

## APPENDIX 4

# THE ROOF-TILES

by

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In 1981, I published a general survey of the roof-tiles (and a small number of other architectural terracottas) discovered during the nine excavation campaigns at San Giovenale (1956–1965). To me, the most remarkable discovery was the extreme scarcity of plain tiles, particularly, when compared with the enormous amounts unearthed at neighbouring Acquarossa. I was forced, reluctantly, to admit that “a major part of the roof-tiles may have been removed for re-use before the houses collapsed”.<sup>233</sup>

In spite of the well-preserved, often quite high tufa walls standing in the Borgo, the situation was in no way different there. Even though the fallen roof-tiles cannot possibly have been damaged by latter-day ploughing or other agricultural activities, the tile fragments were both few and small. Apparently, considerable amounts of tiles were discarded during the excavations,<sup>234</sup> but scholars present at the time confirm that compact tile layers of the kind known from Acquarossa and Poggio Civitate were never brought to light. As to the particular scarceness of cover-tile fragments, Ingrid Pohl suggests that these were often “not recognized as such ... and thus ... discarded as shapeless coarse-ware”.<sup>235</sup>

Of the 56 examples of plain tiles published in 1981, no fewer than 36 come from the Borgo, and in 2009 Ingrid Pohl published 127 more.<sup>236</sup> The available material is, thus, still restricted. Typological classifications remain vague and uncertain, but various new conclusions may now be drawn based, particularly, upon a statistically satisfactory material.

## TYOLOGY

### Pan-tiles, tegulae

Of the San Giovenale pan-tiles published in 1981, 14 come from the Borgo, and in 2009 Ingrid Pohl added 92 more. Only a few include lower corners which make certain classification possible, but a great number of other fragments show convincingly that the picture brought about by the fragments classified with certainty is correct. There is no indication of any Type II pan-tiles in the material retained, but there are clear examples of both Type I A and I B.<sup>237</sup> Moreover, some upper corners are shaped in a way only to be found among Type I tiles,<sup>238</sup> and the same is true for the oblique bevel under some lower corners.<sup>239</sup>

In 1981, I pointed out that most raised borders of the San Giovenale pan-tiles may be divided into two main groups, one with an often strikingly rectangular profile, the other more triangular, with insides sloping towards the surface of the tile.<sup>240</sup> Of the complete number of raised borders now studied, c. 54% are rectangular, 24% triangular, and the rest shaped otherwise.<sup>241</sup> The border sometimes ends c. 5 cm from the upper short side, but more often its point is drawn up almost to the corner.

No complete lengths or widths have been preserved. One pan-tile with complete width was found in 1961 in a house in the Borgo, but was destroyed before recovery.<sup>242</sup> The thickness varies considerably (*Fig. 150a*), the extreme measurements among the 88 tiles whose thickness is recorded being 1 and 3.5 cm, respectively. The majority fall between 1.5 and 2.2 cm, with an average thickness of 2 cm—almost the same as at Acquarossa (2–2.2 cm) and Poggio Civitate (2–2.1 cm).<sup>243</sup>

<sup>233</sup> Wikander 1981, 70. Cf. *San Giovenale* V:2, 224.

<sup>234</sup> *San Giovenale* V:2, 224, with n. 270. Cf. the situation in the centre of the Acropolis (Area F East), where the low walls provided a much poorer protection, but still no fewer than 2,177 fragments of roof-tiles were retained (*San Giovenale* IV:1, 134).

<sup>235</sup> *San Giovenale* V:2, 224. In Area F East, 1,291 pan-tile and 707 cover-tile fragments were recovered (*San Giovenale* IV:1, 134).

<sup>236</sup> For the frequency of various terracotta categories in various archaeological contexts, see Backe-Forsberg 2009, 256, table 93. N.B. that the numbers of pan-tile and cover-tile fragments stated there differ slightly from mine, since three pan-tiles and one cover-tile published in 1981 (nos. 9, 16, 19, 35) were not included in *San Giovenale* V:2.

<sup>237</sup> Wikander 1981, figs. 3, no. 19 (I B), 4, no. 17 (I A); *San Giovenale* V:2, 61, no. A:g-3-3 (I), 88, no. B:c-2/3-12 (I), pl. 107.

<sup>238</sup> Wikander 1981, fig. 3, nos. 20f.

<sup>239</sup> For instance, Wikander 1981, fig. 5, nos. 17, 24.

<sup>240</sup> Wikander 1981, 71 with n. 19.

<sup>241</sup> Ten drawn profiles were published in Wikander 1981, fig. 2 (nos. 2, 5, 7, 9, 14–19), and 24 in *San Giovenale* V:2, pl. 107. It remains, however, impossible to tell whether the shapes of the raised borders have any useful information to provide. Cf. Wikander forthcoming, Ch. I.1.4.

<sup>242</sup> Hanell 1962, 300, fig. 272. A sketch in the field journal suggests a width of as much as c. 65 cm—hardly correctly, though, as only two, probably post-Archaic, pan-tiles are known with widths surpassing 60 cm: *Acquarossa* VI:2, 32, no. T 20a (Chiusi), 34, no. T 46a (Marzabotto), fig. 9.

<sup>243</sup> *Acquarossa* VI:2, 27, 29, fig. 3 (Acquarossa); Wikander forthcoming, Ch. I.1.2 (Poggio Civitate).

Perhaps the most peculiar terracotta fragments unearthed in the Borgo are the remains of a skylight-tile of unusual shape and unequivocal traces of unique, almost absurd, production methods. I have already published this tile in great detail and refrain from repeating myself here.<sup>244</sup>

Moreover, Ingrid Pohl has published a fragment of a disc-shaped terracotta from House B, “prob. the tile that covered the smoke hole in the roof”.<sup>245</sup> I doubt that this interpretation is correct. The estimated diameter of the disc is 52 cm, which would mean that the pan-tile whose opening it was intended to cover must have had a width of at least c. 60 cm—a size without parallels in Archaic Etruria.<sup>246</sup> It is far more probable that we are dealing with a lid of a coarse ware *dolium*. These large containers are made of clays often identical with that of the roof terracottas, and almost a dozen *dolia* with estimated rim diameters between 48 and 61 cm are known from the Borgo.<sup>247</sup>

### Cover-tiles, imbrices

All twelve San Giovenale cover-tiles published in 1981 come from the Borgo, and in 2009 Ingrid Pohl added 28 more. Only a few included upper ends which make certain classification possible, but they do show that all three basic types were in use in the Borgo.<sup>248</sup>

No cover-tiles complete in length were found, and the complete, transverse profile (and, thus, width and height) is preserved for only two tiles and reconstructed approximately for a third. One Type I tile is preserved for 46 cm, perhaps slightly less than three quarters of its total length. Its width decreases upwards from 15 to c. 11 cm, its height from 6.9 to c. 3.5 cm. A cover-tile of unknown type has a width of 13.5 cm and a height of 6.5 cm, but it cannot be determined from what part of the tile it derives. The reconstruction of a Type III C tile, finally, suggests a width of 15 cm, a height of c. 8.2 cm, and a c. 8.5 cm long flange.<sup>249</sup>

The thickness of the cover-tiles varies considerably (Fig. 150b), even within one and the same tile.<sup>250</sup> The extreme measurements among the 25 tiles whose thickness is recorded are 0.8 and 3.2 cm, respectively. The great majority fall between 1.2 and 1.7 cm, with an average thickness of 1.5 cm.

Few conclusions may be drawn from these figures. What can be said is that the dimensions of the cover-tiles from the Borgo mostly agree quite well with those of their, at least partly, contemporary counterparts from Acquarossa and Poggio Civitate. The average thickness is more or less the same. The most re-

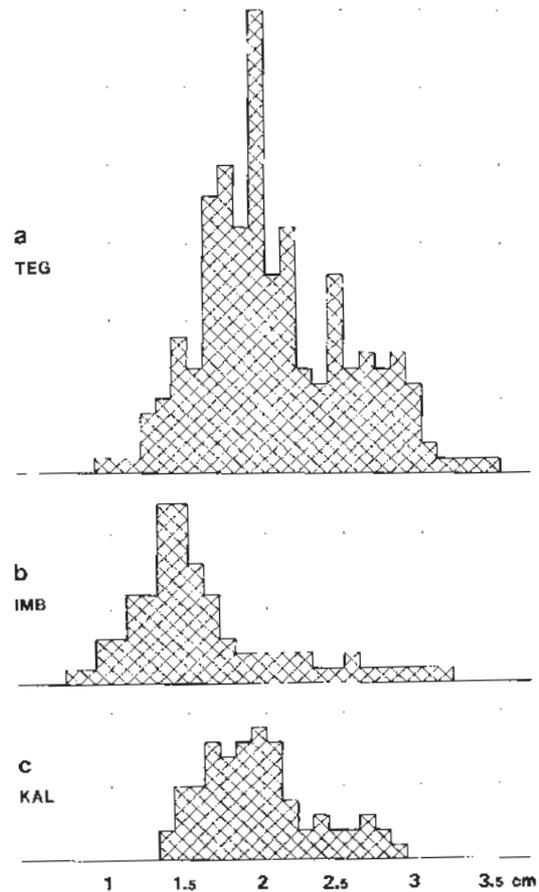


Fig. 150. Thickness of pan-tiles (a), cover-tiles (b) and ridge-tiles (c). The entire range of thickness of every fragment is indicated (for instance, a tile with a thickness between 1.3 and 2 cm is represented by eight adjacent crosses).

markable measurement is the length of the Type III C flange that has no, even remote, equivalent at Acquarossa and only one at Poggio Civitate, considerably shorter ones being the rule.<sup>251</sup>

### Ridge-tiles, kalypteres

Of the San Giovenale ridge-tiles published in 1981, ten come from the Borgo, and in 2009 Ingrid Pohl added seven more. Considering the fragmentary state of the material, I refrained from classifying the ridge-tiles according to types, but preferred to speak only of three groups, the second of which is not in evidence in the Borgo.

*Group 1.* Eight units are decorated with horizontal, plastic cordons. Their sizes and designs differ markedly, from rather small and vaguely shaped ones to sturdy, elegant guilloches.<sup>252</sup> Two of them preserve the remains of what may seem to be a transverse cordon along one short side, but four others distinctly show that we are dealing, instead, with a raised border whose profile—like that of the pan-tile borders—can be rectangular or, more often,

<sup>244</sup> Wikander 1981, 83, nos. 59f., figs. 13f., 16a. Cf. Wikander 1983, 90, no. 29, fig. 8:29; *San Giovenale* IV:1, 133; *San Giovenale* V:2, 122, nos. 522f.; Winter 2009, 31, no. 1.F.3.a.

<sup>245</sup> *San Giovenale* V:2, 90, no. B:c-mix-23.

<sup>246</sup> See above, n. 242.

<sup>247</sup> Three of these were actually found in House B: *San Giovenale* V:2, 75, no. B:a-7-34, pl. 93 (est. diam. 50 cm), 80, no. B:a-1/3-24, pl. 100 (est. diam. 50 cm), 92, no. B/C:c-23, pl. 95 (est. diam. 48 cm).

<sup>248</sup> Wikander 1981, fig. 6, nos. 27, 28; *San Giovenale* V:2, 31, no. A:b-3/7-72? (Type I); Wikander 1981, fig. 6, nos. 30, 38? (Type II); *San Giovenale* V:2, 133, no. R-519 (Type II or III); Wikander 1981, figs. 6-8, nos. 29, 31, 32 (Type III).

<sup>249</sup> Wikander 1981, fig. 6, no. 27 (Type I), fig. 6, no. 38 (unknown type), fig. 8, nos. 29+31 (Type III C). No more complete profiles were discovered by Ingrid Pohl.

<sup>250</sup> See Wikander 1981, fig. 6; *San Giovenale* V:2, pl. 108 (upper two rows).

<sup>251</sup> For Acquarossa, see *Acquarossa* VI:2, figs. 12b-e, 13a, c; for Poggio Civitate, Wikander forthcoming, Ch. I.2.2-4.

<sup>252</sup> Wikander 1981, figs. 9f., nos. 40-42, 45; *San Giovenale* V:2, 30, no. A:b-7-57, 61, no. A:d-2/4-728, 187, nos. WA 1740f., pl. 108.

triangular.<sup>253</sup> Such borders are to be found on three additional units that preserve no horizontal cordon.<sup>254</sup> Two of them may very well have had one, while the third is preserved sufficiently in width and height to prove that it did not. The occurrence of a transverse, raised border which, as opposed to the cordon, can hardly have had any decorative function, suggests that the other short side carried an overlapping flange.

*Group 3.* Five units discovered close to each other in yard Ad of House A and the adjacent Drain L constitute a close, typological parallel to Acquarossa Type III.<sup>255</sup> But their overlapping flanges are much smaller (length *c.* 7.5 cm against Acquarossa's *c.* 13.5 cm) and more strongly curved. The small size, together with the fact that no fragment shows a trace of a horizontal cordon, seems sufficient proof that these flanges had nothing at all to do with the raised, short side borders of Group 1, even though they, too, must reasonably have had similar borders. It is also worthy of note that no fragments were found of the semicircular, lateral openings for the cover-tiles characteristic of Acquarossa Type III.

*Group 4.* Ingrid Pohl has drawn attention to a unique ridge-tile fragment overlooked by me.<sup>256</sup> Its lack of horizontal cordon and its depressed flange clearly show that it cannot be attributed to any of the three groups I presented in 1981. The flange is carelessly shaped, without the distinctly marked limit normally to be seen between the flange and the rest of the tile.<sup>257</sup>

As already intimated, no San Giovenale ridge-tile preserves complete length, width or height. The thickness of the Group 3 fragments varies from 1.4 to 2.3 cm, with an average of 1.8 cm; that of the rest from 1.5 to 2.9 cm, with an average of 2/2.1 cm (*Fig. 150c*).

## DISTRIBUTION

As the Borgo is situated in a steep slope, where the tiles may have fallen down from buildings located higher up—even from the very plateau of the Acropolis—the find spots of particular objects must be treated with caution. Only when several related fragments were found in the same area, is it advisable to attribute them to an adjacent building. I have identified three such groups.

(a) Three fragments of a skylight tile were discovered in Area R,<sup>258</sup> a small area left open during the second building period between House C and the vertical cutting in bedrock that delimits the Borgo towards the east. It seems most reasonable to assume that the tile derives from either House C or a building immediately above the cutting. But if the area was filled up on purpose at the end of Pre-House Period II, as intimated by Ingrid Pohl,<sup>259</sup> the fragments may possibly come from a more distant roof.

(b) While ridge-tile fragments of Group 1 (with a horizontal cordon) have been found scattered over the Borgo, the five fragments of Group 3 (with a torus-shaped flange) all derive from a rather restricted area: four from courtyard Ad of House A (strata

2–4) and one from the adjacent Drain L (stratum 1). Even though neither House B and C nor a building above the vertical cutting can be excluded, the most plausible origin of these ridge-tiles should be the roof of House A.

(c) The skylight-tile fragments, three cover-tiles and two Group 1 ridge-tiles have, judging from their bluish-grey clay or core, been subjected to secondary firing (cf. *infra*, “Technical features”). One cover-tile was found in the central room Ab of House A (strata 3–7), one cover-tile and one ridge-tile in its yard Ad (strata 2–4), one ridge-tile in Drain L (stratum 1), and one cover-tile together with the skylight-tile in Area R.<sup>260</sup> They seem, thus, to indicate a fire in one or several houses in the north-east part of the Borgo.

## TECHNICAL FEATURES

Data concerning the colours of clay, slip and paint are available for all fragments published in 1981 and for almost as many of those published in 2009. The information gathered in *Fig. 151* gives a quite clear picture of the “average” roof-tile from the Borgo: reddish-brown to brown clay, mostly fired throughout but occasionally with a grey core, red to dark red slip or paint.<sup>261</sup>

Some conditions are worthy of special comment. The reddish-brown, orange-brown/red and brown clays characteristic of the early Archaic period dominate completely (77%) over the later, lighter clays (14%).<sup>262</sup> Most tiles are fired the same colour throughout; only a small number have a grey or black core. The clay of two plain tiles and the core of three more (plus the skylight-tile fragments) is light bluish-grey, in three cases accompanied by an orange surface/slip (cf. above, “Distribution”, item c). The same phenomenon is known from Acquarossa—being apparently the result of secondary firing (or possibly misfiring in the kiln).<sup>263</sup> The red to dark red coating characteristic of the early Archaic period is to be found on 75% of the 90 fragments whose slip and/or paint are recorded.

The fabric of the roof-tiles from the Borgo is, like the local pottery, distinguished by the high inclusion of tempering matter, consisting exclusively of tufa. A pan-tile fragment from House C proved to contain as much as 40% crushed tufa.<sup>264</sup>

We have no reason to doubt that the forming of the tiles was accomplished in the same way as at Acquarossa,<sup>265</sup> even if only few marks reveal the mode of production. I know of only one pan-tile with apparent traces of the wooden frame that was certainly used, while such traces are easier recognizable on the

<sup>253</sup> Cf. also a ridge-tile from Area F East (*San Giovenale* IV:1, 59, no. 4, fig. 52, pl. 17:4).

<sup>254</sup> Wikander 1981, fig. 11, no. 56; *San Giovenale* V:2, 61, no. A:d-2/4-729, 122, no. R-521, pl. 108.

<sup>255</sup> Wikander 1981, 81, figs. 10f., nos. 49–53.

<sup>256</sup> *San Giovenale* V:2, 61, no. A:d-2/4-735, pl. 108.

<sup>257</sup> Cf., for instance, the Type II flanges from Acquarossa: *Acquarossa* VI:2, fig. 21.

<sup>258</sup> *Supra*, n. 244.

<sup>259</sup> *San Giovenale* V:2, 20, 106.

<sup>260</sup> Wikander 1981, nos. 38 (A:b), 31, 45 (A:d), 40 (L), 30, 59f. (R).

<sup>261</sup> On my use of the words “slip” and “paint” and the difficulty of distinguishing between these concepts, see *Acquarossa* VI:2, 115, 117. As for the Borgo fragments, I am convinced that the expressions “red slip” and “red paint” do, in fact, describe the same coating.

<sup>262</sup> Pohl (*San Giovenale* III:3, 81) and Karlsson (*San Giovenale* IV:1, 133) divide the dark clays in Areas E and F East, respectively, into two variants of different qualities.

<sup>263</sup> *Acquarossa* VI:2, 121.

<sup>264</sup> Wikander 1981, 70, with notes 13f. Cf. also *San Giovenale* V:2, 224, on the difficulty of distinguishing between cover-tiles and coarse ware. Karlsson (*San Giovenale* IV:1, 133) divides the reddish and the reddish-brown tiles from Area F East into one group that contains “some black mica and a few white inclusions” and another with “large amounts of white and black inclusions, some black mica and some reddish-brown inclusions”.

<sup>265</sup> *Acquarossa* VI:2, 104–110.

	Clay			Core*			Slip			Paint		
	Teg	Imb	Kal	Teg	Imb	Kal	Teg	Imb	Kal	Teg	Imb	Kal
(Dark) red	1						15	5	1	27	7	8
Brownish-red								1		1	1	
Reddish-brown	15	10	9				5		4		3	
Orange (red)		1					3	1	1			
Orange-brown	1	2	2				2	3	1	1		
Brown	5	3	1									
Light brown	3	2	1				7	2			2	
Beige/buff	2		1	1			7		1			
Bluish grey/light grey	2	2	1	6	4	9						
Dark grey/black	1					3	5					

\*when different

Fig. 151. The registered colours of clay, core, slip and paint, distributed among the three basic roof-tile categories.

bottom long sides of cover-tiles.<sup>266</sup> Slip and paint were presumably applied only when the tiles had been put out to dry.<sup>267</sup> Many fragments are too badly corroded to preserve any coating at all, while others do, particularly, in areas *c.* 5–8 cm wide along the long sides or the upper short side, where the pans were protected by the cover-tiles and the overlapping pan-tile, respectively.<sup>268</sup> Undersides are occasionally slightly evened, but mostly very rough from the tempering matter strewn on the work-table to prevent the clay from sticking.<sup>269</sup>

## DECORATION

Painted or plastic decorations were never common on ordinary roof-tiles in Archaic Etruria. Apart from the plastic cordons of Group 1 ridge-tiles, there is, to my knowledge, only one example reported from San Giovenale: a fragmentary pan-tile with a square(?) painted in red, found in a *pozzo* in Area F East and dated before 550/530 BC.<sup>270</sup>

From the excavations in the Borgo come four terracottas that may have decorated roofs in the area:

(a) A painted revetment plaque similar to Acquarossa Type II B.<sup>271</sup>

(b) A revetment plaque with convex strigilation.<sup>272</sup>

(c) A protome in the shape of the head and neck of a ram.<sup>273</sup> Ingrid Pohl seems reluctant to treat it as architectural, and—in spite of some parallels with the cover-tile protomes known, particularly, from Acquarossa<sup>274</sup>—I share her doubts.

(d) A possible antefix, published elsewhere in this volume.<sup>275</sup>

## CHRONOLOGY

*Fig. 152* shows the tiles found in the Borgo divided into the three building periods, as dated by the ceramic finds.<sup>276</sup> There are, however, good reasons to doubt that these dates are valid for the plain tiles, too:

(a) In South Etruria, Type I pan-tiles were gradually substituted by Type II during the second half of the 6th century BC and are very seldom found after *c.* 500 BC.<sup>277</sup> Still, there is no evidence of any kind of Type II tiles in the material from the Borgo.

(b) Group I ridge-tiles are distinguished by their horizontal, plastic cordon, a decoration common at both Poggio Civitate and Acquarossa, but abandoned there *c.* 590 and 550 BC respectively.<sup>278</sup> In the Borgo, three out of eight such tiles are assigned to Period 3.

<sup>266</sup> *San Giovenale* V:2, pl. 107, no. WA-1708 (pan-tile). Wikander 1981, fig. 6, nos. 27, 33, 36–38; *San Giovenale* V:2, pl. 108, no. A:d-2/4-716 (cover-tiles).

<sup>267</sup> See Wikander 1981, 71, on pan-tile no. 1. Cf. Wikander forthcoming, Ch. III.3.2.

<sup>268</sup> Wikander 1981, 71. At Acquarossa, the corresponding areas were normally 4–6 cm (long sides) and 5–6.5 cm (upper short side) wide, respectively (*Acquarossa* VI:2, 125f.).

<sup>269</sup> Wikander 1981, figs. 5, no. 24; 10, nos. 49, 51 (evened); 5, no. 17; 7, nos. 29, 31, 32 (rough). On the issue, cf. *Acquarossa* VI:2, 105.

<sup>270</sup> *San Giovenale* IV:1, 60, no. 7, fig. 55, pl. 17:7.

<sup>271</sup> Wikander 1981, 86f., no. 63; *Acquarossa* I:2, 27, fig. 6.

<sup>272</sup> Wikander 1981, 87f., no. 65.

<sup>273</sup> Berggren & Moretti 1960, 4, fig. 2; *San Giovenale* V:2, 191, no. Sp-25, fig. 15, pl. 104. See also *Fig. 15*.

<sup>274</sup> *Acquarossa* VI:2, 57f., 145–150.

<sup>275</sup> See *Fig. 14*.

<sup>276</sup> Backe-Forsberg 2009, 228f., table 1.

<sup>277</sup> Wikander forthcoming, Ch. I.1.4.

<sup>278</sup> *Acquarossa* VI:2, 158, fig. 60 (Acquarossa). At Poggio Civitate, ridge-tiles decorated with cordons are, without exceptions, restricted to the Orientalizing Complex destroyed *c.* 590 BC (Wikander forthcoming, Ch. II.1).

	<i>Clay</i>					<i>Paint</i>				
	Red	Shades of orange	Dark shades of brown	Light shades of brown	Grey/black	Red	Shades of orange	Dark shades of brown	Light shades of brown	Grey/black
Period 1 (c. 650–530)			4	1		1				
Period 1 or 2			7			2			2	
Period 2 (530/500–430)		2	7	1	2	2			1	
Period 2 or 3				1	1	26				
Period 3 (c. 430/410)	1	4	25	6	3	11	1	2	2	

Fig. 152. The registered colours of clay and paint, distributed among the building periods in the Borgo NW. The ten colours presented in Fig. 151 have here been combined to only five.

(c) Group 3 ridge-tiles are distinguished by their torus-shaped flange, otherwise known only from Acquarossa (550/530 BC) and Castellina del Marangone (530/520).<sup>279</sup> In the Borgo, one fragment is assigned to Period 1–2, four to Period 3.

(d) The reddish-brown, orange-brown/red and brown clays characteristic of Central Italic roof terracottas from the early Archaic period were gradually substituted with lighter ones during the 6th century BC, with only occasional examples from the first quarter of the 5th century.<sup>280</sup> Still, 77% of the tile fragments recovered from the Borgo are made of the darker clays—the figure being exactly the same for those supposedly belonging to Period 3.

(e) The red to dark red slip or paint characteristic of Central Italic roof terracottas from the early Archaic period was aban-

doned during the second half of the 6th century BC. Still, 75% of the tile fragments recovered from the Borgo show traces of such coating—the figure being almost the same (76%) for those supposedly belonging to Period 3.

Taken together, these circumstances clearly show that the Borgo roof-tiles cannot be dated from their find spots. This, of course, does not mean that the basic ceramic dating of various excavation areas and strata must be called in question. The diffusion of the fallen tiles was accomplished in totally different ways than that of the pottery, but it does exhort a certain caution concerning the dates of individual sherds. We must also consider the fact that the Borgo houses of Period 3 may very well have had roofs consisting of tiles reused from Periods 1 and 2.

<sup>279</sup> *Acquarossa* VI:2, 158, fig. 60 (Acquarossa); Winter 2009, 492, no. 6.H.2 (Castellina del Marangone).

<sup>280</sup> Wikander forthcoming, Ch. III.3.3. *Pozzo* 1 in Area F East at San Giovenale, presumably filled up 550/530 BC, yielded no tiles made of lighter clays (*San Giovenale* IV:1, 134).

