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Ilya Antipov and Alexey Gervais

THE BRICKS FROM ST NICHOLAS CHURCH AT LIPNO NEAR NOVGOROD (1292) AND THE ORIGINS OF THE NEW NOVGORODIAN BUILDING TRADITION

In the late 13th century a new building technique was invented in Novgorod – the usage of bar bricks and lime mortars with sand. The question of the origin of this technique, which was used for the first time in the church of St Nicholas at Lipno in 1292, is very important in the context of the entire history of Novgorodian architecture. In St Nicholas church the traditional Old Russian cross-in-square plan and the trefoil type of roof, well-known decorative and constructive features have been combined with the architectural details, which originated from the monuments of European architecture. This church was probably built by Novgorodian and alien master builders together; among those foreign builders were the craftsmen who made bricks.

The main goal of this article is to publish the materials of the research of bar bricks of the church of St Nicholas at Lipno. The authors study the technology of moulding, types of curved bricks, the sizes of bricks, markings on their surfaces. The bricks of this church were compared to the building ceramics of other monuments of the late 13th–mid-14th centuries. The study of the bricks led the authors to the conclusion that the common centre of the brick production could exist at that time in Novgorod.

The thorough comparative research of the bricks of Lipno church and the building ceramics of northern and central Europe of the last third of the 13th century can help us to find the answer to the question of the origins of the master builders of the Novgorod church.

Ilya Antipov, St Petersburg State University, 7–9 Universitetskaya nab., 199034 St Petersburg, Russia; iantipov@yahoo.com
Alexey Gervais, The State Museum of the History of Religion, 14 Pochtamtskaya ul., 190000 St Petersburg, Russia; azherve@mail.ru

Introduction

The Old Russian architecture of pre-Mongolian time is closely connected to the history of Byzantine art. The first stone church in Kiev (so-called Tithe church) was erected at the end of the 10th century by Byzantine architects and builders. Greek masons built the first Russian churches using Byzantine

technology: flat bricks (*plinths*) and stones were connected by mortar made from lime and crushed ceramic or bricks (*tsemianka*). The entire history of pre-Mongolian architecture of Ancient Russia is associated with the usage of these building materials for the ordinary masonry, bar bricks were very rarely used in monuments of architecture in 1220–1230s. In the 12th – first half of the 13th centuries the blocks of cut limestone and lime mortar with sand were used only in Halich and Vladimir-Suzdal architectural schools (Rappoport 1995, 5–53).

In many monuments of the Novgorod architecture of the 12th – first half of the 13th century we can see the combination of the *plinths* and local stones in masonry, and only the most important parts of the walls, vaults and arches were built from bricks. Novgorodian *plinths* of pre-Mongolian time have been studied thoroughly: we know the main peculiarities of moulding, the changes in the format of bricks. These data can help us to date the buildings (Shtender 1980, 86; Gervais 2002, 67 ff.; Jolshin 2013, 92 ff.).

The disastrous Mongolian invasion of 1238–1240 destroyed the towns and villages of ancient Russia. Mongols did not occupy Novgorod, they turned south 100 km from the town (near Ignatch cross). Novgorod was not destroyed, but the devastation of the lands of ancient Russia influenced the life of this northern town. The texts of the Novgorod chronicles mention no evidence of new buildings until the 1290s.

The building activity in Novgorod revived in 1292, when archbishop Clement founded the church of St Nicholas at Lipno. This church was built near Novgorod in the delta of Msta River, where the icon of St Nicholas was found in the 12th century (NPL 1950, 327). It the same year the construction of St. Theodore Stratelates church on Scherkova Str. started on the place of pre-Mongolian church (the construction of new church was finished in 1294).

The church of St Nicholas at Lipno was well preserved until the Second World War. In 1941–1943 the upper parts of the building were destroyed or damaged by German artillery, and some parts of the building broke down during the first years after the end of the war. In the 1950s the church was studied and restored by L. Shulyak (Fig. 1). During the restoration works a lot of information about the peculiarities of the building technique and materials was acquired, although the upper parts of the church were lost (Dmitriyev 1948, 58 ff.; Maksimov 1952, 87 ff.; Gladenko et al. 1964, 214 ff.).

The building technique, new for ancient Russia, can be seen here for the first time: instead of the *plinths* the master builders invented the bar bricks, and instead of lime mortars with crushed ceramic or bricks (*tsemianka*) they used lime mortars with sand. The usage of these constructive materials became the main characteristic of the Novgorod architecture during the time when the so-called Novgorodian republic existed (before 1478, when Novgorod became a part of the Moscow state). Churches and fortresses in Moscow and Tver were built from white limestone at that time, and while the first buildings from bar bricks were constructed in north-eastern Rus' only in the third quarter of the 15th century (unfortunately, they have not survived – Vygolov 1988, 61).

Fig. 1. St Nicholas church at Lipno near Novgorod (1292). View from south-east (Mil´chik 2008, 414).

Some changes in the manufacturing technology and the measurements of Novgorodian bar bricks took place from the late 13th to mid-15th centuries. It is possible to point out three stages of evolution of this technology: 1) late 13th–mid-14th centuries (before 1361); 2) second half of the 14th – first third of the 15th centuries (before 1433); 3) middle–second half of the 15th century. The main difference between the first and second stages is the reduction of the brick sizes; the technological features remained the same. The principal changes appeared in the 1430s – probably the German builders, those who created the so-called Faceted palace (Vladychnaya palata) in Novgorod (1433), invented a new technology – the format of bricks changed fundamentally and, more important, the technology of bricks' moulding changed (Antipow & Jakowlew 2012, 74 ff.).

The question of the origins of the new building materials, which were used for the first time in the late 13th century (in the church of St Nicholas at Lipno) is very important in the context of the entire history of Novgorod architecture. In St Nicholas church the traditional Old Russian cross-in-square plan and the trefoil type of roof, which was widespread in the architecture of Old Russia in the late 12th – first third of the 13th centuries, some decorative and constructional features, which were common for the architecture of the pre-Mongolian epoch were combined with the architectural details which originated from the monuments of European architecture. Small arcades on the upper parts of the façades and on the drum, coved vaults in the corner chambers of the catechumena, cross-shape windows and niches, stone crosses on the façades are among these new features (Figs 2–5).

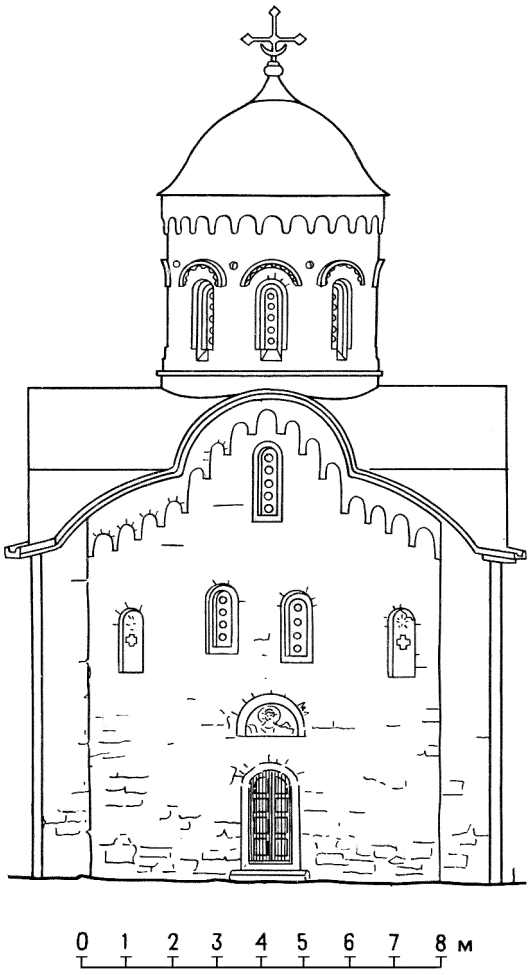

Fig. 2. St Nicholas church at Lipno near Novgorod (1292). Reconstruction of the western façade. Draft by Petr Maksimov (Maksimov 1976, 98).

Fig. 3. St Nicholas church at Lipno near Novgorod (1292). Coved vaults in the corner chambers of the catechumena. Draft by Petr Maksimov (Maksimov 1952, 97). Photo by Ilya Antipov.

Fig. 4. St Nicholas church at Lipno near Novgorod (1292). Cross-shape window on the western façade. Photo by Ilya Antipov.

Fig. 5. St Nicholas church at Lipno near Novgorod (1292). Stone cross on the western façade. Photo by Ilya Antipov.

It is worth mentioning that we can find many of these characteristics in the monuments of Romanesque architecture, although in the late 13th century Gothic architecture already spread in the Baltic region. The new building technique of Lipno church (the usage of bar bricks and lime mortar with sand) connects this monument to the European building traditions.

Scholars have been studying architectural features of the church of St Nicholas at Lipno for many years. Some versions about the origins of the master builders, who resumed building on Novgorod lands after more than 50 years break, were published. The structure of the church and its interior follow the traditions of pre-Mongolian architecture. This feature led some art historians to the idea that the church was built by Novgorod architects, the scholars thought that the mediaeval Novgorodians had a wide range of architectural knowledge and this can explain the West European features of the building (Karger 1954, 48). Other art historians and archaeologists proposed that the church founded by archbishop Climent was erected by foreign master builders (Rappoport 1993, 134; Ioannisyan 2007, 112). The scholars suggested the wide range of possible sources of the architectural features of St Nicholas church: among them they matched the buildings of northern Germany, the Livonian Order, Gotland Island and also the architecture of south-western Rus' (this Rus' region was greatly

influenced by Polish architecture during the second half of 13th century) (Maksimov 1952, 96; Rappoport 1993, 134; Salimov 1994, 36 ff.; Sedov 1997, 404 ff.). Even similarities with Balkan monuments were proposed (Solenikova 1998, 101 f.). Recently O. Ioannisyan suggested that the alien master builders of Lipno church first built the stone St Olaf church in Novgorod on *Gotskij Dvor* (Gothic Yard), as the previous wooden church probably burnt in the big fire of 1275, and also they restored the German church of St Peter, which, according to the chronicle, suffered from the above mentioned fire of the *Torgovaya storona* (Trade part) of Novgorod (Ioannisyan 2007, 112). This version seems very possible, but it cannot help us to find the exact place, from where the master builders came to Novgorod.

It is obvious that West-European architectural elements and constructive materials were well known to the master builders, who erected the church of St Nicholas at Lipno. At the same time, there are lots of "Novgorodian" features in this church, the features which are typical for this epoch and are connected to the architecture of the first third of the 13th century in general. Long ago the scholars pointed out that the church of the Nativity of Virgin on Peryn (1220–1230s), which is located not far from Lipno, was used as a sample for St Nicholas church (Karger 1954, 49 f.). Therefore, we think it is more likely that Lipno church was built by Novgorodian and alien master builders together; among those foreign builders were the craftsmen who made bricks. The variety of types of bar bricks, including curved bricks, as well as rational distribution of this valuable material in the walls of the building, led us to the conclusion that the church was built by the architects, who knew how to use this building material and with the help of the craftsmen who made the bricks of a new type.

It is obvious that the search for the more correct analogies for the European features in the architecture of St Nicholas church should not include only comparison of different decorative and constructive features: some analogies, published by the scholars, are too general, and the same architectural features can be found in many monuments of Romanesque architecture. The right way is to compare the types, sizes and technological characteristics of the bricks, which were used in the construction of the church. It is obvious that craftsmen who made bricks, and the architect, who invented the new architectural features, came from the same building centre.

Therefore, the main goal of this article is to publish the materials of the research of bar bricks of the church of St Nicholas at Lipno. We assume that comparison of the bricks of Lipno church with building ceramics of the 13th century in other territories of the Baltic region will later help us to define the origin of the master builders, who worked in Novgorod in the 1290s.

The bricks of the church of St Nicholas at Lipno (1292)

The collection of the bricks, which are now stored in the Novgorod state museum, and the research of the monument itself, where some bricks from the

ruins are kept, became the foundation for this publication. In addition, we use the descriptions, photographs and drafts of the bricks, which were made by L. Shulyak and P. Maksimov, who studied the monument. These materials are published or stored in different archives.

In St Nicholas church a large quantity of different types of stone (limestone, coquina, sandstone) were used. This feature is also characteristic for the pre-Mongolian architecture of Novgorod. The arches, vaults and drum were made from bricks; lots of bricks were used in the brickwork of pillars and upper parts of the walls. Window openings, niches and decorative elements on the façades were also made from bricks.

The presence of a sand layer on all sides of bricks, except one of the flat sides, dark colour, wrinkled surfaces, the main "bar" size and the diversity of used curved bricks are the main features of the bricks of St Nicholas church.

Moulding

The fat ceramic paste with a lot of supplements – primarily sand, but also lime, granite-gneiss (fractions to 1–1.5 cm), sometimes chamotte – was used for the moulding of bricks. Bricks were made in the fixed bottomless mould (craftsmen used a pallet board). The clod of the clay or the mould and the pallet board were covered with coarse sand. Therefore, all the ends of the bricks show a layer of sand, except the upper flat side, which was cut with a straight-edged wooden tool, a type of knife used for levelling (*pravilo*). The excess on the lower parts of the bricks ends was also cut away with this tool, the traces of which can be seen on many bricks.

After the moulding the bricks were stored for drying, brick-makers laid them on the stretchers or headers and later on fired them. The temperature of firing was sufficiently high (we know this because of maroon colour of the samples) and the firing itself was even.

The curved bricks, as usual, were made in special moulds, as we can see from the traces of wood fibres and the presence of extra clay on the lower parts of the headers and stretchers. However, it is possible that some samples from museum collection were cut off from the raw bricks before the firing. L. Shulyak also marked this method, she pointed out that some curved bricks were not moulded specially, but simply curved from the ordinary bar bricks (Shulyak 1950s: 2866).

The large quantity of markings, made by finger or little stick on the upper flat surface also indicate the plasticity of ceramic paste, as well as the presence of many fingerprints.

The sizes of bricks

Unfortunately, during the restoration of St Nicholas church in the 1950s the total measuring of bar bricks, which were used in different parts of the building, was not done. According to P. Maksimov, the bricks 26 × 12–13 × 8–9 cm and

square bricks (side length is 22–25 cm and thickness is 9–10 cm) were used in the brickwork of the church (Maksimov 1952, 93). But L. Shulyak has mentioned that such square bricks had not been found during the restoration works in the church (Shulyak 1960s, 16), probably P. Maksimov marked out a special type of bricks, because he could not determine its profile (in the brickwork of walls and pillars the curved bricks of the similar size – so-called "big wedge" were often used). The main format of the bricks of St Nicholas church, according to the size of different bricks, which were marked by L. Shulyak, also differs from the format, published by P. Maksimov. The real format can be 26–28 × 11.5–13.5 × 7.5–8.5 cm (Shulyak 1959, 11 ff.).

Our measuring of bricks, which are stored in the collection of the Novgorod museum, in comparison to the materials from the drafts of the different parts of the church show that it is possible to mark out the format 28–28.5 × 13.5–14 × 7.5–8 cm and, probably, the second format 26–27 × 11.5–12.5 × 7.5 cm. It is obvious that the builders usually used some formats in the brickwork according to the characteristics of the exact detail. All bricks of the church of St Nicholas at Lipno are quite thick (7.5–8 cm), but probably two formats have different length and width. The quantity of the samples, it was possible to measure, was not large (14 samples), therefore it is necessary to make new measurements during the possible restoration works on the monument to get any information about the real sizes of Lipno bricks. For that reason, we use the sizes, mentioned by L. Shulyak, in our current work.

The curved bricks

The unique variety of the shapes of curved bricks, used during construction of the church of St Nicholas at Lipno, is the specific feature of the constructional technique of this monument, which fundamentally distinguish it from late Novgorodian buildings. It is obvious that before master builders began to do the brickwork, they thought through what types of bricks should be used for different parts of the building. Five types of curved bricks were used in St Nicholas church (Fig. 6): big wedge, small wedge, brick with splay butt-end, brick with triangular end, corbel (Gladenko et al. 1964, 218).

The elevation of the wedge of big and small wedge bricks is not axi-symmetrical, but one-sided (only the upper flat surface has an incline, other sides form the right angle). It leads us to the conclusion that the wooden mould, in which the bricks were prepared, had skew lateral sides. The arches and vaults of the church were constructed with the big wedge bricks, the decorative hanging arches on the upper part of the building and on the drum consisted of small wedge bricks. In the lower part of the decorative hanging arches the corbel, another type of the curved brick, was used. The corbel was made using the type of small wedge brick, the semicircular projection (torus) was made only from the narrow side of the brick's end (Gladenko et al. 1964, 218). Bricks were inserted into the bases of hanging arches, with the torus in upper position.

The pediments over the windows, frieze on the drum, cornices on the apse and beneath the roof, and also the main part of the ribs in the coved vaults of the catechumena cameras were made from brick with a triangular end. For the window openings with 10° jambs the craftsmen did not cut ordinary bricks, but moulded special bricks with splay butt-ends.

According to the valid opinion of some scholars the usage of many types of curved bricks could follow the technique typical of the stone architecture (Shtender 1991, 98). Probably the master builders reproduced cut stones, traditional for Romanesque architecture, in bricks (e.g. wedge-type cut stones were always used in the masonry of the curvilinear constructions of Romanesque churches). The principles of the imitation in the brickwork the methods, typical for the monuments constructed from stones, have recently been thoroughly investigated (Holst 2005, 9 ff.; 2007, 126 ff.).

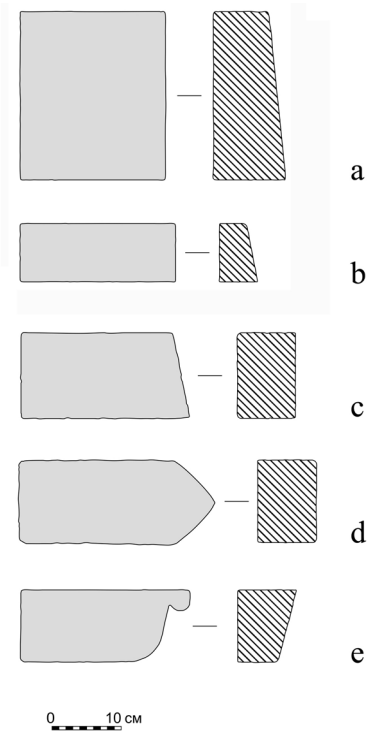

Fig. 6. St Nicholas church at Lipno near Novgorod (1292). The types of curved bricks. a big wedge, b small wedge, c with splay butt-end, d with triangular end, e corbel. Draft by Ksenia Dubrovina.

The markings

Some bricks of the Lipno church have markings, as it was already mentioned. There are simple marks (bow-shaped or straight line) among them (Fig. 7). We also know three versions of more complicated markings (Fig. 8): padlock-shaped, flower-shaped and horseshoe-shaped (probably, L. Shulyak wrote about the latter mark, when she mentioned the signs in the shape of "C" letter, made by the finger on raw bricks – Gladenko et al. 1964, 218). It is possible that these signs marked a new batch of bricks or they were the special signs of the masters. Unfortunately, it is unknown how many bricks with markings were found (only five bricks, all with different markings remain).

L. Shulyak mentioned that some bricks with vegetative ornament were found (one of them is stored in the collection of the Novgorod museum – KP-42860-04/SD-967-24). The ornament was made by pointed chip on a raw brick, and then the dog trod on the brick, which had not been burned yet (Figs 9–10).

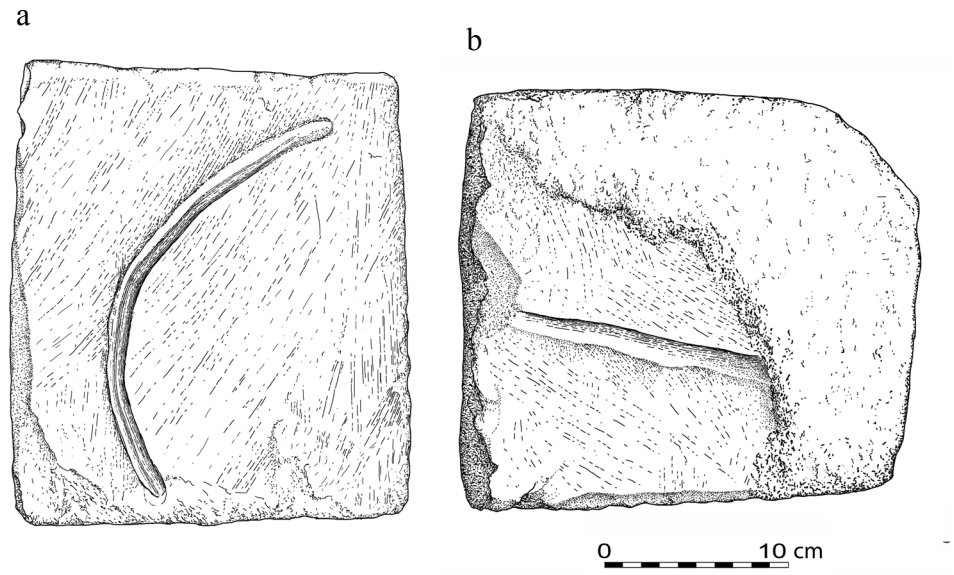

Fig. 7. St Nicholas church at Lipno near Novgorod (1292). Simple markings on bricks (a, b). Draft by Ksenia Dubrovina.

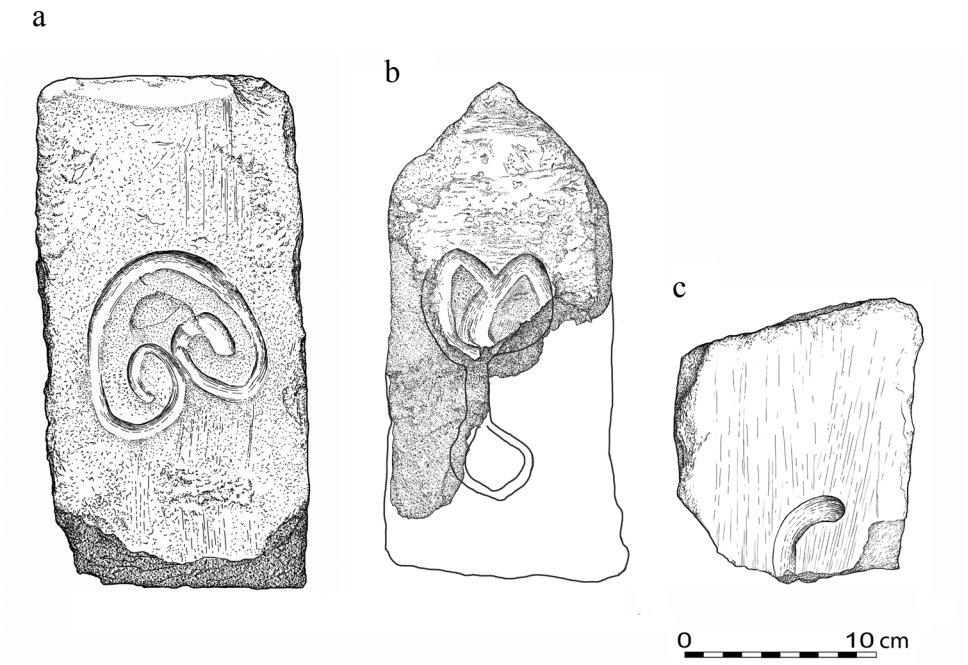

Fig. 8. St Nicholas church at Lipno near Novgorod (1292). Complicated markings on bricks. a padlock-shaped, b flower-shaped (the lost part is reconstructed by archive photo), c horseshoe-shaped. Draft by Ksenia Dubrovina.

Fig. 9. St Nicholas church at Lipno near Novgorod (1292). The brick with an ornamental drawing. Photo by Ilya Antipov.

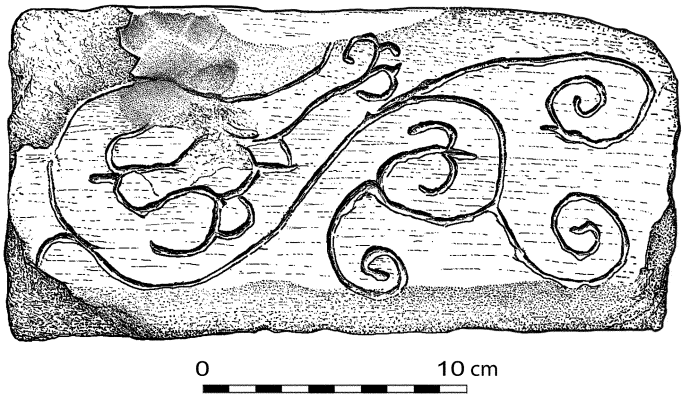

Fig. 10. St Nicholas church at Lipno near Novgorod (1292). The brick with an ornamental drawing. Draft by Ksenia Dubrovina.

L. Shulyak wrote that one of the ornaments had a slim distinct contour with the parts, shaded with right lines, which looked like engraving (Gladenko et al. 1964, 218).

The bricks of the church of St Nicholas at Lipno and Novgorodian bar bricks of the late 13th–mid-14th centuries

It seems very important to compare the bricks from Lipno church to the bricks of the other monuments of Novgorod architecture of the late 13th–mid-14th centuries. St Nicholas' church bricks have essentially the same features as the

bricks from the other churches of that period (the same proportions and ceramic paste, the surfaces are covered by sand, the similar technology of the moulding). However, we should underline some specific features of the bricks of Lipno church.

First of all, it is worth mentioning that the bricks of Lipno church were very thoroughly fired and have a regular shape. Many bricks from other monuments of Novgorodian architecture of the late 13th–mid-14th centuries were not fired uniformly and thus they often have irregular shape (e.g. bricks of the churches of Holy Virgin Protection of Shilov monastery 1310, Entry of Our Lord into Jerusalem 1336–1337 and others). The sizes of the bricks of St Nicholas church (according to L. Shulyak) are smaller than bricks from most other monuments of that time (Table 1). Among the buildings of that epoch only the bricks from St Michael the Archangel church at the marketplace (1300–1302) have a lesser size (though we should bear in mind that the main part of the building does not exist, thus this data cannot be representative enough). The bricks of the other Novgorodian buildings of that time are, as a rule, wider and longer than Lipno bricks. In some monuments two different formats of bricks (wide and narrow bricks) are combined in the brickwork. In two buildings of the first half – mid-14th century we can find the big square bricks ("blocks") – in St Michael the Archangel church at the marketplace (1300–1302), 30 × 30 × 7.5 cm, and in the so-called "Palace of archbishop Vasiliy", the civil building of the first half – mid-14th century (1350?), which was studied during the archaeological fieldwork in the area west of St Sophia cathedral in Novgorod in 2008–2009 (the size of the big bricks-blocks is 25–27 × 25–26.5 × 10–12 cm, some of them have a shape of wedge and were used in abutments of arches).

Among the curved bricks used in the monuments of the end of 13th–mid-14th centuries we can distinguish first of all the bricks with triangular and semi-circular ends, and bricks with a semi-circular hollow – a part of brick window frame (Shtender 1991, 99). Also in some cases masters used wedge bricks and bricks with splay butt-end, where the upper flat surface of the brick is shorter than the lower flat surface and one of the headers was cut aslant. The widest variety of curved bricks can be seen in the church of the Entry of Our Lord into Jerusalem in Novgorodian Detinets (1336–1337) – at that monument master builders used bricks with triangular, splay butt-ends and semi-circular ends, and bricks with a semi-circular hollow – a part of brick window frames. The full variety of curved bricks' types of Lipno church had never repeated. It is also worth mentioning that the majority of curved bricks from the church of St Nicholas at Lipno was made in special moulds, while samples from the 1330s were usually made from raw bricks.

Bricks of St Nicholas church are covered with the layer of sand, but the sand for brick making is not as coarse-grained as in the other monuments of the first half of the 14th century. The markings and drawings were found on the flat surfaces of the bricks used in some monuments of Novgorodian architecture of that time (the churches of Holy Virgin Protection of Shilov monastery, Entry

Table 1. The size and types of bricks in the monuments of Novgorodian architecture (late 13th–mid-14th centuries)

No.	Building	Date	The main size (length × width × thickness, cm)	The additional size (length × width × thickness, cm)	The types of curved bricks
1	St Nicholas church at Lipno	1292	26–28 × 11.5–13.5 × 7.5–8.5	No information	1) big wedge; 2) small wedge; 3) with splay butt-end; 4) with triangular end; 5) corbel.
2	St Theodore Stratelates church on Scherkova Str.	1292–1294	28–30 × 14–15 × 7–8	No information	With triangular end
3	St Michael the Archangel church at the Marketplace	1300–1302	24–25 × 13.5–14.5 × 7–8.5	1) 24–26 × 10.5–12.5 × 7–8.5 2) 30 × 30 × 7.5	–
4	Holy Virgin Protection church of Shilov monastery	1310	31 × 13.5–14.5 × 7.5–8	26–27 × 12.5–13.5 × 6.5–7.5	1) with a semi-circular end; 2) with a semi-circular profile of the brick's corner; 3) with a semi-circular hollow (a part of brick window frame).
5	St Nicholas "The white" church	1312–1313	30–31 × 14–15 × 8–9	–	–
6	Church of Resurrection of Derevyanitski monastery	1335	? × 12.5–14 × 7.5–8	The second size, probably, is ? × 10 × 8	–
7	The church of the Entry of Our Lord into Jerusalem	1336–1337	28–30 × 13.5–14.5 × 7–8	–	1) with a semi-circular end; 2) with triangular end; 3) with splay butt-end; 4) with a semi-circular hollow (a part of brick window frame).
8	Annunciation church at Gorodische	1342–1343	28–30.5 × 14–15 × 7.5–8.5	–	1) with triangular end; 2) with a semi-circular hollow (a part of brick window frame).
9	Transfiguration church at Kovalevo	1345	28–30 × 13–14.5 × 7.5–8.5	–	–

Continued overleaf

Table 1. *Continued*

No.	Building	Date	The main size (length × width × thickness, cm)	The additional size (length × width × thickness, cm)	The types of curved bricks
10	St Paraskeva church	1345	29–30 × 14–15 × 7–9	–	1) with a semi-circular end; 2) with a semi-circular hollow (a part of brick window frame).
11	The palace of archbishop Vasiliy	1350 (?)	28–29 × 14–15.5 × 8–9	1) 26–28 × 13–14 × 6.5–7.5 2) 25–27 × 25–26.5 × 10–12	1) big wedge; 2) with splay butt-end; 3) with a semi-circular end.
12	Dormition church at Volotovo field	1352	29.5–30.5 × 14.5–15.5 × 7–7.5	29.5–30.5 × 14.5–15 × 6–6.5	1) with a semi-circular end; 2) with splay butt-end.
13	The rebuilding of St Michael the Archangel church on Prusskaya Str.	Mid. 14th c.?	29–30 × 13–14 × 7.5–8 (floor bricks)	–	–
14	The porch of the Transfiguration church of Hutyn' monastery	Mid. 14th c.?	28–29 × 14–14.5 × 7–7.5	–	–
15	The church of the Virgin Znameniye on Iliina Str.	1354	28.5–29.5 × 13.5–15 × 7–8	–	–
16	St Michael the Archangel church at Skovorodka	1355	27.5–29 × 13.5–15 × 7.5–8	The second size, probably, is 26.5 × 13 × 7	–

Sources: **1** Shulyak 1959, 11 back, 15 back, 17 back; the bricks are measured by authors in the funds of NSM; **2** Shtender 1977, 436 (curved bricks NSM. KP-37312-9, 10); **3** Krasnorechyev 1963b, 24; **4, 6, 7, 11, 16** the bricks are measured by authors; **5** Shtender 1991, 91; **8** Krasnorechyev 1978, 12, 20; Mil´chik 2008, 405; **9** Krasnorechyev 1969, 11; **10** Shtender 1965, 15; **12** Krasnorechyev 1963a, 9, 10; Kuzmina 2004, 11; **13** Bulkin 1997, 379, 382; **14** Bulkin 1995, 192; **15** Bulkin 2002, 246.

of Our Lord into Jerusalem and Dormition on Volotovo pole – Fig. 11), however, three types of markings specific for the Lipno church cannot be seen anywhere else.[1]

The study of the bricks of the majority of Novgorodian monuments of the late 13th–mid-14th centuries helps us to make a conclusion that a common centre of the brick production could exist at that time in Novgorod: the technology of brick-making is the same in different monuments (composition of ceramic paste, manner of firing, type of sand). The formats of the bricks are also close to each other, mostly the thickness, which is usually between 7.5–8.5 cm. Unfortunately no traces of brick manufacturing of the period of time after the Mongolian invasion were found in Novgorod during archaeological investigations. Therefore,

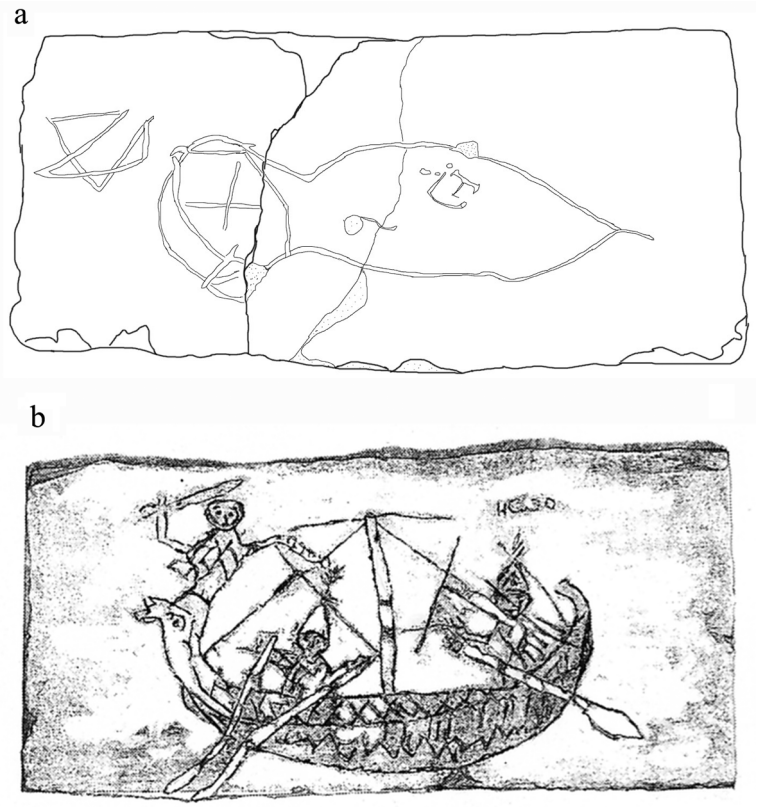

Fig. 11. Drawings on the flat surface of the Novgorodian 14th century bricks. a from Holy Virgin Protection church of Shilov monastery (1310). Draft by Ilya Antipov, b from the church of Dormition on Volotovo field (Trifonowa 2003, 39).

[1] The markings and drawings on Pre-Mongolian bricks are well known (Rappoport 1995, 31 ff.). Also there are some publications about European bar bricks with markings and drawings, although they mainly deal with the bricks of the 16th–19th centuries (Hillenbrand 1970, 5–52; 1981, 10–63; Kempf 1998, 20 ff.). Novgorodian artefacts of the 13th–15th centuries has not been studied yet.

the discovery of the brick works of the late 13th – early 14th centuries in mediaeval Tartu (Vissak 2000, 113 ff.; Bernotas 2013, 143 ff.) also seems very important for the study of the brick manufacturing in Novgorod. It is possible that there were the same brick works in Novgorod. The traces of it will probably be found in future in *Goncharsky (Potter) district* of mediaeval Novgorod, since it was the place where the potters made ceramic vessels. Undoubtedly, the manufacturing of bricks was closely connected with potters' work. It is possible that craftsmen were making batches of bricks for different monuments in the same kilns. The bricks, which were made for the construction of the churches outside Novgorod had been transported by waterways (in 2013 the underwater expedition of A. Stepanov found a ship at the bottom of Volkhov River, which was stored with mediaeval bricks).[2]

The church of St Nicholas at Lipno is the first building in which the bar bricks were used. After 1292 this material became widespread in the architecture of mediaeval Novgorod. Nevertheless, as we tried to show, some characteristic features of the bricks of this church differ from the peculiarities of other Novgorod ceramics of the examined period. What is the cause of this difference? Most likely it is that the craftsmen, making bricks for St Nicholas church, came to Novgorod from one of the building centres of the Baltic Sea region. The manufacturing of bricks in the coastal Baltic region actively developed from the first half of the 13th century, although in some regions the first brick buildings have already appeared in the last quarter of the 12th century (Biermann & Herrmann 2012, 58; Malm 2012, 77). Itinerant craftsmen, making bricks, are well known due to West-European written sources (Bernotas 2013, 151).

It is highly likely that West-European brick-makers left Novgorod after finishing their works on St Nicholas church. The technology, used by possible western masters for the manufacturing of the bricks for Lipno church, was at once adopted by Novgorod builders. Pragmatic Novgorodians started to simplify the brickwork – the window jambs in the churches of the first half of the 14th century were made from ordinary bricks, not from curved ones, and wedge bricks in many cases were not used to build the vaults and arches. It is hard to find the curved bricks in the monuments from the second half of the 14th century, e.g. basic bar bricks were used instead of curved ones for window frames. The main type of curved brick, constantly used by Novgorod master builders, was the brick with the triangular end. This type of brick was well known in pre-Mongolian architecture; we can see it in many Novgorod monuments of that time.

Origins of craftsmen, who produced bricks for St Nicholas church at Lipno: stating the problem

From where did West-European master builders and craftsmen come to Novgorod? The idea that these master builders had connections with the Livonian Order or the Archbishopric of Riga seems the most probable at first glance.

[2] We are very grateful to A. Stepanov for the information about recent fieldwork.

V. Sedov matched the decor of the eastern façades of St James church in Riga, St Laurence church in Nõo, and the composition of the niche on the western porch of Tartu cathedral as analogies to the architectural features of Lipno church; first of all to the decorative arched band on the façades of St Nicholas church (Sedov 1997, 404 ff.; see also Vaga 1960, 33, 67 f.). Indeed there is some similarity between these architectural features, but it is worth mentioning that the decorative motive of the hanging arches is itself widespread over a pretty large territory, on which stone or brick Romanesque buildings were constructed.

In case of the church of St Nicholas at Lipno it is important to mention that, according to our observations, different sets of curved bricks were used for the hanging arches of the Novgorod church opposing the churches with the band of hanging arches, located from the territories of modern Latvia and Estonia. In the church of St James in Riga we see the other method of the brickwork of the hanging arches; outwardly these details look similar, but it is obvious that these buildings were constructed by masters, who used different techniques when creating specific architectural details (Fig. 12).[3] The brickwork of the upper part of the niche on the western porch of the Tartu cathedral is very close to the brickwork of the band of hanging arches in Lipno church (Vaga 1960, 67 f.), but the curved bricks-corbels, which we have seen in the church of St Nicholas at Lipno, were not used here.[4]

a b

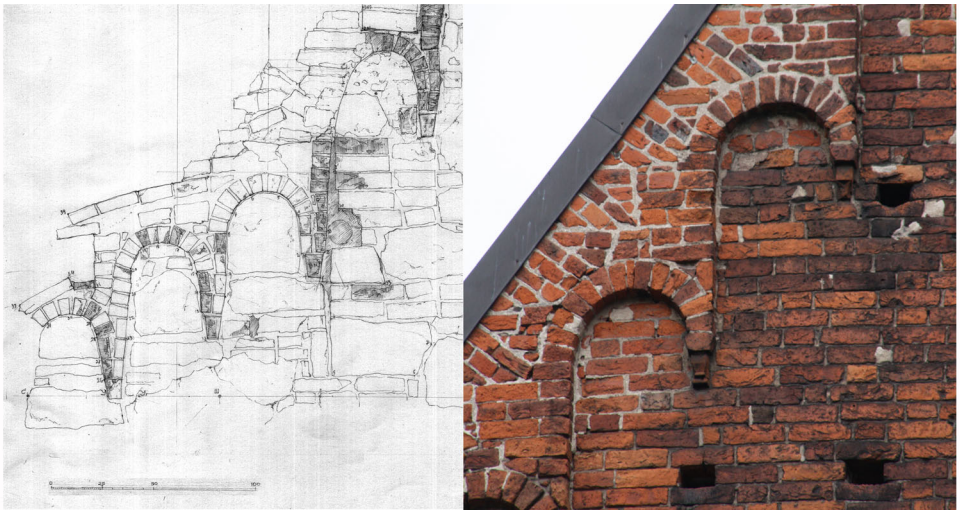

Fig. 12. The parts of the arched corbel table of the 13th century churches. a St Nicholas church at Lipno near Novgorod. Draft by Ljubov Shulyak, b St James (Jacob) church in Riga. Photo by Ilya Antipov.

[3] About St James church see: Vaga 1960, 8 ff.; Grosmane 2004, 9 ff.; Alttoa 2013, 27 ff.

[4] Unfortunately the band of hanging arches of St Laurence church in Nõo is covered with plaster, the type of brickwork is not seen. About the church see Alttoa 1994, 231 ff.

The brick buildings, which appeared on the territory of modern Estonia and Latvia in the second half of 13th – early 14th centuries, were made from the bricks, very close to those used in St Nicholas at Lipno church (big bricks with the layer of coarse-grained sand on it, wrinkled surfaces). This type of brick is generally typical for the late Romanesque and early Gothic architecture of the Baltic region. The ceramic paste of Livonian bricks, however, differs from the Novgorod samples – in Livonian bricks sometimes we see a lot of fragments of stones in ceramic paste. Stones in the ceramic paste are well known in Novgorodian bricks of the mid-15th century, but before that time fragments of stones can be seen in the ceramic paste very rarely. Probably we see this difference because Livonian and Novgorodian brick-makers used different types of clay. It is worth mentioning that the boom of brick building in what is today Estonia began in the 14th century, a few decades after the building of Lipno church (Bernotas 2013, 141).

Therefore, it is obvious that in order to find the origins of West-European master builders, who worked in Novgorod in the 1290s, it is not enough to analyse only the data about the buildings, which were constructed on the territory of the Livonian Order or the Archbishopric of Riga. Additionally, we need to study a wide range of monuments, first of all, buildings, which were erected in the 13th century on the southern coast of the Baltic Sea. A thorough comparative research of the materials, which are, unfortunately, not sufficiently published yet, can help us to find the answer to the question about the origins of the master builders of the Novgorod church. The analysis of the building markings, which we publish in this article, can become one of the keys to find the solution to the problem.

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Ilya Antipov ja Alexey Gervais

LIPNO-ÄÄRSE NIKOLAUSE KIRIKU (1292) TELLISED JA NOVGORODI UUE EHITUSTRADITSIOONI PÄRITOLU

Resümee

13. sajandi lõpul juurdus Novgorodis uus ehitustraditsioon. Seniste Bütsantsi-päraste savimassist lõigatud õhukeste telliste asemele tulid vormide abil valmistatud tellised, nagu olid levinud Lääne-Euroopas. Seni oli lubimördile täiteaineks lisatud peenestatud keraamika- ja tellisepuru, nüüd hakati selle asemel liiva kasutama. Jälgides Novgorodi 13. sajandi lõpu kuni 15. sajandi keskpaiga uut tüüpi telliste tootmistehnoloogia ja mõõtude muutusi, võib välja tuua kolm arenguetappi:
– 13. sajandi lõpp kuni 14. sajandi keskpaik (enne 1361. aastat);
– 14. sajandi II pool kuni 15. sajandi I kolmandik (enne 1433. aastat);
– 15. sajandi keskpaik ja II pool.

Käesolevas artiklis püüavad autorid selgitada, kust jõudsid uut tüüpi ehitusmaterjalid Novgorodi. Esimest korda kohtab neid Nikolause kirikus Lipno ääres 1292. aastal. Selles kirikus on traditsiooniliste Vana-Vene lahenduste (põhiplaan "rist ruudus", kolmikkaarsed katused) kõrval kasutatud ka arhitektuurseid detaile, mis pärinevad Lääne-Euroopa arhitektuurist. Arvatavasti osalesid selle kiriku ehitamisel koos nii Novgorodi kui ka välismaised meistrid, kusjuures viimaste seas olid ka tellisevalmistajad. Käesoleva artikli peaeesmärgiks on publitseerida Nikolause kiriku telliste uurimise tulemusi. Nende telliste tunnuseiks on liivakiht kõigil külgedel peale pealmise, tume värv ja kipras pinnad ning üks kindel suurus. On kasutatud ka mitmesuguseid erineva kujuga profiiltelliseid. Autorid uurivad profiilkivide tüüpe ja nende kujundamise tehnoloogiat, telliste suurust ning nende pindadel leiduvaid märke. Ilmselt tulid Nikolause kiriku tellised valmistanud meistrid mõnest Lääne-Euroopa keskusest ja pärast tööde lõppemist lahkusid Novgorodist.

Vaadeldava kiriku telliseid võrreldi teiste 13. sajandi lõpu kuni 14. sajandi keskpaiga mälestiste analoogse materjaliga. Uuringute tulemusena järeldavad autorid, et sel ajal eksisteeris Novgorodis üks keskne/ühine tellisevalmistamiskeskus (või keskus, kus vormiti ja põletati telliseid). Erinevatel objektidel on kasutatud ühesuguse tehnoloogiaga (savisegu koostis, põletamise iseloom, sarnane liiv) valmistatud telliseid. Nende formaat on samuti ühesugune.

Novgorodi ja Vana-Liivimaa telliste põhjalik võrdlev uurimine võib aidata leida vastuse küsimusele: kust tulid meistrid, kes ehitasid Novgorodi kiriku?