Cemeteries and urban form: a historico-geographical approach

Thomas Kolnberger

Identités. Politiques, Sociétés, Espaces (IPSE), Université du Luxembourg, Campus Belval, Maison des Sciences Humaines, 11, Port des Sciences, L-4366 Esch/Alzette, Luxembourg. E-mail: thomas.kolnberger@uni.lu

Abstract. *Research in urban morphology rarely takes account of the specific forms of burial grounds. This paper offers a synthesis of how Christian cities of the dead mirror the cities of the living, and provides an overview of different Western European 'funeral epochs'. The shifting location of burial grounds relates to major changes in town planning and building. Adopting a historico-geographical approach, micro-morphological transformations of grave-plot forms and their cardinal orientations and accessibility are explored in the context of changing religious beliefs, rules on hygiene, and practical and aesthetic considerations. The role of cemeteries in fringe-belt development is presented, using Vienna as a historical case study.*

Keywords: cemetery, churchyard, urban form, funeral epochs, fringe-belt concept

Cemeteries are virtually absent from the study of urban form. Yet the spatial order of grave fields, graveyards, churchyards, cemeteries and other burial grounds plays a central role in any archaeological analysis, because in one way or another it reflects the settlements of the living (Rugg, 2000). The necropolis or 'necrodeme', as its smaller but more numerous rural version might be called, is also an understudied element. The keyword index of this journal does not list cemeteries or graveyards. Although the range of research and the scope of the literature are large, the pertinence of this literature for urban morphology is either low or not immediately obvious. This paper draws attention to the morphological importance of the disposal of human remains.

Walpole (2003) offers an architectural *longue-durée* perspective on cemeteries in the West covering various epochs. The volume edited by Classen (2016) on *Death in the Middle Ages and Early Modern times* shows

that this time-span can be seen as a single period despite the considerable shifts and regional changes. Tarlow and Nilson-Stutz (2013) provide a handbook of the archaeology of death and burial (cf. Parker Pearson, 1999). Laqueur (2015) provides a cultural/social history of Anglo-American burial practices tracing them back to Roman times; Sörries (2011) and Fischer (1996) do the same for Germany. Illi (1992) analyses the 'churchyard' in preindustrial towns in depth, focusing on Switzerland in medieval and early-modern times. Rugg (2013) concentrates on the transition to modern cemeteries in rural England. Bertrand and Carol (2016) bring together a collection of essays on the origins of modern cemeteries with a particular focus on Romance-speaking Europe.

In contrast, this paper proposes a 'town-plan analysis' of past and present burial grounds based on an extensive literary review and on the author's own surveys of sepulchral

artefacts, grave plots, land use and location. While the author's main area of expertise is continental north-west Europe, examples from other areas heavily influenced by Roman Catholic and Protestant traditions are also considered. Based on the case of Vienna, the fringe-belt concept is employed to investigate the relationship of cemeteries to the historico-geographical pattern of urban form.

An outline of various topographical locations and burial ground patterns is the basis for distinguishing four sepulchral 'epochs': (1) classical antiquity and early Christianity, (2) medieval and early-modern times, (3) modern times, and (4) recent times (since the 1970s). A detailed account of regional variations is not provided in this paper, although these might prove important and revealing (see, for example, Danforth, 1982; De Pina-Cabral, 1986). The aim is to outline the general historical evolution of associated architectural features, town plans and cemetery planning, particularly in relation to the development of historical patterns of fringe belts (Conzen, 2009).

Each sepulchral epoch is characterized as an 'ideal model' comprising the various features and material elements of the phenotypes of burial grounds. Historical examples are presented: first, to explain the location of burial grounds within the urban tissue; and secondly, to focus on the plot forms.

Classical antiquity and early Christianity

Classical antiquity

In classical antiquity, the burial ground was situated outside a walled city or an unfortified settlement, such as an unplanned Roman provincial town. Individual grave sites lined the main access routes to these settlements. The closer to the main gates in the wall, the better for the plot owners, as the graves in the first row were regarded as the most prestigious. Other preferred burial sites were on higher ground or providing a panoramic view. The visibility of the sites to passers-by and the frequency with which they were visited were deemed social assets. The Kerameikos of Athens, with its numerous funerary sculptures

erected on either side of the sacred road out of the city towards Eleusis, and the graves situated alongside the Appian Way, one of the earliest and strategically most important Roman roads, are two well-known examples. The pattern of land use (grave plots, access paths, paved passageways and well-trodden trails) emerged spontaneously and irregularly. Enlargements were made to the existing burial sites when required (Toynbee, 1971).

The first row of graves was loosely aligned, in chronological order, along the main transport routes out of the town. The second, third and further rows of graves behind the original row formed a more jagged line. The grave sites of people of lower social status, squeezed in between the towering burial markers of rich and important people, underlined their precarious existence.

Besides this type of development, there were also highly individualized grave sites, but mostly in rural areas. Large-scale funeral monuments linked to Roman countryside villas (*villae rusticae*) were landmarks displaying the wealth and success of the owner's family. The 'Igel Column', close to *Augusta Treverorum* (Trier in present-day Germany) is such a monument type (Mehl, 1997). The anonymous and invisible burial places of the poor – mass graves outside the city perimeter revealed by archaeological evidence – are the converse of these highly individualized graves (McCormick, 2015).

The sprawl of multi-shaped micro-enclosures, called 'funeral gardens', comprising several graves of an extended family, also influenced the irregular layout of grave sites. Funeral practices – including cremation with urns for the ashes and interment of the corpse with grave goods – contributed to the heterogeneity of the 'deathscapes'. Body interment became the socio-religious standard of Christianity. While Muslims had introduced quite early the *qibla*, the common cardinal direction (Halevi, 2007), Christian 'orientation' to the east, facing the rising sun, resurrection and the Last Judgement, was less strict. Graves could be aligned to church walls or 'point' to something important, even beyond the churchyard (Boissavit-Camus and Zadora-Rio, 1996;
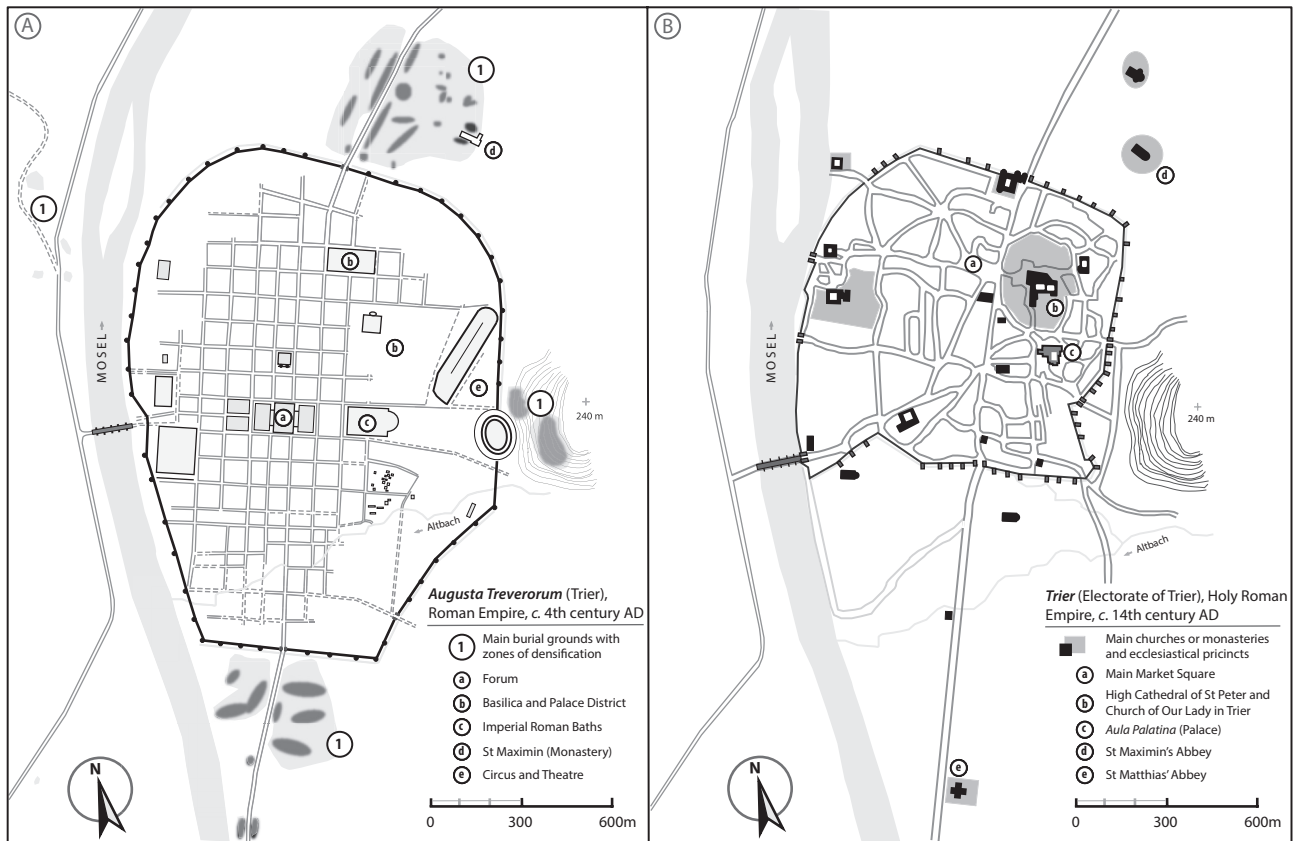
Figure 1. (A) Late Antique Trier (*Augusta Treverorum*) and the location of the main burial grounds in front of the main gates at the ends of the intra- and inter-urban main thoroughfares (*decumanus* and *cardo*); (B) Trier as the seat of a prince-bishop in the late-medieval period. Source: *Deutscher Historischer Städteatlas* (2006) and Maps of the Rheinisches Landesmuseum Trier (GDKE) (adapted by the author).

Rahtz, 1978, pp. 1–3; Schmitz-Esser, 2016, pp. 57–63). Graveyard and religious building, usually the parish church, formed one unit: they constituted 'morphotopes, or the smallest building group of distinctive period mixture or period dominance' (Whitehand, 2009, p. 9). Such units within a Christian town are very different from arrangements associated with Muslim or Jewish building traditions. In Christianity, older burial grounds – in contrast to the Muslim custom – continued to be reused, which resulted in burial sedimentation and archaeological strata. Deceased Romans were granted eternal rest as long as the site was maintained. If not, much needed construction material was taken from the burial sites as '*spoliae*' (repurposed parts) to build the city of the living.

Early Christianity

In the fourth century, Trier was one of the largest cities in the Roman Empire and a residence of the western Roman Emperor (Figure 1A). This metropolis and its minor urban satellites, such as *Belginum* (Figure 2) are archaeological documents of the continuity and change from Celtic (*Belgae* and *Treveri*) to Roman and Romanized or early-Christian funeral practices. All these burial sites form a striking contrast to the planned (or rectified) rectangular grid of Greek-Hellenistic or Gallo-Roman urban forms. This was no coincidence: the area of the living remained strictly separated from the dead. Only commemoration could bridge this '*limes*' by bringing offerings to the burial place outside the city or by placing them on
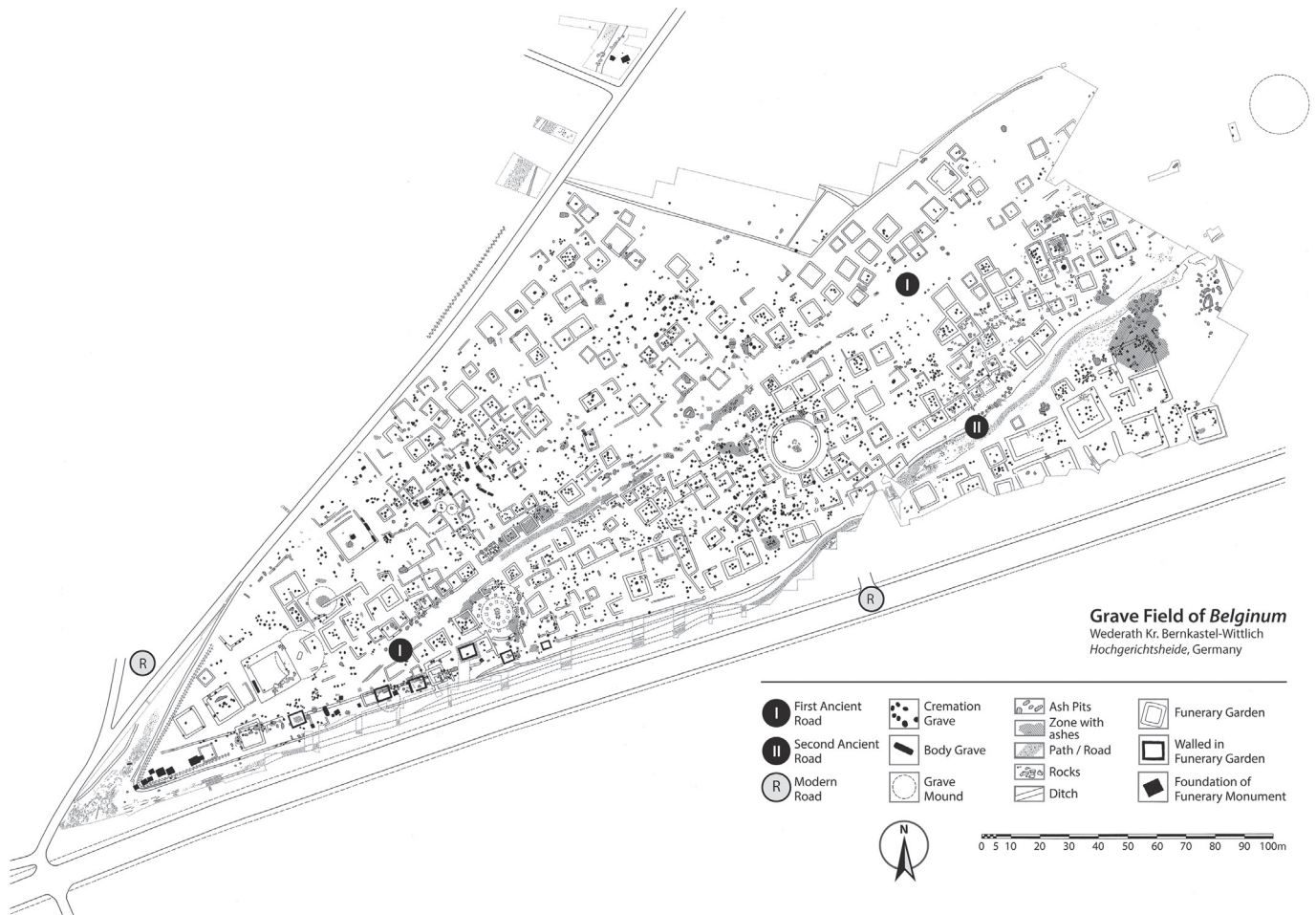
Figure 2. The grave field of the *vicus* 'Belginum' between Trier and Mayence (Germany): in use from the 4th century BC to the end of the 4th century AD. The courses of two minor ancient roads, which ran parallel to the main route, are still discernible. Reproduced and modified from Cordie (2013) by F. Dewald, Rheinisches Landesmuseum Trier (GDKE).

the altar of a house as a sign of veneration of the dead. The Christian Roman Emperor Justinian I, who reigned from 527 to 565, renewed the interdict against intramural burials for the last time, but 'by the eighth century, the ancient necrogeography had been overthrown in most of Europe' (Laqueur, 2015, p. 94).

Medieval and early-modern times

While Roman settlements continued, a new urban form was emerging in the early-medieval period, a transition that the new Christian necrogeography influenced decisively in several ways. First, being buried as

closely as possible to the grave of a Christian martyr (*ad sanctos*, 'to the saints') became the preferred grave site for any Christian. Owing to the official ban against intra-urban graves in late-Roman and early-Christian times, the most prestigious burial grounds were still situated outside the city, like the catacombs of Rome. Later, monastic brotherhoods, who built their churches over the tombs of saints, usually managed these places (compare Figures 1A and 1B). The 'new' Romans erected St Peter's Basilica, the sepulchre church of the martyred apostle and 'first bishop of Rome'. It became the global centre of the Catholic faith and political power. Feudal Europe's new lords also recognized the need for a personal

saint to buttress their rule ideologically and to ensure the fate of their souls after death. They therefore founded major churches and privileged monasteries, and acquired relics to attract pilgrims and simultaneously serve as the location of their dynastic intra-church sepulchres (Bartlett, 2013).

Change within old Roman settlements meant that the new urban cores deviated from the old centre, the *forum*. Consequently, major towns, such as Cologne, Reims, Trier and London, became to some extent the 'ex-centric' form of the old *decumanus* and *cardo* grid. In some cases, the centre of settlements even 'moved out' and 'encroached' on the new burial sites in front of the former city gates, as in Trier and Vienna. There are also examples of complete relocations followed by renamings. The medieval town of St Albans, north-west of London, grew on the hill outside the Roman city (*Verulamium*) where it was believed that the first British saint was buried. The new town centre of Xanten on the Rhine in Germany was built on the grounds of an old Roman cemetery. The close-by ruins of the Roman settlement (*Colonia Ulpia Traiana*) served as the quarry for the new Christian town around the convent of St Victor, which changed its name literally to 'place of saints' (or *ze Santen* from *ad Sanctum*). The saints could pass these centuries-old thresholds and enter the city, either as relics or through a glorious secondary burial. The common dead – like pilgrims – followed the saints into the heart of the settlement. The development of the 'churchyard' as the common burial site throughout the Christian world characterizes the second major change.

The medieval period

A 'churchyard' is an enclosed area of land adjoining or surrounding a church or chapel and used as a town or village graveyard (German *Kirchhof*, French *aître*/*cimetière*). Churchyards took a round or polygonal form as they were not restricted by neighbouring structures or other 'morphological frames', such as pre-existing enclosures, fields or

pre-Christian precincts (temple districts). In 1059, Pope Nicolaus II stipulated that the perimeters of consecration comprised 30 yards around chapels and 60 yards around churches (Schmitz-Esser, 2016, p. 33). These boundaries had to be fenced or walled to guard the holy district of the dead from the sinful world outside. God's acres usually had no predefined paths, except for the one leading to the church's main entrance. At a smaller radius, a circular way featuring the Stations of the Cross could lead around the place of worship (Figure 3). A place for excavated bones or those found in the yard within the enclosure was, however, mandatory after the synods of Munster and Cologne in 1279–80. Depending on the circumstance, the actual eternal depository for mortal remains could be a simple niche or an intricately designed ossuary or charnel house. A single high cross and an eternal light sometimes completed the site (Lauwers, 2005; Sörries, 2011; Zadora-Rio, 2003).

Permanent grave markers outside the church building were rare before the nineteenth century and the bourgeois era. While various signs to indicate new graves were in use, these markers were either perishable (wooden crosses, grave mounds) or not meant to be permanently in place, because of the foreseeable secondary burial of the bones. The ordinary dead were instead commemorated by interceding prayers, then by visiting individual graves. Nevertheless, the position of graves in churchyards also indicated rank and order (cf. Parker Pearson, 1999, pp. 1–20). The most sought-after sites were inside the church, closest to the altar. Christian churches of this sepulchral epoch can be described as indoor cemeteries built around the bodies of the 'special dead': relics of saints or the graves of local grandees. Being buried close to the walls or at certain distinct places, such as the main entrance or side chapels, was the next best choice. In general, the south – the sunny side – was the preferred sector and the dead usually faced the east, sunrise being the symbol of resurrection *ad orientem*. Since the churches were oriented towards the true east, the graves were mostly
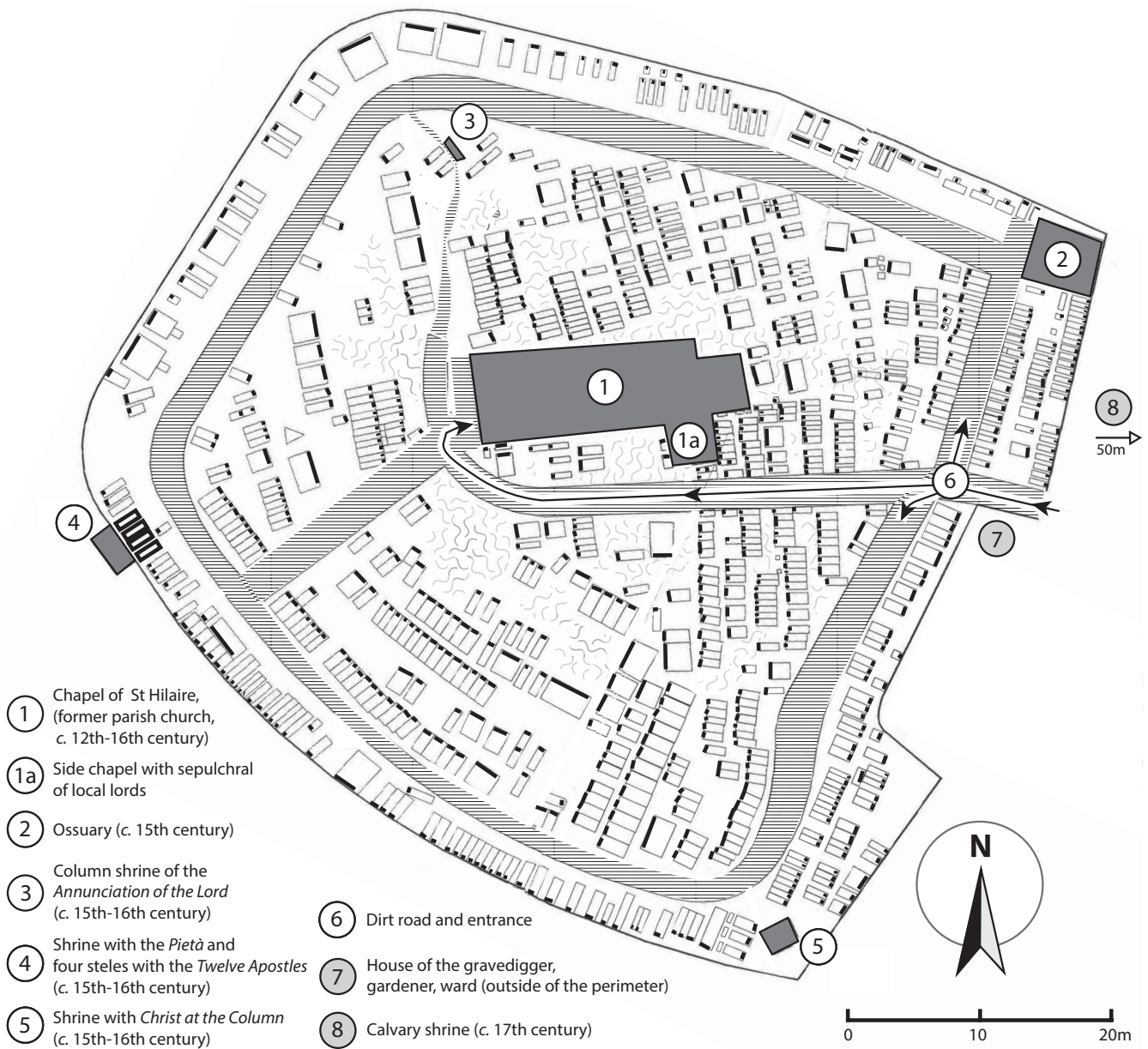
Figure 3. The Saint Hilaire churchyard in Marville, Lorraine. Source: Plan de masse, Municipalité de Marville, France (adapted by the author).

1 — Chapel of St Hilaire, (former parish church, *c.* 12th-16th century)

1a — Side chapel with sepulchral of local lords

2 — Ossuary (*c.* 15th century)

3 — Column shrine of the *Annunciation of the Lord* (*c.* 15th-16th century)

4 — Shrine with the *Pietà* and four steles with the *Twelve Apostles* (*c.* 15th-16th century)

5 — Shrine with *Christ at the Column* (*c.* 15th-16th century)

6 — Dirt road and entrance

7 — House of the gravedigger, gardener, ward (outside of the perimeter)

8 — Calvary shrine (*c.* 17th century)

aligned with the churches, but with considerable variations due to the urban and natural topography (Hoare and Sweet, 2000; Rahtz, 1978). Owing to their rather limited ground for burials, *intra muros* churchyards were crowded. As a 'working landscape', the level of the yard increased over generations due to landfills and the sedimentation of the human 'biomass'. This continued reuse of graves is the reason for older churchyards sometimes

exhibiting an ascending slope towards the building in the centre.

Churchyards served as exclusive consecrated disposal places for Christian communities, but they were also multifunctional places. The entrance area, the *parvis*, served as a place for conventions and political speeches; it was a place where dances and markets were held; it was also used to store goods and its perimeter provided asylum to anyone entering it. In

the countryside, the reinforced walls of forti-fied churches were regarded as the last line of defence for the villager; in a cramped intra-urban situation, the churchyard wall could be integrated into the back of a row of houses: Zurich's *Münsterhof* ('Yard of the Minister'), now a central plaza, is a well-documented example (Illi, 1992; cf. Schneider, 1982).

Early-modern times

St Stephen's, Vienna's fourteenth-century cathedral, was surrounded by the biggest and most famous *Friethof* (literally 'enclosed yard') in the capital before its closure (Figure 4). Today, the square is flat, open, elongated and aligned with the main streets of the *Gründerzeit* (1850–1914), although it was walled and 'hilly' for centuries. The *Fürstenbühel* (literally the 'prince's mound') is one of several artificial elevations from which political speeches were delivered dur-ing the medieval period. While hardly any inner-city churchyards have survived, St Hilaire of Marville in north-east France is one of the few 'necrodemes' or rural grave-yards still maintained and operational today (Figure 3). The urban development of this Burgundian town was practically halted by French annexation in 1659 (Treaty of the Pyrenees). Thus the persistence of the 'urban' form is remarkable. The density zones of the graves – mostly dating back to the eighteenth and early-nineteenth century – illustrate the topography of the preferred burial plots. On the south side, next to the side chapel with its graves of the local seigneurs, and along the access ways to the church building, was featured the annex of the funeral chapel for the most important noble family. Also nota-ble are the sectoral alignments of the tomb-stones, which do not face east, but were placed where the church-goers would see them. The irregular polygon-shape is due to the graveyard's topographical situation on a hilltop.

The archaeological findings of the rural Catholic, later Protestant, churchyard of Breunsdorf near Leipzig, Germany (Figure 5), in use from the twelfth to nineteenth cen-turies, vary in detail. Unlike the St Hilaire Catholic example, the grave plots were moved away from the southern church wall during the sixteenth and seventeenth centuries. The excavated grave plots outside, or at the very edge of, this churchyard's perimeter can be interpreted as the spatial exclusion of poor, marginalized people or those who experi-enced 'social death' as criminals, murderers or suicides. Those who were not deemed to be part of the Christian community, such as unbaptized infants (*Traufkinder*), or not mem-bers of the local community, such as foreign travellers dying in the course of their jour-ney, and other marginal or not 'decent' people were considered special cases. This segrega-tion was general practice until the nineteenth century. From 1840 until the 1950s, the City of Vienna maintained a burial site (unconse-crated until 1935), the so-called 'Friedhof der Namenlosen' ('Graveyard for the people with-out name'), mainly for water-corpses from the Danube. And racial and social segregation in cemeteries of the British Empire continued even into the twentieth century (Christopher, 1995; Murdoch, 2012; cf. Parker Pearson, 1999, pp. 11–17).

Modern times

The 'dawn of modernity' did not put an immediate end to the 'close relationship' or 'cohabitation' of the dead and the living. The French Revolution of 1789 and its aftermath was more of an accelerator of developments already in place, than the ultimate demise of the old 'necroregime' and its deathscapes. Even though the turn of the century may be seen as a time of change in funeral practices, particularly on the European mainland and in the Napoleonic Empire's sphere of influence, this was a transition and not a revolution. Some measures had been anticipated. In Vienna, for example, several intramural churchyards were closed for further burials, such as the central St Stephen's graveyard in 1732. The removal of the single graves followed in 1783 (Brauneis, 1971). The numerous dead buried in one of

Figure 4. St Stephen's Cathedral and surroundings, Vienna (1710). Source: Stadtplan von Steinhausen (1710), Wien Museum, Inv. Nr. 105.500, Austria and a snapshot by Google Maps.

Vienna's many crypts, however, never left the city since they were 'out of sight and out of mind'. The *Cimetière des Innocents*, the oldest, largest and by then also the most infamous graveyard in Paris, was closed in 1780 owing to overcrowding, hygienic and aesthetic reasons, and the growing public awareness of air quality (Corbin, 1982). The remaining corpses were exhumed and transferred to the 'catacombs', the central municipal ersatz ossuary, which was consecrated as a Christian necropolis in 1786 (Métayer, 1993).

Similar measures had been undertaken even earlier due to a lack of practical alternatives.
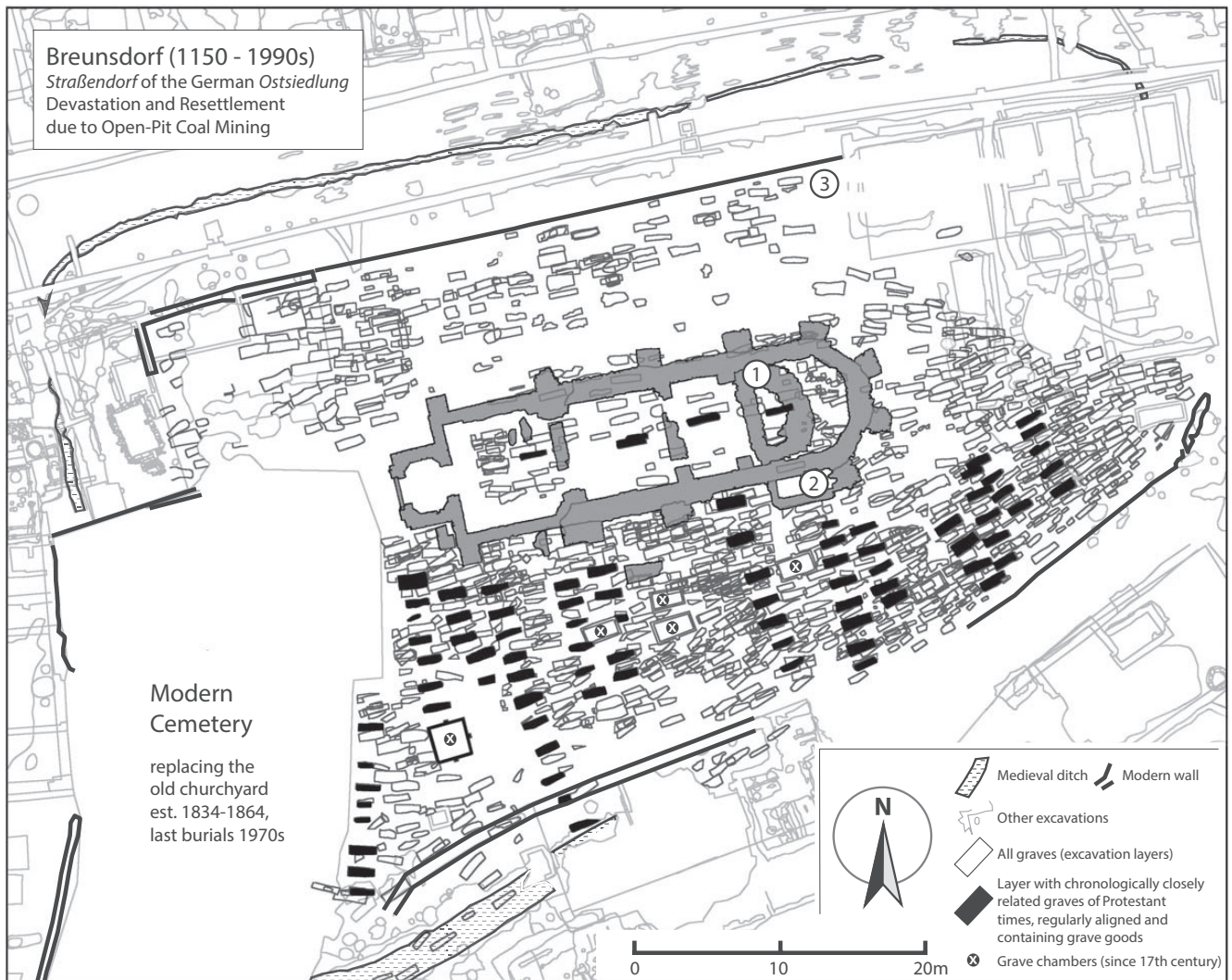
Figure 5. Breunsdorf: necro-archaeology of an abandoned village. (1) The apse of the first Romanesque parish church. The bones collected in the second ossuary (2) during the extension/alteration around 1500 were transferred and deposited in a pit in the eighteenth century during Protestant times (3). Reproduced and modified from Kenzler (2002).

In 1517–18, the plague had ravaged the population of the thriving city of Nuremberg and forced its municipality to close the old inner-city churchyards (Pilz, 1984). The transfer to the suburbs led to the construction of two new graveyards, St Rochus's and St John's, resulting in the perplexing appearance of a 'modern' layout of orderly predefined, albeit slightly irregular, lines of grave plots and individual graves consisting of permanent structures. The fairly straight lines of the plots, their fairly standardized sizes and general orientation (due to regulatory constraints), and the planned accessibility and durable grave markers of the prototypical 'urban' funeral form were important features of the 'modern' cemetery to come. However, Nuremberg's new 'cemeteries' were merely newly established relocations of the old churchyard necroregime, which the parish still administered. Some Protestant communities had to design their burial grounds from scratch and the first generation of graves 'imprinted', that is prefigured, the order of the following ones (Figure 5). The *Camposanto*, a particular form of a cemetery in Central Germany, originated

in the early Reformation years of the sixteenth century (probably inspired by Italian models). It is enclosed by arcades and does not have edifices such as a parish church or ossuary, which unleashed an academic debate on whether its urban form should be viewed as 'pre-modern' and thus a sign of progress (Tietz, 2012).

The new 'necroregime' not only altered the physical form but also the management structures of the burial ground. But this only emerged during the late-eighteenth and nineteenth century. The intensified urbanization, industrialization and increasing urban population forced local municipalities to relocate their old churchyards and turn them into municipal-administered services with a general scheme. The Church had to transfer its authority – or at least its supervision – to the state. Metropolitan areas were at the forefront of this development.

In 1808, the City of Paris entrusted Alexandre-Théodore Brongniart (1739–1813) with the planning of a new type of cemetery. Brongniart, a well-known neoclassical architect and 'general inspector of public works' of the French capital, laid out a new type of burial ground: the first garden cemetery in history. For this 'Eastern Cemetery' (*Cimetière de l'Est*), later better known as *Père Lachaise*, he designed generous avenues, much like the central axes of classical French gardens. Instead of a chateau, the *Grande Chapelle pour les Cérémonies* was placed at the focal point. Tree-lined visual axes connected this central funeral chapel to all corners of the site, while a meandering avenue invited *flâneurs*, male and female urban walkers, to take a stroll around the necropolis (Simmel, 1950; Thomas, 2010). At the beginning of the nineteenth century, however, city streets still lacked a basic urban 'superstructure' such as boulevards, public parks, arcades, cafés, *trottoirs*, while the inevitable accessories for strolls along newly-paved sidewalks, such as walking canes, umbrellas and parasols, were not yet fashionable. The transformation of Paris and the creation of a specific environment for boulevardiers were only realized under Baron Haussmann, Napoleon III's

Prefect of the Seine Department (1853–70). Nevertheless, the rising bourgeoisie regarded this new type of cemetery as an urban promenade and deliberately designed for this purpose (De Saint-Aubin, 1816; Roger, 1816).

Brongniart and Haussmann pursued the same mission: to make the city healthier, less congested and grander (Charlet, 2003; Jordan, 1995). Only their timing and impetus differed slightly: Brongniart's assignment had to conform to the first Napoleonic Empire's new law on cemeteries (called the *23 Prairial an XII* of 1804), which decreed that all those who died had to 'leave' the town centres (Kselman, 1993; Ligou, 1975). In Paris, four large new cemeteries outside the capital's precincts replaced the churches and graveyards of the old regime. In the characteristic fetishism of rational symmetry and order at this revolutionary time, they were built facing north, south, east and west – as in Roman times. Half a century later, Haussmann found the same solution for pressing urban problems, but this time for the living inhabitants in an overcrowded city: a new geometric urban form with broad boulevards bringing light, air, grandeur and infrastructure to the sites. Cemeteries, like any social topography of a living city, also have good and bad, expensive and cheap neighbourhoods. They show signs of segregation between rich and poor – even the 'ghettoization' of religious or ethnic-national groups, such as Protestants or Jews, in their assigned quarters.

The successive extensions of the original *Père Lachaise* cemetery (Figure 6) illustrate that the form of this cemetery mirrors Paris *en miniature*. At the same time, the city of the dead became a strolling ground and recreational area for the living, and, over time, a prime destination for tourists.

After the 'linear sprawl' of the ancient burial ground had given way to the ground plan of 'condensed enclosures' (Figure 7), there was a further change in modern times to the formation of perfectly symmetrical polygons and 'rasterized grave plots' without a church building as a religious focal point. This transition from parish churchyard to municipal cemetery did not occur evenly and smoothly.

Figure 6. The Père Lachaise Cemetery, Paris. Source: Original Plan of Brongniart, *Plan du cimetière de l'Est, dit du Père-Lachaise ou Mont-Louis … 1813***, BNF (Bibliothèque National de France, Paris). 1 – The Main Entrance; 2 – The original Jewish Enclosure; 3 and 4 – The new Jewish and Muslim Section (***carré***) until its dissolution by the 'Law of 14th November 1881' (***sur la neutralité des cimetières***), which prohibited any further segregation of religious denominations in French cemeteries. The former** *cimetière Israelite* **became the site of the first French crematorium. All the 'celebrity graves' (159 on this map) are within the old perimeter (dashed line added by the author) and southern extensions. 5 – the perspective and direction of Figure 7.**

Figure 7. A common Père Lachaise 'neighbourhood'. The municipal regulation defines the form, dimension and material of the built-up area, and the duration of use. The most expensive graves are in the front rows of the avenues and on the 'hills', with their curving lanes, and along the cobbled streets of the 'upper-class' under the trees.

For example, after the fall of Napoleon, the 'progressive' Netherlands reversed the ban on intra-church entombment. Until 1865, Amsterdam citizens could again be buried within the confines of the *Oude Kerk*, literally the oldest church in the city. The floor consists entirely of gravestones covering the burial place of more than 10 000 people (Janse, 2004). In an urban and suburban context, this specific persistence was an exception to the rule, while the 'rural form' of churchyards in the countryside remained the standard structure until the end of the nineteenth century.

Protestant, Orthodox, Catholic and Jewish ways of treating human remains and their final 'disposal' practices might have diverged in the past, but showed some degree of convergence again in 'modern' layouts and infrastructure. In terms of cemetery management and the implementation of private-ownership models, England, with its dominant municipal types of cemeteries, took a different path from continental Europe (Rugg, 2013). On the continent, the non-capitalistic, state-sponsored common-good version of cemeteries prevailed. Privately run cemeteries are a very recent development.

To summarize this 'sepulchral period', after the French Revolution modern cemeteries became a showpiece of progress and the new urban life-style in metropolitan areas throughout Europe and Europeanized areas overseas. However, there was a clear urban-rural divide until well into the nineteenth century. Over-population and new standards of hygiene were the two main drivers of change. A lack of available funds, a conservative outlook and less pressing problems of population density slowed the rural transition (Bertrand and Carol, 2016). In many cases the partial transformation of inner cemetery organization was sufficient to keep the churchyard in its old place. In most cases churchyards were closed and relocated into urban fringe belts.

Recent times

The 'revival' of modern cremation and the increase in cremation rates have been the single most important influence on the form of cemeteries since the Second World War. Cremations led to new forms of burial, such as columbaria in different designs and meadows to scatter ashes, which were simply added to the traditional cemeteries. In addition, new cemeteries have been created in woodlands, called *Friedwälder* (literally, 'forests of peace') or *jardins de souvenirs*, where ashes can be buried in a 'natural' environment for ecological and philosophical reasons (Davies and Mates, 2005; Kolnberger, 2017). When the primary Christian churchyard became disassociated from the ecclesiastical building, the bodily remains of the dead often became completely 'displaced' from the cemetery. At the same time, such sites of commemoration as roadside shrines and R.I.P. murals became increasingly popular, 'dissolving commemorative boundaries in a liquid world' (Sloan, 2018, p. 195). The concurrent 'hyper-individualism' (Augé, 1992) has been accompanied by increased personal choice in sepulchral matters. The disconnection of place, burial and commemoration has also been driven by the rise of technology, bordering on the futuristic: for example, cryonics, vitrification, and ashes processed as diamonds. The beginning of these developments coincided with the changes to the allocation of the burial places (cf. Maddrell and Sidaway, 2010).

Generally, the transfer of cemeteries into the second fringe belt of Euro-American cities (cf. Figure 8) not only allowed larger public burial plots, but also transformed the 'traditional' grave-plot organization and enabled the creation of new urban landscape components, such as the *Waldfriedhof* or the 'return of the dead to the city' (as ashes in urns). The built-up area of cemeteries, was, of course, subject to changes in design fashion. This was to a much lesser degree also true of the plots and the general layout. Nevertheless, the 'anti-landscaping' idea of the *Waldfriedhof*, conceived in Munich by Hans Grässel, pioneered the breaking up of the gridiron of rasterized grave plots in a new way. Inaugurated in 1907, this new type of municipal cemetery was meant to 'lead back to nature' and the grave plots were to be 'sprinkled' in a loose regulatory order throughout a woodland, albeit with very strict design templates for the gravemarkers (Grässel, 1913; Leisner and Neumann, 1996) to safeguard the *Gesamtkunstwerk*. The Munich example inspired *Skogskyrkogåden*, the well-known 'Woodland Cemetery' in Stockholm (first developed in 1917), but features far more landscaping efforts and built-up areas (Walpole, 2003). The 'biggest rural cemetery' in Ohlsdorf (389 ha), established in 1877 as a non-denominational and multi-regional burial ground for the city of Hamburg, is another example of an interpretation of the park cemetery as a secluded Arcadian retreat. This proved to be a trendsetter in large urban agglomerations, but less so in rural areas. Many urban cemeteries also resisted this trend. For example, Vienna's Central Cemetery of 250 ha, inaugurated in 1874, is not laid out as an English-style garden, but in accordance with 'French' landscaping ideals of symmetry.

Cemeteries as elements in urban fringe belts

It is a paradox that cemeteries are a neglected aspect of urban morphology despite the fact that they are prominent features of fringe belts. Fringe belts have come into existence as zones of extensive, heterogeneous land use at the edge of built-up areas (Conzen, 1960; Louis, 1936). They tend to form when the outward spread of an urban built-up area is very slow (Conzen, 2009; Whitehand, 1967). During rapid urban expansion they become embedded within the densely built-up area. Unless associated with a fixation line, such as a city wall, such belts are generally discontinuous (Whitehand and Morton, 2006, p. 2049).

In 2017 the City of Vienna (a city of 1.9 million inhabitants) administered 46 cemeteries – not taking into account nine burial grounds administered by religious communities (three
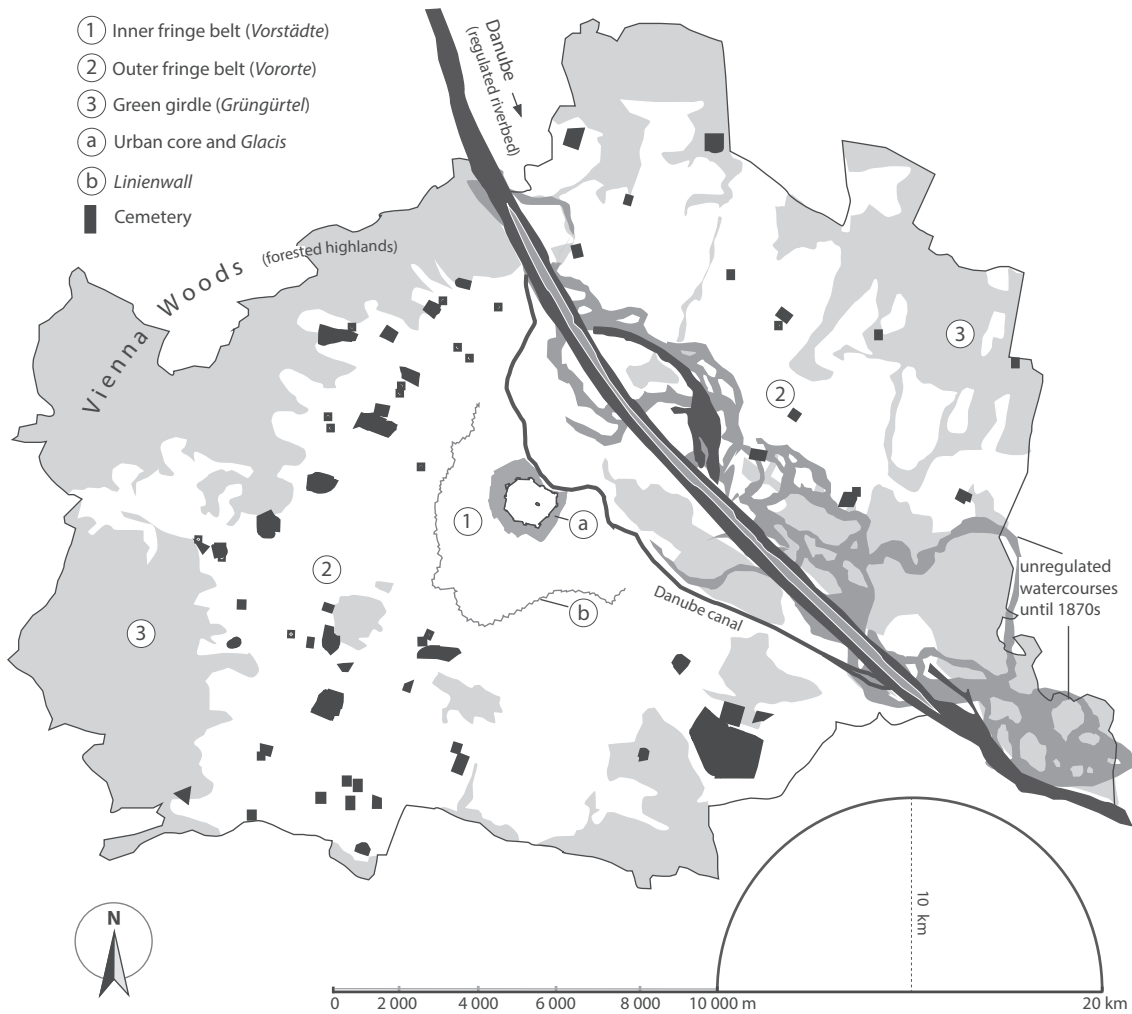
Figure 8. Historical fringe belts of Vienna and surface areas of Vienna's 'living' cemeteries (2017) within the second urban fringe belt. Source: author's mapping based on Google Earth and the municipality-owned company Friedhöfe Wien GmbH.

Catholic, three Jewish, two Protestant, and one Islamic), pet cemeteries and old abandoned graveyards. In total the surfaces of all 'living' burial sites amount to 5.2 km² (cf. Czeike, 1992–2004; Friedhöfe Wien, 2017). All are located in the 'second' historical fringe belt of the metropolis. Vienna's series of fringe belts from medieval times to the industrial and post-industrial age is related to two natural and two administrative-military fixation lines – on the one hand the Danube and the Vienna Woods and on the other the early-modern military fortification (1529–1858) and the outer defensive line of lighter fortifications of the *Linienwall* (1704–1894)

(Figure 8). The transfer of the burial places from the intramural churchyards into the 'second' periphery took place in two steps. To create space for victims of epidemics and to relieve pressure on the inner-city churchyards of Vienna, the emperors Ferdinand I and Maximilian II initiated the construction of burial sites outside the city walls. After the devastation of Vienna in 1529 during the first siege by the Ottomans, graveyards were constructed on former monastery grounds, close to major town gates north-west and south-east of the urban core. Maximilian's *Großer kaiserlicher Gottesacker vor dem Schottentor* ('Grand imperial God's acre beyond the *Gate*
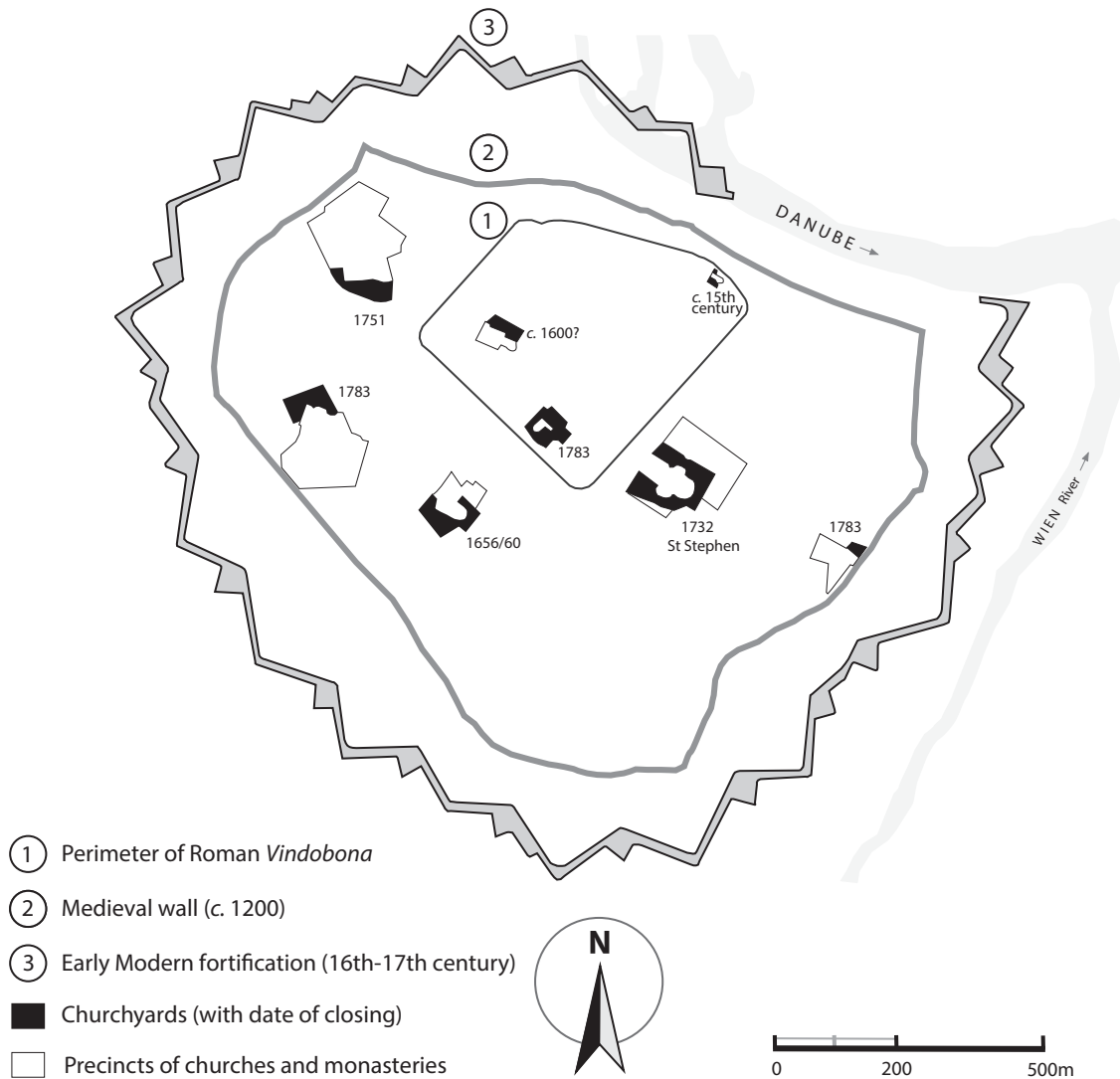
Figure 9. Churchyards of the Old Town (with dates of conveyance) within the Roman and medieval walls of Vienna. Source: based on *Österreichischer Städteatlas* (www.mapire.eu/ oesterreichischer-staedteatlas/wien).

of the Scots') of 1561 remained without a parish church (Figures 9 and 10). It was divided into Catholic and Protestant parts. The regularly patterned site and its series of extensions in the agricultural belt of Vienna shaped the growing suburb (*Alservorstadt*) in several ways (Senfelder, 1902). This 'proto-modern' cemetery was an extra-large plot in Vienna's first fringe belt. The general infrastructure of this fringe belt attracted the building and influenced the alignments of further health, social and welfare establishments – notably hospitals and almshouses – all of them with large space

requirements and having their own institutional cemeteries (five in total). After the second Ottoman siege of 1683, the military also moved in: Habsburg standing armies began to occupy ever larger parts of the first, and later the second, fringe belt. This agglomeration of large plots took place in the context of traditional *rural* property relationships within a sprawling 'row village' and its agricultural plot forms. The cellular street pattern of irregular block development (*Blockrandbebauung*) of the nineteenth-century city expansion was the consequence of this initial imprint. The
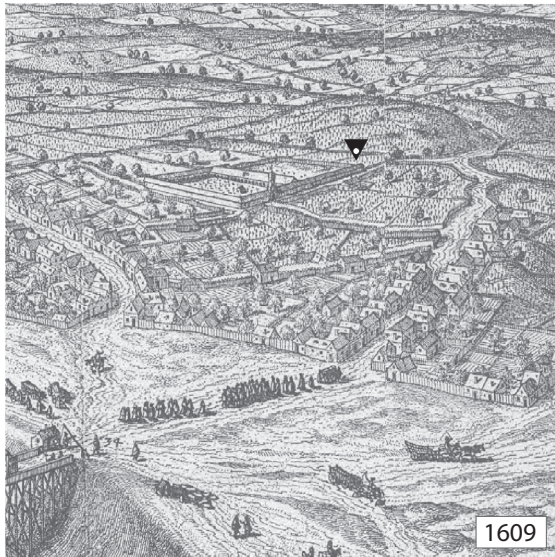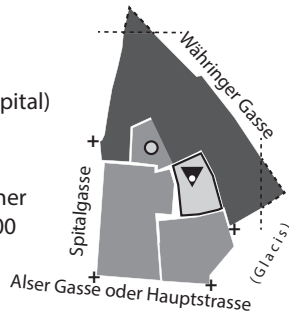
1609

Detail of a bird's view of Vienna

▽ The God's acre/cemetery

N

1771
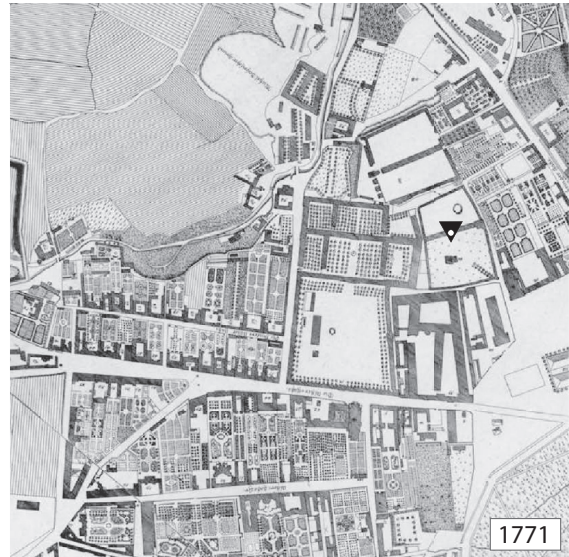
1609 - 1830
Agglomeration

■ Military (barracks, hospital)

■ Civil (hospitals etc.)

○ Location of three further graveyards until *c.* 1800

+ Reference points

Währinger Gasse

Spitalgasse

(Glacis)

Alser Gasse oder Hauptstrasse

1830

1960s - 2000s
Transformation and Expansion

■ New General Hospital

■ New University Campus

+ Reference points

Spitalgasse
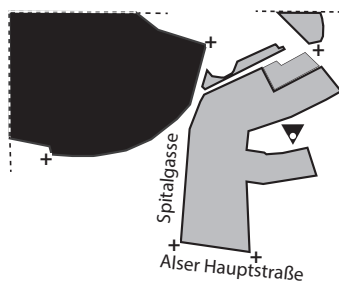
Alser Hauptstraße

N

0   200   500m

2015

Figure 10. Emperor Maximilian's 'God's acre' in 1608 and the suburb *Alsergrund* in transition (1609 – 1770 – 1830 – 2015). Principal sources: *Vogelschau von Wien* (by Jakob Hoefnagel, Vienna, 1609); Grundriß der k.k. Residenzstadt Wien, ihrer Vorstädte und der anstoßenden Orte, auf allerhöchsten Befehl unter der Direction des Hofmathematici Jos. Nagel, aufgenommen von den Ingenieurs Jos. Neußner und Carl Braun im J. 1770 und einigen darauf gefolgten Jahren. 16 Bl. verschiedener Größe in 1/2880; K.K. Polizey-Bezirk Alservorstadt (by Count Vasquez, Vienna, 1830); Google Earth (2017).
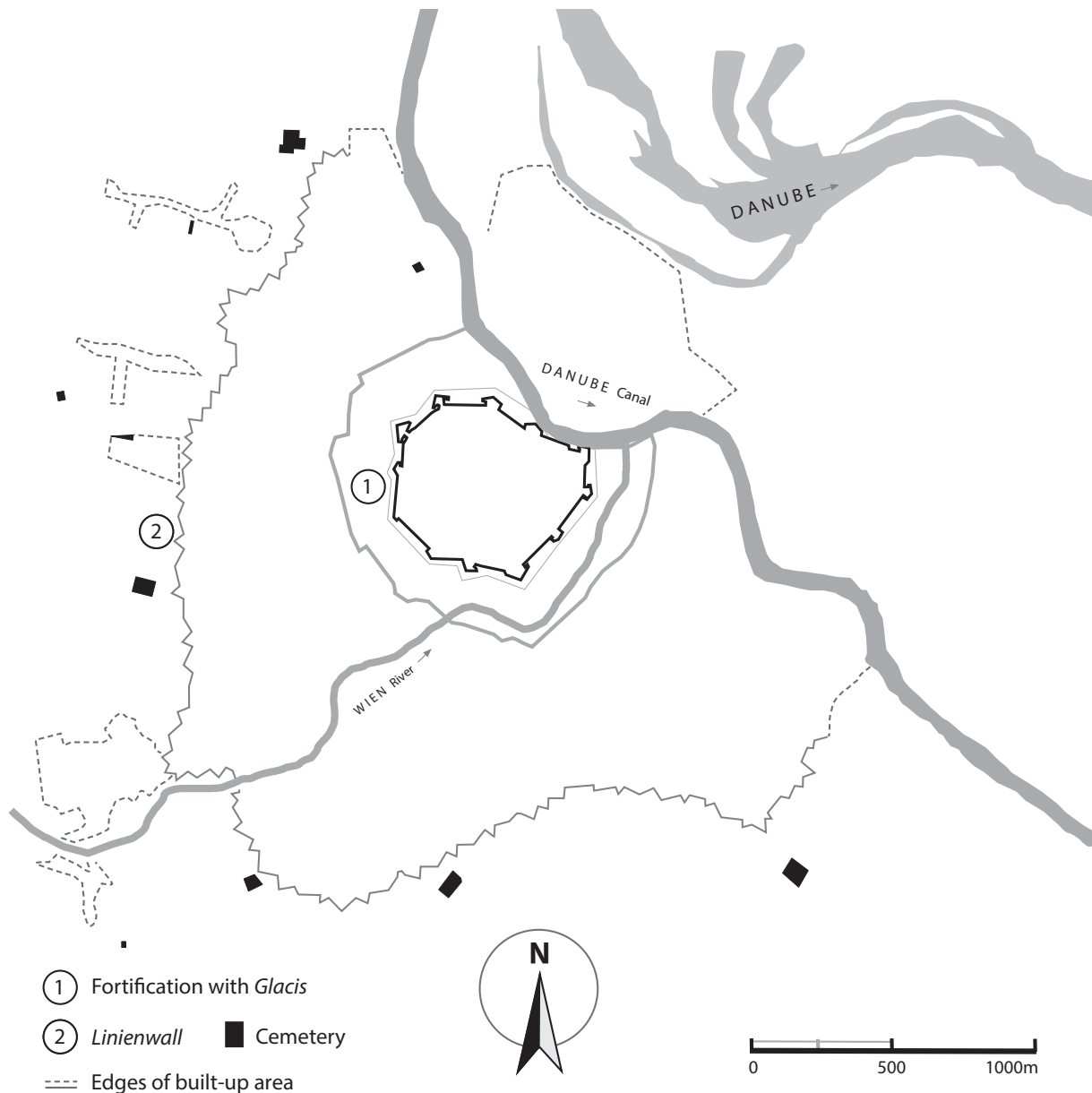
Figure 11. Cemeteries beyond the 'Linien' (1830). Source: based on *Österreichischer Städteatlas* (www.mapire.eu/oesterreichischer-staedteatlas/wien).

difference between Maximilian's foundation and Ferdinand's more traditional parish cemetery *Nikolaifriedhof* (plot assigned 1540/63) in the south-east is striking. The latter remained embedded in the central part of the linear suburb called *Landstraße* – literally 'country road' – at the fork of the two main roads. After the cemetery was closed in 1786, this large plot was transformed into a new market square. The old parish church and cemetery

were cleared without leaving any significant morphological imprint on the neighbouring plots (Krause *et al*., 2013).

The second phase of converting existing fringe-belt plots in the cycle of adaption and redevelopment of burial places was of a different nature. By order of Emperor Joseph II inner city and suburban churchyards had to be closed after 1784. In replacement, five *communale Friedhöfe* ('municipal cemeteries')

leap-frogged beyond the so called *Linien* ('lines') into the outer (or second) fringe belt. The older western part gained the shape of a crescent (Figures 9 and 11). The church-yards of the *Vororte*, independent small com-munities in the farther periphery of Vienna's second belt, also had to be relocated. As in other villages and towns during the reign of Joseph II, the top-down approach adopted was opposed. It initially met fierce resistance in some places. Gradually, however, the towns and villages moved their burial grounds out of the settled areas into their own 'micro fringe belts'. Indeed Vienna has one big historical city core, but also many smaller '*Stadtkerne'*. Therefore, the expansion of the second fringe belt was not a simple outward move and incorporation of the periphery by the centre. A parallel 'centrifugal' outward move of many local micro fringe belts can also be observed. This contributed to the city's polycen-tric character (cf. Fassmann *et al*., 2009). Cemeteries are the morphological 'index fos-sil' for that development in the outer fringe belt.

In summary, it can be said that in the Old Town, churchyards and churches had been inseparable for centuries. The closing of these burial sites created open space or room for extension of buildings or alignment and wid-ening of streets in the neighbourhood. In gen-eral, this functional disintegration led to the disappearance of graveyard plots from the ground plan. In the nested hierarchy of units, therefore, inner urban churchyards became 'weak' urban elements.

The second fringe belt gave birth to the modern cemetery. The discontinuous settle-ment band of suburbs (*Vororte*) offered the necessary space for the relocation of the par-ish church from its traditional burial site and the separation of the graveyard from the resi-dential area. However, owing to their original rectangular imprint on the town quarter, these big plots remained. In the case of a closure, these areas, usually owned by the municipal-ity, were either transformed into green space (in eight cases in Vienna) or built over for use as public buildings or other municipal infra-structure (Lichtenberger, 1977).

Conclusion

The places for the dead are an integral part of any human settlement. They are involved in – sometimes even the driver of – their formation and transformation. This aspect is particularly interesting for a cross-cultural comparison. The spatial 'intimacy' of Christians with their dead differs from the Islamic, Hindu and Buddhist traditions of dealing with the loca-tion of burial sites. The colonial European context was also revealing when Christian burial sites were exported overseas, giving rise to contrasting indigenous and colonial burial arrangements. Within the 'Christian world', regional differences, including in the timing of change if any, are evident. The sepulchral history of the British Isles is – in many details – different from that of con-tinental Europe. Europe from the Catholic Peninsula to the Orthodox East, represents a highly diverse sepulchral landscape. The cemeteries in Belarus, for example, differ in location from Central European traditions (Selverstova, 2015). One of the aims of this article is to offer a common ground for mak-ing comparisons.

A major contribution of this paper is to draw attention to burial plots as urban forms with specific spatial organizations. The gen-eral location of burial grounds and their plot forms are rather 'conservative'. Their spatial structure and character express continuities and reflect cultural transitions over the long term. They arguably express changes in atti-tudes over the long and medium term better than any other urban or rural physical fea-ture. Future research on urban and rural forms should to a greater degree include spaces for the dead and their complex spatial relationship to the cities of the living. Their use as 'index fossils' for the investigation of fringe belts seems to be a particularly fruitful approach in morphological research.

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