

POTTERY CLASSIFICATIONS: CERAMICS FROM *SATRICUM* AND LAZIO, ITALY,  
900–300 BC

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**ABSTRACT:** Pottery from *Satricum* and surveys in southern Lazio (Italy) is investigated combining different classification methods, including vessel form, ware and fabric descriptions. Each method is presented in detail. The resulting classifications are interrelated and present a precise account of vessel typology as well as resources and manufacturing procedures for the period 900–300 BC.

**KEYWORDS:** Typology, wares, fabrics, ceramics, excavation, *Satricum*, survey, Pontine region, Pontine Region Project, Lazio, 900–300 BC.

## 1. GENERAL INTRODUCTION (A.J.N.)

### 1.1. Objectives of the pottery classification

The Groningen Institute of Archaeology (GIA) of the University of Groningen has been involved in archaeological research in southern Lazio since 1977. The main site investigated is *Satricum* located at present-day Borgo le Ferriere near the Pontine plain, on the easternmost border of *Latium Vetus* (fig. 1). *Satricum* is situated approximately 50 km south of Rome. The settlement originated on a number of tuff

plateaux in the lower basin of the river Astura, which is the most important river in Lazio south of the Tiber. The Astura connects *Satricum* with the sea. The site was inhabited from the 9th/8th till the 4th/3rd centuries BC after which some *villae* occupied the territory of the site (Kleibrink, 1997). The Groningen excavation campaigns from 1979 till 1987 have been published as in Maaskant-Kleibrink 1987, 1992; Bouma 1996 (fig. 2). The present paper deals with the examination of the pottery found during the excavation campaigns at *Satricum* as well as during three specific surveys in the region carried out be-

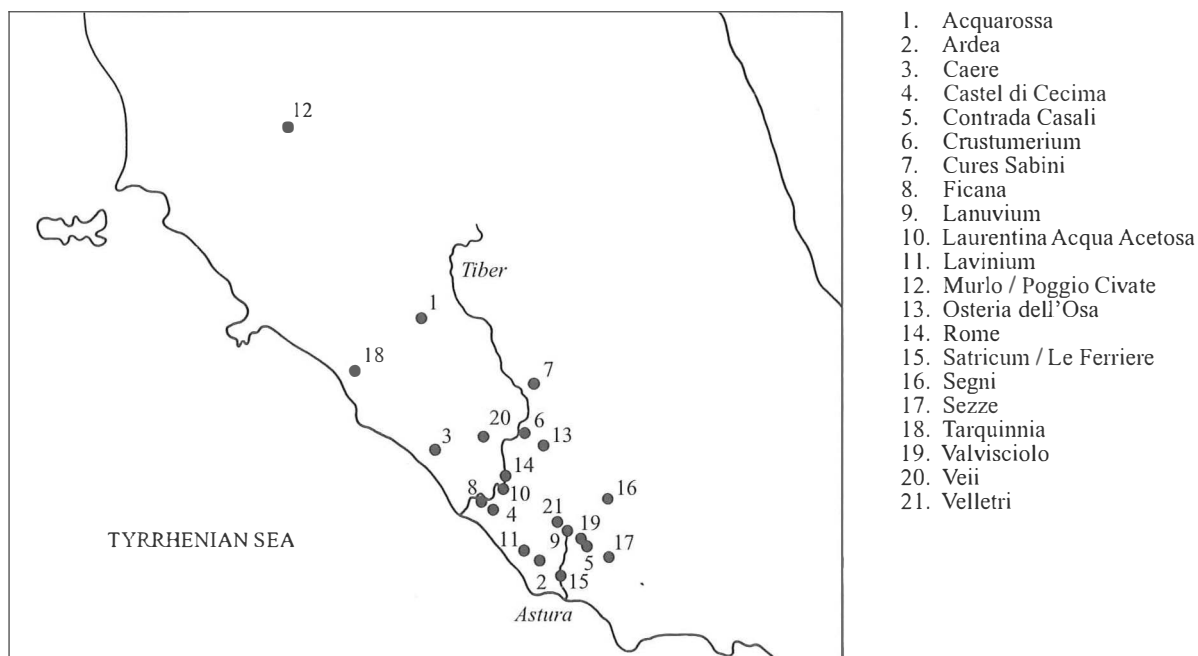


Fig. 1. Map of Central Italy with sites mentioned in the paper.

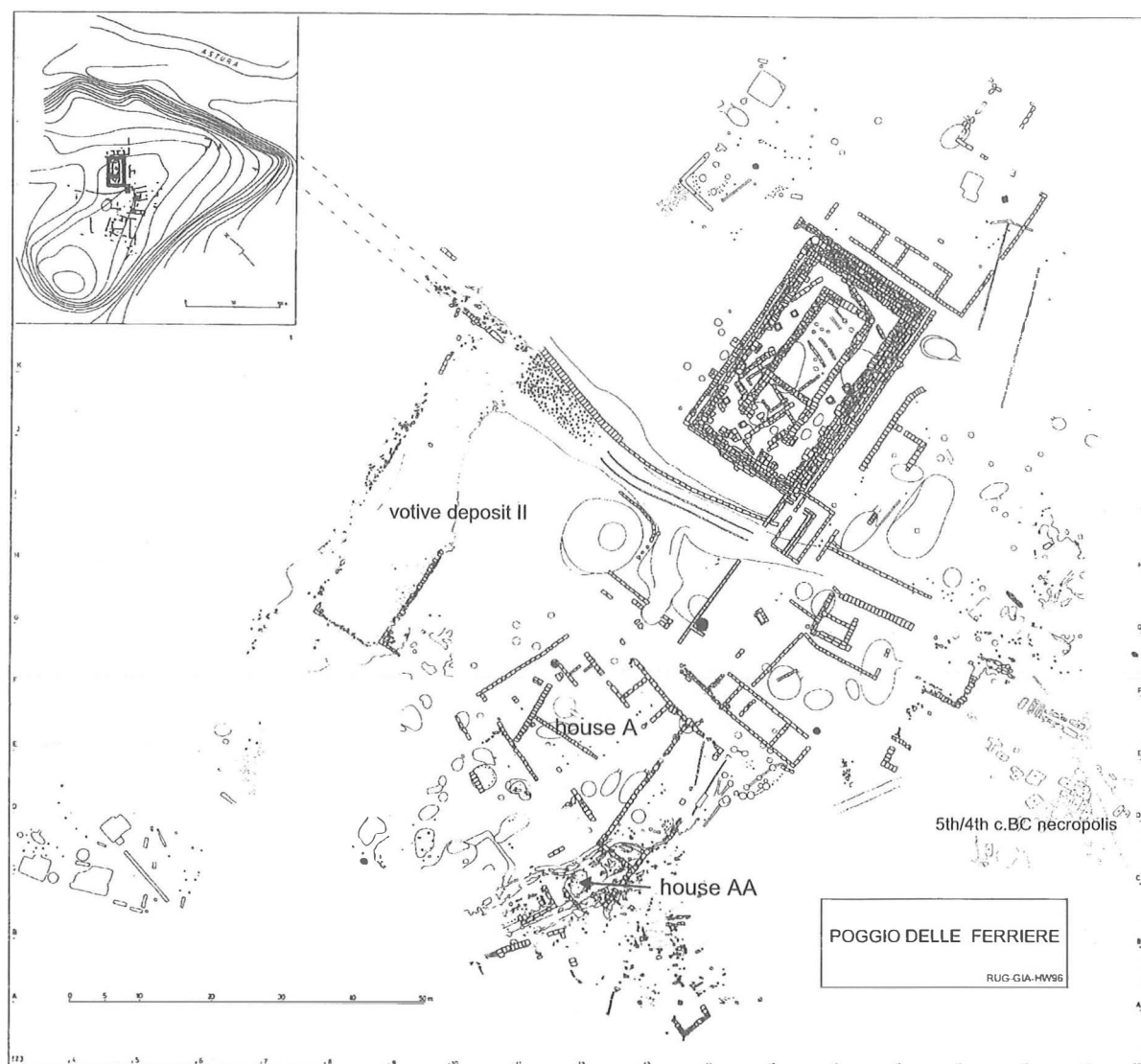


Fig. 2. Hut and house plans at *Satricum* (for hut numbers see Maaskant-Kleibrink, 1987, 1992).

tween 1995–1998 by Attema within the framework of the Pontine Region Project (PRP) (Attema 1993, 1995a). It elaborates the pottery typology presented in the excavation reports (Maaskant-Kleibrink, 1987, 1992), and introduces the classification of the pottery in fabrics and wares. The *Satricum* classification is then related to the regional ceramics on fabrics level.

In this way the research has resulted in three interrelated classifications (pottery typology, ware typology and fabric typology). This relation will be discussed in the last sections of the paper, and forms the main objective of the research. The result is an open typology, which means that it allows for variations and new classes in case of future research

(Adams & Adams, 1991: pp. 226–228). The three classifications of the ceramics have different aims and are based on different methods.

## 1.2. Main characteristics of the pottery classification system

The traditional pottery typology classifies form and function of the various ceramics found. Thus we differentiate between cooking stand and stand or storage jar and jar (see Section 2). The pottery types have been excavated at *Satricum* in various stratigraphically anchored contexts. The relative date of each type is based on the chronology of the settlement

features such as huts, votive deposits and graves and in concordance with diagnostic sherds from other dated contexts in Central Italy, especially tombs. In this paper we limit ourselves mainly to the *impasto* and coarse wares. In the future we will, however, present a typo-chronology of all the ceramics excavated at *Satricum* from the Early Iron Age till the Republican period (9th till 4th/3rd century BC).

The ware typology presented is general. To quote Rice: "Wares have been identified based on a large number of attributes, including function (e.g., kitchen ware), decoration (black-figured ware), paste composition or texture (coarse ware), color (fine orange ware), surface treatment or color (glazed ware, Plumbe ware), form (beaker ware), firing technology (earthenware), time period (Iron Age wares), and geographical location (Derbyshire wares)". Although the term ware is largely used informal, the "fundamental defining criteria are aspects of composition, manufacturing technology, or surface treatment" (Rice, 1987: p. 287). Where possible we adhere in this paper to the ware categories commonly encountered in the archaeological literature of Central Italy for the period discussed such as *impasto bruno*, *impasto rosso*, *bucchero*, coarse ware and *impasto chiaro* (see Section 3). The limited number of ware denominations creates some complications mainly because a further clear subdivision of coarse wares, *bucchero* and *figulina* wares is feasible and required.

The fabric typology is based on variables of paste composition such as colour (before and after refiring under controlled conditions), inclusions and other attributes (see Section 4). These are functional for research into the ceramic craft such as pottery production techniques and organisation. The kilns for firing ceramics excavated at *Satricum* dating from the 7th till the 4th century BC as well as the research into the geology of the region are in this context essential (Maaskant-Kleibrink, 1987; Nijboer, 1998: pp. 115–131).

Colour of the ceramics appeared to be the most distinctive feature, especially after refiring under controlled conditions. Refiring eliminates the variables in colour of the excavated pottery that are due to less controlled firing, former use and post-depositional changes. The method of fabrics research and classification is discussed in Section 4 and is presented in figure 21. The fabric classification led to the establishment of a fabric reference collection for both *Satricum* and the wider region (see Section 6). This collection contains the most significant sherds for the specific fabrics. In addition the fabric reference collection gives per fabric an impression of the types and wares of pottery involved.

### 1.3. Short research history

The need for a fabric classification of the ceramics excavated at *Satricum* arose around 1990 on account of the increasing numbers of excavated sherds with distinctive material characteristics. The ongoing surveys in south Lazio by the PRP added numerous ceramics of different composition from the wider region. It was clear that the detailed and stratified information on the ceramics from the *Satricum* excavation could assist the interpretation of the pottery retrieved during the surveys once their material characteristics could be added to the classification procedure. In addition it was felt that a systematic description of the material characteristics of the pottery could assist a reconstruction of the ceramic craft. Variables of paste composition are significant for their interrelation with pottery production techniques, organisation and distribution patterns. These objectives correspond to current archaeological goals and augment the information of the traditional typological classification for chronological motives (Rice, 1987: p. 287). For these reasons systematic incorporation of the paste characteristics into grading systems became a significant extension of the traditional classification procedures (see Shepard, 1976: pp. 310–314; Rice, 1984). This requires, however, extensive laboratory procedures without which it is difficult to interpret technological properties or identify composition of the pastes. Therefore in 1993/1994 our research group directed by Marianne Kleibrink started an informal workshop discussing the monograph '*Archaeological typology and practical reality*' by Adams and Adams (1991). Much of our vocabulary concerning pottery classifications derives from this publication but was in due course adjusted to accommodate Italian archaeological conventions. Since the campaigns of 1997 Gert van Oortmerssen systematically performed fabric analysis. This implies that the majority of the ceramics catalogued before 1997 were not subjected to a standardised analysis of their fabric.

The existing pottery typology became enhanced with a systematic analysis of the material characteristics of the pottery till the last *Satricum* ceramic study campaign of 2001. As stated, the present publication presents mainly the *impasto* and coarse ware pottery. In future publications we will present in more detail the other artefact groups such as ceramic building materials, *bucchero* and *figulina*.

### 1.4. Notes on Latial chronology

Finally we need to introduce the chronological framework of the period discussed. In recent years there has been a lively debate on the absolute chronology of the Early Iron Age in Italy. Peroni (1994: pp. 213 ff.), Giardino (1995) and Bietti Sestieri (1996) sug-

Table 1. Chronological table showing relation between Latial chronology and other Mediterranean/Central European chronologies.

Aegean/Greek chronology		Etruscan Chronology		Latial Chronology based till 750-700 BC on <sup>14</sup> C data		Chronology based on the scientific dating techniques
		Tarquinia	Veio			
1200	LH IIIC	Bronzo Finale I				Hallstatt A1
1100	Submycenaean	Bronzo Finale II		-1100-		Hallstatt A2
1000	Protogeometric	Bronzo Finale III		I		Hallstatt B1
900	Early Geometric	I A	Villanovian	I	975-950	950-925
		I B				
800	Middle Geometric	I C	Late Villanovian	II	II B	850-870
		II A				
700	Late Geometric	II B	Early Orientalizing	III A	III	800-780
		III A				
650	Proto-corinthian	III B	Middle Orientalizing	III B	IV A	Hallstatt C
		IV				
600	Transitional	Late Orientalizing		IV	630-620	Hallstatt D
					580	
550	Black Figure	Archaic Period				
500	Black/Red Figure					

Table 2. Chronological table showing relations between Satricum phases I–VI, traditional Latial chronology and revised chronology based on radiocarbon datings (till 750–700 BC).

The chronological phases at <i>Satricum</i>	Traditional Latial chronology	Adjusted chronology till 750–700 BC, based on radiocarbon datings (Nijboer et al., 2001; Nijboer, in press)
Phase I	Latial period IIB–III 830–730/720 BC	900–775/750 BC
Phase IIA	Early-Middle Latial Period IVA 730/720–650 BC	775/750–650 BC
Phase IIB	Latial Period Late IVA–Early IVB 650–610/600 BC	650–610/600 BC
Phase III	Latial Period IVB (Middle/Late) + early Archaic period 610/600–550/530 BC	610/600–550/530 BC
Phase IV	Middle and Late Archaic Period 550/530–510/490 BC	550/530–510/490 BC
Phase V	510/490–350 BC	510/490–350 BC
Phase VI	350–100 BC	350–100 BC

gest that the early Iron Age starts around 1020 BC. Pacciarelli (1997) prefers a date around 960 BC while Pare (1996) considers that the Early Iron Age in Italy starts a little later, around 950–920 BC. These adjustments were deemed necessary on account of the recently adjusted absolute chronology of central Europe based on dendrochronological data (table 1; cf. Randsborg, 1991). In the past years radiocarbon research in central Italy by the Groningen Institute of Archaeology in collaboration with Italian colleagues confirms more or less the proposals put forward by Pare (Nijboer et al., 2001; Nijboer, in press). The adjustments in the absolute chronology of the Iron Age in Italy mainly regard the 9th and 8th centuries BC, a period partially coinciding with the ceramic research presented here. The absolute chronology used in this paper is the adjusted chronology based on radiocarbon research. Table 2 can be employed to detect the chronological shifts when compared to the traditional absolute chronology of the Latial period. It also presents the phases of archaeological remains at *Satricum*. The Latial absolute chronology is adjusted till 750–700 BC only since the radiocarbon method can not be used for the period 750/700 BC till 400 BC on account of the Hallstatt plateau in the calibration curve (Nijboer et al., 2001). In addition dendro-chronological data from Italy are hardly available for the period discussed in this paper. Thus due to a lack of chronological evidence based on the scientific dating techniques, it is necessary to employ the traditional chronology based mainly on the Corinthian and Attic pottery sequences from onwards c. 700 BC. The absolute chronology of these se-

quences is based on Tomb 325 at Pithe-koussai, which contained early protocorinthian vessels with a scarab illustrating the cartouche of Pharaoh Bocchoris/Bakenranef who reigned around 720–715 BC. As long as there is no evidence from the scientific dating techniques it is necessary to adhere to the traditional chronology for the period 750/700 till 400 BC (Nijboer, in press).

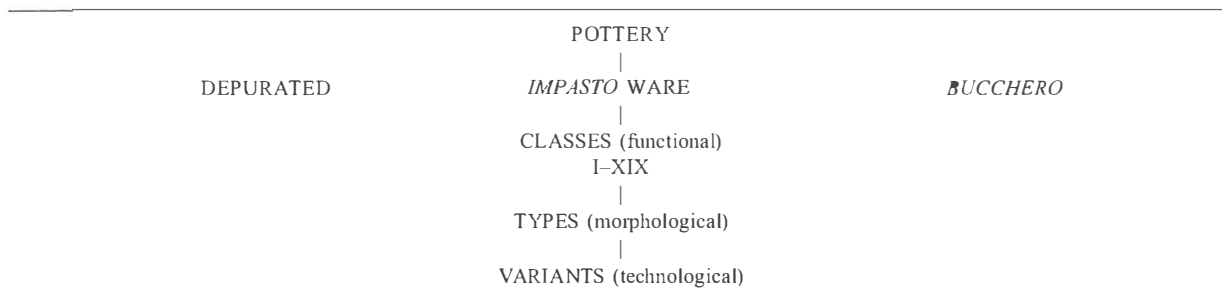
## 2. TYPO-CHRONOLOGY OF THE *IMPASTO* WARE (A.J.B.)

### 2.1. Introduction

In this section a typo-chronological classification of the *impasto* ware from *Satricum* is presented (table 3). The fragments of *impasto* clay are attributed to twelve main functional classes: cooking stand/*for-nello*, storing jar/*dolio*, jar/*olla*, bowl/*bacino*, bowl/*scodella*, cup/*tazza*, mug/*boccale*, jug/*brocca*, amphora/*anfora*, stand/*calefattoio*–*holmos*, plate/*piatto-teglia*, lid/*coperchio*, which are numbered from I to XI. The bases, handles, plastic and incised decorations are classified separately having class numbers XII to XV. In many cases it was possible to attribute them to specific vessel classes and sometimes even to vessel types. Finally we discern a category spinning/weaving that contains spools, spindle-whorls and loomweights (classes XVI to XVIII).

In the terminology of vessel names both the English and the Italian names (*Dizionario terminologici* I, 1980) are used since both are employed in the archaeological literature. Moreover, certain Italian

Table 3. Diagram showing the hierarchy of wares, functional classes, morphological types and their variants.



names such as *calefattoio* or *orciolo* are clearer than the English terminology. Each class is divided in types, numbered 1, 2, 3 etc., according to differences in stylistic or morphological attributes mainly of the body and rim. Technical characteristics are used as a distinctive criterion only in very clear cases such as *impasto rosso* (Rice, 1987: pp. 207–242).

## 2.2. Dating the types

The chronological sequence and consequently the relative date of each type is for the Iron Age based on the chronology of the *Satricum* hutfeatures (GR I, GR II, GR VI, GR VII, GR V, GR AA, GR G and the destruction layer in E10, see Maaskant Kleibrink, 1987, 1992). Being dated rather precisely, the hut features could be put in a chronological sequence covering the 9th, 8th, 7th and first half of the 6th century BC (Le Ferriere Phases I, II and III, see table 2). Unlike tomb-*corredi* that are essentially closed groups of objects representing one specific moment in time, finds from settlement features usually cover a longer period of at least several decennia to maybe half a century in which they were used until the features were abandoned, destroyed or filled up. This is the case even when settlement finds come from closed layers not disturbed by later activities.

The hut features at *Satricum* were covered by a layer that is attributed to the destruction and leveling by late Orientalising and early Archaic building activities (fig. 2). In some cases (all the pits from Phase I) a chronological interval occurs between the material from the closing layer and the material in the pits. Continuous stratification was found in the area of GR AA, where rubbish pit RP IV, GR VII, GR AA, buildings A and G and *Stoa A'* are located and in the area south to these features (sectors 4, 11, 12, 17, 20 to 25). Here layers 3, 4 and 5 cover phases I, IIA, IIB and III from the early Iron Age to the early Archaic period. This southern area will be published in the third and final publication of the excavations. Besides the already published material from the area GR AA, the finds from the southern area have, how-

ever, already been included in this study (see table 4). It must be noted that the numbers from the latter area are the excavation inventory numbers, not the catalogue numbers as in the case of sherds from Maaskant Kleibrink, 1987, 1992.

GR I and GR VII offer a clear context in which part of the finds were found left in situ. GR VI has a beaten floor level filled with rubbish with on top the collapse of the wattle and daub walls. The rubbish of cooking activities was possibly still present on the floor of GR II, III and IV when it was abandoned. In all cases the pits were filled up with rubbish at some moment after their functioning.

In a closed find context the most recent fragments provide the closing date of the fill; the oldest fragments on the contrary are often residual material, remains of earlier activities and not indicative of the initial date of the feature. Clear examples are the many decorated fragments of the 10th/9th centuries BC that are found in all layers. Interference of later activities (*e.g.* trenches for the foundation of walls) that are not always as clear as one would wish, may have caused intrusion of more recent fragments in the original layers and complicate the fixation of the chronology of features and types.

The date of the features is based on diagnostic sherds with parallels from dated tomb contexts in *Latium Vetus*. In those cases where a sufficient number of diagnostic fragments appears in a feature — as is the case with GR I, GR II, GR VI, GR VII, GR V, GR AA, and in the layers 3, 4 and 5 of the area south of GR VII and GR AA — within the same limited range of time, these are supposed to provide the date of the feature and of the associated types. Hut features GR III and IV were therefore considered less suitable for the chronological sequence because of the long period covered by the material and in the case of GR III also because of the limited range of types. Therefore they were added only later to the typo-chronological sequence. It shows that the material of GR III and IV covers phase I and the transition from phase I to IIA. Because of the low number of fragments and the limited range of classes (mainly

Table 4. Chronology of the features at Satricum.

<i>Hut features</i>				
GR I		Phase I (Early)	c. 900–825	{Latial Period IIB)
GR II		Phase I	c. 900–800	(Late LP IIB, early LP III)
GR VI		Phase I (Late)	c. 800–775/750	(Late LP III)
GR VII		Phase IIA	c. 775/750–650	(Early/middle LP IVA)
GR V		Phase IIA	c. 700–650	(Early/middle LP IVA)
GR AA		Phase IIB/III	c. 650–575	(Late LP IVA, LP IVB)
Destruction layer E10/D10		Phase III	c. 590–530	(Early Archaic)
Area south of GR I–GR AA				
Sector 4	L.3	= Phase IIA; L.4 = Phase I		
Sector 11	L.3	= Phase IIB; L.5 = Phase I		
Sector 12	L.2+3	= Phase IIB		
Sector 17	L.4	= Phase I		
Sector 20	L.3+4	= Phase IIB		
Sector 21	L.3	= Phase IIA/B		
Sector 22	L.3	= Phase IIB; L.4/5 = Phase I		
Sector 23	L.3	= Phase IIB; L.4 = Phase IIA; L.5 = Phase I		
Sector 24	L.2/3	= Phase IIB/III		
Sector 25	L.5	= Phase I		
GTC	L.3	= Phase IIA		
Votive deposit II		= Phase IV+ V		
Southwest necropolis		= Phase V		
Features added later:				
GR III		probably Late Phase I		
GR IV		probably Late Phase I		
RP II		Phase I		
RP IV		Late Phase I		
RP III		Phase IIA		
VG 4, 12		Early Phase I		
VG 7, 8, 14		Phase I		
VG 1, 9		Late Phase I		
VG 2, 11		Phase II		
VG 3, 5, 6, 10, 13		Phase IIA		

jars and bowls) also the rubbish pits RP II, III and IV were not used in the first chronological sequence, but added later. Rubbish pit II fits clearly in phase I; RP IV contains phase I types and a concentration of types present since late phase I, whereas no exclusively phase IIA types are present; RP III contains mainly types of phase IIA.

The finds from the early archaic period (Phase III) come from a very thin layer related to the wall foundations that is at places disturbed by subrecent activities. The repertoire of shapes at *Satricum* is limited and the types seem to derive directly from the late Iron Age pots (storage jars, jars, bowls and *teglie*; smaller vessels may have been made of archaic *bucchero* probably of local production).

No buildings are known from Phases IV and V. The stratigraphical material comes mainly from Votive Deposit II that was studied by J.W. Bouma (1996). The typology is based on his research. The same types have been found in a small necropolis on the acropolis southeast of the temple and in the southwest necropolis (Gnade, 1992).

Because of their very selective character and un-

known stratigraphical provenance also the finds from hutchpits VG 1–15 from the 1896–1898 excavations and the finds from the 1907–1909 excavations (Della Seta, 1918; CLP, 1976: pp. 326–328, Tav. LXXXVI, LXXXVIIA; Ginge, 1996) are not suitable for the typo-chronological sequence and were added to the typology at a later stage.

In sum, the date of each type is based on its frequency, (dis)continuity, its first appearance and the duration of its presence in one or more features that could reliably be dated (see above). Orton et al. (1993) state that the minimum duration of a type can be fixed upon 20 to 30 years. Some traditional vessel classes as cooking stands (I-1), storage jars (II-4), jars (III-3, 4, 5) and bowls (V-1,2,3) seem to have a much longer duration. The perception of a long duration, however, may be exaggerated due to the older types that appear as residual material in later features or layers. This is particularly the case with the fragments from the destruction layer of GR AA which covers features GR VII and RP IV, and which contains fragments characteristic of those older features.

### 2.3. Presentation of the typo-chronology

#### 2.3.1. *Notes on the typo-chronological classification*

The description of each type is composed of the following items:

- Type number and morphological description;
- Illustration of one or more diagnostic fragments belonging to the type described;
- List of catalogue numbers of the identified fragments in each feature (where possible fragments from the 1907–1909 excavations (Ginge, 1996), and from the excavations in the temple area by the Dutch Institute Rome (NIR, 1985: pp. 147–177) have been added);
- Type numbers from votive deposit II (Bouma, 1996) and the Southwest necropolis (Gnade, 1992) where appropriate;
- Date (in Le Ferriere Phases);
- Parallels.

#### *Additional remarks*

It must be noted that parallels are derived mainly from the classifications of Latial Iron Age pottery and from Iron Age pottery from contexts at Rome as proposed in: La formazione della città nel Lazio, *Dialoghi di Archeologia*, 1980; in the type catalogue indicated as Dial, followed by the period and type number (e.g. Dial III, 11a = type 11a from Latial Period III); P.G. Gierow, 1966, *The Iron Age culture of Latium I, classification and analysis*; indicated as Gierow with type name and number (e.g. Gierow prim.jar XIII = primitive *impasto* jar type XIII); J.C. Meyer, 1983, *Pre-republican Rome*; indicated as Meyer with type number and period (e.g. Meyer E107 Rome 4A = type E107 from Stufe 4A in Rome); A.M. Bietti Sestieri (ed.), 1992, *La necropoli Laziale di Osteria dell'Osa*; indicated as Osa, period and type number (e.g. Osa III, 24c = type 24c from phase/period III at Osteria dell'Osa).

It was not deemed necessary to collect again *confronti* from a larger central-Thyrranean area, as this has already been done by a number of authors before. The latest larger lists of parallels can be found in: Brandt, 1996 (Ficana); Carafa, 1995 (Rome) and Bietti Sestieri, 1992 (Osteria dell'Osa). If no type parallels could be found, individual parallels from specialised publications on specific settlements are given when possible. This applies especially when the types have no parallels in the contemporary tombs of *Latium Vetus* and Rome. However, those parallels are not suitable in order to fix a precise date. They merely give a chronological indication. Useful parallels for the period discussed were found in Peroni, 1959/1960 (Rome, S. Omobono); Colonna, 1963/1964 (Rome, S. Omobono); Guaitoli and Piccareta, 1974 (Castel di Decima); Lavinium, 1975; Guaitoli, 1981 (Castel di Decima); Malmgren, 1991

(Ficana); Carafa, 1995 (Rome) and Brandt, 1996 (Ficana). The Bronze and Iron Age material from San Omobono, published by Peroni and Colonna, was recovered from beneath the Republican terrace in a non stratigraphical very thick fill that chronologically covered many centuries from the Late Bronze Age to the 4th century BC. They selected and classified the pottery fragment as Bronze Age (Apennine and Sub-Apennine), Iron Age (early and late) or Archaic on the basis of visible characteristics of clay, manufacture and style. Their chronology is based on parallels from other sites, not on stratigraphical data of the site itself.

The settlement material from Lavinium and Castel di Decima comes from trial trenches or layers with a long chronological duration without any relation to structures or features. Also here the chronological impact is limited.

Recently the contents of the Iron Age pits from Ficana were published (Brandt, 1996). In that publication the *impasto* ware is divided in *impasto grezzo* and *impasto fine*. The chronological impact of this division is, however, not clear. The latest publication on the material from Rome by Carafa covers mainly the Archaic and later periods. Carafa follows the system of Morel creating a large number of types on the basis of small morphological differences (Carafa, 1995). For our purposes a typology containing numerous types based on minute dissimilarities was not deemed useful considering that we deal here with fragments of domestic pottery that is often made by hand. In such cases almost any fragment may become a type.

The mere lack of publications of stratigraphical and well-dated material from settlements of the Iron Age in *Latium Vetus* justifies the presented typological study of the pottery from *Satricum*. Finally it must be remarked that the late Iron Age is underrepresented in Carafa's publication.

#### 2.3.2. *Classes and types*

The classes presented below are divided into classes of shapes, classes of significant parts of shapes, and weaving and spinning utensils.

##### *Classes of shapes*

- |      |   |
|------|---|
| I    | Cooking stand/ <i>fornello</i>              |
| II   | Storage jar/ <i>dolio</i>                   |
| III  | Jar/ <i>olla</i>                            |
| IV   | Bowl/ <i>bacino</i>                         |
| V    | Bowl/ <i>scodella</i> — <i>ciotola</i>      |
| VI   | Plate/ <i>piatto</i> — <i>teglia</i>        |
| VII  | Cup/ <i>tazza</i>                           |
| VIII | Mug/ <i>boccale</i>                         |
| IX   | Jug/ <i>brocca</i> — amphora/ <i>anfora</i> |



- X Lid/*coperchio*  
 XI Stand/*calefattoio* — *holmos*

*Classes of significant parts of vessel shapes*

- XII Bases  
 XIII Handles  
 XIV Plastic decorations  
 XV Incised decorations

*Weaving and spinning utensils*

- XVI Spool/*rocchetto*  
 XVII Spindle-whorl/*fuseruola*  
 XVIII Loomweight/*peso di telaio*

2.3.2.1. *Classes of shapes*

Class I = Cooking stand/*fornello* (fig. 3)

Type 1: Truncoconical stand with fuel opening and ventilation holes, often bordered by plain or notched bands, in the wall, a protruding flange also often with a notched band, around a raised plate with large and small ventilation holes; rather coarse reddish *impasto*; sometimes burnished exterior; traces of burning on the inside.

GR I: 394–401; GR II: 683–689; GR VI: 1663; GR V: 1090–1096  
 GR III: 771, 773, 774; GR IV: 1252–1254, 1256–1258

RP II: 1156; RP IV: 2580, 2581;

Sector 4: 4946/54+55+56 L. 4/3, 4960/23 L. 4/3

Sector 25: 4743/46 L. 5/1

GTC: 5229/201 L. 3/3

VG 7: 77–79; VG 10: 154

Phase I, IIA

Delpino, 1969: type 6B; Scheffer, 1981: type ID; Ficana, 1996: pp. 265a,b,c

Type 2: Flat slab with a large number of small circular openings with irregular raised borders, caused by pushing out the clay, on the upside, probably the flat plate of a rectangular stand. Traces of burning on one side.

GR VI: 1662, 1752, 1753

Sector 4: 4808/29 L. 4/2

Sector 20: 4667/11 L. 3/2, 4898/3 L. 5/2, 5212/nm L. 3/1

Sector 22: 4682/15, 21 L.3/1

Sector 23: 4986/18,19 L. 4/1

GTC: 5229/6+7+9 L. 3/3

5086/34

VG 1: 1; VG 2: 8; VG 15: 202–204

Ginge: HUS 27–29; UST 5

Late Phase I, IIA, IIB

Scheffer, 1981: type IB

Type 3: Truncoconical stand with protruding plain flange around flat plate with large and small ventilation holes.

GR AA: 2283

GR III: 770

VG 1: 2

Late Phase I, Phase IIB

Scheffer, 1981: type IC (without flange)

Class II = Storage jar/*dolio* (diameter mouth >30 cm, thickness wall >1.2 cm) (fig. 4)

Type 1: Probably cylindro-ovoid body, outcurved (convex) or outturned (straight) rim, inside angular transition rim to shoulder, inside shoulder straight to slightly convex; sometimes plain or notched band (XIV3–6) on shoulder.

GR I: 349, 350; GR II: 580, 582

Sector 21: 5230/1 L. 3/2

VG 7: 84; VG 8: 139; VG 14: 196

Phase I, IIA, IIB

Osa II, Ia (varI–II), Ie

Variant 1a: Red *impasto* with red slip.

GR III: 744

Sector 4: 4946/18 L. 4/3 (with encircling grooves)

VG 7: 93

Possibly late Phase I

Type 2: Probably cylindro-ovoid body, outcurved or outturned rim, inside angular transition rim to shoulder, inside shoulder concave; sometimes plain or notched band (XIV3–6) on shoulder.

GR II: 581

Sector 4: 4954/13, 4960/20 L. 4/3

Sector 20: 4386/1 L. 3/1

VG 7: 82, 83, 85–91, 100

Phase I, IA, IIB

Osa II, Ib

Ficana, 1996: p. 29e; Guaitoli, 1981: p. 123, fig. 9/3; Lavinium, 1975: p. 18, fig. 13/36–40

Type 3: Probably cylindro-ovoid body, outcurved or outturned rim, inside smooth transition rim to shoulder, sometimes notched band on shoulder.

GR II: 583; GR VI: 1558, 1720; GR VII: 2438, 2466; GR V: 1000, 1020, 1024; GR AA: 2076

GR IV: 1197, 1211

RP IV: 2547

Sector 4: 4815/74 L. 4/2; 4850/21 L. 4/2; 4954/12 L. 4/3

Sector 21: 5156/20

B12: 3390/1 L. 3/1

VG 7: 92

Late Phase I, IIA, IIB

Osa II/III, 1c

Type 4: Cylindrical body, straight vertical or slightly curved rim and plain or notched band (XIV3–6) under the rim.

GR II: 727; GR V: 998, 1126

GR IV: 1302

Sector 4: 4246/21 L. 4/1

Sector 21: 5023/44; 5160/nm; 5176/12

VG 7: 97–99; VG 8: 140; VG 14: 195; VG 3: 17

Phase I, IIA, IIB

Dial. I/IIA, Ia

Gierow prim. dolium I

Colonna, 1963/1964: p. 9, fig. 4/31 (gruppo A); Ficana & Malmgren, 1991: p. 27, fig. 6/5

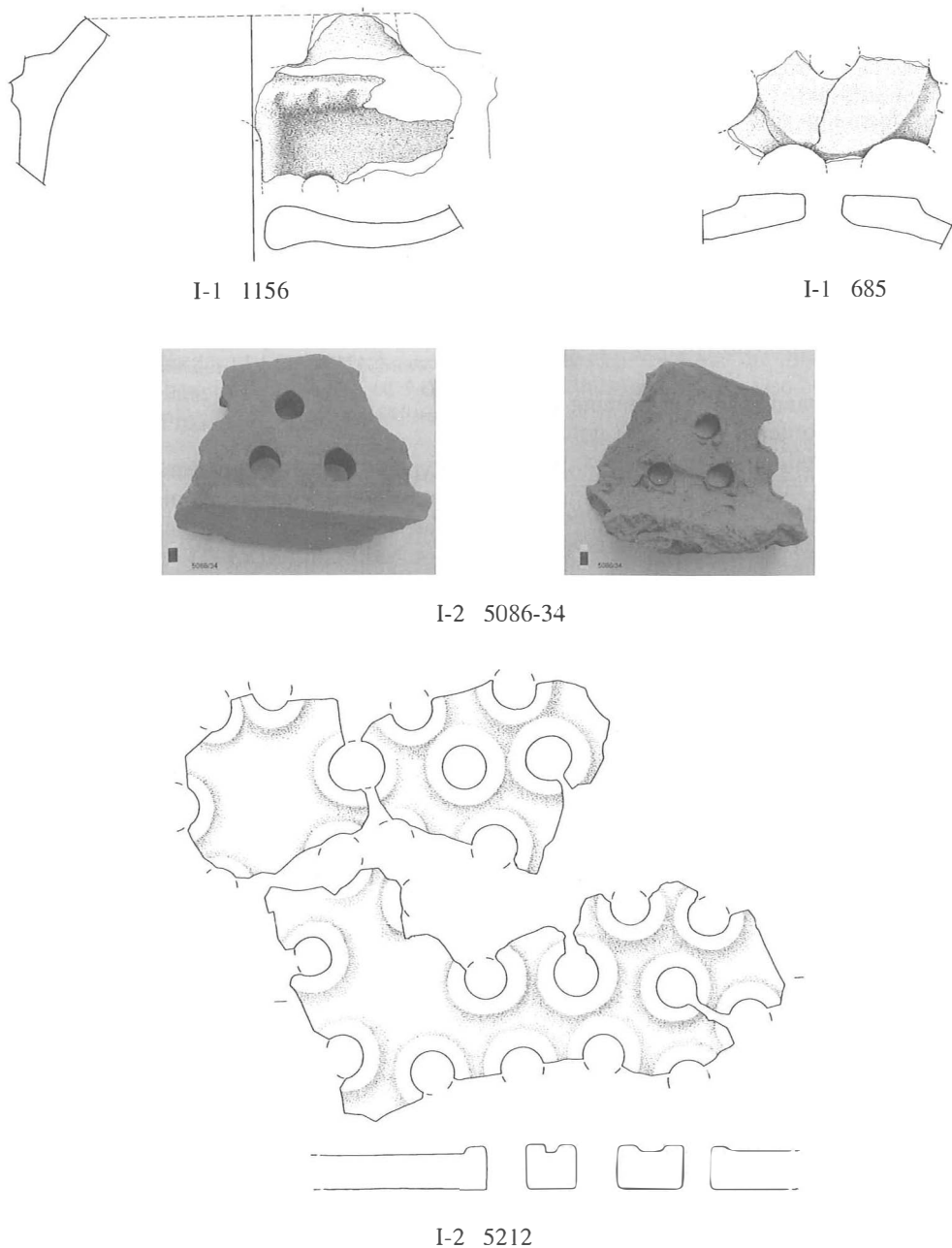


Fig. 3. Ceramics from *Satricum* ascribed to Class I, Cooking stands/*fornello* (1:4).

Type 5: Conical body, outcurved rim, inside smooth transition rim to shoulder.

GR VI: 1559

Sector 4: 4852/15 L. 4/2; 4922/17 L. 4/3

VG 9: 148, 149

Late Phase I

Colonna, 1963/1964: p. 9, fig. 3/28 (gruppo A)

Type 6: Globular body, convex shoulder, outcurved rim, lip convex or faceted, smooth transition rim to shoulder; light red *impasto*.

GR AAu: 2130

RP IV: 2546

Sector 4: 4946/19 L. 4/3

VG 3: 16

Late Phase I, IIA, IIB

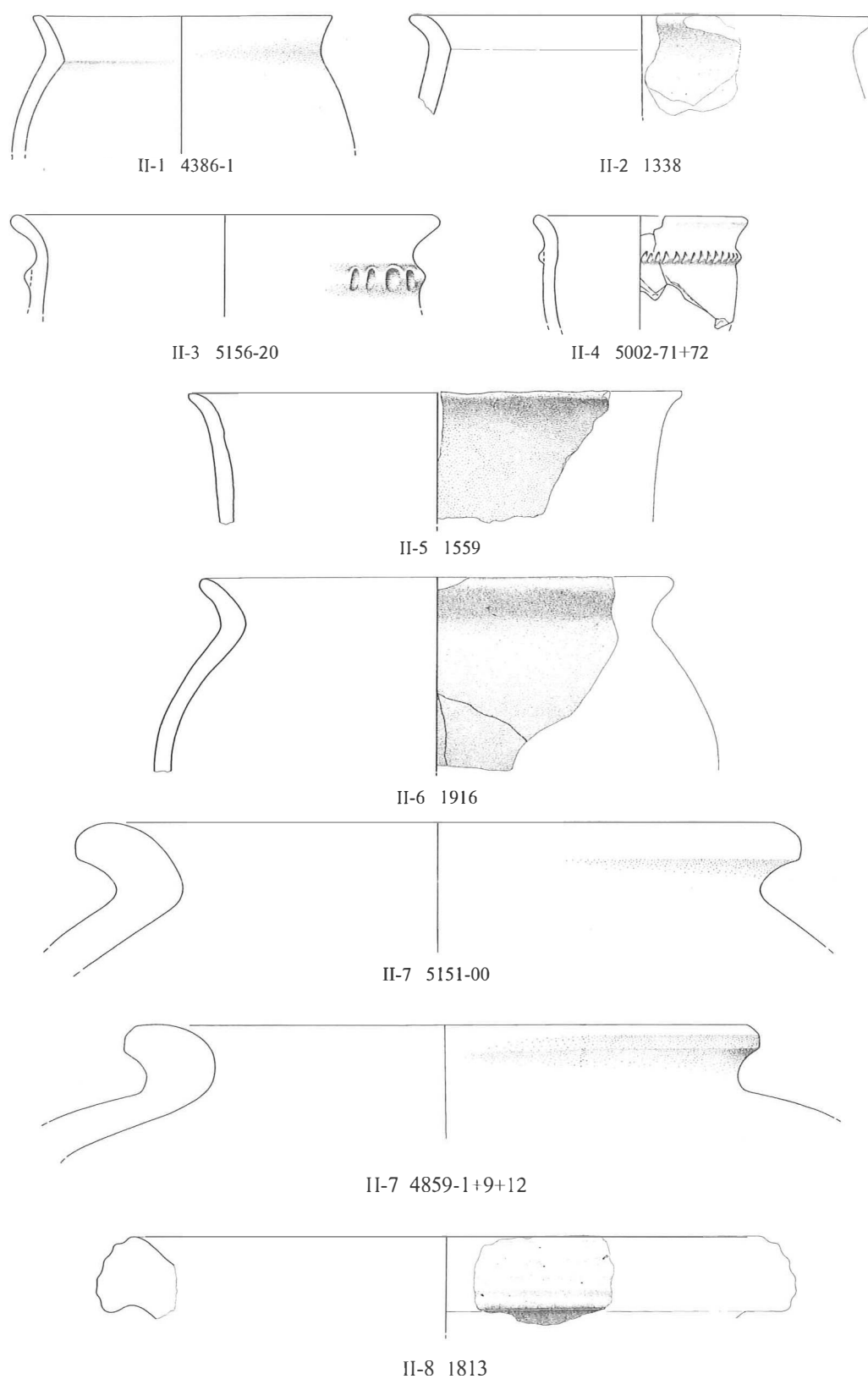


Fig. 4. Ceramics from *Satricum* ascribed to Class II, Storage jar/*dolio* (1:4).

Variant type 6a: Globular, almost horizontal shoulder, red slip.

Sector 20: 4859/1+9+12; 4859/2+17 L. 4/1; 4898/11+12 L. 5/1  
Phase IIB

Type 7: Globular body, outcurved rim, lip slightly thickened or faceted on the outside.

GR VII: 2076, 2343; GR AAu: 2109

RP III: 939, 940

Sector 20: 4898/10 L. 5/1; 5185/18 L. 3/6

Sector 21: 5047/18

Sector 22: 5151/00

Sector 6: 4762/1 L. 5/1

VG 7: 94; VG 10: 158

Phase IIA, IIB, IIIA

Ficana, 1996: p. 30a (phase II)

Type 8: Globular body, outcurved rim, (slightly) thickened and grooved lip.

GR AA: 2239 2312; GR AAu: 1906, 2107

Stoa A: 1813

GR G: 2688

Sector 22: 5151/00 *grumi* pit

Votive deposit II: Bouma, 1996: plates VI/ S103, XX/ S275, XXI/ S287–289, XXXII/ S1–7

Phase IIB, IIIA, IV

Carafa: 631 (600–550), 636 (530–500)

Ficana, 1996: pp. 31b, 31c (phase III); Guaitoli & Piccareta, 1974: p. 87/5, fig. 16/5

Class III = Jar/*olla* (diameter mouth <30 cm, thickness wall <1.2 cm) (fig. 5)

Type I: Ovoid body, outcurved (convex) or outturned (straight) rim, inside angular transition rim to shoulder, inside shoulder concave.

GR I: 352; GR II: 587, 590–592; GR VI: 1565, 1724

Sector 4: 4844/20 L. 4/2

Sector 22: 4381/16 L. 3/1

Kiln B, Nijboer, 1998: fig. 24

VG 7: 104, 105; VG 9: 150

NIR 2: 119

Phase I, IIB

Gierow prim. jar X, coarse jar II

Colonna, 1963/1964: p. 9, fig. 3/24, 26, gruppo A; Carafa: 32, 34 (730/20–675); Ficana, 1996: pp. 35b, 37a; Guaitoli, 1981: p. 123, fig. 9/3; Peroni, 1959/1960: pp. 29/4–6

Variant 1a: Red *impasto* with red slip.

GR VI: 1562

GR III: 744

Sector 20: 5212/7+11 L. 3/1

Sector 23: 4386/1 L. 3/1

Late Phase I, IIB

Type 2: Cylindro-ovoid body, outcurved or outturned rim, inside angular transition rim to shoulder, inside shoulder straight or slightly convex.

GR I: 351, 353; GR II: 585, 586, 588, 589, 593; GR VI: 1563, 1723; GR AAu: 1908

GR IV: 1201, 1202

GR V: 1005, 1006

RP IV: 2548

Sector 4: 4946/13, 15, 16 L. 4/3

Sector 21: 5160/28 L. 3/3

Sector 22: 4731/1 L. 3/1

VG 7: 102; VG 3: 20; VG 14: 196

NIR 2: 117

Phase I, IIA

Gierow prim. jar X, coarse jar II

Carafa: 38 (650–630/20); Ficana, 1996: p. 35c; Ficana & Malmgren, 1991: p. 27, fig. 6/6; Lavinium, 1975: p. 18, fig. 12/10, 13/10; Peroni, 1959/1960: p. 29/4–6

Type 3: Ovoid body, outcurved rim, inside smooth transition rim to shoulder; lip can be slightly thickened.

GR I: 354; GR VI: 1569, 1570–1572, 1576–1578, 1588, 1731, 1732; GR VII: 2346, 2355, 2471, 2478; GR VI: 1728; GR V: 1014; GR AA: 2241, 2243, 2314; GR AAu: 1910, 1922, 2112, 2122

GR IV: 1204, 1205

RP IV: 2551, 2553, 2558

Sector 4: 4105/29 L. 3/1+2; 4134/14 L. 3/1; 4685/12 L. 4/1; 4815/6 L. 4/2; 4844/16 L. 4/2; 4850/19 L. 4/2; 4862/7 L. 4/2; 4926/30 L. 4/3; 4928/26 L. 4/3

Sector 8: 4230/19 L. 3/1

Sector 20: 4380/7 L. 3/1, 4680/3 L. 3/2, 4853/5, 6 L. 4/1, 4859/31 L. 4/1, 4898/1, 2, 7, 13 L. 5/2, 5212/8+12, 17 L. 3/1

Sector 21: 5023/39, 41; 5052/63 L. 3/2; 5156/3, 31 L. 3/3; 5165/14 L. 3/3

Sector 22: 4731/11, 24, 29, 22 L. 3/1; 5151/2, 10, 20, 45 *grumi* pit; 5278/22 L. 5/1; 5301 L. 5/1

Sector 23: 4641/55 L. 3/1; 4756/13 L. 3/1; 4900/17 L. 3/2; 4930/3, 25 L. 4/1

GTC: 5054/2+4 L. 3/1

S 5122/19 (oven)

Votive deposit II: Bouma, 1996: p. 111, fig. 2a, jar type IV (most frequent type)

NIR 1: 100

NIR 2: 128

Ginge: HLS 10–14

Southwest necropolis: Gnade, 1992: small jars 1–5, fig. V–VII

Late Phase I, IIA, IIB, III, IV, V

Gierow prim. jar X/XII, coarse jar I; Meyer B18 (Rome 1A);

Colonna, 1963/1964: pp. 15, 16, fig. 6/86, gruppo C, tipo A; Ficana, 1996: pp. 40a, 40c; Guaitoli, 1981: p. 133, fig. 22/4; Lavinium, 1975: p. 18, figs 13/23, 14/23

Variant 3a: Red slip.

Sector 21: 5097/100+103 L. 3/2, 5150/14, 15 L. 3/2

Sector 22: 5278/2 L. 5/1

Sector 23: 4502/19 L. 3/1; 4963/21 L. 4/1

Phase IIA, IIB

Type 4: Cylindrical body, outcurved or outturned rim, sometimes concave on the inside, smooth inside transition rim to shoulder.

GR I: 355; GR II: 596, 597; GR VI: 1585, 1733; GR VII: 2346, 2349, 2354, 2355, 2468, 2469, 2475; GR V: 1009, 1010; GR AA: 2088, 2244, 2246, 2247, 2248, 2249; GR AAu: 1917, 1919, 1921, 2119, 2120

GR IV: 1207, 1208

RP IV: 2550; RP III: 943;

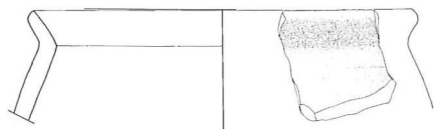
Sector 4: 4111/1 L. 3/1+2; 4246/18 L. 4/1; 4257/48, 49 L. 4/1; 4685/14 L. 4/1; 4862/17 L. 4/2; 4946/14 L. 4/2



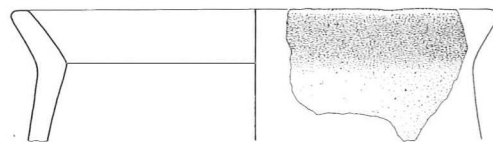
III-1 5212-7+11



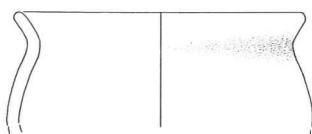
III-1 4070-49



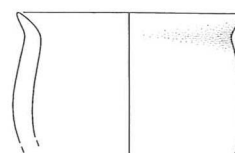
III-2 590



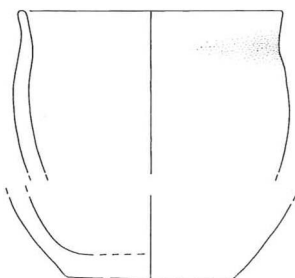
III-2 1563



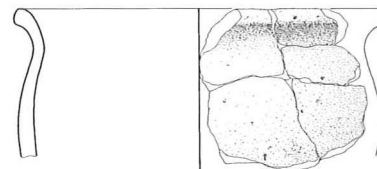
III-3 4930-3



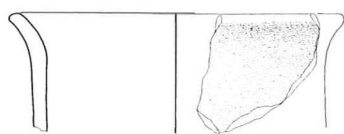
III-3 4859-31



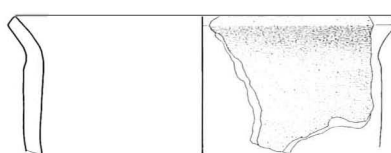
III-3 4898-1+2+7



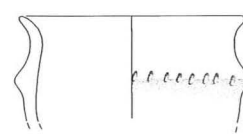
III-3 1871



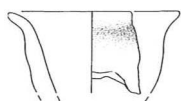
III-4 2649



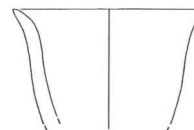
III-4 2705



III-4 4900-19



III-5 3232



III-5 4641-56

Fig. 5. Ceramics from *Satricum* ascribed to Class III, *Jar/olla* (1:4).

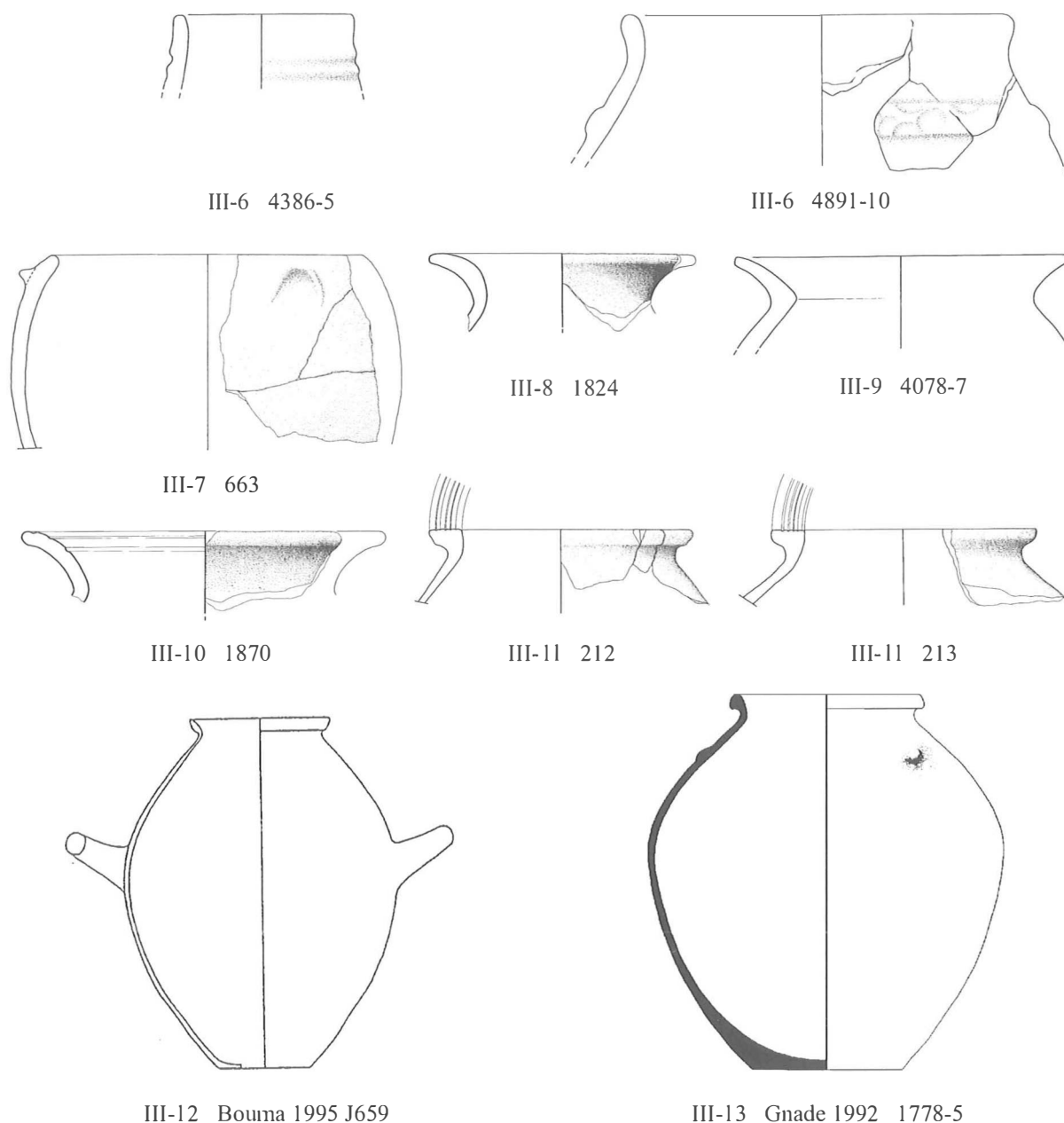


Fig. 5. Continued.

Sector 11: 4847/60 L. 3/2  
 Sector 20: 5185/7 L. 3/6  
 Sector 21: 5052/64 L. 3/2; 5097/114 L. 3/2; 5165/35 L. 3/3  
 Sector 22: 4731/12 L. 3/1; 5148/3+4, 8 L. 3/4; 5278/21 L. 5/1  
 Sector 23: 4504/2 lag 4/1; 4756/15 L. 3/1; 4845/4 L. 6/1; 4900/19,19A,20 L. 3/2; 4963/26 L. 4/1  
 Sector 24: 4523/15 L. 3/1  
 Votive Deposit II: Bouma, 1996: plate V/J76-78  
 Kiln A: Nijboer, 1997: fig. 21  
 VG 7: 103  
 NIR 1: 153/101  
 Late Phase I, IIA, IIB, III

Gierow prim. jar XI: Ardea, 1981: pp. 68, 69, figs 5/4, 6  
 Carafa: 334 (since 700); Colonna, 1963/1964: pp. 15, 16, figs 6/74,77, gruppo C, tipo A; Ficana, 1996: pp. 35d, 35g; Guaitoli & Piccareta, 1974: p. 80, fig. 12/10-12; Lavinium, 1975: pp. 14, 18, figs 12/21, 13/21,26, 14/26

Variant 4a: Yellowish red *impasto* with red slip.  
 GR VI: 1725, 1729, 1730  
 RP IV 2552  
 Sector 23: 4900/15 L. 3/2  
 Late Phase I, IIB

Type 5: Conical downwards tapering body, outcurved rim, smooth inside transition rim to shoulder (upside down bell-shaped).

GR VI: 1587, 1727, 1734; GR VII: 2347, 2352, 2439, 2440, 2442, 2453, 2467, 2476; GR V: 1003; GR AA: 2315;

RP III: 954; RP IV: 2574

Sector 4: 4246/17 L. 4/1

Sector 6: 4762/10 L. 5/1

Sector 11: 4271/nn L. 3/1

Sector 20: 4680/4 L. 3/2

Sector 21: 5097/142 L. 3/2

Sector 23: 4502/18 L. 3/1; 4641/56 L. 3/1; 4749/7 L. 3/2; 4756/14 L. 3/1

VG 7: 106, 107; VG 3: 19

Late Phase I, IIA, IIB

Ficana, 1996: pp. 33, 34; Guaitoli, 1981: p. 130, fig. 17/10, 11;

Lavinium, 1975: p. 18, figs 13/12–14, 14/12–14

Variant 5a: Red *impasto* with red slip.

GR VI: 1564; GR VII: 2351; GR AA: 2313

Sector 20: 5185/35 L. 3/6

Sector 23: 4752/1; 4813/1 L. 6/1; 4900/13 L. 3/2; 4986/17 L. 4/1

Late Phase I, IIA, IIB

Type 6: Probably ovoid body, vertical cylindrical rim, smooth inside transition rim to shoulder.

GR II: 598

GR IV: 1198

Sector 11: 4891/10 L. 3/3

Sector 23: 4386/5 L. 3/1

Phase I

Type 7: Cylindro-ovoid jar with slightly incurved rim (mug-shaped), semi-lunar lugs or vertical ringhandles under the rim.

GR II: 663; GR V: 1018

GR III: 750

GR AA: 2276, 2277

VG 1: 4; VG 3: 18

Phase I, IIA, IIB

Dial I/IIA, 6a, 6b

Gierow prim. jar VII

Osa II, 5

Type 8: Probably globular body, wide outcurved rim (end of rim almost horizontal; lip sometimes slightly thickened on the outside), smooth inside transition rim to shoulder.

GR V: 1008; GR VI: 1582, 1583, 1589, 1590, 1595, 1597–1599, 1600, 1601, 1726; GR VII: 2344, 2443, 2482, GR AA: 2252, 2253; GR AAu: 1932, 1936, 1937, 2118, 2133

GR III: 743, 747

Sector 1 4439/8, 28, 29

Sector 4: 4852/30 L. 4/2; 4885/3+35 L. 4/2

Sector 20: 4859/3 L. 4/1

Sector 21: 5047/17, 5097/117 L. 3/2; 5165/47 L. 3/3

VG 14: 196

NIR 1: 153/100 (with internal angle)

Late Phase I, IIA, IIB

Dial III, 1 la

Meyer D76 (Rome 3A)

Osa IV, 92d varl

Carafa: 2 (730/20–675); 200 (700–675)

Colonna, 1963/64: p. 12, gruppo B; Ficana, 1996: p. 49c

Variant 8a: Yellowish red *impasto* with red slip.

GR VII: 2444; GR VI: 1581

Sector 21: 5097/115 L. 3/2

Sector 22: 4682/17 L. 3/1; 4731/7 L. 3/1; 5151/16 *grumi* pit

Sector 23: 4841/23 L. 5/1

Late Phase I, Phase IIA

Type 9: Probably globular body, wide outcurved rim, inside angular transition rim to shoulder; red *impasto*.

GR V: 1002

RP IV: 2549, 2556

Sector 3: 4078/7 L. 3/1

Sector 4: 4852/28 L. 4/2; 4885/20 L. 4/2; 4926/31, 32 L. 4/3

Sector 22: 5050/6+10 L. 3/3

GTC: 5049/1+4 L. 3/1

C13/C12: 4004/04 L. 3/1; 4008/nn L. 3/1

VG 3: 20.

Late Phase I

Gierow adv.C jar I/II

Meyer E107 (Rome 4A)

Colonna, 1963/1964: p. 12, gruppo B; Ficana, 1996: p. 49c

Variant 9a: With red slip.

GR AAu: 1931

RP IV: 2555

Sector 21: 5176/8 L. 3/4

Phase IIA, IIB

Type 10: Probably globular body, wide outcurved rim with encircling grooves on the inside, smooth inside transition rim to shoulder; reddish *impasto* with red slip.

GR VII: 2364, 2366, 2445; GR AA: 2251; GR AAu: 4130/3, 4148/95, 4152/52

RP III: 941

Stoa A: 1823, 1824

Sector 6: 4762/10+30 L. 5/1

Sector 11: 4180/17 L. 3/1; 4891/9 L. 3/3

Sector 12: 4194/nn L. 2/1; 4205/1 L. 3/1

Sector 23: 4900/21 L. 3/2; 4923/23 L. 6/1

Sector 24: 4855/39 L. 2/1

Phase IIA, IIB, IIIA

Dial IVA, 1a–d; IVB, 1, 8

Gierow adv.C jar I/II, red jar II

Meyer E107 (Rome 4A)

Osa IV, 92e–h

Carafa: 10 (675–630/20), 193 (700–590)

Ficana, 1996: pp. 49a, 49d; Colonna, 1963/1964: p. 12, fig. 5/52, gruppo B

Type 11: Globular body, outturned rim, horizontal lip, decorated with concentric incised lines.

Destruction layer E10: 212, 213

GR G: 2746

Kiln B: Nijboer, 1998; fig. 24

Phase III

Type 12: Globular or ovoid two-handled jar with short thickened lip.

Votive deposit II: Bouma, 1996: p. 111, fig. 2a, jar types VI and VII, plate XCVII/ J657, plate XCVIII/ J659

Phase V

Type 13: Globular jar with thickened lip, often knobs on shoulder or perforations in the rim.

Southwest necropolis: Gnade, 1992, figs IX–XI, jar with bosses 1–3, figs XII–XVI, jar with holes in lip 1–6

Phase V

Class IV = Large bowl/*bacino* (diameter mouth >30 cm, thickness wall >1.2 cm) (fig. 6)

Type 1: Steep, straight and vertical or slightly oblique irregularly modelled wall, straight or slightly incurved rim, protuberant lugs, sometimes decorated with finger impressed notches, attached to the edge of the base.

GR II: 640, 644, 645, 646 650; GR VI: 1622; GR AAu: 2161

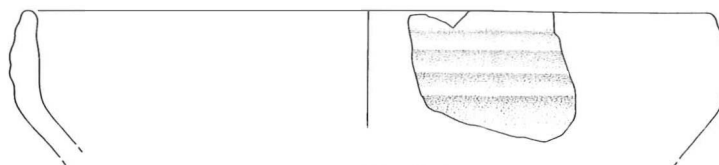
RP II: 1148; RP V: 2565;

Sector 4: 4105/5 L. 3/1+2; 4852/36 L. 4/2; 4928/28 L. 4/3; 4946/50 L. 4/3

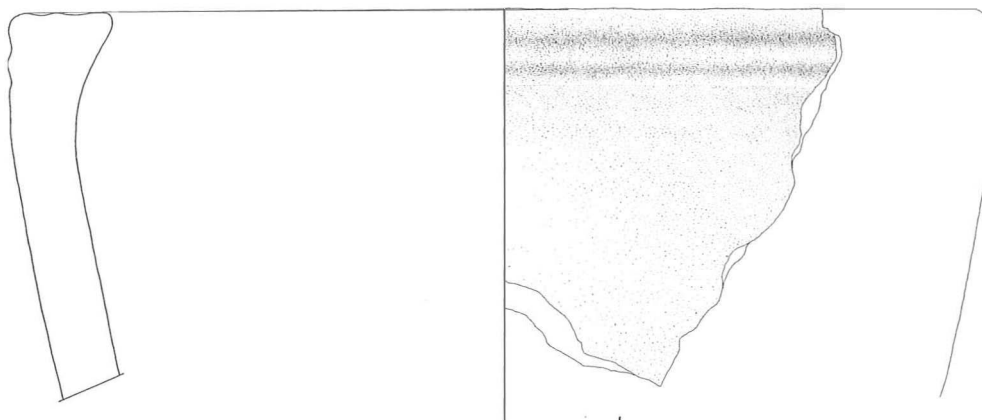
Sector 21: 5023/14; 5165/3 L. 3/3; 5176/19+21 L. 3/4



IV-1 2782



IV-2 4515-1+3



IV-3 846

Fig. 6. Ceramics from *Satricum* ascribed to Class IV, Large bowl/*bacino* (1:4).



Sector 22: 5050/1, 2 L. 3/3  
 Sector 23: 4929/1 L. 4/1; 4963/25 L. 4/1  
 Votive deposit II: Bouma, 1996: p. 116, fig. 2c, types I and II; plates CIV/T2–5, CV/T6–8, CVI/T9–11, CVII/T12–13, CVIII/T15–19  
 Kiln A: Nijboer, 1998: fig. 21  
 VG 10:160  
 Phase I, IIA, IIB, III, IV, V  
 Carafa: 532 (630–590)  
 Ficana, 1996: pp. 71a, 71b; Guaitoli & Piccareta, 1974: pp. 74, 86, figs 12/13, 14/60, 61

Type 2: Low deep bowl with vertical rim, decorated with ridges on the outside.

Sector 17: 4515/1+3 L. 4/1

Type 3: Steep and straight or slightly curved wall, lip flattened and thickened on outside and inside, sometimes decorated with ridges; red *impasto*.

GR II: 620; GR V: 1064; GR AAu: 1962  
 Sector 11: 4271/4 L. 3/1  
 Sector 20: 4911/1 L. 6/1; 5185/61 L. 3/6  
 Sector 21: 5052/129 (with cord decoration) L. 3/2  
 A13/14 oven: 5117/6+7 L. 2/2  
 Phase I, IIA, IIB, III  
 Colonna, 1963/1964: p. 23, fig. 12/124, gruppo C, tipo A; Ficana, 1996: pp. 69, 73, 74, 75

Class V = Bowl/*ciotola* — *scodella* (fig. 7)

Type 1: Straight and oblique or spreading wall/rim, largest diameter at the lip (lid-bowl or *ciotola-coperchio*).

GR I: 379–385; GR II: 634, 635, 640, 642, 644, 647, 648, 652–654, 656–657, 662; GR VI: 1620, 1621, 1623–1628, 1630–1632, 1636, 1639, 1640, 1644, 1743, 1745–1747; GR VII: 2077, 2078, 2380–2382, 2451, 2454, 2487–2491; GR V: 1067–1069, 1074–1078; GR AA: 2077, 2078, 2089, 2090, 2266, 2269, 2324, 2325; GR AAu: 1954, 1964, 1965, 1969, 1972, 1975, 2144, 2151, 2152  
 GR IV: 1237–1242, 1244, 1245, 1247  
 RP IV: 2563; RP III: 958, 959  
 Sector 1: 4483/8 L. 2/2  
 Sector 4: 4105/3 L. 3/1+2; 4246/19 L. 4/1; 4815/2 L. 4/2; 4852/32 L. 4/2; 4954 L. 4/3  
 Sector 11: 4847/43 L. 3/2; 4990/3 L. 5/1  
 Sector 17: 4648/2 L. 3/1  
 Sector 23: 4655/4 L. 3/1; 4841/30 L. 5/1  
 Sector 24: 4523/18 L. 3/1  
 Sector 25: 4721/16 L. 5/1  
 GTC: 5229/200 L. 3/3  
 NIR 2: 115  
 Phase I, IIA, IIB  
 Dial I/IIA, 26a, 35  
 Gierow prim. bowl VI/XI, prim. lid I/V  
 Carafa: 75 (730–675), 76, 77 (730–650)  
 Colonna, 1963/1964: p. 8, fig. 3/19, gruppo A; Ficana, 1996: pp. 52, 76  
 Ficana: Malmgren, 1991: p. 27, fig. 6/3; Guaitoli & Piccareta, 1974: p. 86, fig. 14/54, 55

Variant 1a: light red *impasto* with red slip.

GR VI: 1629, 1637, 1641, 1643, 1645, 1744  
 Sector 21: 5165/2 L. 3/3

Sector 22: 4381/23 L. 3/1  
 Sector 23: 4930/27 L. 4/1  
 Late Phase I

Type 2: Curved wall and slightly curved or straight rim, largest diameter at the lip (lid-bowl or *ciotola-coperchio*).

GR I: 372, 373, 375–377; GR II: 619, 621, 623, 624, 627–633, 636, 637, 643, 660; GR VI: 1616, 1633–1635, 1638, 1642, 1646; GR VII: 2373–2377, 2381, 2393, 2394, 2446–2450, 2484; GR V: 1055–1060, 1065, 1066, 1072, 1073; GR AA: 2090, 2091, 2260–2265, 2320, 2322, 2323; GR AAu: 1960, 2147, 2153–2156, 2159  
 GR III: 761, 763, 766; GR IV: 1228, 1231, 1243  
 RP II: 1151; RP IV: 2559, 2561; RP III: 957  
 Destruction layer E10: 216  
 Sector 4: 4099/15 L. 3/2; 4113/4 L. 3/2; 4163/18 L. 3/1; 4246/20 L. 4/1; 4258/44, 45 L. 4/1; 4852/18, 24 L. 4/2; 4862/3 L. 4/2; 4885/16 L. 4/2; 4922/18 L. 4/3; 4926/33 L. 4/3; 4946/17, 21 L. 4/3  
 Sector 6: 4037/118 L. 3/1  
 Sector 17: 4644/62 L. 3/1; 4645/35 L. 3/1  
 Sector 20: 5185/57 L. 3/6  
 Sector 21: 5176/15 L. 3/4, 5279/30 L. 3/5  
 Sector 22: 5165/60 L. 3/3; 5301/4 L. 5/1  
 Sector 23: 4749/4 L. 3/2; 4761/32 L. 3/1; 4841/22 L. 5/1; 4923/4 L. 6/1; 4929/4 L. 4/1; 4930/1 L. 4/1; 4963/20 L. 4/1  
 Sector 24: 4523/8+9+10 L. 3/1; 4812/5 L. 2/1  
 Sector 25: 4718/10 L. 5/1; 4721/11 L. 5/1; 4743/4, 200 L. 5/1  
 GTC: 5049/200 L. 3/1  
 Votive deposit II: Bouma, 1996: p. 114, fig. 2b, types III and IV  
 Kiln A: Nijboer, 1998: fig. 21  
 VG 7: 109  
 Southwest necropolis: Gnade, 1992: figs I–II, bowls 1–5  
 Phase I, IIA, IIB, III, IV, V  
 Dial I/IIA, 26b; III, 9a  
 Gierow prim. bowl X, prim. lid I  
 Osa II, 26f–k1  
 Carafa: 448 (since 700), 464 (since 675)  
 Colonna, 1963/1964: p. 7, fig. 3/18, gruppo A; Ficana, 1996: pp. 59a, 59b, 63a, 63b; Malmgren, 1991: pp. 24, 25, fig. 5/5

Variant 2a: Red slip.

Sector 21: 5160/7a, 10a L. 3/3

Type 3: Curved wall and smoothly incurved rim, largest diameter on transition wall to rim, often with one horizontal or slightly oblique semicircular or trapezoidal handle just under the rim and sometimes decorated with knobs, ridges or simple incisions.

GR I: 364, 365, 367–370, 374; GR II: 605–612, 614–618; GR VI: 1609, 1611–1614, 1617–1619; 1739, 1740; GR VII: 2371, 2372, 2485; GR V: 1039–1048, 1050–1053; GR AA: 2317–2319; GR AAu: 1949, 2145  
 GR III: 753–755, 757, 758, 760, 762; GR IV: 1223–1227, 1230, 1232, 1233  
 RP II: 1144, 1145; RP IV: 2559; RP III: 955  
 Sector 4: 4099/1, 7 L. 3/2; 4808/18 L. 4/2; 4844/15 L. 4/2; 4852/38+39 L. 4/2; 4922/16 L. 4/3; 4928/27 L. 4/3; 4946/20, 24 L. 4/3  
 Sector 20: 4667/5 L. 3/2  
 Sector 21: 5023/19; 5160/ 9a, 12a L. 3/3; 5185/1 L. 3/6; 5279/29 L. 3/5  
 Sector 22: 4731/23 L. 3/1; 5151/41; 5185/1, 37 L. 3/6, 5301/1 L. 5/1

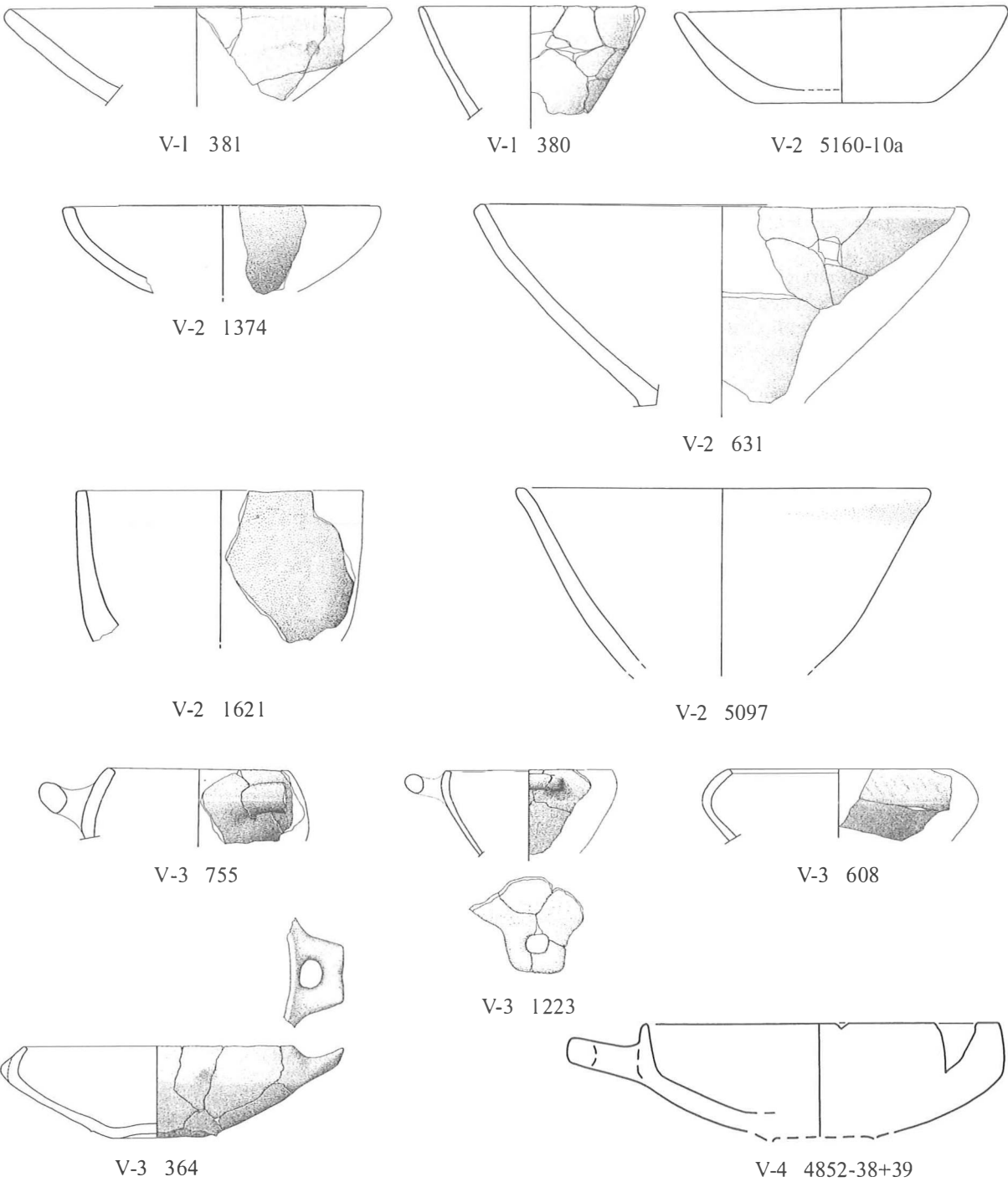
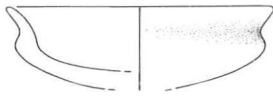
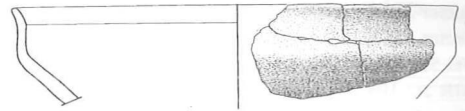


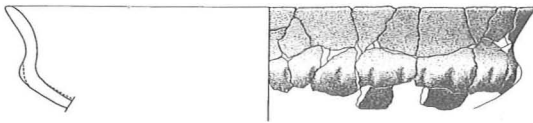
Fig. 7. Ceramics from *Satricum* ascribed to Class V, Bowl/ciotola — *scodella* (1:4).



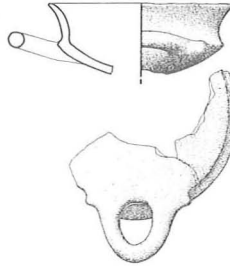
V-5 4682-1



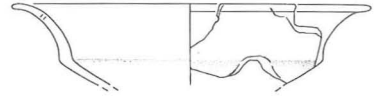
V-6 1034



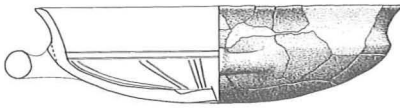
V-6 843



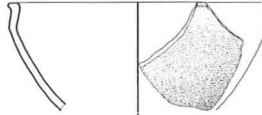
V-6 2386



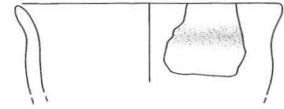
V-6 4900-31



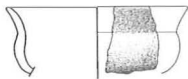
V-6 1031



V-7 2766



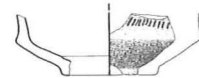
V-7 4187-41



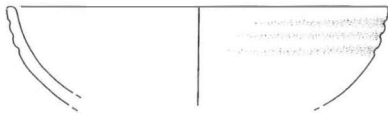
V-7 951



V-8 5212-9+16+42+53



V-8 2171



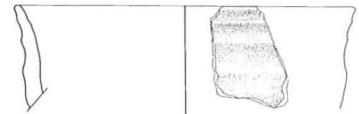
V-9 4731-15



V-10 5185-50



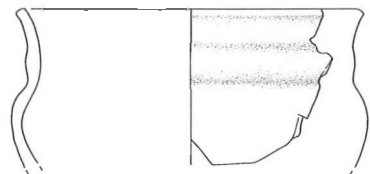
V-11 4731-16



V-12 246



V-13 245



V-14 4751-10

Fig. 7. Continued.

Sector 23: 4845/3 L. 6/1; 4900/55 L. 3/2; 4923/3 L. 6/1  
 Sector 25: 4718/3 L. 5/1; 4721/17 L. 5/1; 4956/1 L. 4  
 VG 5: 39; VG 6: 45; VG 7: 108; VG 8: 141; VG 10: 161  
 NIR 2: : 104, 116, 122, 123; NIR 3: 133  
 Phase I, IIA, IIB  
 Dial I/IIA, 25a, 25b; IIB, 8; III, 7  
 Ficana, 1996: p. 78  
 Gierow prim. bowl I; IIB, 8  
 Meyer A15 (Rome I A); B30 (Rome I B)  
 Osa II/III, 26c,g,m, IV, 24e, 26s  
 Carafa: 55 (730/20–675; 630/20–600/590), 58

#### Variant 3a: With red slip.

GR VI: 1610  
 Sector 4: 4862/14 L. 4/2  
 Sector 21: 5279/09, 27 L. 3/5  
 Sector 22: 5151/54  
 Sector 23: 4900/64 L. 3/2  
 Sector 25: 4743/10 L. 5/1  
 Late Phase I

#### Type 4: Deep body, slightly curved to spreading wall, vertical rim.

GR AAu: 1949  
 GR III: 762; GR IV: 1230  
 Sector 22: 5301/1 L. 5/1  
 Votive deposit II: Bouma, 1996, p. 114, fig. 2b types II and VI  
 VG 5: 39  
 NIR 2: 102  
 NIR 3–4: 136  
 Southwest necropolis: Gnade, 1992: fig. III, bowls 6–8  
 Phase IIA, IIB, IV, V  
 Dial III, 7  
 Gierow prim bowl I/II  
 Osa IV, 24e, 26s  
 Carafa: 55 (730/20–675; 630/20–600/590)

#### Type 5: Carenated bowl, low conical body, smoothly curved carena, short steep shoulder, outcurved rim, horizontal semicircular handle on carena; yellowish red to brown *impasto* burnished to very dark grey or black.

GR VII: 2383, 2384, 2392, 2496; GR AA: 2272, 2273; GR AAu: 1979  
 RP III: 950  
 Sector 1: 4799 L. 4/1  
 Sector 11: 4851/A L. 3/2  
 Sector 17: 4695/1 L. 4/2; 4791/3a L. 4/2  
 Sector 20: 5185/77 L. 3/6, 5212/47 L. 3/1  
 Sector 21: 5097/138 L. 3/2  
 Sector 22: 4682/1 L. 3/1; 4731/1 L. 3/1  
 Sector 23: 4655/3, 15 L. 3/1; 4963/28 L. 4/1; 4670/994, 999 L. 3/2; 4749/1 L. 3/2  
 Sector 25: 4721/21 L. 5/1  
 Votive deposit II: Bouma, 1996, p. 114, fig. 2b type I  
 NIR 4: 137  
 Southwest necropolis: Gnade, 1992: fig. III, bowls 9–10  
 Phase IIA, IIB, IV, V  
 Gierow prim. bowl VII, adv.A bowl II  
 Osa III, 24c

#### Type 6: Carenated bowl, low conical body, sharp carena often decorated with notches, wide outcurved rim, inside angular transition rim to body, horizontal handle on the carena; reddish brown *impasto* burnished to a lustrous black.

GR VII: 2387–2389, 2391; GR V: 1032, 1033; GR AA: 2326, 2327; GR AAu: 2172  
 RP III: 949  
 Sector 3: S 4089/11 L. 3/1  
 Sector 4: 4158/43 L. 3/1  
 Sector 20: 4680/13 L. 3/2; 5185/72 L. 3/6  
 Sector 21: 5160/4 L. 3/3, 5212/51 L. 3/1  
 Sector 22: 5151/49, 50  
 Sector 23: 4900/31+32 L. 3/2  
 Votive deposit II: Bouma, 1996, p. 114, fig. 2b type IX  
 VG 5: 35d,e.  
 NIR 3–4: 137  
 Phase IIA, IIB, IV, V  
 Osa IV, 24f  
 Carafa: 179, 283 (730/720)

#### Variant 6a: With triangular handle; the inside of the body is decorated with an encircling groove around the base from which groups of parallel-incised lines radiate.

GR V: 1031; GR VII: 2385, 2386, 2390  
 RP III: 948  
 Phase IIA

#### Type 7: Deep rounded body with curved wall, straight to slightly incurved shoulder with smooth transition body to shoulder, short outcurved rim, inside sometimes angular transition rim to shoulder; brown *impasto* burnished to dark grey or black.

GR V: 1034, 1035  
 RP III: 951  
 Sector 25: 4743/28 L. 5/1  
 Phase IIA  
 Dial IVA, 5 (carenated)  
 Ficana, 1996: p. 53  
 Osa IV, 107c

#### Type 8: *Calice* or *kantharos*, carenated bowl on high or low stemmed foot, low conical dish, slightly concave or conical spreading wall/rim decorated with horizontal encircling grooves/ridges (XV-7) or fine incisions (XVI-3); kantharos with two high vertical band handles; brown *impasto*, burnished to dark grey or black, wheel-turned.

GR VII: 2513; GR AA: 2081, 2092, 2275, 4120/nn; GR AAu: 1978, 2166, 2170, 2171  
 Sector 4: 4029/23+94 L. 3/1; 4960/22 L. 4/3  
 Sector 11: 4775/12 L. 5/1; 4777/9 L. 5/1  
 Sector 20: 4380/6 L. 3/1; 5212/9, 16, 42, 53 L. 3/1; 5160/14 L. 3/3  
 Sector 21: 5052/6, 69+99, 92 L. 3/2  
 Sector 22: 5151/42, 46  
 Sector 23: 4986/2 L. 4/1  
 Phase IIA, IIB  
 Dial IVA, 3a, 17b, 20  
 Gierow adv.D goblet I/II, adv.D *kantharos* II  
 Meyer A112, B122 (Rome 4A)

Osa IV, 100e, f, 105  
 Carafa: 112–119, 121 (675–590), 127 (675–630/20)  
 Ficana, 1996: p. 100b

Variant 8a: Red *impasto*.

Sector 22: 5148/5 L. 3/4  
 Sector 24: 4803/22 L. 2/1  
 GTC: 5177/201 L. 3/1

Type 9: Wide rounded body, straight vertical or slightly oblique rim, encircling ridges on the rim; brown to red *impasto*.

GR V: 1054; GR AA: 2321  
 GR IV: 1235  
 RP IV: 2560  
 Sector 6: 4683/9 L.5/1  
 Sector 21: 5097/142 L.3/2; 5279/174 L.3/5  
 Sector 22: 4731/8, 15, 16 L.3/1  
 Late Phase I, IIA, IIB  
 Osa IV, 103a

Type 10: Deep rounded body, smoothly incurved shoulder with ridges, short outcurved rim.

GR AA: 2245  
 Sector 22: 5185/50 L.3/6  
 Phase IIB

Type 11: Deep conical body, cylindrical rim with ridges

Sector 22: 4731/41, L. 3/1  
 Phase IIB  
 Osa IV, 26t/u  
 Dial IVA: 3, 4  
 Carafa: 64, 65

Type 12: Cylindrical or conical body, decorated with ridges.

E10: 246  
 Sector 20: 4380/6 L. 3/1  
 Phase IIB, III  
 Carafa: 115, 116, 119, 121, 279

Type 13: Conical body, decorated with ridges.

E10: 245  
 Sector 20: 4386/5 L.3/1  
 Sector 22: 5151/46 *grumi* pit  
 Phase IIB, III

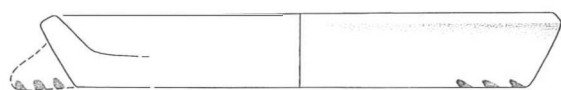
Type 14: Deep rounded body, vertical shoulder and outcurved rim, sometimes decorated with encircling ridges.

GR AA: 2271  
 Sector 6: 4751/10 L. 5/2  
 Sector 12: 4187/41 L. 2/1  
 Phase IIB  
 Gierow red bowl I  
 Osa IV, 103 varII  
 Carafa: 21  
 Ficana, 1996: p. 199, fig. 128/54

Class VI = Plate/*piatto* — *teglia* (fig. 8)

Type 1: Low and wide conical body with wide outcurved rim, angular transition body to rim, sometimes encircling grooves on inside rim; wheelturned.

GR VII: 2498; GR AAu: 2173  
 Sector 11: 4921/1  
 Sector 17: 4517/2 L. 4/1  
 Sector 20: 5212/13 L. 3/1  
 Sector 23: 4900/54 L. 3/2  
 Sector 24: 4812/3 L. 2/1  
 Votive deposit II: Bouma, 1996, in wares IIIa en IIIb; plates V/P88, CXIX/ P1, P3  
 Ginge: HUS 11  
 Phase IIA, IIB, IV, V  
 Dial IVA, 2\*  
 Ficana, 1996: p. 83a  
 Gierow adv.C bowl V, red plate I/II  
 Meyer A113, B117 (Rome 4A)  
 Osa IV, 107c varII  
 Carafa: 254 (730/20)



VI-1 4387-00



VI-2 1062



VI-3 5156-02



VI-4 2394

Fig. 8. Ceramics from Satricum ascribed to Class VI, Plate/*piatto* — *teglia* (1:4).

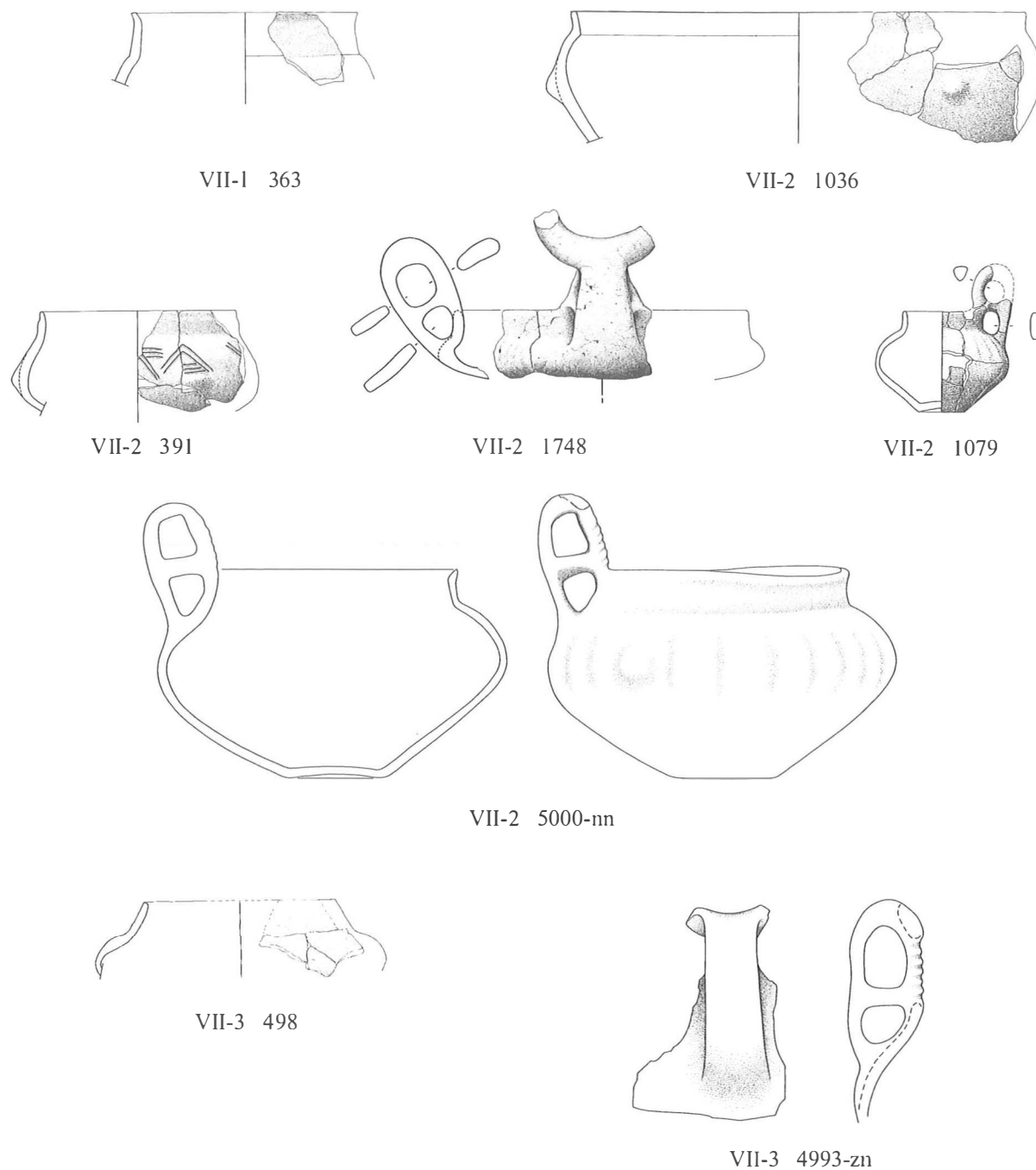


Fig. 9. Ceramics from *Satricum* ascribed to Class VII, Cup/tazza (1:4).

Type 2: Short curved wall, vertical rim, smooth transition wall to base; possible lug at the base.

GR V: 1061, 1062, 1063

Phase IIA

Type 3: Short and straight oblique wall/rim, angular or faceted transition wall to base on the outside, smooth curved on the inside or slightly raised; lugs at base and sometimes impressed decoration on the edge.

GR AA: 2268; GR AAu: 1952  
 Sector 11: 4842/27 (*impasto chiaro*, probably import) L. 3/2; 4851/10 L. 3/2  
 Sector 12: 4194 L. 2/1  
 Sector 17: 4648/38+39 L. 3/1  
 Sector 20: 4387/00+1, 13+14+15  
 Sector 21: 5165/03 L. 3/3  
 VG 3: 22  
 Phase IIB  
 Carafa: 527 (530–500)  
 Ficana, 1996: pp. 82b, 82c, 82f  
 Guaitoli & Piccareta, 1974: p. 89, fig. 19/27

#### Type 4: Low convex plate, convex lip.

B12: 3387/5 L. 3/3  
 Sector 23: 4761/11 L. 3/1; 4841/28 L. 5/1  
 GTC: 5229/3 L. 3/3  
 Phase IIB

Class VII = Cup/*tazza* with one vertical often biforate handle and often decorated with incisions or oblique ridges on the shoulder and knobs on transition shoulder to body (fig. 9)

Type 1: Convex shoulder, conical neck and outcurved rim, angular transition neck to shoulder on outside and inside (*a collo distinto*).

GR I: 363  
 RP II: 1147  
 Early Phase I  
 Dial I/IIA, 19, 23  
 Gierow prim. cup VIII  
 Meyer D35M, H55 (Rome 2A1, 2B1)  
 Osa II, 19a varIII, 19c, 20b  
 Colonna, 1963/1964: p. 6, fig. 1/8, gruppo A

Type 2: Deep conical body, smoothly incurved steep and short shoulder, short outcurved or vertical rim, plain shoulder, knobs on transition body to shoulder, sometimes decorated with oblique ridges on shoulder; reddish yellow to brown *impasto* often burnished to very dark grey or black.

GR I: 356; 390; 391, 392; 393; GR II: 674; 677, 678; GR VI: 1653, 1654, 1748, 1749, 1750; GR VII: 2356; 2441; GR V: 1036–1038; 1079; 1082–1084, 1086, 1087  
 GR IV: 1222  
 Sector 1,2,17: 5000/nm  
 Sector 4: 4926/34 L. 4/3; 4928/30 L. 4/3; 4954/14 L. 4/3  
 Sector 6: 4993/nm  
 Sector 9: 4600/40+42 L. 5/1  
 Sector 11: 4744/5 L. 5/2  
 Sector 17: 4690/nm L. 4/1  
 Sector 21: 5097/121, 5160/1a, 3  
 Sector 23: 4923/2 L. 6/1  
 Sector 24: 4651/2 L. 3/2  
 Sector 25: 4721/19,29,30 L. 5/1  
 GTC: 5177/14 L. 3/1  
 VG 7: 119; VG 8: 143,1444; VG 10: 162; VG 13: 186.  
 NIR I: 151/99; NIR 2: 102, 114  
 Ginge: HLS 2, 3, 17  
 Phase I, IIA  
 Dial I/IIA, 21; Dial IIB, 6a, 6b,7a ,7b; III, 3e, 4  
 Ficana, 1996: pp. 85a, 86b, 86d, 87

Gierow prim. cup VI/XII, VIII, IX, X, prim. cup IX, adv.A cup II  
 Meyer C41, K71 (Rome 2A1), L77 (Rome 3A); N86 (Rome 3A), M79 (Rome 3A)  
 Osa II, 19a, 23b; Osa II/III, 21; III, 20i, 20p

Variant 2a: Red *impasto* with weak red slip.

GR VI: 1586  
 Late Phase I

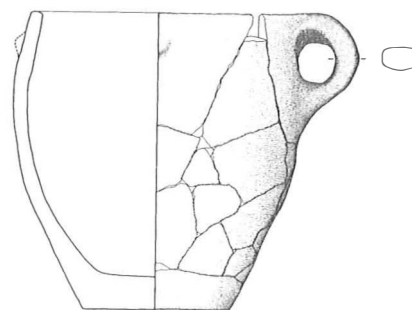
Type 3: Low conical body, depressed convex shoulder, oblique conical rim, shoulder is plain or decorated with oblique or vertical ridges; handle is *bifora insellata* with ridges (XIV-4); mostly reddish *impasto* burnished to lustrous very dark grey or black.

GR II: 667–671, 673; GR VI: 1647, 1648, 1651, 1652; GR V: 1080, 1081  
 GR III: 768, 769; GR IV: 1251  
 Sector 4: 4206/A L. 4/1; 4969/1 L. 4/3  
 Sector 20: 4667/4 L. 3/2; 5212/52 L. 3/1  
 Sector 21: 5052/60 L. 3/2; 5156/8 L. 3/3; 5176/5 L. 3/4  
 Sector 22: 4682/5 L. 3/1  
 Sector 23: 4841/6,24 L. 5/1  
 VG 13: 187, 188  
 NIR I: 90  
 NIR 132/41  
 Phase I, IIA  
 Dial IIB, 7a\*; III, 3b  
 Gierow prim. cup VIII  
 Meyer M79 (Rome 3A)  
 Osa I/III, 20d (shape) 20h, 20o, 21f

#### Class VIII = Mug/*boccale* (fig. 10)

Type 1: Cylindrical ovoid body, incurved rim, vertical handle from high up the wall to the lip and rising above it.

GR I: 386, 388, 389; GR II: 665, 666  
 RP II: 1155  
 Sector 4: 4719/7+32 L. 4/2  
 Sector 21: 5276/28 L. 3/5  
 Sector 23: 4761/88 L. 3/1; 4790/2 L. 3/2  
 VG 1: 5, 41, 42; VG 7: 110; VG 8: 142  
 NIR I: 98  
 Phase I  
 Dial IIB, 5; Dial III, 10; Dial IVA, 9  
 Ficana, 1996: pp. 56–57



VIII-1 926

Fig. 10. Ceramics from Satricum ascribed to Class VIII, Mug/*boccale* (1:4).

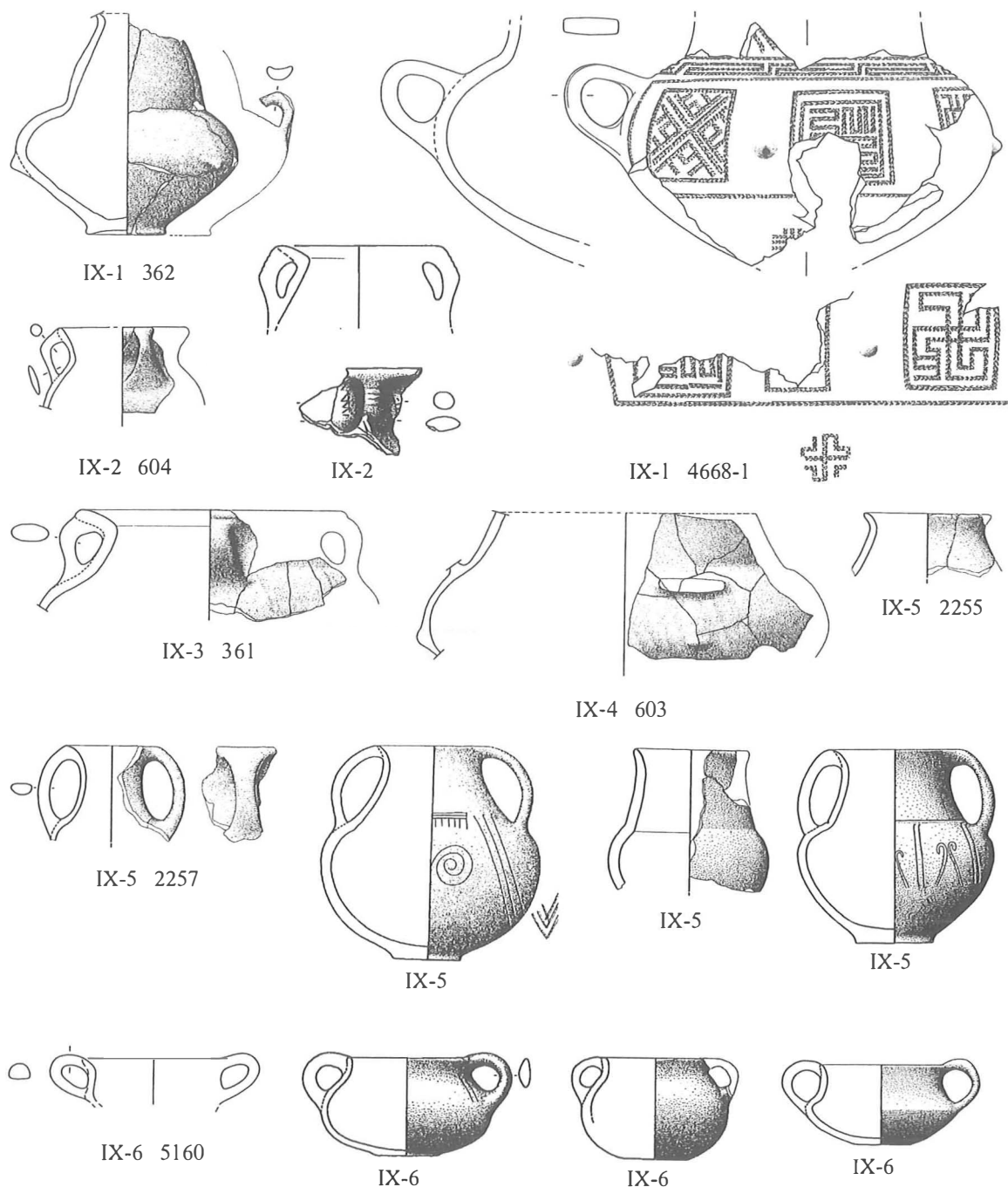


Fig. 11. Ceramics from *Satricum* ascribed to Class IX, Jug/brocca — Amphora/anfora (1:4).

Gierow prim. jar XIV

Osa II, IV, 17a

Guaitoli, 1981: p. 135, fig. 22/6

Class IX = Jug/brocca — amphora/anfora (fig. 11)

Type I: *Orciolo*: base ring, conical *vasca*, convex depressed shoulder, conical slightly convex neck, outcurved rim, small vertical handle on shoulder,

knobs on transition body to shoulder.

GR I: 362; GR II: 594

GR III: 746; GR IV: 1214

Phase I

Dial I/IIA, 14b; IIB, 4

Gierow prim. Jug IV, V/VI

Meyer A32 (Rome 1B), C67 (Rome 2B2)

Osa II, 12b



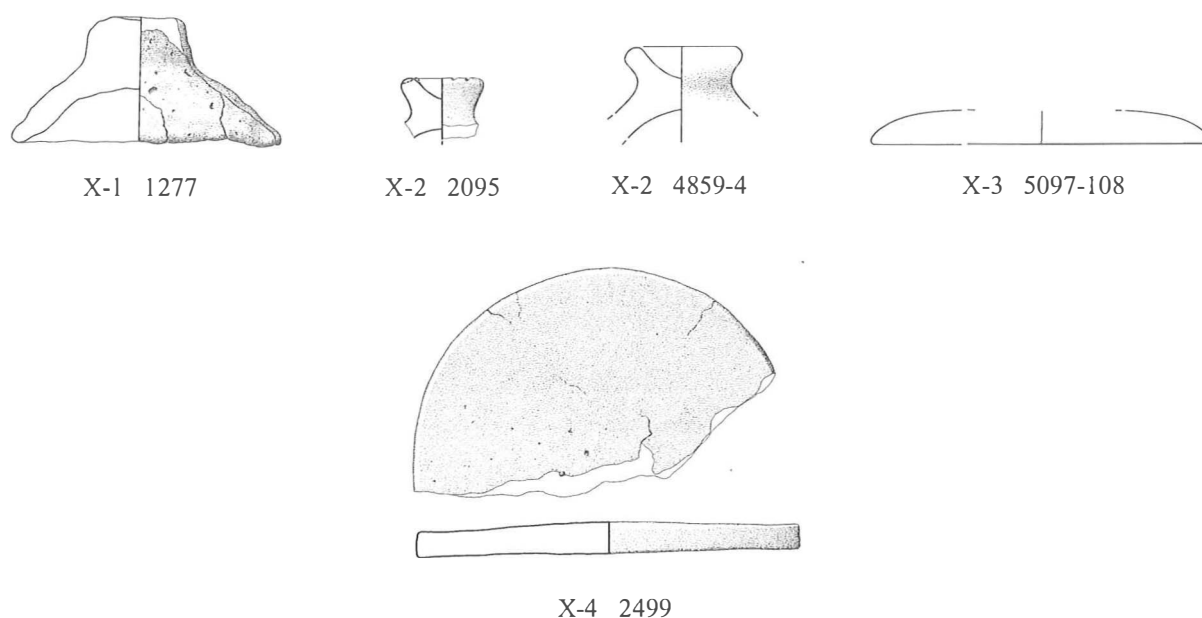


Fig. 12. Ceramics from *Satricum* ascribed to Class X, Lid/coperchio (1:4).

Type 2: Convex shoulder, outcurved or outturned rim, vertical angular band handle from shoulder to lip.

GR II: 604

Sector 1: 4439/61

Phase I

Dial III, 1a, 2a

Type 3: Convex shoulder, conical neck, outturned rim, small vertical smoothly curved handle from shoulder to just below the lip; burnished to very dark grey.

GR I: 361

Sector 21: 5160/24 L. 3/3

Sector 22: 4731/25 L. 3/1

VG 7: 111, 112

Early Phase I

Dial IIB, 1b

Gierow prim. amphora X/XI

Meyer C50, G85 (Rome 2A2)

Osa II, 7a/f/g

Colonna, 1963/64: p. 9, fig. 3/21, gruppo A

Type 4: Steep slightly convex or straight shoulder, conical neck, vertical band handle from shoulder to lip, on shoulder decoration of oblique ridges and knobs on transition shoulder to body; burnished to dark grey.

GR II: 603

Sector 21: 5176/17 L. 3/4

Phase I

Dial III, 2b

Gierow adv.A amphora I

Osa III, 7p

Type 5: Amphora with raised base, globular or ovoid body, conical neck, outcurving rim, two band handles from shoulder to lip; often decorated with fine incisions; light reddish brown *impasto* burnished to reddish brown or black lustre, wheelturned.

GR II: 600; GR VI: 1771; GR VII: 2367, 2368, 2369, 2477, 2518, 2519, 2367, 2368, 2477; GRAA: 2080, 2255–2259; GRAAu: 2127, 2211, 2212

GR III: 751, 752, 814; GR IV: 1209

RP III: 994, 996

B11: 3570/20, 21 L. 3/1

Sector 3: 4078/32 L. 3/1; 4417/mn

Sector 4: 4789/10+14+15+17+18+19+21+22 L.5/1; 4862/1+2 L. 4/2

Sector 6: 4216/20 L. 4/2

Sector 20: 5185/2+40, 19, 43 L. 3/6

Sector 21: 5097/24 L. 3/2; 5176/17 L. 3/4

Sector 22: 4731/3 L. 3/1; 5151/29, 31

VG 6: 46, 47, 49; VG 14: 197

NIR 4: 135

Ginge: HUS 15, DPH 10

Late Phase I, IIA, IIB

Dial III, 2b; IVA, 8d, 13, 14, 15; IVB, 11, 12

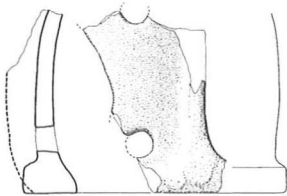
Gierow adv.B amphora II; adv.D amphora I; adv.D oinochoe I

Meyer A115, B38 (Rome 2A1); B109, B124 (Rome 4A), C138 (Rome 4B)

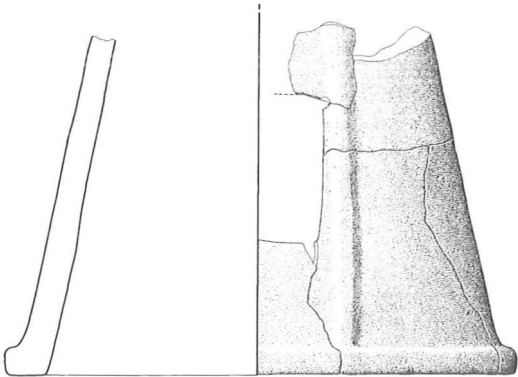
Osa IV, 7ii/jj/kk/u

Carafa: 177, 178 (675/650)

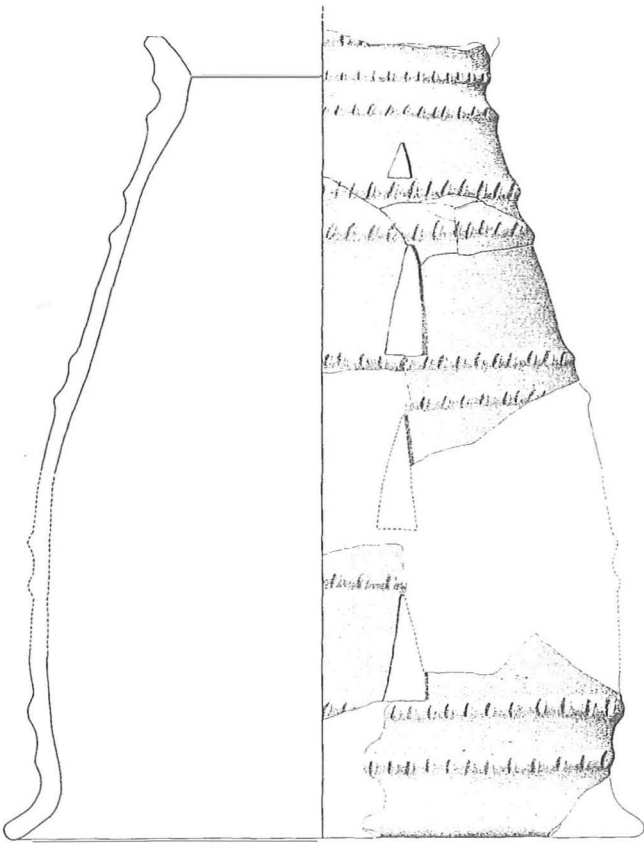
Type 6: Amphora with depressed convex shoulder, short slightly outcurved rim, semicircular band handle from slightly above maximum width to lip and slightly raising above it (*anforiskos*); reddish brown *impasto* burnished to very dark grey or black, wheelturned.



XI-1 2579

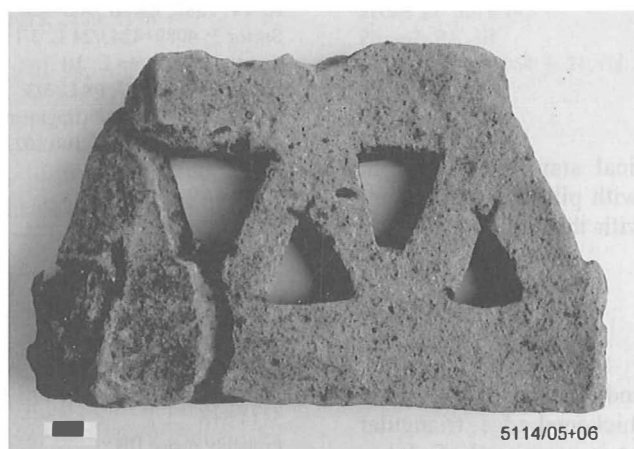
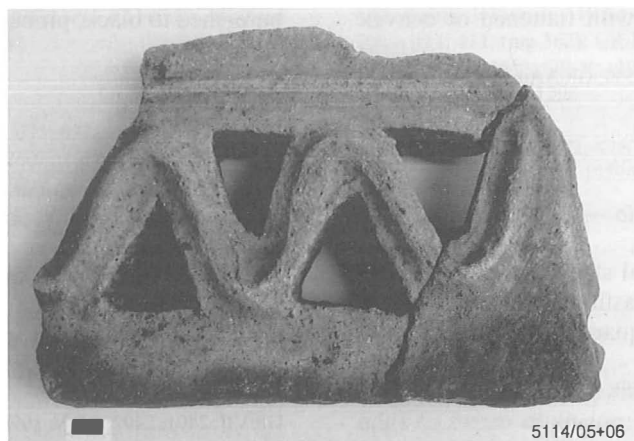


XI-2 2501



XI-3 5114-05+06

Fig. 13. Ceramics from *Satricum* ascribed to Class XI, *Stand/calefatoio* — *holmos* (1:4).



XI-4 5114-05+06

Fig. 13. Continued.

Sector 9: 4624/19 L. 4/1  
 Sector 22: 4682/9 L. 3/1  
 VG 6: 48; VG 5: 43  
 Phase IIA (probably), IIB  
 Ficana, 1996: p. 102  
 Gierow prim. amphora VIIIF

#### Class X = Lid/coperchio (fig. 12)

Type 1: Conical with straight or slightly convex wall, cylindrical or spreading solid grip, slightly concave on top.

GR IV: 1277  
 RP III: 986

Sector 4: 4042/22 L. 3/1

Votive deposit II: Bouma, 1996: lid types I and II; plates CXVI, CXVII, CXVIII

VG 7: 124

Late Phase I (probably); IIA (probably), IV, V

Gierow prim. lid IV

Type 2: As type 1, with cylindrical or conical hollowed out grip, plain or notched edge.

GR VII: 2399, 2400; GR AA: 2095

GR IV: 1278

RP III: 985

Sector 1: 4439/17

Sector 6: 4762/36 L. 5/1

Sector 20: 4859/4 L. 4/1; 5212/49+50 L. 3/1

Sector 22: 5148/7 L. 3/4

Votive deposit II: Bouma, 1996: plate CXVIII/L124

NIR 2: 112, 113

NIR 134/42

Ginge: HLS 6; HUS 19

Phase IIA

Gierow prim. lid I

Type 3: Circular disc with one flat and one convex side.

Sector 12: 4149/31 L. 2/1

Sector 21: 5097/108 L. 3/2

Type 4: Flat circular disc with flattened or convex lip.

GR VII: 2395–2398, 2456, 2499, 2500; GR AAu: 1982–1984, 2197  
Sector 8: 4230/4 L. 3/1; 4763/7

Phase IIA, IIB

Osa II, 4e

Class XI = Stand/*calefattoio* — *holmos* (fig. 13)

Type 1: *Calefattoio*: conical stand with curved flaring wall, decorated with plastic cords, pilasters, circular and rectangular or square openings, and base with thickened edge.

GR I: 394; GR VI: 1660, 1661, 1751; GR V: 1123; GR AA: 2284, 2285; GR AAu: 1992

RP II: 1168; RP IV: 2579

Sector 11: 4776/4 L. 5/2; 4851/38 L. 3/2

Sector 25: 4743/40 L. 5/1

Phase I, IIA, IIB

Dial IIB, 9

Gierow brazier I

Osa II, 31a

Type 2: *Calefattoio*: conical stand with straight spreading wall, decorated with pilasters and rectangular openings, and base with thickened edge; burnished to very dark grey.

GR VII: 2501

VG 10: 155–157

Phase IIA

Type 3: *Holmos*: conical stand with straight and plain spreading wall, base with thickened edge, triangular openings in wall, upper part is composed of globular ball (*bulla*) and wide plate; reddish brown *impasto*

burnished to black; probably partly modelled on slow wheel.

VG 5: 33, 34

Phase IIA

Dial IVA, 7a

Type 4: *Holmos*: conical stand with convex wall and outcurved base with rounded edge, triangular or circular openings and horizontal plastic cords, plain, triangular in section or with notches, decorate the wall; upper part of stand is composed of a globular ball (*bulla*) and a wide plate; red or yellowish red *impasto* covered with a red slip, probably partly modelled on slow wheel.

GR VII: 2401, 2402; GR V: 1098, 1099; GR AA: 2286, 2287, 2288, 2289

GR IV: 1255, 1305

RP IV: 2582; RP III: 968–974

Sector 3: 4089+4243/24 L. 3/1+4; 4411/2+4

Sector 11: 4271/nn L. 3/1

Sector 21: 5160/67, 68 L. 3/3

Sector 22: 4731/5, 43 (fragment of *bulla*) L. 3/1, 5151/26, 27

Sector 23: 4900/86, 88, 100, 102, 103 L. 3/2

GTC: 5049/15 L. 3/1

VG 3: 15

Phase IIA, IIB

Dial IVA, 7b

Ginge: HLS 16, 17; DPH 13

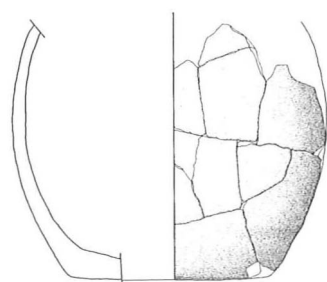
Rathje, 1983: p. 13, fig. 5/a, p. 14, figs 6–8

Type 5: *Holmos*: rectangular stand with straight wall, triangular openings and plastic cords.

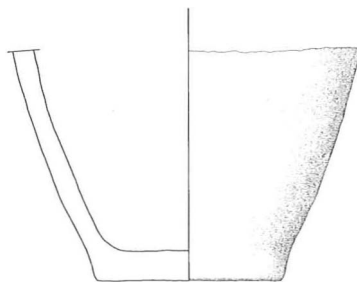
5114/5+6

Probably phase IIB

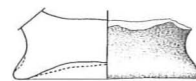
Colonna, 1977: p. 483, Tav. II (from Bisenzio, Olmo Bello tomb XXV)



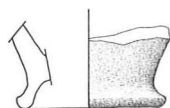
XII-1 263



XII-2 403



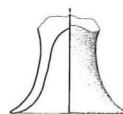
XII-3 1110



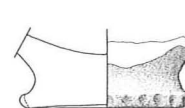
XII-4 716



XII-4 2192



XII-5 2081



XII-6 711

Fig. 14. Ceramics from *Satricum* ascribed to Class XII, *Baselfondo* (1:4).

2.3.2.2. *Classes of significant parts of vessel shapes*

## Class XII = Bases (fig. 14)

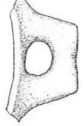
## Type 1: Flat base.

GR I: 404–408; GR II: 691, 692, 695–697, 699; GR VI: 1665–1677, 1754–1757; GR VII: 2404–2407, 2410, 2411, 2457, 2506–2509; GR V: 1100, 1101, 1103; GR AA: 2290–2292; GR AAu: 1998, 2001–2004, 2006–2008, 2011, 2013, 2176–2181  
 GR III: 777, 778, 779, 781; GR IV: 1259–1267  
 RP II: 1157, 1159, 1163; RP IV: 2583–2585; RP III: 976–978, 980  
 Sector 4: 4850/20 L. 4/2  
 VG 2: 10; VG 7: 113; VG 9: 151; VG 10: 163  
 Ginge: HLS 8  
 Phase I, IIA, IIB

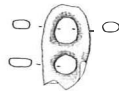
## Type 2: Flat raised base.

GR I: 403; GR II: 701–703; GR VI: 1678, 1679, 1758 1779; GR VII: 2080, 2412, 2413, 2458, 2503, 2510; GR V: 1104–1107; GR AA: 2018, 2334; GR AAu: 2016, 2018, 2189, 2190  
 GR III: 785; GR IV: 1270–1272  
 RP II: 1161, 1162; RP IV: 2581; RP III: 982  
 Sector 4: 4946/12 L. 4/3  
 VG 7: 114  
 Phase I, IIA, IIB

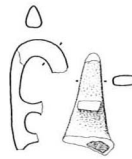
## Type 3: Flat or concave base ring with plain edge



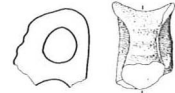
XIII-1 364



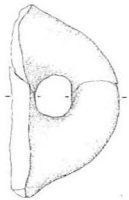
XIII-2 434



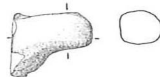
XIII-3 1688



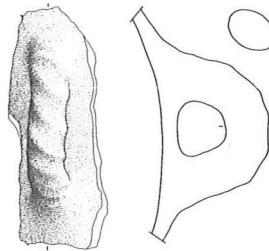
XIII-4 2082



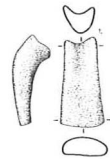
XIII-5 413



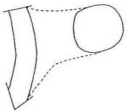
XIII-5 422



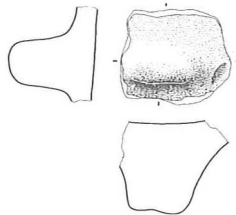
XIII-7 888-



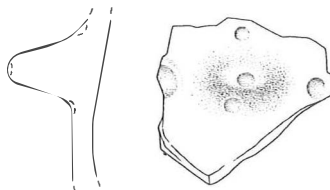
XIII-10 2029



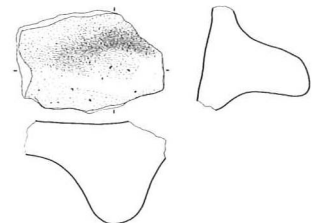
XIII-10 2336



XIII-11 1781



XIII-12 5050-14



XIII-13 1697

(probably Class V, type 1 and 2).

GR I: 411, 412, (jug 362); GR II: 708; GR VI: 1680, 1682, 1760;  
 GR VII: 2415, 2512; GR V: 1108–1110; GR AAu: 2194, 2195  
 GR IV: 1273–1275, 1296  
 RP II: 1164  
 Sector 4: 4852/8+9 L. 4/2; 4960/21 L. 4/3  
 Sector 23: 4761/2 L. 3/1; 4929/9 L. 4/1; 4963/19 L. 4/1  
 VG 7: 115, 116  
 NIR 2: 120  
 Phase I, IIA, IIB  
 Dial I/IIA 14b  
 Gierow prim. lid I  
 Meyer B58, C67 (Rome 2B)

Type 4: Concave base ring with faceted or upturned edge (*a becco di civetta*; probably Class V, type 2).

GR II: 714, 716; GR VII: 2416  
 RP IV: 2588  
 Sector 21: 5279/142  
 Phase I, IIA, III  
 Colonna, 1963/1964: p. 21, fig. 11/119–121 (ciotole gruppo C tipo B)

Fig. 15. Ceramics from *Satricum* ascribed to Class XIII, Handle/ansa (1:4).

Type 5: High or low stemmed cylindrical convex and outcurved foot (Class V, type 9).

GR VII: 2513, 2081

VG 5: 38

Phase IIA

Dial IVA, 3a, 3a\*, 4, 19, 20a

Gierow adv. D bowl, goblet; red bowl

Meyer B122 (Rome 3/4), B117, 123, 126 (Rome 4A), G108 (Rome 3/4A)

Osa IV, 104a, 104c, 105b–e

Type 6: Base ring with notched edge (probably Class V, type 1).

GR II: 706, 707, 711; GR VI: 1683–1687, 1759, 1761; GR VII: 2511; GR AAu: 2021, 2022

GR III: 786

RP IV: 2587

Sector 4: 4928/33 L. 4/3; 4941/5 L. 4/3; 4962/1 L. 4/3

Sector 11: 4633/28 L. 3/1

Sector 21: 5279/149 L. 3/5

Sector 22: 5278/3 L. 5/1

Sector 23: 4756/18 L. 3/1; 4900/110 L. 3/2

Sector 24: 4651/1 L. 3/2

Sector: 4743/7 L. 5/1

VG 7: 117, 118; VG 10: 164; VG 2: 11; VG 3: 23.

Phase I, IIA, IIB

Colonna, 1963/1964: p. 21, fig. 11/117 (ciotole gruppo C tipo A)

Class XIII = Handles (fig. 15)

Type 1: Rectangular/trapezoidal or triangular, horizontal (Class V, types 3–6).

GR I: 415, 433, (bowl 364); GR V: (bowl 1031)

GR III: 792; GR IV: 1289, (bowl 1223)

RP III: (bowl 948)

Sector 21: 5097/43 L. 3/2

Sector 22: 5301/5 L. 5/1

VG 7: 121; VG 5: 35d, 39

Early Phase I, IIA

Dial IIB, 8; III, 7

Gierow prim. bowl I, II, VII; prim. amphora II; adv. B bowl; adv. C bowl; red bowl

Osa II/III, 201a–d

Type 2: Biforal with two small openings of equal dimensions, vertical (Class VII).

GR I: 434; GR V: (cup 1079)

GR III: 801

Sector 21: 5160/3 L. 3/3

VG 7: 119

Early Phase I

Dial I/IIA, 21–23; IIB, 6a

Gierow prim. bowl XXI; prim. cup II, III, VII–IX

Meyer A5 (Rome 1A), C24 (Rome 1B), D35, F43, G44 (Rome 2A)

Osa II, 19, 20a–g

Type 3: Biforal, large superior and small inferior opening, sometimes with ridges, vertical (Class VII).

GR II: 725; GR VI: 1688–1690; GR VII: 2514, 2515; GR V: 1120, 1121; GR AA: 2294; GR AAu: 2023

Sector 4: 4926/34 L. 4/3; 4941/4 L. 4/3

Sector 11: 4940/1 L. 3/4

Sector 21: 5097/11, 32 L. 3/2

VG 10: 166; VG 14: 199

NIR 3: 132

Ginge: HUS 9

Phase I, IIA, IIB

Dial IIB, 6b; III 3a–d; IVA, 10a

Gierow prim. bowl XXI; adv. A cup; adv. B cup

Meyer L77, O91 (Rome 3A), P104 (Rome 3B), Q105 (Rome 3B/4)

Osa II/IV, 20h

Variant 3a: Red slip.

Sector 21: 5097/13+14+19 L. 3/2

Type 4: Biforal with *insellata* top, vertical (Class VI, type 7b).

GR VII: 2082

Sector 21: 5156/17 L. 3/3; 5160/15 L. 3/3; 5176/30 L. 3/4

VG 8: 143, 144; VG 14: 198

Phase I, IIA

Dial IIB, 7a, 7b, III, 4

Gierow prim. cup X

Meyer H55, J70 (Rome 2B), M79 (Rome 3A)

Osa II/III, 21, 22

Type 5: Ring, oval/rectangular in section, horizontal or vertical (Classes II, III, V, types 2 and 3, and VII, type 1).

GR I: 422, 426, 428; GR II: 723, 724; GR VI: 1693, 1780; GR VII: 2417; GR V: 1112, 1117

GR IV: 1291

R P II: 1165, 1167; RP III: 987–989, 991

Sector 4: 4815/76 L. 4/2

Sector 23: 4963/24 L. 4/1

Ginge: HUS 14

Phase I, IIA

Gierow prim. jar XIV; prim. amphora VI; prim. jug IV

Osa II, 200b, 17 (mugs), 26o (bowls); II–IV, 7 (amphoras)

Variant 5a: With red slip.

Sector 23: 4963/22 L. 4/1

Type 6: Ring, circular in section, plain, horizontal or vertical (Classes II, III, V, types 2 and 3, and VIII).

GR I: 414, 416, 420, 427; GR VI: 1691, 1692, 1694, 1762; GR VII: 2418, (bowl 2366); GR V: 1111, 1113, 1115, (bowl 1040); GR AA: 2296, 2335; GR AAu: 2024, 2027

GR III: 794, 795, (bowls 753–755); GR IV: 1281–1283, 1285–1287

RP II; RP IV: 2589

Sector 21: 5097/42 L. 3/2

Sector 22: 5151/17

VG 3: 25, 26; VG 7: 122; VG 8: 145

Phase I, IIA, IIB

Dial I/IIA, 1b, c, 25, Dial IIB, 4

Ficana, 1996: p. 159

Gierow prim. dolium III; prim. jar XV, XVII, XVIII; prim. bowl I, II, VI; prim. amphora II, III; prim. jug I, II; adv. C jar

Osa II–IV, 200a, 202a, 26a, c, f, g, r

Variant 6a: Red slip.

Sector 20: 5185/4, 11 L. 3/6

Sector 22: 5151/15, 18

Type 7: Ring, circular in section, with ridges, horizontal or vertical (Classes III, V, types 2 and 3, and VI).

GR I: 417–419, 421, 425; GR II: 718, 720, 721; GR VI: bowl 1739; GR VII: 2459, 2460; GR V: 1114, 1116, (bowl 1039)

GR III: 788–791; GR IV: 1279, 1280

RP II: 1166

Sector 4: 4815/26 L. 4/2

Sector 21: 5279/18 L. 3/5

Sector 22: 5301/2 L. 5/1

Phase I, IIA

Dial IIB, 2

Ficana, 1996: p. 158

Gierow prim. amphora I, VI–IX

Osa II–IV, 200a; II, 8b

Type 8: Band, oval to rectangular flattened in section, vertical (Classes VII, VIII and IX).

GR I: 429–432, 435, (mug 386, amphora 361); GR II: (mug 666, amphora 604); GR AAu: 2028

GR III: 797; GR IV: 1290, 1292, 1293, 1295, 1297

RP III: 996

Sector 4: 4815/32 L. 4/2; 4946/11 L. 4/3

Sector 21: 5097/29 L. 3/2

Sector 22: 5151/5, 29

Sector 23: 4841/27 L. 5/1

Sector 25: 4721/6 L. 5/1

VG 6: 50

Phase I

Dial I/IIA, 12–14, Dial IIB, 1a, b, 3c, 5, Dial III, 2a–c

Gierow prim. amphora X; adv. A amphora

Meyer E68, C50, D64 (Rome 2B), A115, B124 (Rome 4A)

Type 9: Band, convex/concave in section, vertical (Classes VIII and IX).

GR I: jug 362; GR VI: 1696; GR AAu: 2029

GR III: 798, 799; GR IV: 1294, 1296

Phase I

Dial III, 10

Gierow prim. jug I, III, VI, VII

Osa II, 7c var I; Osa II/III, II, 12, 13, 23

Type 10: Ribbed band handle, vertical (Classes VIII and IX)

GR AA: 2336; GR AAu: 1948, 2198

Sector 22: 5151/7

Phase IIB

Variant 10a: Red *impasto*.

Sector 22: 4731/19 L. 3/1

Type 11: Lug, trapezoidal with flattened edge (Classes II and IV).

GR VI: 1781

RP IV: 2590

Sector 4: 4946/30 L. 4/3

VG 2: 12; VG 8: 147

Late Phase I

Dial I/IIA, 1a

Ficana, 1996: p. 149

Gierow prim. dolium I

Type 12: Lug, semicircular (Classes II and IV and base XIII-8).

GR VI: 1697, 1698; GR V: 1125; GR AAu: 2030, 2031

GR IV: 1298, 1299

RP III: 992

Sector 11: 4271/1 L. 3/1

Sector 22: 5151/51

VG 1: 6; VG 8: 146; VG 10: (*tegla* 160); VG 14: 200

Late Phase I, IIA, IIB

Colonna, 1963/1964: p. 25, fig. 13/131, 132, 135, 137, 138 (bacini gruppo C tipo C); Ficana, 1996: p. 152b

Gierow prim. jar V, XIII

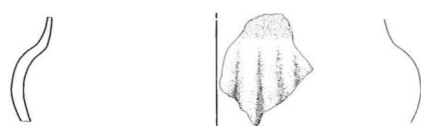
Type 13: Lug, triangular, sometimes decorated with impressions on the edge (Classes II and IV).

Sector 22: 4731/30 L. 3/1; 5050/14; 5148/2; 5151/24

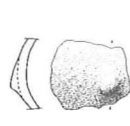
VG 7: 123

Phase IIB

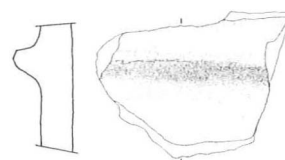
Colonna, 1963/1964: p. 25, fig. 13/131, 132, 135, 137, 138 (bacini gruppo C tipo C)



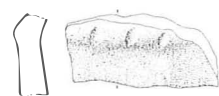
XIV-I 2420



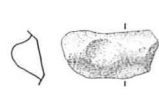
XIV-2 1133



XIV-3 447



XIV-4 1702



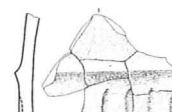
XIV-5 728



XIV-6 810



XIV-7 2421



XIV-7 2039

Fig. 16. Ceramics from *Satricum* ascribed to Class XIV, Plastic decoration/*decorazione plastica* (1:4).

## Class XIV = Plastic decorations (fig. 16)

Type 1: Vertical or oblique ridges (on shoulder Classes V, VII, and IX).

GR I: 449, (amphora 361, cup 390); GR II: (cups 603, 668, 669, 672–674, bowls 608, 610); GR VI: 1699–1701, (cups 1647, 1649, 1651, 1654, 1656, 1658, 1659, 1748, 1776); GR VII: 2420, (bowl 2485)

GR III: 811, 812

RP IV: 2592

Phase I

Dial I/IIA, 23, Dial III, 1–3, 5, 6

Gierow prim. cup V–X, XIII; prim. amphora III, XI; prim. jug III, VII; adv. A cup; adv. A amphora

Meyer O91 (Rome 3A), A95, P104, F101 (Rome 3B)

Type 2: Knobs (on shoulder Classes V, VII and IX).

GR I: 450, (jug 362, bowl 364); GR II: (bowl 607, cups 667–680); GR VI: 1699, 1700, 1703, 1710, (bowls 1772, 1773); GR VII: (bowl 2485); GR V: 1132, 1133, (bowl 1036)

GR III: 813; GR IV: 1309, (bowl 1222)

Phase I, IIA

Dial I/IIA, 16b, 17–19, 21, 23; Dial IIB, 2, 7; Dial III, 3b

Gierow prim. bowl II; prim. cup VI–XIII; prim. amphora VI, VIII–X; prim. jug I–III; adv. A amphora; adv. A jug

Type 3: Band plain (Classes I, II, III and XI, types 1, 2 and 4).

GR I: 447, 448; GR II: 732; GR VII: 2401, 2402, (stand 2501); GR V: 1098, 1099, GR AA: 2288; GR AAu: 2035, 2209

GR III: 805, 806; GR IV: 1255, 1303, 1305

RP III: (*holmoi* 968–974)

Sector 21: 5156/14, 15, 16 L. 3/3

Sector 23: 4900/1 L. 3/2

VG 14: 201

Ginge: HLS 19

Phase I, IIA, IIB

Dial I/IIA, 9a, b

Gierow cords a

Type 4: Band with roundish to oval notches (Classes I, II, III and XI, type 1).

GR I: 439–441; GR II: 726; GR VI: 1702; GR VII: 2517; GR V: 1125; GR AAu: 2037, 2207

GR III: 809; GR IV: 1306–1308

Sector 25: 4721/2 L. 5/1

VG 1: (dolium 3); VG 3: (dolium 7); VG 7: (cooking stand 77); VG 10: 168

Phase I, IIA IIB

Dial I/IIA, 1a, b

Gierow prim. dolium I; cords c, e, i

Osa II/III, 1a, c

Type 5: As type 4 with constricted band between the notches (Classes I, II, III).

GR I: 444, 445, (cooking stand 396); GR II: 729, 730, (cooking stands 686, 687); GR V: 1127, (cooking stand 1092); GR AA: 2298, 2337

GR III: 808

RP II: (cooking stand 1156)

VG 3: 30

Ginge: HLS 16, 18

Phase I, IIA, IIB

Gierow cords g

Type 6: Band with sharp notches, made with a sharp instrument (Classes I, II, III, V, type 6, and XI, type 4).

GR II: 731; GR V: 1131, (cooking stand 1091); GR VI: (stand 1751);

GR AA: (*holmoi* 2286, 2287, 2286); GR AAu: 2032

GR III: 810, (storage jar 740)

VG 3: (*holmos* 15), 31

Phase I, IIA, IIB

Gierow prim. dolium I, III

Osa II, 1e

Type 7: Parallel ridges or grooves, horizontal (Class V, types 10–15), vertical (Class III, types 8–10) or sometimes curved.

GR VII 2421; GR V: 1134; GR AAu: 2039, 2041, 2045

RP III: 993

Sector 11: 4847/41 L. 3/2

Sector 22: 5151/56 *grumi* pit

Sector 23: 4900/97 L. 3/2

VG 10: 167

Phase IIA, IIB

Dial IVA, 1c, d, 3a, 4; Dial IVB, 1b, 8a

Gierow adv. C bowl; adv. D goblet; red bowl, red jar

Osa IV, 92g

## Class XV = Incised decorations (fig. 17)

Type 1: Deep incision made by a sharp pointed instrument or by a rope wrapped stick or indented instrument (*a rotella*), geometric angular motifs (Classes V, VII and IX).

GR I: 451, 452, (cup 391), 453; GR II: 733, 734; GR VI: 1704–1711, 1763, 1765, 1764, 1766, (bowl 1773); GR VII: 2423; GR AAu: 2040

GR IV: 1267

RP IV: 2591

Sector 4: 4258/14 (bowl) L. 4/1; 4852/2, 3, 4 L. 4/2; 4867/1 L. 4/2; 4941/8 L. 4/3; 4945/I+19, 2+7, 3, 4, 5, 8, 10, 12, 13, 14, 15 L. 4/3; 4946/1, 2, 3, 4, 5, 6, 7, 9, 10 L. 4/3

Sector 20: 4859/3b L. 4/1

Sector 21: 5097/4 L. 3/2; 5165/62 L. 3/3; 5176/15 L. 3/4; 5279/31 L. 3/5; Vg 4: 32; VG 8: (bowl 141)

Sector 23: 4650/1 L. 3/1

Ginge: DPH 7; HLS 4; HUS 16, 39

Phase I

Dial I/IIA, 16a, b; Dial IIB, 1a, 4; Dial III, 4

Gierow prim bowl XXI; prim. cup V–VIII; prim. jar IX, X, XIII; prim. amphora III, VII–IX, XI; prim. jug III–VII; prim. brazier I, II; prim. lid VI

Osa II, 12a, 13a

Type 2: Fine low incision, groups of parallel lines, concentric circles, orientalisising motifs (Classes V, type 9, and IX, types 5–6).

GR VI: 1771; GR VII: 2422, 2518, 2519; GR V: 1135, (cups 1080, 1081); GR AA: (*kantharos* 2092); GR AAu: 2043, 2044, (*kantharoi* 1978, 2166, 2171, *amphora* 2211, *kytyle* S4275/2+3)

GR III: 814



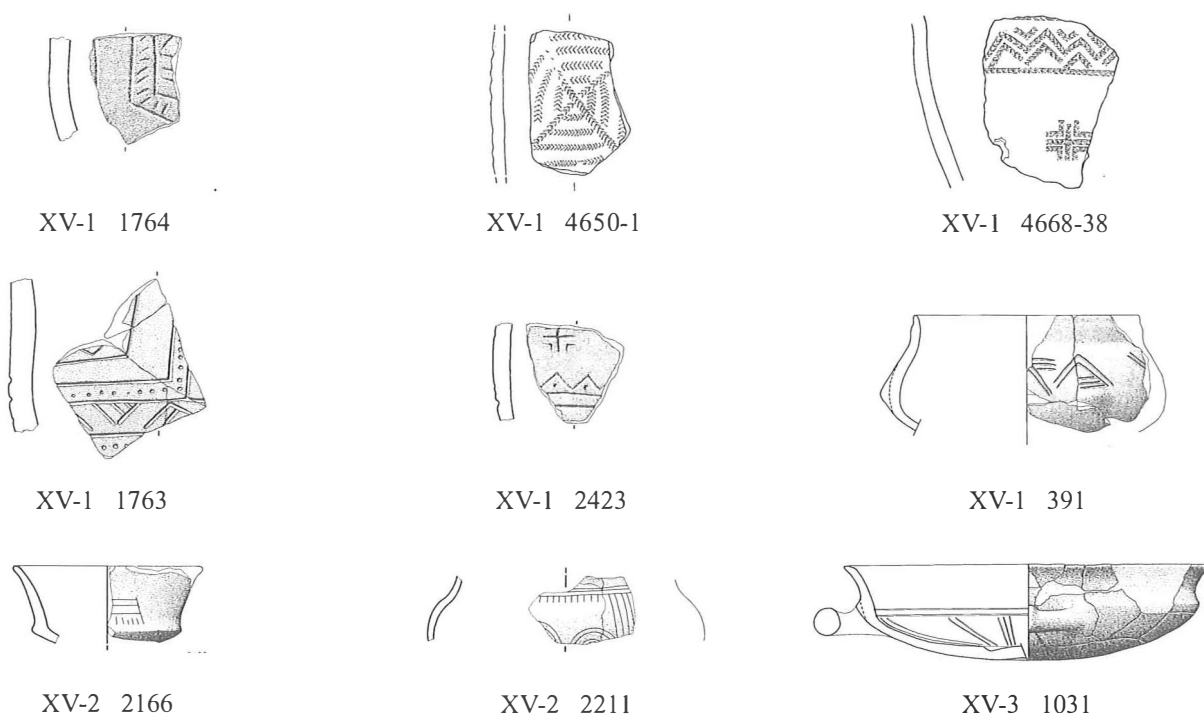


Fig. 17. Ceramics from *Satricum* ascribed to Class XV, Incised decoration/*decorazione incisa* (1:4).

RP III: 994

Sector 11: 4891/19 L. 3/3

Sector 21: 5052/52 (*calice*) L. 3/2

Sector 23: 4963/23 L. 4/1

VG 6: 47, 51, 52, (*amphora* 46)

Ginge: DPH 9, 11

Late Phase I, IIA, IIB

Dial IVA, 13, 14, 16–18, 20; Dial IVB, 11, 12

Ficana, 1996: p. 178

Gierow *adv. D amphora*; *adv. D oinochoe*

Meyer M121 (Rome 4A)

Osa IV, 100g, 105e

Sector 4: 4257/51 L. 4/1; 4392/34 L. 4/1

Sector 6: 4762/38 L. 5/1

Sector 20: 5185/15 L. 3/6

Sector 21: 5097/20 L. 3/2

Sector 23: 4670/40 L. 3/2

VG 7: 130–132

Ginge: HLS 23, 24

Phase I, IIA, IIB

Dial IIB, 12; Dial IVA, 28

Ficana, 1996: p. 259

Gierow II

Osa II–IV, 34c, g

Type 3: Low and thin grooves: parallel lines, radiating lines, hooked lines (*ad uncino*), circles (Classes V, type 6, and IX, types 5–6).

GR V: (bowl 1031), (cups 1080–1083)

RP III: (bowl 948)

VG 5: (*anphoriskos* 43); VG 6: (*anphoriskos* 48). VG 13: (cups 186–188)

Phase IIA

### 2.3.2.3. Weaving and spinning utensils

Class XVI = Spool/*rocchetto* (fig. 18)

Type 1: Cylindrical with convex thickened ends.

GR I: 454, 455; GR VI: 1712, 1713; GR VII: 2083, 2424, 2429, 2461, 2524–2530, 2532; GR AA: 2300, 2339

GR IV: 1310

RP IV: 2593

Type 2: Cylindrical with flattened thickened ends.

GR I: 456; GR VI: 1714, 1767; GR VII: 2425, 2427, 2428, 2531, 2533–2536; GR AA: 2338

Sector 4: 4392/30 L. 4/1

Sector 6: 4751 L. 5/2

Sector 11: 4847/68 L. 3/2; 4889/5 L. 6/1

Sector 21: 5052/88 L. 3/2

Sector 25: 4721/999 L. 5/1

GTC: 5177/1 L. 3/1

VG 7: 133

NIR 2: 126, 131

Ginge: HLS 21

Phase I, IIA, IIB

Dial IIB, 12; Dial IVB, 25

Ficana, 1996: p. 261

Gierow III

Osa II, III, 34h

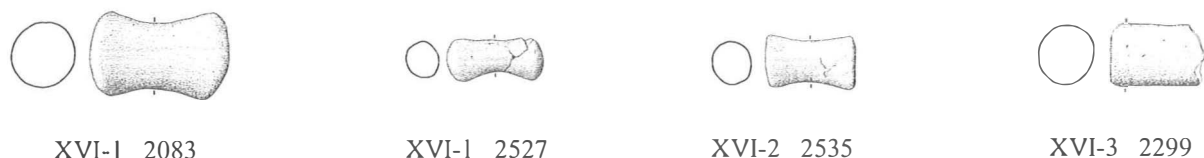


Fig. 18. Ceramics from *Satricum* ascribed to Class XVI, Spool/rocchetto (1:4).

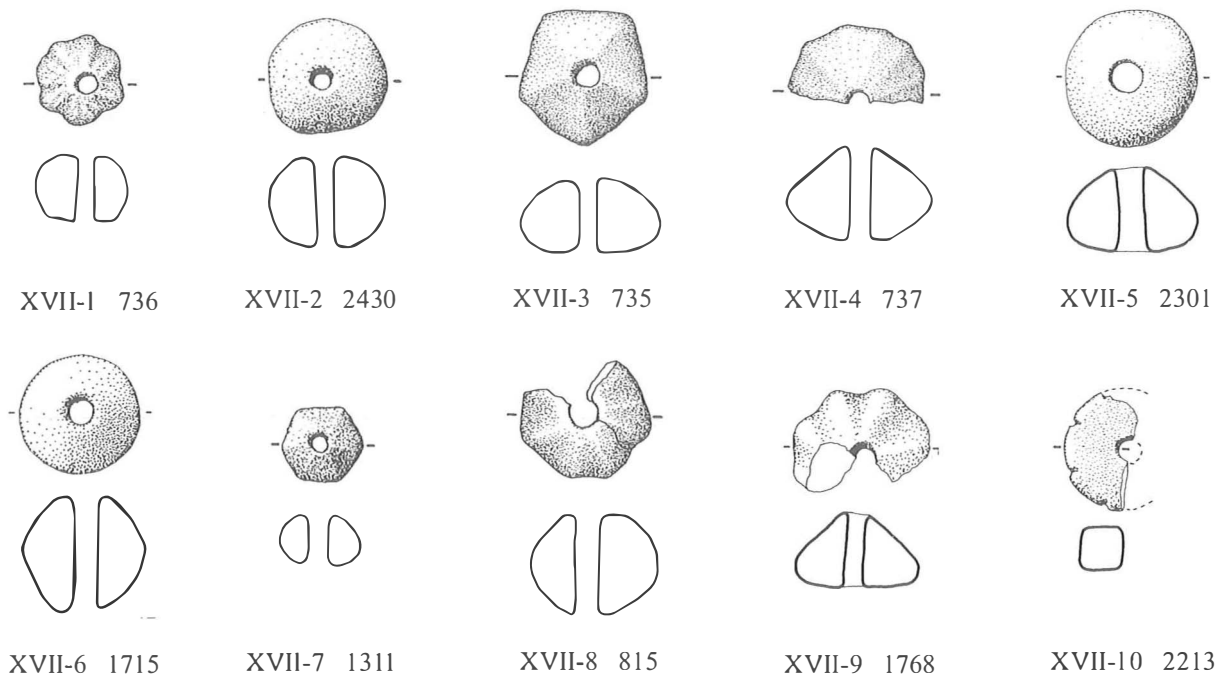


Fig. 19. Ceramics from *Satricum* ascribed to Class XVII, Spindlewhorl/fuserola (1:2).

Type 3: Cylindrical with flattened ends

GR AA: 2299

Phase IIB

Class XVII = Spindle-whorl/fuserola (fig. 19)

Type 1: Globular ribbed.

GR II: 736

Votive deposit II: Bouma, 1996: plate CXXI/ Sp3-4

Phase I

Dial I/IIA, 37c

Gierow III B, C

Osa II-IV, 33c

Type 2: Globular plain.

GR VII: 2430

Phase IIA

Gierow III A

Ficana, 1996: p. 255

Meyer A21 (Rome 1B)

Osa II, IV, 33e

Type 3: Depressed, faceted and plain with two flattened sides.

Sector 21: 5160/19+20 L. 3/3

Sector 23: 4670/36 L. 3/2

Phase IIA, IIB

Type 4: Biconical depressed and faceted or ribbed.

GR II: 735, 737, 738; GR VI: 1716, 1768; GR AA: 2302

GR III: 816, 817

Sector 4: 4246/22 L. 4/1

Sector 11: 4873/38 L. 3/3

Votive deposit II: Bouma, 1996: plate CXXI/ Sp1

Ginge: HLS 27

NIR 2: 106

Phase I, IIB

Dial I/IIA, 37b; Dial IIB, 11; Dial III, 12b; Dial IVA, 27b

Gierow I H-J

Ficana, 1996: p. 253b, c

Meyer D661 (Rome 2B)

Osa II-IV, 33a, c

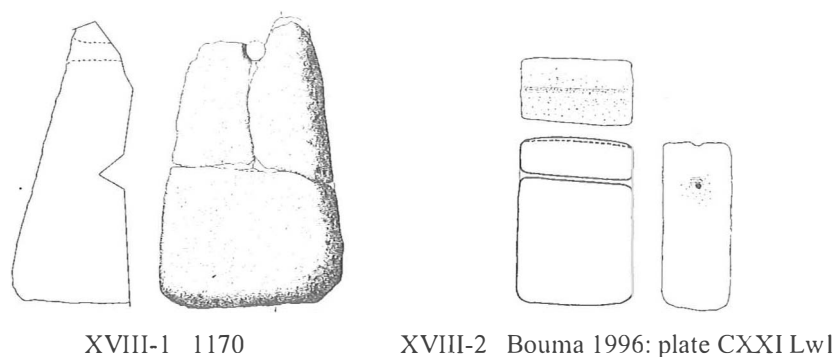


Fig. 20. Ceramics from *Satricum* ascribed to Class XVIII Loom weight/*peso di telaio* (1:4).

**Type 5: Biconical depressed and plain.**

GR AA: 2301  
Phase IIB  
Dial IVA, 27°  
Gierow I G  
Osa IV, 33d var I

**Type 6: Biconical plain.**

GR VI: 1715; GR VII: 2084, 2431, 2462, 2463  
Late Phase I, IIA  
Dial I/IIA, 37a; Dial IVA, 27a  
Gierow I A  
Ficana, 1996: p. 255  
Meyer C45 (Rome 2A)  
Osa II, 33d (with incised decoration)

**Type 7: Biconical and faceted.**

GR IV: 1311  
Sector 21: 5052/87 L. 3/2  
VG 7: 134  
Phase I  
Dial IIB, 11; Dial IVB, 24  
Ficana, 1996: p. 256  
Osa II–IV, 33b

**Type 8: Biconical and ribbed.**

GR III: 815  
VG 7: 135  
NIR 2: 105  
Phase I  
Dial I/IIA, 37b  
Ficana, 1996: p. 253c  
Gierow I B–F  
Osa II–IV, 33a

**Type 9: Conical and plain or ribbed.**

GR VI: 1716, 1768  
Sector 23: 4900/98 L. 3/2  
Late Phase I  
Dial I/IIA, 37b, Dial III, 12b  
Ficana, 1996: p. 251a  
Osa II–IV, 33a

**Type 10: Conical and rounded.**

Sector 23: 4923/4.

**Type 11: Flat and round, rectangular in section, with notched edge or plain.**

GR AAu: 2213  
VG 9: 152  
Phase IIB  
Osa II, 33f (without notches)

**Class XVIII = Loomweight/*peso di telaio* (fig. 20)**

**Type 1: Truncopyramidal, sometimes decorated with circular impressions.**

GR VI: 1717; GR VII: 2085 (decorated)  
RP II: 1170  
Sector 11: 4184/7 L. 2/1+2  
Sector 23: 4641/39,40 L. 3/1; 4761/68 L. 3/1; 4900/106 L. 3/2  
Votive deposit II: Bouma, 1996: plate CXXIII/ Lw9–10  
VG 7: 136  
Late Phase I, IIA  
Gierow I  
Ficana, 1996: p. 262  
Osa II, 32a

**Type 2: Rectangular loomweight.**

Votive deposit II: Bouma, 1996: plates CXXI, CXXII/ Lw1–7, CXXIII/ Lw11, 13

**2.3.3. Discussion of the classes and types**

In the following pages a brief comment will be given on the classes and types described in the typo-chronology presented above. Chronology, context, function and meaning will be summarised for each class and type.

**Cooking stand/*fornello* (Class I) (fig. 3)**

*Date:* The cooking stand with raised plate (type I-1) is found in Phase I and Phase IIA. The type is in use in Italy during the late Bronze Age and the Iron Age (Scheffer, 1981: pp. 28, 35–43, 65–67, type ID). A few fragments have a flat plate and a flange (type I–3) and can probably be dated to Phase I. Type I-3 is close to Scheffer's type IC (Scheffer, 1981: pp.

28, 34, 35), which however, has no flange and is mainly found in Late Bronze Age contexts (Scheffer, 1981: p. 67). Large slabs with pinched out holes with raised border (type I-2) were found in the destruction layer of GR VI dated to the end of Phase I as well as in layers 3 and 4 of the southern area dated to Phases IIA and IIB. They have parallels in the movable multiple-holed plates of Scheffer's type IB found in the Late Bronze Age and Iron Age (Scheffer, 1981: pp. 28, 33, 34, 65).

*Context:* All the pits with a deepened charcoal area and the rubbish pits II and IV yielded fragments of cooking stands of type I-1. Type I-2 was found in the destruction fill of GR VI, which did not have a charcoal area and in the southern area. Many fragments of this type were found in the Villa Giulia hutpits.

*Function:* All types show traces of contact with fire on the inside. Most probably they were used in the cooking, heating or boiling of food and liquids. Their context, within deepened charcoal areas, strengthens this idea. Types I-1 and I-3 were rather small and could easily be moved. On the topplate a cooking jar could be placed (Scheffer, 1981: pp. 103, 104; Olde Dubbelink, 1995: p. 47). The function of type I-2 is less clear. Scheffer (1981: p. 34) lists the various interpretations: fixed or movable plate of a conical cooking stand, grating over sunken hearths (following Della Seta, 1918: p. 237 on the *Satricum focolari*), floor of a pottery kiln, or even window grating. The interpretation as the upper part of large *focolari* is most probable.

*Meaning:* Cooking stands have only been found in settlement contexts, and always in association with other indications for cooking (charcoal areas, animal bones). Their significance lies in their irrefutable functional, utilitarian use.

#### Storage jar/*dolio* (Class II) (fig. 4)

*Date:* The cylindro-ovoid *dolia* with short outcurved/ outturned rim and internal angle (type II-1, 2, 3) as well as the jar with cylindrical body and straight or slightly outcurving rim (type II-4) appear in features of Phase I, IIA and IIB. All 4 types are also known from Latial cremation tombs of the 10th and 9th century BC (Rome, Colli Albani and Osteria dell Osa) and from a few tombs in Veio Quattro Fontanili and Casale del Fosso of the 9th/8th century BC (Buranelli, 1981: p. 40; Bartoloni, 1984: pp. 18–21; Toms, 1986: pp. 60, 65, 66, 72). In settlement areas the types continue down into the 7th century BC (Valvisciolo in: Mengarelli & Savignon, 1904: Nos. 411, 412, fig. 2a–d; Rome beneath the Domus Augustana, beneath the Aula Regia, and in trial trenches at the Roman Forum in: Gjerstad, 1960: pp. 63, 70, 274; Lavinium in: Castagnoli, 1975: p. 18, fig. 13/36–46; Castel di Decima in: Guaitoli, 1981: p. 123, fig. 9/3; Ficana in: Cataldi, 1981: p. 279, fig. 5/7). Stor-

age jars with a wide flaring rim (sometimes with grooves) and/or a pronounced shoulder (thus the body must have been ovoid to globular) are present (type II-6, 7 and 8) from Phase II to Phase IV. In Veio Quattro Fontanili the globular storage appears as a cremation urn in late Phase IIB (tomb Z15a, NSc 1965, 173 fig. 79). Storage jars with thickened lip (type II-9) appear in Phase IIA. The thickened lip with broad grooves or ridges (type II-7 and 8) does not appear before Phase IIB. The type becomes popular in the Archaic period (Le Ferriere I: pp. 115, 116, plate L; Le Ferriere II: p. 100; from Castel di Decima in: Guaitoli & Piccareta, 1974: p. 87, fig. 16/5; from Colleferro loc. Murillo-Coste Vicoi in: Cassieri & Lutazzi, 1988: p. 278, fig. 12/2). The conical storage jar with smooth outcurving rim (type II-5) was found only in a Late Phase I context (GR VI). A parallel was found among the material from S. Omobono (Colonna, 1963/1964: p. 9, fig. 3/28).

*Context:* All features rendered a few rim fragments of storage jars (2 to 5 that is 1% to 5% of the sherds recovered from a feature). No large bases have been found *in situ* to proof that they were placed on or in the floor of the pits. Probably these large containers stood somewhere in the yard outside the structures, as was certainly the case in the Archaic period, when they were partly dug in the ground under the overhanging roof outside the Archaic buildings (*Stoa A'*, Le Ferriere I: p. 101, fig. 37,133). Only in the 9th century BC hut recently excavated at Fidene large storage jars were found *in situ* (Fidene, 1998: figs 24–26, type II,1).

*Function:* The storage jar typically is a utilitarian vessel. The large dimensions (diam. of the mouth >30 cm; in Osteria dell Osa the measure of the mouth is between 32 and 49.5 cm; Bietti Sestieri, 1992: p. 230) of the vessel makes it suitable for the storing of large quantities of food or liquids, but the excavations did not provide evidence of the nature of the contents. Its size makes transport difficult. In Latium in funerary context a large storage jar was often used as the container of the cremation burial (ash-urn and gifts) in the 10th and 9th century BC. Sometimes it contained the inhumation of a child. The very small number of fragments of storage jars in features from the early Iron Age (before the late 7th century) suggests that no large quantities of food were stored at the site.

*Meaning:* In Latial tombs storage jars are strictly related to cremations of both men and women in the area of the Colli Albani, Osteria dell Osa and Rome. In the other Latial regions this is not a characteristic of the funerary rite (contra Bartoloni, 1989: p. 120). The use of *dolia* is neither common in the cemeteries of the Villanova culture (all dated in the 9th/8th century BC; Toms, 1986: pp. 47–56; Bartoloni, 1989: p. 120). The occasional use of the storage jar as container of the burial outside the Latial area of Rome,

Osteria dell'Osa and the Alban Hills (dated to a later period) must be considered incidental and related to a choice by the deceased family. No specific meaning other than that of a very useful container can be attributed to the storage jar.

In cult context many storage jars were donated in miniature size (Kleibrink, 2000: pp. 454–455). Probably these gifts, as most of the miniature pottery found in votive deposits, contained a symbolic quantity of the substance that the original pot was destined for to contain. The miniature pot itself has no specific meaning rather than referring to the original function (Beijer, 1992: p. 108; Bouma, 1992: p. 64).

As a typical utilitarian vessel class the storage jar, being present in almost all the features although in very small quantities, is not liable to change and does not have a specific meaning. The only considerable change can be observed in the course of the 7th century BC when jars with cylindro-ovoid body and plain rim are substituted by jars with a globular body, thick outcurved rim and grooved lip. The reason for this change might be economic although there is no direct evidence that this change is due to economical transformations such as a change in the kind of food or liquid that was stored in the jars thus implying a change in agricultural production and in consumption patterns. The evidence that this might be the case is circumstantial: the introduction of olives, sweet grapes and wine as well as the introduction of many new types of drinking and pouring vessels occurs in the same period.

#### *Jar/olla* (Class III) (fig. 5)

*Date:* Cylindro-ovoid jars with internal angle (type III-1 and 2) appear only in Phase I and IIA. The internal transition becomes smooth in the course of this phase, but mainly at the end of it (type III-3 and 4). These types of ovoid and cylindrical jars are the most common and continue into Phase IV. The bell-shaped jar (type III-5) also appears from onwards Late Phase I.

Globular jars with wide outcurved rim (type III-8, 9, and 10) are present since Late Phase I. In Phase IIA and IIB the rim of the globular jar can be decorated with encircling grooves (type III-10). The surface is often covered with a red slip. The globular *olla* is frequently found in tombs of late Latial Period III and IV (Bietti Sestieri, 1992: p. 319). Globular jars with horizontal rim decorated with concentric grooves (type III-11) have been found only in Phase III.

The mug-shaped jar with incurved rim (type III-7) is rarely found in Phase I and IIA. As miniatures two specimens appear in Phase IIB. In Latial tombs the type is exclusively found in miniature in cremation tombs of the 9th century BC (Bietti Sestieri, 1992: p. 237).

Large globular and ovoid jars (type III-12, 13) have been found in the votive deposit and some of the 5th century tombs (Phases IV and V).

*Context:* All the features rendered jars with cylindro-ovoid, cylindrical or bell-shaped body. They are part of the standard set of utilitarian household pottery. In all the features dating to the 8th century or later (GR VI, GR VII, GR V and GR AA) jars with globular body are added to this standard set.

*Function:* The cylindro-ovoid, cylindrical and bell-shaped *olla* is generally considered to be the vessel used for cooking and storing small quantities of food or liquids. Traces of burning can sometimes be observed on the outside of the base. It shows that the pot must have been in direct contact with fire. The absence of this type of jar in contemporary tombs suggests that its function was exclusively utilitarian in order to store or prepare food and liquids. The globular jars on the other hand, appearing also in many contemporary tombs, are considered containers for liquids probably wine because of their association (in funerary context) with various other vases related to the *symposion* or the banquet. Because of its presence in tombs the mug-shaped jar, containers for cereals according to Bietti Sestieri (1992: pp. 237, 239), is considered part of the individual serving and eating/drinking set of vessels.

*Meaning:* The rather traditional small storing/preparing jar is a typical vase of the utilitarian set of household pottery without any specific metaphorical significance.

As is the case with other utilitarian types (storage jars, lidbowls) miniature copies were donated in large quantities in cult places as symbols of the original vase maintaining its implicit original function (Beijer, 1992: p. 108; Bouma, 1992: p. 64). In some cult places (e.g. Campoverde) also the jar/olla of normal dimensions is a consistent part of the set of donated vessels, but again its significance lies in its function: container of the donated food or liquid (Bouma, 1996: p. 171; Kleibrink, 2000, pp. 455–456).

In funerary context the globular jar, often with a shining red slipped surface, together with many other new types of vessels related to serving and drinking, becomes very popular in the Orientalising period. Sometimes it was ritually broken during the funeral rites together with the spiral amphora (Zevi, 1977: p. 254). The vase marks a change in consumption (the introduction of wine) and in social behaviour (the display of economic and social differences by way of a more or less elaborate set of banqueting vessels). In this sense the vase indicates also in the settlement a change in social behaviour (Beijer, 1991a: p. 29).

#### *Large bowl/bacino* (Class IV) (fig. 6)

*Date:* The large bowl or *bacino* (type IV-1) is found in all the phases of the settlement (Phases I–V). Type

IV-3 decorated with ridges on the outside is mainly present in Phases IIA, IIB and III.

*Context:* Not all the features rendered fragments of the *bacino* and moreover, not more than one or two could be identified in a single feature. The exception is GR II, where seven fragments could be identified. They were all found in the lower charcoal area together with a concentration of bones of pigs and piglets.

*Function:* The *bacino* is a utilitarian vessel used for the preparation of food, probably pork.

*Meaning:* The type is mainly known from settlements (e.g. Rome, Castel di Decima). Some specimens were found in the second votive deposit (Bouma, 1996: pp. 116, 132, 138; type IV-1 and IV-3).

**Bowl/scodella — ciotola (Class V) (fig. 7)**

*Date:* Lid-bowls with spreading wall/rim (type V-1) and lid-bowls with curved wall/rim (type V-2) are abundantly present in the Iron Age phases. Type V-2 is also present in Phase V. The smoothly incurved bowl (type V-3) is found in all phases, but its frequency decreases considerably during Phase II. The sharply incurved bowl (type V-4) of fine manufacture is present mainly in Phase I, IIA, IV and V.

Carenated bowls (types V-5 and 6) and the bowls with deep rounded body and outcurving rim (types V-7) are present in Phase IIA, IIB and in VI and V. Also the *calice* (type V-8) and the *kantharos* (type V-8), both vessel types typical of the Orientalising period, and the related bowl with stemmed foot (type XII-5) appear in features of the 7th century BC mainly in the later part of that century (Phase IIB).

Deep bowls with a decoration of concentric ridges under the rim (types V-9 to 14) have been found in features of Phase IIB.

*Context:* In all features lid-bowls with spreading wall/rim, lid-bowls with curved wall/rim and smoothly incurved bowls are present.

The carenated bowl, the bowl with deep rounded body, the *calice* and the *kantharos* were found in all the features with an elaborate set of serving and eating/drinking vessels of the Orientalising period (GR V, GR VII, GR AA and the southern area). They were also placed in the tombs and donated in the cult places of *Satricum* and Campoverde (Beijer, 1991b: pp. 73, 82).

*Function:* The undecorated lid-bowls without handles (type V-1 and 2) are never present in the contemporary tombs and thus were not considered part of the individual set of serving/eating/drinking vessels. They must have been used during the preparation of meals or the storing of food-. Food may have been prepared in them, but they were more likely used to cover the opening of other vases e.g. jars. Cremation urns were often covered with a bowl in the cremating Protovillanovan and Villanovan cul-

tures of Italy. In Latium there are only a few examples from the 10th/9th century BC: Alban Hills, Villa Cavalletti tomb VII, Anzio tomb XIV, Caracupa tomb V and Lavinium tomb VII (CLP 1976: pp. 78–79, 296–297, 318–319, 360–361; Tav. V-B, LXXIV-C, LXXXII-B, XCVI-A ).

The incurved, carenated and deep rounded bowls have all parallels in the contemporary tombs of the orientalising period, where they are part of the set of serving and eating/drinking pots. Some idea about their original use can be deduced from the funerary context. At Osteria dell Osa some incurved bowls contained the remains of meat (Bietti Sestieri, 1992: p. 297). The carenated bowls of the 7th century BC might have had the same function: serving and eating of small portions of meat. For obvious practical reasons the low wide vase is not suitable for liquids. The deep rounded bowl, the *kantharos* and the *calice* are more suitable for handing out and drinking of liquids (Gras, 1984: pp. 328, 330). Their frequent association with other vases related to the consumption of wine in tombs of the Orientalising period indicates the drinking of wine with these bowls (Beijer, 1991a: p. 33; Beijer, 1991b: p. 75). The *coppacrater*, which is a carenated bowl of large dimensions, was used for the mixing of wine by women. In several rich female tombs in Latium this vessel is associated with the *holmos* (Zevi, 1977; Bartoloni, Cataldi Dini & Zevi, 1982).

*Meaning:* The lid-bowls are utilitarian vessels without a specific significance. They were considered not suitable to be put in tombs. In cult-places many rudimentary modelled miniature bowls were donated. They signify the original vessel and must have contained a small symbolic gift. Together with the miniature jar they dominate the votive assemblages (Bouma, 1996: p. 171; Kleibrink, 2000: p. 456). The incurved bowl is a frequent functional vessel in the settlement and a permanent part of each individual serving and eating/drinking set in the tombs. It is not related to any gender, age or class (Beijer, 1992: p. 110; Bietti Sestieri, 1992: p. 301). The carenated bowl is found in limited numbers in some of the richer tombs (in *Satricum* in the tombs 2, 8 and 18; CLP, 1976: pp. 337–342, Tav. XLII–17; Waarsenburg, 1995). Also in the settlement their presence is limited to the Orientalising features. They seem to indicate prestige. Moreover, they are specialised local products (Beijer, 1991a: p. 27; Beijer, 1991b: pp. 81–84). The same can be said about the *kantharos* and the *calice*. They are distinctive elements in Orientalising tombs due to their shape, which is not indigenous, the fine manufacture and decoration, and the consistent association with the entire set of banqueting vessels (Beijer, 1991a: pp. 33–35; Beijer, 1991b: pp. 72–76). The *kantharoi* found in *Satricum* are specialised local products (Nijboer, 1998: pp. 119–120). Like the globular jar they

mark a change in the economic and social situation at the site.

*Plate/piatto — teglia* (Class VI) (fig. 8)

*Date:* The coarse dishes or *teglie* (type VI-1, 2 and 3) were only found in Phase IIA and IIB. Finer and smaller plates/dishes have been found in Phase IIB.

*Context:* The coarse flat dish was found in GR V, GR AA and *capanna* VG 3 and is not known from contemporary tombs. There is, however, a parallel from the settlement at Castel di Decima.

*Function:* The coarse dish, somewhat similar to the *bacino*, but with a much lower rim, might have been used in the preparing or serving of solid or semi-solid food (the baking of *focacce* is suggested as the function of this very general shape in Italy since prehistoric times; Beijer, 1979: p. 131; Peroni, 1994: p. 110).

*Meaning:* The coarse dish seems to be a simple utilitarian vessel in the households of the 7th century BC.

*Cup/tazza* (Class VII) (fig. 9)

*Date:* Almost all the types and the related cup with biforal handles have been found in features of Phase I (types VII-1 and XII-2, 3 and 4). Type VII-3 is also present in Phase IIA.

*Context:* The majority of the cup-fragments were found in GR I, GR II, GR V, GR VI and in the southern area. Those features are characterised by the presence of many other tablewares.

*Function:* There is no direct evidence of how the cups were used. The shape is suitable to ladle liquids out of a container and for drinking, although it could also contain a portion of solid food (Bietti Sestieri, 1992: pp. 276, 279, 293). The consistent presence of at least one small and one large cup in the tombs makes it likely that they belong to the standard set of the serving and eating/drinking vessels. They had probably different functions according to their size. A relation between the cup and the globular olla is demonstrated in the tombs at Crustumerium (Di Gennaro, 1990: pp. 70, 71). Cups were found inside the jars suggesting that they were used to transport small quantities of liquid.

The almost total absence of cups in the Orientalising features GR VII and GR AA makes one wonder which vessel or vessels took over the function of the cups. I suggest that skyphoid cups of depurated clay as well as *calice s* and *kantharoi* of fine *impasto* and *bucchero* replaced the *impasto* cups.

*Meaning:* In funerary context cups are part of the standard set of serving/eating/drinking vessels. Like the incurved bowls they are not related to gender or age (Bietti Sestieri, 1992: pp. 276, 279).

*Mug/boccale* (Class VIII) (fig. 10)

*Date:* Few fragments could be identified as mugs

with certainty. If no traces of a vertical handle have been preserved the incurved rim looks similar to rimfragments of bowl type V-3. All fragments are to be dated in Phase I.

*Context:* Identifiable fragments were found in the two earliest features GR I and GR II, where they are associated with other tablewares.

*Function:* The form suggests that they could have been used for ladling and drinking liquids, a function similar to that of the cups.

*Meaning:* In funerary context mugs are present in a limited number of tombs as part of the individual serving/eating/drinking set. At Osteria dell Osa moreover, they are limited to tombs of children, young women and young men (age classes 1–4; Bietti Sestieri, 1992: p. 274). They might have contained a specific liquid that was drunk only by young people. The low frequency of identifiable mugs and their presence in only a few features of the settlement suggests also a special function.

*Jug/brocca — amphora/anfora* (Class IX) (fig. 11)

*Date:* Jugs were very difficult to identify. The few identified fragments (type IX-1) are all to be dated in Phase I. Slightly more fragments belong either to jugs or to amphoras (types IX-3, 4, 5). They are to be dated in Phase I, IIA and IIB. Some of the small handles of type XIV-10 must have belonged also to jugs of Phase I. Only few fragments of amphoras could be dated in Phase I (types IX-2, 3, 4). Slightly more were found in features of Phase IIA and IIB (types IX-5, 6), with emphasis on the Late Orientalising Period (Phase IIB) as is the case with the *kantharoi*. Based on the absence of handles some fragments could not be specified as either jug or amphora.

*Context:* All the features of Phase I rendered one or two fragments of jugs. The jug/amphora fragments were found in all the features of Phase II. During Phase I a few fragments were present only in GR I and GR II, the same features with fragments of cups and sharp incurved bowls. The amphora with a decoration of double spirals (type IX-5) was first found in features of the 8th century (GR VI, GR III). It is still rarely present in features of Phase IIA (GR VII, RP III, *capanna* VG 6), but becomes more frequent in GR AA and in the southern area. The *amforiskos* of type IX-6 was found in GR AA and in the 'rich' *capanna*'s VG 5 and VG 6. The spiral amphora and the *amforiskos* are found also in the tombs and the votive deposits of Satricum and Campoverde (CLP, 1976: pp. 326–346, Tav. LXXXVI-5,6, LXXXVII-16,17, LXXXVIII-19, XCII-11–14). In fact the spiral amphora is considered a guide fossil of the Orientalising period in Latium and Etruria (Beijer, 1978).

*Function:* The form is suitable for pouring liquids. Jugs and amphoras were probably interchangeable (Bietti Sestieri, 1992: p. 261). The amphora is a part

of the set of serving/eating/drinking vessels. The vase is suitable to contain and pour liquids and was probably interchangeable with the jug.

*Meaning:* In the tombs of Osteria dell Osa one specific type (the biconical jug with high neck) is related to young women (age classes 2–4; Bietti Sestieri, 1992: p. 266). The other types (jugs with globular body) did not have any relation with gender or age. They are present in many, although not all the tombs as part of the serving/eating/drinking set of the 9th century BC. The jugs were probably replaced by amphoras during the 8th century BC because the jug disappears from most of the tombs and at the same time the amphora is always present.

The few specimens in the settlement, though present in each feature, suggest that they were an established component of the drinking set, probably with a specific function. In the Orientalising period they could be substituted by specimens of depurated clay or *bucchero*.

In funerary context one or more amphoras are present in tombs of both sexes and of all ages. In Osteria dell Osa a slight preference of the amphora in female tombs of the 9th century was observed (Bietti Sestieri, 1992: p. 241). In the 9th/8th century the vase is a constant gift in almost all the tombs. The disappearance of the jug in this period suggests that the amphora took over its function. In the Orientalising period amphoras with double spiral are an established part of the banqueting set (Beijer, 1991a: p. 33) and thus indicative for the economic and social status of the owner. Some of the specimens from *Satricum* could be locally made (Beijer, 1991b: pp. 67–72; Nijboer, 1998: pp. 119–121). Moreover, they could be used and broken ritually during funeral rites together with the globular jar (Zevi, 1977: p. 254). The *amphoriskos* is a typical product of *Satricum*. It is absent at other Latial sites and thus must have been locally made (Beijer, 1991b: pp. 76–79).

In the settlement the amphoras of the Orientalising period indicate a transformation towards a more specialised pottery production as well as a transformation of the social and economic situation at the site.

#### Lid/*coperchio* (Class X) (fig. 12)

*Date:* Lids with solid or hollowed out grip (type X-1, 2) could be dated with certainty in Phases IIA and IIB. Probably they were also present in Phase I since many lid-bowls and base-rings were found. The flat circular disc (type X-3, 4) has to be dated in Phase IIA and IIB.

*Context:* Lids with grip were found in GR IV, GR VII, GR AA and RP III. The type of rather coarse manufacture does not appear often in tombs. Lids of finer quality, which were often decorated, were used in funerary context. Miniature and normal sized coarse lids were donated in the cult places. The flat

disc was found only in the Orientalising features GR VII and GR AA.

*Function:* Fragments of lids can be identified with certainty when the grip or a handle is still preserved. One can be sure that the vase could not stand on grip or handle though the form of most lids is similar to lid-bowls (types V-1, 2), which must often have been used as lids. Also the grip may be confused with base-rings (type XII-4, 6). The flat disc must have covered large jars, which had an opening with a diameter between 20 and 30 cm. The only contextual evidence that they were actually used as lids, comes from Osteria dell Osa. Here lids covered some of the dolia in the cremation tombs of the 9th century BC (Bietti Sestieri, 1992: p. 235).

*Meaning:* Lids did not have any significance in funerary context. Their presence in habitation sites and cult places suggests that they were part of the set of storing/preparing vessels. They are a simple utilitarian form as are the jars, storage jars and lid-bowls.

#### Stand/*calefattoio* — *holmos* (Class XI) (fig. 13)

*Date:* Type XI-1 is the only type of stand present in Phase I. The other types (XI-2, 3 and 4) are all to be dated in Phase IIA and IIB. A particular type is XI-5. The shape is rectangular.

*Context:* A few features of Phase I (GR I, RP II and RP IV) rendered one fragment. GR VI is the only feature with more fragments. The later types were found in all the features of Phase II: GR VII, GR V, GR AA, RP III, the southern area and the rich *capanna* VG 5. Stands, both the *calefattoio* and the *holmos*, are not often found in settlements. Specimens were recorded among the finds of Castel di Decima, Cures Sabini and Ficana (Guaitoli, 1981: p. 125, fig. 11/27, p. 130, fig. 17/4–5; Rathje, 1983: p. 13, fig. 5a, p. 14, fig. 6–8; Guidi, 1988: pp. 325–327; in general Colonna et al., 1977). In funerary context both are rather well represented. The stand is rarely found in religious ritual contexts.

*Function:* *Calefattoio* and *holmos* were used for support of another vessel. Sometimes a fenestrated base was integrated with a two handled jar (Osteria dell Osa, 9th century) or a globular *olla* (Tarquinia, 1986: pp. 232/678, 7th century). In many tombs of the Orientalising period a globular jar or large bowl was actually found standing on a *holmos* (e.g. Castel di Decima tombs 53, 93, 153 CLP 1976; La Rustica tomb 33, Laurentina Acqua Acetosa tombs 70, 133, 137).

*Meaning:* In funerary context the *calefattoio* is considered an object of prestige (at Veio Quattro Fontanili the *calefattoio* was found in 23 rich tombs of both sexes). The miniaturised specimens in early Latial cremation tombs (Latial Periods I and IIA) are related to a specific group of men (Bietti Sestieri, 1992: p. 308). The stands of LP IIB, however were



found in female tombs (Castel di Decima tomb 132, Tivoli tomb 13; CLP, 1976: pp. 210, 257, Tav. XLI-9, LXI/1). It seems that *holmoi* in Latium indicate a high status in the later female tombs (Beijer, 1991a: pp. 22, 23). Thus the *holmos* marks a special position of a specific group of women as mistresses of the house, possibly with the special task of mixing and serving wine (Colonna, 1980: pp. 53, 55, n.18; Bartoloni, Cataldi Dini & Zevi, 1982: p. 266).

During the early phase of the settlement the stand is hardly present as vessel class. It seems not to be part of the fixed set of serving/eating/drinking vessels. Possibly the small *calefattoio* was originally a vessel with a specific function and meaning in the funerary rituals. During the Orientalising period however the *holmos* is an important part of the banqueting set of vessels also in the settlement and marks the transformed economic and social situation. It may indicate altered consumption patterns usually related to an upper class.

#### Bases (Class XII) (fig. 14)

*Date:* Most of the base types can be dated to all the phases. Only the flat raised base with thin wall (type XII-2) and the stemmed foot (type XII-5) are types of the 7th century.

*Context:* Flat bases, flat raised bases with thick wall (type XII-1, 2) and the base-ring (type XII-4, 6) are present in all the features. Thin flat bases are found in GR I, GR VI, GR VII and GR AA, and are present in GR VII and GR AA. The concave base (type XII-4) was found in GR I, GR V and GR AA. All these features are characterised by an abundance of serving/eating/drinking vessels. The stemmed foot (type XII-5) was found only in GR VII.

*Function:* Without specific characteristics, which are often not present, bases can not be attributed to vessel types, but only to one or more classes. Flat and raised bases could have been part of a jar, a bowl, a mug, a jug or an amphora. Thickness of the wall, angle between wall and base, and treatment of the surface on the inside and/or outside might give a slight indication of the vessel type involved. For example a thick wall and treatment of the surface on the outside indicates a closed form, probably jar; the angle wall/base relates to the shape of the body: cylindrical, ovoid or globular. A thick wall and surface treatment on the inside (and possibly also on the outside) indicates an open form, bowl or mug. A thin wall and surface treatment on the outside implies a closed form, jug or amphora. The thick flat base with lug is only known from the *teglia*.

Concave bases could be related to incurved bowls and cups. The ring bases belong mainly to lid-bowls, but some might be attributed to jugs. The stemmed foot is part of the *calice*, *kantharos* and hemispherical bowl.

#### Handles (Class XIII) (fig. 15)

*Date:* Almost all the handle types could be dated in Phase I. Many of them continue into Phase II. Only type XIII-2 (biforal with small equal openings), XIII-8 (oval to rectangular band), XIII-9 (convex/concave band) and XIII-11 (trapezoidal lug) have not been found in features of this later phase. Type XIII-7 (ribbed band) is present in Phases I and IIA.

*Context:* The biforal handle with *insellata* top (XIII-4) was only found in GR VII and GR VI, the ribbed band handle (XIII-7) only in GR AA. All the other handle types are distributed randomly among the features. Lugs not attached directly to bases are limited to the features GR VI, GR V, GR IV, GR AA and RP IV and RP III.

*Function:* If enough of the wall remains the shape of the pot might be reconstructed. However, we have to rely on a comparison with handles attached to entire shapes, which allow attribution of a handle to a specific class, rarely to a type.

The trapezoidal or triangular handle (type XIV-1) was part of a bowl, although some amphoras of the 9th century have the same type of handle. The different types of biforal handles (type XIV-2, 3, 4, 5) can be attributed to cups. The ring handles (type XIV-6, 7, 8) are more difficult to relate to specific classes. It is their size and sometimes manufacture that implies if they were part of storage jars, jars, bowls or jugs. Band handles (type XIV-9, 10, 11) were attached to the smaller vessel classes: cups, mugs, jugs and amphoras. Lugs (type XIV-12, 13, 14) were attached to the shoulder of storage jars and jars, or to the base of *teglie*.

#### Plastic decoration (Class XIV) (fig. 16)

*Date:* Vertical or oblique ridges and knobs (type XV-1 and 2) are mainly found in Phase I. The plain and decorated bands (type XV-3, 4, 5, 6) are present in all phases. Broad horizontal or vertical grooves/ridges (*solcature*, *scanalature*, type XV-7) is limited to Phase IIA and IIB.

*Context:* Fragments with plastic decoration are distributed without a pattern among all the features.

*Function:* Decorations are part of a vessel. Some types of decoration can be attributed to specific classes. Ridges and knobs are part of finer vessel classes. They were moulded as a decoration on the shoulder of some of the bowls, cups, jugs and amphoras. The horizontal grooves of type XIV-7 are limited to the bowls (type V-9-14); the vertical grooves to globular jars (type III-8, 9, 10 and 12).

The plain and notched bands were often separately made and attached to storage jars, jars, cooking stands and *holmoi*. Very small notches decorate sometimes the carena of bowls of type V-3.

#### Incised decoration (Class XV) (fig. 17)

*Date:* Geometric angular motifs made by deep inci-

sions with the *a rotella* technique (type XV-1) were found in very limited numbers in some features of Phase I (only one was found in a feature of Phase IIA). Other specimens were found scattered in the surface layers (Le Ferriere I: p. 113, Nos 117, 451, 453, 544, 733, 734, 1312, 1314; Le Ferriere II: pp. 56, 98, Nos 1432, 1704–1711, 1763–1766, 1812, 2040, 2423, 2530, 2831). The date of this type of decoration is generally placed in the 10th/9th century BC (LP IIA). Geometric angular motifs were also made with a sharp pointed instrument. The effect is a deep smooth incision. This type (XV-1) is found in a few features of Phase I. Generally it is dated in the 9th and early 8th century BC (LP IIA and IIB), but might continue down to the middle of the 8th century (LP III). Fragments decorated with various motifs (geometric and orientilising) made as a fine, low incision (type XV-2) are present in features of the orientilising period (Phase IIA and IIB). Undeep but wide incisions, almost grooves (type XV-3) forming simple patterns as groups of parallel, radiating and curved lines are present in Phase IIA.

*Context:* The scattered distribution pattern (in a few features and in disturbed surface layers) and low number of fragments with deep indented decoration (type XV-1) suggest that they are intrusive in the features as residues of older activities at *Satricum*. The deep smooth incised decoration (type XV-1) is present in significant numbers only in GR I and GR VI. Lately many fragments, partly of jugs/*lorcioli* have been found in the lowest layer in the southern area. Fragments with a low, fine incision (XV-2) are present in GR VII, GR V and GR AA, the 7th century features with an elaborate set of tablewares. Incisions of type XV-4 have been found only in GR V and RP III.

*Function:* Incised decorations are applied only to serving/eating/drinking vessels: bowls, cups, jugs, amphoras and stands. Especially decoration types XV-3 and XV-4 are applied to special vessel types: fine incision on the *calice*, the *kantharos*, the hemispherical bowl (types V-13, 14, 15), the amphora and *anforiskos* (types IX-4, 5, 6); low grooves on the carinated bowl (type V-6), the amphora and *anforiskos* (types IX-5, 6).

*Meaning:* The total number of fragments and vessels with an incised decoration in the settlement is low. A striking contrast can be noticed with the considerable number of similar decorated vases from tombs and votive pits. These vases may have been made primarily for special funerary and religious occasions. On the other hand they may have had originally a special meaning and were deposited during funerary or religious rites after their primary function. All the incised decorations were part of vessels attributed to the serving/eating/drinking category. The same vessels play an important part in the funerary set of vases. Thus vases with incised deco-

ration were used in the settlement but were also considered very suitable to accompany the deceased in their tombs. However, this suggests a meaningful relation between decoration, vase-type and user. We do not know if the reason for vase-decoration was merely esthetical or also ideological. In the 9th century BC in the necropolis of Osteria dell Osa vases with incised decoration could be related to specific family groups. Other groups preferred plain plastic decoration. The best manufactured and decorated vases were found in female tombs, mainly of young age (12–20 years; Anzidei et al., 1985: pp. 168–171, 174). The different preferences among the family groups might be explained as family traditions in the domestic pottery production. The custom to have young women buried with nicely decorated vases must be related to the social persona of the deceased. The 7th century *Satricum* style and motifs of the incised decorations on vases are related to the *symposion* and indicate local production as well as a close relation between different units of the settlement and its nearby territory: habitation, cultus-places and tombs. The distribution pattern of vases with a specific decoration might even lead to the conclusion that some form of local control existed by a prominent family (Beijer, 1991b).

Spool/*rocchetto* (Class XVI) (fig. 18)

*Date:* All spools except one (type XVI-3) have thickened and convex (type XVI-1) or flat ends (type XVI-2). Both types appear always together in Phases I and II, so the distinction is not caused changes in time.

*Context:* They were found in the huts GR I, GR VI, GR VII and in the southern area in a considerable number. The other features did not render spools. They are associated with an elaborate repertoire of tablewares. In GR VI and GR VII spools were found with some spindle-whorls and a loomweight. The combination of spinning and weaving objects and fine pottery distinguishes this group from the other features at the site.

*Function:* The spool is considered an object used in relation to weaving and the loom, where it probably increased the weight of the threads. Its shape is suitable to twine a yarn.

*Meaning:* Its presence in rather conspicuous quantities in only a few rich female tombs (e.g. Osteria dell Osa, Veio Quattro Fontanili, Tarquinia Scaietello tomb 59: 24 spools and 2 spindle-whorls; Hencken, 1968: p. 42, fig. 31) suggests that in funerary contexts the spool has a specific meaning in relation with a certain group of women (the *tessatrici* or women who produce the material for cloth according to Bietti Sestieri, 1992: p. 314).

In the cult (e.g. *Satricum*, Valvisciolo) they were donated as votive gifts and might have been considered also a symbol of the social position of the women, who dedicated them (and not an indication

of a female cult). Unfortunately we have no information about the associated objects in the votive area.

The specific meaning of spools in funerary contexts indicating a special group of women and their presence in a few settlement features with a particular extensive set of artefacts suggests that in the settlement those features must have had a specific function (households of women of the level of *tessatrici*).

Spindle-whorl/*fuseruola* (Class XVII) (fig. 19)

*Date:* A great variety of types (globular, biconical, biconical depressed, conical or discoid in shape with plain, ribbed or faceted profile) is present in the settlement through all phases. The differences in type have no chronological significance.

*Context:* In several features three to five spindle-whorls have been found, associated with spools (GR VI and GR VII) or without them (GR II, GR III). They were not present in GR I, GR V and the Rubbish Pits. Noteworthy is their exclusive presence in the cooking areas GR II and GR III.

*Function:* The spindle-whorl was used for the spinning of wool in combination with a wooden or sometimes bronze stick that was put through the perforation of the spindle-whorl. It could also be used with the loom to increase the weight of the treads like the spools and truncopyramidal loomweights.

*Meaning:* In funerary contexts one or more spindle-whorls characterise many of the female tombs (Osteria dell Osa, Veio Quattro Fontanili). Unlike the spools they seem to be a general symbol of women as *filatrici*, the women who produce the yarn (according to Bietti Sestieri, 1992: pp. 309, 310). In the cult they were donated and represent female gifts. The meaning of spindle-whorls in funerary contexts as a general female indicator and their presence in the settlement in almost all the pits with cooking activities suggest that spinning took place in combination with the preparation of food.

Loomweight/*peso di telaio* (Class XVIII) (fig. 20)

*Date:* Three loomweights (truncopyramidal XVIII-1 or rectangular XVIII-2) have been found in contexts of Late Phase I and Phase IIA.

*Context:* One was found in a rubbish pit (RP II), the other two in features VI and VII in association with spools and spindle-whorls.

*Function:* They are considered part of the loom in order to make the threads heavier. It seems that they were used in combination with other specimens of different weight (spools and spindle-whorls).

*Meaning:* In funerary context loomweights of this type are not frequent. In the few cases they have been found (in Latium only in two tombs in Osteria dell Osa, Bietti Sestieri, 1992: p. 309) they are associated with all the objects that characterise the women *tessatrici*. Also in votive deposits they are rare. In the settlement they were found just in the two fea-

tures (VI and VII), where also all the other objects related to weaving and the loom were present, strengthening the idea of the specific function of these features.

### 3. THE WARE CLASSIFICATION (A.J.N.)

#### 3.1. Introduction

The ware classification presented is based on the accepted Italian categories. As such the ware typology is a loose category since it is based on different attributes such as paste composition or texture (coarse ware), colour (*impasto bruno* or *impasto chiaro*) or surface treatment and colour (*impasto rosso*). Although the term pottery ware is largely used informal, the 'fundamental defining criteria are aspects of composition, manufacturing technology, or surface treatment' (Rice, 1987: p. 287). Kleibrink (2000) and Maaskant-Kleibrink and Attema (2001) did introduce some new ware denominations for southern Lazio. Adams and Adams however, employed a much narrower definition for pottery wares. They consider that a pottery ware comprises vessels having: the same method of construction, the same fabric, the same surface treatment, the same group of vessel forms, the same combination of colours, and the same decoration.

A pottery ware in their classification is equivalent to what in other classifications is often called a pottery type (Adams & Adams, 1991: pp. 357, 99–127). Employing their definition would result in a considerable increase in ware descriptions and a break with the traditional Italian ware denominations. This did not seem functional for Italian archaeology and therefore we employ as far as possible ware categories commonly encountered in the archaeological literature of central Italy for the period discussed such as *impasto bruno*, *impasto rosso*, *bucchero*, *figulina*, coarse ware and *impasto chiaro*. Each of these categories will be described shortly.

#### 3.2. Impasto

The term *impasto* is commonly used for fabrics with a fair amount of inclusions which are still visible with the naked eye (approximately granule- to medium-size; 4 to 1/4 mm. in diam.) (cf. Shepard, 1956: p. 118; Cuomo di Caprio, 1985: p. 28). The size and amount of inclusions is usually not specified in the archaeological literature. Bouma presents some descriptions of *impasto* and records terms commonly used besides *impasto* such as 'simple pottery', '*ceramica comune*' etc. (Bouma, 1996: pp. 312–313). Pastes with a considerable percentage of inclusions of the size mentioned above are usually not suitable for throwing on a potters' wheel. These non-plastic in-

clusions increase the rigidity of the paste and thus reduce the plasticity because they moderate the amount of water-absorbing surfaces. Good water-absorbing characteristics are essential for pastes suitable for a potters' wheel as it ensures an optimal plasticity of the clay. Throwing clay involves the greatest structural reorganisation of the paste when compared with other modelling techniques and therefore necessitates an optimal plasticity and a high water content. Coarse *impasto* pastes have adverse characteristics for modelling on a wheel with high velocity. Moreover, pastes for wheel-throwing contain smaller inclusions than pastes used for hand-forming techniques because they otherwise would cut the potters' hand (Arnold, 1989: p. 29). In the study by Courty and Roux, there is a significant distinction between on the one hand the coarse fraction of the pastes, which were hand modelled with or without the use of a turntable and on the other hand the coarse fraction of pastes which were wheel-thrown. Both the amount of the coarse fraction is less as well as their size (Courty & Roux, 1995; Roux & Courty, 1998). The authors present five examples of pastes for hand modelling including those, which were used for moulds and turntables. These pastes have on average 28% coarse inclusions with a mean size of 300 µm. In contrast are the pastes which were wheel thrown. These contain on average about 16% coarse inclusions with a mean size of about 110 µm (Courty & Roux, 1995: p. 25). In our opinion vessels in *impasto* wares can be made on the turntable but not on a fast-rotating potters' wheel.

In Italy archaeologists distinguish between *impasto bruno*, *impasto rosso* and *impasto chiaro*.

*Impasto bruno* is the most common *impasto* ware dated from the Iron Age till early Archaic period. The surface is red-brown to black and may be smoothed or polished. The vessels may be modelled by hand or by employing a turntable at a stage of the modelling process. Most vessel forms occur in *impasto bruno*. We differentiate in *Satricum* between:

- Common brown *impasto*;
- Common red *impasto*;
- Burnished brown *impasto*; fragile, thin layer of fine clay particles due to polishing;
- Fine brown-black *impasto* (Late Iron Age).

*Impasto rosso* is dated from the Late Iron Age till Archaic period. It is a ware group characterised by a shiny red slip. Sometimes the slip is fired under reducing atmosphere, which makes it black. Ceramics may be hand made or modelled on a turntable. *Impasto rosso* is mainly used for vessel forms related to eating, drinking and the *symposium* ritual. At *Satricum* *impasto rosso* is fairly common and is represented in several fabrics. We differentiate between:

- Red slipped *impasto*;
- Black slipped *impasto*.

The same vessel types falling in II.1 can also be executed in a black slip variant.

*Impasto chiaro* is dated in *Satricum* from the late 6th till 5th/4th century BC. In Etruria it occurs from onwards the 7th century BC. The characteristic colours of *impasto chiaro* are pale yellow, pale orange to pale pink. The core may be grey. Pale archaic wares are also classified as *impasto chiaro*, *impasto chiaro sabbiosa*, coarse creamware or coarse buff/pink ware (Bouma, 1996: p. 329). It contains much augite, which was probably added intentionally. The paste itself appears to be to some extent depurated. The vessel forms associated with *impasto chiaro* comprise basins, storage jars and architectural terracottas. We distinguish between:

- Pale *impasto*;
- Orange *impasto*.

### 3.3. Coarse wares

Coarse wares are common from the Archaic till Republican period. They are partly modelled on a turntable, the surface is not worked while the paste contains many inclusions, predominantly augite. The vessel forms executed as coarse wares comprise mainly jars and lids. Carafa quantifies the various fabrics encountered during excavations on the northern slopes of the Palatine at Rome (Carafa, 1995). The coarse wares are the main group (45% of about 29,000 sherds). This ware group is known according to Carafa from the late 8th century BC but is most intensively encountered during the 6th century BC. The vessel types produced in Rome include jars, bowls, basins and storage jars. At *Satricum* we differentiate between:

- Common coarse ware, varies in colour (6th century BC);
- Ordinary coarse ware (less augite than IV.1; 5th/4th century BC);
- Pale coarse ware (5th/4th century BC);
- Orange coarse ware (5th/4th century BC).

The coarse wares are characterised in fabric by a significant quantity of augite, expressed by the capital E in the fabrics code. The coarse wares comprise the following fabrics:

SAT I. AD\*E.ms-ps.(1–4).a, fine gritty;  
 SAT I. AD\*EQ.ps-vps.(1–4).ab, medium-coarse gritty/(hardness+);  
 SAT II.AD\*.E.ps.(1–4).b, hardness+/laminated;  
 SAT II.ADe.ms-vps.(1–4).ab, variety of characteristics, which is a fabric that contains less augite but demonstrates otherwise all characteristics of the coarse wares.

Some other fabrics are also associated to the coarse wares but contain even less augite:

SAT I/II.AD\*.ms-vps.(1–4).a, variety of characteristics/(slightly) gritty;

SAT I/II.AD\*.ms-ps.(1–4).b, variety of characteristics; SAT II.AD\*.ws.(3–4).a, ((black) organic), which is a depurated variety.

### 3.4. *Figulina*

*Figulina* is made from a depurated clay with hardly any visible inclusions on a macroscopic level. It may contain fine to silt size non-plastics and is usually coated with a wash or slip. In central Italy it fires during the period examined into a pale to reddish yellow colour and can be characterised as a powdery fabric, though the *figulina* of the 8th, 7th century BC seems to be harder (La Rocca, 1977; Bouma, 1996: p. 395). The *figulina* paste is adjusted for modelling on a fast wheel and reflects workshop conditions. At *Satricum* *figulina* is also called depurated ware and becomes common during the 5th and 4th centuries BC. As a paste it is used for the production of tablewares.

### 3.5. *Bucchero*

*Bucchero* is considered to be the '*céramique nationale de l'Âge d'or des Etrusques*' (Gran-Aymerich, 1993: p. 19). Early *bucchero* production probably evolved from the manufacture of dark, fine *impasto* (I.4) vessels and was first produced in southern Etruria. The *bucchero* paste was obtained through a finer levigation than the dark *impasto*. The characteristic black colour of *bucchero* evolves around the firing conditions in the kiln. The pottery was fired in a highly controlled reducing atmosphere (Rasmussen, 1979: p. 2). Previously, it has been suggested that various components such as carbon (Francaviglia et al., 1975: p. 228) or manganese-dioxide (Del Vita, 1927: p. 194) were added to the paste in order to obtain the intense black colour since it was established by archaeometric analyses that *bucchero* contained both carbon and magnetite (Leoni & Trabucchi, 1962; Francaviglia et al., 1975). These substances could however derive from the firing process itself. Cuomo di Caprio reports that mixing clay with carbon would reduce the plasticity of the paste. A reduction of plasticity makes the manufacture of *bucchero sottile* strenuous. Experiments indicate that clay mixed with carbon powder was hard to throw on a wheel (Cuomo di Caprio, 1993: p. 219). Recently, the firing process of *bucchero* has been described by some experiments (Cuomo di Caprio, 1993). Unfired, conventionally made pottery was placed in a container filled with carbonaceous material or sawdust. The container was carefully sealed after which it was fired in a kiln. During firing, a highly reducing atmosphere is obtained in the container and this resulted in an intense black colour of the fired vessel that was comparable to the *bucchero* ware. Firing pottery in these circum-

stances also accounts for the presence of carbon in the fabric (Cuomo di Caprio, 1993: pp. 220–221). This specific procedure of placing artefacts in a sealed container, which is filled with carbon, is also reported for metalworking techniques such as the diffusion of carbon in iron and the granulation technique (Nijboer, 1998: pp. 206–207, 229). The hypothesis concerning this distinctive process for the manufacture of various materials and artefacts is compelling since the close association in form between *bucchero* and metalwares, would be supported by a related production technique. Both, the fine *impasto* and *bucchero* vessels imitate metalwares (Rasmussen, 1979; Rathje, 1983: pp. 12–14; Markoe, 1992; Minoja, 1993) as well as ivory artefacts (Gran-Aymerich, 1993: p. 21). For instance, metal *oinochoe*, jugs, *kyathoi* and goblets have served as prototypes for the *bucchero* production. Moreover, it is likely that the decorative techniques of *bucchero* such as ribbing, incision and relief decoration, originated from metal models. An exception within the *bucchero* repertoire are those vessels which have received a lamination of silver or gold plate (Ramage Hirschland, 1970: pp. 39–41; Gran-Aymerich, 1993: p. 30). The similarities between on the one hand metal and ivory artefacts and on the other hand *bucchero* vessels imply a close relation between potters and other craftsmen.

*Bucchero* probably originated in Caere around 700 BC (Bartoloni, 1989: p. 211) from where its production spread to other neighbouring centres such as Veii, Tarquinia and Vulci. In the beginning the *bucchero* production is limited because the vessels were carefully made as individual artefacts. From southern Etruria, its manufacture diffused to various sites to the north and south. This diffusion of the *bucchero* production is related to a standardisation of the artefacts because they became produced in series. During the late 6th and 5th centuries BC, the *bucchero* is known in a limited number of forms and its distribution was confined to the local market (Gran-Aymerich, 1993: pp. 22–23). Thus the production of *bucchero* gradually evolved from prestige ceramics for banquets to semi-luxury vessels and eventually to common tablewares.

One topic regarding *bucchero* remains to be discussed that is the early specialised pottery production at *Satricum* and the attribution by Gran-Aymerich of a *bucchero* workshop to the site (Gran-Aymerich, 1993: fig. 3). Local *bucchero* manufacture is supported by the existence of potters who produced fine *impasto* tablewares. These wares can be partly correlated to similar *bucchero* vessels at the site, especially the *bucchero amphorae*. Fifteen of these *amphorae*, dated to second half of the 7th century BC, have been recovered in votive deposit I. These *amphorae* were also produced in fine, dark *impasto* which are well represented in the tombs. The *impasto amphorae* are

dated earlier but some are contemporaneous with the *bucchero amphorae* which suggests a transition around 640–630 BC. At *Satricum*, the settlement, necropolis and the cultplace have been excavated which makes it possible to analyse the distribution of the three main wares (*impasto*, depurated and *bucchero* wares), in these different contexts (Bouma et al., 1995: p. 189, fig. 3). The distribution illustrates that *bucchero* fragments remain an exceptional find in the habitation context (3%) while it occurs regularly in the tombs and cultplace (respectively 15% and 34%). The hypothetical local *bucchero* production would have continued for about a century and amounts to hundreds of vessels but not thousands. If *bucchero* was produced at *Satricum* than it must have been in combination with the production of other wares as suggested by the wasters from the kiln that was excavated at S. Pietro a Sieve (De Marinis, 1991). The production of *bucchero* at *Satricum* was a subsidiary activity and not with full time intensity. This pattern is likely to have continued in later periods. During the 5th and 4th century BC, *amphoriskoi* were made of what has been labelled alternatively greyish *bucchero*, *impasto bucceroide*, *bucchero malcotta* or imitation *bucchero* (Bouma, 1996: pp. 380–382). The later *amphoriskoi* are no longer associated with the *impasto* tradition but with the depurated wares. It is therefore likely that they were locally produced during the 5th century BC in combination with depurated wares.

#### 4. METHOD OF FABRICS RESEARCH AND CLASSIFICATION (A.J.N.)

##### 4.1. Notes on fabric analysis

A pottery fabric is described as a collective term for the internal constituents used in making pottery. These include the primary constituent such as clay or marl as well as any other material mixed into (e.g. temper) or processing technique (e.g. levigation) applied to the primary material to impart material characteristics such as hardness, porosity or thermal shock resistance (Adams & Adams, 1991: p. 356; see Appendix 1). Archaeologists have since long been aware of the material characteristics of the pottery but rather as a subjective criterion, such as the ware denominations used in this paper, for example *impasto rosso* and coarse ware. Specific wares like the Etruscan *bucchero* have intrigued scientist since long especially their manufacture (cf. Del Vita, 1927). However, general, systematic classification of the pottery according their fabric was rarely promoted before the 1950s when Shepard published her book *Ceramics for the archaeologist* (Shepard, 1956). Though Shepard herself did not use the term fabric as described above she definitely advanced the study

of archaeological ceramics as matter. She described the physical properties of ceramics as including colour, hardness, texture, lustre, porosity, strength and other properties (Shepard, 1956: pp. 95–137). A systematic analysis of the above properties would advance an objective identification of ceramics as a group of material. Since Shepard fabric analysis included the above characteristics. For example, Vaughan stressed the use of similar macroscopic and microscopic characteristics of large groups of ceramics in order to maximise both the quantity and quality of data able to be retrieved from sherds (Vaughan, 1995: pp. 265–267). Fabric descriptions are useful for representing groups of material, offering a partial glimpse on ceramics, which need to be studied also from other perspectives such as typology. She also emphasises to concentrate on well-defined archaeological groups in order to systematise the observation of macroscopic material and technological features. Peacock and Williams (1986) and Tomber and Dore (1998) did publish monographs on such larger groups. Peacock and Williams placed Roman amphorae in a wider economic context but their data involved the description of the amphorae partly as fabric including a petrologic description. The recent handbook by Tomber and Dore (1998) concentrates on the characterisation of the fabric of Roman pottery found in North-West Europe, especially in Britain. Their aim was to provide a standard for the identification and description of Roman pottery types found in the United Kingdom but also elsewhere in Europe. The book presents numerous wares characterised by colour, sorting, inclusions, quantity, rounding, fracture and hardness. Eventually the research resulted in a physical reference collection with free access and stored at the British Museum “as a means for fabric verification, together with consistent and standard descriptions” of the sherds involved (Tomber and Dore, 1998: p. 2). The classification in fabrics presented in this article follows this line of research focussing on ceramic groups representing significant number of sherds. The specific methods employed are described in the next section.

Two aspects remain to be discussed here, the notion of objectivity and an account on fabrics research in Italy. Vaughan warns that “the perception of progress in the concept of completely objective, codified and standardised studies of pottery, should be seen as the chimera it is” (Vaughan, 1995: p. 263). She recommends ‘pottery sense’, the skill to differentiate between, for example, “two undecorated sherds of Middle Minoan IIA and IIB conical cups without notable hesitation” (Vaughan, 1995: p. 262). Her plea is fully supported by our research since the fabric classification did require interpretation including their ware and type descriptions in order to demarcate multivocal, clustering characteristics for fabrics such as percentage of solid inclusions, which in itself is

a clear property. However, one may wonder if the ancient potter ment a different fabric if the clay contained 11 or 9% solid inclusions (one of the demarcations in our fabric classification is based on less or more than 10% solid inclusions). Comparable complications regarding the domains of variability of individual attributes in fabrics research will be discussed in more detail in the next section. It needs however to be stressed that attribute clustering leads to identification of types (see Sections 4.4, 5.1, and Appendix 1 for keywords and definitions). The fabric description has not been an objective *per se*. Its significance increases when combined with vessel typology and ware description.

In Italy fabrics research has been promoted significantly by Cuomo di Caprio since the 1970 s, culminating in her book *La ceramica in archeologia* (1985). More recently various compilations and congress publications were published (cf. Failla, 1993; Olcese, 1995; Santoro Bianchi & Fabbri, 1997). The research presented concentrates on the role of archaeometry and on specific ceramic groups with a preference for Roman ceramics. Fabric analysis relating to the period 900 to 300 BC assessing ceramics from a major excavation derives from sites such as Acquarossa and Poggio Civitate (Wikander, 1993; Nijboer, 1998: pp. 161–171) while detailed ware descriptions have been published for Etruscan towns such as Caere (Cristofani, 1992, 1993) and Tarquinia (Chiamonte Treré, 1999). One can detect a noticeable increase in the description of the material components of groups of ceramics from Italy but our approach of systematically describing the catalogued sherds from *Satricum* on a macro- and microscopic level culminating in a physical reference collection of the fabrics involved appears to be fairly unique so far.

#### 4.2. Fabric analysis as adopted by GIA's Laboratory of Conservation and Material Science (LCM; [www.LCM.RUG.nl](http://www.LCM.RUG.nl))

##### 4.2.1. Procedures

The fabric typology is based on variables of paste composition such as colour (before and after refiring under controlled conditions), inclusions and other attributes. Each characterising attribute analysed by the LCM is described below in detail. The procedure was as follows. After cataloguing the sherd (making an illustration, description and photograph), a small fragment was broken away using fine pinchers in order to make a fresh break. Fabric attributes were investigated mainly by analysing the fresh break. An old break would conceal certain attributes by soil and grime in the pores of the fabric. The individual features were then assessed using comparison charts for presence percentages and shape, Munsell Soil Colour

Chart, hardness tests, sand ruler and binocular microscope. After identifying a fabric, a selection of sherds was refired at 600°C, 800°C and finally 1050°C in an electric, oxidising kiln in order to establish firing characteristics as well as the final colour of the fabric since the colour of the excavated sherd is often affected by less controlled firing in antiquity, usage and post-depositional changes. Refiring sherds eliminated greatly the colour variables of a fabric. Each attribute received a code leading, at first glance to a complicated fabric code. Much of the description of the fabric is enclosed in this code, the key of which will be presented further on in this section. An advantage of codes is that it becomes clear if fabrics are related or not and if they belong to the same family. Eventually at least two thin sections were made per fabric for a petrologic description.

Since the campaigns of 1997 fabric analysis was systematically performed by Gert van Oortmerssen. This implies that the majority of the ceramics catalogued before 1997 were not subjected to a standardised analysis of their fabric.

The existing pottery typology became thus enhanced with a fabric typology till the last *Satricum* campaign of 2001. The present publication presents mainly the technical information regarding the various classifications of the *impasto* and coarse ware pottery. In future publications we will present in more detail artefact groups such as ceramic building materials, *bucchero* and *figulina* referring to the present paper for the methods employed.

The fabric classification led to the establishment of a physical fabric reference collection for both *Satricum* and the wider region. This collection contains the most significant sherds for the specific fabric. In addition the fabric reference collection gives per fabric an impression of the types and wares of pottery involved.

##### 4.2.2. Method of fabric research and codes

The colour of the ceramics appeared to be the most distinctive feature, especially after refiring. It is therefore placed at the beginning of the code following the abbreviation of the site. Refiring of the sherds was carried out under standardised conditions: oxidising at 600 or 800°C for one hour precisely. Quite a few fabrics would eventually merge by detailed shifting of the variables of the attributes such as colour, predominance of (a) specific inclusion(s) and total percentage of inclusions. Colours were described using Munsell soil colour chart (1994, revised edition). The main colour types of fabrics are:

- Fabric I – red firing;
- Fabric I/II – red to orange firing;
- Fabric II – orange firing;
- Fabric II/III – orange to pale firing;
- Fabric III – pale firing ceramics.

Other decisive material variables examined for the fabric classification involve mainly the inclusions in the clay and some specific qualities regarding hardness, porosity and fracture. These variables are:

- The type of inclusions present;
- The sorting and size of the inclusions;
- The quantity of the inclusions;
- Hardness, porosity and fracture of the sherds.

On the basis of the variables presented above and in figure 21 we will now introduce the key for the codes employed. The following order for each fabric code is maintained:

#### *Provenance*

1. Colour;
2. Dominant inclusion or combination of inclusions;
3. Sorting of inclusions expressed in well sorted (ws), moderately sorted (ms), poorly sorted (ps), very poorly sorted (vps) or not sorted (ns); followed by a combination of numbers between brackets (1–4) relating to particle size;
4. Total percentage of inclusions (a–d);
5. Other characteristics like hardness, feel, the degree to which the surface is powdery, etc.

The origin of the sherds is expressed by three capitals, cf. SAT (*Satricum*), SEG (Segni) or LAV (Lanuvium).

1. Roman number; I, II, or III referring to the colours red, orange or pale;
2. Capital letters for dominant inclusions, undercast (small) letters for subdominant inclusions or when a clear dominance is absent;
3. ws/ms/ps/vps/ns (1–4);
4. a–d;
5. Other characteristics are described in words, not by code.

Lowercase (small) letters in the code are used when:

- A chance on coincidental dominant inclusion is very likely, for example in a fabric, which consists of only a few sherds (up to five sherds) and with a total percentage of inclusions of less than 10%. In these cases small letters (undercast) are used instead of capital letters, even if the material contains a particular dominant inclusion;
- Fabrics with a high percentage of inclusions sometimes have dominant and subdominant inclusions.  
For example, a fabric with >20% inclusions of which quartz/feldspar is dominant with 15–25% and augite subdominant with 7–10% may obtain a code 'AD' (quartz/feldspar) and 'e' (augite) in order to underline the difference;
- No inclusion is dominant, or when the total percentage of inclusions is below 5%, also marked by =.

An asterisk, '\*', behind codes for types of inclusions is used in cases where dominant inclusions, sorting or particle size can only be determined under the microscope.

Refiring is carried out under standardised conditions: oxidising at 600 or 800°C for one hour precisely.

'Related to' means that two or more fabrics are similar in material characteristics though there is a difference in one or two of the attributes of the fabrics. Quite a few fabrics can be grouped as fabric families.

Colours are described using Munsell Soil Colour Chart (1994, revised edition).

#### 4.2.3. *Examples of codes and fabric descriptions*

Here we provide a few examples of fabric descriptions:

SAT II.AD\*.ms(2).ab, augite/hardness 3–4  
*Satricum*; orange firing with quartz/feldspar as dominant inclusion, but this is only detectable under the microscope. Augite is detectable and clearly present but not significantly; moderately sorted; particles between 250 and 1000 (medium sized); > 10% inclusions; hardness higher than usual: 3–4 (2–3 is average for most sherds investigated).

SAT I.ADe.ps-vps(1–4).a  
*Satricum*; reddish firing with quartz/feldspar as dominant inclusion and subdominance of augite; poorly to very poorly sorted; particles <90–>2000; more than 20% inclusions.

LAV I.ek.ps(1–3).cd  
Lanuvium; reddish firing with few inclusions, but still as dominant inclusions augite and lava; poorly sorted, particles >90, 10% inclusions or less.

SEG III.=.ws(4).d, powdery surface  
Segni: pale firing; a low total percentage of inclusions but in narrow range of size, no detectable dominant inclusion; striking powdery surface

#### 4.3. Variables

##### 4.3.1. *Colour*

The colour of the excavated pottery is the most characteristic feature of the fabric description. The examined fabrics demonstrate that in time there is a gradual shift from red — and red to orange firing ceramics dated mainly to the 9th till the 6th century BC to orange — and pale firing ceramics dated predominantly to the 7th till 4th century BC. This shift is primarily due to the change in manufacturing tech-



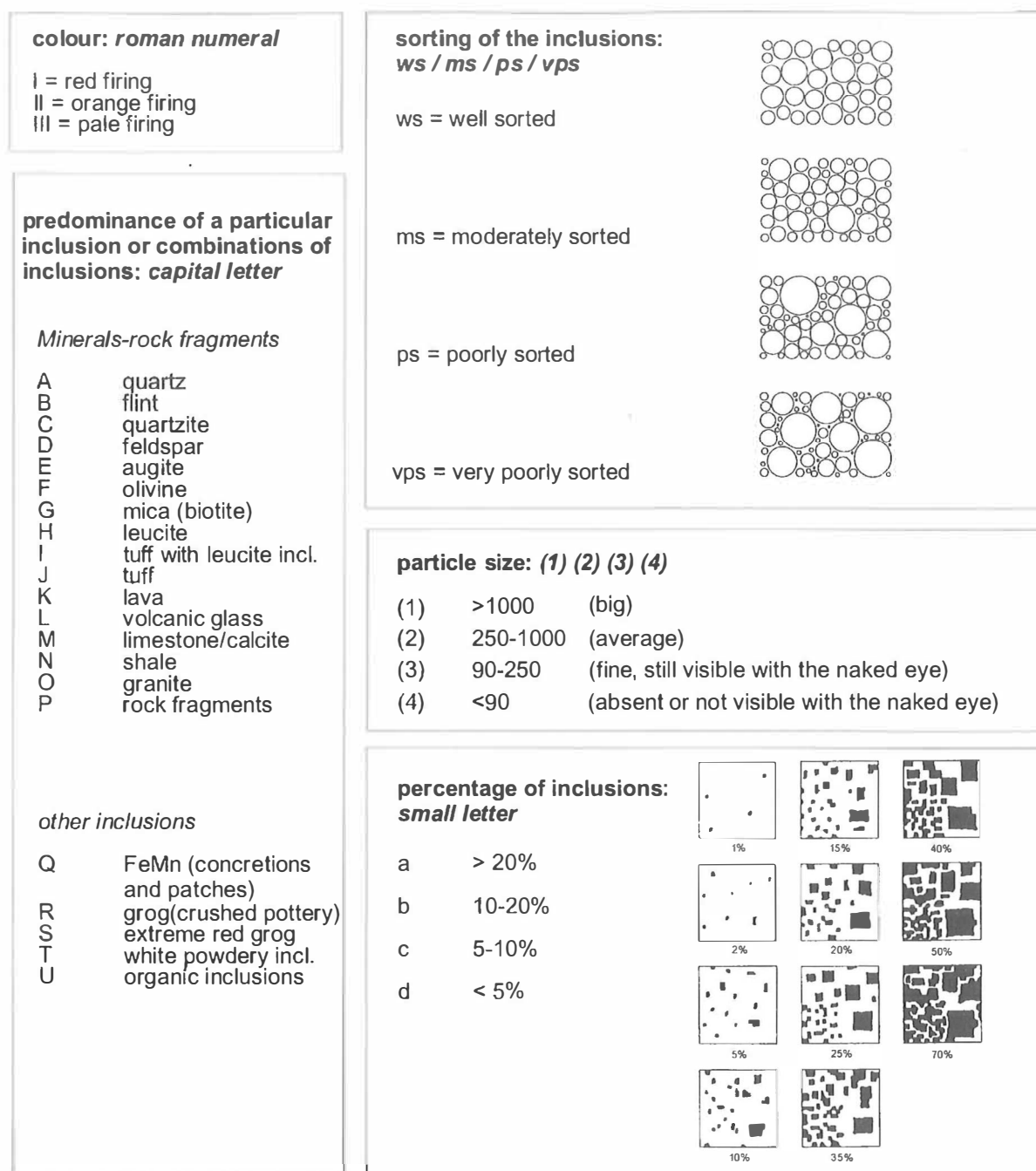


Fig. 21. GIA fabric analysis, codes and diagrams.

niques of the ancient ceramic industry and the introduction of kilns with separated combustion and firing chambers during the 7th and 6th century BC (Nijboer, 1998: pp. 73–196). This led to a standardisation not just in the ceramic repertoire but also in a decrease in colour variables of the pottery. However, the colour as it presents itself after excavation is the result of various processes such as

manufacturing procedures, firing, use in Antiquity and post-depositional changes. This results in numerous colour variables of the excavated ceramics, which are not directly related to the standard colour of the fired clay in an oxidising atmosphere. In order to eliminate some of these variables, the pottery was refired at 600, 800 and 1050°C. Appendix 4 presents the colour variables as they have been measured after

excavation and after each successive refiring programme. The documented Munsell measurements in Appendix 4 demonstrate that the colour variables decrease with each refiring step. Thus it became simpler to ascribe ceramics to a specific colour range/type. It was noticed that the colour of the oxidised zone just underneath the surface of the excavated sherd, if present, was a good indication of the colour obtained after refiring. A colour brown as in the ware group common brown *impasto* (Section 3.2), does not exist as a colour type in the fabric description since after refiring in an oxidising atmosphere, it became red or red to orange.

#### 4.3.2. Inclusions

The inclusions present in the fabrics from Latium Vetus may contain the following inclusions ((v) = volcanic).

##### *Rockforming minerals*

- A Quartz
- D Feldspar (v)
- E Augite (v)
- F Olivine (v)
- G Biotite/mica
- H Leucite (v)

##### *Rockfragments*

- B Flint
- C Quartzite
- I Leucite-tuff or leucite-lava (v)
- J Tuff (v)
- K Lava (v)
- L Volcanic glass (v)
- M Dolomite/calcite
- N Shale
- O Granite
- P Rockfragments

##### *Other*

- Q Ferro-manganese nodules and staining

##### *Intentional*

- R Chamotte/crushed pottery
- S Extremely red chamotte

##### *Unknown*

- T White powdery inclusions

##### *Organic*

- U Organic inclusions
- V Bone

The minerals are identified by using mineral descriptions, thin sections and physical mineral references collected in the region, occasionally identified by XRD.

##### *Sorting of inclusions*

- ws = well sorted
- ms = moderately sorted
- ps = poorly sorted

- vps = very poorly sorted
- ns = not sorted.

Values on the sand ruler (with 10 fractions): 1 = >1000 (coarse); 2 = 250–1000 (medium); 3 = 90–250 (fine, still detectable by eye); 4 = <90 (absent or not detectable by eye).

##### *Percentage of inclusions*

- a = > 20%
- b = 10–20%
- c = 5–10%
- d = 5%

##### *Other characteristics*

- hardness
- porosity
- fracture

Characteristic placed between brackets in the fabric code indicates that it is not found in every, single sherd, but significant for the fabric as a whole.

If a characteristic is indicative for a fabric but not listed in the fabric code by emblem it is described under 'features by eye' between brackets, for example: powdery surface.

#### 4.4. Comments

As mentioned above most of the attributes (1 to 5) are assigned after assessing a range of variables for each characteristic. A fabric type as listed is however consistent because the same overall set of variables is assessed and any given type cannot completely overlap with the definition of any other type. A combination of all the attributes including their variables leads to distinct, individual fabric assignments because combined attribute variables exclude each other. For example some sherds assigned to the red family may overlap in colour with sherds assigned to the red to orange fabric. However colour is only one of the five attributes assessed and it is impossible that variables of the other four characteristics coincide as well. One may detect however from the code those fabrics, which only differentiate in one or two of the attributes. For example, the most dominant fabrics at *Satricum* are SAT I/(II).AD\*.ms-vps(1–4).a, variety of characteristics/(slightly) gritty, and SAT I/(II).AD\*.ms-ps(1–4).b, variety of characteristics.

From the fabric code one can deduce that both fabrics are very similar demonstrating that they belong to the same fabric family and only differ somewhat from each other in sorting and percentage of inclusions. Furthermore a final assessment of each fabric involves also the ware and pottery typology.

Appendix 3 gives a complete description of the specific fabric containing the earliest architectural

terraccottas recovered at the *Satricum* and dated around 600 BC. Figure 22 illustrates the architectural terraccottas as well as the vessel forms attributed to the same fabric.

#### 4.5. Results: the fabric classification

All in all 54 fabrics were identified in the past five years (Appendix 2). This section will list 13 fabrics in order of prevalence at *Satricum*. The order derives from the number of sherds analysed per fabric. This number gives an indication of the dominance of fabrics excavated by the Groningen Institute of Archaeology at *Satricum*. The 42 fabrics (55–13 = 42) not discussed in detail will be presented at a later stage or consist of only a few sherds, not enough to form a consistent group. Some of these sherds might be actually imports.

##### 1. SAT I/(II).AD\*.ms-vps(1–4).a, variety of characteristics/(slightly) gritty

1634 sherds attributed to this fabric.

Wares: *impasto bruno*, *impasto rosso* and a few sherds coarse ware. The fabric is locally made. Present as fabric in 7th century BC pottery kiln (Nijboer, 1998: pp. 115–121) but also in the third production site at *Satricum*, dated to the 5th/4th century BC.

Vessel forms: jar, storage jar, miniature jar, miniature cup, tile, bowl, large bowl, lid, plate, *holmos*, *forNELLO*, spindle-whorl, spool, loomweight and mug. Date: Late 9th till 5th/4th centuries BC, most of which dated to the 8th, 7th century BC (fabric present in some of the huts).

Limited numbers of coarse wares and Archaic/5th century BC vessels though the use of the fabric definitely continued into the 5th/4th centuries BC. The few coarse ware sherds present may be due to the assessment of the variables. A typical coarse ware is indeed related (SAT I.AD\*.E.ms-ps(1–4).a, fine gritty (with considerable more augite). Other forms executed in this fabric are fragments of roof tiles, a terracotta fragment as well as a temple model, all dated to the 5th century BC.

The fabric also includes a jar which can be considered as one of the oldest measures of capacity in Italy (Nijboer, 1998: fig. 73, jar 1). This indicates that this measure was probably made locally and that the knowledge for making such measures of capacity was available at *Satricum*.

Thin sections available.

Fabric present in some of the huts;

Related to the following fabrics:

- SAT I.AD.ns(1–4).a, ((extremely)large) FeMn nodules/crumbling/gritty;
- SAT I.AD\*.E.ms-ps(1–4).a, fine gritty (thus, with considerable more augite than fabric 1);

- SAT II.ADe.ms-vps(1–4).ab, variety of characteristics.

##### 2. SAT I/(II).AD\*.ms-ps(1–4).b, variety of characteristics

676 sherds attributed to this fabric. The difference between this fabric and the previous one concerns mainly the sorting and amount of inclusions (a. indicates more than 20% solid inclusions while b. indicates 10 to 20% solid inclusions). Some sherds assigned to this fabric derive from 7th century pottery kiln.

Wares: *impasto bruno*, *impasto rosso* and a few sherds coarse ware.

Vessel forms: jar, storage jar, tile, lid, *holmos*, *forNELLO*, sieve, spindle-whorl, spool, cup, bowl and amphora.

Date: late 9th till 6th century BC.

Thin sections are available.

Related to the following fabrics:

- SAT I/(II).AD\*.ms-vps(1–4).a, variety of characteristics/(slightly) gritty;
- SAT I.ad\*eq.ps-vps\*(1–4).c, (large) FeMn nodules.

##### 3. SAT I.=.ws\*(1–4\*).d, ((large)FeMn nodules)

585 sherds attributed to this fabric that has a very low percentage of visible inclusions (< 5%), which appear well sorted though not under the microscope. This fabric is suitable for fine wares reflected in the vessel forms including many decorated (incised and relief decorations) tablewares, slipped vessels sometimes burnished to lustre. The fabric includes the typical *Satricum anforiskoi*, *kantharoi* and bowls identified by Beijer (Beijer, 1991b) as well as a vessel type related to the 'Phoenician' plates (classified by Beijer as Bowl V-6), similar to those found in the Western Mediterranean (Peserico, 1998).

Wares: *impasto bruno*, *impasto rosso* and a few sherds coarse ware.

Vessel forms: carinated bowl, bowl, plate, jar, cup, amphora, strainer, stand, spool, spindle-whorl, dolium and jug (*orciolo*).

Date: 9th till 6th centuries BC.

Thin sections available.

Related to the following fabrics:

- SAT I.ad\*eq.ps-vps\*(1–4).c, (large) FeMn nodules.

##### 4. SAT I.ad\*eq.ps-vps\*(1–4).c, (large) FeMn nodules

495 sherds attributed to this fabric, which is related to the above fabrics. This fine fabric contains a low percentage of inclusions (5 to 10%), which vary in size. It consists predominantly of tablewares.

Wares: *impasto bruno*, *impasto rosso* and a few sherds coarse ware.

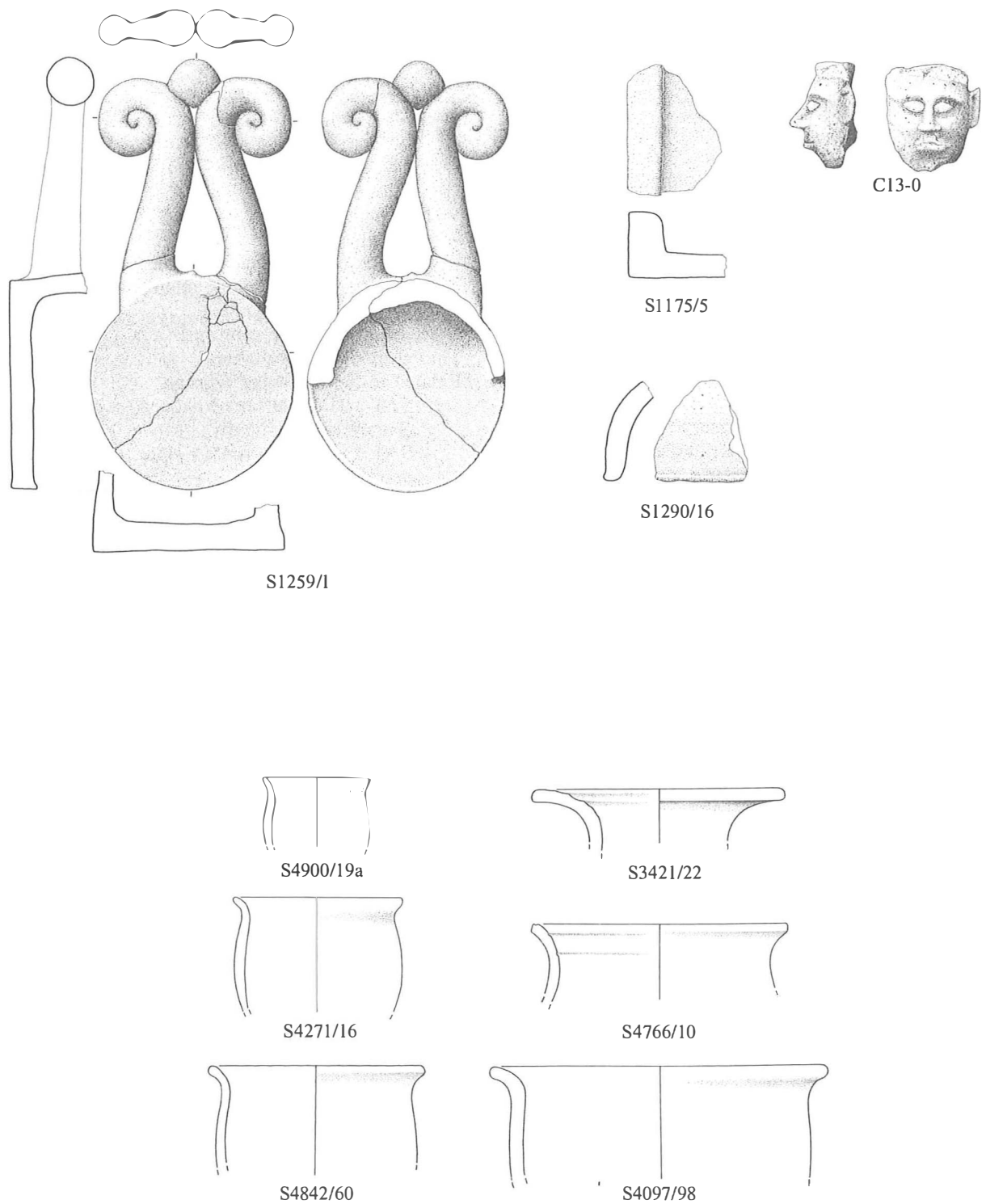


Fig. 22. Architectural terracottas and vessels made in fabric SAT I.AD\*K\*.vps\*(1-4\*)ab, occ.(large) FeMn/ occ.(small) augite, dated around 600 BC (selection of sherds, 1:4).

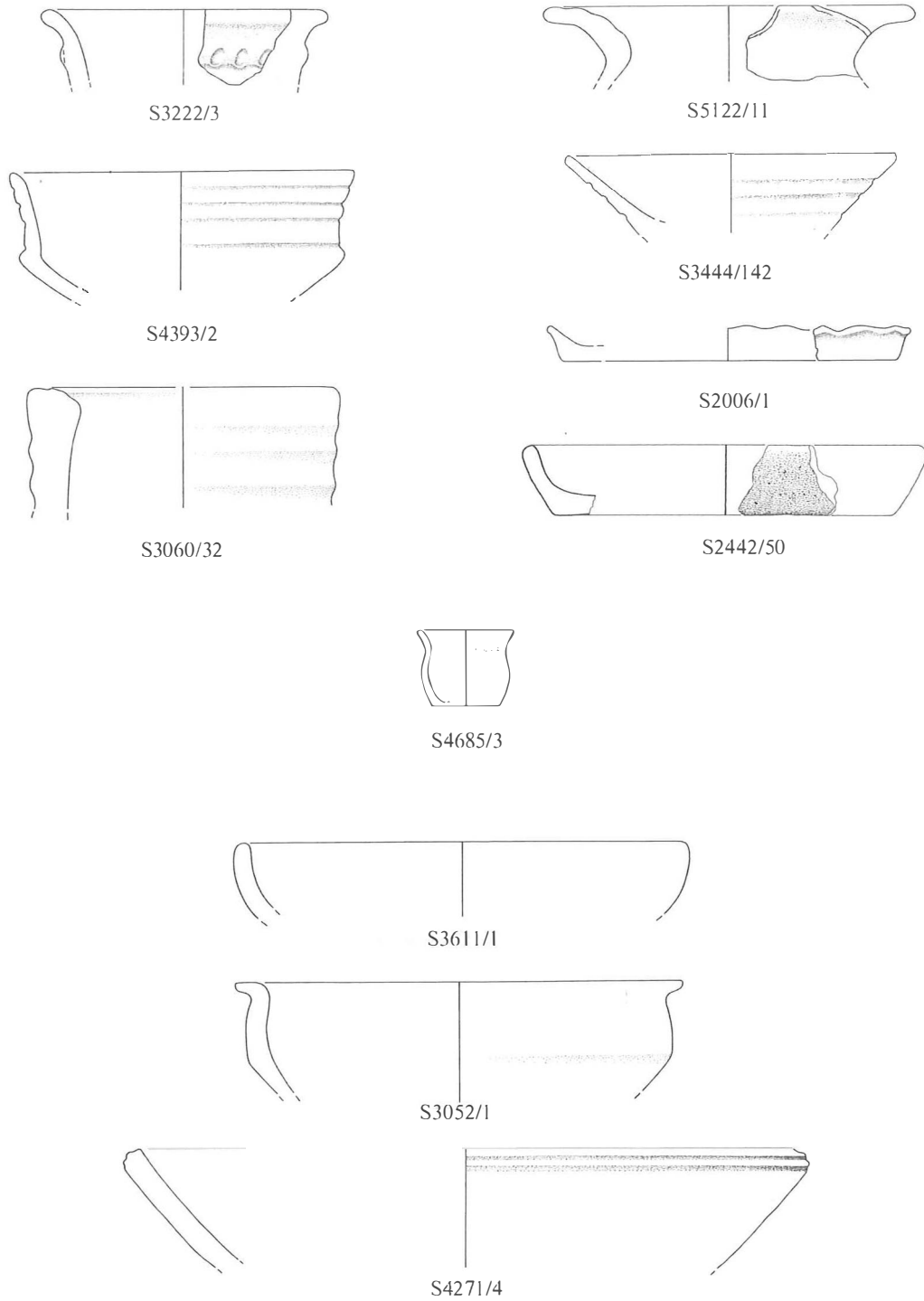


Fig. 22. Continued.

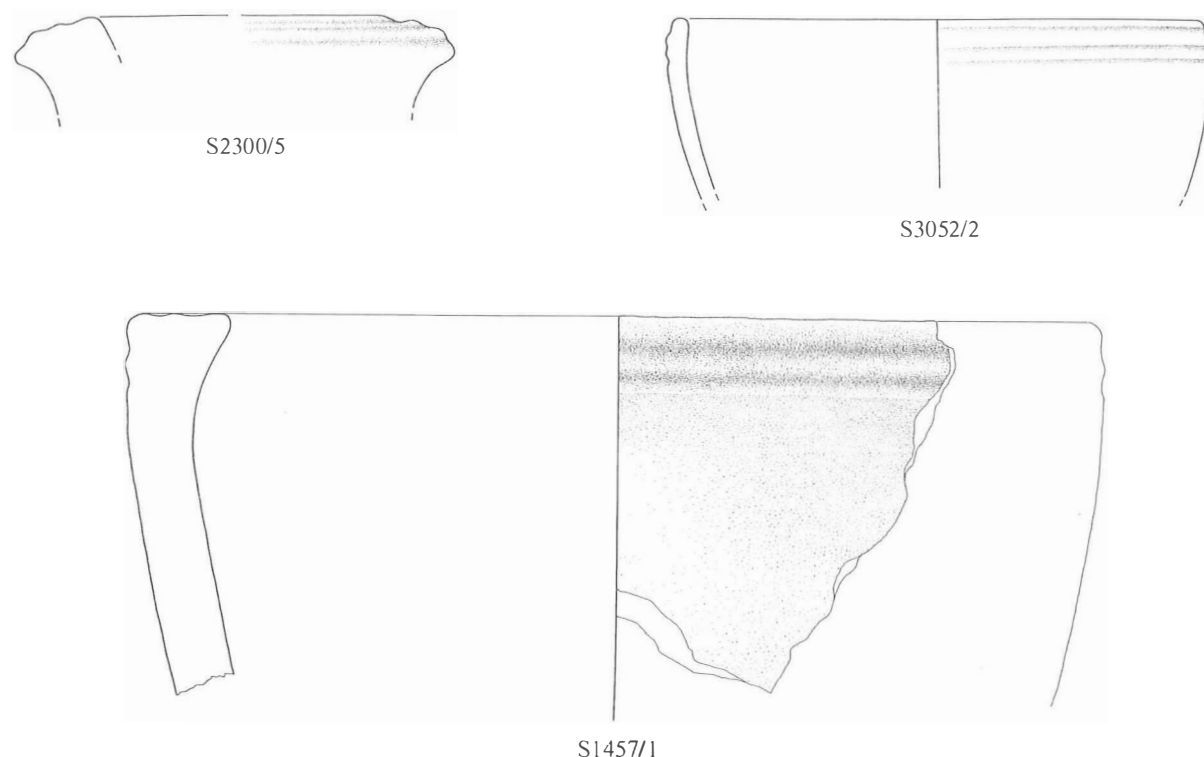


Fig. 22. Continued.

Vessel forms: miniature plate, miniature bowl, miniature cup, spool, spindle-whorl, loomweight, jar, storage jar, amphora, *fornello*, sieve, plate, *holmos*, jar, lid, bowl and cup. Fabric present in some of the huts.

Date: late 9th till 6th/5th centuries BC.

Thin sections available.

Related to the following fabrics:

- SAT I/(II).AD\*.ms-ps(1-4).b, variety of characteristics;
- SAT I. =.ws\*(1-4\*).d, ((large) FeMn nodules).

In the above four fabrics, coarse wares are included but they only occur as intrusion. The bulk of the ceramics involved are *impasto bruno* and *impasto rosso* wares. This fabric family is a typical fabric family of the Iron Age and Orientalising period. The few coarse ware sherds can be accounted for since they are related to typical coarse wares such as SAT I.AD\*.E.ms-ps(1-4).a, fine gritty.

##### 5. SAT II.AD\*.ws(3-4).a, ((black) organic)

Fabric with 246 sherds attributed. It is related to fabric 8 though with finer texture and well sorted inclusions (< 250). The fabric contains mainly tablewares but also some 5th, 4th century BC large jars. From the assessment of a fresh break there is no distinction possible between the 7th century BC *impasto rosso* plates/bowls and the 5th, 4th century BC

vessels. The distinction in date becomes however obvious when one considers the surface treatment as well as the typology of the vessel forms.

Wares: orange coarse wares, *impasto rosso*, late, grey *bucchero*.

Vessel forms: bowl, cup, jar, jug, *amphoriskos* and plate.

Date: 7th century BC and 5th, 4th centuries BC.

Related to the following fabrics:

- SAT II.AD\*.ws(4).abc.

Thus fabric 5 is related to SAT II.AD\*.ws(4).abc, which consists of *bucchero* sherds dated to the 7th century BC. This substantiates the close relation between the local wares *impasto rosso* and *bucchero* during the 7th century BC at *Satricum*. SAT II.AD\*.ws(4).abc has 46 sherds attributed, which coloured orange after refiring in an oxidising atmosphere.

Wares: *bucchero*.

Vessel forms: calice, *kantharos* and amphora.

Date: 7th century BC.

##### 6. SAT I.AD\*K\*.vps\*(1-4\*).ab, occ.(large) FeMn/occ.(small) augite

Fabric containing domestic pottery as well as the oldest architectural terracottas at the site (157 sherds attributed).

Full fabric description in Appendix 3 as example of the administration of an individual fabric.

Wares: *impasto rosso* and *impasto bruno*.

Vessel forms: tile, cover tile, acroteria, small terracotta head (probably decorating an architectural terracotta), bowl, calice, cooking stand, stand, storage jar, large bowl (*teglia*), miniature jar, jar, lid and plate (fig. 22).

Date: late 7th, early 6th century BC.

Thin sections available.

Related to the following fabrics:

- SAT I.AD\*.ms(1-4).b, lava\*/(large) FeMn nodules/occ. black organic;
- SAT I.ad\*Kq.vps(1-4).b, large FeMn nodules/(hardness+);
- SAT I.K\*.vps\*(1-4\*).bc, occasionally striking white tiny dots.

7. SAT I.AD\*E.ms-ps(1-4).a, *fine gritty*

Fabric with 156 sherds attributed and related to fabric 10 though with finer mineral inclusions. Some sherds derive from 7th, others from late 6th century pottery kiln. Distinction between wares is clear judging from the whole appearance of the sherds though less clear from a fabric point of view, which analyses the appearance of the surface of a fresh break. Wares: mainly coarse ware, some *impasto rosso* and *impasto bruno*.

Vessel forms: Jar, storage jar, stand, lid, mug, bowl (*teglia*), spool, cooking stand and tile.

Date: 8th till 5th century BC.

Thin section available.

Related to the following fabrics:

- SAT I/(II).AD\*.ms-vps(1-4).a, variety of characteristics/(slightly) gritty;
- SAT I.AD\*EQ.ps-vps(1-4).ab, medium-coarse gritty/(hardness+).

8. SAT II.ADe.ms-vps(1-4).ab, *variety of characteristics*

123 sherds attributed to this fabric. Fabric with restricted repertoire mainly occurring in Votive Deposit II, *La Fornace* survey and Southwest necropolis (Gnade, 1992; Nijboer et al., 1995; Bouma, 1996). Wares: coarse wares.

Vessel forms: jar, large bowl (*teglia*), votive terracotta and lid.

Date: late 6th, 5th, 4th centuries BC.

Related to the following fabrics:

- SAT I/(II).AD\*.ms-vps(1-4).a, variety of characteristics/(slightly) gritty.

9. SAT II.AD\*.ms-ps(1-4).a\*, (*augite*)/(small) black stains)

Fabric with 119 sherds attributed.

Wares: *impasto* (orange).

Vessel forms: jar, bowl, large bowl (*teglia*) and antefix. Comparable to Knoop Fabric 2 described as 'Campanian' (Knoop, 1987: pp. 228-229).

Date: 6th century BC.

Thin sections available.

Not related.

10. SAT I.AD\*EQ.ps-vps(1-4).ab, *medium-coarse gritty/(hardness+)*

Fabric with 101 sherds attributed including the red architectural terracottas dated to the 6th century BC among which wasters from the late Archaic kiln (Nijboer, 1998: pp. 121-129). Fabric contains 15 to 25% solid inclusions and is therefore suitable for the manufacture of the larger, coarse vessel types as testified by the vessel forms.

Wares: *impasto* (red) and coarse wares.

Vessel forms: Storage jar, plate (large), tile, cover tile, lid, jar and bowl (*teglia*).

Date: 6th century BC.

Thin sections available.

Related to the following fabrics:

- SAT I.AD.ns(1-4).a, ((extremely) large) FeMn nodules/crumbling/gritty;
- SAT I.AD\*E.ms-ps(1-4).a, fine gritty;
- SAT I.ad\*eQ.vps(1-4).bcd, hardness+.

11. SAT I.AD.ws(1+3/4).a, *ws tiny white dots/(large) FeMn nodules*

Red *impasto* with well sorted inclusions (67 sherds attributed).

Wares: *impasto rosso*

Vessel forms: amphora, storage jar, jar, bowl (*teglia*) and plate.

Date: 7th till 5th centuries BC.

Thin sections available.

Not related directly.

12. SAT II/III.E.ps-vps(1-4).a, *coarse gritty/leucite-lava and leucite-tuff*

Fabric belonging to the Late Archaic Fabric Family of pale *impasto* containing considerable amounts of augite (29 sherds of this specific fabric attributed).

Wares: Pale *impasto* (*impasto chiaro*).

Vessel forms: tile, storage jar, loomweight, large bowl (*teglia*), antefix (Juno Sospita, Satyr and Menade), fragments of life-sized terracotta statues and wasters from Late Archaic Kiln in A13-14 (Nijboer, 1998: pp. 121-129).

Date: late 6th, 5th centuries BC.

Thin sections available.

Related to the following fabrics:

- SAT (II)/III. E.ps-vps(1-4).b;
- SAT III.E.ms(1-3).ab, fine gritty;
- SAT (II)/III.EK.ms-vps(1-4).b.

13. SAT III.E.ms(1-3).ab, *fine gritty*

Fabric belonging to the Late Archaic Fabric Family of pale *impasto* containing considerable amounts of augite (25 sherds attributed).

Wares: Pale *impasto*.

Vessel forms: bowl, loomweight, votive *arula* with naked four-winged male figure, tile and large bowl (*teglia*; among which those found in the Late Archaic kiln in A13–14; Nijboer, 1998: pp. 121–129).

Date: late 6th, 5th centuries BC.

Thin sections available.

Related to the following fabrics:

- SAT II/III.E.ps-vps(1–4).a, coarse gritty/leucite-lava and leucite-tuff;
- SAT (II)/III. E.ps-vps(1–4).b.

## 5. DEVELOPMENT OF TECHNOLOGY BASED ON THE FABRICS CLASSIFICATION (A.J.N.)

### 5.1. Introduction

One of the objectives of the fabric research has been that the data obtained would assist an analysis of the pottery technology involved. The account presented is mainly based on the fabrics and on the kilns excavated at *Satricum*. I refer to Nijboer (1998) for a general account of the development of the ceramic craft in central Italy from 800 to 400 BC. This explanation of the transition from household production to pottery workshops in central Italy based on an assessment of the industrial debris and its context, is still valid but may have to be adjusted on a local level.

The fabric typology itself has an intrinsic purpose as a classifying tool but also serves other objectives. Gert van Oortmerssen worked on the intrinsic purpose of the fabric classification, for the other objectives archaeologists were required. It is first essential to establish if the fabric typology can be used as a chronological tool. This question has been answered indirectly in the previous section; a fabric or fabric group can become a dating tool once the fabric typology is augmented with vessel types derived from closed contexts (from tombs, deposits and stratigraphic excavations). Usually a fabric *per se* offers a less precise dating tool than vessel type. This is caused by some conservative features of the ceramic craft, especially when the resources are concerned (Rice, 1987: pp. 459–466; Arnold, 1985: pp. 221–224). The traditional aspect of the craft is indeed reflected in the fabric classification. Fabrics 1 to 4 have a predominant date range from the 9th till the 6th/5th centuries BC, which can not be subdivided on fabrics level. Fabrics 1 to 4 are related in characteristics and therefore form a family. The main distinction concerns sorting and percentage of inclusions. The bulk of the ceramics involved are *impasto bruno* and *impasto rosso* wares, wares not distinguished by their fabric but by the surface treatment. This fabric family is typical for the Iron Age and Orientalising period. As such fabrics 1 to 4 re-

flect the Iron Age pottery tradition, which at *Satricum* continued during the 7th century BC. The few sherds within this fabric family dating to the 6th century BC are interferences caused by the domains of variability of individual attributes. The *Satricum* fabric family dating to the Iron Age and Orientalising period demonstrates that a limited number of fabrics was used for a variety of vessels. This is in contrast to the Archaic pottery tradition where distinct fabrics (as well as wares) became separated into those used for the manufacture of:

- Architectural terracottas and large vessels such as storage jars (red/orange *impasto* and *impasto chiaro*);
- Tablewares (depurated wares); and
- Cooking jars en lids (coarse wares).

Thus the function of the pottery became to dictate to some extent the fabrics employed by the potter. The use of specific fabrics for the manufacture of ceramics with a particular function demonstrates the development of the potters' craft. It is during the 6th century BC that nucleation of workshops becomes feasible for some major urban centres in central Italy as demonstrated by settlement excavations (Nijboer, 1998). The process of nucleation of workshops corresponds with the simultaneous urbanisation process of Etruria and *Latium Vetus*.

The restricted value of the fabric typology as a chronological marker (compared to vessel form) is not absolute. Individual fabrics can be of short duration. For example, fabric 6. SAT I.AD\*K\*.vps\* (1–4\*).ab,occ.(large) FeMn/occ.(small) augite (Appendix 3; fig. 22), contains the earliest architectural terracottas at *Satricum* dated around 600 BC. It is noteworthy that this fabric is hardly mixed with older or later ceramics. Moreover it is the only fabric for architectural terracottas at the site, which contains a significant number of tablewares. A similar relation between early architectural terracottas and domestic pottery has been documented for Poggio Civitate and Acquarossa, two other sites with early buildings covered with architectural terracottas such as roof tiles (Tobey et al., 1986; Wikander, 1993: pp. 100–102, Appendix 2, pp. 168–170; Nijboer, 1998: pp. 161–171).

A combination of vessel type and fabric classification may also lead to a more precise dating. For example, jar III-3 (ovoid jar with outcurved rim, inside smooth transition from lip to shoulder, lip can be slightly thickened) is one of the most common jars at *Satricum*. As a vessel type it dates at the site from the 9th till the 5th/4th century BC and can by itself not be used as a concise chronological marker. However, in combination with the fabric, the date range can become either 9th–7th century BC or 6th, 5th century BC. A similar account has been given for the combination fabric type and ware. Fabric 5. SAT



II.AD\*.ws(3–4).a, ((black) organic) contains mainly tablewares though also some 5th, 4th century BC large jars. From the assessment of a fresh break there is no difference between the 7th century BC *impasto rosso* plates and bowls and the 5th, 4th century BC vessels. The distinction in date becomes however obvious when one considers the surface treatment as well as the typology of the vessel forms. The *impasto rosso* ware of this fabric is dated to the 7th century BC while the orange coarse wares and the late, grey *buccherio* represents the 5th, 4th century BC version. So far the topic of dating in relation to the fabric typology.

There is an uneasiness about differentiating between the various typologies (vessel, fabric and ware) presented in this paper since the sherd itself is an entity combining the various typologies feasible. Adams and Adams consider these different classes as domains of variability, which are independent (Adams & Adams, 1991: p. 176). As we have seen above a change in ware (esp. *impasto bruno* and *impasto rosso*) does not necessitate a change in fabric. In the field as well it became useful to differentiate between the three classifications because with the hundred-thousands of sherds excavated it became increasingly difficult to discuss fabric and ware groups without their systematic description. Besides attribute clustering adds to the identification of types (Adams & Adams, 1991: p. 177).

## 5.2. Kiln sites at Satricum

For the reconstruction of the ceramic craft at *Satricum* it becomes necessary to consider the context as well of the various fabrics identified. The various kiln sites will be presented first, after which some conclusions will follow regarding the local fabrics.

Three pottery production sites have been excavated at *Satricum* dating from the 7th till 4th centuries BC (for illustrations of the kilns and the associated vessels, I refer to Nijboer, 1998: pp. 115–131).

### 5.2.1. The 7th century BC kiln site

The oldest kiln at *Satricum* was built in the 7th century BC on the outskirts of the acropolis. Of this kiln, only part of the combustion chamber was preserved. It has a round shape with a *prae-furnium* attached. The contours of the combustion chamber and *prae-furnium* could be measured as 140 cm wide and 165 cm long while the height was preserved for about 30 cm. In the kiln pottery was found which had been exposed to a firing temperature, which was too high for the fabric. The excavated pottery included bowls, jars and cooking stands, many of which were decorated with plastic cord decoration. The fabric of the pot-

tery inside the kiln was consistent in colour, clay matrix and tempering material (predominantly fabric 1. *SAT I/(II).AD\*.ms-vps(1–4).a*, variety of characteristics/(slightly) gritty). Therefore, the most dominant fabric excavated at *Satricum* by the GIA is represented in the wasters found in the 7th century BC kiln. The fabric itself is related to fired samples of one of the local clays, which derives from the marine terraces. The marine terrace at Le Ferriere contains quartz, sub-rounded fragments of flint and to some extent local volcanic minerals. The volcanic minerals are mixed with the clay in varying quantities. Samples of this clay deposit were fired and thin-sectioned. These were subsequently compared with sections made from the pottery samples from the kiln. The thin-sections from the clay deposit and the pottery from the kiln are alike especially when one considers the possible processing techniques. For example, a thin-section of the fired clay deposit contains about 30% quartz/feldspar, 2–3% flint and some biotite while a thin-section of an *impasto* bowl that was found inside the kiln contained the above plus FeMn and volcanic rock fragments indicating that the paste for the ceramics was mixed with other non-plastic inclusions. The processing of the clay with crushed volcanic rock fragment accounts for the presence in the fabric of the bowl of augite and volcanic glass fragments.

During the 7th century BC there is no evidence for the use of a fast potters' wheel at the site. The fabrics, which can be associated with local production, are *impasto* fabrics which are hard to model on a fast wheel. These fabrics are satisfactory for hand modelling and a turntable. Evidence for slow rotation can indeed be found on some of the *impasto* vessels. On account of the primitive kiln construction and the character of the pottery produced, the mode of production at *Satricum* should be interpreted as a household industry. This does not exclude a continuing household production of some of the wares for preparing food. However, other ceramics at the site reflect the progressive features of the ceramic industry. Beijer has demonstrated that the local pottery was partly made with advanced modelling techniques. The thin walled *amphorae* for example, are made of a fine-grained *impasto* on a turntable from the early 7th century BC on. Vessel types which are associated with this industry, are carefully made *kantharoi*, *anforiskoi* and bowls. The pottery was decorated and burnished to lustre. It was manufactured both for the local market as well as for exchange with other sites in *Latium Vetus*. Thus, the local ceramic products of the 7th century BC demonstrate an increase in specialisation but hardly an increase in efficiency, which would indicate proper workshop conditions. The increase in craft specialisation is also documented by the introduction of a new fabric. Fabric 5. (*SAT II.AD\*.ws(3–4).a*, ((black)

organic) emerges in the 7th century BC and is not related to the main fabrics family at *Satricum* dated to the Iron Age and Orientalising period (Fabrics 1. to 4.). Fabric 5. is neither associated directly with the oldest kiln and will be discussed further on in the paragraph on the distinct Phoenician influence at *Satricum* in the ceramic repertoire.

### 5.2.2. The 6th century BC kiln site

A second kiln excavated at *Satricum* was of an advanced type. It has a rectangular shape and dates to the late 6th century BC. The kiln was found along the edge on the south side of the acropolis and is about 3.7 m long, 2.7 m wide and its height was sustained up to 55 cm. The combustion chamber with *prae-furnium* was preserved and were filled with debris from the kiln structure, pottery and wasters. The blocks of tuff, which formed the substructure of the kiln, were dug into a layer which contained 7th century BC pottery. The remains of the structural features of the kiln were identified as fragments from arches and brick-like material all of which are tempered with organic matter (grasses). More than 100 kg. was excavated of the brick-like material. The bricks were probably used for building the arches and the upper structure of the kiln.

The pottery inside the kiln consisted of wasters from storage jars, plain jars, bowls and *tegulae*. The fabrics of the wasters include pale firing ceramics (of the Late Archaic fabric family of *impasto chiaro*, fabrics 12 and 13) and red firing ceramics (SAT I.AD\*EQ.ps-vps(1-4).ab, medium-coarse gritty/ (hardness+). Unlike the 7th century kiln, the late 6th century kiln is associated with wasters from various, distinct fabrics not belonging to the same family. This supports the statement made above that the development of the potters' craft is reflected by the circumstance that specific fabrics became to be used for the manufacture of ceramics with a particular function. The kiln and associated wasters clearly indicate the local production of fabrics 12. (SAT II/III.E.ps-vps (1-4).a, coarse gritty/leucite-lava and leucite-tuff) and 13. (SAT III.E.ms(1-3).ab, fine gritty). These fabrics belong to the Late Archaic Fabric Family of *impasto chiaro* containing considerable amounts of augite. Among the vessel forms there are various household items as well as architectural terracottas such as pale Archaic tiles with black oblique stripes. The fabric and mineral-content of the pale Archaic tiles and pottery was similar to the fabric and mineral-content of the temple decoration, which is dated around 500 BC. The clay for the Late Archaic fabric family might derive from weathered tuffs or from pale-firing pleistocene calcareous clays, which can be found downstream the Astura. The associated minerals of the tuffs and the weathered tuffs around *Satricum* are quartz, biotite, augite, olivine, rock

fragments, leucite, volcanic glass and occasionally flint. These minerals were found to be the same as identified in the thin-sections of the temple decoration (Kars et al., 1987: p. 60; McDonnell & Kars, 1990). It is concluded that the bulk of the architectural terracottas and pottery was produced from local clays and temper. The correlation between the ceramics that were recovered in the kiln with the pottery from the settlement is weak because of the few sealed deposits dated to the Archaic period. Therefore a concluding remark about the mode of production during the 6th century BC has to remain general. Nevertheless the late 6th century kiln itself reflects proper workshop conditions, which are further documented by the permanent character of the remaining associated structures. The corner of a building is at exactly 90° to the kiln and a well and drainage system were excavated nearby. In addition the amount of building activities at *Satricum* during the second half of the 6th century BC would have enhanced craft specialisation by an increase in demand for architectural terracottas. Tiles were made at the site from around 600 BC for covering various small buildings. The fabric of the red tiles (Fabric 6.) corresponds to the fabric of some tablewares and therefore correlate to the local pottery industry (a similar account is presented for Acquarossa; Wikander, 1993: pp. 137-139). Starting from the advanced household industry that was formulated for the 7th century BC, this industry continued during the 6th century BC though the ceramic vessels are of simple shape and the fabrics altered containing significant amounts of non-plastics. The vessels are modelled on a turntable or wheel though not on a fast wheel for the paste was unsuitable for accelerated rotation. Increased efficiency of the pottery production documented by the standardisation of the ceramics replaced the manufacture of the labour intensive vessels of the previous century. On account of the confined range of the ceramic repertoire, the correlated standardisation of the vessels produced and the fabric specialisation (specific fabrics for specific vessel classes), it is likely that simple household production ceased. Workshop conditions did prevail during the 6th century BC at *Satricum*. The market for the products of the ceramic workshop(s) was predominantly local and the demand was primarily directed by the building activities at *Satricum* (cf. Maaskant-Kleibrink, 1992: pp. 108-146).

### 5.2.3. The 5th/4th centuries BC kiln sites

The third production site at the settlement was located about one kilometre to the west of the acropolis, near the *agger* and to the south of the road to Nettuno. The actual kiln was excavated during the last century and contained votive terracottas, which are dated to the 4th century BC. These votives in-

clude a head, an *uterus* and a foot (Della Seta, 1918: p. 320; Castagnoli, 1963: p. 515; Bouma, 1996: p. 418). A mould for forming a foot was recovered as well. Two areas with concentrations of kiln material were recently surveyed, which indicates that there could have been at least two kilns at this site. The pottery and blocks of tuff found during the survey suggests that this area was inhabited. The survey material included substantial fragments of a raised oven floor, which demonstrate that at least one of the kilns was large and that the kiln had separate combustion- and firing chambers. The survey also yielded wasters of tiles, imbrices and other pottery of the 5th and 4th centuries BC. Therefore, this workshop was involved in the production of votive terracottas as well as domestic pottery and roof tiles. Thin-sections of the ceramics recovered from this area contain a variety of minerals which occur locally. The clay matrix of the pottery corresponds with the clay of the marine terraces, a deposit of which was identified adjacent to the kilns (Nijboer et al., 1995). The workshop was situated next to a suitable clay deposit as well as along a major road. This location would have facilitated exchange especially with devotees who arrived at the site to participate in the religious rituals. The artefacts, which were recovered during the survey, constitute so far the only published evidence for human dwellings and pottery production during the post-Archaic period (but see the data recently published by Gnade, 2000). A few buildings were excavated on the plateau, which can be positively dated to this period while the existence of necropoleis on two of the plateau does not make extensive habitation likely. Nevertheless, the pottery production can be correlated with the two small necropoleis that are dated to this period, the large votive deposit II on the temple hill and two other votive deposits at the site. The close relation between the surveyed area and votive deposit II is documented by the similarities in pottery of ordinary wares. The resemblance is displayed both in vessel types as well as in technology (Nijboer et al., 1995: pp. 10–14). On account of the contextual and stratigraphical evidence from deposit II and parallels from other sites in central Italy, most of the ordinary ware in the surveyed area can be dated to the late 5th and 4th centuries BC with a limited number of items dating to the full 5th century BC. From the contents of votive deposit II it was calculated that the demand for pottery by dedicants alone was significant. The workshop could have produced 300 to 400 ceramic artefacts a year, over a period of almost two centuries, just to supply the ceramic votives. The standardisation obtained and the fabrics of the dedicated jars, which included depurated wares and *figulina* modelled on a potters' wheel, does not indicate household industry but workshop conditions (Bouma, 1996: pp. 305–419). The plain vessels dominate during this period and

their execution does not imply a high degree of specialisation. The repertoire of the workshop was directed towards productivity and commodities with practical value. During the 6th and 5th centuries BC, production had been increased at the expense of labour intensive decoration techniques and surface treatments. Besides the ceramics that were required for the households at *Satricum* and for the funeral rites, the potters made and exchanged pottery and votives for pilgrims. Its location would have facilitated exchange, which was probably conducted at the workshop. It is not possible to decide whether they were full-time employed or combined the production of pottery with agriculture. A part-time occupation appears likely because the settlement patterns at *Satricum* became dispersed. Besides there is so far little information on the character of the settlement during the 5th and 4th centuries (Kleibrink, 1997; Gnade, 2000). The limited size of the settlement does not reflect urban conditions and this makes it unlikely that there was more than one workshop.

### 5.3. Concluding comments on technological development

The three production sites excavated at *Satricum* reflect household industry and/or workshop conditions at different stages. From a fabrics point of view one can detect some specialisation from the 7th century BC onwards when new fine fabrics were introduced such as fabric 5. (*SAT II.AD\*.ws(3–4).a*, ((black) organic) and the related *bucchero* fabric (*SAT II.AD\*.ws(4).abc*). The fine texture and well sorted inclusions (< 250) make fabric 5. in theory suitable for wheel throwing (the 7th century BC vessels do however not present clear characteristics for wheel throwing (cf. Courty & Roux, 1995). As such fabric 5. substantiates the comments given above that at *Satricum* workshop conditions emerged during the 7th century BC. Increasing specialisation is also documented by fabric 6., dated around 600 BC and containing domestic pottery as well as the oldest architectural terracottas at the site (Appendix 3; fig. 2).

Further comments on the relation between fabrics, wares and vessel forms are given in the concluding section (preliminary results).

## 6. THE REGIONAL CONTEXT; FABRICS CLASSIFICATION FROM SURVEYS IN THE TERRITORIES OF LANUVIO, SEZZE AND SEGNI (P.A.J.A.)

### 6.1. General introduction

In this section a fabrics classification of pottery from surveys carried out within the framework of the Pon-

tine Region Project (PRP) is presented. Regional research forms an integral part of the Lazio pottery project and furnishes a wider geographical context for the *Satricum* fabrics classification. The stratigraphical contexts of the *Satricum* pottery are the starting point for dating the survey pottery, while the *Satricum* typology is used to attribute functions to otherwise a-diagnostic sherds. A first report on the regional fabrics classification concerned the pottery from a survey in the territory of Lanuvium held in 1996 published earlier (Attema, 2000). The Lanuvium survey was the second in a series of three surveys carried out in the research programme 'Roman colonisation south of Rome, a comparative survey of three early romanised landscapes' (Attema, 1995a). The present report presents the fabric reports of the Sezze survey (carried out in 1995) and the Segni survey (carried out in 1998), while a summary report of the already published Lanuvium fabrics is added to complete the work done so far on the fabrics classification (see Attema, 1995b; Attema et al., 1996, 1997; Attema 2001 for the Sezze survey; Attema, 1996, 2000 for the Lanuvium survey; and Attema & Van Leusen, in prep. for the results of the Segni survey and the final report on the three surveys in the Roman colonisation program) (fig. 1).

The main objective of the regional fabric classification is to evaluate if and in what way the fabrics from various areas in South Lazio relate to the *Satricum* fabrics. This is achieved by relating the fabric codes of the *Satricum* classification to the classifications presented in this section (Attema et al., 1997; Attema, 2000). The comparison will be limited to those fabrics that fall within the chronological range of the *Satricum* fabrics, i.e. broadly spoken between the early Iron Age and the early Republican period, although reference will be made to a number of fabrics from the Bronze Age and a number of fabrics that continue into the later Republican periods. It must be noted that fine wares and Roman amphorae are left out of the classification and that it is assumed that all fabrics presented here are local products.

As in the case of the *Satricum* classification (and the already published classification of the Lanuvium survey pottery), three fabric families could be identified for the Sezze and Segni surveys based on the colours visible in the core just beneath the surface; a red-firing family (I), an orange firing family (II) and a pale-firing family (III). These families were, in line with the methodology presented above, subdivided in fabrics with particular (combinations of) mineral inclusions, sorting of the inclusions, particle size and percentage of inclusions. As for the description of the fabrics of the survey pottery, the main characteristics of the fabrics are included in the text, together with the comments. Work in progress on the interpretation of the surface record has proven the practical value of the fabric classification of the

survey pottery to detect earlier materials in later Roman contexts.

Each discussion of a survey pottery collection is preceded by an overview of the fabrics discussed in the text.

## 6.2. The Sezze fabrics classification

### 6.2.1. Background

The fabric classification of the Sezze sherd collection was based on a total of 33,886 sherds recorded in the database during the survey. For the most part these sherds were collected along transects, while part of the material was collected from on-site string square surveys. The material was processed in the local antiquarium of Sezze by students who created from the incoming survey pottery a collection of fabric references to which sherds were assigned. These references contained besides the *impasto* and coarse wares also the depurated fine wares, black glazed wares, terra sigillata s and amphorae (not presented here). The references pertaining to *impasto* and coarse wares were later classified by Gert van Oortmerssen using the *Satricum* fabric classification method. Distribution maps (to be published elsewhere; Attema & Van Leusen, in prep.) are therefore based on combinations of fabrics with comparable characteristics and date ranges. Fabrics having no solid quantitative basis have been left out in the discussion below.

### 6.2.2. The red-firing family (SEZ I)

A total of 13 fabrics with a solid quantitative basis could be discerned in this group that may be subdivided in a sub-group of red firing *impasto* fabrics with a relatively pure matrix or fabrics or with a very low percentage of inclusions including FeMn nodules, a sub-group characterised by quartz/feldspar inclusions and a sub-group characterised by augite inclusions.

#### 6.2.2.1. Fabrics of the pure matrix sub-group

This group is characterised by fabrics with a relatively pure matrix and the presence, though not always, of FeMn nodules in the fired clay. The date range is restricted to the protohistoric period (MBA/Iron Age).

##### *Fabric SEZ I. = .wv\*(1-4\*).d*

This fabric is dark red to brown firing. It occurs with or without a dark core, and occasionally has sharp divisions between the matrix colours. It has a very low total percentage of inclusions and occasionally FeMn nodules are present and detectable by eye; absence of FeMn nodules in individual sherds is possibly due to the uneven distribution of the scarce inclusions.

Find contexts in the Sezze area of this fabric are the late MBA Vittorio Vecchi cave, the Selva Forcella protohistorical site and the

protohistoric layer beneath the temple of Juno in the plain of Sezze (see for references Attema, 1997, 2001). These furnish the approximate dates for the various findspots in the sample areas surveyed by the PRP in the plain.

This fabric strongly resembles fabric SAT I. = *ws\*(1-4).d*, (large) *FeMn nodules*, although the Sezze fabric has a purer clay matrix. Find contexts indicate that this fabric was employed for a long period from at least the later MBA period (Vittorio Vecchi cave) to the advanced Iron Age (cf. *Satricum*). The fabric is related to SEZ I.ad\*eq.vps(1-4).c.

Forms include two shoulder fragments of jars from the protohistoric layer beneath the temple of Juno and wall fragments with plastic cord decorations.

#### *Fabric SEZ I.ad\*eq.vps(1-4).c*

This fabric is reddish to brown firing, with a dark core. It is very poorly sorted, has a hackly clay matrix despite a low total percentage of inclusions. Augite as well as FeMn and sporadically some tuff can be detected. A find context in the Sezze area is again the protohistoric layer beneath the temple of Juno. This layer furnishes the approximate date for this fabric.

This fabric compares well to SAT I.ad\*eq.ps-vps\*(1-4).c, (large) *FeMn nodules* as far as the total percentage of inclusions is concerned and the presence of augite, FeMn and quartz/feldspar. Forms include Iron Age jars and hand made flat bases of Iron Age jars or bowls.<sup>1</sup>

#### 6.2.2.2. *Fabrics of the quartz-feldspar sub-group*

##### *Fabric SEZ I.AD\*e.ps-vps(1-4).b, FeMn/tuff*

This is a reddish to brown firing fabric, with or without a dark core. It is poorly to very poorly sorted and a variety of inclusions is present. It has a predominance of quartz/feldspar, while augite is subdominant. None of the more certain find contexts in the Sezze area (Vittorio Vecchi, temple of Juno and the Selva Forcella site) had this fabric. The forms included in this fabric are indeed indicative of the later Iron Age and Archaic period as for instance horizontal band handles of large jars, *teglia* handle, rim of jar and a *a becca di civetta* base. The fabric also includes four knobs of lids that may date into the 5th/4th c. BC as well as rims that may date later.<sup>2</sup> The fabric compares well to SAT I(II).AD\*.ms-ps(1-4).b, *variety characteristics*. This is one of the most significant fabrics from *Satricum* for the Iron Age till (late) Archaic period. Within the Sezze fabrics there is a strong relation with SEZ I.ad\*eq.vps(1-4).c.

##### *Fabric SEZ I.ad\*.ms-ps(2-4).c, (augite)*

This is a reddish to brownish firing fabric, with fine inclusions and a low percentage of inclusions. Forms are characteristically sharp compared to the Iron Age *impasto* forms and to be dated in the late Archaic and post-Archaic period (5th/4th c. BC) and probably continue into the Republican period. The selected sherds are rims of bowls, knobs of lids as well as sharply wheel-turned flat bases.<sup>3</sup> On ware level the sherds classify as coarse ware.

##### *Fabric SEZ I.AD\*.ms-ps(2-4).b, (augite)*

This is a reddish to brownish firing fabric, with or without a dark core. It has a medium percentage of inclusions, but gives the impression of a low percentage since inclusions are small. In general, sherds in this group show a slight predominance of augite. Forms include fourteen knobs of lids, six flat bases of jars, two handles and seven rims of jars/bowls as well as a lug of a *teglia* and a number of body fragments. The date range is problematic, but covers certainly the late Archaic and post-Archaic period, though it may

contain also Roman red-firing coarse ware. There is no one-to-one relation with a *Satricum* fabric.

#### 6.2.2.3. *Fabrics of the augite sub-group*

##### *Fabric SEZ I.e.ms-ps(1-3).c*

This is a reddish to brown firing fabric with a dark core. It has a low total percentage of inclusions with a slight predominance of augite. This fabric was also among the sherds from the proto-historical layer beneath the temple of Juno. Forms include an archaic base *a becca di civetta*, knobs of lids, a lug, two flat bases of jars and a rim with an internal angle, as well as a rim of a *teglia*.<sup>4</sup> The date range is Archaic to (possibly) post-Archaic. No convincing relationship with a *Satricum* fabric could be established.

##### *Fabric SEZ I.E.ps-vps(1-3).b*

This is a reddish to brownish firing fabric with a predominance of evenly spread coarse-sized augite minerals in a relatively pure clay matrix. Forms include a large almond shaped rim of a storage jar. The date range is Archaic to post-Archaic. In a general sense there is a relationship with the Archaic coarse gritty fabrics of storage jars and tiles at *Satricum*.

#### 6.2.2.4. *Conclusion on the Sezze red firing fabrics*

On the basis of the identification and the date range of the red-firing fabrics in the survey pottery several protohistoric and Archaic findspots could be identified in the plain of Sezze. These would otherwise have gone unnoticed, as in general the red firing *impasto* and red-firing coarse ware sherds from the survey were tiny and very worn, while few had diagnostic features and occurred in the midst of dense concentrations of later Roman Republican and Roman Imperial materials.

A number of fabrics have been left out of this discussion, as they had no solid quantitative basis, being represented by one or two sherds only. Fabrics with a solid quantitative basis could conveniently be placed in three groups, and are technologically related to stratigraphically anchored *Satricum* fabrics, although only in a few cases did fabrics really match. We discerned an early BA/IA group with a relatively pure matrix, a quartz/feldspar dominant group dating between the later Iron Age and the Archaic/post-Archaic period and an augite group likewise dating between the later Iron Age and the Archaic/post-Archaic period. Only a minority of the selected sherds seem to pertain to a different period having deviating technical characteristics (hardness, surface treatment) indicative of later periods (mainly Roman). These sherds are easily recognized and clearly belong to other ware groups than the red *impasto* and red coarse wares of the fabrics discussed here.

#### 6.2.3. *The orange-firing family (SEZ II)*

The orange firing family consists of two quartz-feldspar sub-groups. In the first group augite appears as an additional, although sub-dominant characteristic. Vessel forms in this group consist of domestic pottery. No clear relations could be established with

*Satricum* fabrics, although SAT II.ADe.ms-vps(1–4).ab, variety of characteristics and SAT II.AD\*.ms-ps(1–4).a\* (augite)/((small) black stains) are comparable.

The pastes of the second quartz-feldspar group as a rule have a higher percentage of coarse particles and can be functionally attributed to the local production of amphorae and tiles.

#### 6.2.3.1. *Fabrics of the first quartz-feldspar sub-group (with augite as sub-dominant)*

*Fabric SEZ II.AD\*.ws/vps(1+3/4).b, coarse augite*

This is an orange to brown firing fabric, of which the core may have a different colour. It combines fine and coarse inclusions, has a predominance of fine, hardly detectable quartz/feldspar and a subdominance of coarse detectable augite. Among the few selected sherds a large ring-base of a (late) Orientalising jar occurs. Also some small body fragments and part of a band handle of an Archaic vessel form. The date range is Late Iron Age to Archaic.

*Fabric SEZ II.AD\*.ms-vps(1–4).a, augite/variety characteristics*

This is an orange firing fabric with a greyish or brownish grey core, moderately to very poorly sorted and with a predominance of quartz/feldspar, some augite, and occasionally FeMn nodules. The selected sherds contain two loop handles of jars, a flat base of a jar and a raised base of a jar or jug, a plastic cord decoration and two small almond shaped rims of jars. A tentative date range for this fabric is late Iron Age till post-Archaic. It certainly predates the more powdery domestic coarse ware discussed hereafter.

*SEZ I/II.AD\*.ws/vps(1+3/4).b, (augite)/(large quartz/feldspar), variety of characteristics*

This is a reddish to orange firing fabric, sometimes with a greyish core. It combines fine inclusions with a low percentage of coarse inclusions. All sherds belong to wheelturned, somewhat powdery coarse ware. The sherds certainly post-date the Archaic red *impasto* but may be contemporaneous with the 5th c. BC, red/orange coarse ware, although a large part of it will date to the Republican period. The date range would thus be the later post-Archaic period (4th c. BC) and more in general the Roman Republican period. Typical forms are broad almond shaped rims of jars, straight rims of bowls, knobs of lids, flat bases, ring-bases, loop- and occasionally band handles. In short, common Roman Republican domestic coarse ware with an initial date in the post-Archaic period.

*Fabric SEZ I/II.AD\*.ms-ps(1–3).a*

This is a reddish to orange firing fabric with or without a dark core. It has a predominance of fine quartz/feldspar. It has a subdominance of augite that appears, however, characteristic. Only four sherds were in the selection; one body or base sherd of a large storage jar, two rims of small jars and part of a rim without lip from a jar or bowl. We possibly deal here with a fabric that is restricted to the late Archaic period.

#### 6.2.3.2. *Fabrics of the second quartz-feldspar sub-group*

*Fabric SEZ II.ademq.vps(1–4).b, (hardness +)*

This is an orange firing fabric with or without a greyish to brownish core. It is very poorly sorted and has besides quartz/feldspar and FeMn that can be detected by eye, large white and greyish inclusions (chalk). Hardness is above average. The sherds have a pitted surface. The selected sherds are restricted to tile fragments. The

fabric is hard to date; possibly it is Archaic on account of the many inclusions, but a Roman or post-Roman date is also possible on account of its hardness. There are no comparable fabrics from *Satricum*.

*Fabric SEZ II.ademq.vps(1–4).bc, hardness +*

This is an orange firing fabric with a greyish core and very poorly sorted. Besides quartz/feldspar and FeMn, detectable by eye, it has large white and greyish inclusions (not chalk). Its hardness is above average. Also the sherds in this fabric have a pitted surface. Only three sherds are available, all of which are from tiles or storage jars. The date is possibly Archaic, but a Roman or post-Roman date, is also possible on account of its hardness. No comparable fabrics from *Satricum*.

*Fabric SEZ II.adv.vps(1–4).cd*

This is a pale orange to pinkish firing fabric, very poorly sorted and with a low percentage of inclusions. It has a powdery texture. The sherds in the fabric collection pertain to locally produced amphorae and/or Roman tiles.

*Fabric SEZ II.ad\*p\*.vps(1–4).bc*

This is a pale orange to pinkish firing fabric, powdery and very poorly sorted with a low percentage of inclusions. Chalk is present in the clay matrix. The selected sherds belong to late Roman Republican/Imperial tiles, storage jars and locally produced amphorae.

#### 6.2.3.3. *Conclusion on the Sezze orange firing fabrics*

The orange firing fabrics found in the Sezze survey could be classified in two quartz-feldspar groups. The first sub-group can functionally be ascribed to domestic pottery (kitchenware). The presence or absence of a powdery surface may eventually prove to be a decisive criterion for dating the orange-firing fabrics of Sezze more precisely. The orange-firing late Archaic/early Post-Archaic fabrics do not seem to be characterised by the powdery surface that is typical for the later post-Archaic and Roman fabrics (4th c. BC and after). The homogeneity of especially the pastes of domestic pottery dating to the post-Archaic period indicates a degree of standardisation in production.

The second sub-group can functionally be ascribed to a somewhat mixed group of tiles/amphorae and storage jars. The first two fabrics that were discussed clearly belong to tiles/storage jars of local manufacture as they contain large chalk particles, but these are definitely not the standard Archaic or Roman fabrics, this mainly on account of their hardness. Their date must remain uncertain for now. The last two fabrics are local and used for the production of tiles/amphorae and storage jars alike in the Roman Republican and/or Imperial period. Both are powdery fabrics.

#### 6.2.4. *The pale firing family (SEZ III)*

The fabrics of the pale firing family have all been placed within one group. Except for the first fabric

listed, all of these are characterised by augite inclusions in their pastes. The selection is not deemed representative as domestic pottery is virtually absent from the collection, save for the second listed fabric.

*Fabric SEZ III.e.vps(1-4).d, hardness -*

This is a pale firing fabric with a very low total percentage of inclusions. Red grog, augite, FeMn and leucite can be detected. The selected sherds belong to tiles that date in the (possibly late) Roman Republican period.

*Fabric SEZ III.e.ms(1-3).c*

This is a pale firing fabric with a slightly darker core. It stands in the late Archaic tradition. It has a predominance of moderately sorted augite. The selection consists of one sherd only — a part of ring handle — that is the at the same time the only sample of domestic pottery in the pale-firing collection.

*Fabric SEZ III.e.vps(1-4).c*

This is a pale firing fabric with or without a core of slightly different colour. It has a low total percentage of inclusions, is very poorly sorted and shows a slight predominance of augite. It relates to SAT (II)/III.E.ps-vps(1-4).b and SAT (II)/III.e.vps(1-4).cd. The selected sherds are tile fragments.

*Fabric SEZ III.E.vps(1-4).abc, chalk rich matrix*

This is a pale firing fabric that occurs with or without a slightly darker core. It is very poorly sorted and shows a predominance of augite that can be detected by eye. Chalk is present in the matrix. The selected sherds pertain to storage jars and tiles.

*Fabric SEZ III.E.vps(1-4).b*

This is a pale firing fabric with a slightly differently coloured core. It is very poorly sorted, has a predominance of augite, while also FeMn, lava and leucite are present. Selected sherds belong to storage jars.

## 6.2.5. Conclusion

Except for the first fabric discussed, the pale firing fabrics all show a predominance of augite, and their pastes can be placed in the late Archaic tradition. The bulk of the sherds belong to large forms (*dolii*, tiles, large basins) and its adoption for the production of such forms will have continued well into the Roman Republican period when it was replaced by pure fabrics.

The absence of clear forms makes it hard to provide date ranges to the fabrics discerned. From *Satricum* we know that the adoption of pale firing fabrics already started in the late Archaic period, but most of the fabrics that were discussed here may date to the Post-Archaic period. It is certain that they continue to be used in the Roman Republican period where they occur in combination with black glaze ware.

## 6.3. The Segni fabrics classification

### 6.3.1. Background

The fabric classification of the Segni sherd collection is based on a total of 10.132 sherds that were recorded in the database as a result of the survey. For the most part these sherds were collected in on-site sample units of 16 m<sup>2</sup>. The material was processed in the local antiquarium of Colleferro near Segni by students who, as in the case of the Sezze and Lanuvium fabrics, subdivided the fabrics into references. These references contained besides the *impasto* and coarse wares also the depurated fine wares, black glazed wares, terra sigillatas and amphorae (not included here). As with the Sezze fabrics also the references pertaining to the *impasto* and coarse wares of the Segni survey were classified by Gert van Oortmerssen according to the method of the *Satricum* fabric classification. In the process various references created by the survey team had to be joined, while others were split, again leading to a loss of quantitative data on the level of the individual fabric. Fabrics without a solid quantitative basis were left out in the discussion below.

### 6.3.2. The red-firing family (SEG I)

The Segni red firing family could be subdivided in the same subgroups as the Sezze red firing family. It features a sub-group with a relatively pure matrix (two fabrics), a quartz/feldspar dominant sub-group (two fabrics), an augite dominant sub-group (one fabric) and a lava/tuff sub-group (one fabric).

#### 6.3.2.1. Fabrics of the pure matrix sub-group

*Fabric SEG I.e.ws\*(2-3).d*

This is a red firing fabric with a relatively pure matrix and may have a dark core. It has a low percentage of inclusions, of which the larger ones, like FeMn, quartz/feldspar or augite are visible by eye. Some of the sherds contain exclusively traces of organic material and this may eventually be indicative of a separate fabric. The 32 sherds representing this fabric are abraded and only two forms appear; a lug of a large container and a rim of a bowl. On account of the FeMn nodules in the clay most of the sherds will date to the Iron Age, although an earlier — Bronze Age — date of part of the sherds cannot be excluded. The fabric was found on various sites in the survey area.<sup>5</sup> On account of the pure matrix, the fabric compares well to the Iron Age fabric SAT I.e.ws\*(1-4\*).d, ((large) FeMn nodules) and the Sezze fabrics in the pure matrix sub-group discussed above.

*Fabric SEG I.adq.ws\*(1-4).c*

This is a brownish firing fabric with a dark stained core due to the burning of organic inclusions during firing. By eye hardly any inclusions can be detected. The fabric is represented by two fragments of storage jars that are typical of the Orientalising/early Archaic period (7th c./6th c. BC). These are a rim fragment of a large storage jar and a rim of a large jar.<sup>6</sup> There is a relationship with SAT I.ad\*eq.ps-vps(1-4).c, ((large) FeMn.

### 6.3.2.2. *Fabrics of the quartz/feldspar sub-group (with augite subdominant)*

*Fabric SEG I/II.ADe.ms-vps(1-3).a*

This is a red firing fabric that may have a darker core. It is characterised by a 'sandpaper' matrix due to a high percentage of fine to medium sized inclusions. Quartz/feldspar is predominantly present, but augite can also be detected quite easily. Furthermore a variety of minor inclusions is present. Among the eight selected sherds, there are two rims of Archaic tiles and body sherds of Archaic large containers. Also one body sherd of a wheel-turned (possibly late-Archaic) medium-sized jar. In general the fabric compares to the thick-walled Archaic red-firing *Satricum* fabrics, but no near match was found regarding the specific combination and percentages of inclusions.

*Fabric SEG I/II.AD\*E.ms -vps(1-3).ab*

This is an orange to brownish firing irregularly coloured fabric that may have a grey, brown or black core. Quartz/feldspar (under microscope) and augite (by eye) is dominant. Occasionally some grog and/or lava occurs. The selected sherds in this fabric belong to Archaic tiles and cover-tiles, storage jars and smaller wheel-turned jars, while also a loomweight is included. It is clearly related to the Archaic *Satricum* fabrics. It is an important fabric, as it is indicative of the presence of Archaic farmsteads in the *ager* of Segni.

### 6.3.2.3. *Fabrics of the augite sub-group*

*Fabric SEG I.E.ps-vps(1-3).ab*

This is a reddish brownish irregularly coloured fabric with a predominance of coarse to very coarse augite. It has a high percentage of inclusions. As a sub-dominant inclusion quartz/feldspar occurs. The five selected sherds belong to large containers (dolii) that can be placed in the Archaic period. There is no clear match in the *Satricum* fabrics collection.

### 6.3.2.4. *Fabrics of the lava/tuff sub-group*

*Fabric SEG I.K.vps(1-3).bc*

This is a red firing fabric with a predominance of well detectable very poorly sorted lava inclusions in a variety of sizes. The selection contains sherds of tiles and storage jars to be dated to the Archaic period. The fabric is related to SAT I.K\*.vps\*(1-4\*).bc.

### 6.3.2.5. *Conclusions on the red firing Segni fabrics*

Like in the case of the Sezze survey, the identification of the red firing fabrics in the survey pottery enabled us to identify several protohistorical and Archaic sites in the Segni survey area. This was especially helpful in those cases where Roman ceramics prevail and the protohistorical and Archaic component had to be filtered out of the later materials. Some of the Segni fabrics show close relationships with the stratigraphically anchored fabrics from *Satricum* underscoring the presence of Archaic farmsteads in the *ager* of ancient Segni. Like in the Sezze collection the Segni fabrics could be conveniently placed in sub-groups of which those with a relatively pure matrix are the earliest. None of the ceramics in the pure matrix sub-group derive, however, from excavated contexts, which precludes a more exact date in the protohistorical period. The quartz/feldspar, augite and lava/tuff sub-groups are all to be placed

in the period of the advanced Iron Age and Archaic periods.

### 6.3.3. *The orange-firing family (SEG II)*

The orange firing family within the ceramics of the Segni survey can be subdivided into three sub-groups; a sub-group of one fabric with only a very low percentage of inclusions, a quartz-feldspar group consisting of five fabrics; an augite group consisting of four fabrics; and a lava/tuff group consisting of three fabrics.

#### 6.3.3.1. *Subgroup of fabrics with low percentage of inclusions*

*Fabric SEG II.=.ws(3-4).d, hardness +*

This is a very hard orange firing fabric with a grey core. It has a very low percentage of inclusions (almost none visible by eye) and relatively large pores occur in its clay matrix. The five selected sherds belong to rims and plates of tiles and storage jars. A post-Archaic or later (Roman Republican) date seems feasible for this fabric as *Hardness+* in *Satricum* does not occur in fabrics of the Archaic period.

#### 6.3.3.2. *Fabrics of the quartz/feldspar sub-group*

*Fabric SEG II.AD.ms-vps(1-3).a*

This is an orange firing fabric with a high percentage of inclusions. Quartz/feldspar predominates and is well detectable by eye. The fabric is moderately sorted with some larger inclusions. The five selected sherds belong to wheel-turned orange domestic wares. Forms are two almond shaped rims, two pieces of a flat base of a large container and a medium-sized jar.<sup>7</sup> Also a fragment of an amphora is represented in this fabric, indicative of local amphora production. The most probable date range is the (later) post-Archaic to Roman Republican period.

*Fabric SEG II.AD.vps(1-4).ab*

This is an orange firing fabric that occurs with and without a grey core. It gives the impression of a fine matrix with few inclusions, but under the microscope the fabric actually contains medium to occasionally a high amount of inclusions. The structure of the paste is mainly fine grained. Quartz/feldspar predominates and it hardly contains any augite, some lava is present. It is very poorly sorted. The ten selected sherds belong exclusively to building materials (tiles and possibly a brick of a kiln). A date range is hard to determine but on account of the powdery surfaces the ceramics would fit the post-Archaic and especially the Roman Republican period.

*Fabric SEG II.AD.ms-ps(1-4).ab*

This is an orange firing fabric that may have a greyish or reddish core. It gives the impression of a low percentage of inclusions with some larger inclusions that are well detectable by eye. It has an almost absolute dominance of fine quartz/feldspar that may occur in medium and high amounts, but which is only detectable at microscopic level. The selected sherds amount to 80, among which almond shaped rims of medium-sized jars, knobs and parts of lids, flat bases and ring bases of jars and jugs. It is clearly a standardised fabric in which the later Roman Republican and Imperial wheel-turned domestic wares are produced.



*Fabric SEG II.AD.ws-ms(3-4).bc*

This is an orange firing fabric that may have a greyish/brownish core. It gives the impression of a low percentage of inclusions, but it in fact has a low to medium amount of (very) fine quartz/feldspar that is detectable at microscopic level. The ca. 80 selected sherds belong to rims of bowls, jars, knobs and parts of lids, flat bases and ring bases of smallish jars and jugs. Like the fabric discussed above, to which it is strongly related, it was used in the later Roman Republican and Imperial period for the production of wheel-turned domestic wares.

*Fabric SEG II.AD.\*ms-vps(1-3).bc*

This is an orange firing fabric that may have a grey or lighter core. The fabric is characteristic because of the relatively large augite particles at the surface that attract the attention. In reality the fabric has a predominance of fine to occasionally coarse white quartz/feldspar. The selected sherds pertain exclusively to handles and rims of jars. The date range lies possibly between the (possibly late) post-Archaic and Roman Republican period. The fabric is clearly in the Archaic tradition. It is related to SAT II.AD\*.ms-ps(1-4).a\* (augite), but without the black stains that characterise that fabric.

**6.3.3.3. Fabrics of the augite sub-group***Fabric SEG II.E.vps(1-3).bc, coarse*

This is an orange firing fabric that may have a lighter core. It has a predominance of coarse augite, but otherwise gives the impression of a relatively pure matrix. Also red grog may occur as a characteristic. The eight selected sherds belong to tiles and large storage jars (*dolii*). It contains some interesting forms of large containers.<sup>8</sup> The fabric closely resembles the post-Archaic fabrics from *Satricum*, though pastes do not exactly match. The date range of this fabric is the 5th/4th c. BC.

*Fabric SEG II/III.EK.ms-ps(1-4).bc, (chalk in matrix)*

This is an orange to pale firing fabric that may have a reddish core. Augite and lava are dominant. It contains a medium percentage of inclusions that are moderately to poorly sorted (occasionally vps). Eighty percent of the sherds contain chalk in their matrix. The selected sherds belong to tiles. This fabric comes near to SAT (II)/III.EK.ms-vps(1-4).b and SAT II/III.E.vps(1-4).bc, chalk rich matrix. A plausible date range is the later post-Archaic period well into the advanced Roman Republican period.

*Fabric SEG II/III.e.ms-vps(1-3).c, (powdery surface)/(chalk)*

This is an orange to pale firing fabric that may have an orange core. It has a low percentage of inclusions with a slight predominance of augite in a variety of sizes. Some of the selected sherds have some chalk in their matrices. Occasionally sherds have a powdery surface. The selected sherds mainly belong to tiles, but also a ring handle and part of an anatomical votive is present in the collection. A plausible date range for this fabric is the later post-Archaic period and the advanced Roman Republican period. There is no clear match to the *Satricum* fabrics collection, although SATII/III.E.vps(1-4).bc, chalk rich matrix and SAT (I)III.E.ps-vps(1-4).b. are comparable.

*Fabric SEG II/III.E.ms-ps(1-3).a*

This is an orange to pale firing fabric that may have a somewhat darker reddish core. It has a coarse fracture due to the high percentage of coarse inclusions. There is a clear predominance of augite. The fabric shows traces of insufficient blending (white 'lenses'). The fabric may contain chalk in its matrix. The selected sherds belong to large storage jars (*dolii*). A post-Archaic date seems plausible

for this fabric as it clearly stands in the Archaic ceramic tradition. It compares to the Archaic fabric SAT II/III.E.ps-vps(1-4).a, coarse gritty/leucite-lava and leucite-tuff (but without the leucite-tuff and a much lower percentage of leucite-lava).

**6.3.3.4. Fabrics of the lava/tuff sub-group***Fabric SEG II.K.vps(1-3).ab*

This is an orange firing fabric with a predominance of very poorly sorted lava inclusions in a very coarse matrix. Occasionally large white tuff inclusions occur. The fabric is not very coherent on microscopic level. The selected sherds all belong to tiles. A date range in the Roman Republican period seems plausible. There is no clear match to the *Satricum* fabrics collection.

*Fabric SEG II.=.vps(1-4).d,lava*

This is an orange firing fabric that may have a slightly darker reddish core. Some lava can be detected, but generally it has a low total percentage of inclusions. The selected sherds belong exclusively to tiles. The fabrics compare to SATII/III.k.vps(1-4).cd and SAT II/III.k.ps(1-4).c, variety of inclusions that occur only piecemeal at *Satricum*. A late Roman Republican/Imperial date for this fabric is plausible.

**6.3.3.5. Conclusions on the orange firing Segni fabrics**

In the orange firing family within the Segni classification a range of fabrics could be discerned of which the earliest date to the post-Archaic period. They are mostly to be found in the augite sub-group and were used for the local fabrication of tiles and large containers. It is an important category as these fabrics are indicative of post-Archaic farmsteads in the *ager* of ancient Segni (especially the first listed fabric in the augite sub-group: SEG II.E.vps(1-3).bc, coarse). As a rule the fabrics in the quartz/feldspar sub-group date later. They clearly contain fabrics in which standardised Roman domestic wares were produced. The fabrics in the lava/tuff group characterised by low quantities of these volcanic inclusions and by very poorly sorted pastes, belong to the Roman tile production.

**6.3.4. The pale firing family (SEG III)**

Like the orange firing family, also the pale firing family can be subdivided in a quartz/feldspar sub-group, an augite sub-group and a lava/tuff sub-group. The range of individual fabrics is, however, smaller and limited to eight. Some fabrics are fired very hard as is indicated by the addition *hardness* +.

**6.3.4.1. Fabrics in the quartz/feldspar sub-group***Fabric SEG III.(ADek)\*.ms-ps(1-3).d hardness +*

This is a pale firing fabric with a low percentage of inclusions when inspected by eye. Due to the (partial) vitrification of the clay visible in the matrix, inclusions are difficult to distinguish and in reality the paste contains c. 25 percent quartz/feldspar inclusions. Lava (and augite) inclusions can also be detected by eye. The fabric occasionally has white chalk inclusions. It is a very hard fired fabric,

meaning that, although the fabric is in the (post)-Archaic tradition, it will probably date to the Roman Republican period or even later. The selected sherds belong to tiles. Due to its hardness, there is no match in the *Satricum* fabrics collection.

#### 6.3.4.2. *Fabrics in the augite sub-group*

*Fabric SEG III.adE.ms-ps(1-3).b, hardness +*

This is a pale firing fabric that may have a slightly reddish core. Augite is the predominant inclusion while quartz/feldspar is subdominant. Lava occurs. The three inclusions are well visible by eye. The selected sherds belong to tiles. The fabric is in the Archaic tradition, but fired very hard and therefore probably to be dated in the advanced Roman Republican period. Like the above listed fabric, also this fabric has no match in the *Satricum* collection on account of its hardness.

*Fabric SEG III.E.ms-vps(1-3).ab, (coarse augite)/powdery surface*

This is a pale firing fabric that may have a pink, orange or grey core. In general it has coarse inclusions with a clear dominance of augite. There is an almost absence of quartz/feldspar, though occasionally larger inclusions are present that are well detectable by eye. In general there is a wide variety of inclusions present sometimes up to a few percent. In some sherds a yellowish ochre staining is found in the pores, while some of the sherds contain chalk in the matrix associated with detectable calcite inclusions. It has a characteristic powdery surface. The more than 20 selected sherds belong to tiles and storage jars (*dolii*). The fabric bears close resemblance to fabrics SEG II.E.vps(1-3).bc, *coarse*, and the *Satricum* fabrics SAT II/III.E.vps(1-4).bc, chalk rich matrix, SAT II/III.E.ps-vps(1-4).a, coarse gritty, and SAT (II)III.E.ps-vps(1-4).b. These can be reliably placed in the post-Archaic period (5th/th c. BC).

*Fabric SEG III.e.ms-ps(2-3).cd*

This is a pale firing fabric with occasionally a slightly reddish core. It has a pure matrix (though a low percentage of inclusions is present, i.e. augite and feldspar) and a few flattened pores. It is fired quite hard. The selected sherds belong to tiles and cover tiles and a loomweight. A generally Roman Republican date for this fabric seems reasonable. There is no good match to the *Satricum* fabrics collection.

#### 6.3.4.3. *Fabrics in the lava/tuff group*

*Fabric SEG III.E\*K\*.ms(1-3).bc, hardness +*

This is a pale firing fabric with a reddish core. It is a hard-fired fabric not powdery with a low percentage of inclusions. Augite and lava are predominant but in a relatively low amounts. The selected sherds belong to tiles. One tile bears part of a stamp. A suggested date for this fabric is late Republican and Imperial.

*Fabric SEG III.K.vps(1-4).a, greenish/sintered*

This is a pale firing fabric that may have a reddish or greenish white core. It has a high percentage of inclusions. Good detectable reddish lava in a variety of sizes predominates. In some sherds possibly traces of sintering or vitrification occur (dark glasslike spots on microscopic level). One sherd possibly contains vitrified lava inclusions which can easily be misinterpreted as augite on the level of the naked eye. The fabric in itself is in the Archaic tradition, but fired very hard. The selected sherds belong to tiles. A general date in the Roman Republican period seems plausible.

*Fabric SEG III.K.vps(1-3).b*

This is a pale firing fabric with a slightly orange core. It contains a

medium percentage of inclusions of almost exclusively reddish lava that is detectable by eye thanks to the relatively large size of the particles. The sherds have a powdery surface and the fabric is not fired very hard. The selected sherds belong to tiles. This fabric probably dates to the (late) post-Archaic and the Republican period. There is a match in the *Satricum* fabrics collection that occurs, however, sporadically (SAT II/III.k.vps(1-4)cd and SAT II/III.k.ps(1-4).c, variety inclusions).

*Fabric SEG III.k.vps(1-4).cd hardness +*

This is a pale firing fabric. It is fired harder than other fabrics. Lava inclusions are predominantly present in a variety of sizes and are well detectable by eye. The selected sherds belong to tiles. A plausible date range of this fabric is late Republican/Imperial.

#### 6.3.4.4. *Conclusions on the pale firing Segni fabrics*

Conform the orange-firing family of Segni, also in the pale-firing family the earliest datable pale-firing fabric is to be found in the augite sub-group (SEG III.E.ms-vps(1-3).ab, (coarse augite)/powdery surface). It is datable to the Archaic/post-Archaic period as it can reliably be related to fabrics at *Satricum*. Sherds in this fabric are either tiles or storage jars. Somewhat harder fired variants seem indicative of a date in the Roman (Republican) period and concern tiles only.

### 6.4. Summary of the Lanuvium fabrics classification

#### 6.4.1. *Background*

The Lanuvium fabrics classification was based on 20.809 sherds recorded in the survey database. Conform the classification of the *Satricum*, Sezze and Segni ceramics in three families, the sherds from Lanuvium were likewise attributed to a red, orange and pale firing family. The appendix to the paper 'Ceramics of the first millennium BC from Lanuvium' (Attema, 2000), lists the sub-groups and individual fabrics of the three main fabric families including drawings of potforms. The quality of the Lanuvium ceramics was quite high. The following is a short review to complete the section on the regional fabric research.

#### 6.4.2. *The Lanuvium red firing family*

The red firing family of Lanuvium was subdivided in five sub-groups; a relatively pure matrix group of fabrics having certain combinations of mineral inclusions but without predominance of any; a sub-group of FeMn predominant fabrics; a sub-group of augite predominant fabrics; a sub-group of lava/tuff predominant fabrics; and a group of quartz/feldspar dominant fabrics. The date range of the red firing fabrics was probably restricted to the period 850–500 BC, although it was thought that some fabrics might extend into the post-Archaic period.

A difference with the Sezze and Segni classification is that no earlier protohistorical (Bronze Age) material was found. Remarkable in the Lanuvium classification was the presence of a clear FeMn predominant fabric (LAV I Q.ps-vps(1–4).b and LAV I Q.vps(1–4).c). Such extreme rich FeMn fabrics do not occur in either the Sezze, Segni or *Satricum* classifications. It is a fabric that is characteristic for the rural infill that started in the Lanuvium area during the late Iron Age. Together with a number of other red firing fabrics in the Lanuvium classification this fabric could be connected to (locally made) orient-alising *impasto rosso*. Both in the Sezze and Segni survey the sherds were often too abraded to assign them to ware families as was done for the Lanuvium sherds. In the Lanuvium classification a clear relation between the augite predominant fabrics that were used for the production of Archaic coarse wares and the orange firing augite rich fabrics was established.

#### 6.4.3. *The Lanuvium orange firing family*

The orange firing family was divided in an augite predominant sub-group having two fabrics; a quartz/feldspar/augite sub-group of one fabric only; and a quartz/feldspar sub-group with eight fabrics.

As stated earlier, it was observed that the augite sub-group continues the Archaic red coarse ware production during the post-Archaic period. This holds also for the fabrics in the quartz/feldspar/augite sub-group that were used for the production of 5th/4th c. BC tiles. It was concluded that the fabrics in the exclusively quartz/feldspar sub-group had lost all characteristics of the Archaic ceramic tradition. These fabrics were used in the standardised production of wheelthrown Roman domestic wares.

#### 6.4.4. *The Lanuvium pale firing family*

The bulk of the pale firing family falls in two related groups of fabrics; an augite predominant sub-group (five fabrics) and a quartz/feldspar group (six fabrics). Besides these, two other groups were identified; a lava predominant sub-group (two fabrics) and a depurated sub-group with only few large inclusions (two fabrics). It was concluded that the pale firing augite and quartz/feldspar fabrics replace the Archaic red firing production of tiles and much of the storage and cooking pottery.

At Lanuvium it was observed that the lava predominant fabrics (also known from the Segni and Sezze surveys) are characteristic of Roman tile production of the Republican and early Imperial period. The depurated group having few large inclusions was dated to the period 300 BC — 100 AD and ascribed to the production of medium-sized ceramics.

#### 6.5. Final comments on the regional fabrics classification

On the basis of the fabrics classification of the ceramics of three surveys in different locations within the Pontine Region at a maximum distance of 30 km from *Satricum*, the following general theoretical, methodological and culture-historical observations can be made according to level of classification.

The highest level of classification into red, orange and pale firing fabrics holds for all three regions and is conform the stratigraphically anchored *Satricum* classification. On the evidence of the typology of the forms studied, it can be assumed that the technological change from red firing fabrics to orange and pale firing fabrics occurred region-wide during the late 6th century BC. It therefore constitutes a crude but very convenient first dating criterion for pottery in a survey context. As the red firing ceramics are generally associated with household production/incipient workshop conditions, and the orange firing fabrics with standardised forms and mass-production reflecting proper workshop conditions, the categories are at the same time indicative for different modes of production that in the specific historical context of *Latium Vetus* can be related to romanisation. The pale firing fabrics occurring from the late Archaic period play a very significant role as it was apparently widely adopted after it was first introduced. The question is open whether we may relate the introduction of this fabric family with early cultural (and possibly political) influences from Rome (Maaskant Kleibrink & Attema, 2001).

The second level of classification — at which colour families are split into sub-groups on the basis of the type, percentage and sorting of the minerals in the paste and specific characteristics of the paste (powdery surface for example) — likewise holds for all three regions as more or less the same sub-groups could be created for each collection of ceramics. A region-wide technological trend in the red firing sub-groups is the change from the generically protohistorical relatively pure matrix sub-groups of fabrics to the FeMn, augite and quartz/feldspar dominant sub-groups. The latter is typical for the advanced Iron Age and Archaic periods. The change in paste reflects the above-mentioned change from household to workshop production. On a societal level it signifies the change to an urbanising society; the fabrics with volcanic temper are typical for fabrics that were used for the large storage jars and tiles of the Archaic buildings and farmsteads that start to dot the Latial landscape from the 8th c. BC onwards. The technological change-over to orange and pale-firing fabrics at the end of the 6th c. BC and the large-scale adoption of this fabric in the 5th and 4th centuries BC is restricted to a specific number of sub-groups that share (besides colour) certain well-

recognizable characteristics, such as mineral content (augite mainly), the powdery surface of their pastes and the fact that they were mainly used for large vessel forms (*dolii*, teglie, basins) and tiles. These fabrics are now relatively easy recognizable during a survey. This is a great help in identifying the post-Archaic period in the regional landscape, a period that lacks highly diagnostic wares. Fabrics of this type appear in all collections alike and were in a survey context first identified during the so-called La Fornace survey at *Satricum* (Nijboer et al., 1995) and in stratigraphic context in the large 5th/4th c. BC votive deposit on the temple hill at *Satricum* and the 5th/4th c. BC cemetery in its periphery (Gnade, 1992; Bouma, 1995).

The third level of classification considers the individual fabrics within the sub-groups. Among them some highly significant fabrics can be singled out that may be characteristic of the local geology, for example, fabrics of the red firing family that have a certain amount of FeMn nodules that tend to place them in the late orientalisising/early Archaic period. It is, however, only in the case of Lanuvium that a specific FeMn fabric was identified, in other classifications (*Satricum*), FeMn nodules appear as sub-dominant or play hardly a role (Segni or Sezze). Another example of local geological variety is the observation that 'red flint', which occurs as additional inclusion in many of the fabrics of the *Satricum* red-firing family, is not present in the survey collections. On the other hand a number of fabrics from the Lepine area contain chalk that as a rule is not present in the *Satricum* fabrics. There are, however, some rather striking matches between fabrics in the survey classification and the *Satricum* classification that have been mentioned where appropriate. These comparisons were made to tie the individual fabrics from the survey to the *Satricum* chronology. Of course one should never expect that percentages and ratios of inclusions will exactly agree as we deal with different clay beds resulting from different geological processes. It is therefore more often on the level of the sub-groups that we can see parallel technological developments taking place. Especially the level of the sub-group is most adapted to monitor, date and interpret technological change during regional surveys, safe for some highly characteristic individual fabrics.

## 7. PRELIMINARY RESULTS; THE RELATION BETWEEN CERAMIC TYPOLOGY, WARES AND FABRICS (A.J.N.)

The hundreds of thousands sherds excavated by the GIA at *Satricum* have been processed resulting in a typology of vessel forms, ware denominations and a fabric classification in order to differentiate between

the ceramics. The three classifications (vessel forms, ware and fabric) present together a practical typology for fieldwork. Types are not defined by only one attribute but by a combination of characteristics. The most information is obtained when the three classifications are combined. This aspect became apparent in various sections presented above. For example, fabrics *per se* can be used as a chronological tool but the significance increases when the vessel form and ware classification are incorporated as was discussed in the section on the development of technology. During the evaluation of the surveys it became clear that some fabrics were identified though their related vessel form could not be established exactly in time making the chronological significance of both limited. On the other hand it was also established that some fabrics are characteristic for specific time spans offering a chronological marker for surveys.

The *Satricum* ceramics are mainly dated to the 9th–7th and the 5th–4th centuries BC. The Archaic wares are represented but only in limited numbers since the buildings pertaining to the 6th century BC were recovered just below the surface and not associated with a large number of sherds. The main feature containing some archaic ceramics was the late Archaic kiln since the firing chamber was built into the soil and filled with ceramics dated around 500 BC. The limited number of 6th century BC ceramics makes it difficult to establish a complete account of all archaic ceramics that must originally have been present at *Satricum*. The 6th century 'discontinuity' in the ceramic repertoire is apparent in all three classifications. For example, there are hardly any 6th century BC tablewares presented in the vessel typology. At fabrics level there are some fabrics, such as fabric 5, which originate during the 7th century BC and continue into the 5th/4th century BC while the 6th century BC is not represented. Considering the longevity of fabrics it is likely that the fabric was also present at *Satricum* during the 6th century BC but has not been recovered due to the nature of the Archaic archaeological deposits. At ware level there is some dispute regarding the beginning of the manufacture of the *figulina* wares at the site. It is likely that *figulina* ceramics were produced locally from the second half of the 6th century BC onwards considering the characteristics of the Archaic architectonic terracottas (as powdery as the local 5th century BC *figulina*). However, *figulina* wares become apparent from the 5th century BC (Nijboer, 1998: pp. 115–131). So far the comments on chronology in relation to the vessel forms, wares and fabrics.

Other purposes of the three classifications include the reconstruction of the ceramic craft (presented above) and the possibility to differentiate cultural units, which is described in the sections on fabrics from *Satricum* and those from the region. In general it is concluded that the fabrics from Sezze, Segni and

Lanuvium do not match exactly those from the stratigraphic excavations at *Satricum*. This makes it likely that the sites surveyed obtained the majority of their ceramics from different production centres. Nevertheless, fabrics made in the region do exhibit similar characteristics marking region-wide ceramic trends displayed not just in similar vessel forms but also in the organisation of the ceramic craft as reflected in the fabrics (cf. Nijboer, 1998: pp. 131–143). This region-wide ceramic trend differs somewhat from the trend in Etruria. It is noteworthy that the *figulina* wares at *Satricum* do not occur before the 6th century BC, while in Etruria it was produced *en masse* during the 7th century BC (Cristofani, 1992: pp. 107–140; Nijboer, 1998: pp. 73–195; Chiaramonte Treré, 1999: pp. 99–204). Also the 7th century BC painted *impasto rosso* (*impasti a suddipintura rossa su fondo bianco e a suddipintura bianca su fondo rosso*) typical for Etruria, does not occur in the southern part of *Latium Vetus*. Instead specialisation in the ceramic craft at *Satricum* and its region is reflected in the *bucchero* wares, fine-grained *impasto* vessels (fabric 3) and the *impasto rosso* tradition (the introduction of fabrics with finer texture suitable for producing tablewares such as fabric 5). The innovation of the pottery tradition at *Satricum* during the 7th century BC reflects Phoenician traits rather than Greek since there is no local production of *ceramica d'imitazione greca* (cf. Cristofani, 1992: pp. 107–140) while the 7th century BC ceramics are abundant and the prevalence of the local *impasto rosso* wares (unpainted) is remarkable (the red slip, which characterises the *impasto rosso* ware derives from the Phoenician red slip tradition (Nijboer, 1998: p. 80). *Impasto rosso* is present in almost all Orientalising fabrics identified at the site. Thus it is possible to detect specific traits in the combined classifications of the pottery from the southern part of *Latium Vetus* when compared to other regions.

The research presented in this article is descriptive. The individual classifications (vessel forms, wares and fabrics) are discussed comprehensively but not in all detail. The classification of vessel forms concentrates on the *impasto* and coarse wares while the description of the fabrics includes other ware groups but was restricted to a general presentation of 14 fabrics out of 54. Future publications will concentrate on specific ceramic groups, such as the architectural terracottas, the local *bucchero* and the coarse wares. We also intend to continue working on fabric descriptions from other sites in *Latium Vetus* in order to assist comparative purposes by describing and comparing ceramics from different sites.

## 8. NOTES

1. Inventory numbers: 94S86.2; III.3; S94.174.5; III.1; z.n., III.1.
2. Inventory numbers of the horizontal band handles of large jars;

94S85.3; S94.174.2; XIII.5) of the *teglia* handle; 94S46.3, of the rim of jar; 94S4.3; S94.174.5 (a *a becca di civetta* base). Inventory numbers of the four knobs of lids that may date into the 5th/4th c. BC are 94S31.2; 94S147.1; 94S109.6; 94S50.2), for the rims that may date later see 94S48.2 and 94S120.3.

3. Inventory numbers of the bowls are 94S88.2; 94S85.1; 94S87.1; S94.88.1; S94.93.1; S94.88.4; of the knobs of lids; 94S99.3; 94S85.2.
4. The inventory number of the Archaic base *a becca di civetta* is 94S87.1, of the knobs of lids; 94S85.3; S94.88.2, the lug 94S109, the two flat bases of jars; S99.3; 94S111.6 and the rim with internal angle SS 112.3. The rim of a *teglia* is without number. This fabric was in the survey reports originally identified as reference 53.
5. The lug of a large container has inventory number SEG 138-T5; the rim of a bowl is without number. The findspots where this fabric was found is site 1–14, a section near field 126 and the II Rio site and section 1–1, steak 1. The fabrics were in the survey reports originally identified as references 47c and 79.
6. The inventory number of the rim of a large storage jar is SEG 1-4-GS; the rim of a large jar is without number and derives from section 1-1, layer 1.
7. Inventory numbers of the two almond shaped rims are SEG 233 GS, SEG 2 69-5, the two pieces of a flat base of a large container have number SEG 204-GS and the medium-sized jar has number SEG 1 29 GS.
8. The rims of large containers have inventory numbers SEG 2-12; SEG 1-21-51 and SEG 2-4.

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## APPENDIX 1. KEYWORDS AND DEFINITIONS (FROM: RICE, 1987; TOMBER & DORE, 1998; ADAMS & ADAMS, 1991).

- Artefact type: in archaeology, an artefact type is a grouping together of artefacts having similar characteristics.
- Ceramic fabric: a collective term for the internal constituents used in making ceramics. These include the basic clay, marl or mud, which is the primary constituent, and any other material (temper, levigation etc.), which is mixed into the clay (marl or mud) to facilitate firing or to impart hardness, porosity or other characteristics to the ceramics.
- Ceramic slip: a fluid suspension of fine clay and water, used to coat a body before firing or poured into a mould to cast a piece; a nonvitreous coating on a pottery vessel.
- Diagnostic attribute: a particular attribute, which is essential to the definition of a type, so that any given entity must exhibit this attribute before it can be identified as a member of the type. In other words possession of one or more diagnostic attributes is a necessary condition for type attribution in the case of any entity.
- Domain of variability: a complex classification, such as a classification of pottery, usually includes not only a great many individual variables, but variables of many different kinds, which are designated as domains of variability.
- Extrinsic attribute: a characteristic of any type, which can not be determined simply by examining members of the type. In the case of artefact types, extrinsic attributes include dates of manufacture, presumed uses of the artefact, etc.
- Hand-made wares: pottery wares made without the use of the potter's wheel.
- Ideal type specimen: an entity which exhibits in the fullest degree all of the diagnostic and descriptive attributes of the type to which it belongs. In many types the ideal type specimen is actually atypical; that is the majority of type members do not exhibit the defining and descriptive attributes to the fullest degree.
- Intrinsic attribute: a variable feature of any type which is directly manifest in the members of the type. That is, it can be determined by examination of the members themselves, without any knowledge about the contexts from which they came or the purpose for which they were used.
- Numerical variable: a quantitative variable comprising a number or something that can be measured.
- Open typology: a typology which is designed for the sorting and typing of entities that have not yet been found, in addition to entities currently in hand. The types in an open typology



must be mutable, to allow for future discoveries that may not correspond exactly to anything that is currently known.

- Practical typology: a typology possessing the qualities of practicality and utility. In archaeology this usually means a typology that can be used in the field or in the laboratory for the sorting of newly recovered artefacts, without the expenditure of effort or resources that is greater than is justified by the importance of the results.
- Significant variable: in any given typology, significant attributes are those attributes of a particular variable that are regularly used to differentiate one type from another. In some pottery typologies, for example, the variable colour is subdivided only into the attributes white, red and black, meaning that these are the only colours used to differentiate one type from another, even though other shades of colour may occur. White, red and black are therefore significant attributes of the variable 'colour', while pink, grey and brown are not.
- Type attributes: the series of attributes that are characteristic of a type collectively. They are observable in most but not necessarily all of the individual members of the type.
- Type definition: in theory a type definition would be a minimum statement of the diagnostic attributes of any given type; that is, it would furnish the minimum amount of information about any type which would be sufficient to distinguish it from all other types. In archaeology most types are not given explicit definitions; they are represented in the form of type descriptions rather than definitions.
- Type description: a verbal and/or pictorial representation of a type concept, which is designed to communicate the concept as fully as possible from one person to another, and to facilitate the recognition of type members in practice. Type descriptions differ from type definitions in that they normally include all of the characteristics of the type, and not just the diagnostic ones.
- Typology: a typology is a particular kind of classification, one made specifically for the sorting of entities into mutually exclusive categories which are called types.
- Variable: a feature or characteristic, such as colour, which varies from one entity to another, and which is taken into account in the definition and/or description of types. Particular manifestations, or variations, of a variable are referred to as attributes.
- Vessel form class: a vessel form class is made of recurring vessel forms that have been grouped together and given a common class designation because of morphological similarities.
- Wheel-made wares: pottery wares produced with the aid of the potter's wheel, in contrast to hand-made wares, which are made without the wheel. The production of pottery on the wheel is sometimes referred to as 'throwing' and the resulting vessels are called 'wheel-thrown'.

## APPENDIX 2. LIST OF DESCRIBED FABRICS PRESENT IN THE REFERENCE COLLECTION

### FAMILY I

SAT I.AD.ns(1-4).a, ((extremely) large) FeMn nodules/crumbling/gritty  
 SAT I.AD\*.ms(1-4).b, lava\*/(large) FeMn nodules/occ. black organic  
 SAT I.AD.ws(1+3/4).a, ws tiny white dots/(large) FeMn nodules  
 SAT I.AD\*E.vps(1-3).a, large FeMn/porosity/hardness+  
 SAT I.AD\*E.ms-ps(1-4).a, fine gritty

SAT I.ad\*eq.vps(1-4).bcd, hardness+  
 SAT I.AD\*EQ.ps-vps(1-4).ab, medium-coarse gritty/(hardness+)  
 SAT I.ad\*eq.ps-vps\*(1-4).c, (large) FeMn nodules  
 SAT I.ADer.vps(1-4).a  
 SAT I.AD\*K\*.vps\*(1-4\*).ab, occ. (large) FeMn/occ. (small) augite  
 SAT I.adKQ.vps(1-4).ab  
 SAT I.ad\*Kq.vps(1-4).b, large FeMn nodules/(hardness +)  
 SAT I.Hl.ws(3-4).c  
 SAT I.hIJ.ms(2-4).bc, striking white tiny dots  
 SAT I.I.vps(1-4).a, FeMn nodules & stains  
 SAT I.K\*.vps\*(1-4\*).bc, occasionally striking white tiny dots  
 SAT I.Kh.ms-ws(2-4).b, white dots/FeMn  
 SAT I.q.vps(1-4).d  
 SAT I.=.ws\*(1-4\*).d, ((large) FeMn nodules)

### FAMILY I/II

SAT I/(II).AD\*.ms-vps(1-4).a, variety of characteristics/(slightly) gritty  
 SAT I/(II).AD\*.ms-ps(1-4).b, variety of characteristics  
 SAT I/II.AD\*.ms-ws(2-4).a  
 SAT I/II.adp.ws-ms(2-4).ab, insufficient blending  
 SAT I/(II).E.ms-ps(1-2).b  
 SAT I/(II).=.ws\*/vps(1/2+4\*).d, (large) FeMn/flint/hardness +

### FAMILY II

SAT II.AD\*.ms-ps(1-4).a\*, (augite)/(small) black stains  
 SAT II.AD.ws(2-3).b  
 SAT II.AD\*.ws(3-4).a, ((black) organic)  
 SAT II.AD\*.ws(4).abc  
 SAT II.AD\*.ws(4).b, insufficient blending  
 SAT II.ADe.ms-vps(1-4).ab, variety of characteristics  
 SAT II.AD\*E.ps(1-4).b, hardness+/laminated  
 SAT II.AD\*J.vps(1-4).ab, porosity +

### FAMILY II/III

SAT II/(III).aD.ms(1-2).a, hardness+  
 SAT II/(III).aD.ms-ws(2-3).b  
 SAT II/(III).ADE.ws(2-3).ab  
 SAT II/(III).E.ps-vps(1-4).a, coarse gritty/leucite-lava & leucite-tuff  
 SAT II/(III).E.vps(1-4).bc, chalk rich matrix  
 SAT II/(III).E.ps-vps(1-4).b  
 SAT II/(III).E.ms-ps(2).b  
 SAT II/(III).e.ms-ws(2-3).d, white speckled matrix (mic.)  
 SAT II/(III).e.ws-ms(2-4).d, powdery  
 SAT II/(III).EK.ms-vps(1-4).b  
 SAT II/II.k.vps(1-4).cd  
 SAT II/III.k.ps(1-4).c, diversity inclusions  
 SAT II/(III).=.vps(1-4).cd  
 SAT II/III.=.ws\*(4).d, hardness -  
 SAT II/III.@.vps(1-3).cd, large angular inclusions/(hardness -)/(powd. surf.)

### FAMILY III

SAT III.AD\*.ns(1-4).c, hardness+/organic  
 SAT III.ad.ms(2-4).c, hardness -  
 SAT III.AD\*.ws(3-4).ab, traces of insufficient blending  
 SAT III.ADe.ws(2).ab  
 SAT III.E.ms(1-3).ab, fine gritty  
 SAT III.e.ws(2-4).c

## APPENDIX 3. EXAMPLE OF A FULL FABRIC DESCRIPTION (G.J.M.V.O.)

## SATRICUM FAMILY 1

*Fabric SAT 1.AD\*K\*.vps\*(1-4\*).ab, occ. (large) FeMn/occ. (small) augite* possesses the following characteristic features by eye:

- Reddish to brownish firing, with or without dark core, with or without dark to black interior;
- Impression of a medium to low percentage of inclusions, but under the microscope a medium to high amount of inclusions;
- Predominance of lava and quartz/feldspar; occasionally slight subdominance of mainly small augite;
- Poor detectability of purplish grey (sometimes brownish) lava in a variety of sizes;
- Good detectability of some (large) FeMn;
- Quartz/feldspar is not detectable by eye;
- Presence and detectability of a variety of other inclusions like FeMn stains, brown to red flint,
- Tuff (large white soft), leucite-tuff/lava, leucite (occasionally a pitted surface due to loss of lava inclusions).

*Properties:*

Density: fine, a few small pores  
texture: medium-coarse

## Colour:

2.5 YR 3/4 (5x)	5 YR 4/3	7.5 YR 3/3	10 YR 2/1 (4x)
			2.5 Y 3/1 (c)
2.5 YR 4/3	5 YR 4/3 (c)	7.5 YR 3/4 (c)	10 YR 2/1 (i/6x)
2.5 YR 4/3 (c)	5 YR 4/4 (5x)	7.5 YR 4/3	10 YR 3/1 (c)
2.5 YR 4/6 (38x)	5 YR 4/6 (31x)	7.5 YR 4/4 (5x)	10 YR 3/2
2.5 YR 4/8 (4x)			10 YR 3/2 (i,/ 2x,c/6x)
			10 YR 3/3
			10 YR 3/3 (c/ 2x)
			10 YR 4/2
			10 YR 4/2 (c/ 2x)
			10 YR 4/3
			10 YR 4/3 (c)
			10 YR 5/2
			10 YR 5/4

Refiring colour 600° C: x = 11

2.5 YR 4/6 (6x)	5 YR 4/6 (4x)	7.5 YR 4/6	10 YR 4/3 (c)
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Refiring colour 800° C: x = 10

2.5 YR 4/6 (4x)	5 YR 4/6
2.5 YR 4/8 (5x)	

Refiring colour 1050° C: x = 11

2.5 YR 4/6 (11x)
------------------

Hardness : 2-3

fracture: irregular-hackly

Total % solid inclusions: 10-25%

sorting: vps (mainly due to lava inclusions which are hardly detectable by eye)

particle size: <90->2000

Solid inclusions: rounded to angular

Quartz/feldspar: 5-15% (mainly fine, occ. up to 20%)

Flint: p-2% (occasionally red)

Quartzite: -

Augite: p-5% (mainly fine) (sporadically some more like in S 2309/5)

Olivine: x-p

FeMn: p-3% (nodules and stains/occasionally up to 5%)

Mica: x-p

Leucite: p (striking white tiny dots)

Leucite-tuff/lava: p

Lava: 3-15%

Tuff: x-p (white, soft)

Volcanic glass: -

Limestone/calcite: -

Shale: -

Granite: -

Rock fragments: -

Grog: -

Organic inclusions: sporadically detected

## Related to:

A SAT 1.K\*.vps\*(1-4\*).bc, occasionally striking white tiny dots

A SAT 1.ad\*Kq.vps(1-4).b, large FeMn nodules, hardness

A SAT 1.AD\*.ms(1-4).b, lava\*/(large) FeMn nodules/occ. black organic

Number of sherds in reference collection: 107

Thin sections: 5

S 2189/13 [AJN/INST. OF ARCH.: Group 13 S 2189/13]

The thin section shows an irregular distribution of inclusions throughout the cross section. In certain areas concentrations of relatively fine quartz/feldspar are found. These concentrations have an elongated shape and do not run parallel with the bending of the sherd. Possibly traces of an uncompleted/insufficient blending of temper through the clay. Quartz/feldspar is predominantly present, certainly >20%, up to about 35%. The relation between quartz and feldspar is 30/40 : 70/60. The lava/tuff inclusions, so prominently detectable in the fresh cross section are more difficult to detect in the thin section. They are visible as greyish black irregular shaped particles in a variety of sizes, with or without voids. In some of the larger particles the voids have a 'starlike' shape, which is caused by the former presence of now deteriorated leucite within the lava/tuff. The lava/tuff is present in circa 5-10%, but difficult to estimate. The percentual relation between quartz/feldspar and lava/tuff does not match very well the values described in the fabric. In the thin section considerably more quartz/feldspar is found compared to the sherds in the fabric.

S 2189/13 [AJN/INST. OF ARCH./Group 13]

S 2334/23 [AJN/INST. OF ARCH./Group 13]

S 2352/193 [AJN/INST. OF ARCH./Group 13]

In general comparable to the thin section of S 2189/13 above. Significant is also the vps character of the inclusions in the fresh cross sections compared to the ms character within the thin sections.

S 2195/03 [AJN/INST. OF ARCH./Group 13]

A dense clay matrix with many tiny elongated fissures running sub parallel to the shape of the sherd. Although the clay flakes have a micaceous appearance under crossed polars the thickness of the section is slightly too high to see the orientation of the individual flakes. The total amount of inclusions is between 25-35%, rounded to angular, sporadically euhedral, predominated by ms quartz/feldspar in 15-20% (80:20, besides sanidine occasionally plagioclase); lava is present in 10-15% in a variety of sizes (vps). Some of the lava particles contain the 'crystal shapes' of former leucite crystals. FeMn is present in a few nodules 1-2%. Augite is p-1%, flint is p.

APPENDIX 4. COLOUR VARIABLES OF CERAMICS FROM *SATRICUM*, AFTER EXCAVATION AND AFTER EACH SUCCESSIVE REFIRING PROGRAMME. LEGEND: **BOLD** = DOMINANT COLOURS; *ITALIC* = INTERACTION WITH OTHER FABRIC FAMILIES IN CASE OF DOMINANT COLOURS.

<b>I</b>	red		variables:	sample size= 606		
		10 R 4/4	2.5 YR 2.5/2	5 YR 3/1	7.5 YR 2.5/1	10 YR 2/1
		10 R 5/4	2.5 YR 3/1	5 YR 3/2	7.5 YR 3/1	10 YR 2/2
			2.5 YR 3/2	5 YR 3/3	7.5 YR 3/3	10 YR 3/1
			2.5 YR 3/3	5 YR 3/4	7.5 YR 3/4	10 YR 3/2
			<b>2.5 YR 3/4</b>	5 YR 4/3	7.5 YR 4/3	10 YR 3/3
			2.5 YR 3/6	<b>5 YR 4/4</b>	<b>7.5 YR 4/4</b>	10 YR 3/4
			2.5 YR 4/3	<b>5 YR 4/6</b>	7.5 YR 4/6	10 YR 4/2
			2.5 YR 4/4	5 YR 5/6	7.5 YR 5/4	10 YR 4/3
			<b>2.5 YR 4/6</b>		7.5 YR 5/6	10 YR 4/4
			2.5 YR 4/8			10 YR 5/2
						10 YR 5/4
				variables 600°C:	s.s.= 79	
		10 R 4/8	2.5 YR 3/4	5 YR 4/4	<b>7.5 YR 4/6</b>	10 YR 4/4
			2.5 YR 3/6	<b>5 YR 4/6</b>		
			<b>2.5 YR 4/4</b>	5 YR 5/6		
			<b>2.5 YR 4/6</b>			
			2.5 YR 4/8			
				variables 800°C:	s.s.= 90	
			2.5 YR 3/6	5 YR 4/4		
			<b>2.5 YR 4/6</b>	<b>5 YR 4/6</b>		
			<b>2.5 YR 4/8</b>	5 YR 5/6		
				5 YR 5/8		
				variables 1050°C:	s.s.= 29	
			<b>2.5 YR 3/4</b>	5 YR 4/6		
			<b>2.5 YR 4/4</b>			
			<b>2.5 YR 4/6</b>			
			2.5 YR 4/8			
<b>I/II</b>	red to orange		variables:	sample size = 947		
		2.5 YR 3/3	5 YR 3/2	7.5 YR 2.5/1	<b>10 YR 2/1</b>	2.5 Y 2.5/1
		2.5 YR 3/4	5 YR 3/3	7.5 YR 2.5/2	10 YR 2/2	2.5 Y 3/1
		2.5 YR 3/6	5 YR 3/4	7.5 YR 3/1	10 YR 3/1	2.5 Y 3/2
		2.5 YR 4/3	5 YR 4/3	7.5 YR 3/2	10 YR 3/2	2.5 Y 4/2
		2.5 YR 4/4	<b>5 YR 4/4</b>	7.5 YR 3/3	10 YR 3/3	2.5 Y 4/3
		<b>2.5 YR 4/6</b>	<b>5 YR 4/6</b>	7.5 YR 3/4	10 YR 3/4	2.5 Y 5/2
		<b>2.5 YR 4/8</b>	5 YR 5/4	7.5 YR 4/2	10 YR 4/1	2.5 Y 5/3
		2.5 YR 5/6	5 YR 5/6	7.5 YR 4/3	10 YR 4/2	
		2.5 YR 5/8		<b>7.5 YR 4/4</b>	10 YR 4/3	
				7.5 YR 4/6	10 YR 4/4	
				7.5 YR 5/4	10 YR 5/4	
				7.5 YR 5/6	10 YR 6/3	
				7.5 YR 6/4		
			variables 600°C:	s.s.= 98		
		<b>2.5 YR 4/6</b>	5 YR 4/6			
		<b>2.5 YR 4/8</b>	5 YR 5/6			
			variables 800°C:	s.s.= 75		
		<b>2.5 YR 4/6</b>	5 YR 4/6			
		<b>2.5 YR 4/8</b>	5 YR 5/4			
			5 YR 5/6			
			5 YR 5/8			
			variables 1050°C:	s.s.= 50		
		2.5 YR 3/4	2.5 YR 5/6			
		<b>2.5 YR 3/6</b>				
		<b>2.5 YR 4/6</b>				
<b>II</b>	orange		variables:	sample size = 337		
		2.5 YR 4/6	5 YR 4/4	7.5 YR 4/3	10 YR 2/1	2.5 Y 2.5/1
		2.5 YR 5/6	<b>5 YR 4/6</b>	<b>7.5 YR 4/4</b>	10 YR 3/1	2.5 Y 3/1
			<b>5 YR 5/6</b>	<b>7.5 YR 4/6</b>	10 YR 3/2	2.5 Y 3/2
			<b>5 YR 5/8</b>	7.5 YR 5/4	10 YR 3/3	2.5 Y 4/1
			5 YR 6/6	<b>7.5 YR 5/6</b>	10 YR 4/1	2.5 Y 4/2
			5 YR 6/8	7.5 YR 6/4	10 YR 4/2	2.5 Y 4/3
				<b>7.5 YR 6/6</b>	10 YR 4/3	2.5 Y 5/1
					10 YR 4/4	2.5 Y 5/2
					10 YR 5/3	2.5 Y 5/3
					10 YR 5/4	
					10 YR 6/4	
					10 YR 7/4	

## APPENDIX 4. CONTINUED.

(1 GLEY 2.5/N)				
		variables 600°C:	s.s.= 70	
	5 YR 4/6	7.5 YR 4/6	10 YR 5/4	2.5 Y 5/2
	<b>5 YR 5/6</b>	<b>7.5 YR 5/6</b>	10 YR 5/6	
	<b>5 YR 5/8</b>	<b>7.5 YR 6/6</b>	10 YR 6/4	
	5 YR 6/6			
	5 YR 6/8			
		variables 800°C:	s.s.= 83	
2.5 YR 5/8	5 YR 4/4	7.5 YR 4/6	10 YR 5/4	2.5 Y 5/2
	<b>5 YR 4/6</b>	<b>7.5 YR 5/6</b>	10 YR 5/6	
	<b>5 YR 5/6</b>	<b>7.5 YR 6/6</b>	10 YR 6/4	
	<b>5 YR 5/8</b>			
	5 YR 6/6			
	5 YR 6/8			
		variables 1050°C:	s.s.= 38	
2.5 YR 4/4	5 YR 5/8			
2.5 YR 4/6				
<b>2.5 YR 4/8</b>				
2.5 YR 5/8				
<b>II/III orange to pale colour</b>				
		variables:	sample size = 191	
5 YR 5/4	7.5 YR 5/4	10 YR 3/1	2.5 Y 5/2	
5 YR 5/6	7.5 YR 5/6	10 YR 4/1	2.5 Y 5/3	
5 YR 5/8	7.5 YR 6/3	10 YR 5/2	2.5 Y 6/3	
5 YR 6/4	<b>7.5 YR 6/4</b>	10 YR 5/3	2.5 Y 6/4	
5 YR 6/6	<b>7.5 YR 6/6</b>	10 YR 5/4	2.5 Y 7/3	
5 YR 7/6	7.5 YR 7/4	10 YR 6/1	2.5 Y 7/4	
	7.5 YR 7/6	10 YR 6/2	2.5 Y 8/2	
		10 YR 6/3	2.5 Y 8/3	
		<b>10 YR 6/4</b>		
		10 YR 6/6		
		10 YR 7/3		
		<b>10 YR 7/4</b>		
		10 YR 8/3		
		variables 600°C:	s.s.= 30	
5 YR 5/6	7.5 YR 5/4	10 YR 5/2	2.5 Y 7/4	
<b>5 YR 6/6</b>	7.5 YR 5/6	10 YR 5/4	2.5 Y 8/4	
5 YR 6/8	<b>7.5 YR 6/4</b>	10 YR 6/4		
	<b>7.5 YR 6/6</b>	10 YR 6/6		
		10 YR 7/4		
		10 YR 8/3		
		variables 800°C:	s.s.= 29	
2.5 YR 5/6	<b>5 YR 5/6</b>	7.5 YR 5/4	10 YR 4/2	2.5 Y 7/4
	5 YR 6/6	7.5 YR 6/4	10 YR 5/3	
	5 YR 6/8	<b>7.5 YR 6/6</b>	10 YR 6/2	
		7.5 YR 7/4	10 YR 6/4	
			10 YR 6/6	
			10 YR 8/4	
		variables 1050°C:	s.s.= 16	
2.5 YR 4/6	5 YR 4/4	<b>7.5 YR 6/6</b>		
2.5 YR 4/8	5 YR 5/8	7.5 YR 7/4		
<b>2.5 YR 5/8</b>	5 YR 6/6			
2.5 YR 6/6				
<b>III pale colour</b>				
		variables:	sample size = 25	
5 YR 6/4	<b>7.5 YR 6/4</b>	<b>10 YR 7/3</b>	2.5 Y 5/3	
	7.5 YR 6/6	<b>10 YR 7/4</b>	2.5 Y 6/2	
	7.5 YR 8/3	10 YR 8/2	2.5 Y 7/2	
		10 YR 8/3	2.5 Y 7/3	
			2.5 Y 8/2	
		variables 600°C:	s.s. = 0	
		variables 800°C:	s.s. = 6	
	7.5 YR 6/6	10 YR 6/6	2.5 Y 8/2	
		10 YR 7/3		
		10 YR 7/4		
		10 YR 8/2		
		variables 1050°C:	s.s. = 4	
2.5 YR 5/8	5 YR 6/8	7.5 YR 7/6	10 YR 8/3	