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Please cite this as: Bouwmeester, J. 2025 Urban Archaeology at a Crossroads, Internet Archaeology 70. https://doi.org/10.11141/ia.70.7

Urban Archaeology at a Crossroads

Jeroen Bouwmeester

Summary

Since the Second World War, archaeological remains in towns have come under increasing pressure: major construction works have led to considerable degradation of the archaeological record. From the 1970s onwards, there has been growing awareness of the vulnerability of archaeology in old towns, yet it was not until the introduction of the Malta legislation in 1992 that archaeological research in towns really took off. In the Netherlands, however, application of the legislation also has an obvious downside. With research being mainly documentary in character, synthesising research is lagging behind. In addition, it is not always clear where within the 19th- and 20th-century urban expansion archaeology can be expected, and what type of remains there will be. The effect of construction on the remains has also remained unclear for a long period of time. Research by the Cultural Heritage Agency of the Netherlands has provided important insight into this. As a result, this article provides an agenda to address some of the key challenges faced by the field of urban archaeology.

1. Introduction

It is impossible to imagine contemporary society without towns. In north-western Europe, the majority of towns date back to the Middle Ages, and some to Roman times. In other parts of Europe, especially the Mediterranean, many towns are much older still. Without going deeply into the question of when a settlement can and may eventually be called a town, it is safe to say that they represent central places: nodes in a more widespread political, social and economic network. These nodes attract people: visitors, and also new residents. A dynamic society emerges, where different cultures and ideas come together, and population growth leads to a greater concentration of accommodation in relation to the immediate surroundings. Apart from houses, residents also need food and commodities to support themselves, and the growing complexity of urban society leads to a growth in urban facilities and buildings. All this leaves traces in the soil, from simple potsherds, to construction phases for houses and workshops, to rubbish, not to mention the graves of inhabitants. Layer after layer, these traces and remains pile up, sometimes disturbing older underlying layers, right up to the present day.

However, are today's towns so different from the towns of the past? The size and population of many modern towns are much larger than earlier towns, but let us not forget that, in the heyday of the Roman Empire, Rome (Italy) already had half a million inhabitants living in apartment complexes (Storey 1997). In the past, there were also large-scale interventions in the urban fabric e.g. the great works of George-Eugène Haussmann in Paris (France) where large parts of the medieval town were cleared to make way for wide boulevards. In the 1960s, too, many European towns were threatened by the demolition hammer as part of

urban renewal. What differs is the scale and speed at which the urbanisation process seems to be taking place nowadays. Given modern building techniques, there is an increasingly small palimpsest, or accumulation of remains, and instead more of a *tabula rasa*. The past is being cleared away to make way for something entirely new.

It is the aforementioned large-scale projects that, from the 1960s onwards, have left large craters in the old historical urban fabric. So large that, in many places in Europe, locals have started to protest against them. At the same time, so many archaeological remains have come to light that a paradoxical effect has emerged, where the destruction of historical buildings has given urban archaeology more and more of a foothold. How exactly this took place we will now explore.

2. Archaeological heritage management in European towns

From the Renaissance onwards, there has been a growing interest in classical antiquity, especially of cities such as Rome. Interest in the archaeology of medieval towns is much younger. One of the earliest urban archaeological investigations of a medieval town was carried out shortly after 1870 in Oslo (Norway), in an area where the precursor of the present town lay. The remains were examined not by archaeologists but by railway engineers interested in archaeology, and certainly not to present-day standards. Urban archaeological research was also carried out early in Novgorod (Russia), from the 1920s. Small-scale archaeological excavations took place in several (former) towns before the war, such as in Gdánsk (Poland), Haithabu (Germany), Lübeck (Germany) and Groningen (the Netherlands) (Sarfatij 1990), where the research was mainly focused on excavation and (limited) documentation.

During the Second World War, as a result of the bombardment of towns such as Rotterdam and Middelburg in the Netherlands, it became clear how much archaeological material was present under the towns' buildings. This led to several archaeological excavations, and it is no coincidence that it was in Rotterdam, in 1960, that Catharinus Hoek became the Netherlands' first town archaeologist. Yet this was a positive exception. In many European towns, urban archaeology was an underrated topic. In the early 1970s, a study on the erosion of archaeology in UK towns was conducted under the supervision of Carolyn Heighway (Heighway 1972). This study was soon replicated in other countries, such as Germany and the Netherlands (Van Es *et al.* 1982; Fehring 1996). The results were disconcerting. In large parts of European inner towns, the archaeological record was seriously threatened or had even disappeared.

Because of the *tabula rasa* effect mentioned earlier, the outcome is irreversible. There has been much protest against the visible erosion of buildings, for example in Amsterdam in the Netherlands, and Orléans in France (see Bryant's article in this volume x-ref needed). The effect of such studies has been to map the invisible erosion of archaeology in towns. At the same time, however, this positive result should not be overestimated. While larger Dutch towns have since fared relatively better, erosion continues to take place in many smaller towns (see below; Magendans and Poldermans 1985).

3. The situation in the Netherlands

The history of urban archaeological preservation in the Netherlands largely parallels that of the rest of Europe. The Netherlands is mainly formed from the delta of several large rivers flowing from Switzerland and Germany (the Rhine and Waal) and northern France and Belgium (the Meuse and Scheldt) to the North Sea. This makes it an ideal location for the transhipment of trade from sea to rivers and vice versa. It is therefore no coincidence that this fertile delta was home to around 200 towns in the Middle Ages. Together with northern

Italy, the Low Countries (the Netherlands and Belgium) formed the most densely urbanised areas of Europe in the Middle Ages (de Vries 1984, 38–9). An important part of the archaeological heritage from the Middle Ages and the modern period is concentrated around these towns, but, as in other parts of north-western Europe, it has been seriously threatened and already partly lost since the second half of the 20th century. The number of town or regional archaeologists with their own practice and excavation licence is limited. In 2009, there were over 30 municipalities listed; by 2024, only 16 of them remained (Arts and Bakker 2009; https://certificaten.sikb.nl/gecertificeerden/BRL+4000+-+Protocol+4004/[Last accessed 18 October 2024]).

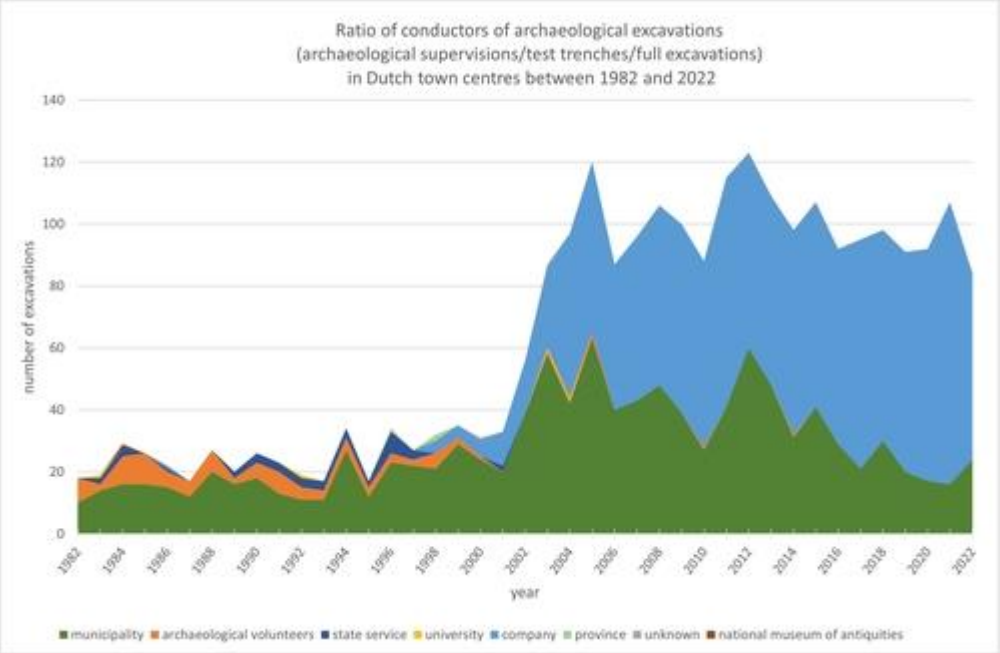

Figure 1: A graph showing the number of excavations that took place in towns between 1982 and 2022, plotted against time and by type of excavator (J. Bouwmeester, RCE).

The main watershed for urban archaeological preservation, both within and outside the Netherlands, is the European Convention of Valletta (the Malta Convention https://rm.coe.int/168007bd25). Based on the underlying principle that archaeological remains should be preserved *in situ*, and, if this is not possible, the developer should take care of *ex situ* preservation (excavation), the number of investigations in towns has increased significantly. This is evident from an inventory of the number of research reports arising from archaeological excavations within the urban contours of 1900 (before large-scale expansion of the towns) in the national archaeological information system *Archis* (the results of this survey were presented for the first time in 2023 at the BNA Contact Dagen (an annual exchange between Belgian and Dutch archaeologists and building historians) in Bruges, Belgium, and the European Association of Archaeologists (EAA) annual Meeting in Belfast, Northern Ireland). Until 2001, the number of archaeological excavations in towns fluctuated between 17 and 35 per year (Figure 1). Most of this research was carried out by municipal archaeological services, with a modest share by amateur archaeologists, universities and the state service (the former Rijksdienst voor het Oudheidkundig Bodemonderzoek (ROB), the predecessor of the Dutch Cultural Heritage Agency (RCE)). From the late 1990s, archaeological companies also began to play a role, although initially only on a small scale. When the Malta legislation came into force, the number of investigations in towns increased exponentially, and it is easy to see that the commercial companies accounted for most of this. Apart from some isolated peaks, it is also

noticeable that, by the end of the survey period (around 2022), the number of excavations by urban archaeological departments was actually back to square one, with less than 25 excavations per year. The amateur archaeologists, government departments and universities that were still conducting limited research in towns before the Malta Convention, no longer played any role after 2001.

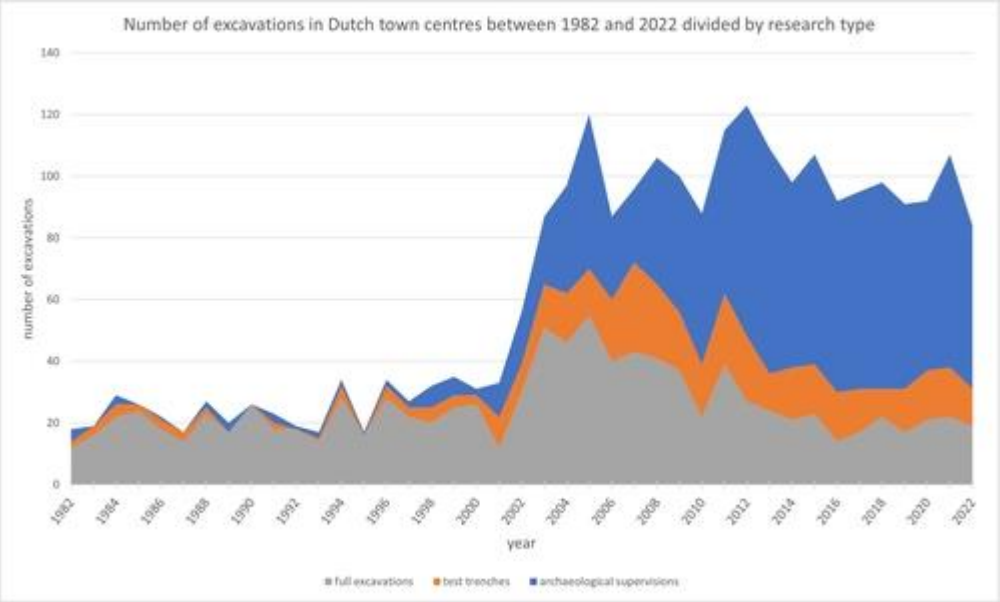

Figure 2: A graph showing the number of excavations that took place in towns between 1982 and 2022, plotted against time and by research type (J. Bouwmeester, RCE).

Regarding the type of investigation, it is noticeable that, with the implementation of the Malta Convention, the number of full excavations initially increased but then slowly levelled off to the pre-2001 level (Figure 2), while the number of trial trenches increased from 2001 onwards. This is logical because, within the archaeological heritage management cycle, trial trenches are an intermediate step towards an excavation (Figure 3). During a trial trench survey, the nature, complexity and extent of the archaeological remains are assessed, on the basis of which the decision is taken whether or not to excavate. If excavation occurs, the trial trenching provides important information about the design of the subsequent investigation, its costs and associated research questions. Most striking is the increase in the number of archaeological supervision projects. This involves the developer carrying out construction work while an archaeologist subsequently documents any archaeological remains and finds. Guidance is based on the protocols of trial trenching or excavation. Guidance is often applied because actual trial trenching in urban areas is not always practical, and the developer feels that customised work could be more efficient regarding time and money. However, there are very high risks involved. The research questions for supervision projects are often brief, the time pressure on the research is high, and achieving good, reasoned, sampling for specialist research such as micromorphology is difficult. In addition, supervision projects are a black box in terms of costs. There is no knowing what might be found, and costs can add up quickly. Subsequent interpretation, reporting and additional specialist research pay the price for this. A lot of money may be spent on the field research, after which the processing is much more basic.

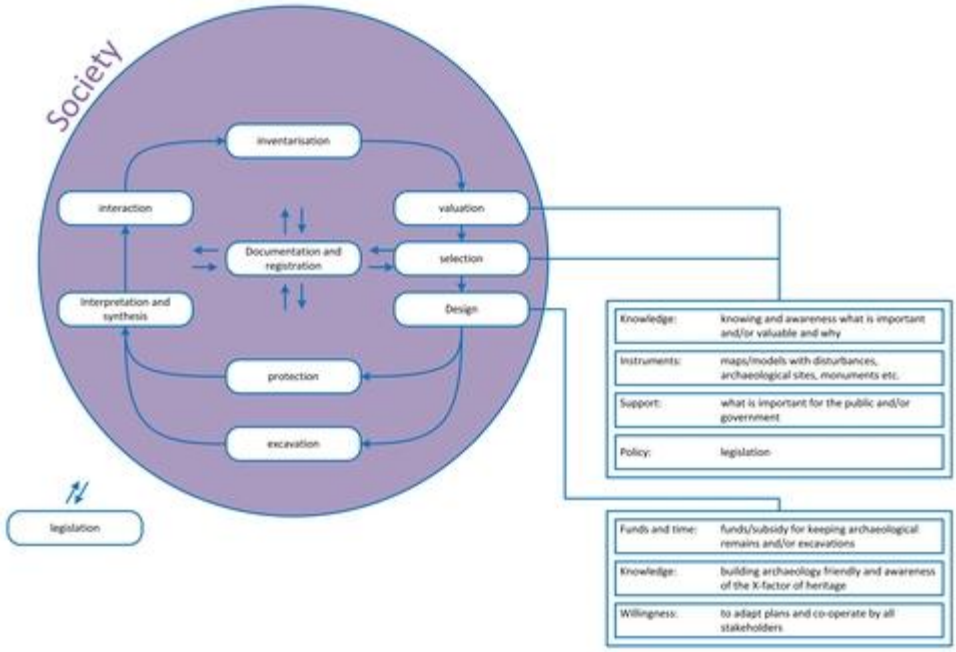

Figure 3: The archaeological heritage management cycle by Willems (Willems 1997, 4), adapted for 21st-century conditions (after Bouwmeester and Belford 2021, 13).

What does this mean? In any case, it is clear that, since the Malta Convention, many more archaeological excavations are carried out in towns within the Netherlands, particularly in towns that do not have their own archaeological department. Incidentally, this also raises the question of how many sites must have disappeared unseen in those towns before that point. It also means that many more companies and organisations have started carrying out research in towns, even within one town, since Malta. In terms of scientific content, this can lead to differences arising between towns. With home-town archaeological services, local knowledge and expertise has been built up over the years regarding both the town in question and its immediate surroundings. New ideas and theories can be tested, implicitly and explicitly in the field, which ultimately leads to a growing knowledge of local history, and several towns have worked on local research agendas. However, most towns have to make do without an archaeological service, although there may be a policy archaeologist. Within these towns, excavations are usually carried out by different companies. The danger here is that there is less accumulation of local knowledge. The questions raised by the investigations may focus more on a particular site than on the bigger picture. On a more positive note, archaeologists who have worked in different towns can be better placed to see connections between different sites across towns.

However, there is a marked contrast between the significantly increased number of excavations and the number of cross-boundary synthetic studies. Between 2009 and 2022, 1399 excavation studies (trial trenches and excavations) were carried out within towns (source: *Archis*). Within the same period, a total of nine overarching cross-town synthesising studies, such as dissertations and the Harvest for Malta (Oogst voor Malta) project, were carried out (Groothedde 2013, van Oosten 2014, Schrickx 2015, Cleijne *et al*. 2017, Jayasena 2019, Arts 2020, Blonk-van den Bercken *et al*. 2020, Fischer 2021, Stolk 2022; see also Series Nederlandse Archeologische Rapporten). That is a ratio of one synthesis to 350 excavations! This means that much of the research carried out does not lead to greater insights regarding urban archaeology and urban development at supra-local and national

levels. It logically follows that research questions become highly repetitive. There is then little or no new knowledge development, and research does not build on any new insights. This begs the question, somewhat exaggerated, of whether *ex situ* conservation still applies rather than archaeological destruction.

Excavating sites is not always an option. This may be because of complex site conditions, but mostly it is related to the cost of the research itself. Because of the concentrated and complex accumulation of archaeological remains, excavations in towns are very time-consuming. In practice, choices are made between what is and what is not to be (intensively) excavated. Sometimes efforts are made to preserve *in situ* by, for example, archaeology-sparing construction (Groenendijk 2021a). In other cases, (parts of) archaeological sites are sacrificed. Choices are also made regarding how intensively archaeological research is carried out. This is mainly at the expense of specialist research. A direct consequence is that traces of artisanal production, for instance, are not recognised nor investigated as a result (Bouwmeester *et al*. 2013). Specialist research requires a good understanding of the site and its phasing during the fieldwork, in order to sample and investigate the right contexts. This demands more of the archaeologists in the field. Ultimately, it is this complexity combined with the quantity of finds and other remains that leads to a deterioration in research results. With the use of new techniques, excavations of sites from earlier periods with a lower concentration of remains and finds tend to yield relatively more new information than excavations in towns.

It is important to be clear at an early stage within the planning process where archaeological remains can be expected, what the value and extent (absolute and in terms of complexity) is likely to be, and to what extent the remains are still relatively intact in the soil. For historical inner towns, archive research can help in this respect for the younger periods. From an archaeological perspective, most parts of inner towns can be regarded as areas with a high archaeological expectation (see below). Exceptions are areas that were disturbed in the second half of the last century (see above). For the areas immediately outside medieval walls, the situation is less clear. The buildings and use of such areas in the medieval and post-medieval period were less intensive and continuous. In addition, many temporary activities will have taken place, such as the construction of fortifications in times of siege, and 19th-century town gardens. From the end of the 19th century, these areas around many towns were built up at a rapid pace. First came factories, initially located within the towns. Later, these factories again had to make way for housing and were relocated even further out. In recent years, the RCE has developed tools to understand the areas around towns better.

4. Archaeological expectation models for areas around a historic town centre

In the Netherlands, archaeological heritage management uses what are called expectation maps. These maps indicate zones where archaeological remains may be located, with an estimate of their value. This value is generally divided into four categories: zones with high/medium/low archaeological value, or zones with no archaeological value. Policies can then be formed on the basis of these expectations. The policies will be stricter for zones of higher archaeological value than for zones of lower value. Decisive for any policy is the stated archaeological expectation in combination with the probability of disturbance during the planned intervention. In certain zones, for example, slight disturbances are allowed because the chance of damage to archaeological remains will be relatively small.

Medieval inner towns are almost always designated as a high category. They represent a zone with a concentrated accumulation of archaeological remains. The (older) disturbances are in fact part of this palimpsest, and form part of the biography of the site in question.

Zones immediately around the medieval core are often assigned a lower expectation and value. This is because of the more open nature of the area and, thus, a more scattered presence of archaeological sites. The paradox of this is that, when an archaeological site is found within this zone, it can often be of high value. However, the exact location of such a site is not always easy to determine, nor is the likelihood of finding a site outside the historic town centre. The central question of the RCE study to develop expectation models around towns, was therefore whether it was possible to determine the location of certain types of site more precisely, in order to better define the expectation for the area immediately around the town.

5. The archaeological value of the area around a historic town centre

To arrive at a generic expectation model for the area immediately around a historic town centre, the following approach has been taken. A series of town maps from the second half of the 16th century were taken as the basis of the model: Jacob van Deventer measured and recorded the roads and buildings of each town and its immediate surroundings as precisely as possible, based on the technique of triangulation (Figure 4). For almost all the medieval towns, this provided a very detailed picture of the different types of structures in and around them, and their locations (Rutte and Vannieuwenhuyze 2018).

Figure 4: A map of Deventer around 1560, by Jacob van Deventer.

All these structures have been vectorised and put into a global information system (GIS) database, with a georeferenced map as an underlay. By linking the locations of the buildings to 19th-century cadastral maps, it has even been possible to find out the specific farm names of most of them. As a result, we know that almost all the buildings not clearly identifiable on the maps were in fact farmyards. Furthermore, the celestial distances between the various structures and walls around the towns were measured. This has provided detailed insight into the layout of the areas.

Table 1: An overview of the structures found around Alkmaar, Nijmegen, Deventer, Zutphen, Arnhem, Sneek, Doesburg, Vlaardingen and Wijk bij Duurstede.

			Large towns			Medium-sized towns			Small towns		
	Total number of structures	**Total %**	**Alkmaar**	**Nijmegen**	**Deventer**	**Zutphen**	**Arnhem**	**Sneek**	**Doesburg**	**Vlaardingen**	**Wijk bij Duurstede**
No. of inhabitants in 1560			13,650	9000	7700	6000	5200	3000	2100	2000	1500
Type of structure											
Habitation zone	17	4	8	-	-	2	5	-	1	-	1
Gallow	6	1	1	1	2	-	-	-	-	1	1
Horreum	5	1	-	3	2	-	-	-	-	-	-
Hospital	1	0	-	-	-	-	-	1	-	-	-
House (including farms)	280	67	29	32	46	18	84	8	18	25	20
Castle	3	1	1	-	-	-	1	-	-	-	1
Church	13	3	-	2	2	2	3	-	1	-	3
Monastery	7	2	3	-	-	1	2	1	-	-	-
Cross	6	1	-	5	1	-	-	-	-	-	-
Leper house	4	1	1	1	1	1	-	-	-	-	-
Pillory	12	3	-	5	1	4	2	-	-	-	-
Drying ground	1	0	-	-	1	-	-	-	-	-	-
Watermill	17	4	-	-	5	-	10	-	2	-	-
Windmill	47	11	10	13	13	2	-	4	1	2	2
Total	419	99	53	62	74	30	107	14	23	28	28
No. of structures per inhabitant			0.004	0.006	0.009	0.005	0.021	0.004	0.011	0.014	0.019

A sample of nine towns was used for this study. The selection was based on population size (around 1560; Lourens and Lucassen 1997) and location within the Netherlands. The nine towns were then divided into three categories based on population size, namely large (>7500 inhabitants: Alkmaar, Nijmegen, Deventer), medium-sized (2500–7500 inhabitants: Zutphen, Arnhem, Sneek) and small (<2500 inhabitants: Doesburg, Vlaardingen, Wijk bij Duurstede) (Bouwmeester 2021, 89) (Table 1). By plotting the number of structures against

the distance from the town walls, the area around the towns could be divided into three zones, namely 0–600 m, 600–1300m and >1300m (Bouwmeester 2017) (Figure 5). Both the density and diversity of the structures decreased the further the zone was from the town centre (Bouwmeester 2021). This is best illustrated by the density of farms. It is also notable that wind and water mills, as important economic facilities, were mostly located close to the town. The same applied to gallows and execution locations, which marked the extent of a town's jurisdiction (Baas *et al.* 2005, 50).

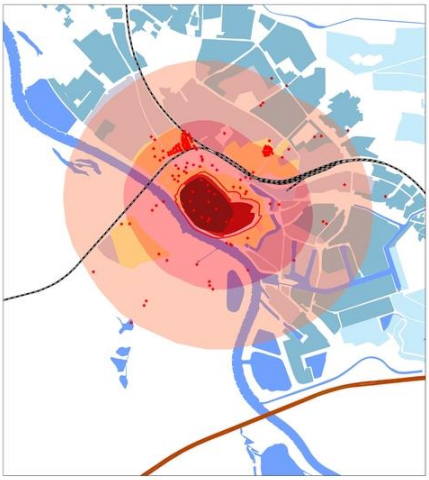

Figure 5: A map of Deventer showing its urban expansion, different zones, and the location (in red) of sites derived from the Jacob van Deventer map (J. Bouwmeester/M. Kosian, RCE).

Of course, Jacob van Deventer's maps are a 16th-century snapshot, and it must be borne in mind that they are subjective observations for a specific purpose. The 19th-century cadastral map already shows that, in the following centuries, farmyards disappeared from some locations and were added in others. This will also have been the case in the Middle Ages, as will all kinds of other activities that do not appear on the map, which will have created new traces and cleared older ones. A good example of this is the 1578 siege of Deventer by Rennenberg (Figure 6): the image clearly shows how the landscape was overturned in several places at the time of the siege.

Figure 6: The siege of Deventer by the Count of Rennenberg (1578), detail (Anonymous, Museum de Waag
Deventer, https://deventer.adlibhosting.com/ais6_museumdewaag/Details/museum/4140) [Last accessed: 10 February 2025]

Some years ago, an attempt was made to refine the generic model with three zones, by investigating the extent to which the location of sites was determined by the presence of other structures and the underlying landscape. The consultancy agency Buro de Brug conducted a test for this purpose based three towns: Tiel, Middelburg and Groningen. The area around the three towns was radially divided into 12 sections. Within each section, the elements on Jacob van Deventer's map were counted, valued and categorised (housing, burial, ritual, economy and infrastructure/roads). In the process, their impact on the town was also established. It turns out that the landscape, other sites and roads all had a clear impact on the location of buildings, structures and objects. At the town level, the three zones from the initial model do not consist of symmetrical rounded contours but rather polymorphic contours, depending on the landscape and roads. However, this is so site-specific that it cannot be used as a generic model. However, for local urban expectation maps, it may be an interesting addition (Bouwmeester *et al*. 2020).

6. The disturbance of archaeological remains

In the introduction, the consequences of modern interventions in a town were characterised as a *tabula rasa*. Old remains, both above and below the surface, have to make way for new construction. This phenomenon occurred especially after the war, with the introduction of draglines and other excavators that were increasingly capable of clearing old foundations and remains and establishing large-scale areas for housing. The impact of post-war construction work in towns was therefore enormous.

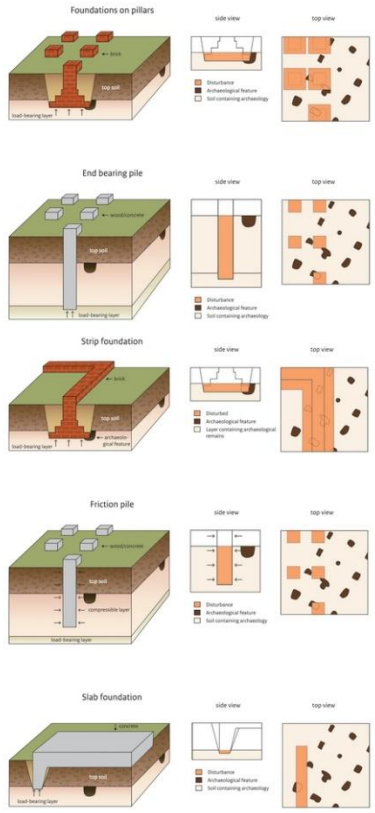

Figure 7: The most common foundations underneath buildings in relation to archaeological remains (Bouwmeester *et al*. 2017, 150).

What also played a role was greater caution by constructors in using old foundations for new buildings. Disturbances before this time were generally much more limited. Clearances were mainly restricted to a narrow area under and just next to future walls and in front of basements. This means that, within such buildings, large parts of the subsoil still remained intact (Figure 7). The same applies to foundations based on pillars and piles, especially in areas with weaker soils (Bouwmeester *et al*. 2017, 150, fig. 5). This foundation method is now also used to preserve archaeological remains in new buildings (Groenendijk 2021b).

As well as at the level of specific buildings, disturbances can also be considered at the level of town districts. Medieval towns had a dense accumulation of buildings. In addition, when overcrowding occurred, backyards were built in association with so-called 'kameren', small one-room houses in which entire families had to live (den Braven *et al.* 2008). In 1874, the Fortification Act was passed (Rutte and Abrahamse 2016, 218); until then, towns were also seen as military strongholds, which meant that all habitation and buildings had to be within the ramparts. The new law put an end to this fortification function for most towns, enabling factories to move outside the town and new residential areas to be built there as well. The old fortifications were transformed into large parks. The building density of these first residential areas was still substantial, but lower than in the medieval core. A general trend since then has been to reduce the building density of the expansion districts and create more public space (Figure 8). This includes more green spaces and wider streets. Another factor that plays into building density is the location of the town in question. A new 1930s neighbourhood in Amsterdam, for example, looks very different from the much smaller town of Deventer in the east of the country. Building density also affects the possible preservation

of archaeological remains under these neighbourhoods. After all, more public space means less building and therefore less disturbance of the soil. After the Second World War, the approach changed, and neighbourhoods today are prepared for building as a whole, with the entire area being levelled and restructured (Bouwmeester *et al*. 2017). For Dutch archaeology, this has meant the start of large-scale settlement research, as, for instance, in Wijk bij Duurstede, Utrecht-Leidse Rijn, Oss and Zutphen.

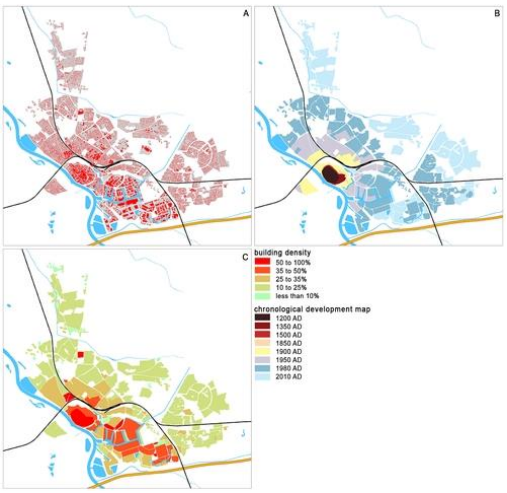

Figure 8: (A) A map of Deventer showing buildings in red (A); (B) a map of Deventer showing the extent of urban developments; and (C) a map of Deventer showing density of buildings in different areas (J. Bouwmeester, RCE/M. Kosian, RCE/M. Haars, BCL Archaeological Support).

7. How to proceed?

The above discussion can be summarised as follows.

- Urban archaeology has received a major boost as a result of the Malta legislation, but this has not resulted in an equal increase in overview studies and syntheses.
- Expectation models for urban areas around original medieval towns provide an indication of the nature and size of buildings, with densities decreasing further away from a town. The location of the urban areas is partly determined by the landscape and also by other nearby structures and buildings, but that is town-specific.
- The same areas around towns have become increasingly built up over the past 150 years. However, studies have shown that pre-war neighbourhoods and buildings in particular were built in such a way that older traces of settlement can still be found underneath.

What does this mean for the future? First of all, more synthesising research and academic focus on towns is necessary to take the field further in terms of scientific and theoretical content. Knowledge exchange between archaeologists is an important link in this, but the data must also be interrogated further. Attention must be paid to the large amounts of grey literature and data created in the period before the Malta legislation. In any case, the basic information must be made available so that the right assessments can be made in the future.

Furthermore, expectation models combined with disturbance models clearly indicate that a lot of archaeological information is still hidden under early urban developments. This also means that urban renewal projects and infill developments should pay attention to archaeological sites. Extending the models further, by combining the specific structures and

buildings with each other and with the underlying landscape, could make locations more predictable at a local level. New technology, such as artificial intelligence, may play an important role here in the future.

Urban archaeology is currently at an important crossroads. If we continue on the same path, a lot more research will be carried out and reported. However, it will always be with the same comparable questions at a local level. With such an approach, there will be no additional development of knowledge, but simply more documented clearance of archaeology. This violates the principle of *ex situ* conservation. The datasets being generated are not being used optimally and the upward knowledge spiral is broken. New steps need to be taken to move urban archaeology in a different direction: steps that the archaeological profession must take together.

Bibliography

Arts, N. and Bakker, C. 2009 'Gemeentelijke archeologie anno 2009', *Archeobrief* **13**(2), 22–25.

Arts, N. 2020 *Stad en platteland op het zand. Een archeologische biografie van landschappen en samenlevingen in de Kempen, 1100-1650*, Thesis: Tilburg University. https://research.tilburguniversity.edu/en/publications/stad-en-platteland-op-het-zand-een-archeologische-biografie-van-l

Baas, H., Mobach, B. and Renes, H. 2005 *Leestekens van het landschap. 188 Landschapselementen in kort bestek*, Utrecht: Landschapsbeheer Nederland.

Blonk-van den Bercken, A.L., Verhoeven, A.A.A., van Londen, H. , Oudhof, J.W., Overmars, G. and Lobbes, M.E. 2020 *Ambachtelijke productie in steden*, Nederlandse Archeologische Rapporten **66**,
Amersfoort. https://www.cultureelerfgoed.nl/publicaties/publicaties/2020/01/01/ambachtelijke-productie-in-steden

Bouwmeester, J. 2017 'Modelling the 16th-century urban countryside. A zone of influence and interaction' in R.C.G.M. Lauwerier, M.C. Eerden, B.J. Groenewoudt, M.A. Lascaris, E. Rensink, B.I. Smit, B.P. Speleers and J. van Doesburg (eds) *Knowledge for Informed Choices. Tools for More Effective and Efficient Selection of Valuable Archaeology in the Netherlands*, Amersfoort: Rijksdienst voor het Cultureel Erfgoed. 108–19.

Bouwmeester, J. 2021 'Catching archaeology in Deventer. A case study of combining two instruments to improve archaeological heritage management in urban context' in P. Belford and J. Bouwmeester (eds) *Managing Archaeology in Dynamic Urban Centres*, Leiden: Sidestone. 87–105.

Bouwmeester, J. and Belford, P. 2021 'Introduction: issues, principles and practice' in P. Belford and J. Bouwmeester (eds) *Managing Archaeology in Dynamic Urban Centres*, Leiden: Sidestone. 7–18.

Bouwmeester, J., Abrahamse, J.E. and Blom, A. 2017 'Mapping disturbances. Potential disturbance of archaeological remains in built-up areas', R.C.G.M. Lauwerier, M.C. Eerden, B.J. Groenewoudt, M.A. Lascaris, E. Rensink, B.I. Smit, B.P. Speleers and J. van Doesburg (eds) *Knowledge for Informed Choices. Tools for More Effective and Efficient Selection of Valuable Archaeology in the Netherlands*, Amersfoort: Rijksdienst voor het Cultureel Erfgoed. 143–153.

Bouwmeester, J., Tys, D. and Theuws, F. 2013 'Reflections on the role of artisan production in urban development in the Low Countries between AD 500-1150', *Medieval and Modern Matters* **4**, 153–61. https://doi.org/10.1484/J.MMM.5.110182

Bouwmeester, J., Van Leeuwen, J. and Oudhof, J.W. 2020 'Verwachtingen op stadse gronden. Een zoektocht naar methoden voor het opstellen van archeologische verwachtingen voor de ommelanden van de historische stad' in J. Bazelmans, E. Beukers, O. Brinkkemper, I.M.M. van der Jagt, E. Rensink, B.I. Smit & M. Walrecht (eds) *Tot op het bot onderzocht. Essays ter ere van archeozoöloog Roel Lauwerier*, Amersfoort: Rijksdienst voor het Cultureel Erfgoed. 293–307.

Cleijne, I.J., Huijbers, A.M.J.H., Brand, A.D. and Gruben, R.J.W.M. 2017 *Huizenbouw en percelering in de late middeleeuwen en nieuwe tijd*, Nederlandse Archeologische Rapporten **59**, Amersfoort. https://www.cultureelerfgoed.nl/publicaties/publicaties/2017/01/01/huizenbouw-en-percelering-in-de-late-middeleeuwen-en-nieuwe-tijd

de Vries, J. 1984 *European Urbanization. 1500-1800*, London: Methuen & Co.

den Braven, A., Fermin, B. and Groothedde, M. 2008 *Van achtertuin tot achterbuurt. Archeologisch en historisch onderzoek aan de Wanne - Lievenheersteeg te Zutphen*, Zutphense Archeologische Publicaties **35**. https://doi.org/10.17026/dans-x5f-7fwy

Fehring, G.P. 1996 *Stadtarchäologie in Deutschland, Sonderheft 1996 der Zeitschrift Archäologie in Deutschland*, Stuttgart: Theiss.

Fischer, A.D., van Londen, H., Blonk-van den Bercken, A.L., Visser, R.M. and Renes, J. 2021 *Urban farming and ruralisation in the Netherlands (1250 up to the nineteenth century), unravelling farming practice and the use of (open) space by synthesising archaeological reports using text mining*, Nederlandse Archeologische Rapporten **68**, Amersfoort. https://www.cultureelerfgoed.nl/publicaties/publicaties/2021/01/01/urban-farming-and-ruralisation-in-the-netherlands

Groenendijk, M. 2021a 'Archaeology-friendly building in a city centre: mission achieved or mission impossible?' in P. Belford and J. Bouwmeester (eds) *Managing Archaeology in Dynamic Urban Centres*, Leiden: Sidestone. 69–76.

Groenendijk, M. 2021b *Piles in the Picture. A study of the Physical Disturbance and Archaeological Information Loss Caused by Piling Through Archaeological Sites and Features, Based on Photographs*, Amsterdam: Vrije Universiteit Amsterdam.

Groothedde, M. 2013 *Een vorstelijke palts te Zutphen? Macht en prestige op en rond het plein 's-Gravenhof van de Karolingische tijd tot aan de stadsrechtverlening*, Thesis: Leiden University. https://scholarlypublications.universiteitleiden.nl/handle/1887/20532

Heighway, C. (ed) 1972 *The Erosion of History. Archaeology and Planning in Towns. A Study of Historic Towns Affected by Modern Development in England, Wales and Scotland*, Lincoln: Council for British Archaeology.

Jayasena, R. 2019 *Graaf en modderwerk: Een archeologische stadsgeschiedenis van Amsterdam*, Thesis: Universiteit van Amsterdam. https://hdl.handle.net/11245.1/459d4b61-b67d-4660-afbb-2be9fdb6049e

Lourens, P. and Lucassen, J. 1997 *Inwonertallen van Nederlandse steden ca. 1300-1800*, Amsterdam: Nederlandsch Economisch-Historisch Archief.

Magendans, J.R. and Poldermans, J.M. 1985 'Enkele recente ontwikkelingen vijf jaar na het verschijnen van "Het Bodemarchief Bedreigd"', *Westerheem* **34**(2/3), 48-63.

Rutte, R. and Abrahamse, J.E. 2016 *Atlas of the Dutch Urban Landscape: A Millennium of Spatial Development*, Bussum: Toth.

Rutte, R. and Vannieuwenhuyze, B. 2018 *Stedenatlas Jacob van Deventer. 226 plattegronden uit 1545-1575- Schakels tussen verleden en heden*, Bussum: Thoth.

Sarfatij, H. 1990 *Verborgen Steden. Stadarcheologie in Nederland*, Amsterdam: Meulenhoff.

Schrickx, C. 2015 *Bethlehem in de Bangert: een historische en archeologische studie naar de ontwikkeling van een vrouwenklooster onder de Orde van het Heilig Kruis in het buitengebied van Hoorn (1475-1572)*, Thesis: Leiden University. https://hdl.handle.net/1887/33034

Stolk, M. 2022 *The Archaeology of Vlooienburg: Materiality and Daily Life in Multicultural Amsterdam, 1600-1800*, Thesis: Universiteit Amsterdam. https://hdl.handle.net/11245.1/cf8249ed-e887-4e9f-9dae-ba7b4ed43c09

Storey, G.R. 1997 'The population of ancient Rome', *Antiquity* **71**, 966–78. https://doi.org/10.1017/S0003598X00085859

van Es, W.A., Poldermans, J.M., Sarfatij, H. and Sparreboom, J. 1982 *Het bodemarchief bedreigd - archeologie en planologie in de binnensteden van Nederland*, Amersfoort: Rijksdienst voor het Oudheidkundig Bodemonderzoek.

van Oosten, R. 2014 *De stad, het vuil en de Beerput. Een archeologisch-historische studie naar de opkomst, verbreiding en neergang van de beerput in stedelijke context (13de tot 18de eeuw)*, Thesis: Rijksuniversiteit Groningen. https://hdl.handle.net/11370/0e2bb316-5439-4d0b-b3c4-ab994b7fb2b1

Willems, W.J.H. 1997 'Archaeological heritage management in the Netherlands: past, present and future' in W.J.H. Willems, H. Kars and D.P. Hallewas (eds) *Archaeological Heritage Management in the Netherlands: Fifty Years State Service for Archaeological Investigations*, Amersfoort: Rijksdienst voor het Oudheidkundig Bodemonderzoek. 3–34.