Consumption patterns and living conditions inside *Het Steen*, the late medieval prison of Malines (Mechelen, Belgium)

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Abstract

Excavations at the Main Square (Grote Markt) of Malines (Mechelen, Belgium) have unearthed the building remains of a tower, arguably identifiable as the former town prison: Het Steen. When this assumption is followed, the contents of the fills of two cesspits dug out in the cellars of the building illustrate aspects of daily life within the early 14th-century prison. An integrated approach of all find categories, together with the historical context available, illuminates aspects of the material culture of the users of the cesspits, their consumption patterns and the living conditions within the building.

Keywords: archaeology, history, Flanders, late medieval urban society, prison, material culture

1 Introduction

Mechelen (fig. 1) (known as Malines in both French and English) was one of the major towns in the medieval duchy of Brabant and, during the Burgundian government, eventually became the juridical capital of the Low Countries. The town still has a rich heritage, both above and below ground level. The latter part, however, has recently been severely damaged by the construction of underground parking lots. Even the Main Square *(Grote Markt)*, at the centre of town, did not escape this fate.

Excavations at the Main Square of Malines took place in 2001 and 2002 (fig. 2 & 3). This project was carried out by the *Instituut voor het Archeologisch Patrimonium* (now integrated into the 'Flemish Heritage Institute') and the town council of Malines. An introductory description of this fieldwork has been edited by Lettany (2003), a study of part of the archaeological structures and find material was published, within its historical context, in a local monograph (Troubleyn *et al*. 2007). Both volumes being written in Dutch, the results and interpretations

are now, for the first time, made available for the international archaeological community. Within this contribution, building remains excavated at the north-eastern corner of the present square and the small finds from two cesspits are at the centre of attention.

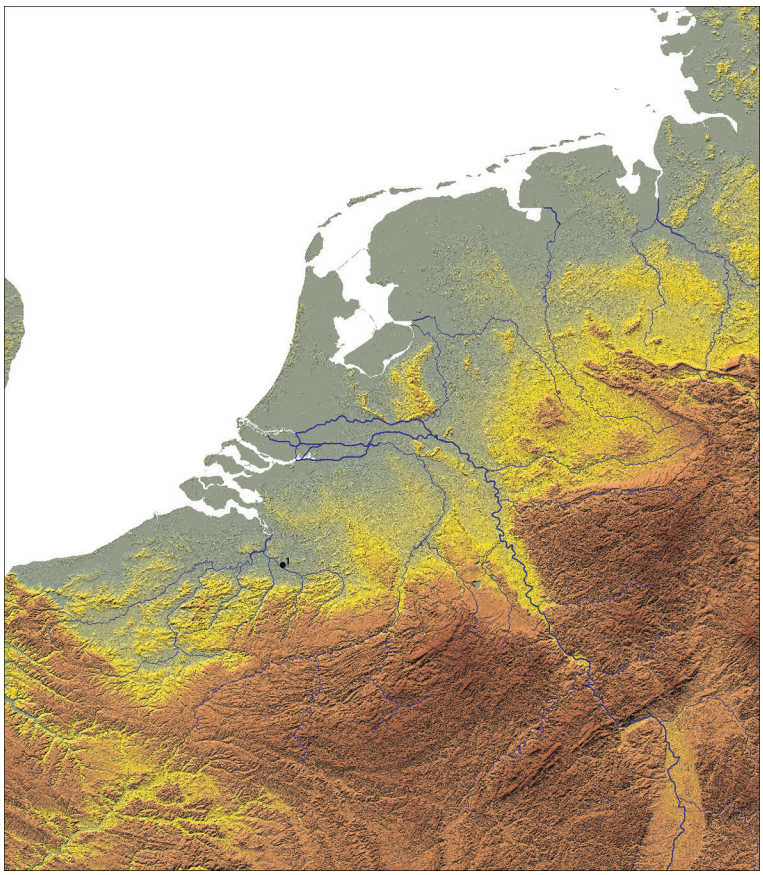

Fig. 1 Location of Mechelen

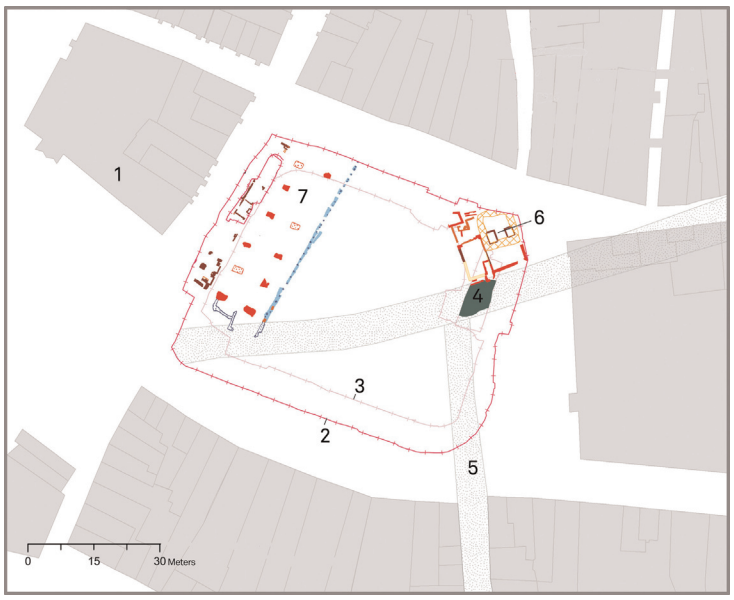

Fig. 2 The Main Square (Grote Markt) at Malines (1: parcels on the 1824 land register; 2: limits of the excavated area, upper level; 3: limits of the excavated area lowest level; 4: 13th-century road surface; 5: reconstructed road network; 6: building remains of Het Steen; 7: building remains of the market hall).

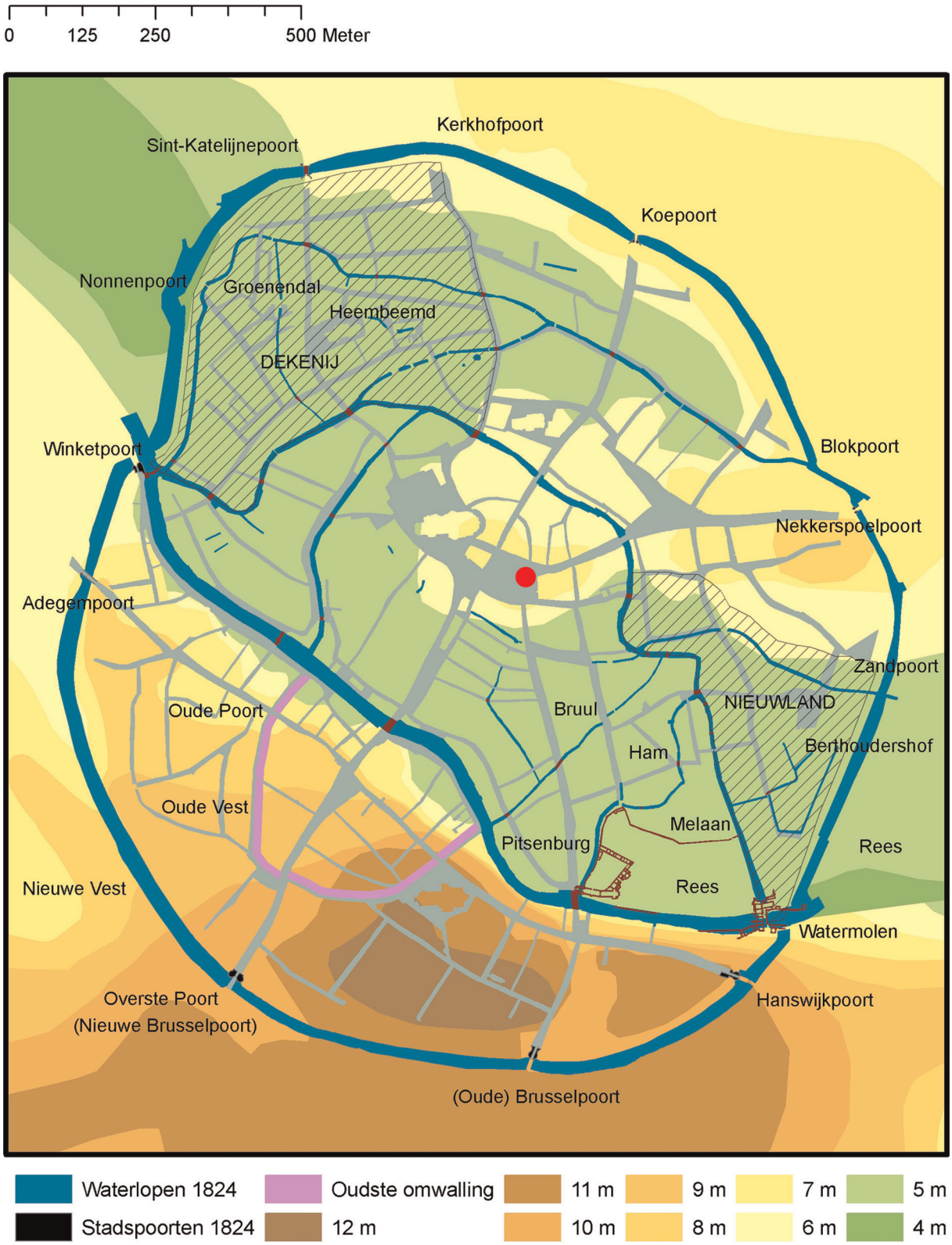

Fig. 3 Relief plan of Malines with the 19th-century waterways (Waterlopen 1824, indicating the second town defence), the town gates (Stadspoorten 1824) and the location of the first town defence (Oudste omwalling). The red dot indicates the location of Het Steen, in the geographical, economic and political centre of town.

2 The building remains

At the north-eastern corner of the present square, a complex of robbed foundations and remnants of brick walls was found along the remains of a 6 m wide street. The former had a width of 1.5 to 1.8 m and were filled with small fragments of sandstone (fig. 4, fig. 5: 1). Together, they form a square with inner sides of approximately 6 by 6 m. Below these features, a smaller foundation trench was found (1.15 m width), filled with yellow sand (fig. 5: 2). This layer of sand must have been laid out as a solid base upon which sandstone walls of about 1.15 m thick were erected. This thickness of the walls suggests a large building, probably a tower taking into account the square building plan. Next to the tower foundations, two robbed foundations of connected sandstone walls were found, belonging to a cellar (fig. 5: 2). Details about this external construction, *i.e.*, about the building to which this cellar belonged, are not available.

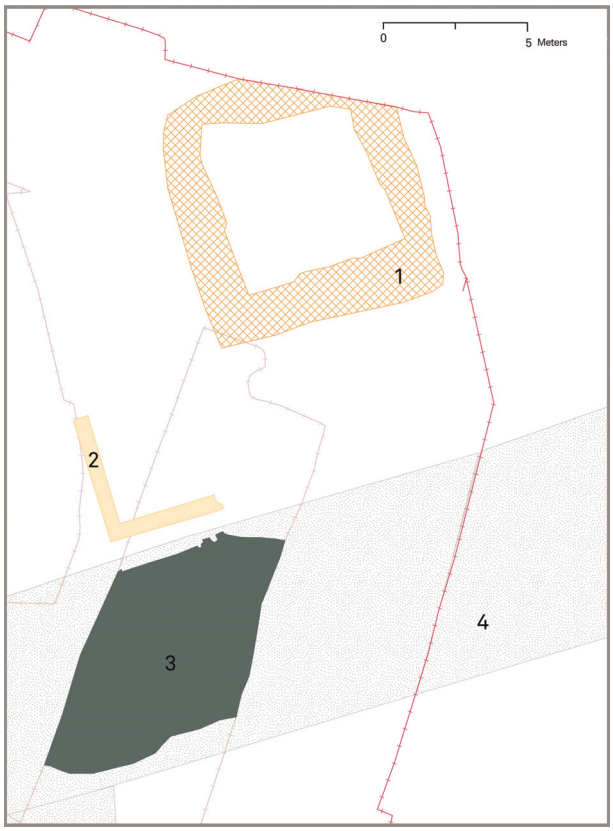

Fig. 4 Remains of Het Steen, phase 1 (1: robbed foundation trenches of the tower; 2: cellar walls; 3: excacated 13th-century road surface; 4: reconstructed 13th-century road surface).

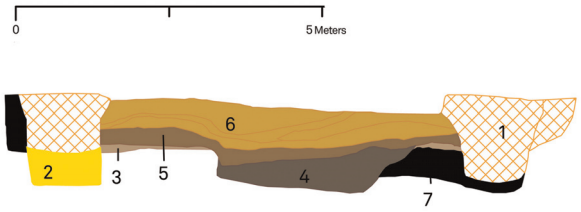

Fig. 5 Section through the tower (1: robbed foundation trenches; 2: sand layer as lowest part of the foundations; 3: layer with construction debris; 4: pit with consumption refuse, cutting through 3; 5 & 6: layers deposited as base for the tower's floor; 7: refuse pit pre-dating the construction of the tower).

In the centre of the ground plan of the tower, a shallow pit was excavated, containing a large quantity of (small) bones and shells (fig. 5: 4). This pit had been cut through a thin layer of sandstone fragments and particles of chalk mortar, most probably representing the construction phase of the tower (fig. 5: 3). The shallow pit was itself covered by layers of sediment, which must have formed the base of a later floor within the tower (fig. 5: 5 & 6). Assuming that the shallow pit contained food refuse deposited during or shortly after the building activities of the tower, a radiocarbon date of the animal remains from its fill could provide a construction date. The result (KIA 31713: 820 ± 25 BP) has a rather wide range: between 1165 and 1265 (95% probability) or 1205-1260 (68% probability). This range could, however, be narrowed by a *terminus post quem*, given the observation that one of the tower's foundations had been cut through the fill of a pit containing material from the first quarter of the 13th century (1200-1225, see Troubleyn *et al*. 2007 for justification of all pottery dates put forward) (fig. 5: 7). Moreover, the thin layer of sandstone fragments and particles of chalk mortar (fig. 5: 3) contained fragments of pottery belonging to the second half of the 13th century. Combining this information, a building date for the tower shortly after the middle of the 13th century seems most likely (phase 1).

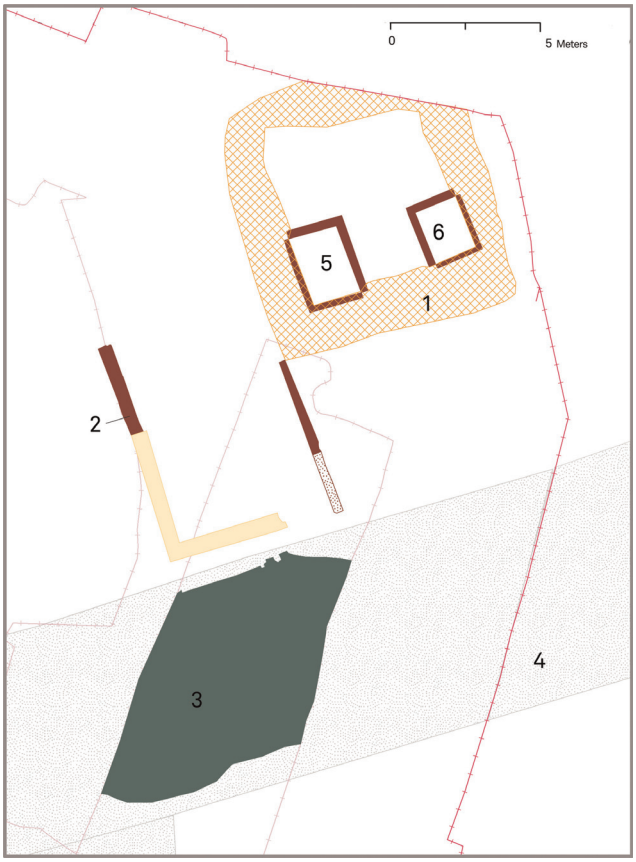

Fig. 6 Remains of Het Steen, phase 2 (1: robbed foundation trenches of the tower; 2: partly rebuilt cellar walls; 3: excavated 13th-century road surface; 4: reconstructed 13th-century road surface; 5: cesspit 2; 6: cesspit 4).

The sediments covering the shallow pit (fig. 5: 5 & 6) contained ceramics roughly dating to the third quarter of the 13th century. The two cesspits, the contents of which are the subject of this paper, had been cut through these layers (fig. 6: 5 & 6: the cesspits are not visible in this section). The western structure ('cesspit 2') measured 2 by 2 m, the eastern one ('cesspit 4') 2 by 3 m. In their fills, material mainly from the early 14th century was found. Most probably, simultaneously with the construction of the cesspits, the sandstone cellar located outside the tower

was enlarged with brick walls (fig. 6: 2). Cesspits and cellar walls, representing building phase 2, both showed bricks of the same dimensions (28 cm length). In fact, although the building materials and stratigraphic position suggest that the two cesspits were built at the same time, this cannot be proven beyond doubt. However, the contents of the fills demonstrate that, at least during the early 14th century, they were used simultaneously.

In a third phase, which cannot be dated accurately, extra walls were added to the complex and two more cesspits were constructed outside the tower, as part of these additions (fig. 7: 7). The end result was a quadrangular ground plan dominated by the tower in its north-eastern corner. This building complex underwent several major alterations until its disappearance. The two cesspits from phase 3 contained only building debris.

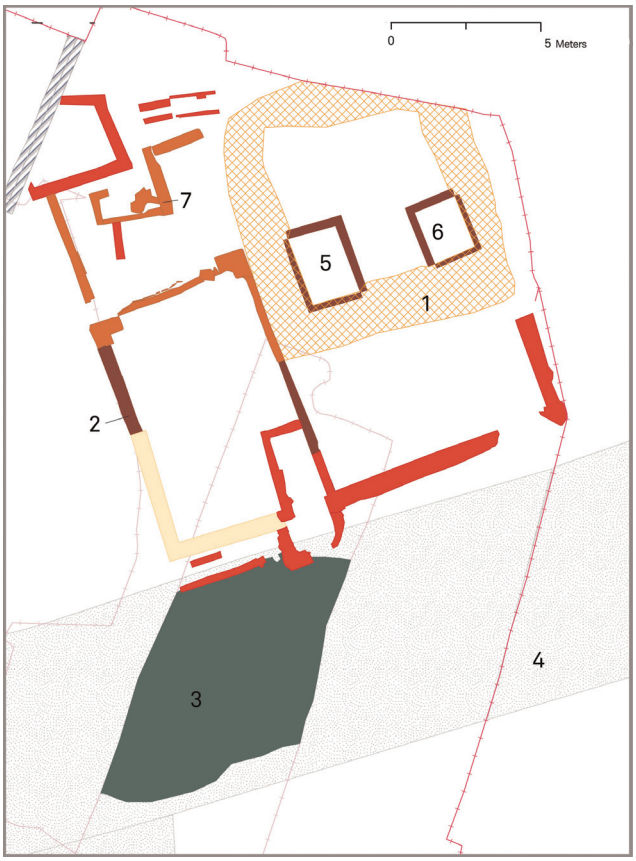

Fig. 7 Remains of Het Steen, phase 3 (1: robbed foundation trenches of the tower; 2: partly rebuilt cellar walls; 3: excavated 13th-century road surface; 4: reconstructed 13th-century road surface; 5: cesspit 2; 6: cesspit 4; 7: new constructions).

Unfortunately, there are no depictions of the building excavated; on the earliest drawings of this part of town, dating back to the late 16th century, the building has already disappeared. This implies that little is known about the aboveground part of the structure, and its internal organisation. As mentioned, the size of the foundation remains points towards a tower while the building debris indicates a construction of natural stone. The location of the cesspits inside the tower implies that toilets were present inside the building. However, that two cesspits were dug out inside the building, and used contemporaneously, is puzzling. In the case of a tower, the multi-levelled structure could be a partial explanation. In any case, that two (rather large) cesspits were needed at the same time, most probably mainly for people staying *within* the tower (otherwise one of the cesspits could have been located outside) suggests the presence of a considerable group of users within the building.

3 Identification of the building

It would be surprising that a large building in the centre of the town would never have been mentioned in the written records. At the same time, all large public buildings appearing in the archives, and situated in the town centre, can be located precisely because they (or their successors) still exist (*e.g.*, the Aldermen's House), or because remains have been found during excavations (*e.g.*, the large Market Hall) (see Troubleyn *et al*. 2007). There is one exception: the late medieval town prison. The oldest mention of such a building dates back to 1280 ('*le commune prison dele vile de Maelines'*, Bormans & Schoolmeesters 1895, 318-324). On the basis of the historical data available, the exact location of this building could not be reconstructed although the hypotheses published always situate the prison in the very centre of town (*e.g.* Schoeffer *s. d.*, 365; Eeman *et al*. 1984, 446; Installé 1997).

Historical indications, and especially the political situation at the time, put the building of a town prison in connection with the erection of the second town wall. During the 13th century, the local noble family of the *Berthouts* enforced their influence in the growing town, against the prince-bishops of Liège, by stimulating trade and economy in general, while exercising rights on the management of markets, promoting the construction of quays and wharfs, and collecting urban tolls and staple rights. Their most ambitious project, however, was the construction of the second town wall, between 1264 and 1268 (Eeman & Vlieghe 1991, 75; Troubleyn *et al*. 2007), the first one most probably being erected around 1200 (Lettany 2003, 30-31) (fig. 3). The erection of the second wall made Malines a large fortified town, of which the thriving economy made the inhabitants gradually more and more independent from the external feudal and ecclesiastical powers. One of the signs of this 13th-century evolution was the permission the citizens obtained to build a town prison. That this prison was built in the centre of town, is quite logical, because it was close to the place where justice was exercised, *i.e.* where the law-court (the *Vierschaar,* a court of justice typically residing in open air) met, and where the Aldermen's House was situated. At Malines, justice and government were indeed organised in the centre of town, along an open space known as the *Markt van Mechelen*, a location that would later become the Main Square (*Grote Markt*). The building of their own prison was perceived as very important for the citizens of Malines. It meant that they could organise jurisdiction for themselves and were no longer subjected to an external penalising power, *i.e.* that of the prince-bishops of Liège. The prison thus became a symbol of the town's freedom.

In a written source dating back to 1424, the prison is named *Het Steen* ('The Stone Building'): '*Prisoniam Machliniensem dictam Den Steen'* (Stadsarchief Mechelen, Fonds Berlemont, map 45, p. 46, Berlemont 1975), suggesting a large construction built of natural stone. The name *Het Steen*, however, is already mentioned many times earlier, first in 1287 (Beterams 1957, 799, nr. 6578), albeit without a formal identification as prison (while, however, evidence for another function is equally lacking). Historical sources indicate that the building was demolished between 1483 and 1492 (based on Stroobant 1897, 76-77), or possibly somewhat later, during the 16th century (Schoeffer *s.d.*, 363). In late medieval sources, *Het Steen* is used as a landmark when describing the location of houses along the *Grote Markt*. This again confirms that the prison must have been located close to that place. Moreover, a detailed interpretation of the location of the late medieval houses along the *Grote Markt*, situated (by written sources) nearby or next to *Het Steen* (*i.e.,* their relative position towards another: see Troubleyn *et al.* 2007), proves that the building was indeed located at the north-eastern corner of the present Main Square.

It can thus reasonably be assumed that the building excavated, the late medieval town prison and the building known historically as '*Het Steen*' are one and the same, and have always been so, since the construction date (late 13th century) until its abandonment (end of the Middle Ages). The chronological frameworks provided by the archaeological and the historical data certainly fit together and the nature of the construction excavated does not contradict the inter-

pretation. It must also not be forgotten that the construction in natural stone is the only one of that kind near the location excavated, making confusion with another building improbable. Of course, definitive proof for the interpretation put forward will never be available (or is hidden in the – still partly unsorted – late medieval town archives of Malines). It remains possible, although highly unlikely, for example, that the building was not used as a prison in the earlier part of its existence, *i.e.* the period the fills of the cesspits date back to. Hence, in what follows, the identification of the building as the late medieval town prison will be treated as a probability, but not a certainty.

It is beyond the scope of this study to present an inventory of comparable sites from other towns in the Low Countries. Still, it is worth mentioning that also at Delft, the town prison was originally located in a single standing tower erected in the centre of town (*Het Oude Steen*: De Groot 1984). Of course, other possibilities also existed, since the local political situation determined the location and organisation of detention. This could result in prisons being part of the old feudal castles (*e.g.*, Antwerp: *Het Steen*, Gent: *Het Gravensteen*), or being located in the towers and gates of the town defences.

4 Research questions, within the context of social history

In what follows, the contents of the two cesspits from phase 2 will be studied in order to reconstruct aspects of former daily life within the building excavated, during the early 14th century. Since the assumption has been put forward that the cesspits may contain material related to a population that stayed as prisoners in the tower, the question whether the small finds from the cesspits can possibly corroborate this interpretation must be the first research theme. Are we really dealing with material derived from the late medieval town prison? If so, the finds would illuminate a part of late medieval society rarely represented in the archaeological record. Most importantly, however, it should be realised that such evaluation can only be made when there is contextual historical information about the site evaluated. Before starting an overview of the find material, it is thus useful to summarise some historical data available about former prison life, first on a general scale (mainly based on Puch 1970, Dunbabin 2002, Geltner 2006, 2008a, 2008b) and then on a more local level. Eventually, as shall be demonstrated, this leads to additional, more detailed research questions.

The first aspect to deal with is the nature of the population within a late medieval prison. One of the most fundamental differences between the prison of today and that of the late Middle Ages is the reason why people were kept in custody. Nowadays, imprisonment typically represents a prolonged stay in confinement, imposed as a sentence, while formerly, people stayed in prison mostly for shorter times and for other reasons, *i.e.*, while awaiting further acts of justice (custodial captivity: Dunbabin 2002, 98-113). Next to the group awaiting trial, the prison also kept people in debt (in order to put stress upon their relatives to help solve these financial problems), mentally disabled persons (typically before eviction out of town) and foreign soldiers (temporarily) kept as prisoners of war (Berents 1991, 85-101; De la Croix *et al*. 1996, 1213-1224). The practice of justice most frequently resulted in the enforcement of fines, while executions or corporal punishments were more rarely applied. Prolonged confinement or a life sentence were also not systematically used as punishment (although it did occur (punitive captivity: Dunbabin 2002, 98-113), a phenomenon first brought to the attention again by Puch 1970). Important prisoners kept as hostages (coercive captivity: Dunbabin 2002, 80-97) were probably more rare in an urban context. In general, in late medieval towns, financial problems were the main reason for imprisonment, also because acts of crime could be compensated by paying off the victims or their relatives. This implied that a (often short) stay in prison was not the fate of a small, marginal part of society but could happen to many people in town. For the town of Arras (northern France), it has been calculated that a third of the urban population

stayed in prison at least once during their life (Muchembled 1992, 40-44). Since commercial problems were a common cause for ending up in prison, part of the population certainly came from the somewhat wealthier urban classes (Geltner 2008b, 152).

Although the juridical aspects of medieval incarceration have been investigated (see the references *supra*), social life in late medieval prisons is still not well known (or studied) from the written sources. An exception is the recently published historical study of the late medieval prisons of four Italian cities (Florence, Venice, Bologna and Siena), focusing on aspects of daily life and the place of the prison in the social network of the towns (Geltner 2008a, 2008b). All four examples concern buildings in the centre of town ('proud symbols of a hard-won independence', Geltner 2008a, 4), from where the inmates took part in urban life. 'More than simply a place of detention, coercion, and punishment, an island surrounded by four tall walls, the communal prison of Florence was a central site for the negotiation of civic identity, secular jurisdiction, and popular charity' (Geltner 2008a, xviii). This image seems to be valid for late medieval urban prisons in general. The central place for the prison building ascertained its visibility (as a warning), at the same time guaranteed some form of control (against possible bad treatment of the imprisoned citizens) and allowed access to the inmates. Visitors of all sorts indeed made frequent appearances inside the prison (Geltner 2008b, 152).

Regular visits were much needed because the most striking characteristic of most medieval prisons was the fact that the inmates were not completely supported by those who kept them in custody. One had to pay for one's daily needs in prison: food, heating, furniture, etc. Social differentiation played an important role because of these factors and is indeed apparent from the bookkeeping of the Italian sites (Geltner 2008a). Richer people, who mainly stayed in prison because they did not want to pay, could afford the expenses of their detention. Poor people, however, who mainly stayed in prison because they could not pay, were facing increasing debt; they could not survive without charity. Some prisoners were simply not released, not only because they could not pay their debts, but also because they could not reimburse their prison costs (Geltner 2008a, 59). It must also be remembered that merchants could continue their trade while labourers were without any income. To reduce friction between such socially different groups, the prison was usually subdivided (Puch 1970, 347-373; Geltner 2008a). For comparable reasons, women were almost always kept separate from men.

In general, Geltner (2008a, 2008b) draws a picture of a prison that was certainly not a 'hellhole', although hygienic conditions (odours, noise, filth) were often less than perfect (see also Dunbabin 2002, 121), heating was not always sufficient (see also Dunbabin 2002, 122), and daily life was characterised by boredom. Prisoners did not work and had no daily time schedule. Gambling was their most favourite pastime and violence often occurred.

Whether the late medieval prison at Malines fits into this general picture is hard to tell, since the internal organisation of the site during late medieval times is not documented by the written sources. The town archives (Stadsarchief Mechelen, nr. C-S-V-1, Stedelijke Ordonnanties, 1523-1558) do, however, document the situation in the town prison of the 16th century (situated at another location but bearing the same name: *Het Steen*). Many aspects of the 16th-century prison management are comparable to those described for late medieval Italy (Geltner 2008a), medieval England (Puch 1970) and high medieval Europe in general (Dunbabin 2002) suggesting that this information is also relevant for the older prison at Malines.

From the 16th-century sources (see also Maes 1947), it is clear that the prison at Malines was run as a commercial enterprise by someone who paid the town a rent and had to deposit a guarantee as an insurance against bad management. Together, this implied a high financial input that could only be realised by the wealthier citizens: the guarantee was a sum of 600 *gulden*, which in 1526 was the equivalent of 10 years wages of an assistant bricklayer (as calculated from accounts in the town archives: Scholliers 1965). In compensation, profit was made by asking the prisoners a considerable entrance fee (16 *stuivers*, in 1526 the wage for 7 days of

work by an assistant bricklayer). There were further costs, depending upon the status of the prisoner. The 16th-century prison, characterised by social differentiation, consisted of a room for richer people (the *poorterskamer*) and one for the less fortunate. Prisoners paid rent but the residents of the *poorterskamer* paid much more (one *stuiver* per day) than those in the 'common room' (one *stuiver* per week).

Moreover, people staying in the better room had to deposit bail (against escape), which was also the case for prisoners from outside of town. On top of this, one had to pay for food (4 *stuivers* per day) and for the use of a bed (2 *stuivers* per day), services that could only be afforded by the wealthier prisoners in the better room (or their families). A stay there would have cost 7 *stuivers* per day (for basic services), a sum that in 1526 equalled three days wages for an assistant bricklayer. To survive prison, poor people thus completely depended on support from their family, on alms, or on organised charity. The city council paid the prison 'manager' one *stuiver* per day for the basic needs of the poor prisoners, but this was not even enough to meet the daily costs for food. Occasionally, poor inmates received the leftovers from the meals in the *poorterskamer* but this was not a structural solution to their needs.

In general, the regime of confinement was rather loose at Malines' 16th-century prison. Inmates often received visitors; married men could even spend time with their wives. Books and medicine could be brought in. In the 16th-century rules for the town prison, there is even tolerance of gambling. This was allowed when no cheating occurred and when only wine was offered as stake (Beterams 1956, xlii-xliii). Control by the prison manager was often weak, necessitating the appointment of two supervisors by the town council, who had to inspect the prison at least twice a month.

As has been mentioned before, archaeology cannot yet add much to this picture. Although (parts of) buildings that have served as prisons have certainly been excavated at other locations (*e.g.* at castle sites), aspects of daily life within those structures have never been studied, as far as the authors are aware. The challenge is now to see whether the material from Malines is a welcome exception to that rule.

First of all, it must thus be evaluated whether the small finds from the cesspits corroborate or contradict the identification of the building as a prison. In the case of a positive answer, it can be questioned whether the fact that the excavations revealed two cesspits instead of one suggests a subdivision within the building (two levels, each with their own latrine?), possibly reflecting a social separation within the population of prisoners (rich versus poor, citizens versus non-citizens, or men versus women?), or even a separation between guards and prisoners. Regardless of the outcome of this evaluation, the finds can be used in a reconstruction of the consumption patterns and material culture of the prison's inhabitants. Living conditions within the building will possibly also be illustrated. The finds at any rate reflect aspects of urban life within an early 14th-century building. In what follows, the possible interpretation of the site as a prison will, unavoidably, always be present in the background; still, it will be attempted to evaluate the data as neutrally as possible.

5 The small finds

5.1 Sampling and recovery

Although the dimensions of the two cesspits are not equal (see *supra*), the stratigraphy of both fills is roughly similar. At the bottom of structure 2 (fig. 8), a cess layer (2D) was found consisting of a superposition of many smaller layers, the result of the constant use but, at the same time, frequent cleaning of the pit. This layer is covered by another cess layer (2C), which in turn is covered by a layer especially rich in finds (2B). The destruction of the pit is reflected by a

layer (2A), consisting of building debris (brick, tile fragments, mortar), charcoal and ceramics. In cesspit 4 (fig. 9), the lowest part of the fill (4C) again consisted of a series of cess layers (comparable to 2D), followed by a layer (4B) that was partially disturbed by the intrusion of building debris (4B1). The uppermost layer (4A2) has the same characteristics as unit 2A in the other cesspit, although part of it (4A) must have been further disturbed while the foundations of the tower were robbed. The fill of cesspit 2 was excavated completely, that of cesspit 4 was only partially excavated (approximately 50%), concentrating on the parts of the layers with concentrations of find material. Finds have been hand-collected from the volumes excavated and the remaining sediment has been sieved (see *infra*, table 4).

Outside the cesspits, but still within the tower, a cess layer (layer 1) was found, which contained sherds that matched finds from the cesspit fills. Clearly, this layer represents a part of those fills that has been removed during a destruction phase. Only a selection of material from this 'layer 1' has been included in the analyses.

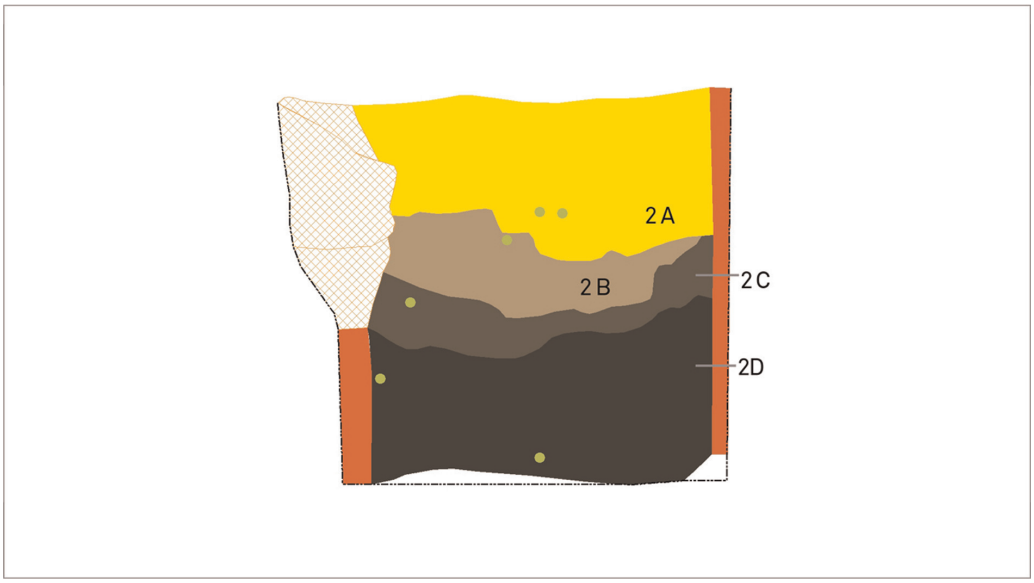

Fig. 8 Section through cesspit 2 (stratigraphy: see text).

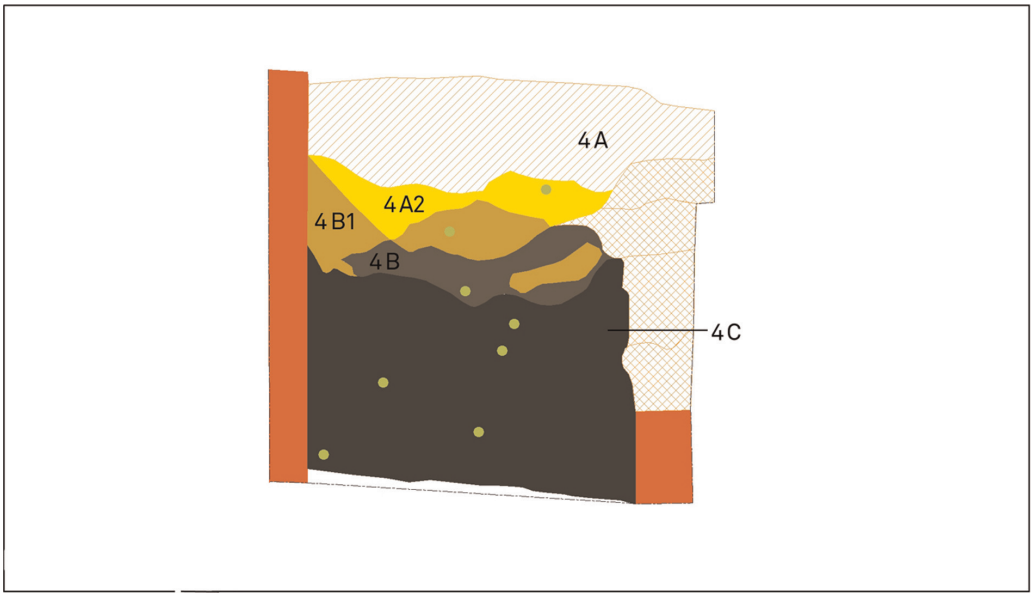

Fig. 9 Section through cesspit 4 (stratigraphy: see text).

5.2 Ceramics

The ceramic fragments studied were those hand-collected, supplemented with the finds from the sieved residues. The number of sherds from the cesspit's fills was enormous and the high degree of fragmentation made (re-)fitting extremely difficult, especially since most finds represent undecorated greyware. For this reason, the analysis concentrated on the rim fragments. These were used to discriminate between pottery types, an exercise hampered, however, by the absence of a formal typology for the local pottery of that time. Consequently, no attempt was made to produce strict quantitative data, such as frequencies expressed as percentages.

The pottery assemblages from the different stratigraphic units within the cesspit's fills apparently represent a homogeneous early 14th-century assemblage, showing no diachronic differences. These find groups can thus be treated as a whole; even between the ceramics from both cesspits no differences could be observed. However, the find numbers differ considerably, with 391 rim fragments in cesspit 2 and only 24 rim fragments in structure 4. Even when this last number is doubled (only half of the fill was excavated, albeit the part with the highest find density), the difference is striking. Possibly, this discrepancy may be explained by a difference in the connection between the cesspits and the latrines. If structure 4 was, for example, connected by means of a chute with a toilet on the upper floor, this could have limited the input of ceramic waste. In any case, the find numbers for the other categories of material are also consistently low, hampering the comparison between the assemblages of both cesspits.

The ceramics from the tower comprise tablewares, storage vessels and cooking vessels (figs 10 to 13). The first group is dominated by jugs of varying dimensions, most commonly in greyware, with some examples in highly decorated redware. Beakers are rare, but, when present, are made in stoneware, while smaller bowls and dishes are virtually absent. Both bowls and dishes (or plates) are found more frequently amongst the wooden objects. The storage vessels mainly include pitchers, mainly in greyware but some stoneware pitchers also occur, along with some fragments of storage jars and a single fragment of a spouted pot. Cooking receptacles are mainly represented by a large number of single-handled cooking pots (both in redware and in greyware) and a single fragment of a dripping pan. Fragments of lids in redware may be linked with the single-handled cooking pots. Large tripod cooking pots are virtually absent. Finally, the fragments of two types of bowls (a large semi-globular form and a wide, open form called *teil*) could not be ascertained to a functional pottery category; they presumably had a multifunctional role in the late medieval household. It appears that tableware dominates the assemblages: almost three quarters belongs to that category. Cooking pottery represents a fifth of the finds. Overall, the ceramic assemblage is strongly dominated by greyware, a typical phenomenon for this period in eastern Flanders and western Brabant (De Groote 2008, 402-406).

The functional composition of the pottery requires closer examination. The main question is whether the assemblage reflects a common household where all domestic activities took place. Were meals cooked within the tower, or did only prepared food arrive at the place, either from the surrounding buildings or from outside? The main impediment to solving this interpretational problem is the scarcity of comparative archaeological assemblages, certainly from Malines itself, but also from synchronous sites on a regional scale. Assemblages used for comparison should moreover be sought nearby, given the regional variability of late medieval ceramic material from the former feudal entity of Brabant, compared to *e.g.* Flanders (De Poorter 2001; De Groote 2008). Only a limited number of such assemblages are available from Brabant, *viz.* material from the castle of Londerzeel (Dewilde & Van der Plaetsen 1994) and an urban refuse deposit at Aalst (De Groote & Moens 1995). From (feudal) Flemish territory, synchronous assemblages are those from the fill of a sewer at the abbey of Ename (De Groote 2008), two from Brugge (Hillewaert *et al*., unpubl. data) and three from Gent (Desmet & Raveschot 1983; Raveschot 1982; Van Doorne 1980).

Fig. 10 Tableware from the cesspits: jugs in highly decorated redware, greyware and stoneware.

Fig. 11 Tableware from the cesspits: beakers in stoneware and a wooden plate.

Comparing these contexts, the abundance of tablewares at the tower is striking. This pattern, referring to the consumption rather than to the storage or preparation of food, can be interpreted as proof for the absence of kitchen activities in the tower. The fill of a cesspit, as refuse container, should reflect the activities in the adjacent rooms. Cesspits located close to the consumption area (the 'dining room') will always contain more tableware than refuse contexts farther away from that part of former households. So cooking probably did not take place in the tower itself, but possibly in the surrounding buildings, while food may also have been brought in, *e.g.* from urban households outside *Het Steen*. The contents of the fills also suggest that, if kitchen activities had taken place in the surrounding buildings, refuse from that part of the site did not end up in the cesspits in the tower.

Fig. 12 Storage vessels from the cesspits: pitchers in greyware and stoneware, and a greyware spouted pot.

Fig. 13 Cooking vessels from the cesspits: single-handle cooking pot in greyware, single-handle cooking pot in redware, and a frying pan in redware.

Pursuing the evaluation of activities that were part of the chain of food production to consumption, it must also be stressed that specific pottery types were not necessarily used for a single purpose. Receptacles used for cooking could also have been used for serving the meal (stressing even more the dominance of 'tableware'). People could indeed have eaten from frying pans or small cooking pots. In this respect, it is perhaps meaningful to underline that, within the cooking wares, vessels of small dimensions, *viz.* the single-handled cooking pots, dominate, while large double-handled tripod cooking pots are virtually absent. This suggests that food was served in single portions rather than as communal meals, even if cooking took place near

the rooms. This pattern could also be interpreted as proof for the delivery of meals prepared in urban kitchens, transported in small cooking vessels covered by ceramic lids, like those found in the cesspits, and perhaps reheated on the hearth of one of the rooms.

Grey pottery (dominant in the assemblage) is now perceived as a less attractive product than redware, and certainly to stoneware or highly decorated ceramics. Its dominance in an assemblage could, without taking into account location or timeframe, be interpreted erroneously as an indicator of lower purchasing power. However, the assemblages mentioned earlier show that greywares were still dominant in the western Brabant territory during the period under discussion (De Groote 2008, 415-420). Therefore, the abundance of greywares in the fills of the cesspits does not justify an attribution of the tower inhabitants to a lower social class. In the same way the (rare) presence of stoneware and redware does not imply the presence of richer people at the site.

A special group amongst the ceramic finds is formed by 17 fragments of tiles that have been used as games-boards. The tiles are engraved with geometrical patterns referring to games such as backgammon (with triangular motifs towards the rim) and 'merels' or 'nine men's morris' (with concentric squares and intersecting lines, fig. 14). A single small circular piece of brick must have been used as a playing disc or counter.

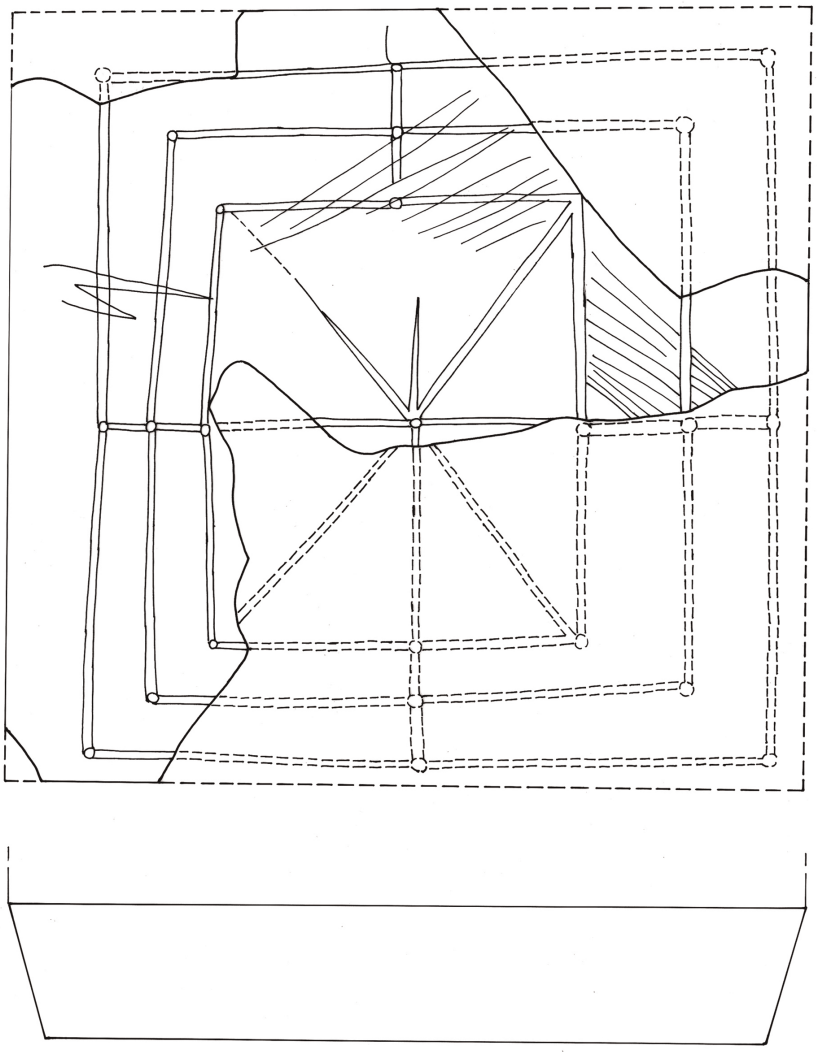

Fig. 14 Game board for 'merels' or 'nine men's morris', engraved into a tile (side 21 cm).

5.3 Wooden objects

A number of wooden cups and plates (fig. 11) were recovered from the cesspit fills (albeit almost exclusively from cesspit 2). Other wooden artefacts include a number of unidentified (fragments of) objects, fragments of (toilet?) lids, a number of gaming pieces (one showing a decoration of engraved concentric circles, fig. 15) and part of a gaming board, resembling that of present backgammon (fig. 16). A number of wooden sticks with clear cut marks were also found. These were possibly used as counting devices (tally-sticks).

5.4 Bone objects

A remarkable collection of 345 bone dice (fig. 17) was recovered from the sieved residues, 144 from cesspit 2, 194 from layer 1 (the disturbed contents of the cesspit's fills) and 7 from cesspit 4 (which was only partly excavated). The cubes show side lengths between 5 and 11 mm and are made from the long bones of large mammals. The numbers are indicated by engraved circles and mostly follow a regular pattern, with 1 and 2, 3 and 4, and 5 and 6 on opposite sides. Although this is the standard late medieval pattern, only 45% of the dice show an absolutely identical configuration of the numbers.

Often the orientation of the numbers differs or production mistakes have been made, resulting in numbers occurring twice or in sides without any number. A particular group of 18 dice must be related to a different game than that for which the standard dice were used. In 10 cases the opposing sides both bear the numbers 2, 4 or 6, while 8 dice follow the pattern '1-1, 3-3, 5-5'. It is obvious that this cannot be the result of random mistakes made during production of the artefacts. Their number (10 and 8) possibly suggests that these dice were used as pairs. Unfortunately, it remains unknown for which game these dice were used.

Fig. 15 Wooden game pieces.

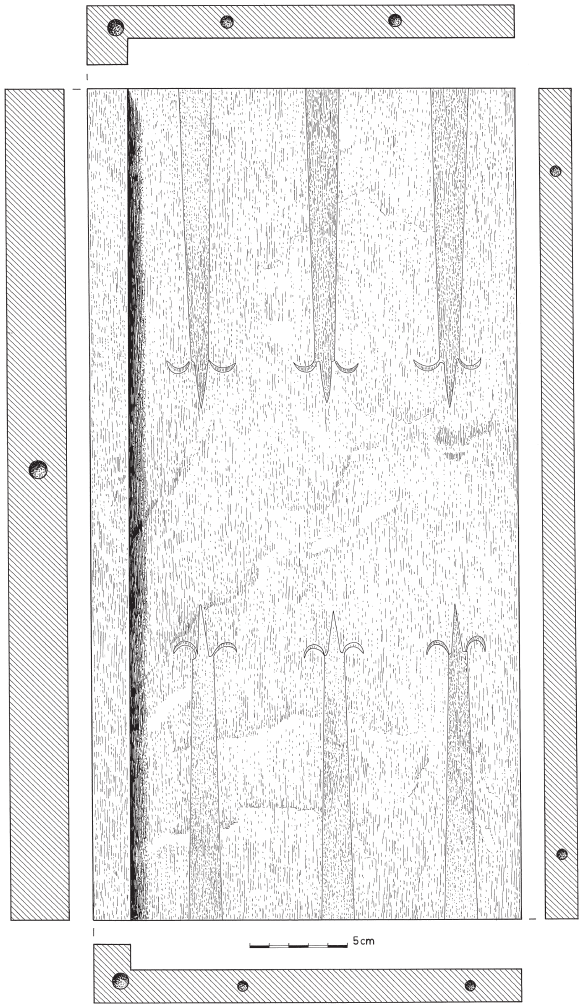

Fig. 16 Wooden backgammon board.

Fig. 17 Bone dice, sides 5 to 11 mm.

5.5 Leather

In total, 139 fragments of leather have been recovered (cesspits 2 and 4 combined), characterised by moderate to poor preservation conditions. The majority (100 fragments) comprises parts of shoes. Two types of shoes could be identified. One is a side-laced ankle shoe and the other a wooden-soled patten mule. The remainder are fragments of belts and nine more or less circular discs (fig. 18), probably to be interpreted as game pieces, cut out of used leather, most probably soles of shoes. One sole fragment clearly shows that discs have been cut out of it (fig. 19), which implies that they were made locally, in an *ad hoc* way.

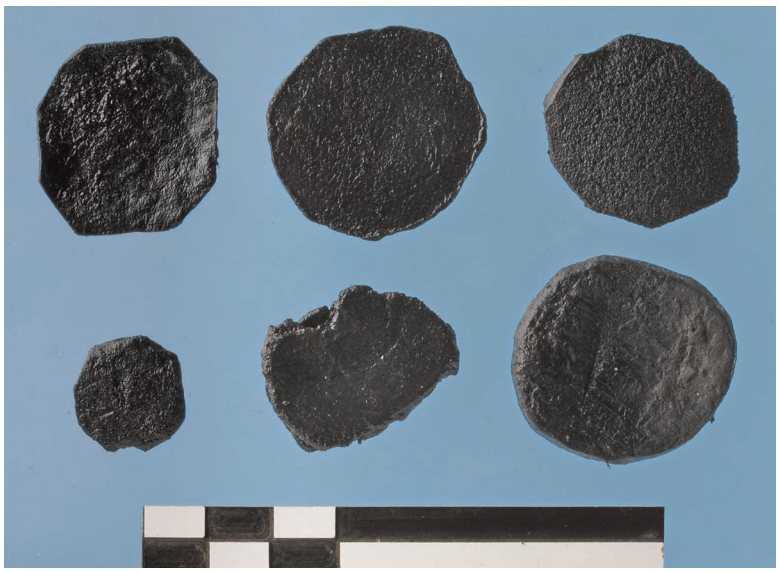

Fig. 18 Leather game pieces.

Fig. 19 Fragment of the leather sole of a shoe with circular incisions.

5.6 Metal artefacts

The cesspits (mainly pit 2) contained thirty coins, all but three made in an alloy of copper and silver. The unfavourable preservation conditions in the pits made these coins completely illegible. Three coins, however, were made of silver and are preserved in a better state. They all show a minting date in the end of the 13th or the beginning of the early 14th century. Another

group of metal objects is formed by 54 tokens (*méreaux*), which had no real monetary value but were used as counters. They also often served as gaming tokens, probably the reason why they were found in the cesspit contexts. Other metal objects include two religious pilgrim's badges, a number of fragments from buckles, strap loops and mounts, a small candlestick made in a pewter-lead alloy, a fragment of an iron knife blade and a bronze chape.

5.7 Glass

The excavations only produced four glass fragments, all from layer 1 and thus no longer associated to one of the cesspits. The fragments refer to the most common type of drinking glass, a so-called 'glass goblet', found throughout the 14th century in the duchy of Brabant. The preservation conditions in the cesspits may have hampered the survival of other glass objects.

5.8 Macrobotanical remains

For macrobotanical analysis (seeds and fruits), samples of 10 litres, from layers D, C and B in cesspit 2, and from C and B1 in cesspit 4, have been wet sieved using mesh widths of 4, 2, 1 and 0.5 mm. Additionally, a small volume from the same layers has been sieved over a mesh width of 0.25 mm. The great majority of the seeds and fruits recovered were waterlogged, while charred and mineralised material was less frequent. Identifications are listed in table 1. They are lumped per cesspit since meaningful differences between the layers, in terms of their botanical contents, could not be observed. The macrobotanical remains are discussed as a single collection, since differences between both cesspits are also absent.

Cereals are mainly represented by bran fragments, the outer wall of the grains, which are together with the grains ground into the flour used for making bread. These are not completely digested and thus end up in a cesspit as part of human excrements. Species identification of this material was not possible. Other cereal material includes waterlogged chaff fragments of rye (*Secale cereale*), a number of mineralised ears of the same species (fig. 20) and a single charred grain of bread wheat (*Triticum aestivum*). The latter cereal was more expensive than rye in late medieval times, but the species is less resistant to hard winters. The mineralised ears of rye must have been part of straw that was put onto the floor, or that was used as filling for sleeping bags or mattresses. The uncharred chaff remains of rye could also have been part of that straw. Since rye is a free-threshing cereal, the chaff normally remains at the site where threshing was carried out.

The consumption of vegetables is always hard to reconstruct from cesspit material; most species are consumed before seed production. Only the remains of 'cabbage' (*Brassica* sp.) could be identified, although, in theory, these could also derive from wild representatives of the genus. Pulses are traditionally underrepresented as well; the species found are lentil (*Lens culinaris*) and Celtic or broad bean (*Vicia faba*). Herbs and spices were also sparingly represented, with savory (*Satureja hortensis*) and pepper (*Piper nigrum*) the only two species present. The first is a kitchen herb that was commonly used and probably accessible to most people, the second a more expensive spice (Collet 1992). Pepper was only found in cesspit 4.

Fruits and nuts form the most abundant category of consumable plants. Nuts are represented by hazel (*Corylus avellana*) and walnut (*Juglans regia*), both locally available. The fruit spectrum comprises many locally grown species, and some imported species. The first group is represented by apple (*Malus domestica*), pear (*Pyrus communis*), sweet cherry (*Prunus avium*), sour cherry (*Prunus cerasus*), plum (*Prunus domestica* ssp. *domestica*), damson (*Prunus domestica* ssp. *insititia*), medlar (*Mespilus germanica*), strawberry (*Fragaria vesca*), bilberries (*Vaccinium* sp.), blackberry (*Rubus fruticosus*) and raspberry (*Rubus idaeus*), that were commonly available at the

cesspit	2	4
USEFUL PLANTS		
Cereals		
Triticum aestivum (ch.)	*	-
Secale cereale chaff	**	-
Secale cereale ear	*	-
Cerealia testa fr.	**	***
Cerealia fr. (min.)	*	-
Vegetables and pulses		
Brassica sp.	*	*
Brassica sp. fr.	*	*
Lens culinaris (min.)	*	-
Brassica rapa / oleracea	-	*
Brassica rapa / nigra	-	*
Vicia faba hilum (min.)	-	*
Herbs and spices		
Satureja hortensis	-	*
cf. *Piper nigrum*	-	*
Fruit and nuts		
Fragaria vesca	***	***
Malus domestica	**	**
Malus domestica (min.)	*	*
Malus endocarp	**	**
Vaccinium sp.	-	*
Rubus fruticosus	***	***
Vitis vinifera	*	**
Rubus idaeus	**	**
Corylus avellana fr.	**	*
Prunus domestica ssp. *insititia*	*	*
Mespilus germanica	**	*
Juglans regia fr.	*	*
Pyrus communis	**	*
Pyrus / Malus fr.	*	**
Pyrus stone cell	**	***
Prunus domestica ssp. *domestica*	-	*
Prunus sp.	**	*
Prunus fr.	*	*
Ficus carica	***	***
Prunus avium	**	*
Prunus avium / cerasus	**	*
Prunus cerasus	*	*
Morus nigra	-	*
fruit epidermis	*	*
Oil and Fibre plants		
Cannabis sativa	*	-
WILD PLANTS		
Field weeds		
Polygonum lapathifolium	*	*
Agrostemma githago	*	*
Agrostemma githago fr.	**	**
Scleranthus annuus	*	-
Sonchus asper	*	-
Spergula arvensis	*	-
Urtica urens	-	*
Raphanus raphanistrum pod fr.	-	*
Centaurea cyanus	*	-
Centaurea cyanus fr.	**	**
Centaurea cyanus fr. (min.)	*	-
cf. *Arnoseris minima*	*	-
cf. *Arnoseris minima* (min.)	*	-
Chenopodium album	-	*
Anagallis arvensis	*	*
Anagallis arvensis (min.)	*	*
Papaver argemone	*	*
Rumex acetosella	*	*
Rumex acetosella (min.)	*	-
Anthemis sp. (min.)	*	-
Anthemis cotula	*	*
Vicia tetrasperma/hirsuta (ch.)	*	-
Stellaria media	*	*
Stellaria media (min.)	*	-
Fallopia convolvulus	-	*
Ruderals		
Lapsana communis	-	*
Hyoscyamus niger	*	-
Urtica dioica	*	*
Ranunculus sardous	*	*
Reseda luteola	*	-
Atriplex patula / hastata	*	*
Polygonum aviculare	*	*
cf. *Linaria vulgaris?*	*	-
Grassland plants		
Poa sp.	*	*
Prunella vulgaris	*	*
Poaceae sp.	*	*
Poaceae (min.)	*	-
Ranunculus repens type	*	-
cf. *Leontodon* sp.	-	*
cf. *Leucanthemum vulgare*	-	*
Potentilla erecta	*	-
Wetland plants		
Alisma sp. embryo	*	-
Scirpus lacustris	-	*
Carex riparia	*	-
Oenanthe fistulosa	*	-
Eleocharis palustris	**	*
Hydrocotyle vulgaris	*	-
Other wild plants		
Mentha arvensis / aquatica	*	-
Chenopodium sp. (min.)	*	-
Apiaceae (min.)	*	-
Polygonum aviculare / Fallopia convolvulus fr.	*	*
Myosotis sp.	*	-
Carex sp.	*	*
Rumex sp.	*	*
Rumex / Carex (min.)	*	-
OTHER		
Eriophorum vaginatum fibres (?)	+	-
Sphagnum leaf fragments	+	+
unidentified mineralised plant remains	+	+

Table 1 Macrobotanical remains found in the cesspits (uncharred unless indicated otherwise, (ch.): charred, (min.): mineralised) (: some; **: tens, ***: hundreds, +: present but not quantified, fr.: fragments)*

Fig. 20 Mineralised ears of rye (Secale cereale).

town markets. For imported species, only figs (*Ficus carica*) and grapes (*Vitis vinifera*) are present, but the latter may also have grown in local vineyards. More exceptional are the finds, from cesspit 4, of black mulberry (*Morus nigra*), a local fruit that was mostly grown in the gardens of the well-to-do (Lindemans 1952, II, 205).

The cesspits contained the seeds from a wide variety of weeds. Most of these are considered to be weeds from arable fields, with corncockle (*Agrostemma githago*) and cornflower (*Centaurea cyanus*) as the most common species. Without doubt, many of these weeds were brought into the building with the straw that was used for floor covering or other purposes. Weeds from grasslands could have arrived at the site in the same way (with hay). Some of these seeds, however, could have been contaminants of the cereals consumed in the tower.

Macroremains (and spores, see *infra*) of peat moss (*Sphagnum* sp.) point to the presence of peat (Deforce *et al*. 2007). Macrobotanical remains of cotton grass (*Eriophorum vaginatum*) corroborate this interpretation. Peat would have been brought into the building as fuel.

5.9 Pollen, spores and parasite eggs

Five pollen samples have been analysed, three from cesspit 2 and two from cesspit 4, in each case derived from the bottom layers of the fills (table 2). The results are discussed in general, in view of the similarity of the pollen spectra of all samples.

The most frequent pollen type is that of cereals (Cerealia), of which only rye (*Secale cereale*) could be identified to species level. The abundance of cereal pollen is most likely linked with the consumption of grain products, since a high amount of pollen stays attached to the grains after the plant has flowered. The same must be the case with arable weeds like corncockle (*Agrostemma githago*), chamomile type (*Anthemis* type), cornflower (*Centaurea cyanus*), white lace flower (*Orlaya grandiflora*) and corn poppy type (*Papaver rhoeas* type), of which seeds must have been brought in to the flour mill and bakery together with grain. Other food plants represented in the pollen spectra are parsnip (*Pastinaca sativa*), pea (*Pisum sativum*) and grape (*Vitis vinifera*). The latter pollen could have ended up in the cesspits because of the consumption of fresh grapes or raisins, although drinking wine might also be an explanation (Rösch 2005). Kitchen herbs are represented by chervil (*Anthriscus cerefolium*), borage (*Borago officinalis*) and coriander (*Coriandrum sativum*).

cesspit		2			4
sample number	1	2	3	1	2
Trees and shrubs					
Alnus	7	3	33	75	45
Betula	1	4	8	15	6
Carpinus betulus	-	-	-	1	3
Cornus mas	-	-	-	-	1
Corylus avellana type	6	4	24	39	33
Fagus sylvatica	2	-	2	12	7
Fraxinus excelsior	-	1	-	1	3
Myrica gale	-	-	2	-	-
Pinus	-	1	2	4	3
Prunus type	3	-	1	-	2
Quercus	1	8	11	16	14
Salix	-	-	-	-	1
Sambucus nigra type	2	3	-	1	1
Taxus baccata	-	-	-	-	1
Tilia	-	-	2	1	-
Viburnum opulus	-	1	-	-	1
Ulmus	1	2	-	1	-
Herbs					
Cultivated plants	-	-	-	-	-
Anthriscus cerefolium	-	1	-	3	2
Cannabis type	-	1	-	-	-
Coriandrum sativum	-	1	-	-	2
Borago officinalis	1	-	-	-	-
Cerealia (undiff.)	210	209	189	175	171
Pastinaca sativa	1	-	-	-	-
Pisum sativum	-	-	-	-	1
Secale cereale	5	7	23	9	3
Vitis vinifera	2	-	-	2	2
Other herbs					
Agrostemma githago	-	-	-	1	-
Anthemis type	13	12	21	5	13
Apiaceae (undiff.)	5	2	1	1	3
Artemisia	1	-	1	2	-
Aster type	1	2	1	-	1
Asteraceae-Liguliflorae	9	15	1	-	1
Astragalus type	1	-	-	-	-
Brassicaceae	3	-	-	4	3
Calluna vulgaris	2	5	9	43	36
Caryophyllaceae	-	1	-	1	-

Table 2 Results of the analysis of pollen, spores and non-pollen palynomorphs (specimen counts) *(Cont. on next page).*

cesspit		2			4
sample number	1	2	3	1	2
Centaurea cyanus	3	26	15	15	13
Centaurea nigra type	1	2	-	5	-
Chenopodiaceae	2	4	6	-	4
Convulvulus arvensis	1	-	-	1	-
Cyperaceae	1	-	-	5	2
Ericaceae (undiff.)	1	-	1	1	1
Filipendula	-	-	-	-	1
Galium type	1	-	-	2	1
Jasione monatana type	-	-	-	2	1
Knautia arvensis type	-	-	-	-	1
Latyrus type	3	3	1	-	1
Lotus type	3	1	-	1	-
Mentha type	3	-	1	1	1
Orlaya grandiflora	-	-	-	1	1
Papaver rhoeas type	-	1	-	-	-
Phyteuma type	-	1	-	-	-
Plantago lanceolata	4	5	3	3	-
Plantago major/media	1	1	-	1	-
Poaceae (undiff.)	219	154	126	54	75
Polygonum aviculare type	2	2	-	1	2
Polygonum persicaria type	1	-	1	-	-
Potentilla type	-	2	-	-	1
Ranunculus acris type	1	8	2	-	2
Rosaceae (undiff.)	5	3	3	7	9
Rumex acetosa type	24	40	27	13	9
Solanum nigrum type	-	-	-	-	1
Trifolium repens type	7	10	2	6	3
Trifolium pratense type	1	3	-	-	-
Vaccinium type	1	1	-	4	1
Vicia type	1	4	-	1	-
Ferns and mosses					
Filicales undiff.	-	1	2	1	1
Polypodium vulgare	-	-	1	-	-
Pteridium aquilinum	-	-	-	1	-
Sphagnum	-	4	19	39	41
Sphagnum leaf fragment	-	-	-	1	-
Total	**563**	**559**	**541**	**578**	**531**
Non-pollen palynomorphs					
Pediastrum kawraiskyi	-	-	-	-	1
Thecaphora	5	3	2	4	4
Ascaris	14	6	1	12	7
Trichuris	254	97	46	165	100
Indeterminata	10	3	3	4	7

Table 2 Results of the analysis of pollen, spores and non-pollen palynomorphs (specimen counts).

An alternative explanation for (at least) part of the pollen of cereals and their associated weeds might be the use of straw or hay for stuffing mattresses or covering the floor. Yet another possible source for part of the pollen may have been the consumption of honey. Typical honey plants, largely depending on bees for pollination, are trefoil type (*Lotus* type), white clover type (*Trifolium repens* type) and red clover type (*Trifolium pratense* type) (Sawyer 1988). Many others of the entomophilous pollen types may have arrived at the site in the same way (Deforce in press). Honey, which often contains extremely high amounts of pollen, was commonly used as sweetener in the late medieval kitchen and was a much cheaper alternative to pure sugar

(Dalby 2000, Küster 2000). The pollen of common heather (*Calluna vulgaris*), with remarkable high values in cesspit 4, will either relate to the peat mentioned earlier, to honey, or to both. Spores of peat moss (*Sphagnum* sp.) do point to the presence of peat (Deforce *et al*. 2007). A *coenobium* (colony structure) of *Pediastrum kawraiskyi*, a green alga from oligotrophic aquatic biotopes, corroborates this interpretation.

Finally, the pollen samples also contained the eggs of intestinal parasites, *i.e. Ascaris* and *Trichuris*. These species are found in almost all cesspits from this period and must have been very common parasites of people and their animals.

5.10 Charcoal

Analysis of charcoal fragments derived from different layers within each cesspit shows that beech (*Fagus sylvatica*), alder (*Alnus* sp.) and oak (*Quercus* sp.) were most commonly used as firewood. Birch (*Betula* sp.) is also frequently represented but hornbeam (*Carpinus betulus*), alder buckthorn (*Frangula alnus*), poplar (*Populus* sp.) and willow (*Salix* sp.) only rarely ended up on a fire inside the tower (table 3). This pattern is not surprising: oak and beech are ideal for burning, both as firewood and as charcoal. Alder is less suited for firewood but produces good quality charcoal (Gale & Cutler 2000). From the fragments investigated, it could not be seen whether wood or charcoal was used predominantly. The results from the pollen analysis and the study of macrobotanical remains suggest that peat was also used as fuel. Remarkably, the charcoal spectrum seems to differ between both cesspits, with structure 2 containing more beech and oak, but structure 4 significantly more alder. The patterns observed, however, may be the result of random events.

	cesspit 2 n	cesspit 2 %	cesspit 4 n	cesspit 4 %
Alnus sp.	42	15,0	105	52,0
Betula sp.	22	7,9	23	11,4
Carpinus betulus	2	0,7	1	0,5
Fagus sylvatica	123	43,9	46	22,8
Frangula alnus	1	0,4	0	0,0
Populus sp.	1	0,4	0	0,0
Quercus sp.	69	24,6	25	12,4
Salix sp.	18	6,4	1	0,5
unidentifiable bark fragments	2	0,7	1	0,5
totaal	280	100,0	202	100,0

Table 3 Results of the charcoal analysis (specimen counts and frequencies).

5.11 Animal remains

Methods and preservation

The animal remains from the cesspits were studied per stratigraphic layer (2B, 2C, 2D, 4B, 4C), excluding the uppermost deposits of building debris (2A, 4B1, 4A2, 4A). The fill of cesspit 2 was excavated and analysed completely, that of structure 4 was only partially excavated (approximately 50% but concentrating on dense find deposits). The total volume excavated was sieved over 4 mm mesh, a certain part additionally over 2 mm, and an even smaller part also over 1 mm. The 4 mm residue was fully analysed, the other residues partly (table 4). By record-

ing the sample volumes, it is possible to calculate the total contents of the excavated parts of the fills as if they were sieved completely on a 1 mm mesh, and as if the residues were subsequently sorted entirely. The aim of the reconstruction of the original quantities is a comparison of relative frequencies of species per layer. It should be noted, however, that this exercise has only been undertaken for the fish remains. Finds from this group are typically divided over all sieved fractions while different ecological groups are represented by material of different dimensions (*e.g.* small freshwater fish versus large marine species). An inventory of the animal remains is given in tables 5 to 9.

cesspit / layer	mesh width (mm)	volume sieved (l)	proportion of the original volume	% residue sorted	standardisation factor
Cesspit 2					
2B	4	1426,5	1	100	1
	2	404,5	0,3	33	10,7
	1	147	0,1	5,2	184,8
2C	4	307	1	100	1
	2	109	0,4	64,2	4,4
	1	82	0,3	11,4	33
2D	4	1350	1	100	1
	2	502	0,4	29	9,3
	1	194	0,1	15,6	44,6
Cesspit 4					
4B	4	97	1	100	1
	2	97	1	39,8	2,5
	1	97	1	13,6	7,4
4C	4	465	1	100	1
	2	170	0,4	31	8,8
	1	124	0,3	6,1	61,2

Table 4 Inventory, per cesspit and layer, of the volumes sieved, using different mesh widths. From the proportion of the volumes sieved, and the percentages of the residues sorted, a standardisation factor can be calculated, enabling to transform the finds numbers per sieved unit into numbers describing the contents of the cesspits as if the whole volume would have been sieved on a 1 mm mesh width and all of the residue would have been sorted.

The animal remains are, in general, characterised by a poor preservation condition. That the bone material is severely fragmented could be expected and will be the result of human activities related with the preparation and consumption of food, but the physico-chemical state of the remains is also poor, which should be taken into account when discussing the presence, absence and abundance of certain find groups.

Insects

Insect remains were limited in number and only occurred in the lowest deposits. The taxa represented typically are parasites on (dead or living) animal and plant material, or on cess or other decomposing substances. The *pupae* of flies are the most common finds within this group; these species must have actively visited the cesspits in order to deposit their eggs.

cesspit / layer	2B	2C	2D	total 2	4B	4C	total 4
MOLLUSCS							
Littorina littorea	17	-	150	167	-	1	1
Mytilus edulis	150	100	410	660	5	40	45
Cerastoderma edule	6	-	5	11	-	2	2
CRUSTACEANS							
Carcinus maenas	-	-	1	1	-	-	-
BIRDS							
Anser anser f. domestica?	28	7	12	47	1	34	35
Anas platyrhynchos f. domestica?	21	1	4	26	-	1	1
Accipiter nisus	22	-	-	22	-	-	-
Gallus gallus f. domestica	95	22	29	146	12	111	123
Columba livia f. domestica	3	-	-	3	-	-	-
Athene noctua	-	-	-	-	-	2	2
Passeriformes sp.	-	-	-	-	-	1	1
eggshell	+	+	+	+	-	+	+
gastroliths	+	+	-	+	-	+	+
unidentified bird remains	904	160	291	1355	104	432	536
MAMMALS							
Chiroptera sp.	1	-	-	1	-	-	-
Mus musculus	-	-	-	-	-	1	1
Rattus rattus	9	6	19	34	7	18	25
rodent, size cfr. Mus musculus	5	1	1	7	-	8	8
rodent, size cfr. Rattus rattus	2	1	5	8	-	6	6
unidentified rodent remains	19	6	80	105	-	96	96
Lepus capensis	1	-	2	3	-	-	-
Oryctolagus cuniculus	33	-	10	43	4	13	17
Felis silvestris f. catus	2	1	-	3	-	21	21
Sus scrofa f. domestica	132	18	18	168	5	11	16
Bos primigenius f. taurus	199	44	59	302	18	48	66
Ovis ammon f. aries	5	1	1	7	1	-	1
Ovis ammon f. aries / *Capra aegagrus* f. hircus	95	21	25	141	6	21	27
rib - large	166	33	45	244	9	17	26
rib - middle	123	21	19	163	7	12	19
rib - small	-	3	-	3	-	-	-
vertebra - large	119	14	25	158	9	21	30
vertebra - middle	94	17	36	147	3	14	17
vertebra - small	-	-	-	-	-	-	-
unidentified mammal remains	3230	306	290	3826	206	327	533
total	**5481**	**783**	**1537**	**7801**	**397**	**1258**	**1655**

Table 5 Animal remains from the 4 mm (mesh width) fractions from the different layers within the cesspits (except fish remains) (specimen counts, except for finds indicated as '+', which were present but not quantified).

cesspit / layer	2B	2C	2D	total 2	4B	4C	total 4
fraction 2 to 4 mm							
INSECTS							
Pristonychus terricola	-	-	2	2	-	-	-
Curculionidae sp.	-	-	-	-	1	1	2
Histeridae sp.	+	+	+	+		+	+
Staphilinidae sp.	-	-	1	1	-	-	-
Ocypus sp.	-	-	-	-	-	1	1
Diptera sp.	-	-	+	+	+	+	+
Ptinus sp.	-	-	-	-	-	1	1
MOLLUSCS							
Mytilus edulis	+	+	+	+	+	-	+
CRUSTACEANS							
Carcinus maenas	-	-	1	1	-	-	-
Crangon crangon	-	-	-	-	1	-	1
Cirripedia sp.	+	+	+	+	-	-	-
Armadillidium vulgare	-	-	+	+	-	+	+
Isopoda sp.	-	-	+	+	-	-	-
BIRDS							
Passeriformes sp.	1	-	-	1	1	-	1
eggshell	-	-	+	+	-	-	-
gastroliths	-	-	+	+	+	+	+
unidentified bird remains	30	11	14	55	20	100	120
MAMMALS							
rodent, size cfr. *Mus musculus*	-	-	-	-	-	1	1
rodent, size cfr. *Rattus rattus*	-	-	3	3	-	7	7
unidentified rodent remains	50	7	50	107	-	40	40
unidentified bird or mammal remains	300	150	100	550	200	250	450
fraction 1 to 2 mm							
BIRDS							
eggshell	-	-	+	+	-	-	-
unidentified bird or mammal remains	150	50	30	230	-	-	-

Table 6 Animal remains from the 2 and 1 mm (mesh width) fractions from the different layers within the cesspits (except fish remains) (specimen counts, except for finds indicated as '+', which were present but not quantified).

Molluscs and crustaceans

All mollusc remains are shell fragments from marine species: periwinkles (*Littorina littorea*), cockles (*Cerastoderma edule*) and (most frequently) mussels (*Mytilus edulis*). Remarkably, shells from freshwater or terrestrial molluscs are lacking, possibly because of the poor preservation conditions. The small size of the cockles is striking, suggesting that they came to the site together with lumps of mussels, rather than as a separate food item.

Crustaceans are represented by a small number of skeletal fragments from the common shore crab (*Carcinus maenas*) and the common shrimp (*Crangon crangon*), two marine species. Both may either have been consumed, or accidentally have been brought in with other sea food. The barnacles (Cirripedia sp.) must have ended up in the pits together with the mussel shells to which they typically live attached.

cesspit / layer	2B			2C			2D			4B			4C			total
mesh width	4 mm	2 mm	1 mm	4 mm	2 mm	1 mm	4 mm	2 mm	1 mm	4 mm	2 mm	1 mm	4 mm	2 mm	1 mm	
marine fish																
Raja clavata	2	2	-	1	-	-	2	2	-	-	-	-	-	-	-	9
Raja montagui	3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	3
Raja sp.	-	-	-	-	1	1	-	1	-	-	-	-	-	-	-	3
Chondrichthyes sp.	19	2	1	1	-	-	6	-	-	-	-	-	6	1	-	36
Clupea harengus	2523	2544	44	332	443	2	770	931	44	41	485	-	516	371	-	9046
Clupea harengus / *Sprattus sprattus*	-	-	105	-	-	46	-	1	16	-	-	9	-	-	25	202
Clupeidae sp.	251	-	-	-	-	-	-	-	-	-	-	-	-	-	-	251
Merlangius merlangus	1278	25	-	241	11	-	445	22	1	55	18	-	97	10	-	2203
Melanogrammus aeglefinus	890	3	3	122	-	1	294	4	2	43	1	5	48	1	1	1418
Gadus morhua	225	-	-	21	-	-	131	-	-	11	-	-	7	-	-	395
Gadidae sp.	1562	142	32	238	46	24	641	78	28	78	88	2	136	132	2	3229
Trachurus trachurus	2	-	-	-	-	-	1	1	1	-	-	-	-	-	-	5
Liza ramada	1	-	-	-	-	-	1	-	-	-	-	-	-	1	-	3
Triglidae sp.	1	-	-	2	-	-	5	-	-	-	-	-	-	-	-	8
Scomber scombrus	4	-	1	-	-	-	6	-	-	-	-	-	-	-	-	11
Psetta maxima	1	1	-	1	-	-	-	-	-	-	-	-	-	-	-	3
Pleuronectes platessa	332	24	4	44	2	3	196	9	5	22	11	-	39	6	-	697
Platichthys flesus	82	11	2	5	4	1	35	7	-	5	7	-	8	7	-	174
Limanda limanda	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	1
Pleuronectidae sp.	1681	150	9	202	43	5	999	204	26	78	109	-	146	84	-	3736
Solea sp.	10	-	-	1	-	-	5	-	-	2	-	-	19*	1	-	38*
anadromous fish																
Alosa sp.	68	5	-	10	-	-	5	-	-	1	-	-	6	1	-	96
Osmerus eperlanus	1	15	34	1	-	40	2	27	18	-	52	15	-	25	12	242
Coregonus sp.	1	1	-	1	1	-	-	-	-	-	1	-	-	-	-	5
Salmo salar / *Salmo trutta trutta*	-	-	-	-	-	-	5	-	-	2	-	-	-	-	-	7
Salmonidae sp.	9	-	-	-	-	-	-	-	-	-	1	-	-	1	-	11

Table 7 Fish remains from the 4, 2 and 1 mm fractions of the sieved residues (specimen counts, except for finds indicated as '+', which were present but not quantified) *(Cont. on next page)* *.*

cesspit / layer	2B			2C			2D			4B			4C			total
mesh width	4 mm	2 mm	1 mm	4 mm	2 mm	1 mm	4 mm	2 mm	1 mm	4 mm	2 mm	1 mm	4 mm	2 mm	1 mm	
freshwater fish																
Anguilla anguilla	413	325	30	58	116	14	116	155	19	13	109	1	59	151	1	1580
Lota lota	1	2	-	-	-	-	-	-	-	-	-	-	-	-	-	3
Blicca bjoerka	9	-	-	-	-	-	-	-	-	-	-	-	-	-	-	9
Cyprinus carpio f. domestica	7	-	1	1	-	1	-	-	-	-	-	-	3	1	-	14
Leuciscus sp.	-	8	-	2	-	-	5	2	-	2	-	-	2	5	-	26
Rutilus rutilus	35	2	-	3	-	-	3	1	-	-	1	-	3	-	-	48
Cyprinidae sp.	266	129	92	21	17	6	40	28	18	3	43	1	88	43	-	795
Esox lucius	7	1	-	3	-	-	1	-	-	-	3	-	7	1	-	23
Gasterosteus aculeatus	-	-	4	-	1	-	-	-	-	-	16	1	-	1	-	23
Perca fluviatilis	7	3	-	-	-	-	1	-	-	-	-	-	-	-	-	11
Percidae sp.	-	-	-	-	-	-	-	-	-	-	1	-	2	2	-	5
Total identified	9691	3395	362	1311	685	144	3715	1474	178	356	946	34	1173	845	41	24369
Unidentified fish remains	1570	1500	1400	178	290	550	510	880	927	102	520	440	238	420	183	9708
Total	11261	4895	1762	1489	975	694	4225	2354	1105	458	1466	474	1411	1265	224	34077
scales Clupeidae sp.	+	+	-	-	-	-	-	-	+	-	+	-	+	-	-	+
scales Cyprinidae sp.	-	+	-	+	+	-	-	-	+	-	+	-	+	-	-	+
scales *Esox lucius*	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-	+
scales Percidae sp.	+	+	-	-	-	-	-	-	-	-	+	-	-	-	-	+

Table 7 Fish remains from the 4, 2 and 1 mm fractions of the sieved residues (specimen counts, except for finds indicated as '+', which were present but not quantified).

cesspit / layer mesh width	2B all fractions	2C all fractions	2D all fractions	4B all fractions	4C all fractions	total all fractions
marine fish						
Raja clavata	23	1	21	0	0	45
Raja montagui	3	0	0	0	0	3
Raja sp.	0	37	9	0	0	47
Chondrichthyes sp.	225	1	6	0	15	247
Clupea harengus	37875	2347	11391	1254	3781	56647
Clupea harengus / Sprattus sprattus	19404	1518	723	67	1530	23242
Clupeidae sp.	251	0	0	0	0	251
Merlangius merlangus	1546	289	694	100	185	2814
Melanogrammus aeglefinus	1477	155	420	83	118	2252
Gadus morhua	225	21	131	11	7	395
Gadidae sp.	8995	1232	2615	313	1420	14575
Trachurus trachurus	2	0	55	0	0	57
Liza ramada	1	0	1	0	9	11
Triglidae sp.	1	2	5	0	0	8
Scomber scombrus	189	0	6	0	0	195
Psetta maxima	12	1	0	0	0	13
Pleuronectes platessa	1328	152	503	50	92	2124
Platichthys flesus	569	56	100	23	70	817
Limanda limanda	0	0	9	0	0	9
Pleuronectidae sp.	4949	556	4056	351	885	10797
Solea sp.	10	1	5	2	28*	46*
anadromous fish						
Alosa sp.	122	10	5	1	15	152
Osmerus eperlanus	6445	1321	1056	241	954	10017
Coregonus sp.	12	5	0	3	0	20
Salmo salar / Salmo trutta trutta	0	0	5	2	0	7
Salmonidae sp.	9	0	0	3	9	20
freshwater fish						
Anguilla anguilla	9435	1030	2405	293	1449	14612
Lota lota	22	0	0	0	0	22
Blicca bjoerka	9	0	0	0	0	9
Cyprinus carpio f. domestica	192	34	0	0	12	238
Leuciscus sp.	86	2	24	2	46	159
Rutilus rutilus	56	3	12	3	3	77
Cyprinidae sp.	18648	294	1103	118	466	20629
Esox lucius	18	3	1	8	16	45
Gasterosteus aculeatus	739	4	0	47	9	800
Perca fluviatilis	39	0	1	0	0	40
Percidae sp.	0	0	0	3	20	22
Total identified	112915	9077	25362	2973	11137	161464
Unidentified fish remains	276340	19604	50038	4658	15134	365774
Total	389255	28681	75400	7631	26271	527238

Table 8 Standardised counts of the fish remains. These reconstructed data give an inventory of the contents of the excavated parts of the cesspits as if the total volume would have been sieved using a 1 mm mesh width, and alle residues would have been sorted (: of which 19 skeletal elements of the same individual).*

Two other crustacean taxa are present: the woodlice (Isopoda sp.) and the common pill bug (*Armadillidium vulgare*). These animals live in dark, wet places and can often be found in the lower part of buildings.

Fish

The number of fish bones recovered and studied is large, comprising more than 34,000 remains, of which more than 24,000 identifiable, representing at least 28 species. Marine fish are dominant (tables 7-9). Cartilaginous marine fish are rare and are represented by two ray species, *Raja clavata* (thornback ray) and *Raja montagui* (spotted ray) and possibly sharks, although this could not be attested beyond doubt. Amongst the group of marine fishes with a bone skeleton, herring (*Clupea harengus*) is the most common species. A number of skeletal elements belonging to the herring family (Clupeidae sp.) could not be identified to species and possibly represent small specimens of allis shad or twaite shad (*Alosa* sp.), two anadromous species (see *infra*). Possibly, amongst the smaller, unidentified clupeid remains, sprat (*Sprattus sprattus*) is also present although it remains striking that not a single positive identification could be made. If it is assumed that all smaller skeletal elements amongst the clupeids do represent herring, then remains of this fish form about half of the fish material. Most of the herring had a standard length (measured from the tip of the snout to the base of the tail) of 20-25 cm. The form in which the animals arrived at the site is difficult to ascertain. They were certainly not gutted ('*gekaakt*', resulting in the absence of certain skeletal elements of the gill cover and the shoulder girdle) but arrived whole. These whole fish were most presumably not fresh, but processed (salted or smoked) in some way.

From the gadid family (Gadidae sp.) three species were found, *viz*. whiting (*Merlangius merlangus*), haddock (*Melanogrammus aeglefinus*) and cod (*Gadus morhua*). Their remains form a minor part of the assemblage, but will have been important for the food supply in view of their dimensions and meat weight. The whiting show standard lengths of 25-35 cm, the haddock of 40-50 cm (fig. 21). From both species, all skeletal elements were found in representative numbers, indicating that these fish arrived whole (fresh?) at the site. Cod, however, shows a bimodal distribution with peaks around 65 and 95 cm (fig. 21). It has been investigated whether one of these two groups could represent stockfish (beheaded, dried fish typically produced in northern regions) but no clear conclusions could be made. The cod consumed was possibly processed in some way but not as stockfish, of which the large scale import probably only started after the period studied here.

In Flemish late medieval inland sites, next to herring and gadids, flatfish are typically one of the three important groups of marine fish consumed. At the site, most of the flatfish consumed was plaice (*Pleuronectes platessa*, 80%) while flounder (*Platichthys flesus*) reached considerably lower frequencies and material from dab (*Limanda limanda*) was extremely rare. Plaice, showing standard lengths of most frequently 20-30 cm but occasionally up to 45 cm (fig. 21), must have been fished at sea but the flounder could have come from the Scheldt river basin. It tolerates freshwater conditions and is represented by much smaller specimens, most commonly 10-20 cm standard length (fig. 21). Of minimal importance for the food supply were turbot (*Psetta maxima*), a flatfish species mostly fished in northern waters, and sole (*Solea* sp.). The marine fish spectrum is completed by low numbers of horse mackerel (*Trachurus trachurus*), thinlip mullet (*Liza ramada*), at least one member of the searobins (Triglidae sp.) and mackerel (*Scomber scombrus*).

Anadromous fish live in the sea but migrate into freshwater river systems in order to spawn. Representatives found are allis shad or twaite shad (*Alosa* sp.), smelt (*Osmerus eperlanus*), whitefish (*Coregonus* sp.) and at least one member of the trout family (Salmonidae sp.), most probably salmon (*Salmo salar*) or seatrout (*Salmo trutta trutta*). Within this group, smelt was the most common species to be served at the table. However, these fish were of small size: only 5-15 cm standard length. For further interpretation, it should be remembered that whitefish and trout are fish that store a lot of fat in pores inside their bones, which therefore dissolve easily in the soil, due to the transformation of fat into fatty acids, which dissolve the surrounding mineral (calcium) component of the bone (Mézes & Bartosiewicz 1994). These species are thus probably underrepresented.

cesspit / layer mesh width	2B all fractions	2C all fractions	2D all fractions	4B all fractions	4C all fractions	total all fractions
marine fish						
Raja clavata	0	0	0,1	0	0	0
Raja montagui	0	0	0	0	0	0
Raja sp.	0	0,4	0	0	0	0
Chondrichthyes sp.	0,2	0	0	0	0,1	0,2
Clupea harengus	33,5	25,9	44,9	42,2	33,9	35,1
Clupea harengus / Sprattus sprattus	17,2	16,7	2,9	2,2	13,7	14,4
Clupeidae sp.	0,2	0	0	0	0	0,2
Merlangius merlangus	1,4	3,2	2,7	3,4	1,7	1,7
Melanogrammus aeglefinus	1,3	1,7	1,7	2,8	1,1	1,4
Gadus morhua	0,2	0,2	0,5	0,4	0,1	0,2
Gadidae sp.	8	13,6	10,3	10,5	12,8	9
Trachurus trachurus	0	0	0,2	0	0	0
Liza ramada	0	0	0	0	0,1	0
Triglidae sp.	0	0	0	0	0	0
Scomber scombrus	0,2	0	0	0	0	0,1
Psetta maxima	0	0	0	0	0	0
Pleuronectes platessa	1,2	1,7	2	1,7	0,8	1,3
Platichthys flesus	0,5	0,6	0,4	0,8	0,6	0,5
Limanda limanda	0	0	0	0	0	0
Pleuronectidae sp.	4,4	6,1	16	11,8	7,9	6,7
Solea sp.	0	0	0	0,1	0.2*	0.0*
anadromous fish						
Alosa sp.	0,1	0,1	0	0	0,1	0,1
Osmerus eperlanus	5,7	14,6	4,2	8,1	8,6	6,2
Coregonus sp.	0	0,1	0	0,1	0	0
Salmo salar / Salmo trutta trutta	0	0	0	0,1	0	0
Salmonidae sp.	0	0	0	0,1	0,1	0
freshwater fish						
Anguilla anguilla	8,4	11,4	9,5	9,9	13	9
Lota lota	0	0	0	0	0	0
Blicca bjoerka	0	0	0	0	0	0
Cyprinus carpio f. domestica	0,2	0,4	0	0	0,1	0,1
Leuciscus sp.	0,1	0	0,1	0,1	0,4	0,1
Rutilus rutilus	0	0	0	0,1	0	0
Cyprinidae sp.	16,5	3,2	4,3	4	4,2	12,8
Esox lucius	0	0	0	0,3	0,1	0
Gasterosteus aculeatus	0,7	0	0	1,6	0,1	0,5
Perca fluviatilis	0	0	0	0	0	0
Percidae sp.	0	0	0	0,1	0,2	0
Total identified	100	100	100	100	100	100

Table 9 Relative frequencies (%) of the fish remains, calculated on the basis of the reconstructed counts (see table 8) (: of which 19 skeletal elements of the same individual).*

Freshwater fish comprise only a fifth of the fish remains identified. Within this group, cyprinids (Cyprinidae sp.) and eel (*Anguilla anguilla*) are the most frequent. The eel bones represent average sized specimens (mostly 30-40 cm standard length, fig. 21). About one tenth of the cyprinids could be identified to species, showing the presence of roach (*Rutilus rutilus*), at least one *Leuciscus* species (chub, dace, ide), bream (*Blicca bjoerka*) and carp (*Cyprinus carpio* f. domestica). Most of these fishes were caught at young ages, showing small sizes, *viz.* standard lengths of less than 20 cm (fig. 21). The (small number of) carp deserves some attention since this fish was only introduced into the Low Countries during the late medieval period (Hoffmann 1994). At first, it was kept in ponds managed by noble households and abbeys but soon carp escaped

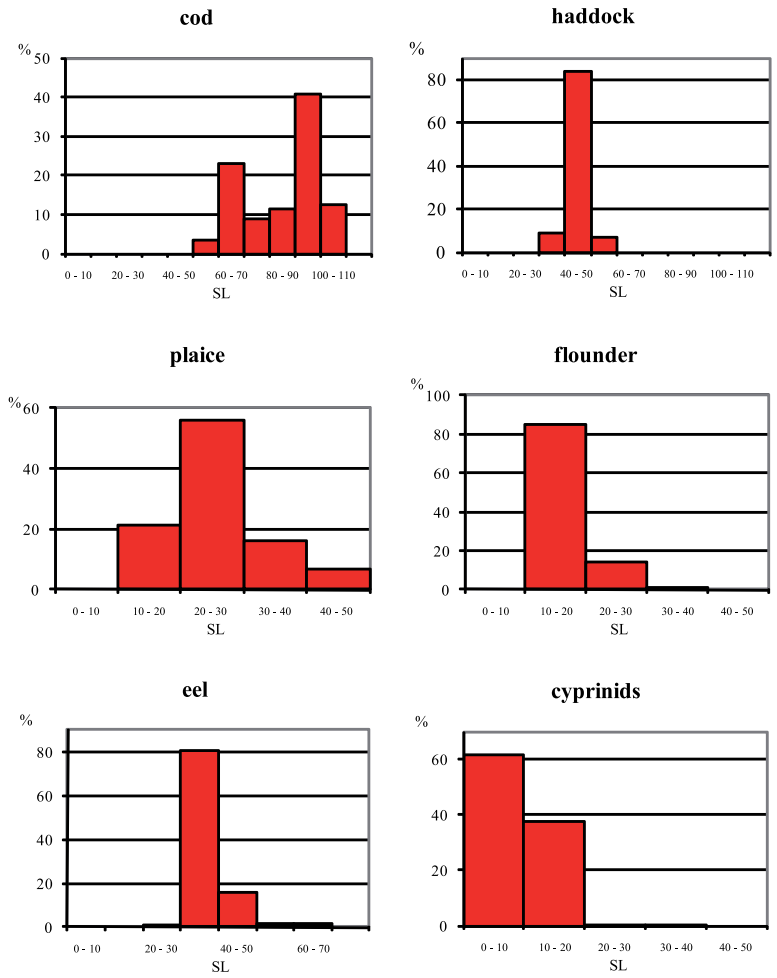

Fig. 21 Standard lengths (SL: length from the snout to the base of the tail) of a number of fish species consumed in Het Steen (cesspits 2 and 4 combined).

into the wild, while medieval towns also started to breed the species in their moats (Deligne 2009). The small carp found in the cesspits could thus well have been fished in the town waters and do not necessarily bear any status. Other remains of freshwater fish found in the contexts investigated include small numbers of skeletal elements of burbot (*Lota lota*), pike (*Esox lucius*), three-spined stickleback (*Gasterosteus aculeatus*) and perch (*Perca fluviatilis*).

Birds

The bird remains are characterised by a high frequency of unidentifiable fragments (table 5). Bones from geese are rather frequent and probably belong almost exclusively to the domestic goose (*Anser anser* f. domestica). Remains from ducks are less common and possibly all represent the domestic duck (*Anas platyrhynchos* f. domestica). Domestic fowl (*Gallus gallus* f. domestica) is the most abundant species, mostly represented by adult animals. Other bird remains include a partial skeleton of a sparrowhawk (*Accipiter nisus*), and a number of bones from little owl (*Athene noctua*) and domestic pigeon (*Columba livia* f. domestica). Whether the latter three species represent food remains, is unclear. These animals were possibly simply killed when coming near to the tower, or were found dead and cleaned away.

Domestic pigeons were, however, only introduced into the Low Countries during the late Middle Ages, to be kept as a status symbol (but also manure producers) in towers near castles or abbeys. Soon, they escaped and started to breed on high buildings in towns (Benecke 1994). The status of the pigeon remains is thus unclear: they could represent a food item brought in

from some richer household, or a feral animal living on or around the tower. The spectrum of bird remains is completed by a number of songbird bones (Passeriformes sp.), unidentified eggshell fragments, tracheal 'rings' (bone elements supporting the trachea) and small, polished stones, known as 'gastroliths', swallowed by birds and used as grinding material in their digestive system (fig. 22). All skeletal elements are represented, except, in the most commonly found species, the bones from the tips of the wings.

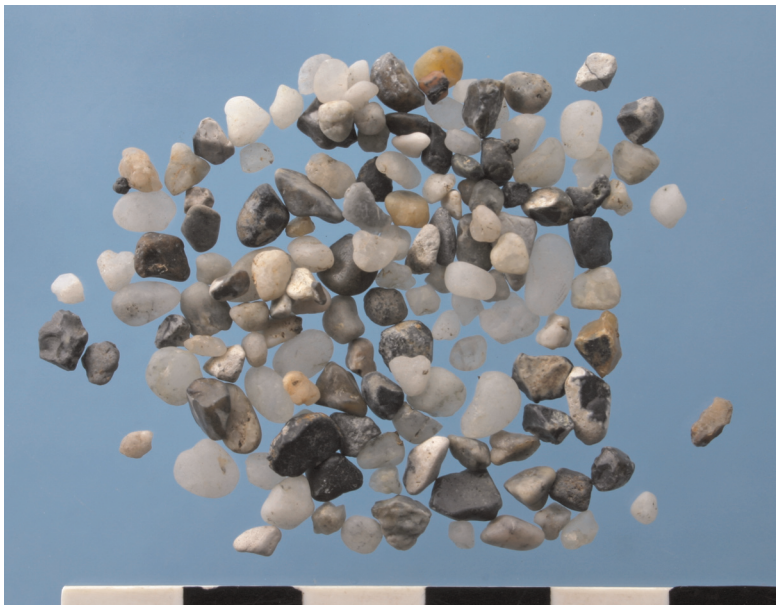

Fig. 22 Gastroliths of birds.

Mammals

Most important in number are the bones of domestic animals: cattle (*Bos primigenius* f. taurus), sheep (*Ovis ammon* f. aries) and pig (*Sus scrofa* f. domestica) (table 4). Cattle clearly was the most important meat provider. Of all three species, remains of all parts of the skeleton were found. Cattle and sheep are mostly represented by older animals. Game species played a minor role in the food supply; only hare (*Lepus capensis*) and rabbit are attested (*Oryctolagus cuniculus*). The latter finds are interesting because the rabbit was only introduced into the Low Countries during the late Middle Ages and was kept – first for its fur, only later also as a food item – in wastelands such as the coastal dunes and in enclosed hunting areas, the so-called 'warrens'. Keeping rabbits was a project of the upper class, *i.e.* the inhabitants of castles and abbeys (Lauwerier & Zeiler 2001; Ervynck 2003). Only later (although the exact date for this evolution is unknown), were rabbits kept in small cages by urban households, thus becoming a real domestic animal. Finally, both cesspits contained a number of bones from cats (*Felis silvestris* f. catus), mostly young animals.

The small mammal remains comprise a skull fragment of an unidentified bat species (Chiroptera sp.) and a large number of rodent bones from both the 4 mm and 2 mm sieve. The latter group apparently only consists of skeletal elements of two commensal species, the house mouse (*Mus musculus*) and the black rat (*Rattus rattus*). The presence of these rodents, and especially of the black rat, is also clearly witnessed by gnawing marks on the chicken remains, and on the bones of the large domestic animals of which the meat was consumed within the tower (fig. 23).

Fig. 23 Cattle phalanges gnawed by rodents (left: reference specimen), most probably black rats (Rattus rattus).

Conclusions on the animal remains

The inventory of the animal remains clearly shows that, within this find group, most of the contents of the cesspits' fills consist of consumption refuse. Possibly, the small-sized cockles and the shore crab only arrived at the site together with lumps of mussels, and the sparrowhawk and little owl were perhaps not eaten but only killed or found dead. Furthermore, there is a category of so-called intrusive animals that lived in the building without being invited or encouraged to do so: the insects and woodlice, and the commensal house mouse and black rat. Finally, the cesspits contained the remains of animals that lived near the spot without playing any role in the food provisioning, such as the cats of which only parts of the skeletons have been found. It remains possible that these animals have also been eaten but the bone remains bear no traces that could ascertain this interpretation.

Within the taphonomic group of consumption refuse, a subdivision must be made between slaughter remains, kitchen refuse and table leftovers. This interpretational exercise is especially meaningful because it illuminates the chain of food preparation activities within the building. Within that context, it is striking that the bird remains are characterised by the presence of almost all skeletal elements, except the bones from the tips of the wings, and even elements associated with the intestines (tracheal rings and gastroliths) that are normally removed before cooking. This could suggest that whole birds were brought in, and were prepared on the spot, of which only skin and plumage (with the small bones of the wings still attached) was taken outside. Alternatively, it could be envisaged that birds were brought into the building with their skin and plumage already removed (thus already prepared for cooking), although the presence of the gastroliths and tracheal rings would imply that the intestines were not yet removed.

The larger mammals present similar interpretation problems. In the case of cattle, slaughter remains (*e.g.* horncores) seem to be absent, but from sheep and pig most parts of the skeleton apparently ended up in the contexts investigated. This could imply that the processing of carcasses took place within the building complex or, perhaps more likely, that all parts of the animals (including those that normally have been left at the processing place) were also used as ingredients in the meals.

6 Interpretation of the finds

When the question is addressed whether the small finds can corroborate the possible identification of the tower as a prison, the most supporting evidence is presented by the large collection of game playing material, unparalleled by any other medieval archaeological context, as far as the authors are aware. Board games are represented by the fragment of a wooden backgammon board and the engraved ceramic tiles. The game pieces needed for these games were found in different forms: black pieces made out of leather, a red ceramic one and several brown wooden ones. The tokens ('*méreaux*') were probably also used as gaming pieces. Different players obviously used game pieces of a specific material and colour. Playing backgammon involves the use of dice, which were indeed found in the cesspits' fills, but the finds are too numerous to be explained by the use in board games alone. Without doubt, playing dice as a gambling activity on its own took also place within the tower's rooms.

The most striking aspect of the dice indeed remains their high number. If all 345 pieces found were used exclusively for playing dice, they would then equal 69 sets for games requiring five dice. In the case of playing with three dice, 115 sets are present. Why then was so much game material needed at the site, and why was it all thrown away? The best explanation may be that we are dealing with a group of people that were gambling but that were often controlled against such practices. This interpretation can then point towards a population of prisoners who deliberately threw the dice and all other game objects in the toilets each time the guards controlled the rooms. Or did the guards throw the material into the pits in order to maintain the prohibition against gambling? In any case, new dice had to be smuggled in afterwards (there is no proof for their production within the building), meanwhile, the number of objects in the cesspits' fills gradually grew, even taking into account regular cleaning. As has been mentioned, in the 16th-century rules for the town prison, there was a tolerance towards playing dice (Beterams 1956, xlii-xliii) but, apparently, this seems not to be true for the older prison regime. Indeed, playing dice was at any rate forbidden in Malines around 1300 (Maes 1947, 347-348).

The gambling material, taking into account all contextual information, thus points towards a prison. An alternative explanation could be that the site investigated was an inn, where customers were gambling, or a military site, where soldiers did the same. However, the first option is hard to match with the nature of the building (a tower), while the presence of a military site in the centre of town is not supported by the written sources. This leaves us with the sole option of a prison, for which historical support is indeed available (see *supra*). Accepting this, the contents of the cesspits can now illustrate aspects of daily life of the inmates. However, the question still remains whether the cesspits contained waste from the prisoners only, or also from the prison staff? Most likely, the prisoners were housed in the tower while the staff occupied the buildings around it, a situation, however, that does not exclude consumption refuse from the guards also being deposited in the cesspits. However, assuming that food preparation took place in the buildings surrounding the tower, a supposed garbage disposal from those places in the cesspits investigated would have been reflected by a higher proportion of cooking and storage wares amongst the ceramics. Most probably, the cesspits thus mainly contain material related to the prisoners inside the tower.

The analysis of the various find categories shows that there is no clear difference between the contents of cesspit 2 and 4. This observation may be biased by the limited nature of the artefact assemblage from the latter structure but in any case, the biological remains do not point towards different diets. It cannot be ruled out that there was a social differentiation within the prison building, but such a pattern apparently remains hidden, for example by processes of redistribution between different parts of the tower. It must neither be forgotten that the difference between the users of both cesspits could have been that between men and women, and that socially mixed but single-sexed groups could have been occupying different parts of the

buildings, connected to a different cesspit. In any case, it is hardly conceivable that the building would have been inhabited by a homogeneous group of people and still would have needed two cesspits. Anyway, in what follows, the finds will be treated as one, single assemblage.

In general, diet within the building cannot be described as rich but the inmates certainly did not live on bread and water alone. Food was even rather diverse, including vegetables and fruits, and a variety of fish, albeit dominated by herring (fig. 24). That herring and other marine species were most often consumed amongst the fish, may be related to the fact that, when processed, they could be kept long as provision. The find assemblages from the cesspits show that marine molluscs, especially mussels, were also part of the prisoners' diet. Shore crabs and shrimps fit into that marine component of the food supply, although the taphonomic or culinary meaning of these food items remains obscure (intrusive animal remains or not?). That oysters are absent from the contexts investigated has no impact on the evaluation of the diet since oysters do not regularly appear on inland tables before the 16th century. All this, of course, does not mean that the prisoners enjoyed the products of a very rich cuisine.

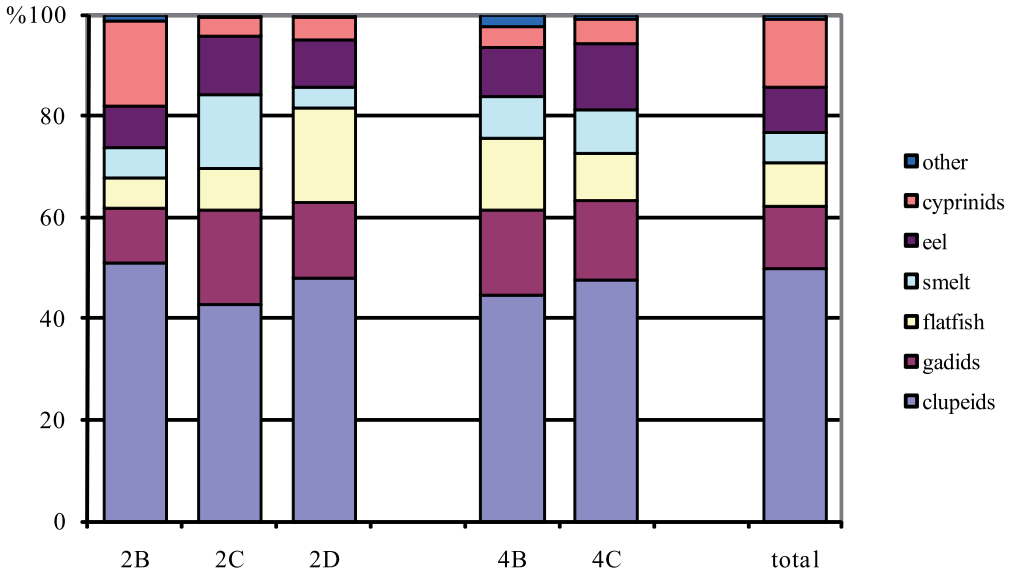

Fig. 24 Frequency of the most important fish species (calculated on the base of standardised counts, see table 9).

Expensive or prestigious food items are lacking or virtually absent, *i.e.*, imported spices (except a few pepper fragments), wild mammals (larger than rabbit or hare), and special fish such as sturgeon or large carp. The small sizes of flounder, eel and cyprinids also point to a low purchasing power of the inmates; these fishes do not even necessarily have to have come from the market but could well have been caught in the town waters by people supporting the inmates. The predominance of cattle (fig. 25) can also be seen as an indication of a rather limited status, at least when it is accepted that, at the time, pig was the most favoured meat provider amongst the domestic mammals in the area (Ervynck 2004). The virtual absence of bones from young sheep and cattle points in the same direction, just like the presence of lower quality parts of animal carcasses amongst the table leftovers.

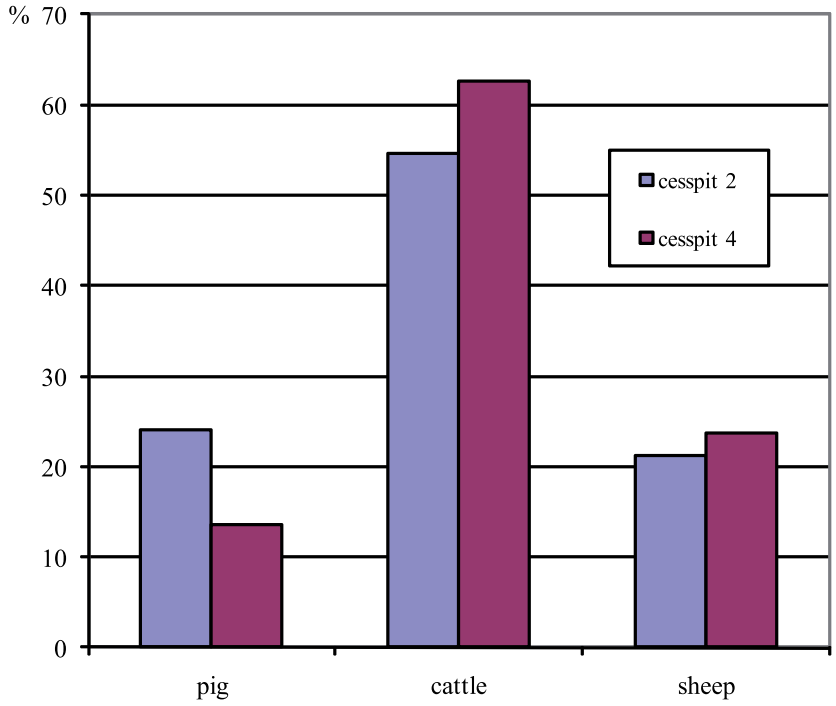

Fig. 25 Frequencies (based on the numbers of remains) of the most important domestic meat providers.

It must again be stressed that the reconstruction presented depicts the food provisioning of the 'average prisoner', who in reality did not exist. Bearing in mind that food was served in small receptacles, individual differences in diet could easily be maintained. Certain more luxurious food items, such as hare or turbot, delivered by friends or relatives, could thus have been eaten by a small portion of the prison population only.

The ceramics recovered do not really add to the evaluation of the prisoners' status. A clear dominance of greywares is typical for the period considered and, within the present state of ceramological research, stoneware and highly decorated pottery are no longer seen as straightforward indicators of wealth. Purchasing power could have been better evaluated based on the presence (or absence) of metal artefacts, such as metal cooking pots, beakers or plates, which were certainly much more expensive than ceramic artefacts. Metal objects, however, would (if present) never have been deposited in the cesspits but, when discarded, would have been recycled (re-melted). Finally, whether the low number of glass finds is meaningful, remains unclear, since unfavourable preservation conditions could also account for this pattern (see De Groote *et al*. 2004).

From the small finds sampled from the cesspits, some inferences can be made about daily life within *Het Steen*. First, the question of food provisioning must be discussed. Extrapolating historical sources from later centuries, it must be taken into account that meals may have been brought in that had been prepared in urban households. Such practice, however, seems difficult to verify through the archaeological finds. Alternatively, some of the animal remains, such as the gastroliths (which are in fact slaughter remains), point towards the preparation of food at the site. However, this does not necessarily imply that the prisoners prepared birds within their rooms. Possibly, cats, running around with slaughter remains, brought them into the prison.

The living conditions within the building are illuminated by a number of finds. The botanical investigation suggests that peat blocks and wood were burnt within the prison rooms. Whether this was done for cooking, or for heating a prepared meal, remains uncertain; possibly burning peat only served for heating the room(s). A metal artefact from the cesspits' fills indicates that the prison rooms were lit by candles. Fragments of straw suggest that the floor was covered

with this plant material or that mattresses or sleeping bags were filled with it. Other aspects of the interior of the building remain out of sight.

Part of the animal remains show that the inmates were not the only ones living in the prison. Animals shared their fate, be it invited or unwelcome. Small arthropods (insects and other species, amongst which many flies) must have belonged to the normal, indoor fauna. They were joined by commensal rodents, which left their gnawing marks on many bones, which must have been lying around before ending up in the cesspit. Bats must have visited the tower and, possibly, some wild birds did too. Some died, or were killed, and ended up in the cesspits. The pigeon bones may represent such an event, if they do not come from an animal brought in as food. Finally, (young) cats must have been present in the tower. Whether these animals were stray cats or were actually kept as pets, is impossible to say. Unwanted kittens of a domestic cat may have been killed by the inhabitants of the tower.

Clearly, the prison was not the cleanest of dwelling places, although medieval standards of hygiene certainly differed from those of today. In any case, garbage disposal was not organised efficiently enough to prevent food refuse from lying around before eventually being cleaned away, an interpretation proven by the rodent gnawing marks. When it could not be burned (given that this was possible within the rooms), most garbage must have been deposited in the cesspits. The pottery must have been broken in the rooms, perhaps by accident, perhaps voluntarily or as result of violent conflict. Why so many fragments of shoes ended up in the cesspits, remains puzzling. Finally, a small part of the finds must represent items lost while using the toilet: pilgrim's badges, silver and other coins, buckles, etc.

The remarkable set of gaming objects shows how the inmates fought against the boredom of prison life. In general, whatever the game, one must inevitably have played for money, which the inmates indeed also had with them and incidentally lost in the cesspits. Gambling thus implied a potential for accruing further debt but apparently was very popular at the same time. It was easily arranged, created an immediate diversion and it promised to improve one's material conditions (Geltner 2008b, 154). The apparently daily habit of gambling (for money) must have had its consequences for prison life. Together with the inequalities considering food provisioning and the services one could pay for (documented by the historical sources but not proven by the archaeological assemblage presently discussed), this must have led to disputes and ultimately to violence. From the archaeological finds, such social interactions cannot be reconstructed although, regarding safety and violence, it remains striking that part of the blade of a knife and a chape were found in the cesspits. Unfortunately, it was not possible to verify whether alcohol was consumed by the inmates; otherwise this could shed an even more dramatic light upon daily life within the tower.

7 General conclusion

The excavations at Malines' *Grote Markt* have shed more light upon the nature of a 14th-century town prison in the Low Countries, and upon aspects of daily life within its walls. In general, the finds and interpretations are in agreement with the information from later, 16th-century, local written sources and with what is known of the social history of the late medieval Italian prisons described by Geltner (2008a, 2008b), and the concept of a medieval prison in general (Puch 1970, Dunbabin 2002).

The location of *Het Steen* indeed shows that a late medieval prison was not constructed with the exclusion of the prisoners from town life in mind. The building was part of the economic and political centre of town, enabling the inmates to stay into contact with families, friends and business partners. At the same time, for the late medieval town, the prison was a symbol of independence, to be seen by everyone. For the citizens, it was a daily warning, but also a reassurance: in case of trouble, they would be judged by their equals.

The various find categories give some information about the social status and purchasing power of the inhabitants of the tower. In general, it is clear that varied food items (meat, fish, fruits, etc.) entered the prison but no real luxury products. Of course, behind this general view, an underlying social differentiation could have been present, although this could not be discriminated through the study of the finds. Moreover, the composition of the consumption remains could have been influenced by complex ways of food provisioning (both organised from inside and outside the prison complex) and garbage disposal. In any case, with some redistribution of food leftovers organised to help the poorest inmates, no member of the prison population would have had to survive on bread and water alone.

The living conditions within the prison rooms may have differed significantly per prisoner, depending on the services one could pay for, but apparently everybody had to cope with some general unpleasantness, such as food remains that were not cleaned away immediately and the presence of commensal rodents and insects.

The regime within the prison was possibly rather lax. The abundant finds of gaming pieces in the cesspits suggest that they were thrown away before or during controls, but at the same time demonstrate that violations against the rules forbidding gambling were daily events.

Finally, the fills of the cesspits provide proof that they were probably abandoned towards the end of the early 14th century, while the building to which they belonged continued in existence until much later (see *supra*). Whether this indicates a period of abandonment of the tower, or a change in the management of garbage disposal, remains unclear.

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Notes

1. All addresses and affiliations refer to the present work situation of the authors.
2. Konjev passed away in the autumn of 2008, at the age of 52, without ever having seen this English version of his work. We will always remember the pleasure of working with him.

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