Medieval Brick Architecture in Brno in the Context of South Moravia

Petr Holub – Václav Kolařík – David Merta – Marek Peška – Antonín Zůbek

The study's objective is to overview the state of research into medieval brick architecture in Brno including standing brick sacred buildings in South Moravia. In the archaeological finds in Brno, the low or small-format brick appears during the first half of the 13th century. Bricks having this format were also used for the most part for building the walls of one of the most important heritage monuments in Brno – the Old Town Hall. As a building material, or rather accessory material, the brick appears as late as the beginning of the 14th century. Under the influence of the construction of the Church of the Assumption, during the 14th century the high brick gradually came to prominence and was used more frequently in the construction of whole buildings or large sections of them. At the end of the 15th century the high brick was gradually replaced by lower and longer Renaissance formats.

Keywords/Schlüsselwörter medieval town/mittelalterliche Stadt – burgher house/Bürgerhaus – church/Kirche – abbey/Abtei – monastery/Kloster – brick architecture/Backsteinarchitektur

It is currently presumed that the development of brick architecture within Moravian territory was influenced by two basic currents derived from two types of brick. The high medieval brick is thought to have arrived from France and Flanders via the Rheinland, or possibly Silesia, while the low (small-format) brick most likely had its origins in Lombardy, around Bologna and Cremona, from where it should have spread through the Danube basin and Pannonia, across Slovakia to South Moravia (Bárta 1973, 82). In the wider surroundings of South Moravia finds of Roman brick are quite common; in medieval Vienna (*Vindobona*), Krems-Stein (close to *Favianae*), Hainburg (close to *Carnuntum*), Bratislava (close to *Gerulata*) and Buda (*Aquincum*). In Moravia, in addition to the finds of Roman bricks at the Roman station of Burgstall near Mušov, there is evidence of secondary use of Late Roman bricks in the early medieval period in archaeological finds from the time of Great Moravia (Musil 1993; Komoróczy 2003). From the period of the High Middle Ages we are aware of their application, for example, in the masonry wall of St. Michael's Church in Staré Město near Uherské Hradiště (Hrubý 1965, 262–264; Musil 2003, 78–82). However, we should not underestimate the possibility of the transfer of the brick tradition from Byzantium, which was present in the Balkans from antiquity throughout the whole Middle Ages (cf. Ćurčić 2010) and was also instrumental in transferring the know-how for the traditional technique of brick laying to Kievan Rus' as early as the second half of the 11th century (Ioannissian–Ivakin 2012, unpaginated).

As mentioned above, the occurrence of the low format of bricks is typical mainly for the wide region of the Danube basin and Pannonia where its use in the Vienna area can be traced back to the first half of the 13th century. The bricks are applied in the earliest construction phase of the cruciform corridor of the Dominican monastery built around 1226 (the format dimensions are 17.5 × 11 × 4 cm; Schöbel 2001, 19) and in St. Michael's Church. In general, it can be stated that the earliest known brick formats from Vienna had dimensions of about 18–22 × 9.5–11 × 4–5 cm. During the 13th century the format was enlarged reaching values of 24–24.5 × 11.5–12 × 5.5 cm (Mitchell–Schön 2002, 472–473). A similar evolution of formats is also evidenced in Krems in Upper Austria where the oldest formats from the 13th century reach the dimensions of 22–23 × 10–11 × 5 cm (Buchlinger et al. 2008, 169–171). In the region of south-west Slovakia the earliest formats of brick come from the burgher environment where their dimensions vary around 22–25 × 10.5–12.5 × 4.5–5.5 cm (Nagy 2003, 92–95, cat. No. 2–11). Another location is Trnava, where during the period of the Middle Ages in general we observe formats of 25–27 × 10.5–12.5 × 4.5–8 cm (Staník 2006, Note 2), when the earlier period is typified by an occurrence of so-called husk bricks of the 29.5–33 × 14–15 × 5.5–6.5 cm format (Žuffová 2010, 15–16, 24). While in Bratislava, as in Vienna and Krems, the bricks are used merely for building architectural details, in Trnava the architecture (fortifications, secular and sacred structures) was built exclusively from bricks from the very beginning of the masonry wall phase.

In the region of South Moravia the earliest evidence of high medieval brick architecture comes from the religious environment. Among structures that still stand even today the most important example is the **Cistercian monastery at Velehrad** (**Fig. 44** and **45**), begun with the support of Margrave Vladislaus Henry in 1205 and with the founding phase completed in 1228 by the consecration of the monastery church (Pojsl 1990; Líbal 2001, 531–534; Foltýn et al. 2005, 725; Wihoda 2007, 156n). ***1)*** The other, and still standing, late Romanesque sacred heritage monuments in South Moravia from the first half of the 13th century built from brick, that can be assigned to this group, are **St. Wenceslas' Church in Kostelec near Kyjov** (**Fig. 43**), the construction of which can be associated with the building workshop in Velehrad (Samek 1994, 581), ***2)*** and **All Saints' Church in Staré Hvězdlice** (**Fig. 40–42**) with the choir loft (Samek 1999, 175–176; Janiš–Vácha–Vrla 2015). ***3)*** Any additional structures built entirely from bricks have either not survived or are not known.

The use of bricks in medieval architecture in Brno has two clearly marked milestones. The first one is the earliest application of mostly small-format bricks and the other is the arrival of the high brick and the following boom in brick architecture in Brno. Both impulses came from the religious environment which throughout the Middle Ages was the most important agent in the transfer of construction techniques and building style elements.

In the period of the beginning of Brno (generally the 13th century; **Fig. 1**), in the town itself and its surroundings, the use of bricks in sacred and secular buildings was rather a complementary form in terms of the construction of masonry walls. Bricks were mostly used to line windows, entrances, candle niches, and occasionally in the construction of discharging archs. Rarely they are found as building material in vaults. An impulse for the application of bricks in the earliest masonry wall architecture in Brno very likely came as a cultural influence from the Danube basin and was introduced with the first waves of colonists from Lower Austria (Měřínský–Zumpfe 1997, 145–158). The lack of suitable stone material for building structural details also played a part in this.

1) *It is interesting to note how information in literature about the bricks used differs. Brick height 8–8.5 cm (Líbal–Muk 1984, 242); Dobroslav Líbal (Líbal 2001, 39) states that the brick dimension is 28 × 13 × 9 cm and they are laid in Polish bond. According to Václav Kotrba the formats of bricks from Velehrad vary, which he ascribes to the structural development of the complex, when in the first period – the construction of the choir – the bricks used were sized 30–31.5 × 13.5–14 × 7 cm and 31 × 16.5 × 9 cm, afterwards during the nave construction they used 28.5–29 × 12.5 × 6 cm bricks and during the building of the octagonal tower it was 29.5 × 14.5 × 10 cm. Therefore, the construction started with bricks 7–9 cm high, but later the workshop changed it to a uniform thinner brick 6–6.5 cm high. The thickest 10 cm high brick belongs to the last stage of construction (Kotrba 1951, 151).*

2) *The bricks used for the construction of St. Wenceslas' Church were sized 27.5–28 × 13.5–14 × 5–5.5 cm.*

3) *Bohumil Samek states that the format of the bricks in the apse of the Church of All Saints is 28 × 12.5 × 7 cm (measurement by the authors of this contribution: 27.5–28 × 12–12.5 × 7 cm), bricks in the bell tower measured 26 × 12 × 5.5 cm.*

Fig. 1
Brno reconstruction plan from around 1400. A – St. Peter and Paul's Church; B – St. James' Church; C – Dominican monastery; D – Minorite convent; E – Dominican nuns' convent, so-called Herburský; F – St. Nicholas' Church; G – Chapel of the Virgin Mary; S – Jewish synagogue; R – Old Town Hall.

From the second half of the 13th century, in addition to the city proper enclosed by a wall and the sacred buildings in its hinterland, brick appeared as a complementary structural element in the architecture of the nearby castles – Špilberk, Obřany and Veveří. In the royal **Špilberk Castle**, founded by the Přemyslid King Ottokar II of Bohemia, small format bricks sized 22.5 × 10.5 × 5 cm were used, for example, in the panels of the vaults on the ground floor of the Gothic palace at the southern wall of the entrance. The floor (and ground floor?) served as the royal chapel, the structure being roughly dated to the 1270s (Kühn 1943a; Dohnalová 2006, 120, 124–126, with a summary of further literature). The residence of the Lords of Obřany, **Obřany Castle**, was established in the 1270s. As early as around 1316 the castle was seized and demolished (Konečný 1977, 219–232; Plaček 2001, 452). The area of the present day ruin yielded bricks of low Gothic format of 26 × 13 × 4–5.5 cm. ***4)*** Small-format bricks sized 21 × 10.5 × 5.5 cm were also used in the royal **Veveří Castle** for building the pillars of the triumphal arch in the castle chapel dating from the period between the end of the 13th century and the third quarter of the 14th century (Dohnalová 2006, 164).

4) *The measurement of bricks from Obřany Castle obtained from walking was carried out by the authors.*

In **1323** Queen Widow Elizabeth Richeza and King John of Bohemia founded the **Cistercian Abbey** for Cistercian nuns in **Staré Brno**. The Church of the Assumption in the convent is placed in connection with the Silesian style, the complex of the convent is generally considered the first structure built using high Gothic brick in Brno and its surroundings. Undoubtedly, it provided an important impulse leading in its consequence to a wider application of brick in Brno architecture, possibly also partly linked with the different political and cultural background of the Luxembourg dynasty (Samek 1994, 183–193; Sedlák 2000, 167–169; Foltýn et al. 2005, 208–215; Hričková 2007; Benešovská 2010, 488–497).

Brickyards and brick-makers in written sources

The topography of brickyards in Brno can be traced back to the period of the end of the second and, for the most part, the third quarter of the 14th century. For this period we have available an almost uninterrupted series of tax records from 1343, 1345–1348, 1350, 1360, 1365–1367, 1378, 1387 and 1389 and a memory book from 1343–1376 (1379) (Flodr ed. 2005; Mendl ed. 1935; Urbánková–Wihodová eds. 2008). This enables us to follow 11 owners of brickyards ***5)*** who operated their businesses in the suburbs. In the sources called *curia laterum* (Flodrová 1996, 110–111) it is possible to identify with certainty three brickyards. The question remains of whether some of the brick-makers in the suburbs did not pay tax directly from the brickyards. This might be supported by the fact that at the end of the 14th century none of the brick-makers paid for property inside the city wall, but only in the suburbs, hence in the expected neighbourhood of their brickyards or directly from them. In this case we might take into consideration at least two other brickyards.

5) Various sources describe brick-makers as laterator, latterator, czigelstreicher, czigler, czeigler, tziegler, cigler, cziegelpeck.

We know then that before the middle of the 14th century at the latest there were several brickyards working in Brno. Given that only the Augustinian monastery was being built (after 1350, see below) and the city gates were being repaired (again after 1350), it is most likely that the products from the brickyards were primarily used in burghers' houses.

Brick in Brno's sacred architecture

In the religious architecture of the 13th century, as in secular architecture, bricks were used mainly in the details (see above). They have been confirmed in the majority of documented standing medieval sacred buildings. Their application was limited to the lining of window openings, entrances, relieving arches, niches, discharging archs and, very rarely, to the construction of barrel and rib vaults, or even complete perimeter walls.

The **Chapel of St. Kunigunde (Fig. 2** and **3)** in Brno-Zábrdovice, consecrated in 1209, can be considered as the site of one of the earliest applications of brick in Brno architecture. The small-format bricks are used here for building the segments above a pair of windows. This window arrangement probably belongs to the second construction phase from the 1240s, although we cannot rule out that it was even earlier. The chapel, from which only the southern wall of the nave has survived, was the oldest shrine of the newly established **Premonstratensian monastery**, completed, including the new church, sometime around the mid-13th century (Samek 1994, 242–244; Borský–Černoušková 1999; Foltýn et al. 2005, 233). Utilisation of small-format and medium-format bricks was also documented in relics of the Romanesque-Gothic phase of the cloister, in the eastern section of the western wing (Merta 2013, 113). Significant use of bricks in this location is also confirmed within later Gothic conversions and reconstructions. We infer from the documented contexts that in the later periods of the Middle Ages at least the monastery buildings were built in part from high bricks. ***6)***

6) The data was acquired from partial building documentation accompanying construction work in this part of the convent. It is very likely that a similar northern wing of the cloister is in the Romanesque-Gothic mass, so that various architectural elements and structures using bricks might appear even there (Holub et al. 2010b).

Before the mid-13th century the second (Gothic) construction phase of **St. Peter's Church** on Petrov hill was taking place during which it was completely rebuilt. As part of this rebuilding the Romanesque crypt was elongated in the eastern direction. Holes dug out in earlier walls were reinforced and walled up with brick while the connection between the Romanesque and Gothic sections was spanned by a barrel vault from brick. The brickwork was made from 24 × 12 × 5 cm sized bricks (Procházka 2000, 73).

Fig. 2
Brno-Zábrdovice, Chapel of St. Kunigunde. Southern wall of the church (photo archive Archaia Brno o. p. s. – inv. no. 01082-2014).

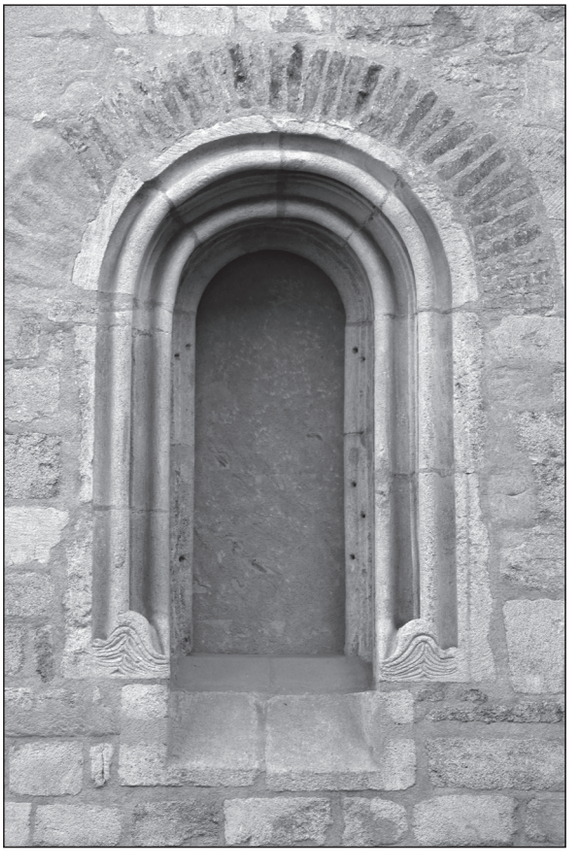

Fig. 3
Brno-Zábrdovice, Chapel of St. Kunigunde. Segmented arch above the chapel window from category I low bricks (photo archive Archaia Brno o. p. s. – inv. no. 01093-2014).

Fig. 4
Former Dominican monastery, brick arcades of the southern wing of the cloister corridor from format I.2 bricks (photo archive Archaia Brno o. p. s. – inv. no. 027-02-022).

The so-called **Old Town Hall** (Radnická 8; **Fig. 11–13**) also belongs to this period. Its beginnings are dated by art history and archaeology to the period before the mid-13th century, when medium-format bricks were also largely used (25 × 4.5–5 × 10–11 cm). They were applied in building parts of the unique preserved gable above the northern wing, in the vault of the so-called safe/treasure house on the floor above the passageway. In the case of the gable it is the first confirmed application of face bricks within the territory of Brno, although without pointing. In the period before the mid-13th century the Old Town Hall is a rare example of a secular building which is completely brick-built. We are unable to identify its purpose. It might be considered to be, for example, a house of foreign merchants, etc. (Merta–Peška 2007a, 210–212; Merta–Peška–Staněk 2012).

Probably still before 1239, the **Dominican monastery** (**Fig. 4**) was established in Brno at St. Michael's Church. However, the Dominicans are mentioned for the first time in 1243 while in 1248 there is a reference to a newly-built oratory (Dřímal 1947, 11). So far, there has been no evidence of using products from fired clay in the late Romanesque building horizon (the 1230s and 1240s) of the Dominican church. Within the next construction phase dated to sometime around the mid-13th century, when the northern wing of the cruciform corridor and the adjoining buildings were erected (Peška 2002, Fig. 28; 2015, 59), there is a documented small window with a brick-built semi-circular top arch situated in the northern wall of the northern wing of the cruciform corridor. The reveals as well as the arch were built using bricks sized 4 × 14 × 8 cm. After the small window was walled up with brick it was covered by plaster with a painted medallion dated 1302. Decorations from the period before 1302 probably include windows in the chapter hall (northern wing) opening to the garden, the sides of which are lined with bricks sized 25 × 11.5 × 5.5–6 cm. The southern section of the cruciform corridor was probably built in the second half of the 13th century as well. The arcades of the cloister, from the level of the stone reveals of the window openings are built from bricks with the low Gothic format (I.2 or I.3) laid in irregular cross bond. In the 14th or possibly 15th century two pillars from the cloister at the wall were built using high bricks with the 28.5–29 × 13.5–14 × 9–9.5 cm format laid in cross bond.

The Minorite monastery with St. John's Church (**Fig. 5** and **6**) was founded as early as 1230 according to tradition. First written evidence comes from 1239 and in 1244 the provincial chapter of the order was held there (Eliáš 1986; Foltýn et al. 2005, 167–172; Kudlíková 2010). The building of the monastery may have been preceded by the construction of a late Romanesque house with masonry walls. The stone walls of the excavated cellar of the house had an additional illumination niche in the western wall built from bricks of the 24 × 12 × 5 cm format. The fill of the house yielded a larger set of building ceramics – floor tiles, flat roof tiles and bricks. ***7)***

7) *According to Rudolf Procházka who carried out the excavation the house is later than the stratigraphic sequences from the first quarter to the third quarter of the 13th century, and he dates the destruction horizons of the house to the third quarter of the 13th century, in relation with the construction of the cloister (Procházka 2003, 163–165). However, it is also possible that the building was incorporated into the organism of the monastery (a refectory comes to mind) in which case the dating would not be so unequivocal (Holub et al. 2003a, 5; Kudlíková 2010).*

Fig. 5
Minorite convent, brick arch of a Roman window from format I.2 bricks (photo archive Archaia Brno o. p. s. – inv. no. A04-98-041).

Fig. 6
Bell tower of the Minorite convent. Brick structural details of the entrance on the floor from format II.2 high bricks (photo archive Archaia Brno o. p. s. – inv. no. 19778-2013).

During the construction of the convent proper bricks were again used only for structural details. In the first construction phase (1230s–1240s) the windows and the relieving arch of the entrances in the eastern wing were built of brick. In the second construction phase around 1250 bricks were used for the pointed arches of the western arcade of the cloister (Procházka–Loskotová 1996, 256–257, Fig. 21:3). In the third construction phase small format bricks were applied during the rebuilding of the eastern wing around the newly inserted portal and locally to fill in holes which cannot be identified today.

A change in the approach to using building ceramics in sacred architecture was relatively late to arrive. The earliest evidence of a building built completely from bricks, in the "backstein gotik" style, is the **Cistercian convent** for Cistercian nuns in **Staré Brno** (**Fig. 7** and **8**). The Church of the Virgin Mary was probably completed in 1333 (Sedlák 2000, 167–169; Hričková 2007; Benešovská 2010, 488–497). It is built from face bricks (27 × 12.5 × 8.5 cm) and particularly the oldest sections are striking in the stylistic purity of the brick architecture with the sparse application of dressed stone. Bricks were also used to erect the convent buildings, the chapter hall and the cloister. V. Kotrba presumes that the convent in Staré Brno was populated from Sezemice in Eastern Bohemia, which also had an influence on its architecture. Eugen Dostál assumes that the convent's architecture was inspired by the building of the Church of the Holy Spirit in Hradec Králové, also founded by Elizabeth Richeza. It is, however, more likely that the construction was influenced by the environment from where the founder came to Bohemia, i.e. Wielkopolska (Greater Poland). ***8)***

Fig. 7
Former convent of Cistercian nuns in Staré Brno. Overall view of the Church of the Assumption (photo archive Archaia Brno o. p. s. – inv. no. 01068-2014).

Fig. 8
Former convent of Cistercian nuns in Staré Brno. Facade of the southern part of the transept (photo archive Archaia Brno o. p. s. – inv. no. 00583-2014).

Other sacred buildings in Brno with significant use of bricks are those founded by the Moravian margrave branch of the Luxembourg dynasty – the Augustinian monastery with St. Thomas' Church and the Carthusian monastery in Královo Pole and the parish Church of St. James.

The intention to establish the **Augustinian monastery** (**Fig. 9**) was announced by Margrave John Henry on 2nd February 1350. Its founding was permitted on 18 July 1356 by Pope Innocent VI and shortly afterwards on 26 December 1356 John Henry issued the foundation charter of the convent (Kühn 1943b; Merta–Peška 2002a, 97–118, 513–527; Foltýn et al. 2005, 173n). St. Thomas' Church became the first large brick-built structure ***9)*** within the inner city perimeter. Brick masonry was used in the choir completed in 1359. The brick dimensions are 27–28 × 12–13 × 8.5 cm, the bond is based on regularly alternating stretchers and headers. Excavation carried out in 2005 uncovered the foundations and part of the above ground brickwork of the triumphal arch in the former northern chapel called "In the Wall". The triumphal arch was built from high Gothic bricks (27 × 13 × 8.5 cm) and shaped forms (29 × 14 × 8.5 cm) with a single quarter-circle trough in the corner (Merta 2006, 12).

The other buildings within the convent complex were probably built from bricks as well. The surviving cellars under the former eastern wing of the convent structures are from bricks sized 27 × 13 × 8.5 cm. The use of brick masonry in the convent buildings is confirmed by evidence from P. Jeronym Houfnagel from the period of the great Baroque reconstruction between 1732 and 1751, when the old monastery was taken to pieces and "something like 70,000 bricks" were reclaimed from it (Merta–Peška 2002a, 97–118, 513–527).

The **bell tower of the Minorite monastery** (**Fig. 6**) was erected sometime around the mid-14th century. The stone-built structure has the window openings and the entrance at the floor level lined by bricks. The dimensions of the bricks employed are 27–27.5 × 12.5–13 × 8.5–9 cm (Holub et al. 2013b, 94–97). The **spire of the Minorite Church of St. John** that we know only from historical vedute was built at the same time. It can be derived from the vedute that at least the octagonal top was built from bricks. The **spire of the Dominican Church of St. Michael** that we know from 17th century vedute only was built in a similar way.

The **Carthusian monastery with the Church of the Holy Trinity in Královo Pole** (**Fig. 10**) situated 3.5 km northwards from the historical city centre was established by the Moravian Margrave John Henry. The complex was built after 1375 (Foltýn et al. 2005, 196). Given the nearby outcrop of high quality construction stone, which was used as the basic building material for the newly arising monastery complex, the brick became only complementary material for building structural

8) *V. Kotrba presumes that the architecture of the church in Staré Brno was influenced by the brick-built Church of the Holy Trinity of the Cistercian nuns in Sezemice. The Sezemice church is built using bricks sized 27 × 12.5 × 8–9 cm laid in early Gothic bond where the headers have overburnt or glazed faces. In the church in Staré Brno the brick bonding and the dark or overburnt faces are similar. Viktor Kotrba considers the direct influence of architecture from North Germany exerted through the Sezemice convent on the construction of the church in Staré Brno. After a ground-floor plan analysis V. Kotrba arrives at the conclusion that the trefoil end of the church, which is otherwise unknown in Cistercian architecture, is the result of a change in the building plans after the sojourn of Elizabeth Richeza in the Rhineland. According to Kotrba, this type of architecture is at home there and belongs to the circle of Cologne architecture (Cologne, Marburg). For the Church of the Holy Spirit the same author states the brick dimensions are 26–26.5 × 12–12.5 × 9–10 cm (Kotrba 1951, 159, 190, 245–246). Eugen Dostál points at the kinship of the architecture with the Church of the Holy Spirit in Hradec Králové which was also founded by Elizabeth Richeza. He maintains that it should not be assumed it was only the good quality of Brno clay that was behind the brick building but the impulse could have arrived from the queen herself who as a princess was well acquainted with Polish Gothic brick architecture (Dostál 1928, 110). Klára Benešovská and Dušan Foltýn have no doubts about the influence of Polish/Silesian architecture (Foltýn et al. 2005, 213). The Silesian influence is also admitted by Jan Sedlák, who also considers the possible impact of the architecture of the Church of St. Elizabeth in Marburg (Sedlák 2000, 167–169). D. Líbal makes no statement regarding influences on the building (Líbal 2001, 38–42). Most recently, Klára Benešovská attempts to explain the influence on the architecture of the convent building which varies between direct influence from the Rhineland and one coming through Elizabeth's homeland (Benešovská 2010, 488–497).*

9) *The wall construction is actually of the shell type when the faces are built from bricks, the core is cast from prevailing stone.*

details. Within the space of the large cloister we find bricks of the 28–29 × 13–14 × 8.5–9 cm format, mainly used to build segments above the windows and entrances to the corridor of the cloister as well as the individual monk's cells, with the occasional application of shaped forms. High format bricks are partly used within the perimeter wall and as bases for the tile stoves heating up the individual cells (Borský et al. 2012, 15–19).

The construction of some sections of **St. Giles' Church in Brno – Komárov** is also attributed to the period of the second half of the 14th century. The high bricks and shapes were used to build face brick walls (Borský–Černoušková 1999).

The late Gothic **St. James' Church**, the construction of which started in the mid-15th century, was built using high bricks laid in cross bond (on the history and building development of St. James' Church see Bretholz 1901, 13–59). ***10)***

10) The church was given a new plaster finish in the 1990s. Although there is documentation of the reconstruction work from that period available, the authors did not succeed in obtaining it. A stamped brick with the city emblem of Salzburg (?) sized 27.5 × 13.5 × 8 cm from the side chapel of St. James' Church opposite today's Černý Medvěd restaurant (Jakubské náměstí 2) was acquired in 1854 by Moritz Trapp (Holub 2006, 53).

While in the sacred architecture of the 13th century brick finds only marginal application, this was to change significantly during the 14th and the 15th centuries. From using brick as an element in building individual technical details to the overall application when brick was most frequently used as the facing element of brick facades in the German backstein gotik style. It is important that in the case of sacred buildings we also have available written documents dating their construction, which enables us to operate with historical data and determine both the architectural details (cantilevers, rib profiling, bolts or window tracery), and the application of a particular building material.

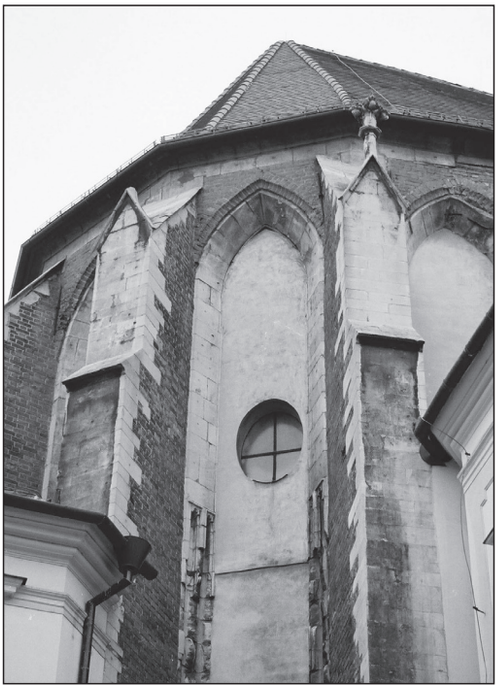

Fig. 9
Former Augustinian monastery with St. Thomas' Church. Brick presbytery from Gothic format II.2 high bricks (photo archive Archaia Brno o. p. s. – inv. no. 009-01-004).

Fig. 10
Former Carthusian monastery in Královo Pole. Brick entrance from the corridor of the large cloister into the area of one of the monks' gardens from category II.2 high bricks (photo archive Archaia Brno o. p. s. – inv. no. 12555-2006).

Brick in burgher buildings made of timber and clay in Brno in the 13th century

Brickyard products emerge quite regularly in the fill of Brno's demolished half-timbered houses from the 13th century. Given the find context the dating and identification of brick application in the earliest burgher buildings is very difficult.

Currently, we are unable to specify in greater detail the form of the buildings within the limits of the later town. We know that they were mostly above-ground buildings with a timber or half-timber structure, of which largely solitary post holes and exceptionally foundation trenches have been documented. New, more advanced structural elements were introduced during the second third of the 13th century by colonisers from German-speaking countries who profoundly influenced both the technology and the high standard of the buildings. From the horizon of the primary pre-masonry burgher architecture only archaeologized remains of houses made of wood and clay have survived, most frequently represented by their dug-out basements (for a summary of the problem of half-timbered architecture from the 13th century see Zůbek 2001; Holub et al. 2005a, 44–100; Peška–Merta 2009, 89–91). Above ground wood and clay buildings are currently represented by several sections of half timbered structures from the house at Mečová 8, which nevertheless originate from as late as the mid-15th century. ***11)*** Nevertheless they give us an idea of how the late medieval non-masonry houses might have looked. From this point of view it is interesting to note the utilisation of unfired bricks in the infill between the timbers, which makes us consider the use of unfired bricks in the earlier horizons of Brno's built-up area (Holub et al. 2005a, 60). The fact that half-timbered structures were not unusual is still clearly visible in a veduta of Brno by H. B. Beyer and H. J. Zeiser from 1650 (the painting is kept in MuMB under inv. No. 2284).

11) The construction is dendrochronologically dated to after 1451 (Holub et al. 2005a, 60).

During research into the application of building ceramics in non-masonry architecture from the 13th century we can rely on the fire series of strata uncovered in the destruction fill in the basements of wood and clay houses, or alternatively in the levelled out layers of material from these structures after their destruction in the open areas of the plots. They contain mainly shards of fired and non-fired daub. However, fragments or whole pieces of bricks, roof tiles and floor tiles are also found there. Given the widespread secondary use of materials in the Middle Ages it is impossible to reliably determine to what extent the bricks

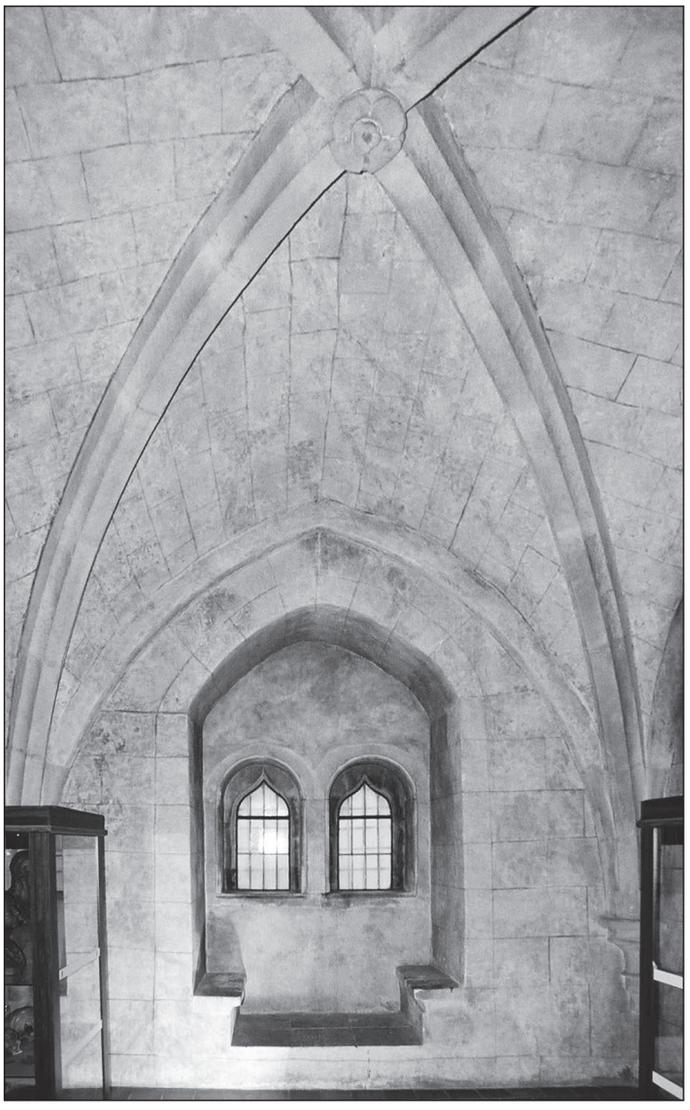

Fig. 11
The Old Town Hall, the so-called treasure house on the floor adjoining the street (photo archive Archaia Brno o. p. s. – inv. no. 345-03-29).

were used in the construction of a wood and clay house, or in which of its parts and which structures. Research data tells us that low Gothic bricks were used to build the entrance necks of wood and clay houses and bases under the fireplace. As an example, it is possible to name the examined remains of the houses at **Radnická 8** (Loskotová 1993, 207; Loskotová–Procházka 1995, 125–128; Merta–Peška–Staněk 2012), **Dominikánská 5** (Holub et al. 2005a, 74) and **Rašínova 6** (Holub et al. 2005a, 96). However, even in these cases we cannot rule out secondary utilisation of bricks. The vanishing of wood and clay houses can generally be dated to the end of the 13th and the first half of the 14th century, when they were gradually replaced by new buildings with masonry walls.

The fills of wood and clay basements, after destruction by fire or plain levelling out, yield four brick formats. They are the so-called small-format bricks (category I.1; 20–22 × 9–10.5 × 3.5–5.25 cm, with a possible range of dimensions), Gothic low bricks of larger format (25.5 × 12.5 × 4.5–6 cm, i.e. category I.2; 26–26.5 × 13–14 × 5–6 cm, i.e. format I.3) and finally Gothic high bricks (27.5–29 × 13.5–14.5 × 8.5–9.5 cm, category II.2). In the case of bricks recovered from demolitions we should take into consideration the complete destruction of the house, when the fill comprises all of the construction phases without the possibility of their more detailed identification.

From the number of uncovered relics of the sunken parts of wood and clay buildings (Holub et al. 2005a, to this day we know of about 140 buildings or their remains of this type) we selected a few structures with more significant content of building ceramics to be excavated in full.

The extensive excavation of the basement measuring 6.1 × more than 2 m was carried out at **Dominikánská 5**, its documented depth being 2.4 m. In the south-east corner the southern wall of the basement was joined by the excavated entrance, built from bricks, at the western wall. The destruction of the basement is dated to the last third of the 13th century. At the base of the lining of the entrance neck we find mixed wall material consisting of clay with brick fragments sized ca. ? × 12 × 5 cm. It was joined by a brick structure with irregular bond from mainly finger-shaped bricks with a format of ? × 11.5–12 × 4.5–5.5 cm. The basement fill contained fragments of bricks of which at least one can be categorised as small-format (? × 9.5 × 4.5 cm). However, the spectrum of the fragments from the basement fill is more varied than usual (width 12.5–14 cm, height 4.5–6.5 cm, frequent finger-shaping), which can be attributed to the fact that the bricks came from different parts of the building and are not from a particular, clearly interpreted structure (Holub et al. 2005a, 73–74; Merta et al. 2001, list of the walls, 4–5). Similar lining of the entrance neck in the basement of a wood and clay building was investigated at **Radnická 8**. The bricks from the destruction layer constituting the cellar fill and from the entrance neck had identical dimensions of 24 × 13 × 5.5 cm. A cellar with an entrance neck at Dominikánská 7 was excavated as a whole. The basement comprised of a roughly square dug-out pit with a side length of about 5.4 m and a depth of 1.5 m, where three construction phases were identified during its building. The destruction of the third construction phase is dated by the ceramic materials to the end of the 13th century. The bricks in the destruction fill of the basement had dimensions of 28.5–29 × 12.5–14.5 × 5–6.5 cm (Holub et al. 2005a, 75–76). The original, probably rectangular, pit of the basement of the house at **Mozartova St.** reached the dimensions of 9 to 11.5 × more than 4.8 m, the documented depth was 1.8 m. Based on ceramic material the destruction of the building is dated to the turn of the 13th and the 14th century (Holub et al. 2005a, 86; 2005b, 509–510), which is confirmed by the finds of two coins of John of Luxembourg from the period of his reign before 1319 recovered from the levelled terrain above the structure (Holub 2002, 14–16). The bricks that occur there are small-format bricks of category I.1: 20 × 9.5–10.5 × 3.5–5 cm, and category I.2: 26.5 × 12.5–13.5 × 4.5–6 cm. The basement fill also yielded one high brick of category II (27.5 × 13.5 × 9 cm). This could indicate the advance of this format at the turn of the 13th and the 14th century in Brno. An above-ground non-masonry building was erected on the site of a demolished house which included a fireplace built from small-format and medium-format finger-shaped bricks in secondary use. One of the investigated wood and clay basements with the largest area in Brno was uncovered at **Náměstí Svobody 17**. Its dimensions reached 7 × 17.1 m and its depth was 2.2–2.5 m. Two charred samples of beams from the basement structure were successfully dated to 1243 and after 1260. The house was razed by a fire at the turn of the 13th and the 14th century (Procházka–Peška 2007, 209–216). In addition to small-format bricks of category I.1: ? × 10–11 × 4.5–5 cm the fill also contained bricks of category I.2: 25–25.5 × 12–12.5 × 4.5–6 cm. In a single case there was an occurrence of a high brick with the 28.5 × 13.5 × 8.5 cm format (Holub et al. 2005a, 89–90). The inner area of an extensive basement at **Dominikánské náměstí 2 (The House of the Cistercian Nuns from Staré Brno)** reached the dimensions of ca. 21 × 7.6 m. For reasons of structural reinforcement its southern wall and south-east corner were built of stone in the second construction phase with (secondary?) application of bricks with the formats of 24 × 12 × 5 cm and 21 × 10 × 4.5 cm. During the next reconstruction the space of the original basement was partly reduced and the unused part of the original cellar was filled up. The time of the first phase of construction might be indicated by a beam identified east of the dug-out cellar, dendrochronologically dated to the period after 1247. The finds from the above mentioned basement fill can roughly be dated to the second half of the 13th century. The fill from the second phase produced six fragments of bricks. They are bricks of category I.2: ? × 12.5–13.5 × 4.5–6 cm (Holub 2005a, 79).

Fig. 12
The Old Town Hall, vault of the so-called treasure chamber (photo archive Archaia Brno o. p. s.).

Fig. 13
The Old Town Hall, crown of the vault of the so-called treasure chamber built from format I.2 bricks (photo archive Archaia Brno o. p. s.)

Fig. 14
Panská 6–8, perimeter wall of the basement from format I.2 bricks (photo archive Archaia Brno o. p. s. – inv. no. 386-03-02).

Fig. 15
Kapucínské náměstí – cellar with vault from Gothic format I.2 low bricks (photo archive Archaia Brno o. p. s. – inv. no. 021-06-12).

Brick in medieval burgher masonry architecture in Brno

As Brno underwent a massive reconstruction represented mainly by large-scale demolitions at the end of the 19th century, the result was the destruction of the majority of the historical buildings from the ground floor level up. The remains of brick walls have been preserved to this day to various extents in the relics of several dozen buildings, the number of which is constantly decreasing. The problem concerning the chronology of the individual buildings and their dating is therefore difficult to resolve. Current research in this direction mainly concentrates on the chronology and representation of bricks in the individual construction phases of the houses. In a few cases we are supported by absolute dating established on the basis of dendrochronological analysis and archaeological stratigraphy. The dating is impeded by the absence of chronologically sensitive construction details.

As opposed to the wood and clay houses of the 13th century, in masonry houses we observe more frequent application of brick as a construction material. In the first buildings in particular, this can be partly ascribed to the fact that this was secondary utilisation of bricks from the earlier horizon of wood and clay structures. We know that bricks were also picked up from destruction material that caved into the wood and clay basements, which is supported by the nature of their fill. In a way similar to the earliest church buildings, in the first burgher masonry houses from the period until the first half of the 14th century the application of bricks was limited to building the reveals of window openings and entrances, relieving arches, niches, and discharging archs. A barrel vault has been preserved in the house at **Petrov 2** and before the demolition of the "kamenate" type of house at **Starobrněnská 2–4** there was documentation of the ground floor being spanned by one section of a rib-free cross vault (Borský–Černoušková 1997, 21–22; Merta–Peška 2009, 215n). In both cases they were small-format bricks. Exceptionally, the documentation covers complete perimeter walls, such as in the house at **Panská 6–8** (**Fig. 14**; Holub et al. 2004, 77–79). The period can be characterised by the prevailing continued application of small format bricks of category I (see below). They were used to line cellar windows (e.g. **Česká 10**, **Dominikánské náměstí 2**, **Dominikánská 5**, **Dominikánská 9**, **Kobližná 4**, **Kobližná 10**, **Minoritská 2** (**Fig. 22**) , **Starobrněnská 8**, **Jakubská 6** and elsewhere), reveals of entrances (**Starobrněnská 8**, **náměstí Svobody 8**, **Kobližná 10**, **Minoritská 2**, **Petrov 1** and **Dominikánské náměstí 2**), relieving arches and as reinforcement of windows (**Orlí 16** and **Petrov 1** and **4**)

Fig. 16
Dominikánské náměstí 2 (house of the Cistercian nuns from Staré Brno), arch bearing the ground floor partition built from format I.3 low bricks (photo archive Archaia Brno o. p. s. – inv. no. 059-01-028).

Fig. 17
Petrov 2, arch in the basement built from format I.2 bricks (photo archive Archaia Brno o. p. s. – inv. no. 113-01-24).

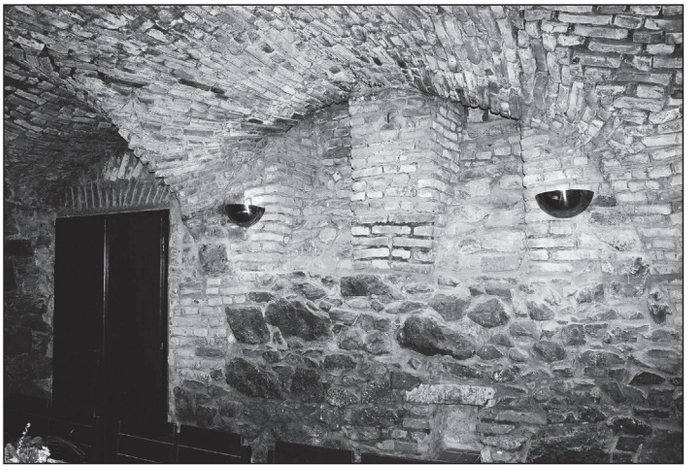

Fig. 18
Petrov 2, lining of the small windows on the eastern side of the basement from format I.2 bricks (photo archive Archaia Brno o. p. s. – inv. no. 120-01-20).

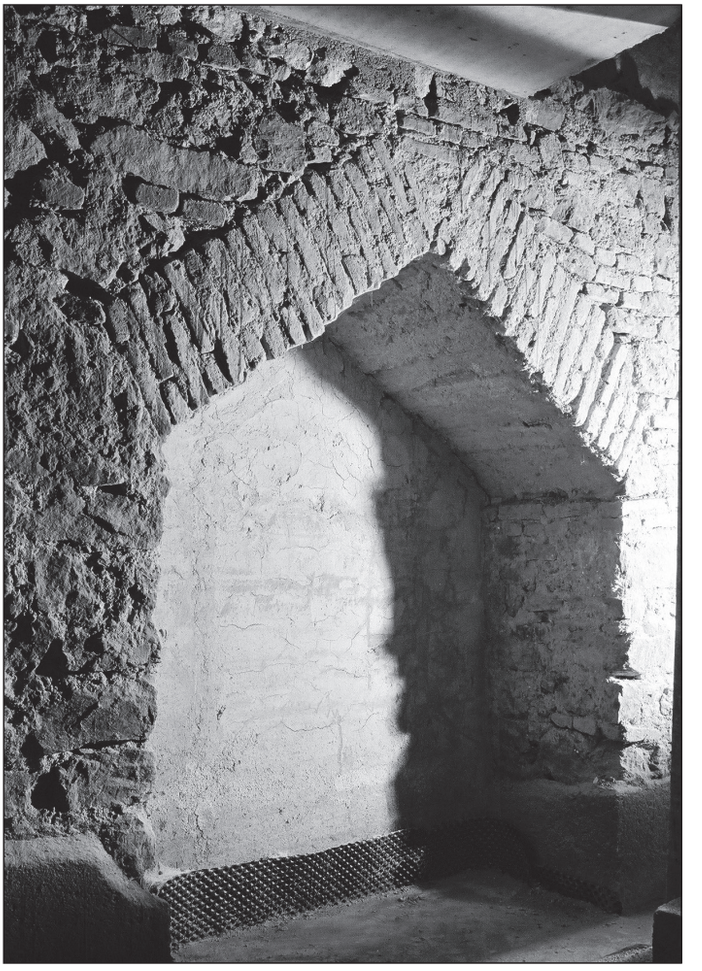

Fig. 19
Dominikánská 9, discharging arch of the basement built from format I.2 bricks (photo archive Archaia Brno o. p. s. – inv. no. 109-01-018).

and candle niches (**Dominikánské nám. 2**, **Dominikánská 5**, **Dominikánská 9**, **Minoritská 2** and others; **Fig. 21**). In one case there is evidence of bricks used for the arch and lining of the sides of an entrance neck to the cellar (**Dominikánská 5**). A barrel vault built from these bricks is documented in two basements (**Petrov 2** and **Kapucínské náměstí**; **Fig. 15** and **18**; on Kapucínské náměstí in greater detail cf. Holub et al. 2007a, 423; on the other locations mentioned cf. Procházka et al. 2003). Bricks were also used to build discharging archs in cellars bearing the above ground structures on the ground floor with a different design of the layout (**Dominikánské náměstí 2**, **Minoritská ulice 2 – Fig. 20**, **Petrov 2 – Fig. 17**), or alternately discharging archs related to the foundations of the foundation walls of the house (e.g. **Kobližná 4**). With the exception of **Dominikánské náměstí 2**, the burgher buildings documented so far have not comprised of more construction phases in which small-format bricks would be used. With regard to the dating of the time of construction of these houses we can only rely on a few rare cases supported by written sources, dendrodata and archaeological stratigraphy (for an overview of masonry architecture see Merta 2001, 41–60; Procházka et al. 2003; Merta–Peška–Procházka 2004, 181; Holub et al. 2007b; 2013a).

The construction of the house at **náměstí Svobody 8** is dated by dendrochronological analysis of the floor beam of the cellar/ground floor to the period after 1278. Likewise, the house at **Kobližná 4** is assigned to the period after 1320 based on an analysis of the beams from the basement structures preceding the construction of the oldest house with masonry walls (Merta–Peška 2005, 149–160). Based on archaeological finds from the fill of the cellar at **Dominikánská 7** burnt by fire the building of the first basement with masonry walls can be dated to the turn of the 13th and the 14th century (Merta et al. 2001, 19–20). The dating of the cellar at **Jakubská St.** (formerly No. 6) built after the

demolition of an earlier house is similar, to the turn of the 13th and the 14th century (Holub et al. 2010a, 414). Both of the earlier phases of the building at **Dominikánské náměstí 2** originated from before 1322, when the house became the property of the Cistercian nuns from Staré Brno. Nevertheless, it could have been built much earlier, in the period before the foundation of the nearby Royal Chapel in 1297 (Holub et al. 2003c, 43–45). At **Orlí 16**, a wood and clay basement was demolished in the second third of the 13th century, immediately preceding the construction of a masonry house (Holub et al. 2007a, 431). These are only a few processed examples related to using low Gothic bricks of category I, the production of which petered out during the first half of the 14th century.

The later construction phases of the burgher houses, as well as new buildings from the 14th and the 15th century, reflect the influence of the building workshops working after 1323 on the brick-built Church of the Assumption of the convent of the Cistercian nuns in Staré Brno and after 1350 on the Augustinian St. Thomas' Church. As in the previous period, the high Gothic brick of category II was used in the reveals of window openings and entrances, their relieving arches, as well as candle niches, and discharging archs. However, as opposed to the low Gothic bricks of category I, it was more frequently used in building barrel vaults and perimeter walls. The use of the shaped forms of bricks became a common practice in that period. The example of a brick-built shelter over a staircase at the house at **Petrov 1** is quite unique (Borský et al. 2006, 206–207; Borský–Holub–Merta 2015, 60–63). The first houses built completely from brick were probably completed during the second half of the 14th and in the 15th century.

The application of high bricks was slow to arrive. It is questionable whether the high and the low format co-existed for some time, but it is very likely. One of the earliest examples of using high bricks is the eastern brick-built core of the house at **Dominikánská 9** – the House of the Lords of Kunštát (**Fig. 20–22**). Typologically, it is the so-called house with center discharging arch for the wall between the rooms on the ground floor (a similar structure is exemplified, for example, by the house at **Dominikánské náměstí 2**, see above; on the problem of house typology in medieval Brno see Peška–Merta 2009, 88–96). It consists of a single-space basement divided by a footing which bears the ground floor partition. Here again, the bricks are only used in the details (a niche and the pockets for embedding the floor beams). The high brick is used as well (Eliáš 2001, 34–41). Bricks of this category are quite regularly applied to building barrel vaults.

Fig. 20
Minoritská 2, discharging arch of the Gothic entrance of the basement built from format I.2 bricks (photo archive Archaia Brno o. p. s. – inv. no. 2811-2004).

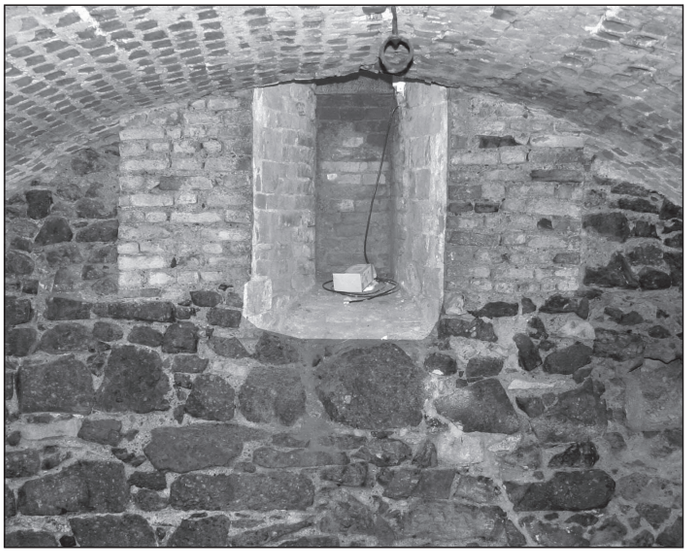

Fig. 21
Minoritská 2, candle niche in the basement from format I.2 bricks (photo archive Archaia Brno o. p. s. – inv. no. 3226-2004).

Fig. 22
Minoritská 2, lining of the street entrance built from format I.2 bricks (photo archive Archaia Brno o. p. s. – inv. no. 3233-2004).

To this day, it is possible to see the vault in the basement at **náměstí Svobody 8**. A frequently occurring feature in this period is the small vaulted cellars extending below the street, e.g. **Zelný trh 17** (Peška 2009), **Starobrněnská 2–4** (Peška et al. 2006), and **Jakubská 7**. In the basement of the house at **Orlí 3** there are pointed discharging arches at the street side built from masonry, forming spacious niches and bearing the above ground section of the eastern perimeter wall of the house. As in the house at **náměstí Svobody 8**, this cellar is an extension of an earlier walled pantry, in which low bricks of category I.1 and I.2 were used (Borský–Černoušková 1998). The southern perimeter wall at **Mečová 2** is relieved and borne by footings from high bricks in the basement, on the ground floor and on the floor. The building was preceded by a wood and clay basement destroyed at the end of the 13th century and an earlier stone foundation of the house (details in Merta–Peška 2007b). High bricks were used more extensively, for example, in the later phases of the basement of today's house at **Kobližná 4**. The building of the house at **Dominikánská 1–3** dates back to the 14th or possibly the 15th century. High bricks were used for the foundations with arches in the basement, window reveals on the first floor, entrance portal from the street to the basement and shaped forms in the discharging arch on the first floor (Merta et al. 2001, 19–20; Procházka et al. 2003, 27–30). The application of bricks in building only architectural details, such as door and window openings and candle niches, continues to prevail even in this period. The reconstruction of the house at **Česká 10** (**Fig. 25**) that belongs to the second half of the 14th century, involved a documented pair of pointed arcades built from shaped forms, inserted into earlier cellars and bearing the northern wall of the newly constructed middle passage. The above-ground part of the house had been inspected only perfunctorily as the house was unexpectedly demolished. Based on the previous inspection of the structure and photographic documentation we know that high bricks were used in the street front, northern perimeter wall, part of the floor and the passage closed from the courtyard by an entrance gate with a pointed relieving arch (Merta et al. 2005, 14). A similar, no longer existing, example of a brick building, was the house at Františkánská 9, where the eastern perimeter wall from category II bricks laid in cross bond was documented (Merta et al. 2000, 99–102). The house at **Josefská 10** partly built from bricks (?) belonged to the same period. Apart from the lining of a small window from the basement at the street side reinforced by high bricks, the documentation included a central brick-built column with footings leaning against it. Given that this house was also demolished prior to a detailed structural-historical survey, we can only ask what the volumes of the brick-built and the above-ground sections were (Procházka et al. 2003, 111).

High bricks have been preserved to a greater extent within the **Old Town Hall** (**Fig. 23** and **24**; Radnická 8), in the **Bishop's Court** (**Fig. 30** and **31**; Muzejní 2) and at **Zelný trh 7 (Fig. 28)**. The buildings have already been published and it was presumed that the described brick structures belonged to the 15th up to the 16th century (Samek 1963, 182–186; 1994, 143–145). Given that the architectural elements on which the dating is based are typical of a period from the mid-14th century to the beginning of the 16th century and they cannot be unequivocally chronologically used for unambiguous dating, we can justifiably presume, from the context of the written sources related to construction work on these buildings and based on comparison with dated sacred architecture and building ceramics from archaeological excavations, that these structural modifications can go back as far as the period around 1350. In terms of dating, an important find is the entrance portal to the cellar of the house at **Petrov 8**, built from shaped forms (8 × 12.5 × 27 cm), which cuts into the archaeological terrains from the 13th to the 14th century and can be stratigraphically situated in the mid-14th century (Procházka et al. 2003, 224).

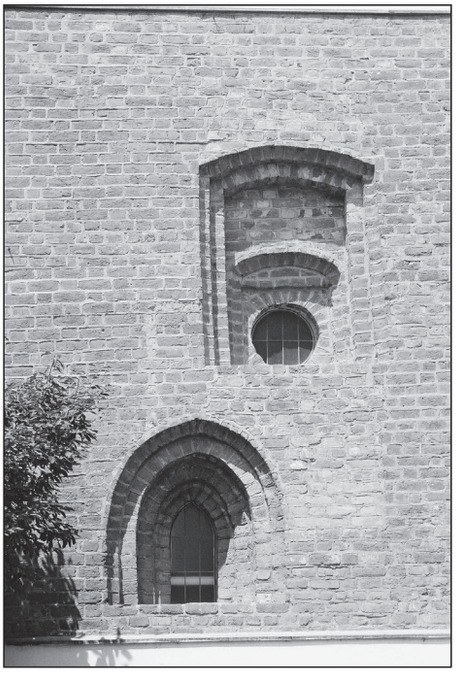

Fig. 23
The Old Town Hall, brick walls on the floor of the house from format II.2 high bricks (photo archive Archaia Brno o. p. s. – inv. no. 175-02-019).

Fig. 24
The Old Town Hall, walled-up blind windows on the floor of the house from format II.2 high bricks (photo archive Archaia Brno o. p. s. – inv. no. 06982-2012).

Fig. 25
Česká 10, northern perimeter wall on the ground floor built from format II.2 high bricks (photo archive Archaia Brno o. p. s. – inv. no. 118-03-23).

Fig. 26
Petrov 3, basement arch built from Gothic format II.2 high bricks (photo archive Archaia Brno o. p. s. – inv. no. 054-02-020).

Fig. 27
Petrov 3, exterior side of the wall from Gothic format II.2 high bricks (photo archive Archaia Brno o. p. s.).

Fig. 28
Zelný trh 7, ground floor wall from format II.2 high bricks (photo archive Archaia Brno o. p. s. – inv. no. 01926-2011).

Fig. 29
Dominikánská 7, front up to the floor level built from format II.2 high bricks. A brick arch preserved above the portal from the Classicist period (photo archive Archaia Brno o. p. s. – inv. no. A00-10-310).

Significant development of brick architecture in the environment of burgher buildings can be identified in the period of the Late Gothic and the Renaissance. What is probably the most important recent find is the context uncovered in the house at **náměstí Svobody 1** (Borský 2005; Borský–Merta–Zůbek 2006, 46n), during the reconstruction of which format II.1 bricks were successfully dated using dendrochronological data from the structure of the first floor. The application of the recovered brick format of 28.5–29 × 14 × 7 cm is dated there between the years 1559–1570 (Borský 2005; Kyncl 2005). Another burgher house from that period built entirely from bricks is the new building at **Dominikánská 7** (**Fig. 29**), dated to the end of the 15th or the beginning of the 16th century. The house reaching the height of the first floor is built from bricks having the 28 × 14 × 8 cm format. Shaped forms were used for the cellar entrance topped by a segment (Procházka et al. 2003, 36–41). Bricks were used at least for the ground floor of the adjoining house at **Dominikánská 9**, the passage of which to the courtyard was terminated by a pointed brick footing. From among the documented buildings we can name the "skeleton" brick house at **Petrov 3** (**Fig. 26** and **27**), from which a substantial part of the ground floor and the first floor including windows and entrances have been preserved (format II.2 bricks sized 27 × 12–13 × 8.5–9.5 cm; Merta–Peška–Procházka 2004, 180). The remains of late medieval buildings also include parts of the structures of the house at **Petrov 2** (**Fig. 32** and **33**; primarily it may have been the whole of the first and the second

Fig. 30
Muzejní ul. – Bishop's Courtyard. Window on the floor lined with format II.1 high bricks (photo archive Archaia Brno o. p. s. – inv. no. 01935-2011).

Fig. 31
Muzejní ul. – Bishop's Courtyard. Small window lined with format II.1 high bricks (photo archive Archaia Brno o. p. s. – inv. no. 01928-2011).

floor; Merta–Peška–Procházka 2004, 180) including a wall around the plot with crenellations. ***12)*** A similar situation can be found at **Petrov 4**, where a new building of the ground floor and the first floor from high bricks probably replaced the original half-timbered structure (Borský 2011). The buildings within the Velký špaliček block of houses, with partly preserved brick structures, also belong there: on the ground floor at **Mečová 6** (28 × 12 × 8 cm; Merta–Peška 2002b, 128) and on the first floor at **Starobrněnská 12** (27 × 13 × 6.5–7 cm; Procházka et al. 2003, 273). A brick-built Late Gothic cellar and a courtyard wing have been documented in the house at **Starobrněnská No. 2–4** (Procházka et al. 2003, 254–258). A similar situation was observed in the basement of the house at **Panská 9**. Among the most recently identified structures the ones that belong to this horizon include the walling on the first floor of the rear wing of a three-part house at **Orlí 16**. A dendrochronologically dated beam from the half-timbered structure (tie beam?) on the street side of the floor from the period after 1510 may be related to the construction of this part of the house (Peška 2006; Holub et al. 2007a, 430–431). However, an earlier date is not impossible. A similar situation is confirmed by the wall on the floor level of the former house at **Orlí 23**. There is also evidence from the Late Gothic period of arcades (footings) inserted in former open passages bearing new floors of the houses. This includes the houses at **náměstí Svobody 1** (Borský–Merta–Zůbek 2006, 45–62), **Mečová 4** (Procházka et al. 2003, 144; Merta–Peška 2002b, 128) and **Starobrněnská 12** (Procházka et al. 2003, 272; Merta–Peška 2002b, 127). An arcade from high bricks serving as the sedile within a presumed mázhaus was uncovered on the ground floor at **Orlí 3** (Borský–Černoušková 1998). The exceptionally well preserved house at **Petrská 1** (**Fig. 35**), where the whole ground floor is covered by the garden terrace and the perimeter walls and relieving arches on the first floor were built using high bricks, belongs to the same period (27.5–28 × 13.5 × 9–9.5 cm; Kolařík–Sedláčková 2016).

12) *Dating is also enabled here by a pair of primary portals whose morphology indicates the turn of the 15th and the 16th century. More on the house at Petrov 2 (Holub–Kolařík 2003, Tab. 2.).*

Fig. 32
Petrov 2, portal inserted in the Late Gothic structure from format II.1 high bricks (photo archive Archaia Brno o. p. s. – inv. no. 04474-2010).

Fig. 33
Denisovy sady, outer ward wall with visible Gothic bonding from format II.2 bricks (photo archive Archaia Brno o. p. s. – inv. no. 01895-2011).

If we consider the examples mentioned above which constitute a mere fraction of former brick architecture in Brno, it is obvious that there can be some problem with the chronology of the formats of high bricks, for which we still do not have sufficient absolute data. We can only establish with certainty the sequence of the development from category I small format bricks to the high formats of category II. In not a single one of the documented examples does the high brick precede small format bricks in terms of its date. The arriving Baroque style was marked by gradual unification towards the medium format which reached today's dimensions.

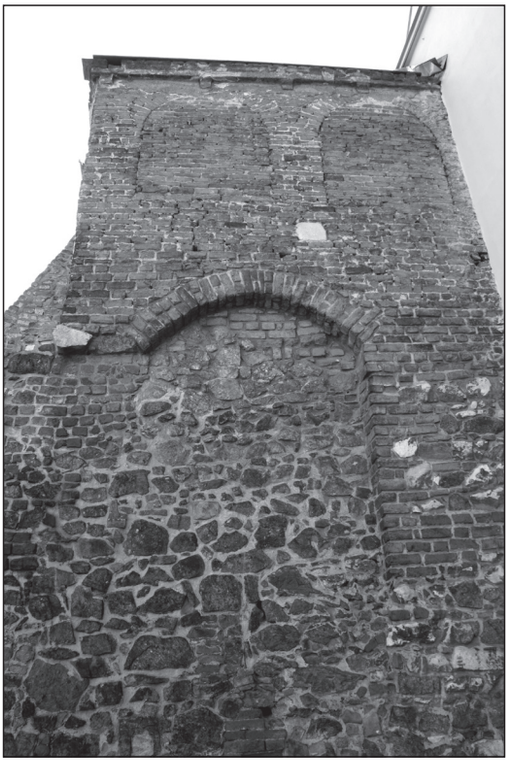

Fig. 34
City wall with a Late Gothic tower built from format II.1 bricks (photo archive Archaia Brno o. p. s. – inv. no. 1905-2011).

Fig. 35
Petrská 2, small window on the floor with lining built from format II.2 bricks (photo archive Archaia Brno o. p. s. – inv. no. 04074-2016).

Brick in the medieval city fortifications in Brno

The city wall was erected sometime after the mid-13th century. The surviving stone structures of the fortification wall, assumed to belong to the earliest construction phase, feature occasionally surviving merlons of the crenellations reinforced by low Gothic bricks.

Between 1350 and 1353 the Jewish Gate underwent reconstruction and between 1354 and 1356 the Běhounská Gate was repaired. We know from written sources that in the Jewish Gate a window sill was to be built from bricks under the roof of the inner tower with larger and smaller slits for archers. The exterior smaller tower was to rise six ells above the gate's vault and was to be protected by roofing (Kolařík 2008, 122–161). The same or following period of construction work could probably be associated with the building of a brick parapet fitted with slits preserved in a section of the outer bailey wall below Petrov (**Fig. 34**). In the period of the Late Middle Ages format II.1 bricks were used for building the mixed walls of the outer bailey documented in the area of Moravské náměstí (? × 13 × 8 cm), in the bastion at Bašty (? × 13 × 8 cm) and the escarpment of the moat, which is confirmed on Solniční St. (27.5 × 12.5–13 × 7.5 cm). Bricks were used to build the arch and the railing of the bridge in front of the Veselá Gate (28 × 13.5 × 7.5 cm).

The structures in front of the Běhounská Gate, dated to the period of the Early Middle Ages, were built using almost exclusively category IV bricks (format 29 × 14 × 6.5 and 30.5 × 14.5 × 6.5 cm; Kolařík 2007, 150–151).

Brick bonding and pointing

In category I bricks and generally in the earliest buildings the prevailing bond is the irregular cross bond stretcher – header, which can be documented at Petrov 2, as well as in the southern wing of the Dominican monastery. In these buildings a surface finish by pointing was applied very rarely, and is completely missing in window reveals, niches and entrances from basements of houses with masonry walls (**Fig. 36**). Pointing in low format bricks is only confirmed in the western wing of the Dominican monastery dated to the period after 1266.

In high bricks (category II) and hence later buildings the regular cross bond prevailed completely. It is well observable, for example, in the Church of the Assumption in Staré Brno (**Fig. 37**), St. Thomas' Church (**Fig. 38**), as well as at Radnická 8, Zelný trh 7 and in the Bishop's Court. The walls from face bricks were usually modified with carved (Česká 10, Mečová 2, 4,

Orlí 16; **Fig. 39**) and, exceptionally, embossed (Church of the Virgin Mary in Staré Brno) pointing. There is also documented pointing in the bell tower of the Minorite monastery on Jánská St. In buildings reconstructed in the past (Radnická 8, Zelný trh 7, Muzejní 2), the form of pointing cannot be presently identified.

Fig. 36
Minoritská 2, surface finish of masonry wall from format I.2 bricks (photo archive Archaia Brno o. p. s. – inv. no. 2794-2004).

Fig. 38
St Thomas' Church, original pointing of the inner corner of a buttress at the southern wall built from format II.1 bricks (photo archive Archaia Brno o. p. s. – inv. no. 06083-2014).

Fig. 37
Staré Brno – Church of the Assumption, original pointing of the masonry wall from format II.1 bricks preserved in the roof truss area (photo archive Archaia Brno o. p. s. – inv. no. 07040-2016).

Fig. 39
Orlí 16, surface finish of masonry wall on the floor – format II.2 bricks (photo archive Archaia Brno o. p. s. – inv. no. 04496-2006).

Application of shaped forms of brick

Using shaped forms is usually associated with later high bricks of category II. A number of surviving buildings use shapes to line the reveals of entrances and windows. They are, again, the Church of the Assumption and St. Thomas' Church (see below). Other evidence, including secondary evidence, comes from secular buildings: the Bishop's Court, Česká 10, Dominikánská 1–3 and 7, Mečová 2, Radnická 8, Zelný trh 7 and Petrov 8. The shaped forms of category II size had on one or both sides a grooved corner at the facing side. They were mainly used for lining window openings and entrances.

Simple, bevelled small-format shapes of category I size have so far been documented only in religious buildings. In the western wing of the Dominican monastery they were used for lining the window and door reveals from the second construction phase after 1266. From the Minorite monastery we know of shapes bevelled on both sides in secondary positions.

The only piece of evidence of glazed shapes, which may have been used in some of the later high medieval reconstructions of the original Dominican church have been documented as secondary application in the perimeter wall of the newly-built St. Michael's Church from the second half of the 17th century (Holub 2001).

The typology and dating of medieval bricks in Brno

The basic brick-maker's goods in the 13th century were masonry, flooring and covering bricks (Winter 1906, 157–159), in today's terminology bricks, roofing and tiles. In general we can classify brick products by the purpose they are to serve: standard bricks, arch bricks, fortification bricks, chimney bricks (in a questionnaire in 1836 marked redundant, replaced by standard bricks), bricks for lining the walls of wells and highly specialised shaped forms of brick for building various architectural elements (window sills, sconcheons, reveals and ribs), floor tiles, roof tiles and convex bricks (c.f. Picmausová 1985, 21–26; Ebel 2001, 30; Teyssler–Kotyška 1928, 1019).

An important accompanying feature of medieval bricks in Brno is finger-shaping which occurs on bricks dated from the 13th to the 16th centuries. The last format where finger-shaping can be observed is category II.1 (ca. 27–29 × 13–15 × 6.5–8 cm with different variations), which belongs to the Late Gothic or the early Renaissance (15th–16th century).

The oldest bricks from archaeological finds in Brno can be dated to the first half of the 13th century up to the beginning of the 14th century when brick formats underwent rapid development.

Based on a comparison of the dimensions it is possible to distinguish four basic format categories marked with Roman numerals I–IV (according to Holub 2006).

Category I – Gothic low brick

I.1: low, small-format brick, 20–22 × 9–10.5 × 3.5–5.25 cm. In archaeological contexts and structures it can be found in the original position only in buildings from the 13th century, the latest date of occurrence is probably the turn of the 13th and the 14th century. Naturally, in a secondary context it continues to occur beyond that point.

I.2: low brick, 23 (22.5)–26 × 11–13 × 4.5–6.5 (6.75) cm. In archaeological contexts in Brno it is found as early as the mid-13th century, perhaps even earlier than small-format brick I.1. Its gradual disappearance may be traced to the beginning of the 14th century.

I.3: low brick, 26–27 × 13–14 × 5.5–6 cm. It can also be traced back to the contexts of finds from the first half of the 13th century (again only height and width) and it disappears at the turn of the 13th and the 14th century.

Category II – Gothic high brick

II.1: high brick, 27–29 × 13–15 × 6.5–8 cm. It appears in find contexts from the turn of the 14th and 15th centuries and vanishes during the 16th century. However, a brick format that can be assigned to this class also occurs in the mid-13th century in the Dominican monastery (Peška 2002). The dimensions in this category intersect with format IV of modern brick, so to distinguish them it is necessary to also compare other technological values. Dating of this format is supported by a dendrochronological date obtained from a beam under a discharging arch ***13)*** in the building at náměstí Svobody 1. ***14)***

II.2: format 27–29 × 13–14.5 × 8.5–10 cm. High Gothic brick (folk called "buchta" or "bun") begins to appear in archaeological finds in Brno from the second half of the 13th century, but more probably from its end. At the turn of the 14th and the 15th centuries it is gradually replaced by lower format II.1.

13) *The footing is built using bricks of the 28.5–29 × 14 × 7 cm format.*

14) *The dendrochronological date of the oak tie bars was determined by J. Kyncl to between 1559 and 1570 (Kyncl 2005).*

Category III – arch bricks

III.1: format 24.5–25.5 × 17.5–18.5 × 5.5–6 cm. It is represented by arch bricks. The format was used with great certainty during the 16th century, and we might perhaps also consider the end of the 15th century.

III.2: format 22–23.5 × 15.5–17 × 5.5–7 cm. It is again representative of arch bricks. The earliest dated occurrence is confirmed to the turn of the 14th and the 15th centuries in the fills of the brick firing oven on Božetěchova St. and within the precinct of the Carthusian monastery (Holub–Sedláčková 2005). It is again commonly used in the 15th and 16th centuries and we can include here two shapes carved on both sides at the face from the collection of finds in Brno.

Fig. 40
Staré Hvězdlice, All Saints' Church, presbytery with pilaster strips from hewn bricks (photo archive Archaia Brno o. p. s. – inv. no. 1077-2009).

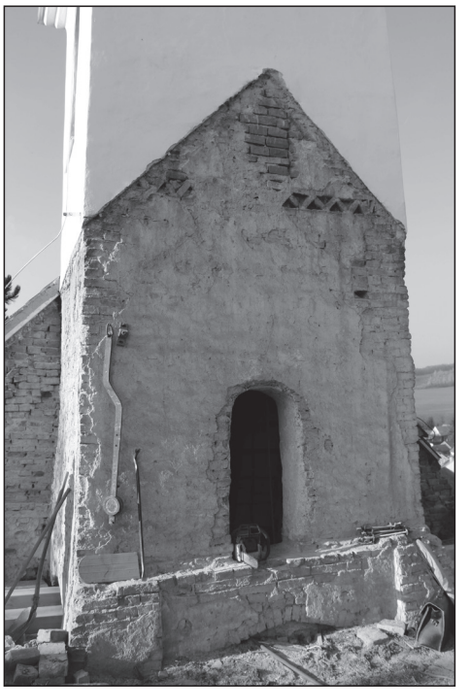

Fig. 41
Staré Hvězdlice, All Saints' Church, tower after removal of the later truss (photo archive Archaia Brno o. p. s. – inv. no. 23303-2009).

Fig. 42
Staré Hvězdlice, All Saints' Church, view of the triumphal arch and into the church presbytery (photo archive Archaia Brno o. p. s. – inv. no. 5262-2009).

Category IV – modern formats of bricks

IV.1: format 28–29.5 × 13.5–15.5 × 6–7 cm begins to occur in find contexts in Brno from the 17th century and can be identified with the stipulated format for the regions of Vienna and Lower Austria from 1686 (c.f. Ebel 2001, 30; Schirmböck 1971–1973, 226–227).

IV.2: format 30–31 × 14.5–15 × 5.5–7 cm can be assigned to the period of the end of the 18th–19th century and can be related to the regulation of the dimensions of brick products in 1788 and 1836 (Ebel 2001, 30–33).

Brick in sacred buildings in South Moravia (a brief overview) *15)*

15) Most recently, the context of medieval brick architecture and the individual sites in South Moravia was also dealt with in a short article by Zdeněk Vácha, who generally questions the feasibility of dating brick formats (Vácha 2012). However, our opinions tend to slightly differ in this respect.

Apart from the above-mentioned Cistercian monastery at Velehrad (**Fig. 44** and **45**) and the parish churches – St. Wenceslas' Church in Kostelec near Kyjov (**Fig. 43**) and All Saints' Church in Staré Hvězdlice (**Fig. 40–42**) – we should also mention the parish **Church of St. Laurence in Vracov near Hodonín**, which is placed in connection with the Velehrad building workshop. It is thought to have been built sometime in the 1240s. The primary vault of the presbytery was built from brick (Richter 1956–1957; Líbal 2001, 550). Using small-format and medium-format bricks is also known from some churches within South Moravia. In a secondary application this format of bricks is documented in the presbytery of the parish **Church of St. Bartholomew in Medlov**. The presbytery was built sometime after the mid-14th century. The great number of secondarily applied small-format bricks is indicative of their use in the earlier structure – the first mention of the church comes from 1238 (Samek 1999, 460–461). Sometime at the end of the 13th century a new presbytery roofed over with two panels of a cross vault was built in the **Church of St. Laurence in Branišovice**. The panels were constructed from bricks sized 25 × 13 × 6 cm (Samek 1994, 119). For the time being it is the only known example from that period in a village environment.

One of the most important brick buildings within the area of South Moravia is undoubtedly the former **Rosa Coeli convent of Premonstratensian nuns in Dolní Kounice** (**Fig. 48–50**). The convent was founded at the end of the 12th century and in the following periods it was extended, modified and rebuilt. There are no preserved convent buildings from the end of the 12th and the beginning of the 13th centuries with the exception of a torso on the ground floor of the floor-high cloister.

Fig. 43
Kostelec u Kyjova, St. Wenceslas' Church (photo archive Archaia Brno o. p. s. – inv. no. 11665-2012).

Fig. 44
Velehrad, monastery, Basilica of the Assumption and St. Cyril and Methodius, northern wall (photo archive Archaia Brno o. p. s.).

Fig. 45
Velehrad, monastery, Basilica of the Assumption and St. Cyril and Methodius of the Cistercian monastery. Gothic window in the northern wall of the nave (photo archive Archaia Brno o. p. s.).

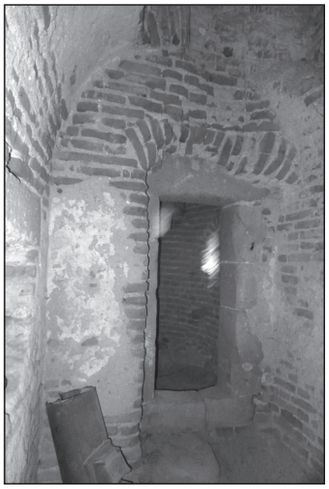

Fig. 46
Předklášteří u Tišnova, Basilica of the Assumption of the "Porta Coeli" convent of Cistercian nuns. Gothic portal with a room on the floor at the western front (photo archive Archaia Brno o. p. s. – inv. no. 17872-2015).

The construction of the large church and the convent proper began sometime in the last third of the 13th century as is confirmed by its western wing that the original convent was composed into. A typical feature of masonry constructions from that period is the characteristic "orange" mortar and the application of small-format bricks for building architectural details such as entrances or windows (5–5,5 × 10,5–11 × 25 cm). Outside excavated contexts their remains are visible mainly in the western exterior wall of the cloister. The same format of bricks was also used in building the vault above a room in the western wing of the convent.

The next building horizon is represented by the completion of the cloister and the convent church. The horizon is characterised by using bricks of large format applied as face bricks (8 × 14 × 27 cm). These activities can be put to the second third of the 14th century. Other convent buildings are not known for the given period. After the Hussite wars the convent was repaired, again using high bricks (8–9 × 15 × 27 cm). At least the former convent church was renovated in the spirit of Baroque Gothic after 1700. Given that the convent was destroyed by fire soon afterwards we are unaware of the details of the reconstruction work (Merta–Peška 2015).

Bricks were used to a certain extent during construction work in the **Porta Coeli convent of Cistercian nuns in Předklášteří** (**Fig. 46**). The convent was established in 1233 by Queen Constance (Líbal 2001, 489–496; Foltýn et al. 2005, 612–619). Bricks were not used in the earliest building horizon related with the founding of the convent, but only later during structural modifications which are certain to have taken place still in the second half of the 13th century. These construction activities were connected with the rebuilding of the spiral staircase situated at the western front and leading to the trusses of the basilica. Medium-format bricks were used to build the barrel vault of a new tiny room of indefinite purpose on the floor level. ***16)***

In the 14th century, minor modifications, from today's knowledge, were conducted in the **church of the Cistercian nuns in Oslavany** (**Fig. 51**; more on the convent in Foltýn et al. 2005, 589–594; Líbal 2001, 309–310). The most significant of those was the building of a brick Sanctus spire above the triumphal arch of the church from bricks of high format sized 28 × 13 × 8 cm. The reconstruction also affected the buildings of the convent proper and the extent of the work is known to us, but we have no knowledge of possible further application of brick.

In 1356 Čeněk of Lipá received approval from the Pope to establish the **Augustinian monastery in Moravský Krumlov**. From the convent church of St. Bartholomew only the presbytery was built in a similar way as St. Thomas' Church of the Augustinians in Brno, i.e. from unplastered face bricks ***17)*** and using stone for architectural elements. B. Samek presumes that the work was done in collaboration with the same building workshop as in Brno (Samek 1999, 588–589).

Rebuilding work was undertaken sometime during the second half of the 14th century in the **Church of St. Peter and Paul in the convent of Magdalene nuns in Dalešice** (**Fig. 52**). The chapel of St. Mary Magdalene was added to the north of the nave (according to B. Samek before 1392). Built in stone, it was accessed from the west through a monumental portal with nested arches from high bricks and shaped forms (Samek 1994, 363).

An important brick building is the parish **Church of St. Margaret in Loděnice** (**Fig. 53**). The church is mentioned for the first time in 1222, although its present form is later. It is usually thought that the triple nave terminated by a polygonal presbytery was built in two construction stages, first in the 1430s to 1440s, second around the mid-15th century (completion of the triple nave). The structure is thought to have been built from high bricks of identical format: 26 × 12.5 × 9 cm (Samek 1999, 397–399).

16) *This construction work was identified by the authors of the text (David Merta and Marek Peška) during an investigation of the convent in the autumn of 2015.*

17) *An attempt to establish the brick dimensions failed.*

Fig. 47
Dolní Kounice, former Church of the Virgin Mary of the "Rosa Coeli" convent of Cistercian nuns. Western perimeter wall of the cruciform corridor – masonry lining of the Gothic window (photo archive Archaia Brno o. p. s. – inv. no. 25363-2017).

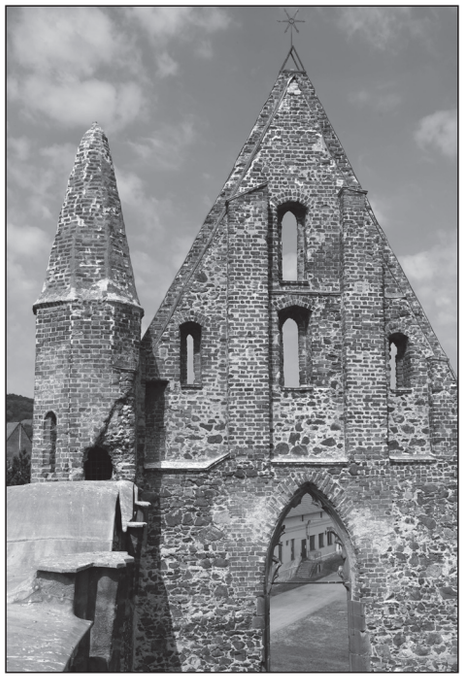

Fig. 48
Dolní Kounice, former Church of the Virgin Mary of the ""Rosa Coeli" convent of Cistercian nuns. View from the church nave to the gable of the western front with a spire (photo archive Archaia Brno o. p. s. – inv. no. 25363-2017).

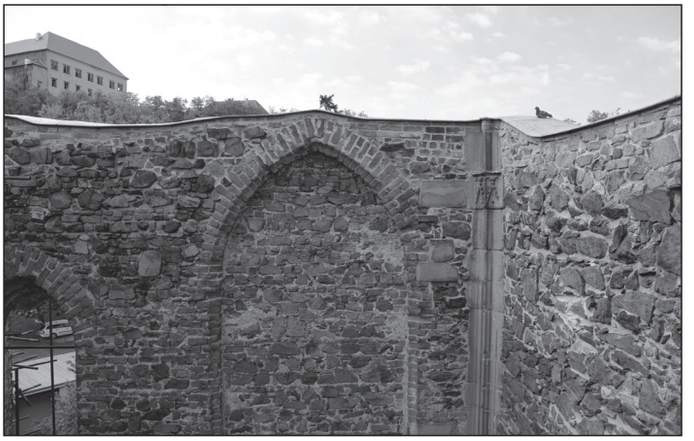

Fig. 49
Dolní Kounice, former Church of the Virgin Mary of the "Rosa Coeli" convent of Cistercian nuns. View of the northern wall of the transept from the interior (photo archive Archaia Brno o. p. s. – inv. no. 25343-2017).

Fig. 50
Dolní Kounice, former Church of the Virgin Mary of the "Rosa Coeli" convent of Cistercian nuns. Niche in the eastern wall of the southern part of the transept (photo archive Archaia Brno o. p. s. – inv. no. 25429-2017).

Fig. 52
Dalešice, Church of St. Peter and Paul of the former Benedictine monastery. The chapel (photo archive Archaia Brno o. p. s. – inv. no. 11223-2006).

Fig. 51
Oslavany, Church of the Mother of God of the former "Vallis sanctae Mariae" convent of Cistercian nuns. View of the inside of the bell tower of the church (photo archive Archaia Brno o. p. s. – inv. no. 151-03-36).

18) *Here it seems fitting to quote Bohumil Samek who states that the second construction stage (1443–1466) was undertaken by an archaically oriented workshop (Samek 1999, 398).*

It is, however, questionable whether the church can be dated like this. Some details such as tie beams and cantilevers may be assigned to a period of a hundred years earlier. ***18)*** Similar, or even identical, elements are used in the convent in Dolní Kounice. An earlier dating would be supported by the sharply pointed windows of the presbytery, as we could find similar windows in Rosa Coeli or even in the convent of the Cistercian nuns in Staré Brno. The brick format also makes this dating possible. The dating is in accord with D. Líbal, who considers the triple nave to be a construction from the turn of the 13th and the 14th centuries and he allocates the building of the presbytery to the last quarter of the 14th century (Líbal 2001, 240).

The parish **Church of the Assumption in Ivančice** (**Fig. 54**) has its origin in the 1230s. In 1304 it was set on fire and work on the new building began sometime after 1312. The presbytery was built first, followed shortly by the tower. The building of the triple nave started in the third quarter of the 14th century using high bricks of the 25 × 13 × 8.5 cm format (Líbal 2001, 138–139; Samek 1994, 395n).

Reconstruction work would also be undertaken in other sacred buildings. We can mention as an example the **Church of the Holy Cross in Nebovidy** (**Fig. 55**), where the western front was modified with a new inserted double-nested pointed portal from shaped bricks. North of the portal a small window crowned by an arch was also built from shaped bricks (shaped brick dimensions were 27–28 × 12.5–13 × 7.5–8 cm), and a similar design of the triumphal arch, which refers to the church vaulting. This happened sometime in the third quarter of the 14th century (Líbal 2001, 273; Samek 1999, 644–647). In the **Church of St. James the Greater in Hodonice** (**Fig. 56**) the reconstruction after the mid-14th century involved

building a new presbytery with a sacristy, raising the staircase at the southern side of the western front as well as the original nave and furnishing it with a masonry helmet (Líbal 2001, 98; Samek 1994, 492–493). At least this construction work was made using high bricks and shapes. We are also aware of the rebuilding of the **Church of St. Philip and James in Lelekovice** in the third quarter of the 14th century, when the nave and the presbytery were raised, so that they could bear a vault (Líbal 2001, 227; Samek 1999, 326–328). The western front and eastern gable of the nave above the triumphal arch were modified, and this work leads us again to think of greater application of bricks during the modification. Among the more important buildings we should not omit the Louka monastery near Znojmo (**Fig. 57**), established in 1190 by the Bohemian appanage prince Conrad II. Brick building was introduced there at the turn of the 14th and the 15th centuries, when high bricks were used to complete both towers and the presbytery of the church. The same bricks can be found in the walls of part of the ground floor of the surviving western wing of the cloister (Vácha 2012; Kroupa et al. 1997).

Our list contains only a few selected examples of buildings that we had an opportunity to investigate. This problem has so far been addressed more or less randomly and not systematically and at the level it would deserve. With regard to the overall context it should be added that the small-format brick also appears in the earliest layer of the buildings in Olomouc – such as in the former Dominican monastery and even in Jihlava – e.g. the entrance neck to the utility room of a house built after 1235. We assume that the absence of small-format and medium-format bricks in Znojmo, the fourth largest medieval town in Moravia, is due to the unsatisfactory state of research. High Gothic bricks from the end of the 14th and the 15th century are represented in each of the three towns.

Final summary

Within the environment of South Moravia brick finds application in sacred architecture from as early as the beginning of the 13th century. Exceptions are the Cistercian Abbey at Velehrad and the parish churches in Kostelec near Kyjov and in Staré Hvězdlice, where brick is used as the main building material. From the same period we should mention the application of brick in building the vault over the presbytery of the church in Vracov. As an element for building architectural details brick is probably used quite often, although convincing evidence is missing. Using small-format bricks in the 13th century for vaulting was identified in the western wing of the convent in Dolní Kounice. The rare application (certainly as a result of the state of research and preservation) of brick to build a vault is evidenced by the presbytery of the church in Blížkovice from the end of the 13th century. A profound change came with the building of the convent of Cistercian nuns in Staré Brno in the third decade of the 14th century. Other newly-built religious buildings (the Rosa Coeli convent in Dolní Kounice, the Augustinian monastery in Brno, the Augustinian monastery in Moravský Krumlov, the Church of St. Margaret in Loděnice, the church in Ivančice, the Carthusian monastery in Královo Pole) take advantage of the aesthetic of front walls from face bricks. In general, it can be stated that from the time of the construction of the convent of Cistercian nuns in Staré Brno brick completely took over the field in sacred architecture.

From the second third of the 13th century burgher houses made from timber and clay to a limited extent use bricks, floor and roof tiles as complementary building material. Given the fact that only the defunct basements have survived from these buildings it is difficult to decide in which parts of the buildings the bricks were used. In cellars they were used, for example, to line the entrance necks and in the above-ground parts of the house to build the base underneath the fireplace (e.g. Mozart Street, see Holub et al. 2003b, 80–81). Their fills, either a result of destruction by fire or the levelling out of the demolished house, yield four formats of brick. They include the so-called small-format bricks and Gothic low bricks of larger format (category I), and finally Gothic high bricks (category II).

Fig. 54
Ivančice, Church of the Assumption (photo archive Archaia Brno o. p. s. – inv. no. 17047-2016).

Fig. 53
Loděnice, Church of St. Margaret. The presbytery (photo archive Archaia Brno o. p. s. – inv. no. 20076-2011).

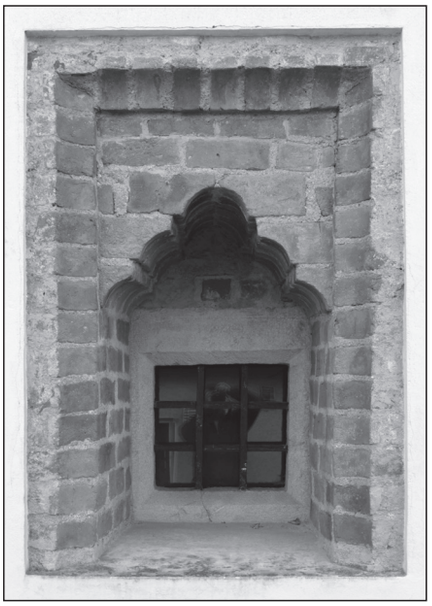

Fig. 55
Nebovidy, Church of the Holy Cross. A small window (photo archive Archaia Brno o. p. s. – inv. no. 16077-2013).

Fig. 56
Hodonice, Church of St. James the Greater. The spire (photo archive Archaia Brno o. p. s. – inv. no. 07444-2007).

The so-called Old Town Hall (Radnická 8) also belongs to this period. In this building, dated to before the mid-13th century, medium format bricks were extensively used in building parts of the preserved gable above the northern wing and the vault over the so-called treasure house. In the case of the gable it is the first known application of face bricks in an above-ground wall in Brno.

In the earliest masonry horizon which immediately followed after houses made from timber and clay, bricks are mainly used to line window and entrance openings, candle niches and rarely to build structural archs. Evidence of using small-format bricks to build a vault over the whole floor or its part is only exceptional (basement Petrov 2, floor Starobrněnská 2–4).

Wider application of brick in burgher masonry architecture arrives as late as the first half of the 14th century in connection with the above-mentioned building of the Church of the Assumption and the convent of the Cistercian nuns in Staré Brno and St. Thomas' Church and the Augustinian monastery. In this period bricks are used to build complete floors in houses. We presume that it was primarily a case of replacing original half-timbered structures. Bricks are also used in the vaults of cellars, often extending from older cellars into the public space (e.g. Zelný trh 17). The most significant examples of brick architecture in this period, in addition to sacred buildings, are the Old Town Hall (Radnická 8), the houses at Zelný trh 7 and Petrov 3 and a building within the precinct of the Bishop's Court (Muzejní 2).

However, the real advance of brick architecture which definitively put an end to using stone did not happen until the Renaissance period. This period also brings the first more extensive demolition of medieval masonry architecture and its replacement by new buildings with a different concept of the floor plan. A typical example of this building is the house at Dominikánská 7.

The brick typology in the Brno region may reflect the incoming cultural influences – low brick originates from the Danube basin, being Roman heritage, while high brick found its way to Brno from northern Germany via Silesia.

Compared to other "brick" cities, such as Trnava in Slovakia or Wroclaw in Poland, the significant format changes driven by the different cultural influences in combination with using several types of stone in Brno provide us with a unique complementary alternative for dating medieval buildings.

Fig. 57
Znojmo, Louka, St. Wenceslas' Church of the Premonstratensian monastery (photo archive Archaia Brno o. p. s. – inv. no. 4246-2007).

References

BÁRTA, R. 1973
Naše cihlářství v minulosti. Příspěvky k dějinám skla a keramiky 2, Rozpravy Národního technického muzea v Praze 45, 81–106.

BENEŠOVSKÁ, K. 2010
Královna Eliška a klášter cisterciaček Aula Sanctae Mariae.
In: Benešovská, K. (ed.), Královský sňatek. Eliška Přemyslovna a Jan Lucemburský. Praha, 488–497.

BEYER, H. B. – ZEISER, H. J.
Obležení Brna Švédy v roce 1645, pohled z ptačí perspektivy, olejomalba na plátně z roku 1650. Obraz uložen v MuMB pod inv.č. 2284.

BORSKÝ, P. 2005
Brno – Náměstí svobody 1. Stavebněhistorický průzkum. Nepublikovaný rukopis uložený v archivu Archaia Brno o. p. s. Brno.

BORSKÝ, P. 2011
Kanovnický dům čp. 273 (k. ú. Brno-město) na Petrově č. 4. Stavebněhistorický průzkum. Nepublikovaný rukopis uložený v archivu Archaia Brno o. p. s. Brno.

BORSKÝ, P. – ČERNOUŠKOVÁ, D. 1997
Objekt Starobrněnská 2/4 – Mečová 10 v bloku tzv. Velkého špaličku v Brně. Stavebněhistorický průzkum. Nepublikovaný rukopis uložený v archivu Archaia Brno o. p. s. Brno.

BORSKÝ, P. – ČERNOUŠKOVÁ, D. 1998
Objekt Orlí 3 v Brně. Stavebněhistorické posouzení sklepů a části parteru. Nepublikovaný rukopis uložený v archivu Archaia Brno o. p. s. Brno.

BORSKÝ, P. – ČERNOUŠKOVÁ, D. 1999
Kostel sv. Kunhuty v Brně – Zábrdovicích. Stavebněhistorický průzkum. Nepublikovaný rukopis uložený v archivu Archaia Brno o. p. s. Brno.

BORSKÝ, P. – HOLUB, P. – MERTA, D. 2015
Brněnská stínadla. K historické topografii Hory sv. Petra a historii domu Petrov č. 275/1. In: Červená, R. (ed.), Archivum amicus historici est. Sborník k životnímu jubileu Hany Jordánkové. Brno, 47–72.

BORSKÝ, P. – HOLUB, P. – MERTA, D. – PEŠKA, M. 2006
Petrské návrší v Brně – poznámky k vývoji zástavby, Dějiny staveb 2006, 200–212.

BORSKÝ, P. – HOLUB, P. – MERTA, D. – SEDLÁČKOVÁ, L. 2012
Ke stavebnímu vývoji cel v kartuziánském klášteře v Králově poli, Brno v minulosti a dnes 25, 10–32.

BORSKÝ, P. – MERTA, D. – ZŮBEK, A. 2006
Dům U zlatého orla čp. 95 na náměstí Svobody č. 1 v Brně. Památková péče na Moravě, Monumentorum Moraviae Tutela 12, 45–62.

BRETHOLZ, B. 1901
Die Pfarrkirche St. Jakob in Brünn. Brünn.

BUCHLINGER, G. – MITCHELL, P. – SCHÖN, D. – SCHÖNFELLNER-LECHNER, H. 2008
Die Domus Gozzonis in Krems an der Donau – Das Haus des Stadtrichters Gozzo aus dem 13. Jahrhundert und seine Entwicklung bis zum Ausgang des Mittelalters, Castellologica Bohemica 11, 165–190.

ĆURČIĆ, S. 2010
Architecture in the Balkans: From Diocletian to Süleyman the Magnificent, c. 300–1550. New Haven – London.

DOHNALOVÁ, P. 2006
Středověké sakrální stavby a jejich doklady na moravských hradech. Magisterská diplomová práce na Ústavu archeologie a muzeologie FF MU. Brno.

DOSTÁL, E. 1928
Umělecké památky Brna. Praha.

DŘÍMAL, J. 1947
Zemský dům. Brno.

EBEL, M. 2001
Rozměry cihlářských výrobků, Dějiny staveb 2001, 30–33.

ELIÁŠ, J. O. 1986
Minoritský klášter v Brně, Archaeologia historica 11, 313–319.

ELIÁŠ, J. O. 2001
Dům pánů z Kunštátu v Brně, Dějiny staveb 2001, 34–41.

FLODR, M. (ED.) 2005
Pamětní kniha města Brna z let 1343–1376 (1379). Prameny dějin moravských 8. Brno.

FLODROVÁ, M. 1996
Brněnská cihelna „Na Leči" ve 14.–16. století, Archeologia technica 10, 110–113.

FOLTÝN, D. ET AL. 2005
Encyklopedie moravských a slezských klášterů. Praha.

HOLUB, P. 2001
Dokumentace kostela sv. Michala v Brně. Nepublikovaný rukopis uložený v archivu Archaia Brno o.p.s. Brno.

HOLUB, P. 2002
Nález dvou parvů Jana Lucemburského v Brně na Mozartově ulici, Numismatik VII/4, 14–16.

HOLUB, P. 2006
Stavební keramika v Brně na základě nálezů z archeologických výzkumů. Magisterská diplomová práce na Ústavu archeologie a muzeologie FF MU. Brno.

HOLUB, P. – KOLAŘÍK, V. 2003
Brno, Petrov – kanalizace. Nálezová zpráva č. j. 48/03 uložená v archivu Archaia Brno o.p.s. Brno.

HOLUB, P. – KOLAŘÍK, V. – MERTA, D. – PEŠKA, M. – POLÁNKA, P. – SEDLÁČKOVÁ, L. – ZAPLETALOVÁ, D. – ZŮBEK, A. 2007a
Brno (okr. Brno-město), Přehled výzkumů 48, 410–461.

HOLUB, P. – KOLAŘÍK, V. – MERTA, D. – PEŠKA, M. – SEDLÁČKOVÁ, L. – ZAPLETALOVÁ, D. – ZŮBEK, A. 2010
Brno (okr. Brno-město), Přehled výzkumů 51, 395–432.

HOLUB, P. – KOLAŘÍK, V. – MERTA, D. – PEŠKA, M. – ZAPLETALOVÁ, D. – ZŮBEK, A. 2004
Předběžné výsledky záchranných archeologických v Brně v roce 2003, Přehled výzkumů 45, 39–96.

HOLUB, P. – KOLAŘÍK, V. – MERTA, D. – PEŠKA, M. – ZAPLETALOVÁ, D. – ZŮBEK, A. 2005a
Ke stavu poznání nezděné měšťanské architektury vrcholně středověkého Brna, Forum Urbes Medii Aevi II, 44–100.

HOLUB, P. – KOLAŘÍK, V. – MERTA, D. – PEŠKA, M. – ZŮBEK, A. 2013
Bürgerliche Architektur des hochmittelalterlichen Brno/Brünn. In: Hoffmann, Y – Richter U. (Hrsg.), Die Frühgeschichte Freibergs im überrregionalen Vergleich. Städtische Frühgeschichte, Bergbau, früher Hausbau. Halle, 457–471.

HOLUB, P. – KOLAŘÍK, V. – MERTA, D. – ZBRANEK, H. 2010
Terénní dokumentace z akce č. A085/2010, Vojenská nemocnice – LSPP (klášter), uložená v archivu Archaia Brno o.p.s. Brno.

HOLUB, P. – KOLAŘÍK, V. – MERTA, D. – ZŮBEK, A. 2005b
Poznámky k topografii nejbližšího okolí bývalého herburského kláštera v Brně, Brno v minulosti a dnes 18, 485–528, 659–673.

HOLUB, P. – KYNCL, T. – MERTA, D. – ŠABATOVÁ, L. 2013
Zvonice minoritského kláštera v Brně, Forum Urbes Medii Aevi VII./1–2, 90–107.

HOLUB, P. – MERTA, D. – PEŠKA, M. – PROCHÁZKA, R. 2007b
The origins of burgher architecture in high-medieval Brno (until the mid-14th century). In: Mediaeval Europe 2007, 4e Congrés International d'Archéologie Médiévale et Moderne. Paris. Available from: <http://medieval-europe-paris-2007.univ-paris1.fr/Fr.htm>.

HOLUB, P. – MERTA, D. – PEŠKA, M. – PROCHÁZKA, R. – ZAPLETALOVÁ, D. – ZŮBEK, A. 2003a
Nejstarší měšťanská architektura královských měst Brna a Trnavy, pokus o srovnání, Pamiatky Trnavy a trnavského kraja 6, 1–10.

HOLUB, P. – MERTA, D. – PEŠKA, M. – ZAPLETALOVÁ, D. – ZŮBEK, A. 2003b
K otázce topenišť v dřevohliněných domech ze 13. století v Brně, ...aneb proč nevěříme na zemnice, Svorník 1/2003. Vývoj a funkce topenišť, 75–84.

HOLUB, P. – MERTA, D. – PEŠKA, M. – ZŮBEK, A. 2003c
Poznámky k historické topografii Dominikánského náměstí, Brno v minulosti a dnes 17, 41–78.

HOLUB, P. – SEDLÁČKOVÁ, L. 2005
Brno – Královo Pole, Božetěchova 1–3, Výstavba areálu FIT VUT Brno. Nálezová zpráva č. j. 27/05 uložená v archivu Archaia Brno o. p. s. Brno.

HRIČKOVÁ, J. 2007
Klášter Aula Sanctae Mariae na Starém Brně a jeho hospodářský vývoj ve středověku. Magisterská diplomová práce na Historickém ústavu FF MU. Brno.

HRUBÝ, V. 1965
Staré Město. Velkomoravský Velehrad. Praha.

IOANNISSIAN, O. – IVAKIN, G. 2012
Construction Materials and Building Techniques in the Architecture of Medieval Rus' from the 10th to the Beginning of the 12th centuries. In: Ousterhout, R. – Holod, R. – Haselberger, L. (eds.), Masons at Work conference papers from the conferences organized by the Center for Ancient Studies. University of Pennsylvania, Phialdelphia. Not paged. E-publication. Available from: <http://www.sas.upenn.edu/ancient/publications.html>.

JANIŠ, D. – VÁCHA, Z – VRLA, R. 2015
K nejstarším stavebním dějinám a typologii románského kostela Všech svatých ve Starých Hvězdlicích (okres Vyškov), Archaelogia historica 40/2, 799–817.

KOLAŘÍK, V. 2007
Opevnění města Brna do konce třicetileté války na základě archeologických výzkumů. Diplomová práce na Ústavu archeologie a muzeologie FF MU. Kopie rukopisu uložená v archivu Archaia Brno o. p. s. č. j. DP-020. Brno.

KOLAŘÍK, V. 2008
Vrcholně středověké opevnění města Brna, Forum Urbes Medii Aevi V, 122–161.

KOLAŘÍK, V. – SEDLÁČKOVÁ, L. 2016
Zjišťovací archeologický výzkum v prostoru zahrad mezi domy Petrov 1 a 2. Nálezová zpráva č. j. 06/16 uložená v archivu Archaia Brno o. p. s. Brno.

KOMOROCZY, B. 2003
Římské cihly na Hradisku u Mušova, Zprávy památkové péče 63/2, 66–77.

KONEČNÝ, L. 1977
Dosavadní výsledky archeologického výzkumu hradu Obřan u Brna, Archaeologia historica 2, 219–232.

KOTRBA, V. 1951
Česká gotická architektura cihlová. Disertační práce uložený na FF UK. Praha.

KROUPA, P. – KROUPA, J. – SLAVÍČEK, L. – UNGER, J. 1997
Premonstrátský klášter v Louce. Znojmo.

KUDLÍKOVÁ, M. 2010
Poznámka ke gotickým stavebním formám minoritského kláštera v Brně, Průzkumy památek 17/2, 102–109.

KÜHN, K. 1943a
Der Spielberg in Brünn. Eine deutsche markgräfliche Pfalz. Brno.

KÜHN, K. 1943b
Die Thomaskirche zu Brünn das Werk der Parler-Hütte. Ein Beitrag zur Baugeschichte des Mittelalters im Deutschen Osten. Brünn.

KYNCL, J. 2005
Znalecký posudek č. 369-01/05 na dendrochronologické datování dřevěných stavebních prvků domu Brno-město č. p. 95, náměstí Svobody 1. Brno.

LÍBAL, D. 2001
Katalog gotické architektury v České republice do husitských válek. Praha.

LÍBAL, D. – MUK, J. 1984
Středověké stavební konstrukce a technologie, Archaeologia historica 9, 239–246.

LOSKOTOVÁ, I. 1993
Než vznikla Stará radnice, Forum Brunense 1993, 207–215.

LOSKOTOVÁ, I. – PROCHÁZKA, R. 1995
Brněnské zemnice, Brno v minulosti a dnes 13, 125–128.

MENDL, B. (ED.) 1935
Knihy počtů města Brna z let 1343–1365. Brno.

MERTA, D. 2001
Nejstarší měšťanská architektura v Brně, Průzkumy památek 8/2, 41–60.

MERTA, D. 2006
Brno, kostel sv. Tomáše, rekonstrukce sakristie. Nálezová zpráva č. j. 20/06 uložená v archivu Archaia Brno o. p. s. Brno.

MERTA, D. 2013
Bývalý premonstrátský klášter v Brně Zábrdovicích (poznámky ke středověkým stavebním dějinám), Forum Urbes Medii Aevi VII./1–2, 108–117.

MERTA, D. – KOVÁČIK, P. – PEŠKA, M. – PROCHÁZKA, R. – SADÍLEK, J. 2000
Předběžné výsledky záchranných archeologických v Brně v roce 2000, Přehled výzkumů 42, 75–107.

MERTA, D. – PEŠKA, M. 2002a
Několik poznámek k architektonickému vývoji bývalého kláštera augustiniánů v Brně a jeho nejbližším okolí, Brno v minulosti a dnes 16, 97–118, 513–527.

MERTA, D. – PEŠKA, M. 2002b
Proměny domovního bloku Velký Špalíček v Brně, Dějiny staveb 2002, 118–130.

MERTA, D. – PEŠKA, M. 2005
Stavební vývoj domu Kobližná 4 v Brně před výstavbou „Schrattenbachova paláce" v 18. století, Dějiny staveb 2005, 149–159.

MERTA, D. – PEŠKA, M. 2007a
Brněnské domy s věží, Dějiny staveb 2007, 205–216.

MERTA, D. – PEŠKA, M. 2007b
Nálezová zpráva o provedení záchranného archeologického výzkumu při stavbě „Komplexní regenerace historického jádra", Mečová ulice p. č. 447, k. ú. Brno – Město. Nálezová zpráva č. j. 72/07 uložená v archivu Archaia Brno o. p. s. Brno.

MERTA, D. – PEŠKA, M. 2009
Stavby typu „kamenate" v prostředí vrcholně středověkého Brna, Dějiny staveb 2009, 215–222.

MERTA, D. – PEŠKA, M. 2015
Ke stavu poznání stavebních dějin bývalého kláštera premonstrátek Rosa Coeli v Dolních Kounicích. Nález románského obytného objektu pod stavbou barokního konventu, Archaeologia Historica 40/2, 819–837.

MERTA, D. – PEŠKA, M. – PROCHÁZKA, R. 2004
Měšťanský dům středověkého Brna. Informace o průběhu a výsledcích grantového projektu, Dějiny staveb 2004, 171–186.

MERTA, D. – PEŠKA, M. – STANĚK, P. 2012
Nálezová zpráva o provedení záchranného archeologického výzkumu při akci Stará radnice v Brně – statika. Nálezová zpráva č. j. 77/12 uložená v archivu Archaia Brno o. p. s. Brno.

MERTA, D. – PEŠKA, M. – ZAPLETALOVÁ, D. – ZŮBEK, A. 2001
Obchodní galerie Velký špalíček. Nálezová zpráva č. j. 18/01 uložená v archivu Archaia Brno o.p.s. Brno.

MERTA, D. – POLÁNKA, P. – SEDLÁČKOVÁ, L. – ZŮBEK, A. 2005
Brno – Česká 10, Jakubská 3, Pasáž Magnum. Nálezová zpráva č. j. 47/05 uložená v archivu Archaia Brno o. p. s. Brno.

MĚŘÍNSKÝ, Z. – ZUMPFE, E. 1997
Jihomoravská a dolnorakouská města, jejich místo v kulturním vývoji a odraz v hmotné kultuře, Archaeologia historica 22, 145–158.

MITCHELL, P. – SCHÖN, D. 2002
Zur Struktur und Datierung des Mauerwerks in Wien, Österreichische Zeitschrift für Kunst und Denkmalpflege 56/4, 462–473.

MUSIL, J. 1993
Gestempelte römische Ziegel vom Burgstall bei Mušov, Mähren, Archaeologica Austriaca 77, 89–103.

MUSIL, J. 2003
Římské cihly a velkomoravská architektura, Zprávy památkové péče 63/2, 78–82.

NAGY, P. 2003
Stredoveká stavebná keramika na Slovensku. Diplomová práce uložená na Katedre archeológie FF UK v Bratislavě. Bratislava.

PEŠKA, M. 2002
Brno – Nová radnice, rekonstrukce II. etapa. Nálezová zpráva č. j. 36/02 uložená v archivu Archaia Brno o. p. s. Brno.

PEŠKA, M. 2006
Orlí 16, rekonstrukce objektu. Předběžná zpráva o provedení archeologického výzkumu a dílčí dokumentaci obnažených historických stavebních konstrukcí. Nálezová zpráva č. j. 53/06 uložená v archivu Archaia Brno o. p. s. Brno.

PEŠKA, M. 2009
Zpráva o provedení záchranného archeologického výzkumu a doplňkový stavebně – historický průzkum při stavbě „Zpřístupnění brněnského podzemí – soubor staveb (Mincmistrovský sklep – propojení sklepů a Zelný trh – labyrint)". Nálezová zpráva č. j. 29/09 uložená v archivu Archaia Brno o. p. s. Brno.

PEŠKA, M. 2015
Dominikánský konvent sv. Michala v Brně na Rybném trhu. Historie a stavební vývoj do poloviny 17. století v kontextu střední Evropy. Disertační práce uložená na ÚAM FF MU. Brno.

PEŠKA, M. – MERTA, D. 2009
Měšťanská architektura středověkého Brna v kontextu středního Podunají, Pamiatky Trnavy a Trnavského kraja 12, 87–102.

PEŠKA, M. – SEDLÁČKOVÁ, L. – ŠŤOURAČ, D. – ZAPLETALOVÁ D. 2006
Stavba sekundárních kolektorů Brno – Stoková síť města Brna (ISPA project). 18. stavba, Zelný trh, Starobrněnská. Nálezová zpráva č. j. 21/06 uložená v archivu Archaia Brno o. p. s. Brno.

PICMAUSOVÁ, E. 1985
Stavební keramika na Moravě v 11.–15. století. Diplomová práce uložená na Ústavu archeologie a muzeologie FF MU. Brno.

PLAČEK, M. 2001
Ilustrované encyklopedie moravských hradů, hrádků a tvrzí. Praha.

POJSL, M. 1990
Velehrad. Stavební památky bývalého cisterciáckého kláštera. Brno.

PROCHÁZKA, R. 2000
Zrod středověkého města na příkladu Brna (k otázce odrazu společenské změny v archeologických pramenech). In: Ježek, M. – Klápště, J. (eds.), Brno a jeho region. Mediaevalia archaeologica 2. Praha–Brno, 7–158.

PROCHÁZKA, R. 2003
Pozdně románský dům z areálu minoritského konventu v Brně, Průzkumy památek 10/2, 163–168.

PROCHÁZKA, R. – ČERNOUŠKOVÁ, D. – MERTA, D. – PEŠKA, M. – SADÍLEK, J. 2003
Měšťanský dům středověkého Brna I–III. Rukopis uložený v archivu Archaia Brno o. p. s. Brno.

PROCHÁZKA, R. – LOSKOTOVÁ, I. 1996
Die archäologische Erforschung der Bettelordenklöster in Brno, Beiträge zur Mittelalterarchäologie in Österreich 12, 251–260.

PROCHÁZKA, R. – PEŠKA, M. 2007
Základní rysy vývoje brněnské keramiky ve 12.–13. století, Přehled výzkumů 48, 143–232.

RICHTER, V. 1957
Raně gotická stavba vracovského kostela, Umění a svět I, 7–16.

SAMEK, B. 1963
Brněnská radnice, Brno v minulosti a dnes 5, 168–196.

SAMEK, B. 1994
Umělecké památky Moravy a Slezska 1. Praha.

SAMEK, B. 1999
Umělecké památky Moravy a Slezska 2. Praha.

SCHIRMBÖCK, A. 1971–1973
Die chronologische Formate-Tabelle des Wiener Mauerziegels und das herkommen ihrer Massgrundlagen in der Jahrtausenden (Grundlage zur datierung von Altmauern), Jahrbuch Landeskunde von Niederösterreich, NF 39, 201–253.

SCHÖBEL, J. 2001
Der erste Kreuzgang des 1226 gegründeten Dominikanerklosters in Wien und seine Veränderungen, Österreichische Zeitschrift für Kunst und Denkmalpflege 55, 14–30.

SEDLÁK, J. 2000
Architektura na Moravě a ve Slezsku za vlády lucemburských markrabat, Forum brunense 2000. Moravští Lucemburkové 1350–1411, 167–188.

STANÍK, I. 2006
Najstarší typ murovaného stredovekého meštianskeho domu so vstupnou šijou v Trnave na hlavnej ulici č. 16, Forum Urbes Medii Aevi III, 150–169.

TEYSSLER, V. – KOTYŠKA, V. 1928
Technický slovník naučný. Praha.

URBÁNKOVÁ, K. – WIHODOVÁ, V. (EDS.) 2008
Brněnské berní rejstříky z přelomu 14. a 15. století. Prameny dějiny moravských 15. Brno.

VÁCHA, Z. 2012
Opatská kaple (kaple sv. Šebestiána) premonstrátského klášterního kostela Panny Marie a sv. Václava ve Znojmě-Louce (Poznámky ke stavebnímu a výtvarnému vývoji), Archaeologia historica 37/2, 539–555.

WIHODA, M. 2007
Vladislav Jindřich. Brno.

WINTER, Z. 1906
Dějiny řemesel a obchodu v Čechách ve 14. a 15. století. Praha.

ZŮBEK, A. 2001
Počátky středověké měšťanské architektury v Brně. Magisterská diplomová práce na Ústavu archeologie a muzeologie FF MU. Brno.

ŽUFFOVÁ, J. 2010
K najstarším sakrálnym stavbám Trnavy, Pamiatky Trnavy a Trnavského kraja 13, 15–28.

Mittelalterliche Backsteinarchitektur in Brünn im Kontext Südmährens

Die Entwicklung der Ziegelarchitektur auf unserem Gebiet wurde durch zwei grundlegende Strömungen beeinflusst. Allgemein wird angenommen, dass der hohe Ziegel aus Frankreich und Flandern über Rheinland, eventuell Schlesien kam, der niedrige Ziegel dann aus Lombardien, der Umgebung von Bologna und Cremona stammt und sich von dort über das Donaugebiet, Pannonien und die Slowakei nach Südmähren verbreitete.

Die Anwendung von Ziegeln in der mittelalterlichen Brünner Architektur scheint zwei Meilensteine zu haben – die erste Nutzung von Ziegeln und die Ankunft der hohen Ziegel mit anschließender Blütezeit der Ziegelarchitektur in Brünn. Die bisher älteste Anwendung von Ziegeln identifizierte man in Brünn in der Ausmauerung der Fenstersegmente der St. Kunigunde-Kapelle im Areal des Prämonstratenserklosters in Brünn-Zábrdovice, die vor dem Jahr 1209 erbaut wurde. In der nachfolgenden Periode stellte in der neugegründeten Stadt Brünn und in ihrer Umgebung die Anwendung von Ziegeln in den Sakral- und Profanbauten eher eine Ergänzung gemauerter Konstruktionen dar. Sie beschränkte sich auf Ausmauerungen der Fenster- und Eingangsanschläge, der Gewölbe, Nischen, Traggürtel und ausnahmsweise die Konstruktion von Tonnen- und Rippengewölben, eventuell ganzer Umfassungsmauern. Die Ursache des Ziegeleinsatzes in der ältesten gemauerten Brünner Architektur war ohne Zweifel der Kultureinfluss aus dem Donauraum, der durch die ersten Kolonistenwellen aus Niederösterreich, sowie durch die herrschende Přemyslidendynastie übermittelt wurde. Eine Rolle spielte unbestritten auch der Mangel an geeignetem Baustein für die Herrichtung von Baudetails. Der erste datierte Ziegelbau in der Stadt und ihrer nächsten Umgebung ist die Mariä Himmelfahrtskirche im Zisterzienserinnenkloster in Alt Brünn, das im Jahre 1323 von der Königin-Witwe Elisabeth Richeza und dem böhmischen König Johann von Luxemburg gegründet wurde. Die Klosterkirche wird mit dem schlesischen Stil in Zusammenhang gestellt und allgemein für die erste Anwendung gotischer hoher Ziegel in Brünn und Umgebung gehalten. Unbestritten war es ein wichtiger Impuls, der zu einer breiteren Anwendung von Ziegeln in der Brünner Architektur führte, der wohl teilweise mit der unterschiedlichen politischen und kulturellen Orientierung der herrschenden Luxemburger Dynastie verknüpft war. Beide erwähnten Impulse kommen aus dem kirchlichen Milieu, das das ganze Mittelalter hindurch als Vermittler von Bautechniken und Stilelementen galt.

In der Sakralarchitektur des 13. Jahrhunderts findet der Ziegel eine gewisse Anwendung vor allem bei Bettelorden, aber auch z.B. in der Pfarrkirche der hl. Peter und Paul. Eine wesentliche Veränderung kommt mit dem Aufbau des Zisterzienserinnenklosters in Alt Brünn. Folgende neuerrichtete Kirchenbauten bedienen sich schon des Sichtelements von Rohziegelfassaden. Im Prinzip kann man sagen, dass ab dem Aufbau des Zisterzienserinnenklosters der Ziegel in der Sakralarchitektur das Feld total beherrschte.

Die weltliche Architektur bedient sich von den Anfängen der Stadt an, also im Rahmen des holzlehmigen Bauhorizonts, in einem beschränkten Maße der Baukeramik, und zwar sowohl Ziegel, als auch Fußbodenfliesen und Dachziegel. Da sich aus diesen Bauten nur archäologische Kelleranlagen erhielten, ist schwer zu entscheiden, wozu die Ziegel in diesen Bauten benutzt worden sind. Bei Kellern dienten sie zum Zumauern der Eingangshälse, in den oberirdischen Teilen wohl zur Auskleidung der Heizanlagen. Aus ihren Ausfüllungen, seien es Branddestruktionen oder einfache Hausplanierungen, stammen drei Ziegelformate. Es handelt sich um sog. kleinformatige Ziegel, gotische niedrige Ziegel größeren Formats und schließlich gotische hohe Ziegel.

In dem ältesten gemauerten Horizont, der auf holzlehmige Bauten unmittelbar anknüpfte, werden Ziegel in absoluter Mehrheit zum Ausmauern von Fenster- und Eingangsöffnungen, Nischen und vereinzelt zum Ausmauern von Konstruktionsgürteln benutzt. Eine Ausnahme bildet bisher die Nutzung kleinformatiger Ziegel zur Einwölbung eines ganzen Stockwerks (1. Kellergeschoss, Petrov 2).

Die Anwendung von Ziegeln in der bürgerlichen gemauerten Architektur verbreitet sich wahrscheinlich im 14. Jahrhundert, wenn ganze Stockwerke aus Ziegeln errichtet werden (wohl als Ersatz für die Fachwerkkonstruktion). Aus Ziegeln wurden auch Keller gebaut, die meistens aus älteren Untergeschossen unterhalb der Häuser unter die Freiplätze auslaufen (Zelný trh 17).

Die Blütezeit der Ziegelarchitektur, die die Steinbauten völlig verdrängt, kommt in der Renaissance. In jener Zeit erfolgt auch die erste „Sanierung" der mittelalterlichen Bebauung, die durch Neubauten abgelöst wird.

Kategorien der Brünner mittelalterlichen Ziegel

Die ältesten, aus archäologischen Befunden stammenden Ziegel sind in die 1. Hälfte des 13. Jahrhunderts zu datieren. Im 13. und 14. Jahrhundert machen Ziegelformate eine stürmische Entwicklung durch.

Anhand des Vergleichs der Brünner Ziegel mit drei erhaltenen Ausmaßen kann man vier Grundkategorien von Ziegelformaten unterscheiden, die als I – IV bezeichnet werden.

Kategorie I – gotische kleinformatige Ziegel

I.1: kleinformatiger Ziegel, 20–22 × 9–10,5 × 3,5–5,25 cm. In archäologischen Befunden und Bauten kommt er in ursprünglicher Lage ausschließlich in Objekten aus dem 13. Jahrhundert vor, seine Vorkommensgrenze ist die Wende vom 13. zum 14. Jahrhundert. In Sekundärlage kommt er natürlich weiterhin vor.

I.2: Format 23 (22,5)–26 × 11–13 × 4,5–6,5 (6,75) cm. In archäologischen Befunden kommt es in Brünn bereits in der 1. Hälfte des 13. Jahrhunderts vor, also wohl früher als der kleinformatige Ziegel I.1. Am Anfang des 14. Jahrhunderts klingt es aus.

I.3: Format 26–27 × 13–14 × 5,5–6 cm ist auch bereits in Befunden aus der 1. Hälfte des 13. Jahrhunderts zu beobachten (wieder nur Höhe und Breite) und klingt an der Wende vom 13. zum 14. Jahrhundert aus.

Kategorie II – gotische Ziegel hohen Formats

II.1: Format 27–29 × 13–15 × 6,5–8 cm kommt in Befunden aus der Wende vom 14. zum 15. Jahrhundert vor und klingt im Verlauf des 16. Jahrhunderts aus. Das in diese Kategorie einzuordnende Ziegelformat kommt jedoch auch in der Mitte des 13. Jahrhunderts in dem Dominikanerkloster zum Vorschein. Ausmaße dieser Kategorie ähneln jenen der neuzeitigen Ziegel IV.1 und bei ihrer Unterscheidung sind auch weitere technologische Merkmale zu berücksichtigen.

II.2: Format 27–29 × 13–14,5 × 8,5–10 cm. Der hohe gotische Ziegel (Kuchen) kommt in archäologischen Befunden in Brünn ab der 2. Hälfte des 13. Jahrhunderts vor, eher aber zu seinem Ende. An der Wende vom 14. zum 15. Jahrhundert wird er allmählich durch das niedrigere Format II.1 abgelöst.

Kategorie III – Keilziegel

III.1: Format 24,5–25,5 × 17,5–18,5 × 5,5–6 cm stellt Gewölbeziegel dar, die im Verlauf des 16. Jahrhunderts benutzt wurden.

III.2: Format 22–23,3 × 15,5–17 × 5,5–7 cm stellt wieder Gewölbeziegel dar. Ihr ältestes Vorkommen wird an die Wende vom 14. zum 15. Jahrhundert datiert. Geläufig wurden sie im 15. und 16. Jahrhundert benutzt und es werden dazu auch zwei im Brünner Fundbestand festgestellten Formziegel gereiht, deren Vorderseite beidseitig ausgeschnitten ist.

Die mittelalterliche Ziegelarchitektur von Brünn im Kontext Südmährens

Auf dem Gebiet Südmährens finden Ziegel gewisse Anwendung in Sakralarchitektur schon am Anfang des 13. Jahrhunderts. Eine Ausnahme repräsentieren die Zisterzienserabtei auf Velehrad und die Pfarrkirchen in Kostelec bei Kyjov und Staré Hvězdlice, wo Ziegel als das Hauptmaterial für den Bau verwendet wurden. Aus derselben Zeit sollte man noch die Anwendung von Ziegeln bei Einwölbung des Chors der Kirche in Vracov erwähnen. Als ein Element zur Ausführung von architektonischen Details wurden Ziegel vermutlich ziemlich oft verwendet, obwohl die überzeugenden Belege dafür nicht vorhanden sind. Die Anwendung von kleinformatigen Ziegeln beim Gewölbebau im 13. Jahrhundert wurde im Westflügel des Konvents in Dolní Kounice erfasst. Sporadische Anwendung (mit Sicherheit durch den Forschungsstand und Erhaltungszustand beeinflusst) von Ziegeln bei Ausmauerung des Gewölbes wird durch den Chor der Kirche in Blížkovice aus dem ausgehenden 13. Jahrhundert belegt. Zu einem grundlegenden Wandel kam es im Zusammenhang mit Erbauung des Zisterzienserinnenklosters in Alt Brünn in den 1330er Jahren. Weitere neugebaute kirchliche Bauten (Kloster Rosa Coeli in Dolní Kounice, Augustinerkloster in Brünn, Augustinerkloster in Moravský Krumlov, St. Margarethenkirche in Loděnice, Kirche in Ivančice, Kartause in Královo Pole) verwenden bereits vor allem das visuell auffällige Sichtelement der Rohziegelfassaden. Im Grunde kann man sagen, dass seit der Erbauung des Komplexes des Zisterzienserinnenklosters in Alt Brünn die Ziegel in Sakralarchitektur die vollständige Oberhand gewonnen haben.

In der Typologie der Ziegel können sich also im Falle der Brünner Region die ankommenden Kultureinflüsse abspiegeln – der niedrige Ziegel stammt aus dem Donaugebiet und repräsentiert das Erbe der Römer, der hohe Ziegel kam nach Brünn aus dem Norddeutschland über Schlesien. Eine wesentliche Änderung der Ziegelformate, die durch verschiedene Kultureinflüsse in Kombination mit Verwendung von mehreren Steinarten verursacht wurde, bietet uns in Brünn im Unterschied zu den anderen „Ziegelstädten", wie zum Beispiel Trnava in der Slowakei oder Breslau in Polen, die besondere Möglichkeit einer zusätzlichen Datierung mittelalterlicher Bauten.

Bildlegenden

Abb. 1
Der Rekonstruktionsplan von Brünn um 1400. A – Kirche St. Peter und Paul; B – St. Jakobskirche; C – Dominikanerkloster; D – Minoritenkloster; E – Dominikanerinnenkloster (nach der Schwester Herburg benannt); F – St. Nikolauskirche; G – Kapelle der Jungfrau Maria; S – Judensynagoge; R – Altes Rathaus.

Abb. 2
Brünn-Zábrdovice, Kapelle St. Kunigunde. Südliche Kirchenwand (Photoarchiv Archaia Brno o. p. s. – Inv. Nr. 01082-2014).

Abb. 3
Brünn-Zábrdovice, Kapelle St. Kunigunde. Ein Segmentbogen über dem Kapellenfenster aus niedrigen Ziegeln der Kategorie I. (Photoarchiv Archaia Brno o. p. s. – Inv. Nr. 01093-2014).

Abb. 4
Ehemaliges Dominikanerkloster, Ausmauerung der Arkaden im Südflügel des Kreuzgangs mit Ziegeln des Formats I.2 (Photoarchiv Archaia Brno o. p. s. – Inv. Nr. 027-02-022).

Abb. 5
Minoritenkloster, Ausmauerung eines romanischen Fensterbogens mit Ziegeln des Formats I.2 (Photoarchiv Archaia Brno o. p. s. – Inv. Nr. A04-98-041).

Abb. 6
Glockenturm des Minoritenklosters. Ausmauerung der Baudetails des Eingangs im Obergeschoss mit hohen Ziegeln des Formats II.2 (Photoarchiv Archaia Brno o. p. s. – Inv. Nr. 19778-2013).

Abb. 7
Ehemaliges Zisterzienserinnenkloster in Alt Brünn. Gesamtansicht der Kirche Mariä Himmelfahrt (Photoarchiv Archaia Brno o. p. s. – Inv. Nr. 01068-2014).

Abb. 8
Ehemaliges Zisterzienserinnenkloster in Alt Brünn. Der Giebel im Südteil des Querschiffs (Photoarchiv Archaia Brno o. p. s. – Inv. Nr. 00583-2014).

Abb. 9
Ehemaliges Augustinerkloster mit St. Thomaskirche. Ausmauerung des Chors mit hohen gotischen Ziegeln des Formats II.2 (Photoarchiv Archaia Brno o. p. s. – Inv. Nr. 009 01-004).

Abb. 10
Ehemalige Kartause in Královo Pole. Ausmauerung des Eingangs vom großen Kreuzgang in einen der Mönchgärten mit hohen Ziegeln der Kategorie II.2 (Photoarchiv Archaia Brno o. p. s. – Inv. Nr. 12555-2006).

Abb. 11
Altes Rathaus, sog. Schatzkammer im Obergeschoss an der Straße (Photoarchiv Archaia Brno o. p. s. – Inv. Nr. 345-03-29).

Abb. 12
Altes Rathaus, Gewölbefuß in der sog. Schatzkammer (Photoarchiv Archaia Brno o. p. s.).

Abb. 13
Altes Rathaus, Gewölbescheitel in der sog. Schatzkammer, mit Ziegeln des Formats I.2 ausgemauert (Photoarchiv Archaia Brno o. p. s.).

Abb. 14
Panská 6–8, die Umfassungsmauer im ersten Untergeschoss aus Ziegeln des Formats I.2 (Photoarchiv Archaia Brno o. p. s. – Inv. Nr. 386-03-02).

Abb. 15
Kapucínské náměstí (Platz) – Kellerraum mit Gewölbe aus niedrigen gotischen Ziegeln des Formats I.2 (Photoarchiv Archaia Brno o. p. s. – Inv. Nr. 021-06-12).

Abb. 16
Dominikánské náměstí 2 (Platz), Haus der Zisterzienserinnen aus Alt Brünn, der Traggürtel für eine Trennwand im Erdgeschoss, mit niedrigen Ziegeln des Formats I.3 ausgemauert (Photoarchiv Archaia Brno o. p. s. – Inv. Nr. 059-01-028).

Abb. 17
Petrov 2, Entlastungsbogen im Kellergeschoss, mit Ziegeln des Formats I.2 ausgemauert (Photoarchiv Archaia Brno o. p. s. – Inv. Nr. 113-01-24).

Abb. 18
Petrov 2, Fensterlaibungen in der Ostwand des Kellergeschosses, mit Ziegeln des Formats I.2 ausgemauert (Photoarchiv Archaia Brno o. p. s. – Inv. Nr. 120-01-20).

Abb. 19
Dominikánská 9, Entlastungsbogen im Kellergeschoss, mit Ziegeln des Formats I.2 ausgemauert (Photoarchiv Archaia Brno o. p. s. – Inv. Nr. 109-01-018).

Abb. 20
Minoritská 2, gewölbter Sturz des gotischen Eingangs ins Kellergeschoss, mit Ziegeln des Formats I.2 ausgemauert (Photoarchiv Archaia Brno o. p. s. – Inv. Nr. 2811-2004).

Abb. 21
Minoritská 2, Abstellnische im Kellergeschoss, mit Ziegeln des Formats I.2 ausgemauert (Photoarchiv Archaia Brno o. p. s. – Inv. Nr. 3226-2004).

Abb. 22
Minoritská 2, Türlaibung des Eingangs zur Straße, mit Ziegeln des Formats I.2 ausgemauert (Photoarchiv Archaia Brno o. p. s. – Inv. Nr. 3233-2004).

Abb. 23
Altes Rathaus, Ausmauerung des Obergeschosses des Hauses mit hohen Ziegeln des Formats II.2 (Photoarchiv Archaia Brno o. p. s. – Inv. Nr. 175-02-019).

Abb. 24
Altes Rathaus, Ausmauerung der Blindfenster im Obergeschoss des Hauses mit hohen Ziegeln des Formats II.2 (Photoarchiv Archaia Brno o. p. s. – Inv. Nr. 06982-2012).

Abb. 25
Česká 10, Ausmauerung der nördlichen Umfassungswand des Erdgeschosses mit hohen Ziegeln des Formats II.2 (Photoarchiv Archaia Brno o. p. s. – Inv. Nr. 118-03-23).

Abb. 26
Petrov 3, Ausmauerung der Gürtelbogen im Kellergeschoss mit hohen gotischen Ziegeln des Formats II.2 (Photoarchiv Archaia Brno o. p. s. – Inv. Nr. 054-02-020).

Abb. 27
Petrov 3, Außenseite des Mauerwerks aus hohen gotischen Ziegeln des Formats II.2 (Photoarchiv Archaia Brno o. p. s.).

Abb. 28
Zelný trh 7, Mauerwerk im Erdgeschoss aus hohen Ziegeln des Formats II.2 (Photoarchiv Archaia Brno o. p. s. – Inv. Nr. 01926-2011).

Abb. 29
Dominikánská 7, die Fassade ist bis zur Ebene des Obergeschosses mit hohen Ziegeln des Formats II.1 ausgemauert. Über dem klassizistischen Portal blieb ein Laibungsbogen aus Ziegeln erhalten (Photoarchiv Archaia Brno o. p. s. – Inv. Nr. A00-10-310).

Abb. 30
Muzejní Str. – Biskupský dvůr. Ausmauerung eines Fensters im Obergeschoss mit hohen Ziegeln des Formats II.1 (Photoarchiv Archaia Brno o. p. s. – Inv. Nr. 01935-2011).

Abb. 31
Muzejní Str. – Biskupský dvůr. Ausmauerung eines Fensters mit hohen Ziegeln des Formats II.1 (Photoarchiv Archaia Brno o. p. s. – Inv. Nr. 01928-2011).

Abb. 32
Petrov 2, Portal in einer spätgotischen Konstruktion aus hohen Ziegeln des Formats II.1 (Photoarchiv Archaia Brno o. p. s. – Inv. Nr. 04474-2010).

Abb. 33
Denisovy sady, Zwingermauer mit gotischem Mauerwerksverband aus Ziegeln des Formats II.1 (Photoarchiv Archaia Brno o. p. s. – Inv. Nr. 01895-2011).

Abb. 34
Stadtmauer mit spätgotischem Turm aus Ziegeln des Formats II.1 (Photoarchiv Archaia Brno o. p. s. – Inv. Nr. 1905-2011).

Abb. 35
Petrská 2, ein Fenster im Obergeschoss, dessen Gewände mit Ziegeln des Formats II.2 ausgemauert sind (Photoarchiv Archaia Brno o. p. s. – Inv. Nr. 04074-2016).

Abb. 36
Minoritská 2, Oberflächenbehandlung einer Wand aus Ziegeln des Formats I.2 (Photoarchiv Archaia Brno o. p. s. – Inv. Nr. 2794-2004).

Abb. 37
Alt Brünn – Kirche Mariä Himmelfahrt, die ursprüngliche Verfugung der Mauer aus Ziegeln des Formats II.1, im Bereich des Dachstuhls erhalten (Photoarchiv Archaia Brno o. p. s. – Inv. Nr. 07040-2016).

Abb. 38
St. Thomaskirche, die ursprüngliche Verfugung in der inneren Ecke eines Strebepfeilers an der Südwand, mit Ziegeln des Formats II.1 ausgemauert (Photoarchiv Archaia Brno o. p. s. – Inv. Nr. 06083-2014).

Abb. 39
Orlí 16, Oberflächenbehandlung der Ziegelmauer im Obergeschoss – Format II.2 (Photoarchiv Archaia Brno o. p. s. – Inv. Nr. 04496-2006).

Abb. 40
Staré Hvězdlice, Allerheiligenkirche, Kirchenchor mit abgehauenen Ziegellisenen (Photoarchiv Archaia Brno o. p. s. – Inv. Nr. 1077-2009).

Abb. 41
Staré Hvězdlice, Allerheiligenkirche, der Turm nach Abtragung des jüngeren Dachstuhls (Photoarchiv Archaia Brno o. p. s. – Inv. Nr. 23303-2009).

Abb. 42
Staré Hvězdlice, Allerheiligenkirche, Blick auf den Triumphbogen und in den Kirchenchor (Photoarchiv Archaia Brno o. p. s. – Inv. Nr. 5262-2009).

Abb. 43
Kostelec bei Kyjov, St. Wenzelkirche (Photoarchiv Archaia Brno o. p. s. – Inv. Nr. 11665-2012).

Abb. 44
Velehrad, Klosterbasilika Mariä Himmelfahrt und St. Kyrill und Method, die Nordwand (Photoarchiv Archaia Brno o. p. s.).

Abb. 45
Velehrad, Basilika Mariä Himmelfahrt und St. Kyrill und Method im Zisterzienserkloster. Gotisches Fenster in der Nordwand des Kirchenschiffs (Photoarchiv Archaia Brno o. p. s.).

Abb. 46
Předklášteří bei Tišnov, Basilika Mariä Himmelfahrt im Zisterzienserinnenkloster „Porta Coeli". Gotisches Portal mit einem Raum im Obergeschoss bei der westlichen Fassade (Photoarchiv Archaia Brno o. p. s. – Inv. Nr. 17872-2015).

Abb. 47
Dolní Kounice, ehemalige Kirche der Jungfrau Maria im Zisterzienserinnenkloster „Rosa Coeli". Die westliche Umfassungswand des Kreuzgangs – Ausmauerung einer gotischen Fensterlaibung (Photoarchiv Archaia Brno o. p. s. – Inv. Nr. 25363-2017).

Abb. 48
Dolní Kounice, ehemalige Kirche der Jungfrau Maria im Zisterzienserinnenkloster „Rosa Coeli". Blick aus dem Kirchenschiff auf den Giebel der westlichen Fassade mit Turm (Photoarchiv Archaia Brno o. p. s. – Inv. Nr. 25363-2017).

Abb. 49
Dolní Kounice, ehemalige Kirche der Jungfrau Maria im Zisterzienserinnenkloster „Rosa Coeli". Blick vom Interieur auf die Nordwand des Querschiffs (Photoarchiv Archaia Brno o. p. s. – Inv. Nr. 25343-2017).

Abb. 50
Dolní Kounice, ehemalige Kirche der Jungfrau Maria im Zisterzienserinnenkloster „Rosa Coeli". Eine Nische in der Ostwand im Südteil des Querschiffs (Photoarchiv Archaia Brno o. p. s. – Inv. Nr. 25429-2017).

Abb. 51
Oslavany, Kirche Mutter Gottes im ehemaligen Zisterzienserinnenkloster „Vallis sanctae Mariae". Einblick in den Dachreiter (Photoarchiv Archaia Brno o. p. s. – Inv. Nr. 151-03-36).

Abb. 52
Dalešice, Kirche St. Peter und Paul im ehemaligen Benediktinerkloster. Kapelle (Photoarchiv Archaia Brno o. p. s. – Inv. Nr. 11223-2006).

Abb. 53
Loděnie, St. Margarethenkirche. Kirchenchor (Photoarchiv Archaia Brno o. p. s. – Inv. Nr. 20076-2011).

Abb. 54
Ivančice, Kirche Mariä Himmelfahrt (Photoarchiv Archaia Brno o. p. s. – Inv. Nr. 17047-2016).

Abb. 55
Nebovidy, Heiligkreuzkirche. Fenster (Photoarchiv Archaia Brno o. p. s. – Inv. Nr. 16077-2013).

Abb. 56
Hodonice, Kirche St. Jakobus der Ältere. Turm (Photoarchiv Archaia Brno o. p. s. – Inv. Nr. 07444-2007).

Abb. 57
Znojmo, Louka, St. Wenzelkirche im Prämonstratenserkloster (Photoarchiv Archaia Brno o. p. s. – Inv. Nr. 4246-2007).