.50 m), and the attention paid to small details such as the regular insertion of a header.

\textsuperscript{45} Gnade 1997b, 97. Cf. also the acropolis for a possible parallel. An almost intact, small bowl was here found next to wall $b'$, near to its corner (Maaskant-Kleibrink 1987, 48, Fig. 17; Cat. p. 153 for illustrations). Cf. Chiaramonte Treré 1986b, 79-89, on building offerings in Civita Tarquinia; esp. 87-88, on the offering of a fifth-century olla with bronze fragments. Cf. also eadem 1986a, 178-186. Cf. also Strom 1993, 115-117 for a similar phenomenon in Pontecagnano where two vases, which originally formed a drinking service, were after use deliberately cut into halves and placed in the foundation trench of a building from the late fourth century (with reference to comparable practices in the Greek world, Wells 1988). For a survey of different kinds of Greek building offerings and foundation deposits and on their interpretation, see Zeis 1994.

\textsuperscript{46} See Knoop 1992, 89-98, on the three types of roof-tiles encountered in the graves of the Southwest Necropolis.
Allied to considerations of decorum, another more practical reason must also have played a role in such a large-scale rebuilding scheme. As has been said, a natural depression in the land had been used for the original lay-out of the road. Lying as it did at the bottom of this depression, at a fairly deep level when compared to the two sides, the road must often have flooded during heavy rainfall. Due to the impermeability of the virgin soil, rain-water would not have easily drained and the road would have needed a few days of sunshine to dry out. This must have caused the same kind of regular inconvenience that we experienced during the excavations. The decision to rebuild the road completely and to substantially raise its level is therefore quite understandable. This explanation receives some support from the excavation baulks left on top of the pavement. These demonstrate clear traces of what seem to be mud and sand sediments, immediately on top of the pavement of the earliest road (see above, for the clay-like layer underneath the filling of the second road. See also Pl. 3). Further, the finds in the sediments and in the lower pavements (both pottery and bone fragments) often exhibit levigated surfaces, apparently caused by regular contact with water.

Parallels
Both the construction technique and the various types of pavement immediately call to mind those of the central road on the Satricum acropolis in front of the temples, which was excavated at the end of the nineteenth century. Here too the road is constructed in a deep natural depression in the virgin soil, which reaches a maximum depth of 3.30 m. Recent research to confirm the road's existence has led to the discovery of three different road-building techniques, which were linked by the excavators to three consecutive building phases: Orientalizing, Archaic and late fifth century. A thick layer of closely packed volcanic pebbles, bordered on the south by a curb wall of headers (wall 76), has been identified as the Orientalizing phase. This road was documented for a stretch of about 6 m on the north side of Votive Deposit II, and has been interpreted as the western continuation of the road in front of Temple II. The Orientalizing date was based on the pottery finds among the pebbles, which unfortunately have not been published. As in the Poggio dei Cavallari, the pebble road is lying directly on the bottom of the natural depression. According to the excavators the road was repaved in the Archaic period with a layer of tightly packed tufa chunks. It was bordered on the north by the monumental curb wall which was excavated at the end of the nineteenth century (walls 82 and 89).

The western stretch of this wall consists of a row of red-brown tufa headers, the eastern

47 Cf. Colonna 1968, 75-68 for a comparable situation in the case of the Cerveteri-Pyrgi road. Here a calcareous layer ('una lente di ghiano e sabbia cementata') covering the original Etruscan road level has been explained as a sediment caused by rainwater seeping down from above. See also Quilici 1989, 461, n. 16.
48 Barnabei/Mengarelli 1896, 193-194, with plan on p. 192.
49 During the excavations in the area in front of the latest temple, conducted by the Dutch Institute in Rome, a pebble pavement belonging to this road was verified, as were the remains of the monumental curb wall bordering the street to the north (to be published). Excavators from Groningen University have excavated parts of the same road in the area to the northwest of the temples (Maaskant-Kleibrink 1991, 61; eadem 1992, 18-28; ibidem 20-21, on the interpretation of the nineteenth-century data in relation to the results of the present excavations; Bouma 1996, II, 32-34).
50 Maaskant-Kleibrink 1992, 21, 23-25 (with detailed description of wall 76 on p. 24); excavation square K10; fig. III; colour pl. 2; Bouma 1996, II, 32, figs. 28-29, 31. The orientations given are those used by the excavators (see above, n. 18 on the different use of orientations).
52 Barnabei/Mengarelli 1896, 193, with plan on p. 192.
stretch of a row of stretchers. The Archaic road was the first road to run across the acropolis. Another stretch of it (of about 20 m), which consisted of a thick layer (0.30 m) of brown tufa chunks, was unearthed in the area southeast of the temple ruins. This closely resembles the two pavements encountered in the Poggio dei Cavallari: i.e. the Archaic pavement south of the contraforte wall h, and the pavement north of the road associated with walls e-f and identified here as a side-walk to the Late-Archaic road (see above).

The north road was repaved for a second time towards the end of the fifth century, when the western stretch was paved with irregular chunks of white and brown tufa, plus debris from the roofs of Temple I and II and a small quantity of fragmented pottery. At the same time, a new and identically paved road was laid to the south of the deposit. Another stretch of Archaic road has been unearthed along the west side of Votive Deposit II. This was documented for a length of almost 60 m. Its pavement consisted of white and brown tufa chunks, pebbles, sherd s of sixth century impasto pottery and fragments of architectural elements of Campanian type.

Although the roads themselves are technically similar, different chronologies have been attributed to the respective road building phases on the acropolis and Poggio dei Cavallari. The most striking difference is that the excavators of the acropolis road did not identify a Late-Archaic phase or a repaving of the Archaic road, but did define a late fifth-century phase. In their reconstruction of the information given in the nineteenth-century excavation report, the road in front of the temples and bordered by the monumental curb wall 82/89 was identified as an Archaic road attributed to the period of Temple I. They further concluded that it had still been in use at the time of Temple II. No finds are presented to support this Archaic date, however.

There should therefore be little objection to a reattribution of the road in front of the temples to the period of Temple II. Such a reconstruction would be supported by the association with curb wall 82/89. Indeed, the

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53 Maaskant-Kleibrink 1992, 21-22, 28; excavation squares F 18/19; fig. IV; pl. 5; Bouma 1996, II, 32.
54 The pavements in the Poggio dei Cavallari consist, however, of white tufa chunks. But it should be noted here that photographs of the pavement of the stretch of Archaic road southwest of the sanctuary give the strong impression of white tufa chunks (Cf. Maaskant-Kleibrink 1992, pl. 5; Quilici 1997, fig. 3).
55 Bouma 1996, II, 32, and fig. 28 showing he sequence of three pavements; on the south road, ibidem, 23-29, figs. 18-32.
58 With regard to the continuation of this road in an easterly direction, it is even explicitly reported that 'the thick layer of chunks of brown tufa did not contain a single fragment of pottery, roof tiles or antefixes' (Maaskant-Kleibrink 1992, 22).
59 Cf. also Quilici 1997, 76, fig. 3. Quilici dates the last road phase (dated by the excavators to the late fifth century) to the end of the sixth or the beginning of the fifth century. The photograph, however, is of the pavement southwest of the sanctuary which is explicitly identified by the excavators as an Archaic pavement attributable to Temple I (despite the absence of finds). Quilici appears to be either confused or to consider this particular stretch of road as indeed identical to the final repavement of the road in front of the temples. Some support for the latter reconstruction is provided by a photograph of a section through the road north of Votive Deposit II, published by Bouma (see Bouma 1996, II, fig. 28, on p. 33). This shows the sequence of three pavements above each other. The upper pavement (the one dated in the late fifth century on account of the material found embedded in it) appears to bear a strong resemblance to the (undatable) stretch found southwest of the temples. It should be further noted that the nineteenth-century excavators interpreted the architectonic debris found on top of this road as a dump used to fill in the depression and not as an actual pavement (cf. also Maaskant-Kleibrink 1992, 20-21).
materials and construction of this wall had already been recognised as similar to those of the *peripteros* of Temple II in the nineteenth century.  

Due to the absence of published finds we cannot verify the Orientalizing date suggested for the pavement of the earliest road phase. This consisted either of large volcanic pebbles or of a thick layer of densely packed pebbles that covers half the block of a seventh century curb wall (wall 76). As has been shown, a similar pavement and side wall were brought to light at the bottom of the depression in the Poggio Cavallari, south of wall h (Pl. 11). In this case the pebbles appeared to be covered by a more substantial pavement of white tufa chunks, which carried traces of wheel ruts. Although, a chronological distinction between these two pavements is possible, there is no evidence for it. Both have therefore been attributed to the Archaic period, either as succeeding phases or as belonging to one and the same pavement, *i.e.* as a preparation layer and the actual pavement. In my view the latter possibility is the more plausible and could also be applied to the situation on the acropolis.

Outside Satricum there are few roads with which the Late-Archaic road in the Poggio dei Cavallari can be compared. This may be largely due to the fact that many excavations still await publication. Thanks to the thorough work of Lorenzo Quilici, however, we are well informed about the ancient roads of Italy and in particular about construction techniques. Besides an exhaustive survey of all the known roads, he provides much useful technical information which can be compared with the data collected in the excavation of the road in the Poggio dei Cavallari.

It appears that many Archaic roads were still in use in Roman times. In almost all the roads presented, the earliest tracts lie at a fairly deep level or in ditches. The depth is explained as the hollowing out of the ground caused by continuous use over a long period. This process only came to an end when a road was raised and provided with a regular pavement.

It should further be noted that a typical feature of the Roman road is the side walls, the *crepidini*, which border the pavement on two sides, often slightly elevated above its surface. This technique also appears in many Archaic roads.

Another recurring feature is the filling laid in the space between the side walls in order to provide the pavement with adequate drainage. Most early roads are also provided with some kind of drainage system to carry off rain water, such as ditches running parallel to the side walls. It thus seems clear that Roman road engineering had its roots in Archaic times.

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60 Barnabei/Mengarelli 1896, 193.
61 *Cf.* identical traces in the pavement of the acropolis road on the nineteenth-century plan published in Barnabei/Mengarelli 1896, 192.
62 *Cf.* the Archaic road stretch in Nazzano (southern Etruria), for a similar arrangement, with different layers of pavement on top of each other. In this case they have also been identified as preparation layers for the actual pavement (Archeologica nella Tuscia 1982, 158-162, pl. LXIII, 1)
63 Quilici's most recent publication on this subject appeared in 1997 as a contribution to the exhibition catalogue *Carri da guerra e principi etruschi* (Quilici 1997, 73-82). Here he examines roads from the Archaic period in Italy. In 1989 he had published a survey of the ancient roads in Etruria (Quilici 1989, 451-506). This was followed in 1992 by an article on the development of the technical aspects of road building in Central-Italy, a contribution to the volume Technica stradale romana (Quilici/Quilici Gigli 1992).
64 Quilici 1992, 21-22.
A road from the Archaic period which deserves to be cited as a one of the best parallels for the Satricum road (partly because of its great width - more than 10 m) is the monumental road between Cerveteri and its harbour Pyrgi, which remained in use until the imperial period.

In 1967 some sections were excavated during an emergency excavation. These revealed side walls of large tufa blocks (c. 0.95 m in length) and two successive paving phases: a first, early Archaic pavement (10.20-10.80 m wide) situated at a depth of c. 1 m and composed of pebbles, sand and clay; and a raising of this Archaic road level in the first half of the fifth century, combined with a new pavement of stones and large pebbles. In cross-section, the road exhibited a strongly concave profile between inclined planes. The latter were identified as side-walks for pedestrians. A similar function has here been proposed for the remains of the pavement associated with walls e-f to the north of the Satricum road, at the northern end of section I (see above). The road remained in use until the imperial period.

In ancient Latium, the best parallel for the Satricum road (albeit less wide) is probably found in Acqua Acetosa Laurentina, on the periphery of Rome. Here a long road tract identified as the ancient via Lavinate has been uncovered over a length of c. 800 m, of which 500 m runs through the necropolis of the site and 300 m through the valley of the Acquacetosa. This road was in use from the eighth to the fifth centuries. The earliest phase consisted of a ditch c. 3 m deep, presumably hollowed into the tufa table by long and continuous usage. Around the middle or second half of the sixth century, a pavement (2 m wide) of different sized chunks of tufa was laid on top of the earlier tract. This revealed wheel ruts. The new road was not only provided with side walls (crepidini) but also with side-walks consisting of a battuta of tufa lumps, which are believed to have also improved the drainage. In one place where the road crossed a depression in the terrain, the side wall reached a depth of 1 m. It was built using a polygonal technique. A second wall, built with a pseudo-isodome technique, was also uncovered at a distance of 1.9 m from the side wall. Due to the more advanced building technique, this wall has been identified as a later, Late-Archaic restoration. An important difference between this and the Satricum road lies in the width, recorded at only 2 m.

A similar narrow width has been encountered in a complex of Archaic roads recently excavated at Tor de' Cenci. Here three roads have been brought to light, one of major importance with two smaller roads crossing it. Tombs located beside the main road provide a date in the eighth century for its earliest use. It continued to be used until the second century or later. The original road levels were found at the bottom of a hollow in the terrain, at a depth varying between 1.5 and 3.5 m. The levels appeared to have been raised twice (in total by about 0.30 m) during the Republican period. The original width of the road (c. 2.50 m) was at that time broadened to c. 3 m. The upper pavement consisted in one place of una rozza massiciata in scaglie di pozzolana, and in another of a battuta of larger tufa lumps mixed with pozzolana. On the basis of the pottery found in one of the sections, the raising of the road level was dated to the mid-Republican period. Hereafter,
at least two other raisings are recorded, the final one (dating to the second century) demonstrating the use of wooden posts inserted horizontally every 4.50 m in the side wall and the sides of the ditch to prevent erosion.

A third interesting parallel for the road in the Poggio dei Cavallari, again in Latium, is provided by a road tract at Tor Bella Monaca identified as part of the ancient road connecting Gabii with Rome via the town of Centocelle.\textsuperscript{70} Although no Archaic level has been recorded, its existence is assumed. Like the examples mentioned above, the road is situated in a depression at a depth varying between 1 and 3 m. The presumed Archaic level is covered by a pavement laid down in the second half of the third century. This covers a width of 4.40-4.70 m and is bordered by side-walls of large tufa blocks laid lengthwise. The road was provided with drainage canals, on one side hollowed out in the top of the side wall itself, on the other a ditch running along the outside of the wall. An interesting feature in relation to the Late-Archaic road of Satricum is the presence of blocks projecting from the insides of the walls every 12.30-12.80 m.\textsuperscript{71} A later pavement consisting of polygonal basalt blocks has been recorded on top. The width of the road was then reduced to 2.40 m, while the space remaining between the new pavement and the former sidewalls was provided with a battutta and became a side-walk.

A final parallel which can be cited here is a road in Aquarossa (Etruria). Unfortunately, it has not been published and all we have is a short description and three illustrations.\textsuperscript{72} The road connects zona F with the centre of the settlement. It is 4 m wide and bordered by large tufa blocks. These appear to be larger in the wall on the south side, probably due to its position along the flank of the hill. An interesting reference is made to its excellent construction, which consists of "un ottimo fondo costruito con pietrisco e pezzi di tufo che formavano uno strato resistente e compatto". This strongly recalls the compressed tufa stratum found against the bottoms of the lowest blocks of the road walls in Satricum. Three different road levels have been identified.

Conclusions

The discovery of the road in the Poggio dei Cavalari has greatly extended our picture of Satricum as an urban settlement and at the same time has provided important information about the level and development of technical knowledge during the sixth century.

Given the resemblances to the road phases documented on the acropolis, it is quite conceivable that we are dealing with a single main thoroughfare leading from the lower settlement to the acropolis. After ascending its northwestern flank, it here became a genuine Via Sacra running south-east in front of the temples. It even seems quite possible that this road was an extension of the main thoroughfare approaching Satricum from the

\textsuperscript{70} Quilici 1992, 22-23, figs. 5-8, with references in n. 19.

\textsuperscript{71} This particular feature has been recorded in a number of other roads, most dating to the later Republican period. Cf., for example, the stretch of road excavated in Rome in the area of the church of S. Teresa in 1965 and identified as diverticulum a via Salaria Vetera ad portam Collinam (NSc 1969, 72-77). Cf. also a recently excavated stretch of the Via Flaminia near the Villa of Livia, in BCom 94, 1991-1992, 195-197, figs. 264-268; BCom 96, 1994-1995, 282-285 (with references in n. 5), figs. 112-115.

\textsuperscript{72} Östenberg 1975, 25 (description), 191, 193 (illustrations); Quilici 1997, 78.
direction of Ardea, passing first through the Northwest Necropolis and then through the walls of the town.\textsuperscript{73}

As on the acropolis, a natural depression in the terrain was used for the original lay-out of the road in the Poggio dei Cavallari. A first pavement of brownish tufa chunks alternating with a pavement of pebbles was laid down at the bottom. This was covered by a more substantial pavement of white tufa chunks, probably during the Archaic period although there are no finds or stratigraphical evidence which offer an initial date. Given the chronological range covered by the pottery fragments found on top of this early road, we can assume that it was used during the larger part of the sixth century.

In the last quarter of the sixth century, the Archaic road was rebuilt: its level was raised and monumental side walls of tufa blocks were erected. The reasons for building the new road were twofold: one practical, related to drainage problems arising from the low-lying course of the Archaic road, and one prestigious, related to a general monumentalization of the town.

Parallels in Latium and Etruria suggest that the history of the Satricum road exemplifies a wider development in road building. Simple tracts of road become mature roads in the course of the sixth century, their construction reflecting a high level of organization and an equally high level of technical skill. Many of these roads constitute the basis of later Roman roads which in fact use similar construction techniques.

The rebuilding and monumentalization of these roads accords with the general trend of architectural development during the second half of the sixth century. This is characterised by large-scale building projects and can be regarded as evidence of the culminating stage of urban development in the Archaic settlements of Central-Italy around the turn of the sixth century.

Within this general picture, the Late-Archaic road in Satricum still constitutes an exception in Latium because of its great width - nearly 6 m excluding the side-walk. This aspect is probably directly related to the road’s function as the main artery of the town and/or to its connection with the Late-Archaic temple on the acropolis. The only other example exhibiting such a width is the road between Cerveteri and the sanctuary of Pyrgi, which must therefore stand as the best parallel.

It is probable that the rebuilding of the town was not limited to the road and the Late-Archaic Temple, but that it also encompassed defence works and houses along the main thoroughfare and elsewhere. Although most evidence relating to such structures has been destroyed, there are various indications of their original existence. On the one hand, there are traces visible on aerial photographs taken during the last twenty-five years of research. On the other hand, there are artifacts (pottery and roof-tiles) collected in surveys of the ploughed fields in the lower settlement area or found in the layers on top of the Late-Archaic road (see following chapter). The latter clearly indicate a continuity in the town’s existence, although this aspect is perhaps better illustrated by the later history of the road. This too will be discussed in the next chapter (Ch. 3.2).

\textsuperscript{73} Barnabei/Mengarelli 1896, 199, reported that the necropolis was intersected by various roads, of which only two are indicated on the plan in their fig. 3. See the RAF aerial photograph of Satricum taken in 1936 for a clear view of the necropolis road (published in Castagnoli 1963, 504, fig. 1; Schmiedt 1970, pl. 21; Waarsenburg 1995, 41, pl. 6); cf. also the reconstruction of the road system in and around Satricum on a map of the Istituto Geografico Militare (IGM), made in 1936 and published in Waarsenburg 1995a, 39, pl. 4.2.