

THE EARLY MEDIEVAL *TESSERAE* FROM THE ST SERVATIUS CHURCH EXCAVATIONS IN MAASTRICHT – THE NETHERLANDS (1981-1989)

Titus Panhuysen*

Keywords: church archaeology, Maastricht (NE), St Servatius, cubical mosaic stones, *tesserae*, glass, chemical analysis, Carolingian period, Harris-Matrix, Paix-Dieu/Amay (BE), workshop, basilica.

Abstract: In the eighties of the last century a massive excavation was carried out in the Church of St Servatius in Maastricht in the context of an overall restoration of the church building which dates from the 11th to 15th century. The Servatius Church was originally a grave church that was founded in the sixth century by Bishop Monulph of Maastricht creating a pilgrim centre to honour his fourth-century predecessor Servatius, the first Bishop of Tongeren (BE). The excavations have not only brought to light remains of the sixth-century church building of Monulph, but also a hitherto unknown and richly decorated basilica that was in use between c. 650 and 950 A.D. as an abbey church. The diggings were extremely meticulously carried out over 40 connecting excavation trenches and the whole is very well documented and drawn in nearly 374 plans and sections. The digging is done entirely by hand and the soil is sieved dry as much as possible in stratigraphic units. That has resulted in a large amount of dating sherds within a reliable Harris-Matrix. Special material groups were found such as window glass, *tesserae* (cubical or cuboid mosaic stones) and fragments of wall paintings. The 133 mosaic stones from this excavation will be discussed here within their find contexts, from which something can be deduced about their original use and significance. This article is the result of a presentation during a most important Workshop in Belgium in March 2015 in the former Abbey of Paix-Dieu (Amay, BE) under the title *Early medieval tesserae in north-western Europe (VIth-Xth century)*.

Rezumat: În anii '80 ai secolului trecut s-au desfășurat cercetări arheologice de amploare în Biserica Sf. Servatius din Maastricht (Olanda) în contextul unei restaurări de amploare a clădirii bisericii datate în secolele al XI-lea – al XV-lea. Biserica Sf. Servatius a fost inițial o biserică ridicată în secolul al VI-lea de episcopul Monulph de Maastricht pentru a crea un centru de pelerinaj în onoarea predecesorului său din secolul al IV-lea, Servatius, primul episcop de Tongeren. Cercetările arheologice au adus la lumină nu numai rămășițele bisericii construite de Monulph, ci și o construcție ulterioară, necunoscută până atunci, o basilică bogat ornamentată la interior, utilizată în intervalul 650 - 950 p. Chr. ca biserică de abație. Cercetările arheologice au fost realizate deosebit de meticulos, manual, în cadrul a mai bine de 40 de suprafețe de cercetare interconectate, din acestea rezultând o documentație riguroasă și 374 planuri și profile. Pământul săpat a fost cernut urmărind în măsura posibilităților unitățile stratigrafice. În acest mod s-a putut documenta un număr mare de fragmente ceramice cu valoare cronologică înregistrate într-o Harris-Matrix. S-au remarcat categorii speciale de artefacte precum sticla de geam, *tesserae* (pietre de mozaic de formă cubică sau cuboidă) și fragmente de pictură murală. Cele 133 de pietre de mozaic descoperite în cadrul acestor cercetări sunt obiectul contribuției de față. Vor fi prezentate în contextul descoperirii lor, din interpretarea căruia sunt posibile concluzii privind utilizarea inițială a acestor pietre și semnificația lor. Acest articol prezintă pe larg o comunicare susținută în martie 2015 în cadrul unui important atelier științific organizat în fosta Abație Paix-Dieu (Amay, BE) sub titlul *Early medieval tesserae in north-western Europe (VIth-Xth century)*.

The excavations

In 1981 a beginning was made with extensive restorations of the basilica of St Servatius in Maastricht (Fig. 1).¹ Initial excavations took place in the winter of 1981-1982 in the so-called Stifts Chapel, a twin chapel which was constructed in the 11th century against the northern wall of the north transept and which functioned as treasury and oratory.² This exploratory research took place in anticipation of a planned relocation of a number of late medieval gravestones which were still in their original locations with the original burials underneath.

Some years later these were followed by comprehensive excavations in the church itself (1985-1989), when pits were dug throughout the church for the purpose of heating.³ The trenches were mostly planned in the locations of the planned pits. However, matters were complicated by the fact that the archaeologists' research had to be planned within the confines of the order of restoration activities of the walls and vaults of the church which necessitated huge scaffolding reaching to the ceiling. As a result, excavations were carried out in 40 small, hand-dug trenches (2135 m³) covering an area far larger than taken up by just the heating pits which were filled in with concrete 'cellars', soil or a pure inert silver sand afterwards (Fig. 2). Of course this method wasn't conducive to an overview of the site, but it did lead to very detailed documentation. In total, 174 plans were drawn (4787m²)

* University of Amsterdam, e-mail: tasmpanhuysen@gmail.com.

¹ Oswald *et alii* 1990, p.188; Jacobsen *et alii* 1991, p. 257.

² T. Panhuysen, *De archeoloog*, in: De Sint Servaas 1982-1992, pp. 3, 5-7, 17; Panhuysen 1982; Panhuysen 1984, pp. 82-95; Mekking 1982; [changed interpretation of the incomplete plan of a polygonal part of a church: Panhuysen 1991].

³ T. Panhuysen, in: De Sint Servaas 1982-1992, pp. 3, 5-7, 17, 181-182, 189, 200-201, 205-206, 216-217, 221-223, 239-240, 309-322, 383-386; Panhuysen 1990; Panhuysen 1991; De la Haye 1993; Panhuysen, De La Haye 2002; Panhuysen 2014a; Panhuysen 2014b.



Fig. 1. Maastricht, St Servatius Church. The eastern apse, flanked by towers, and the eastern transept from the southeast.

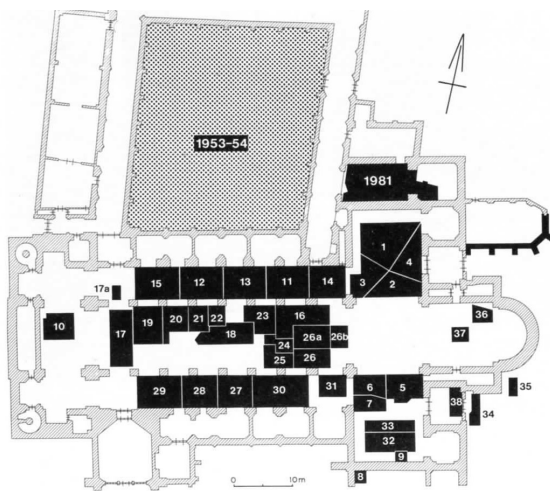


Fig. 2. Maastricht, St Servatius Church. Map of excavation trenches (1981-1989) (by G. Veldman).

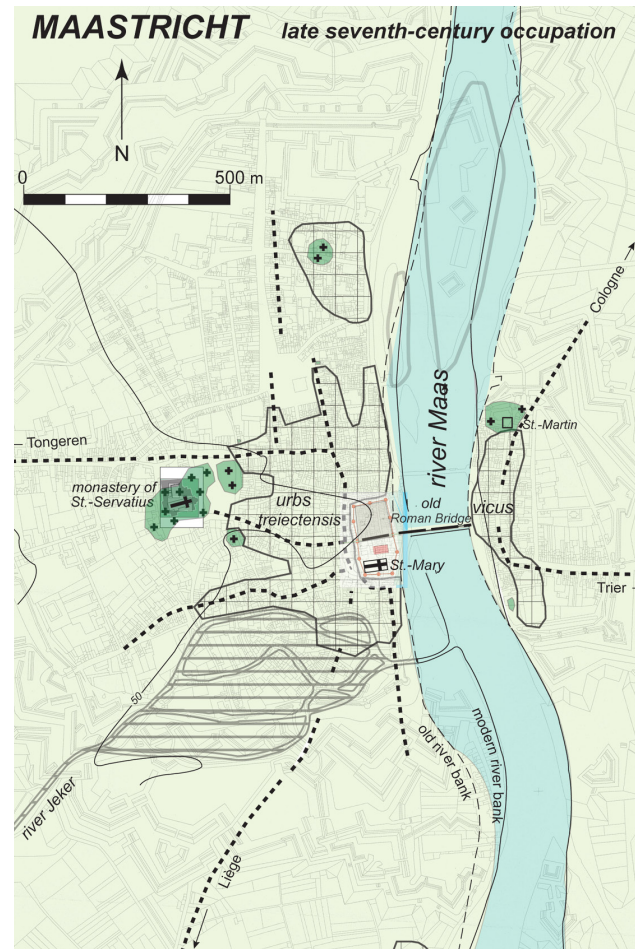


Fig. 3. Maastricht. Map of the supposed late-seventh century occupation (design: author).

and 113 sections (868 m²) as well as a lot of details drawings which resulted in a reliable stratigraphy in the form of a Harris Matrix. The soil was systematically sieved by hand per layer, so that very few finds were lost, if at all. This has greatly benefited our knowledge of small finds which as a rule are very scanty in church archaeology.

It is remarkable that very few remains of *in situ* walls and foundations were found. This in contrast to an almost complete floor of pink Roman concrete (*opus signinum*) belonging to one of the last construction phases of the Carolingian basilica which was uncovered nearly intact some 60 cm below present-day floor level. Everywhere the remains of robbed walls and foundations were found, which were back-filled with pieces of building material, lumps of whitish mortar and fragmentary stucco and window glass. Beside the remains of almost 400 graves, the most interesting find groups from a chronological point of view were formed by a wide range of pottery, (and in addition) window glass and fragments of wall paintings.

Four building phases dating from the 4th to 11th centuries

During the excavation campaigns in the St. Servatius Church it became clear that there had been at least four building phases which preceded the 11th century building which is still standing today.⁴ These include a cemetery continuing from the late Roman period into the early Christian period with a square mausoleum

⁴ T. Panhuysen, *Bouwperiodisering van de voorlopers van de Sint-Servaaskerk. Voorlopige resultaten van de Servaasopgravingen 1981-1989*, in: *De Sint Servaas* 49, 1990, pp. 391-394; Panhuysen 1990.

or *cella memoria* which was discovered exactly below the 11th century vaulted burial chamber of the patron. The second phase consists of walls of the first church of the second half of the 6th century (the *magnum templum* mentioned by Gregory of Tours) and many burials and cists made of mortared rubble containing 6th–7th century grave goods. The third phase represents a complete new build of a three-aisled basilica and traces of monastic buildings from the second half of the 7th century (Fig. 3).⁵ Finally, all these buildings were raised to the ground after which the construction of a large pilgrimage church started in the second half of the 10th century which was altered to its present-day form in the late 11th and 12th centuries.

A well-documented find of 133 mosaic stones

Besides finds of pottery (2566 fragments),⁶ stucco (898 fragments),⁷ and window glass (741 fragments),⁸ 133 cubical or cuboid, mostly glass, mosaic stones (*tessellae* or *tesserae*) were found which attracted great interest from glass specialists (Fig. 4),⁹ not so much with regards to their chemical characteristics, but because of their excellently documented finds contexts.¹⁰ Nothing was known about their chemical compositions until the beginning of 2015, but the presentation of the material at the Workshop of Paix-Dieu (Amay, BE) aroused the curiosity of specialists who expressed an interest in carrying out chemical analyses at short notice with an aim to include the results in current research projects.¹¹ Knowledge of the chemical composition of the glass *tesserae* can help us further with questions about their origins or place of production, production process, date, workshops, trade and exchange, application and meaning.¹² By comparing the results with those from other early medieval sites, distribution patterns and historical connections can be highlighted. The region known as the EUREGIO¹³ with Merovingian bishop seats at Maastricht and Liège (BE), early Christian centres at nearby Cologne (DE) and Trier (DE), several influential abbeys such as Stavelot / Malmédy (B.), Prüm (DE) and Maastricht, royal palaces in Jupille (BE), Herstal (BE), and Düren (DE), and especially the centre of power at Aachen (DE), turns out to provide an interesting case for comparative research of this particular group of finds.¹⁴

The function of mosaic stones in early Christian architecture is clear: they were used in polychrome mosaics with Christian themes to decorate the apse, dome and walls of early Christian and Byzantine

⁵ New hypothesis about the starting period of the construction of the basilica: Panhuysen 2011a; Panhuysen 2011b.

⁶ See Beck 2015.

⁷ See the report of the technical research at the SRAL (Stichting Restauratie Atelier Limburg), Maastricht by Diascorn 2014.

⁸ Description and inventory by Mariëtte Paris-Vankan (Meerssen, NL); glass analysis by L. Van Wersch, I. Biron, Fr. Mathis, M. Bonnin and D. Strivay (University of Liège, BE).

⁹ Workshop 'Early medieval tesserae in north-western Europe (VIth–Xth century)'. Material, techniques and exchanges. Centre des métiers du patrimoine Abbaye de la Paix-Dieu, Amay-Belgium (19.03–20.03.2015).

¹⁰ Panhuysen 2015.

¹¹ Programs of the Universities of Liège (BE) and Göttingen (DE).

¹² During the Workshop in Paix-Dieu (see above note 9), talks were given on the production techniques of antique glass by Dieter Brems en Patrick Degryse (Catholic University of Leuven, BE), on specific problems relating to scientific research and chemical analysis of early medieval glass by Ian Freestone (UCL London), on glass colouring/clouding and on the application of gold foil to *tesserae* by Elisabetta Neri (Sorbonne, Paris).

¹³ The name EUREGIO stands for European region. It is used to refer geographically to the Meuse–Rhine Euregio (Dutch: Euregio Maas–Rijn, French: Eurorégion Meuse–Rhin, German: Euregio Maas–Rhein). It is a Euroregion created in 1976, with judicial status achieved in 1991. It comprises 11.000 km² and has around 3.9 million inhabitants around the city-corridor of Aachen–Maastricht–Hasselt–Liège. The seat of the region has been in Eupen, Belgium since 1 January 2007.

¹⁴ Presentations on the *tesserae* of Stavelot (by Brigitte Neuray [SPW Namur], Chantal Fontaine and Helena Wouters [KIK/IRPA Brussels]) and the dome mosaic of the Carolingian Palace Chapel in Aachen (by Sebastian Ristow [University of Cologne], Andreas Kronz [University of Göttingen]) offered a first glimpse into the possibilities of comparative research with the latest investigative techniques. Of great importance for future comparative research is a unification and standardization of the type of questions asked and the methods of chemical analysis used. Perhaps it is also useful to apply different methods of analysis to the same material. In Göttingen investigations are carried out with a wavelength-dispersive (WD)-Electron microprobe and with LA-ICP-MS (Laser Ablation Inductively Coupled Plasma Mass Spectrometry); in Brussels with SEM-EDX (Scanning electron microscopy with energy dispersive X-ray spectroscopy); in Liège with PIXE-PIGE (Particle-induced X-ray emission - particle-induced gamma-ray emission).

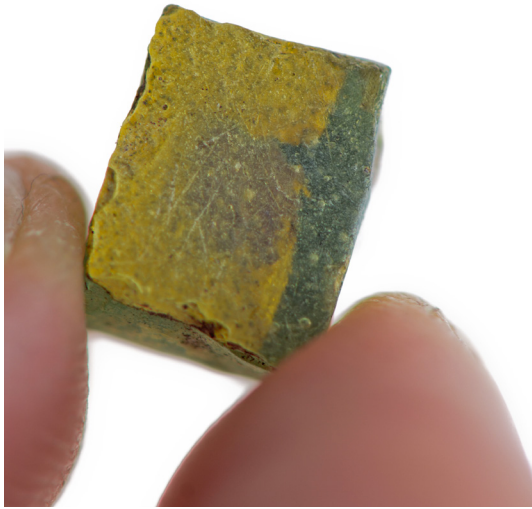


Fig. 4. Maastricht, St Servatius excavation. A small find from the church excavation.

churches and baptisteries.¹⁵ Famous examples are found in 5th–6th century churches in Rome (IT), Ravenna (IT) and Thessaloniki (GR).¹⁶ Mosaics are also found in early medieval churches in Gaul as evidenced by historical literary sources and archaeological finds, but here the change to wall paintings seems to have occurred rather early.¹⁷ This was undoubtedly done to save money since the production of mosaics was a very costly affair indeed!

For the construction of the halo or *nimbus* of saints and for the golden backgrounds of the biblical scenes gold foil *tesserae* were used, made from cubes of colourless or pale greenish glass which were covered by an extremely thin layer of pure gold (hammered from gold coins), which was then sealed by a thin layer of colourless or pale greenish glass, called the cartellina. Mosaic stones have been found during many church excavations, but rarely *in situ*, which makes it difficult to prove that they were actually used in mosaics.¹⁸ The apse and apse calotte of the Carolingian oratory of Germigny-des-Prés, to the south of Paris, are completely

decorated with mosaics (Fig. 5).¹⁹ In order to decorate Charlemagne's palatial chapel at Aachen with mosaics in the early 9th century, a huge (local?) production of *tesserae* was required (about 2 million).²⁰ However, archaeological excavations usually only yield just a few *tesserae* or a few dozen at most; finds of several hundred *tesserae* are exceptional. These numbers are too small to create more than just some simple, linear designs or letters or to cover more than just a small surface instead of the huge areas of, for instance (semi-)domes, for which thousands, if not tens of thousands of *tesserae* were used.

Variety and find contexts of the *tesserae* from Maastricht

The *tesserae* from the excavations in the St Servatius Church can be distinguished according to colour and material. The largest part is made of glass, of which 47 are made of transparent green glass with a thin layer of gold foil (Figs. 10, 12), 35 are of various green shades (transparent, opaque, dark green, bright green, and olive green), 21 are of blue glass (transparent dark, opaque turquoise), 10 of red glass (opaque and streaked), 14 cubes, mostly made of natural stone, are black, and six are white or opaque yellow (Figs. 6, 7). The *tesserae* were mostly found in layers which were formed during the existence of the basilica which can be dated between the second half of the 7th century and the end of the 10th century.²¹ It is therefore highly likely that they were (re-)deposited during the life-time of the basilica, but it cannot be excluded that they represent old material that was dug up. They could even by themselves constitute evidence for the practice of recycling. Some have ended up in younger levels and can in their turn originate from older, early medieval levels. A large

¹⁵ L'Orange, Nordhagen 1960; M. Büchsel, *Gott offenbart sich im Bild*, in: Stiegemann *et alii* (eds.) 2013, pp. 75–86. During the workshop in Paix-Dieu Christian Sapin (University of Bourgogne) gave a paper on the use of mosaics as wall decorations in Late Antique and Early Medieval architecture.

¹⁶ On the meaning of Ravenna for Aachen: Ranaldi, Novara 2014.

¹⁷ Weidemann 1982, p. 138; Fixot, pp. 176–177; Foy 2008; Prévot *et alii* (eds.) 2014, p. 735 *s.v.* mosaïque and musivum (Index des Realia).

¹⁸ Examples are Poitiers (FR): see D. Simon-Hiarnard, Nr. 115 'Wandmosaik mit Phönix' and Nr. 116 'Mosaikfußboden mit Inschrift', in: Stiegemann *et alii* (eds.) 2013, pp. 162–164. During the workshop in Paix-Dieu other examples have been discussed, such as the wall mosaic of the Notre-Dame-de-la-Place in Bordeaux (B. Palazzo-Bertholon), the *tesserae* from the excavation of the Episcopal Church of Autun (S. Balcon-Berry), and the finds from the Saint-Clément in Mâcon (L. van Wersch, F. Mathis, M. Bonnin, D. Strivay and Chr. Sapin).

¹⁹ Heitz 1987, pp. 150–152; Untermann 2006, p. 82.

²⁰ Marksches 2014; examples in Aachen: W. Giertz, Kat. nr. 117 'Glasmosaiksteine' and Kat. Nr. 21 'Glasmosaiksteine', in: Pohle (ed.) 2014, pp. 105, 180–181.

²¹ Based on the Harris Matrix and the dating of the pottery (see note 6).

concentration of 54 *tesserae* was recovered from a small area measuring only 12 m² outside the north-eastern corner of the basilica in soil that was turned over from disturbed graves (context 20010) (Figs. 8, 9). A small cluster of five mosaic stones was found embedded in a lump of mortar made from lime with mixed in bits of roof tiles, perhaps the remains of a floor of *opus signinum* (Fig. 10). Remarkably, another 28 *tesserae* were found inside the basilica, at only a few meters distance from the first find, in a small area of just a few square meters of a dirty, compacted loamy floor in the rebuilt northern annex (context 20043). This annex possibly functioned as access from the cloisters and the churchyard of the abbey.²² A small group of 11 mosaic stones was recovered from the dark turned over soil of Carolingian graves along the southern wall of the basilica, in close proximity to the great south porch (contexts 20796 and 21226).²³ In the middle-aisle of the basilica six mosaic stones have been discovered near the altar on the tomb of the founding fathers of the church Monulph and Gondulph, but their find context is suspect due to later intrusions (contexts 20611 and 20614). The southern annex in the south-eastern corner of the building too yielded a few *tesserae* in raised levels beneath the hardened floor level of the interior (context 20972). Also in the southeast, a single *tessera* was found in a grave just outside the basilica, at the bottom of a small Merovingian cist of mortared rubble (grave 79, context 21018), which was destroyed when the basilica was built, so that is uncertain whether this is an *in situ* find. If so, this would be the oldest *tessera* context found during the basilica excavations. Finally, several *tesserae* were recovered from the late 10th century destruction trench of the robbed, northern basilica wall and from various 11th century fills and raised levels; most of these also come from the vicinity of the north-eastern corner of the basilica.

Context 20010 (continuing into trenches 1-4): culture layer with black soil, against the north-eastern corner of the basilica (Figs. 8, 11)

This is a sizable deposit which consists of a layer of black soil mixed with charcoal, rubble, lumps of mortar and stray finds. It is a thick layer which dips to the northeast and the east and which follows the natural incline on the eastern side of the basilica at the transition towards the low-lying area, the location of the present-day Vrijthof square which has been levelled up by many meters since the early Middle Ages. The underside of this anthropogenic layer dips more than 1.5 meter, from 51 meters above sea level (51.00+ NAP) near the east wall of the basilica (wall 5) to 49.5 m. above sea level a few meters further east. The top of the layer formed a new surface and somewhat reduces the natural decline of the landscape. This 10th century surface was archaeologically investigated and forms level 7 in trench 4. The dirty soil beneath this surface (between 50.60 and 51.00+ NAP) was sieved and many finds were retrieved (find number 04-07-01), especially fragments of window glass, lead came with an H-section, lead, iron, nails, bone, *tesserae* and lots of pottery. In total, 54 mosaic stones were recovered from several units within this context, *i.e.* 40% of the total number of *tesserae* found during the basilica excavations (see Figs. 8, 9). The same is true for window glass, which is represented by 88 fragments or 12% of the total number of recovered window glass fragments. This layer was formed



Fig. 5. Germigny-des-Prés (FR), apse calotte of the Oratory of Théodulf with mosaic representing the Angels and the Arch of the Covenant (c. 809).

²² The church plan gives no information about this feature, because a possible northern passage is unrecognizable due to the complete destruction of the foundation.

²³ This porch is easily recognized by two walls at right angles to the south wall of the church and the presence of two heavy – almost two-meter-wide – threshold stones.

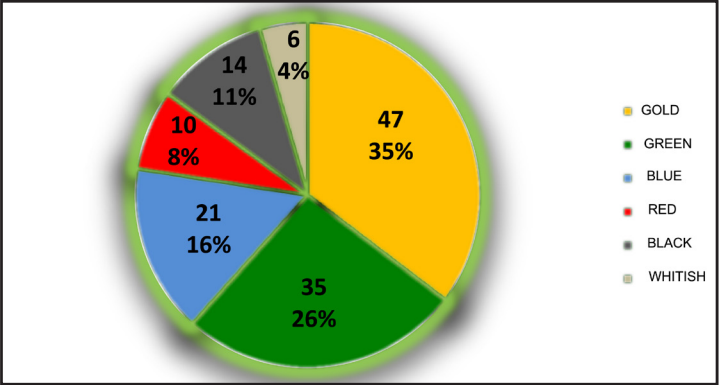


Fig. 6. Maastricht, St Servatius excavation. Diagram of coloured *tesserae*.

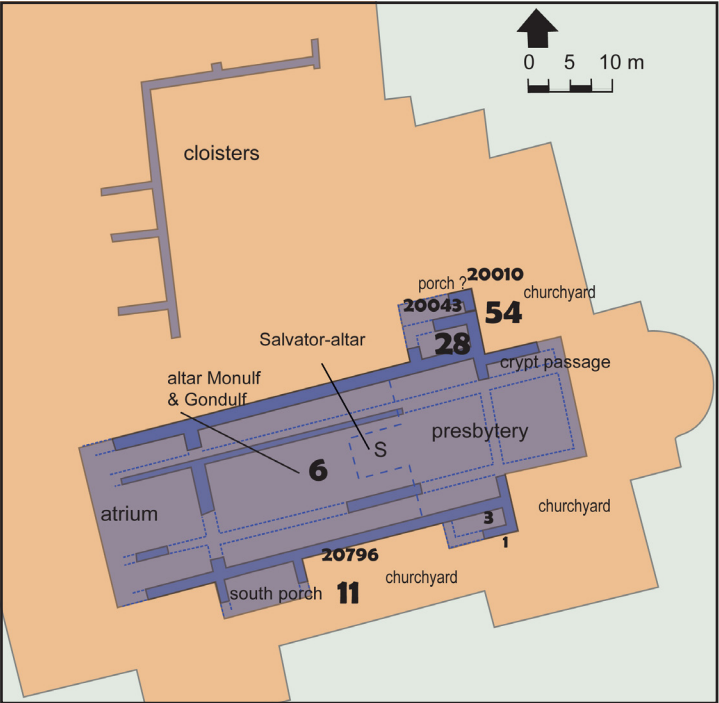


Fig. 8. Maastricht, St Servatius excavation. Carolingian Basilica with context numbers and concentration spots of *tesserae*.

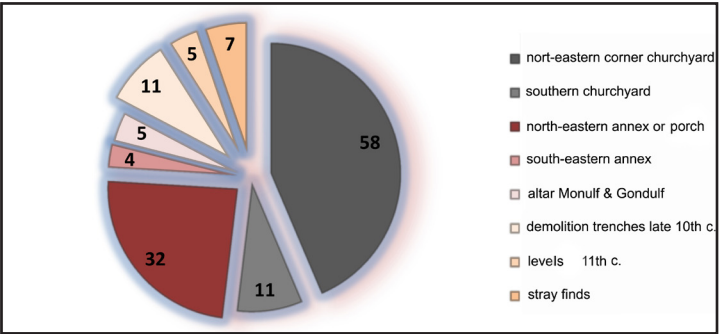


Fig. 9. Maastricht, St Servatius excavation. Diagram of find concentrations of *tesserae* in the Carolingian basilica.

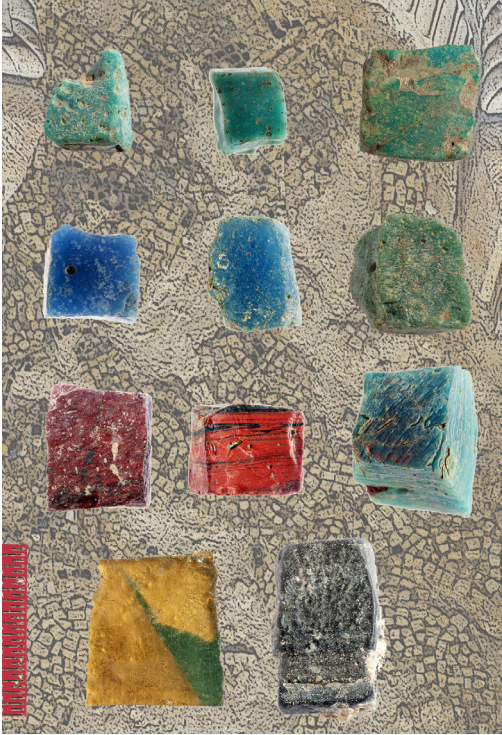


Fig. 7. Maastricht, St Servatius excavation. An overview of coloured *tesserae*.

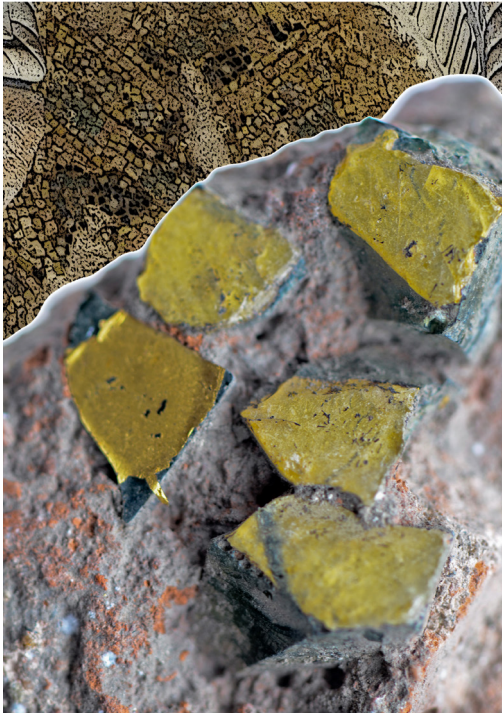


Fig. 10. Maastricht, St Servatius Church excavation. Group of five *tesserae* in mortar, found outside the basilica (context 20010).

quite some time after the construction of the basilica, while the area to the east of the basilica was used as churchyard. The large amount of building rubble may point towards interim building activities in the adjacent basilica.

The similarities with the find material from a nearby fireplace inside the walls of the basilica are remarkable. The layer yielded relatively large numbers of pottery, including white ‘Maasland pottery’, regional black and red pottery, early ‘Zuid-Limburg’ pottery and several other pottery types.²⁴ It is difficult to date the layer on the basis of existing typo-chronologies for these ceramics, but the overall picture indicates a 10th century date and the beginning of this century may well represent a *terminus post quem*. The period of initial use of ‘Zuid-Limburg type-A’ pottery is not well documented and it may well be earlier than has been assumed until now.²⁵ The layer was sealed by a fan of building rubble from the demolition of the Carolingian basilica.

Context 20043 (trenches 1 and 3): floor H in the annex or porch at the north-eastern corner of the basilica (Figs. 8, 11)

The floor is at 51.50-51.55 meters above sea level and is made up of dirty, loamy soil measuring between 5 and 10 cm in thickness. It is associated with an annex or extension which was constructed between the east wall (wall 5), which was extended in a northerly direction, and the north wall (wall 13) of the basilica and which perhaps functioned as access to the church. The dirt floor covered a pit which functioned as a stokehole, which was inserted in the corner of the annex. The floor was compacted and hard with patches of iron oxide and had dropped in several places. From this surface, as well as from the greyish sandy layer, underneath 28 mosaic stones (21%) and 173 window glass fragments (23%) were retrieved. The fill of the fireplace contained even more window glass (216 fragments or 29% of the total) and lead, but only four *tesserae* (3% of the total). The upper layers of the fill contained mostly building debris as Carbonian sandstone, carboniferous limestone, cretaceous limestone or ‘marl’, tufa, boulders and chunks of stucco. At a deeper level many nails, including small tacks with a domed bronze head, diverse iron objects, numerous

Sint Servaaskerk Noordtransept put 1 profiel BB'

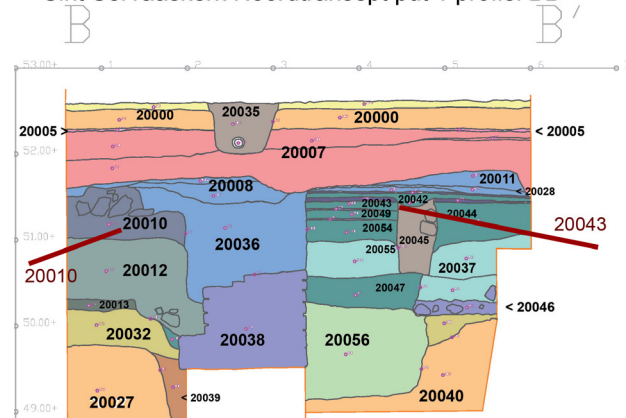


Fig. 11 Maastricht, St Servatius excavation. Section BB of trench 1 with a clear example of the stratigraphy. Context 20036 in the middle stands for the eastern wall 5 of the basilica.

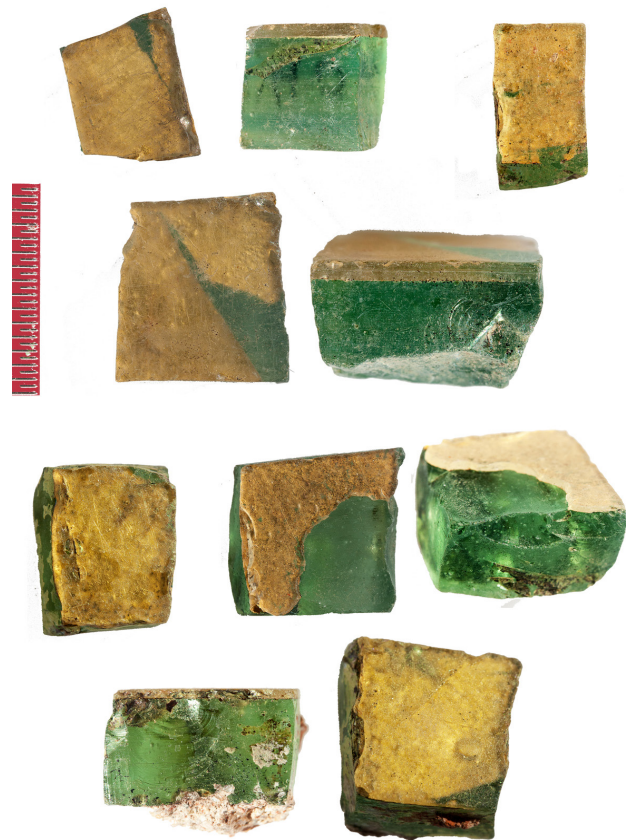


Fig. 12. Maastricht, St Servatius excavation. Some examples of mosaic *tesserae* with gold foil and its covering *cartellina*.

²⁴ Beck 2015, pp. 79-109.

²⁵ *Ibidem*, pp. 49-54, 88, 117.



Fig. 13. Maastricht, St Servatius Church. View from the west in trench 2 during the excavation.



Fig. 14. Maastricht, St Servatius excavation. View from the southeast in trench 3 on the floor levels (contexts 20043 and 20042) above the fireplace in the corner of the annex.

lead and glassy slags, charcoal, burnt clay, bronze, animal bone, snail shells and, again, many pottery fragments, including an almost complete glazed pot of 'Maaslands wit' pottery (whitish coloured pottery from the Meuse valley, precursors of 'Andenne' [BE] pottery).²⁶ The pottery assemblage from this context is similar to that of context 20010, and a date in the late 9th/early 10th century is here highly likely.

Context 20796 (trench 27 and 30): black layer with inhumation remains along the south wall of the basilica, to the east of the main entrance (Fig. 8)

This context represents a *c.* 130 cm thick layer made up of the turned over soil of disturbed graves on the outside of the south wall (wall 62) of the basilica, to the east of the great porch (transverse wall 61). At its highest level it measures at *c.* 52 m above sea level. The square outline of the churchyard – which clearly shows up in the plan of the second layer of trench 27 – follows the orientation of the exterior walls of the basilica. In section, the upper half which is rich in charcoal is clearly separated from the paler coloured lower half. Besides pottery sherds, a few window glass fragments (2% of the total), the dirty soil also contains ten *tesserae* (7% of all *tesserae*) and bone. The layers continue in an easterly direction and can be traced in the section of trench 30.

Epilogue

As a consequence of the secure contexts from which the Maastricht finds derive (Fig. 13), several questions come into mind: what is the significance of all those incidental *tesserae*, what were they used for originally, have they been reused and how did they end up in the soil they were found in? On the one hand, the number of *tesserae* found during the St Servatius excavations is relatively large, but on the other hand they only cover a very small area (just a few dm²). In spite of very careful excavations of the basilica only 133 *tesserae* were found in total. Hardly any were found in the interior of the Carolingian basilica, apart from those embedded in the floor of the north-eastern annex. It is therefore not likely that they were used in mosaics that decorated the walls or apse of the church. The find of a fragment of a floor made in the Roman *opus signinum* tradition, in which five gold foil *tesserae* were embedded (Fig. 10), as well as a few finds of *tesserae* with remains of mortar still adhering, do indicate that the *tesserae* were used in an architectonic context (Fig. 12). However, the question remains in what kind of context?

It is notable that most *tesserae* were found in two locations outside the church in layers that contained black soil from Carolingian burials; these layers also contained fragmented window glass. Another large group of *tesserae* was found in the compacted dirt floor of an adjacent extension or porch together with large numbers of window glass fragments. However, hardly any were found at this location in the fill of the fireplace underneath this thick floor (Fig. 14). This context yielded comparatively far more fragments of window glass and lead (including H-sectioned lead comes for stained glass windows). If glass working had taken place in this location, then the *tesserae* would have represented a welcome source of glass (in a period when there was a heavy reliance

²⁶ *Ibidem*, pp. 54–65, figs. 109–111.

on recycling of glass), but this is apparently not the case. Presumably dismantled stained glass windows were heated up here on an open fire to melt the lead from them for the purpose of recycling.²⁷

The most important find concentrations, making up about two thirds of the total number of *tesserae*, were found in close proximity to each other, one just inside the walls of the basilica, the other just on the outside. Although one context consisted of a compacted dirt floor and the other of the black, turned over soil from disturbed burials, both finds assemblages are surprisingly comparable - far more than with other, surrounding contexts -, even containing fragments of the same objects that could be joined together.

If the annex is interpreted as a porch, this entrance could have been used as access through which soil and rubble were removed and dumped outside, for instance the remains of the worn dirt floor which was replaced by a new floor of pink concrete during the last phase of the basilica. Perhaps formerly, graves in the church were marked with simple linear designs or names made from *tesserae* inserted in a mortar floor or even a simple dirt floor. The pottery finds indicate this clear out can't have happened before the beginning of the 10th century.

An alternative interpretation for the occurrence of the Maastricht *tesserae* in the funerary context of the grave soil is a symbolic one, whereby the *tesserae* were imbued with the symbolic notion of *pars pro toto* during the Christian grave ritual.²⁸ In this case the *tesserae* could be a reference to the baptism which took place in the baptistery, originally an octagonal building with a golden dome, where the symbolism of life and death, beginning and rebirth, were joined forever.²⁹ That is a daring proposal, but as the matter stands today, the prosaic reality of the regular clearing out of the dirt floor and, finally, of the construction of a new stone and concrete floor makes this the preferable interpretation.

The Maastricht *tesserae* are well documented and although their finds contexts reveal little about their original application, these contexts do provide a clear end date for their use: they have been cleared out in the course of the 10th century. Apart from one stray *tessera* in a 7th century Merovingian burial, a 9th century date therefore seems plausible. This makes it a very interesting group of glass for chemical analysis in order to, hopefully, establish links not only with the material from Stavelot (BE), Thier d'Ogne (BE), Theux (BE), Liège and Aachen, but also with that from the royal palaces at Paderborn (DE) and Germigny-des-Prés (FR).

Firstly, it is necessary to establish whether the Maastricht *tesserae* are made of a pure soda-lime glass in the Roman tradition, or if they are of a post-Roman HIMT glass composition (high iron, manganese and titanium) with potential impurities introduced by recycling, or even if they are made of a locally or regionally produced potash glass, because these different glass types can be used for the purpose of (indirect) dating, although they are not a means of dating *per se*.

Will the chemical analyses show that they were antique, reused mosaic stones (as is the case with the *tesserae* found at trade centres at Ribe (DK), Åhus (SE) and Dorestad (NL)³⁰, or are they made of recycled antique glass/post-Roman HIMT-glass, or were they perhaps contemporary, brought to Maastricht from, for instance, Aachen?

Hopefully, the use of the latest scientific research methods in combination with secure finds contexts and diligent registration of the finds will eventually make it possible to answer many questions relating to the nature of this almost forgotten material.³¹

NOTE: I would like to thank Yvette Sablerolles (Nottingham University) for her help and the translation of my original Dutch text into English.

²⁷ In spite of the legend that the Church of St Servatius was saved by its patron saint from plunder and destruction by the Vikings at the end of the 9th century (881), this archaeological find could indicate the contrary.

²⁸ Only one *tessera* – a gold foiled one! – was found *in situ* (?) on the bottom of a Merovingian cist made of mortared rubble (no. 79).

²⁹ A. Angenendt, *Credo. Die Taufe als Sakrament des Glaubens in der Mission*, in: Stiegemann *et alii* (eds.) 2013, pp. 53–66.

³⁰ See the contribution by Henderson *et alii*, forthcoming.

³¹ In 2015 samples of the Maastricht glasses were selected for chemical analysis carried out by Andreas Kronz (University of Göttingen) and Line van Wersch and her colleagues of the University of Liège (see note 8).

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Excerpt from Caiete ARA 7, 2016.