

## Streets in Medieval Wrocław

Jerzy Piekalski

During the Middle Ages Wrocław, the main city in Silesia, continued to evolve in response to changing economy, laws and demography. During its preurban phase, which is dated from the tenth until early thirteenth century, it had a polycentric structure. The main centre was an earth-and-timber fortified settlement which included the residence of the prince and the cathedral, timber houses of the prince's officials, ecclesiastic servants and an armed unit; there was also a trading settlement, two convents, residences of the elite, and several villages (fig. 1-2). During the first half of the thirteenth century Wrocław passed to the communal stage. The demographic basis of the new town commune were colonists from the German empire. Magdeburg town law was adopted and at first the town continued under the control of dukes from the Polish Piast dynasty. The new chartered town enjoyed considerable liberties but was under close economic control of the duke. It was planted on the periphery of the older settlement concentration. The rapid development of the new town in new legal and economic circumstances led to the deterioration of the older settlement pattern even before the end of the thirteenth century.

One of the main factors which influenced the character of Wrocław's infrastructure, including the building of its streets and their condition, was geography. Wrocław developed in the wet valley of the Odra, one of the largest rivers in Central Europe, in an area, where it is joined by several tributaries. In the region of Wrocław Odra formed a number of unstable channels with islands in between. This made the river easier to cross. The first centre of settlement was a fortified settlement of the local princes. It was set up in the tenth century on an island which later was named the Cathedral Island (Dominsel, Ostrów Tumski). Gradually, around the fortified settlement were established further elements of the settlement structure – on other islands and on both riverbanks. Some of these settlements lay within the flood terrace – in a waterlogged zone occasionally subject to flooding. Built-up areas were never far from the bank of the Odra, its side branch Oława or the city moat. The distance was never more than 300 metres. The land on the banks of the Odra had to be drained and raised with sand banks. The main market square and its surrounding town houses were planned in a dry area safe from flooding, about four and a half metres above the water level in the Odra (Chmal, Traczyk 2001). The condition of the streets was considerably affected by the climate and livestock kept in the town. For around six months each year, November to April, the road

surface would be wet or frozen. At least until the middle of the fourteenth century domestic animals – mostly pigs - were allowed to run loose in the streets. This practice is confirmed by thick layers mostly made up of muck. To keep the town streets in proper condition the town folk used different ways to cope with problems posed by the climate and livestock.

The network of streets in the preurban polycentric settlement may be reconstructed from written sources – very limited – and also, from archaeological investigation of built-up areas and from location of churches. The irregular street plan formed when two trade routes which converged on Wrocław were linked to inner streets connecting different areas within the settlement complex. We know at present that the most intensively used area was along the route running north-south. It developed by the joining in the south of the town of roads running from Krakow and Prague. Along it was formed the main area of the trade and market settlement. The route continued north, crossed the Odra (from the second half of the twelfth century on a wooden bridge), passed the Augustine convent and the fortified settlement of the prince. It then split into two branches running north to the provinces of Wielkopolska and Kujawy. Another road ran from the ford on the Odra westward. Also along this road we find buildings of a trading settlement and farther on, a settlement of Jewish merchants (from around the turn of the thirteenth century) as well as some smaller villages. In the densely built-up areas, especially in the fortified settlement, there were streets and squares, but we still know too little about their lay-out.

In Wrocław, the lay-out of the communal town, including the street plan, was regular. This was similar to most towns of East-Central Europe (Benevolo 2000, 328-351; Piekalski 2001, 159-254). Standardized rectangular street blocks and plots with town houses alternated with streets forming a grid. Three market squares also had a rectangular plan. Trade concentrated in the market squares and was forbidden in town houses, at least during the thirteenth century (Goliński 1991, 41-55). There were churches and cemeteries – at first, two parish churches, three monastery churches and two hospital churches; later additional new churches were built, and new parish churches too. Still before the end of the thirteenth century the area of the town commune was enlarged by adding a strip of land to the south and to the west. To the east side a New Town was chartered (fig. 3).

From the analysis of culture layer stratigraphy, size of burgage plots and buildup it appears that the regular town plan developed in the wake of several parcelling projects, carried out in the thirteenth century. It is not always clear in what order these projects were

carried out and what their extent was. Specialists are divided in their opinion and the results of every new excavation come under lively discussion and bring conflicting interpretations (Młynarska-Kaletynowa 1986; Chorowska, Lasota 1995; Rozpędowski 1995; Piekalski 2002; 2005; Buśko 2005). The street plan charted in the thirteenth century was stable during the entire medieval and the modern period. Some minor changes were made only when the town walls were pulled down during the nineteenth century. Only a very small number of streets were made wider.

Methods of surfacing were different during different stages of town development; they depended on how wet the substrate was and the social and topographic importance of the street. From the preurban phase we know the structure of surfacing in the fortified settlement. Sleepers were laid end to end, the length of the street. Over them, at right angles, rough planks were placed (fig. 4). For this purpose oak timber was used, frequently reused from older structures. Comprehensive excavation made in two street areas revealed the use of timber from sections of the rampart which had been pulled down or rebuilt. The streets were up to two and a half metres wide but there were also more narrow thoroughfares and surfaced passages between buildings (Kaźmierczyk 1995; Bykowski 2004, 120).

Our understanding of streets of the regularly planned communal town is relatively good. Studies started to be made in the 1960s and have continued, under different authors, until today. Thanks to this research we have been able to identify different quality street surfacing and its evolution until the modern period (Kaźmierczyk 1966-70; Buśko 1997; 1999; Piekalski 2004, 355-356). It appears from these findings that in the thirteenth-fourteenth century the dominant form of surfacing in Wrocław streets was timber.

Technically the most advanced streets had the form of raised boardwalks (fig. 5-6). Their construction started by driving vertical timbers into the soggy ground. Next came the supporting timbers; they were set onto the uprights, at right angles to the line of the street, every three to four metres. Then, sleepers were placed, along the line of the street. Finally, over this grid were placed, at right angles to the sleepers, rough planks of the road surfacing, between four and six cm in thickness (Mruczek 2000, 263-271). Structures of the described kind are confirmed by dendrochronology dates, starting from the thirteen forties, in all districts of the medieval town. They were used in principal streets, in the better off districts of Wrocław (Kiełbśnicza - Herrenstrasse, Ofiar Oświęcimskich - Junkernstrasse, Oławska -

Kürschnerstrasse, Kurzy Targ - Hühnermarkt, Kotlarska - Kupferschmiedestrasse) but also in the northern lower-lying district of Wrocław, in streets inhabited by poorer tradespeople (in Łaciarska - Altbusserstrasse, Malarska - Malergasse, Drewniana - Einhorngrasse). There they survived longest, until the sixteenth century. The entire width of the street was surfaced using this method. In the market squares the situation differed. Here, raised boardwalks were used only in assigned thoroughfares. The best information on the distribution, construction methods and dating of these structures comes from archaeology. But it must be added that boardwalks, especially in the northern districts, have left their mark in street names typical for Wrocław like Schmiedebrücke, Schuebrücke (Stein 1995, 20, 66).

The high standard of the rough plank surfacing on raised boardwalks offered the best conditions for pedestrian traffic and transport, especially in autumn and winter. We know that simpler techniques were also used. This is true especially of the fourteenth century, when the natural surface of the town area had developed a thick layer of settlement debris. This layer was mostly of organic matter and insulated from the wet. In a simpler method some elements of the raised walkway were no longer needed. If the ground did not subside, there was not need for stabilising vertical stakes. The street was laid out over supporting timbers laid on top of the sleepers. Last came a layer of rough planks placed at right angles to the sleepers. The next step in simplifying the construction method was to dispense with the supporting timbers and lay the sleepers directly over the organic layer or a layer of sand (fig. 7, Kaźmierczyk 1966-1970, part 2, 64).

A characteristic feature of layers surviving from the medieval streets of Wrocław is the alternating sequence of strongly organic humus with animal manure (muck) and sand layers. Time after time, streets were spread with sand in an attempt to keep them dry, clean and more level. Sand makes up as much as 70% of the muck. The makeup of the stratigraphic sequence shows that the muddy street surface was periodically spread with layers of sand up to a dozen-odd centimetres in thickness. This sand subsequently sank into the street mud unless something was done to reinforce its roof layer. One way to do this was by covering the layer of sand with loosely placed rough planks. We have some evidence that this method was used (Buśko 1997; 1999). This is when the roof of the sandy layer is clearly defined, at times accentuated by a smudge left by decomposed wood. In the stratigraphic sequence they are legible as a characteristic 'layer cake' built of alternating slender layers of sand and humus (fig. 8).

The most advanced method of reinforcing the sandy layer was by laying a stone pavement over it. The material used consisted of post-glacial pebbles typical for the European Lowland. The stones had a diameter of around 15 cm, seldom more than 20 cm. They were fitted close together in zones hemmed in by larger stones or vertically placed stubby lengths of rough planks. The oldest stone pavements in Wrocław, in the main market square, are dated to the end of the thirteenth century (Buśko 1997, 118; Płonka, Wiśniewski 2000, 248; Bresch et al. 2002). They were restricted to routes across the square and areas leading to some of the trader's booths. Stone pavements were also used for surfacing the area of some booths and in cellars. During the Middle Ages stones from dismantled pavements were reused to lay new pavements; only exceptionally we are lucky to find better preserved sections. Usually what remained was a sandy substrate with some isolated pebbles (fig. 9). Stone pavements were laid increasingly often during the fourteenth century and became widespread at the turn of the fifteenth. In most streets they replaced timber surfacing. In this way the intensive accretion of organic culture layers was slowed down. Until then, over some hundred and fifty years the level of the terrain in the town had risen by around two and a half metres. Let me add that the difference of level between the fifteenth and the twenty first century is only sixty to seventy cm.

In an emergency medieval streets were spread with random material – rubble from burnt timber-and-clay frame houses, brick rubble, ashes or slag. These methods of street improvement were used by the residents of the neighbouring houses. Analysis of stratigraphy in line excavations - the results of repairs of infrastructure - suggest differences in technical and sanitary status of streets in their individual stretches. This is especially well documented in Szewska-street (Schuhbruecke) and Kielbaśnicza-street (Herrenstrasse). More than 250 m of their length has been investigated and revealed zones which differed in their social and topographic status. In streets which were in a better condition we find a regular horizontal stratigraphy and a larger quantity of sand.

Some streets had gutters. In northern districts of the town the natural slope of the terrain towards the river was used to install gutters which operated thanks to gravity. A quite well preserved gutter was discovered in Kielbaśnicza-street (Herrenstrasse), the rich town district (Goliński 1997, p. 30-74). This facility, made of rough timber ran down the middle of the street and had the form of a trough with a lightly rounded bottom. The gutter was 86 cm wide and up to 63 cm deep (fig. 10). It carried off sewage from the plots of the more

prosperous and from butcher's booths, which lined a street crossing the Kielbaśnicza-street in its more modest stretch nearer to the Odra river, which during the Middle Ages was known as Młyńska –street ('Mill' street).

## Conclusions

The study of medieval streets in Wrocław helped to establish the following points:

1. Natural soil conditions, hydrography and climate were not especially favourable for pedestrian traffic and transport in the preurban settlement complex, or in the later communal town.
2. The nature of street culture layer stratigraphy indicates that the townspeople had to make a regular effort to keep the streets in proper condition.
3. During the preurban phase and in the early communal town the streets were typically timber surfaced. The best technical solutions were used in the thirteenth and the first half of the fourteenth century.
4. Gradual deforestation of the area around Wrocław made it necessary during the late Middle Ages to replace timber surfacing with stone pavements. Removal of refuse to outside the town which started during the same period, decelerated the accretion of culture layers within the town. Methods used in the fifteenth century were continued with success until the nineteenth century, when better quality granite paving was introduced.

## List of figures

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## Streets in Medieval Wrocław in Silesia

Jerzy Piekalski

The aim of my paper is to report on methods of street construction and maintenance in medieval towns. A vital element of medieval town infrastructure, streets were built by shared communal effort of the townspeople and used as public space. In this they differed from private urban lots. Important questions relate to the methods of laying out streets, construction techniques, sanitary and technical maintenance.

From the archaeological record we know that a number of different techniques were used in constructing street pavements. Most advanced technically were streets lined with planks set over a timber grid. Their lowest level was that of supporting timbers (girders), laid at right angles to the line of the street every 3 or 4 metres. Where the ground was unstable some of the girders would be fitted over stakes driven into the ground. Over the girders, parallel to the street, a line of sleepers was laid. They in turn served as a base for planks, laid in a tight arrangement, at right angles to the street axis. This type of paving was used in thoroughfares as well as in cross-streets. It appears that in the 13<sup>th</sup> and 14<sup>th</sup> c. this type of construction set the highest standard of street paving, used as often as possible. Other, more simple techniques of timber paving are also documented, eg planks laid over sleepers, or even directly on the ground.

A common method of street maintenance was by spreading sand over their dirt-covered surface. On occasion, traces (impressions) of planks are preserved in the roof of the sandy layer. Usually, the planks were placed so close together that the sandy layer did not get trampled and mixed with dirt. This technique is evidenced not so much by the remains of timber elements as by the fine preservation of the sandy layers.

Pavements of rough field stone over a sandy base were used here and there starting from late 13<sup>th</sup> c. but only locally. During repairs it was usual to recover and reuse the cobbles. Because of this the condition of pavements only exceptionally is good. Most often one finds the sandy base with some isolated cobbles.

Every now and then streets would be paved with random material, eg rubble from dismantled brick buildings, ash or slag. The latter was used for paving the square in front of the Franciscan church in Wrocław.