Landschap en nederzetting in de Mediterrane Oudheid

Uitgave ter gelegenheid van het emeritaat van

Peter Attema

TMA Supplement 3, 2024

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Peter Attema op een akker op de Latijnse nederzetting Crustumerium (Lazio, Italië). Foto: Marcello de Vos.

De voorzijde van de omslag toont de diverse landschappen waarin Peter in zijn carrière heeft gewerkt (van boven naar beneden): de Monte Pollino, Calabrië (foto Siebe Boersma); de villa van Astura, Lazio (foto Siebe Boersma); de Casale te Crustumerium, Rome (foto Siebe Boersma); de glooiende heuvels van het Tarkhankut-schiereiland, de Krim (foto Tymon de Haas); de Via Appia en Monti Lepini, Lazio (foto Tymon de Haas).
Achterzijde: Peter Attema in Crustumerium, januari 2024 (foto Siebe Boersma).

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tijdschrift@mediterrane-archeologie.nl

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Inhoudsopgave

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Vervolg

Redactioneel

Met gepaste trots presenteren wij het derde supplement van het Tijdschrift voor Mediterrane Archeologie, getiteld *Landschap en nederzetting in de Mediterrane Oudheid*. Dit speciale nummer verschijnt naar aanleiding van het emeritaat van Peter Attema, hoogleraar Klassieke en Mediterrane Archeologie aan de Rijksuniversiteit Groningen. Gedurende zijn carrière is Peter uitgegroeid tot één van de meest gezichtsbepalende mediterraan archeologen in de Lage Landen en internationaal een voortrekker in de ontwikkeling van de mediterrane landschapsarcheologie. Daarnaast was hij in 1988 één van de oprichters van het Tijdschrift voor Mediterrane Archeologie; het is dan ook niet meer dan passend om in dit tijdschrift terug te blikken op zijn rijke carrière.

In dit supplement presenteren (voormalig) collegae en studenten een keur aan onderzoek, met als rode draad de diverse interesses die Peter gedurende zijn loopbaan heeft ontwikkeld en in diverse onderzoeksprojecten nader heeft onderzocht. Daarbij blikken de auteurs terug op onderzoek dat zij met Peter hebben uitgevoerd of presenteren zij nieuwe projecten die schatplichtig zijn aan de traditie van landschapsarcheologisch onderzoek zoals die onder leiding van Peter in Groningen vorm heeft gekregen. Met de 15 bijdragen maken we zo een reis door 40 jaar onderzoek in verschillende delen van de mediterrannée, en komen diverse zijpaden aan bod die tonen dat Peters interdisciplinaire blik op landschap en verleden ook elders van invloed is.

We beginnen deze reis bij het eerste grote veldwerkproject waaraan Peter deelnam: de opgravingen te Satricum (Lazio, Italië). Dit is de plek waar hij als student en beginnend onderzoeker onder leiding van zijn voorganger, hoogleraar Marianne Kleibrink, de kneepjes van het veldwerk leerde. In het onderzoek naar deze site, misschien wel de best onderzochte vroeg-stedelijke nederzetting in Latium, spelen twee belangrijke thema's een hoofdrol. Enerzijds gaat het dan om het thema urbanisering, de ontwikkeling van stedelijke nederzettingen in Italië, een proces dat in veel van Peters latere werk een hoofdrol speelt. De bijdrage van *Marcello De Vos* en *Elisabeth van 't Lindenhout* belicht hoe we nog altijd nieuwe inzichten kunnen verkrijgen in de ontwikkeling van dergelijke stedelijke centra door een nauwgezette analyse van de primaire opgravingsdocumentatie.

Het tweede thema betreft de gedetailleerde studie van artefacten, die niet alleen voor de ontwikkeling van chronologieën van groot belang is, maar ook een rijke bron vormt voor tal van andere studies, zoals de reconstructie van de *chaîne opératoire* of regionale uitwisselingsystemen. *Bert Nijboer* illustreert dit belang in zijn bijdrage aan de hand van het langlopende *fabrics*-onderzoek aan het aardewerk van Satricum, dat de basis heeft gelegd voor steeds verder verdiepende studies van het aardewerk in de regio rondom Satricum. De bijdrage van *Marjan Galestin*, oud-collega en mede-opgraver in Satricum, toont het belang van een kritische en interdisciplinaire benadering van antieke artefacten in een heel andere context; zij reflecteert kritisch op de datering van een aantal vermeend Romeinse bronzen beeldjes uit het Noord-Nederlandse wierdengebied.

Vanuit Satricum verbreedde Peter als promovendus zijn blik naar het omliggende landschap, en ontwikkelde hij het zogenaamde *Pontine Region Project* (PRP). In dit project combineerde hij veldverkenningen, cartografisch onderzoek en geo-archeologische studies om zo de ontwikkeling van nederzetting en landschap over de lange termijn (*longue dúree*) te reconstrueren. Dit project heeft zich in diverse fasen verder ontwikkeld en heeft ons inzicht gegeven in de effecten van urbanisatie en kolonisatie op landbouw en plattelandsbewoning in zuid-Latium. De bijdrage van *Tymon De Haas en collegae* reflecteert op de ontwikkeling van dit project, dat door interdisciplinaire samenwerking en de toepassing van nieuwe methoden en technieken tot op de dag van vandaag nieuwe inzichten blijft genereren. *Tanja van Loon* en *Gijs Tol* belichten in hun bijdrage het belang van bestaande artefactcollecties als aanvullende bron van informatie over het antieke landschap. Ze tonen hoe dergelijke collecties, indien voorzien van de juiste contextuele informatie, een verrijking vormen van de gegevens uit systematische veldverkenningen zoals die van het PRP.

Vanuit het PRP ontwikkelde Peter met collega *Gert-Jan Burgers* van de Vrije Universiteit (Amsterdam) in de late jaren '90 een voor die tijd baanbrekende vergelijkende studie van regionale landschappen. Binnen het zogenaamde *Regional Pathways to Complexity* (RPC) project werden processen van urbanisering en kolonisatie zoals die al langer door Peter in de Pontijnse regio werden bestudeerd, vergeleken met ontwikkelingen in Apulië (waar de Vrije Universiteit onder leiding van Douwe Yntema en Gert-Jan Burgers vergelijkbaar onderzoek uitvoerde) en Calabrië, waar de Rijksuniversiteit Groningen onder leiding van Marianne Kleibrink al onderzoek deed op de Timpone della Motta nabij Francavilla Marittima. Binnen dit project begeleidde Peter ook zijn eerste promovendi.

Een deel van de mensen die betrokken waren bij het RPC-project heeft sindsdien een andere richting gezocht: mede-projectleider *Gert Jan Burgers* heeft zich ontwikkeld tot specialist in de studie van erfgoed, een thema waarop hij in zijn bijdrage nader ingaat. De meeste promovendi uit dit project hebben de academisch archeologie vaarwel gezegd, hoewel zij zeker nog inspiratie halen uit hun betrokkenheid bij het RPC-project. Hiervan getuigt *Froukje Veenman*, nu gemeentelijk archeoloog in

Groningen, in haar bijdrage over de geschiedenis van de tomaat. Tegelijkertijd is uit het RPC-project een tweede langlopend regionaal project voortgekomen: met onder meer één van de RPC-promovendi, Martijn van Leusen, doet Peter tot op de dag van vandaag onderzoek in de Sibaritide in Calabrië. Nog steeds promoveren jonge onderzoekers op aspecten van dit onderzoek; *Maurizio Crudo* bespreekt in zijn bijdrage de hoofdlijnen uit zijn recente dissertatie over de exploitatie van het landschap in deze regio.

Nadat Peter in 1999 werd benoemd tot hoogleraar in de Klassieke en Mediterrane Archeologie aan de Rijksuniversiteit Groningen, identificeerde hij in zijn inaugurele rede twee centrale richtingen waarin hij zijn onderzoek verder wilde ontwikkelen. Ten eerste zag hij het belang van een integratie van de landschapsarcheologie, en dan met name survey-onderzoek, met de opgraving van (stedelijke) nederzettingen; ten tweede wilde hij zich toeleggen op de studie van de "marges van het klassieke landschap".[1] Die tweede ambitie werd vervuld tussen 2006 en 2010, toen Peter in samenwerking met het *Center for Black Sea Studies* van de Universiteit van Aarhus (Denemarken) een nieuw survey-project lanceerde op de Krim (Oekraïne). De geschiedenis van dit project wordt door *Wieke de Neef* en *Burkart Ullrich*, voormalig teamleden, levendig beschreven in hun bijdrage. Ondanks de vroegtijdige beëindiging van dit project heeft het belangrijke nieuwe inzichten opgeleverd in de interacties tussen Griekse kolonisten en inheemse volkeren aldaar, onder meer dankzij de grootschalige inzet van geofysisch onderzoek in de studie van het landschap.

Voor de verwezenlijking van de eerste ambitie, de integratie van survey en opgraving, keerde Peter terug naar bekend terrein, de regio Latium in midden Italië. In samenwerking met Italiaanse collega's van de archeologische dienst van Rome, Francesco di Gennaro en Barbara Belelli-Marchesini, ontwikkelde hij vanaf 2006 een onderzoeksprogramma op en rond de Latijnse nederzetting Crustumerium, gelegen enkele kilometers ten noorden van Rome. Naast intensieve veldverkenningen in het ommeland werd een heel scala aan methoden ingezet om deze nederzetting in kaart te brengen: intensieve surveys werden gecombineerd met topografisch onderzoek, grootschalige geofysische prospecties, gerichte proefsleuven alsmede gedetailleerde opgravingen van tombes in één van de omliggende grafvelden. Voormalig studenten *Remco Bronkhorst* en *Nikolaas Noorda* schetsen een beeld van de nieuwe inzichten – en open vragen – die dit project genereerde.

Aan de twee voornoemde ambities kunnen we gerust nog een derde toevoegen: vanaf 2015 zette Peter zich in om de vele survey-datasets die hij zelf en collega's in binnen- en buitenland hebben aangelegd te integreren, om zo grootschaliger vergelijkend onderzoek mogelijk te maken. Een dergelijke integratie was al voorzien binnen het RPC-project, maar bleek op dat moment technisch niet haalbaar. Pas zo'n 20 jaar later lukte het om met het *Rome Hinterland Project* (RHP) een geïntegreerde survey-database te bouwen. *Willem Jongman* beschrijft in zijn bijdrage hoe hij binnen dit project als oud-historicus de samenwerking met archeologen ervoer, en welke perspectieven zulke interdisciplinaire samenwerking kunnen openen voor de toekomst.

Met het woord samenwerking hebben we een laatste belangrijke rode draad in Peters carrière benoemd. In alle voornoemde projecten speelde goede samenwerking een cruciale rol: met specialisten uit diverse disciplines (geschiedenis, bodemkunde en geologie, botanie en ecologie, geofysica, …), maar ook met collega-archeologen uit andere taalgebieden en onderzoekstradities. Dat het Groningse onderzoek dat Peter in de loop der tijd initieerde internationaal erkend en gewaardeerd werd blijkt uit het grote aantal buitenlandse studenten en promovendi dat het aantrok. De bijdragen van *Agnese Fischetti* en *Agostino Sotgia* geven mooie voorbeelden van de kruisbestuiving tussen Italiaanse en Nederlandse onderzoekstradities die zo ontstond.

Hiermee komen we aan een voorlopig eindpunt van onze reis door Peters rijke en gevarieerde onderzoekscarrière. Twee bijdragen presenteren wat dit alles heeft opgeleverd. *Siebe Boersma*, archeologisch tekenaar en veelvuldig deelnemer aan een aantal van de hiervoor benoemde projecten, doet dit met een visuele impressie die de sociale en culturele aspecten van ruim veertig jaar veldonderzoek in de Mediterrane wereld in beeld brengt. Deze impressie is te vinden in het midden van dit nummer. De omslag, eveneens ontworpen door Siebe, toont daarnaast enkele van de landschappen waar dit veldonderzoek plaats vond. *Martijn van Leusen* sluit het nummer af met een bibliografische analyse van Peters indrukwekkende publicatielijst – die als lijvige bijlage is toegevoegd.

Aldus illustreert dit supplement niet alleen een rijke en productieve carrière in het veld en een zeer brede wetenschappelijke interesse; het weerspiegelt ook een rijke nalatenschap. Zoals de diverse bijdragen tonen, zetten vele van Peters *allievi* met veel enthousiasme het onderzoek naar nederzetting en landschap in de Mediterrane wereld voort – nu en in de toekomst. We wensen u veel leesplezier!

Tymon de Haas & Marcello de Vos

Literatuur

Attema, P. 2002. *In de marges van het klassieke landschap*, Rede uitgesproken bij de aanvaarding van het ambt van hoogleraar in de Klassieke en Mediterrane Archeologie bij de Faculteit der Letteren van de Rijksuniversiteit Groningen op 26 februari 2002. Groningen.

Eindnoot

1 Attema 2002: p. 23.

Surveys and ceramic fabrics in and around Satricum (Old Latium) between 950/900 and 300/200 BC

Albert J. Nijboer

Abstract. In the early 1990s, the predecessor of Peter Attema as chair of Classical and Mediterranean Archaeology at the University of Groningen, Marianne Kleibrink, started a new research programme. This programme aimed to examine and describe the fabrics of ceramics excavated at the pre-Roman site of Satricum (900 to 300 BC). It was the intention that all staff members would participate, particularly Peter, Gert van Oortmerssen, the late Arnold Beijer, and myself. Thus, the Satricum Fabrics project was initiated. One of its objectives was to enhance the chronological resolution of abraded pottery sherds recovered from field walking surveys in southern Latium. This turned out to be more complicated than originally anticipated. The present paper will address this issue as well as topics such as urbanization, ceramic traditions, and innovation.

For Satricum, the project has revealed in detail that the number of fabrics increased significantly with centralization and the subsequent formation of an early town. Part of this increase is due to interregional imports, but it is mostly the result of more complex, local modes of production and growing technological know-how. There are even small-scale, single fabrics for highly specialized functions, such as the final lining of the combustion chamber of a large ceramic kiln dating around 500 BC. However, two fundamental issues persist: skill and lingering local traditions in ceramic paste manipulation. Thus, the introduction of a new fabric does not immediately result in the abolition of the old ones. Moreover, identifying ceramic fabrics requires more expert competence than expected. In addition, the use of locally available clays and minerals may have been employed for centuries in case production continued. The retirement of Peter as chair of Mediterranean archaeology in 2024, offers me an opportunity to reflect on our fabrics project with some closing remarks.

Keywords: Latium Vetus, Satricum, excavations, ceramics, fabric research.

Introduction

This paper was written to mark the formal retirement of Peter Attema as Chair of Classical and Mediterranean Archaeology at the University of Groningen in the summer of 2024. He and I have worked together for over 40 years, starting as students in the early 1980's, and we share many mutual interests. For example, I could have reflected on our excavations at the beach to the south of Nettuno where we examined an accumulation of ceramics associated with a Late Bronze Age saltern that contributed to the present Salt & Power project.[1] In addition, I cherish my memories of the excursions we undertook together in Italy with second-year Bachelor students, with Peter driving us through spectacular landscapes of various Italian regions, visiting archaeological sites and museums.

Nonetheless, I chose the topic of ceramic fabrics at Satricum because I consider it a fine example of integrated research that connects issues such as the excavation of a developing Latin town and landscape archaeology. Our fabric research at Nettuno, for instance, resulted in far fewer ceramic pastes than the 58 from Satricum, because the site did not last as long and revealed limited progress.[2]

Starting in the 1960s, research into ceramic fabrics has helped archaeologists to interpret the ceramics retrieved during surveys.[3] Another objective of fabrics research is the reconstruction of the pottery industry in the past, from concept and resources to the final artifact and its use (the *chaîne opératoire*). The methods we employed in the study of ceramic fabrics from ancient Satricum (see figure 1), dated roughly between the tenth and third centuries BC,[4] included detailed visual examination, using

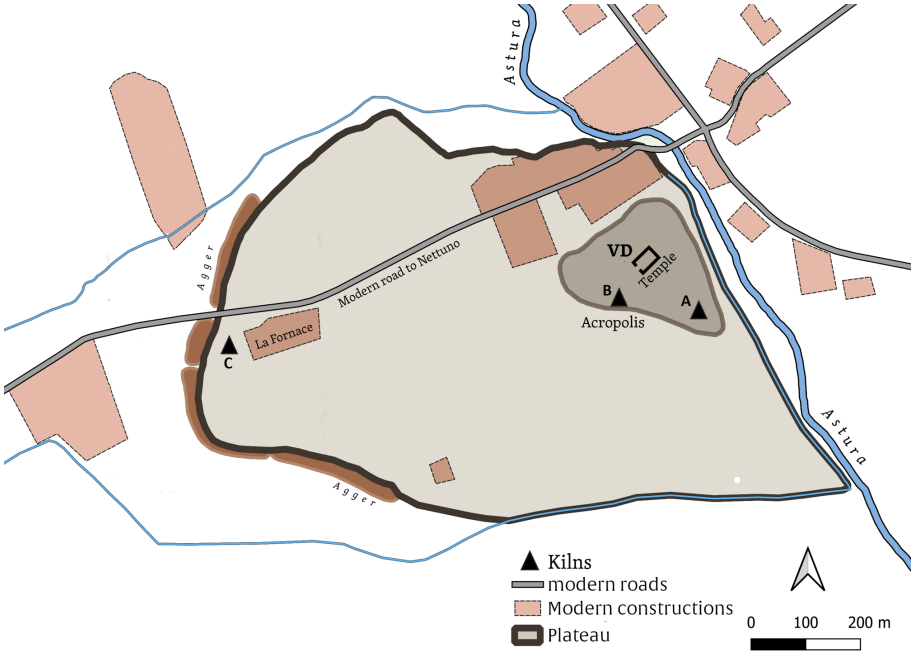

Figure 1. Map of Satricum; A, B and C indicate the location of the pottery kilns and associated workshops. VD = Votive Deposit.

rather basic scientific techniques such as thin sectioning, microscopic examination, and the assessment of colour and particle size. These methods are suitable for studying larger quantities of ceramics. We aimed to establish a ceramic repertoire per fabric to determine its chronological duration. This meant that we included sherds not only from specific settlement features, such as huts, but also those from levelling layers.

The material we examined mainly derives from Votive Deposit II, dated between the late sixth and third centuries BC, from our excavations of the Iron Age and Archaic settlement remains on the acropolis of Satricum in 1989 and 1991, and from the complex La Fornace, which was not excavated but surveyed.[5] The La Fornace complex included quite some ceramic fabrics that were hardly present in the settlement excavations on the acropolis, which mainly yielded ceramics dating from the ninth to the sixth centuries BC, apart from those from Votive Deposit II that date roughly from the late sixth to the third centuries. Therefore, the La Fornace complex significantly increased the number of identified fabrics, though with low numbers of sherds, since they were not encountered during our excavations on the acropolis. The full publication of the artefacts excavated at Satricum over the last decades by the University of Amsterdam, as well as those from Votive Deposit III, could rectify these low numbers as they retrieved far more Republican ceramics than we did. This might result in identifying more individual fabrics for the later period.[6]

Overall, 58 ceramic fabric groups were identified at Satricum based on roughly 5100 sherds covering the period from approximately 950/900 to 300/200 BC (see table 1). All information on these 58 fabric groups, including drawings of sherds assigned to each ceramic fabric, is present in the LCM archive. A selection of these data is available on our website with numerous active links that give access to the files.[7] The present paper will discuss several of the fabrics to facilitate interpretation (see table 2). From both table 1 and 2, one can infer that some fabrics are dominant, while others are less represented in the examined repertoire. Among these are fabrics deriving from the La Fornace complex and imported ones, such as the Corinthian coarse ware ceramics (see table 2: no. 11). In addition, some of the finer, depurated wares produced on a fast potter's wheel, such as *figulina* and *bucchero*, represented in the LCM archive as well, were not analysed in detail since this would require chemical analyses. Thus 55 bucchero sherds from Satricum, including later variations from fifth-century BC tombs, are assigned to one ceramic fabric that appears orange when refired. These sherds are characterized by their brownish-grey to black colours with hardly any detectable inclusions (partially due to the body colour), but occasionally well-sorted fine quartz/feldspar, red flint, or augite. Other ceramic fabrics within these 58 categories are highly related and clearly belong to one family. Such families indicate that strictly controlled recipes for ceramic pastes were scarcely present during these centuries. They have to be grouped since potters slightly varied per batch of processed clay, in the sorting and quantity of local, non-plastic minerals they added. This aspect is illustrated with two examples below.

During our examinations, we refired a selection of sherds per fabric group in a modern kiln under standard oxidizing conditions. This resulted in a basic classification by colour: red, orange, and pale, each with transitional colours and associated Munsell colour codes (see table 1). Experience with refiring ancient ceramics provides a better understanding of the countless colour variations encountered in most ancient domestic wares.

Since fabric research focuses on the paste, one needs to classify other attributes, such as firing conditions and the various surface treatments, separately. Consequently, we did tend to focus on the lightest colour present on a sherd, those that reveal oxidizing conditions in the kiln. Frequently, one can trace this colour just beneath the surface of a fresh break, a prerequisite for this kind of fabric research. Quite some dark-coloured ceramics at Satricum are the result of an intended and controlled reducing atmosphere created in the kiln, reflected in ware names such as *bucchero* or dark, fine *impasto* which are often highly polished. Without this refiring experience, one tends to group the ceramic pastes into far more colour categories than just red, orange, and pale with their associated Munsell colours.

The fired red- to orange-coloured paste at Satricum is the most common, covering the whole period of roughly 950/900 to 300/200 BC (see table 2: no. 5). The orange-coloured paste emerged during the seventh century BC but was dominant between the sixth and third centuries BC. From the sixth century BC onwards, a pale-coloured ceramic fabric became added, mainly for sturdier artefacts such as architectural terracottas and storage jars. Nearly all 58 ceramic fabrics at Satricum in Table 1 are local products; we have published pottery kilns dating from the seventh century BC onwards (see figure 1). In addition, the red/orange ceramics frequently contained well-rounded, small flint fragments, found in a marine clay deposit associated with the latest kiln complex, that of La Fornace.[8] Firing clay samples from this deposit in our modern kiln resulted in an orange-firing ceramic. The pale firing paste comprises two basic groups; one that contained visible inclusions and one that was depurated, the latter known as *figulina* and suitable for use with a fast potter's wheel. This paste has been predominantly present in tableware from the late sixth century BC onwards. Powdery *figulina* is separately classified as a fabric in the Satricum collection, but it would require chemical analyses to create subdivisions of this paste. Our research into ceramic fabrics focussed on the wares with visible inclusions.

Besides the colour, one can look at the type, quantity, form, and sorting of visible inclusions to create individual fabrics. Our website provides details regarding the method.[9]

Fabric attribution requires experience to obtain somewhat reproducible outcomes. Our experiments with students to identify individual ceramic fabrics, even after a short training, resulted in quite some mismatches when checked by our fabric analyst, Gert van Oortmerssen. We soon decided that he should identify individual fabrics, which he did for some subsequent excavations and surveys.

In the following section, I introduce some of the ceramic fabrics at Satricum in more detail, as they illustrate certain strengths of this line of research. In addition, I discuss a specific context, the large pottery kiln B, which was used during the decades around 500 BC. This kiln is associated with at least 12 of our 58 ceramic fabrics, including a specific technical fabric for insulation. Finally, I address the issue of surveys and fabrics research in and around Satricum.

The most common and long-lasting fabric

Fabric number 5 in table 2 (see also figure 2) is the most conventional paste at Satricum. This fabric is closely related to three fabrics that are not listed in Table 2. These three fabrics, dating mostly from the tenth to the seventh century BC, are described in our system with the following codes:

- SAT I/(II).AD*.ms-ps(1-4).b, to which 699 sherds are assigned;
- SAT I.ad*eq.ps-vps*(1-4).c, (large) FeMn nodules with 516 sherds;
- SAT I.=.ws*(1-4*).d, ((large) FeMn nodules), to which 602 sherds are assigned.

When comparing these codes with the one listed as no. 5 in table 2, one can detect slight differences in colours and variations in the sorting and quantity of the inclusions. They form one fabric family, with individual attributes shifting gradually into each other, comprising 3524 sherds, roughly 70% of all investigated sherds. Thus, this ceramic fabric family is not the result of a specific recipe for particular functional pottery forms (as illustrated below for the cooking wares). In addition, it often contains limited amounts of typical, rounded flint particles. The marine clay deposit at La Fornace mentioned above, seems to be the origin of the majority of the ceramic pastes produced at Satricum, in use from 950/900 until the third century BC. The bulk of the 3542 sherds allocated to this fabric family were found in hut features on the acropolis and concern common household wares. Finer, more elaborately worked tableware usually falls within the well-sorted fabric categories such as the *orciolo* in figure 3, which provides an illustration of the Early Iron Age *orciolo* from one of the lowest strata excavated (S 4668; height 15 cm and maximum diam. 26 cm). However, in this same fabric family we also have a fragment of a terracotta head with curling hair and diadem (LF 5/15; see figure 3; 11.2 x 7,7 x 4.1 cm). Since this fragment derives from the survey of the La Fornace complex, there is only one example of such a terracotta head. The *orciolo* is assigned to Fabric SAT I.=.ws*(1-4*).d, ((large) FeMn nodules) and the fragment of terracotta head to fabric no. 5 in table 2.

The repertoire of the most common fabric family at Satricum includes ceramic forms such as cooking stands, ceremonial stands (*holmoi*), jars, jugs, plates, storage vessels (*dolia*), spinning equipment (loom weights, spindle-whorls, spools), and architectural building materials

Figure 2. Detail photograph of a fresh break of fabric no. 5 (see Table 2). S 5173 / 01 & /02 (base of stand); appearance of the fabric at a fresh cross section / field of view: 1.2 x 2.7 cm. See for a full description
https://www.lcm.rug.nl/lcm/teksten/teksten_uk/fabric_sat_12AD_a_variety.htm

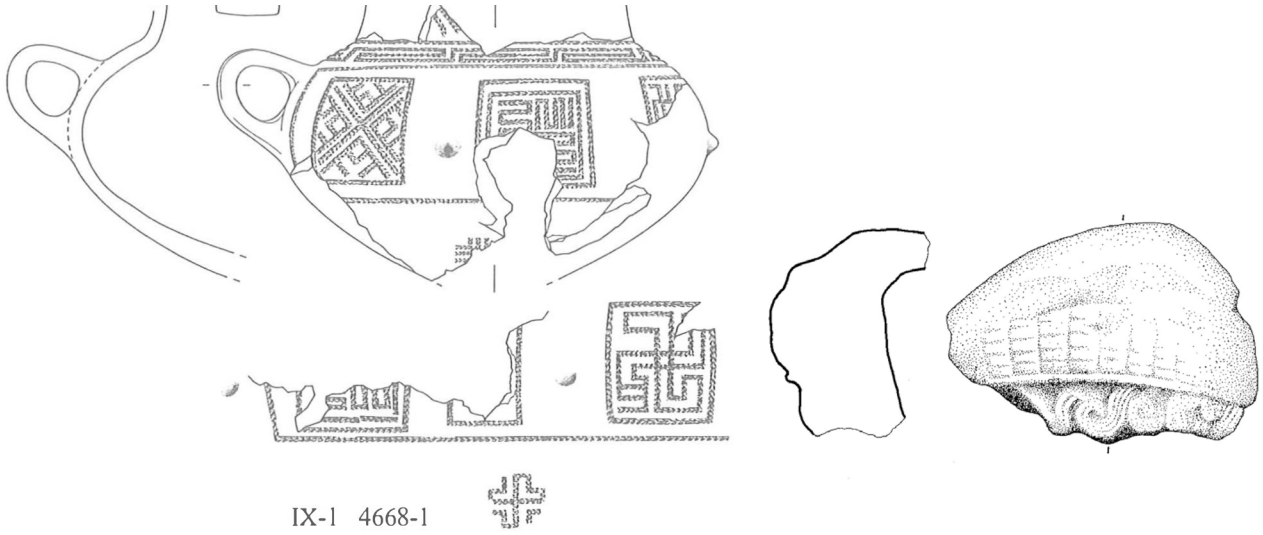

Figure 3. Two sherds assigned to the most dominant fabric family at Satricum, but dated to very different centuries.

(roof tiles). It is associated with all three production areas at Satricum, from the seventh-century BC kiln on the acropolis to the La Fornace complex, and includes wasters.[10]

This fabric family reflects local production and consumption. It is unlikely to have been distributed regionally, so correlations with other central settlements/early towns in Old Latium are limited unless these employed comparable geological clay resources. Moreover, sherds recovered during any survey close to Satricum and assigned to this lasting fabric family will not increase the chronological resolution of abraded sherds with hardly any remaining typological form or surface treatment.

Fifth- and fourth-century BC cooking wares

Fabric no. 6 in table 2 has a light brown to orange firing paste and a predominance of fine quartz/feldspar (see figure 4). It comprises 125 sherds, all of which pertain to vessel types used for cooking, such as cooking jars with lids and so-called *teglie*. This fabric closely resembles a recipe for a larger group of vessels with a specific function: cooking. As a ware group, it is known in the archaeological literature as 'coarse ware', which, in the classification by Carafa, is associated with vessels subjected to heating.[11] We found materials with fabric no. 6 predominantly in Votive Deposit II.[12] However, coarse wares are occasionally found as well in other fabrics at

Figure 4. A detail photograph of a fresh break of fabric no. 6 (see table 2); appearance of the fabric at a fresh cross section / field of view: 1.1 x 3.4 cm. For a full description including the ceramic repertoire, see https://www.lcm.rug.nl/lcm/teksten/teksten_uk/fabric_sat_2ADe_ab_variety.htm._

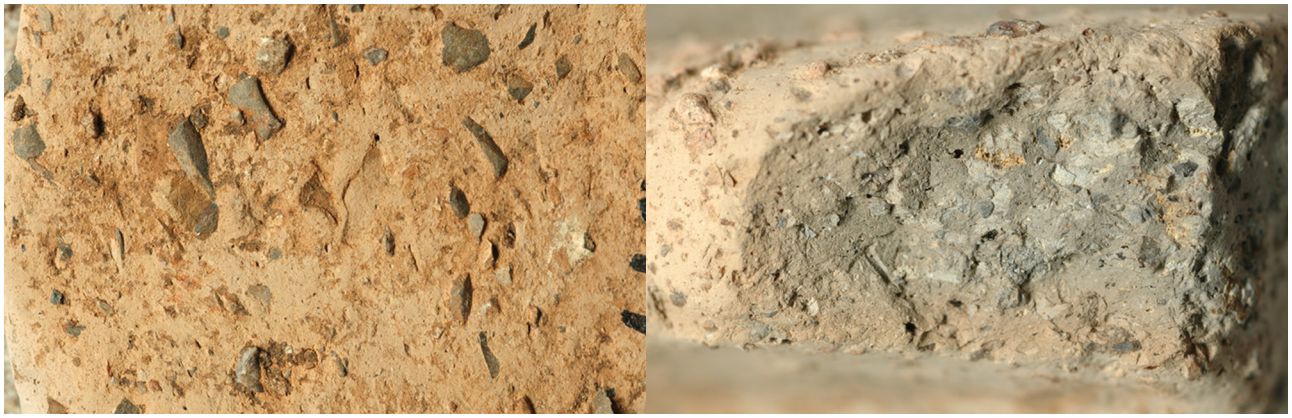

Figure 5. Detail photographs of fabric no. 11 (see table 2). Left S 4157 and appearance of the fabric at an abraded surface / field of view: 4.7 x 3.1 cm. Right: S 2150, microscopic appearance of the fabric at a fresh cross section / field of view: 3.1 x 2.0 cm. For a full description, see https://www.lcm.rug.nl/lcm/teksten/teksten_uk/fabric_sat_23X_cd_low_hardness_powdery_surface.htm

Satricum, implying that a recipe might have existed for this functional category of cooking vessels but came with some margins. The paste itself is not suitable for fast rotation on a wheel due to the character and quantity of non-plastic inclusions. Features demonstrating the use of a wheel with slow rotation are clearly traceable. The selection and sorting of the minerals in this fabric indicate an increase in *savoir-faire* in producing pastes with specific characteristics, such as pottery with thermal shock resistance. There are no indications, in terms of minerals or otherwise, that this specific fabric was produced elsewhere than at Satricum.

Imported Corinthian coarse ware

An even more specific fabric from Satricum relates to Corinthian imports (table 2: no. 11; see also figure 5). This fabric has no link with other pastes from the site because it was not locally produced, considering the atypical, non-local temper. The detailed description of this fabric matches Whitbread's account of the Corinthian pastes containing mudstone.[13] At Satricum, 39 diagnostic sherds are assigned to this fabric; they include some small rim fragments of transport amphoras, probably of type A. A group of sherds of this fabric pertain to a large krater or *lebes* with a maximum diameter of 50 cm (see figure 6).

The best parallel in form is krater no. 91 in well 1981-6 at Corinth. Paolo Orsi drew a painted, Corinthian krater/*lebes* from Gela (Sicily) with a maximum diameter of 45 cm and a height of 28 cm. In form, including the typical handle, it resembles the fragment from Satricum well.[14] At Satricum, the larger vessels from Corinth have so far not received much attention. It is a small but informative group of vessels, recording long-distance, overseas trade with the inhabitants of Satricum of some scale. It recalls the few Corinthian coarse ware imports from Caere dated to the sixth century,[15] where the quantity and variation of transport amphorae are far larger than at Satricum. Considering their context in a levelling layer, the Corinthian transport amphorae and *lebes* at Satricum have a *terminus ante quem* in the decades around 600 BC.[16] There are a few other imports from Corinth, particularly the figuratively decorated smaller vessels such as *kotyle* in tombs and votive deposits of the eighth and early seventh century.[17] It needs to be stressed, though, that Etrusco-Corinthian pottery dominates massively at Satricum and its surroundings after ca. 650 BC. Thus,

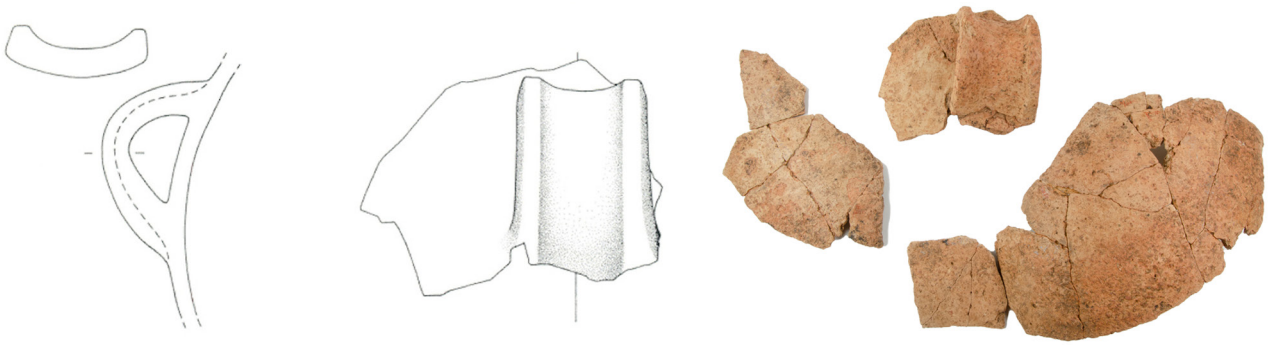

Figure 6. Fragments of a Corinthian, coarse ware krater/lebes at Satricum. Preserved are body sherds and a vertical band handle with raised edges.

Figure 7. Two artefacts in a ceramic fabric associated with Kiln B. Satyr fragment from VD II of antefix with Satyr and Maenad (59.5 x 35.5 cm; fabric no. 9, see table 2) and votive arula from Votive Deposit II (12.6 x 13,5 cm; fabric no. 13; see table 2).

Van Loon assigned more than 3000 sherds in the nearby votive deposit of the Laghetto del Monsignore to the Etrusco-Corinthian ware group.[18] However, the smaller, painted Corinthian/Etrusco-Corinthian vessels of a depurated paste hardly contain any visible inclusions and were therefore not investigated further in our fabrics project. The Corinthian coarse wares though, can be easily recognized at Satricum but seem to form a restricted category.

Kiln B and its workshop

The large complex of Kiln B on the acropolis has been presented in detail elsewhere.[19] The output of this workshop is associated with the construction of the last monumental temple of Mater Matuta at Satricum around 500 BC (see figure 7).

So far not specified are the many associated ceramic fabrics. First, two opposite fabrics in terms of processing are introduced, linked to the construction of Kiln B. One of these was not processed at all and the other is a highly specific, technical fabric. Bricks used in the construction of the kiln had the same attributes of paste as the loam used for plastering the huts of the eighth and seventh century BC (Table 2; no. 2). When the loam plaster is fired, these are known in Italian as *grumi*. In the kiln, the few remaining, complete bricks were roughly rectangular. The ancient *grumi* and bricks are very much like fired loam samples taken from the acropolis.

The second fabric was only employed during the final plastering of the interior combustion chamber. It is a highly technical one (table 2: no. 12). It employs the concept of porosity when producing fire-resistant bricks/ceramics. For this paste, organic remains such as chaff and stubble were added to the clay, which after firing resulted in voids (see figure 8). Thus, a highly porous, ceramic fabric was created that is not encountered elsewhere

Figure 8. Detail photograph of fabric no. 12 (see table 2); appearance of S 5034 / 44 at a fresh cross section / field of view: 2.85 x 1.9 cm. For a full description with images of the lining retrieved from the large kiln, see https://www.lcm.rug.nl/lcm/teksten/teksten_uk/fabric_sat_3AD_ns_c_hardness_organic.htm .

at the site. It is an explicit, technical fabric, resulting in heat resistance. This quality is still used in modern kilns with a porosity spanning from 20 to 95%.[20] So, for heat-resistance, two concepts were known at Satricum from the sixth century BC onwards: increasing porosity for this technical fabric and adding specific minerals for the cooking vessels (see above).

A third group of items that might be related to the construction of the kiln are red and red/orange roof tiles/*tegulae* with clear signs of an excessively high firing temperature. They are either wasters or tiles that were used to cover the upper firing chamber of the kiln. Of this upper chamber, no clear remains were traced during the excavation. They indicate, however, that pale and red/orange roof tiles were still produced around 500 BC at Satricum. The introduction of pale-firing architectural terracottas did therefore not result in the abandonment of the red/orange ones.

Fabric nos. 9, 10, and 13 (see table 2) are encountered in close vicinity of the kiln, often as wasters. From the codes, one can deduce that we are dealing once more with closely related ceramic fabrics, a fabric family. Many of our modern presumptions about precision are not appropriate for the ancient world. Thus, an accurately defined recipe for the terracottas was not employed around 500 BC. The basic constituents are a local, depurated, pale-firing clay and a variety of local inclusions to improve the drying and firing characteristics of the sturdy *tegulae* and other artefacts made from this paste. In addition, the potters processed red-firing pastes at this workshop. The number of ceramic fabrics associated with this kiln amounts to twelve of which six are presented here. More did exist at the same time, such as the *figulina* tableware but these were not present at the kiln complex.

The ceramic output at Satricum around 500 BC is therefore manifold. Paste preparation is very much linked to the subsequent *chaîne opératoire* and output in mind, which is the concept from the start of what had to be produced; for example, a paste for a drinking cup suitable for a fast potter's wheel or a paste fit for producing large terracotta's made with moulds. During the urbanisation process, paste preparations as reflected in the number of individual fabrics, became quite specific. One could argue that the number of ceramic fabrics identified at a specific site is a reflection of the degree of urbanisation. Thus, the number of wares/fabrics identified at Etruscan Caere is larger than those at Satricum. Kiln B functioning at the height of the urbanisation process at Satricum, is definitely not just related to the construction of the last monumental temple on the acropolis.

Epilogue

What were some of the outcomes of the research programme on Satricum and its ceramic repertoire initiated by Marianne Kleibrink, and how did this line of research develop in more recent years in relation to the study of the region surrounding Satricum? Around 1993/1994, the programme started with informal discussion-evenings based on the monograph *Archaeological typology and practical reality*.[21] For archaeological ceramics, the most common typologies categorize regional vessel form and ware groups, such as *bucchero*, *impasto rosso*, coarse ware, and *impasto chiaro sabbioso*. More recently, Gijs Tol used such ceramic ware categories in a new paper to assess the archaeological infill in the territory around Satricum during the sixth century BC.[22] It appears that this infill was limited, accelerating particularly during the fourth and third centuries BC. It is one of the complications, unknown to us when we started the ceramic fabrics project 30 years ago. Many of the early fabrics we described for the Satricum collection predate 500/400 BC. These seem now less relevant when one just intends to examine the results of surveys in the countryside around Satricum.

Another outcome is that region-wide ware denominations are often imprecise. Even if we have a relatively specific recipe for a coarse ware group at Satricum (see above), it is encountered in other ceramic fabrics in our collection as well. This is recorded for other ware groups as well. So, one of the most common ceramic wares of the seventh century BC at Satricum, a table ware known as *impasto rosso*, is traced in several of the fabrics identified at the site. This could be related to ranges in suitable qualities for both ceramic fabrics and wares; ranges that are difficult to quantify since they remain so far rather relative.

Kiln B and its workshop, having at least twelve associated ceramic fabrics, reveals that their number had increased significantly by 500 BC. The *savoir-faire* of paste manipulation developed noteworthy during the urbanisation process of the seventh and sixth centuries BC. Thus, paste processing became increasingly linked to the production of more diversified ceramic artefacts.

This leads to another outcome as well as a complication. The chronological duration of many of the ceramic fabrics is long since the local resources are used for centuries in case there is continuation in pottery production as at Satricum. Only a limited number of ceramic fabrics can be assigned to a period of decades, such as those related to the mid-sixth-century BC architectonic terracottas used for the monumental buildings at Satricum (see table 2: no. 7). These, though, are a minor component of the whole ceramic assemblage in use at that time. An overview of such changes comes with years and requires expertise. It is therefore, advised to assign this line of research to those who have specialized in the ceramic *chaîne opératoire* and closely work together with archaeologists.

Although ceramic fabrics research itself did develop as well during the past decades, an advantage of our method remains that one can process larger quantities of sherds/artefacts. Tymon de Haas and Gijs Tol, one-time PhD students of Peter who continue his line of research, work frequently together with Dr Barbara Borgers (see also the contribution by De Haas et al. in this TMA). She seems to study especially coarse wares, since this is a ceramic group often encountered during field-walking as did Filmo Verhagen.[23] For roughly a decade Barbara and Filmo examined, on and off, the Satricum fabrics collection and our LCM-archive remains open for those who require it for their research since more can be done with it than is implied in this paper. Recently, Barbara and others studied the Roman Republican coarse ware from Norba and Forum Appii. Material specifics and distribution indicate that the production of these cooking wares in this region originates at Satricum during the fourth century BC.[24] Subsequently, the production and distribution of coarse ware vessels became integrated in wider 'Roman' networks though some local production might have emerged more inland or near Norba.

A final remark concerns the notion of objectivity that seems to be associated with the archaeological sciences, whether low-key, as in our methods, or advanced, employing the latest analytical techniques. The example from Satricum is just one illustration showing that the ceramic *chaîne opératoire* is multi-faceted once early urban centres develop. Vaughan did already warn: "the perception of progress in the concept of completely objective, codified and standardised studies of pottery, should be seen as the chimera it is." She recommends 'pottery sense', the skill to differentiate between "two undecorated sherds of Middle Minoan IIA and IIB conical cups without notable hesitation", for example.[25] This 'sense' can only be developed gradually, examining countless sherds from a period and region, while looking in detail. Her plea is fully supported by our research since the fabric classification does require interpretation including their ware and type descriptions in order to demarcate the multivocal, clustering characteristics for fabrics such as percentage of solid inclusions, which in itself is a clear property and objective. However, one may wonder if the ancient potter meant a different fabric if the clay contained 8% or 12% solid inclusions (one of the demarcations in our fabric classification is based on less or more than 10% solid inclusions). Such specifics can be appropriate for modern, multinational ceramic factories but less so for potters in antiquity who employed skilfully the resources that were locally available. Therefore, the significance of a ceramic fabric description increases only when it is combined with knowledge of developments in the *chaîne opératoire*, vessel typology and ware description, as we tried to do.

Author description

Albert Nijboer has been a lecturer in Archaeology at the University of Groningen since 1987. He is involved in several excavations in central and south Italy, such as Satricum, Francavilla Marittima, Piccareta 13 (a Late Bronze Age saltpan south of Nettuno), and Crustumerium. In 1987, he established the Laboratory for Conservation and Material Studies (www.lcm.rug.nl). His publications mainly examines the Iron Age in the Mediterranean (https://rug.academia.edu/AlbertNijboer). At present, he coordinates the Project Rasquert, which investigates the archaeology and history of the central settlement at Rasquert/Baflo (Groningen).

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Endnotes

1 Cf. Attema et al. 2003; Allessandri et al. 2024.

2 Nijboer et al. 2006.

3 Cf. Moody et al. 2003.

4 I would like to acknowledge the contributions by Gert van Oortmerssen, Siebe Boersma and the reviewers of this paper.

5 Nijboer et al. 1995; De Haas 2021.

6 A team member of the University of Amsterdam's excavations at Satricum, Martina Revello Lami, defended her dissertation entitled *From standard pots to potter's standards. An integrated approach to ceramic standardization and change in Archaic Satricum (6th-4th century BC)* on Friday 21 June 2024 in the Aula of the University of Amsterdam. Since her PhD is not yet Open Access, I am not aware of its contents, though it could result in a fuller understanding of the ceramic fabrics of this later period.

7 https://www.lcm.rug.nl/; A printed, extensive synopsis of this fabrics programme is available in Attema et al. 2002: pp. 363-89.

8 Nijboer 1998: pp. 115-131.

9 http://www.lcm.rug.nl/lcm/teksten/teksten_uk/fabric_method.htm; one can consult as well Attema et al. 2002: pp. 367-71.

10 Nijboer 1998: pp. 115-131.

11 Carafa 1995: pp. 126-224.

12 Bouma 1996.

13 Whitbread 2003: pp. 8-9.

14 Pfaff 1988: pp. 29, 36, 73-74. Orsi 2022: pp. 267, 699.

15 Cristofani 1993: pp. 334-336.

16 Bronkhorst & De Vos 2021: pp. 14-15.

17 Cf. Bartoloni et al. 1976: pp. 330-331; Waarsenburg 1995; Bouma et al. 1996: p. 193; Van Loon 2017.

18 Van Loon 2017: pp. 215-272.

19 Nijboer 1998: pp. 120-129.

20 Hein et al. 2008.

21 Adams & Adams 1991.

22 Tol 2023.

23 Verhagen 2024; Borgers et al. 2023; Willems et al. 2024. Filmo Verhagen defended her PhD on May 31, 2024 at Uppsala University. Thanks to Peter, I could examine this thesis before her defence. It is entitled *Daily life in the Roman Republican countryside. A ceramic perspective on change and continuity in the production, distribution and consumption of cooking wares from the Pontine Region (Central Italy), 4th – 1st centuries BC*

24 Borgers et al. 2023: pp. 2, 8, 14.

25 Vaughan 1995: pp. 262-263.

Table I. Overview of the Satricum ceramic fabrics by colour, quantity, and date.

Standard colour of paste	Red firing paste I	Red to orange firing paste I/II	Orange firing paste II	Orange to pale firing pastes II/III	Pale firing pastes III
Number of fabrics described	20	7	10	15	6
Total number of sherds assigned	1780	2441	591	244	39
Date range	950/900 to third century	950/900 to fourth century	Seventh to fourth century, especially fifth and fourth century	Especially late sixth and fifth century	Late sixth to fourth century

Table 2. Ceramic fabrics of Satricum, ca. 950-300 BC: data derive from the archive of the LCM and https://www.lcm.rug.nl/lcm/teksten/teksten_uk/fabric_analysis_on_ceramics_uk.htm

Fabric number in this paper	Fabric code	Short description of the fabric	Number of sherds assigned	Ceramic repertoire	Predominant date range attested at Satricum
1.	SAT I.ad*Kq*.vps*(1-4).b, occ. (large) FeMn/occ. (small) augite	reddish to brownish firing, predominance of lava and quartz/feldspar; occasionally slight presence of mainly small augite	107	mostly tiles and large vessels such as storage jars	600-500
2.	SAT I.AD.ns(1-4).a, ((extremely) large) FeMn nodules/ crumbling / gritty	reddish to brownish and/or brownish-grey firing irregularly stained with a variety of colours	29	Loam for plastering of huts (grumo when fired) and brick Unprocessed loam	900-500
3.	SAT I.AD*K*.vps*(1-4*).ab, occ. (large) FeMn / occ. (small) augite	red firing clay with predominantly quartz, feldspar, and lava	160	Oldest architectural terracottas and range of household wares	600-500
4.	SAT I.AD*EQ.ps-vps(1-4).ab, medium-coarse gritty / (hardness+)	red-firing clay with predominance of quartz, feldspar, augite, and ferro-magnesian nodules	104	architectural terracottas and some household wares	Sixth century
5.	SAT I/(II).AD*.ms-vps(1-4).a, variety of characteristics / (slightly) gritty	reddish/orange to brownish firing predominance of rounded to sub-rounded quartz/feldspar inclusions	1707	stands/cooking stands, table wares/cooking vessels (jars, plates), storage vessels, loom weights, spindle-whorls, spools, and architectural building materials	950/900 to third century
6.	SAT II.ADe.ms-vps(1-4).ab, variety of characteristics	(light) brown to orange firing, predominance of fine quartz/feldspar, hardly to not detectable by eye	125	Jars, teglie Bowls – lids Coarse ware	Late sixth to fourth century
7.	SAT II.AD*J.vps(1-4).ab, porosity +	orange firing clay with predominantly quartz, feldspar and tuff	15	Architectural terracottas	Mid-sixth century
8.	SAT II.AD*.ms-ps(1-4).a*, (Augite) / ((small) black stains)	orange-firing clay with predominance of quartz and feldspar	121	Architectural terracottas and household wares, including coarse cooking wares	550-400
9.	SAT II/III.E.ps-vps(1-4).a, coarse gritty / Leucite-Lava & Leucite-Tuff	pale firing clay with predominantly augite	29	Mainly architectural terracottas and ceramics related to output Kiln B	500-400

Table 2 continued.

Fabric number in this paper	Fabric code	Short description of the fabric	Number of sherds assigned	Ceramic repertoire	Predominant date range attested at Satricum
10.	SAT (II)/III.E.ps-vps(1-4).b	pale firing clay with predominantly augite	14	Mainly architectural terracotta's Kiln B	500-400
11.	SAT II/III.@.vps(1-3).cd, large angular inclusions / (hardness -) / (powdery surface)	(pale) orange to greyish firing, (very) low percentage of opaque angular inclusions not local	39	Corinthian coarse ware, transport amphorae, dinos (crater), hydria	Decades around 600
12.	SAT III.AD*.ns(1-4).c, hardness+ / organic	greenish pale to pink firing with grey core medium percentage of inclusions not sorted	8	Final lining of the firing chamber of Kiln B Striking porosity	500
13.	SAT III.E.ms(1-3).ab, fine gritty	pale firing clay with predominantly augite	25	Mainly architectural terracottas Kiln B	500-400