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**Wooden sacral architecture in Greater Poland.
An interdisciplinary case study of the church in Domachowo**

Abstract. Sacred wooden architecture in Poland is a huge and still unrecognised research problem. It covers a number of issues of interdisciplinary character: from the properties of building materials and carpentry techniques, through construction and architectural-spatial solutions, to cultural and natural conditions. Hence, the best way to study this problem is interdisciplinary research. The necessity of cooperation of representatives of various scientific disciplines became the basis for creating a team to study the wooden church of St Michael the Archangel in Domachowo, so far dated to 1568. As researchers representing various disciplines (including archaeology, history, art history, history of architecture, architecture, architectural conservation), we cite sources and research that allow us to formulate a thesis that the past of the Domachowo church dates back to the 14th century. Moreover, we present the research and methodological problems inscribed in the aforementioned church building, understood as a whole. Such a multifaceted approach allows us to redefine the current knowledge about the church in Domachowo.

Keywords: sacral architecture, wooden churches, interdisciplinary research, Greater Poland, architecture.

Existing studies have considered religiousness and its material expression, the direct 'architectural' manifestation of a new religion, mainly in relation to masonry buildings. Many scientific discussions virtually ignore the once widespread wooden architecture, which, despite being less well preserved, is still an equally important feature of the Polish cultural landscape. There is no doubt that, from the very beginning, sacral architecture was of a dual nature, being built of either wood or masonry. To understand the scale of this phenomenon, it suffices to mention Jan Łaski's *Liber beneficiorum* of 1520 for the diocese of Gniezno, where the number of village churches totalled 482, of which only 32 were masonry (*Liber beneficiorum* 1880; 1881; Kutzner 1969, p. 372; Wiśniewski 2004, p. 243 ff). In this context, one should ask whether the image of medieval architecture seen only through the prism of the masonry buildings known to us today is sufficient and, at the same time, reliable.

Sacral wooden architecture in Poland is still an enormous uncharted research area that presents a whole range of problems, such as the characteristics of building materials, carpentry techniques, construction methods and work organisation, architectural and spatial solutions, the style and quality of architectural details, furnishings and wall decorations, as well as cultural settings and natural determinants (Kornecki 1992, p. 8). As Aleksander Jankowski rightly notes, the prevailing opinion in contemporary studies on wooden sacral architecture of Lesser Poland (Małopolska), Silesia (Śląsk), Mazovia (Mazowsze) and Greater Poland (Wielkopolska), is that the exploration potential of traditional research methods has been exhausted. Looking at the issue from this perspective, the only thing remaining is to add precision to chronological datings. So far, researchers have determined the number of churches, distinguishing the architectural and spatial types shaped by regional differences in the Middle Ages. They have analysed development trends and stylistic transformations to ultimately confirm the predominance of log and frame constructions (Jankowski 2009, p. 9).

One can only agree with A. Jankowski's opinion, but should we preserve this *status quo*? Should we move in circles within our own disciplines, faithful to learned models and methods? In contemporary science there is no longer (or there should not be) room for disciplines to function in isolation, separately, without collaborating. For this reason, much-needed interdisciplinary teams are already a *sine qua non* of the development of contemporary humanities. The authors of this paper understand interdisciplinarity as dialogue and cooperation between representatives of different fields of knowledge. At the same time, they foster the transdisciplinarity of science that is understood as going beyond the traditional interests of one's own area, beyond the established repertoire of concepts and methods, in addition to adopting such concepts and methods from other fields.

The above assumptions became the foundation for creating a fully interdisciplinary research team to study one of the most interesting examples of wooden

sacral architecture in Greater Poland – the Church of St Michael the Archangel in Domachowo, dated (so far) to 1568 – a church that, following the path described by Aleksander Jankowski, has already passed through all the exploration stages within its relevant field of research.

The team consisted of an archaeologist, a historian, an art historian, an architectural historian, an architect, and an architectural conservator, as well as representatives of many other professions. Their vision of collaboration presented in this paper aims to show how much they can still achieve together, and how such surprising and spectacular discoveries are practically within reach.

In recent years, conservation work was undertaken in the Archdiocese of Poznań in a selected group of wooden churches, under the project ‘Renovation of historic wooden sacral architecture of the Greater Poland region – stage II’, co-financed from the European Union funds under the Infrastructure and Environment Operational Programme¹.

The project (implemented between 2017 and 2020) included extensive conservation and restoration work in the church of the village of Domachowo. This was also an opportunity to carry out archaeological, architectural and structural research, as well research on the actual building and its decoration. It is worth noting that the research was undertaken as an ‘addition’ to the conservation project, following some unexpected discoveries, which will be discussed further in this paper.

St Michael’s Church in Domachowo is an oriented church of a complex architectural and constructional shape. Its central part is a single-nave body with a narrower, elongated chancel terminating in three sides to the east. The main nave consists of two sections, both on a near-square plan, with the western part slightly narrower than the eastern one. Adjoining the chancel to the north is a sacristy set on a rectangular plan, and a rectangular chapel terminating in three sides to the south. Adjacent to the south side of the original main nave is an aisle on a rectangular plan, separated from the nave by arcades, with a vestibule terminating it on the western side. On this side, the whole structure is complemented by a square tower with a porch on the ground floor and two annexes on both sides of the church. The chancel and the nave have separate steep roofs of almost the same height: the highest one over the western section topped with a ridge turret, a slightly lower one terminating polygonally to the east over the chancel, and yet another, lower one over the western section of the nave. The sacristy, much lower than the chancel, is covered by a mono-pitched roof. The chapel, also lower than the chancel, is covered

¹ ‘Renovation of historic wooden sacral architecture of the Greater Poland region – stage II’, co-financed from European Union funds under the Infrastructure and Environment Operational Programme, Priority axis 8 Protection of Cultural Heritage and Development of Cultural Resources 2014–2020. The project was implemented in the years 2016–2020 and included ten architecturally and historically important wooden churches in Greater Poland – in Bagrowo, Buk, Domachowo, Jezierzycze Kościelne, Łęki Wielkie, Łomnica, Mączniki, Oborniki Wielkopolskie, Słoplanowo, and Zakrzewo nr Rawicz.

by a gable roof with a ridge turret, terminating polygonally to the south. The roof framework over the nave and chancel is of a reduced king-post-truss type.

The construction history of the church in Domachowo is mentioned in many studies published already in the mid-19th century. Unfortunately, the information is limited to mentioning its alleged erection as a log construction in 1568, the addition of a brick sacristy in 1586, thorough renovations in 1775 (construction of a new sacristy, remodelling of the tower, reinforcing the walls inside with a frame structure) and in 1930 (addition of a frame-construction aisle and a western section to the nave, replacement of the tower and of the brick chapel next to the chancel with wooden ones designed by Lucjan Michałowski). None of these studies took into account the church's physical constituents in resolving the historical and constructional issues, and they all ignored the question of construction techniques.

Aleksander Jankowski was the first to analyse both the literature and sources on and the existing physical constituents of the church in the 2000s. He also brought to light a lot of hitherto unknown facts about the church's history and construction techniques. However, he upheld the accepted dating of the above-mentioned construction stages. Moreover, he limited his architectural research mainly to issues concerning the half-timbered construction, namely to the analysis of the structural node: the top plate of the log construction, the top plate of the frame and the connection of these top plates with the truss beam of the roof framework. He did not take advantage of the options offered by dendrochronological testing (Jankowski 2009).

During the recent conservation work, the building's inner frame was uncovered to reveal the existence of paintings on the logs. The form and style of the paintings cast doubt on the previous dating of the church. The discovery led to an investigation of both the frame and log construction systems. Among other things, it showed that the logs were connected at the quoins by half laps with a mortice and tenon, which made it impossible to replace single whole logs. Additional random dendrochronological examination showed that some of the logs in the chancel and the roof framework dated to the 1360s (1368/1369) and some to the early 16th century (1502/1503) (Krapiec 2020). None of these dates coincided with the dating proposed in the past literature concerning the building.

This unexpected situation and the lack of a complete structural examination of the church provided a rationale for a comprehensive historical and architectural research project, including an analysis of the church's existing physical constituents, a source and literature study, and dendrochronological testing (Brykowska 2003; *Badania architektoniczne* 2015). The interdisciplinary approach to the solution of the questions concerning the construction history and the building techniques used in the Domachowo church was an innovative one. So far, such extensive research has not been carried out in this or any other church. Moreover, a comparative analysis of log construction churches from the medieval and early modern periods (Matuszczak 1971; Hof 1999; Brykowski 2001; Bajon-Romańska 2008,

Inwentarz 1985), as well as half-timbered ones from the 18th century (Hähnel 1968; Dehlitz 1987; Trocko-Leszczyńska 1995) provided new information that placed the Domachowo church in a broader context. The analysis also provided a point of departure for a number of conclusions about the history of building techniques and of construction processes in the medieval and early modern periods.

The main goal of the research project, apart from solving the abovementioned multifaceted issues and the full conservation of the building, was the verification of a hypothesis, which had already become public knowledge, about the chronological precedence of the church in Domachowo among all the wooden churches in Poland. The leader in the 'race', St Nicholas' Church in Tarnowo Pałuckie erected in 1373/1374 (Greater Poland province, Wągrowiec district; Wyrwa 2011; 2015; 2017, p. 40 – older literature specified), has recently been overtaken by the Church of the Assumption of St Mary in Krzyżowice (Brzeg district). The lower parts of the walls in the latter (up to a height of 3.95 m) are of a log construction type in pine wood dated to 1325/1326 or 1326/1327 (Kłoda, Ważny 2016, p. 216–217). Where does this place the church in Domachowo? An analysis of sixty-one samples taken from various places in the church suggests that the wooden elements of the oaken (*Quercus*) log construction in the chancel and the short elements of the roof framework can be dated to 1368/1369 (Krapiec 2020). These dates have led Jerzy Borwiński to the following conclusion: 'it [the church] is thus far the oldest scientifically confirmed and almost entirely preserved wooden church in Poland' (Borwiński 2019, p. 4). The conclusion is as interesting as it is premature. Hence the necessity to revise the existing written sources on the history of the church, explaining, as intended, the two-hundred-year difference between the current dating and the outcomes of dendrochronological tests.

The available sources are not extensive. They have already been collected in an entry in 'Słownik historyczno-geograficzny województwa poznańskiego w średniowieczu' (*Słownik* 1982–1986, pp. 385–386). The earliest information about a church in Domachowo comes from two documents from the late 13th century. According to the first one of 20 April 1290, Duke Przemysław II of Greater Poland annexed, at the request of Bishop Jan (Gerwic) of Poznań, the Domachowo *źreb* (a type of farming estate), a property of Wojciech called Okazaniec (Ocasanech), to the Bishop's village of Zimnowo, granting the estate immunity. It was explained that the annexation was 'under German law', meaning that it was in connection with the incorporation process of the estate (KDW 1878, no. 643). The undertaking is further described in another document of 11 September 1293, according to which, the abovementioned Bishop Jan declared that in order to free the church estate in Zimnowo from some unspecified 'appropriators' (*detentores*) he granted it to Wojciech Okazaniec (*Okaszanyecz*), who was to incorporate it under German law together with his Domachowo estate. In return, Wojciech was to own six *lany* (field units) and six gardens in Zimnowo and Domachowo. After his death, Wojciech's

sons, Jan and Florian, agreed to keep their Domachowo estate integrated with the bishop's property under German law, on condition that if they were to leave their property, they would lose their *solectwo* (rural areas under the administration of a *soltys*, a hereditary office holder acting on behalf of an estate owner) and their share in the bishop's property. If the bishop were to sell the estate, they were entitled to keep their Domachowo estate as a separate one. The *soltysi* all had the right to own an inn, a butcher's shop and a mill, and to hunt birds and hares. From the inn proceeds, they were to pay a pound of wax to the local church. The bishop also granted them the right of patronage over the church (KDW 1982, no. 44).

The authenticity of this no-longer-existing document (attested only by Bishop Jan Lubrański in 1515) raises some questions², but in its essence, the information is authoritative, especially that it corresponds to the authentic ducal document of 1290 (preserved in original). The mutually supportive accounts give us an exceptionally clear picture of how the village evolved. On the one hand, there was Domachowo owned by Wojciech Okazaniec, and on the other, the adjacent Zimnowo, the bishop's estate that had been seized by some other people. The bishop made an agreement with Wojciech to recover his property. Having merged it with his Domachowo, Wojciech incorporated the estates as one village under German law. In return, he was to become the *soltys* of the village. The name Zimnowo was never mentioned again, and the village created from two settlements became known as Domachowo. Today, it is no longer possible to locate the sites of the individual estates.

In all subsequent documents, the village is attested as a bishop's property. There are also further mentions of the *soltysi* of Domachowo, who must have been quite wealthy, given that they donated altars to churches in the neighbouring towns. We learn that in 1501, there were as many as five *soltysi* who still owned six łany (i.e., the same number of łany as in the incorporation agreement). Fourteen years later, in 1515, seven *soltysi* presented for approval their privileges awarded by Bishop Jan in the 13th century. The size of this group (their different nicknames suggest they were not brothers) seems to prove that they still had to live under Polish law, where the circle of inheritors was wider than under German law. Consequently, the fragmentation and partitioning of property was probably the reason for the demise of the *soltys* status. In the 15th and 16th centuries, the abovementioned *soltysi* are still consistently described as *providi* (prudent), which was, in fact, a bourgeois attribute. Thus, their knightly status was no longer acknowledged, but they were still perceived as better than ordinary peasants, who were only *laboriosi* (hard-working),

² The questions were raised by Bolesław Ulanowski (1888, pp. 360–362, 534). The main formal objection was the reference to Duke Przemysł as *dux Regni Polonie*, which title did not appear until after the ruler's death. Hence it could not have been used in 1293. Another apparent issue is the very detailed description of peasants' responsibilities, which is more typical of the 14th century. Nonetheless, one should note that even if the document was forged to some extent, it does not undermine its authenticity. The forger would have definitely tried to describe the circumstances as he knew them, and these were not necessarily the same as in the 13th century.



Fig. 1. Domachowo, Krobia municipality, Gostyń county. Onsite documentation. 3D inventory of St. Michael the Archangel Church: building and vicinity (edited by Artreal Sp. z o.o., Lublin)

so the memory of the higher *soltysi* status still lingered. However, the bishop finally bought out the *solectwa* from the proliferating and impoverishing *soltysi* (1556) and, from then on, the lands were leased on perpetual usufruct terms.

Research into the history of Domachowo was necessary to put the story of the church in context (Łukaszewicz 1858, p. 15; Nowacki 1964, pp. 417–418). Although it is mentioned already in the document of 1293, this account could have been falsified, as noted above, perhaps by adding a clause concerning the right of patronage. The church was built in the 14th century at the latest, given that as of the 15th century information is provided about the subsequent parish priests. The parish was quite rich (in 1437 it was leased for 19 marks per year) and included a number of surrounding villages (Stara Krobia, Krajewice, Sułkowo, Bodzewko and Rębowo). From the last quarter of the 15th century onwards, it is attested that *soltysi* presented candidates for the local parish priest, which means that they did, in fact, exercise the right of patronage mentioned in the dubious document of 1293. It should be noted, however, that the wording of the relevant sentence in the document is quite peculiar: the bishop gave the *soltysi* ‘the full right of patronage [...] so that they may be satisfied’, but they were to exercise this right by mutual agreement – in other words, jointly – and it was the bishop who was the yielding party. The church, therefore, originally belonged to the bishop.



Fig. 2. Domachowo, Krobia municipality, Gostyń county. Onsite documentation. 3D inventory of St. Michael the Archangel Church: interior and vicinity (edited by Artreal Sp. z o.o., Lublin)

This interpretation is valid regardless of the authenticity of the document as such (even the potential forger had to be aware of certain circumstances). However, it does not clear up all doubts. It is still impossible to say whether the joint patronage was established at the end of the 13th century or later. It seems possible that such a solution reflected the circumstances of the church being founded by the *soltysi* (or at least with their participation), which may not have happened until the 14th century. The new parish was most probably created on part of the former parish of Krobia (as suggested by the fact that it included the village of Stara Krobia). Krobia was the property of the bishop, and hence one can speculate that he reserved a share in the right of patronage. All this is probable, but by no means certain.

The doubts described above will be resolved if the document of 1293 and its specific layers are confirmed as authentic. Hence it is of fundamental importance to thoroughly analyse it. Further source queries should, of course, be undertaken, though there is no hope of finding new documents from the 13th or 14th centuries. Records concerning Domachowo can certainly be uncovered in court manuscripts from the 15th and 16th centuries, and especially in church records. Because Domachowo was the property of a bishop, its affairs were generally not brought before secular courts. Land and municipal records might contain a more precise description of the borders with the neighbouring villages, which could point to the erased location of the lost village of Zimnowo.

It is, however, quite unlikely that the outcomes of the queries will change the picture outlined above. The visitation records of the parish are not of much assistance. The oldest date is 1610. They do contain some interesting information (e.g., the previously unattested dedication to St Michael and St Magdalene) and, most



Fig. 4. Domachowo, Krobia municipality, Gostyń county. Excavation 1/2020. Western profile (photo by A. Róžański)

importantly, they provide a description of the church; (it was wooden with a brick chapel founded in 1586). Next to it stood a wooden bell tower and a mortuary. There was also a hospital in the village (which was also founded in 1586). Unfortunately, this information cannot explain the earliest uncertainties. Nonetheless, some finds can be expected in the church itself, like a rood beam (dated to 1523) mentioning the painter and parish priest Fabian (*[P]ictor opera Fabiani plebani in Domachowo anno Domini millesimo quingentesimo vigesimo ter[tio]*). Father Fabian is, indeed, attested in the years 1522–1529 and it was he who apparently arranged the new decoration (or maybe even a major renovation) of the building.

It seems that the best way to understand a church as a wooden work of architecture is to put it in its proper historical context, taking into account, among other things, its spatial and functional settings. Consequently, one must not lose sight of its space, of which the most expressive dimension is set by the architectural framework constituting its boundaries, internal divisions and proportions. On the other hand, in its architectural dimension, a building also has symbolic connotations. In a sacral building, the space demarcated by the structure is a sacred place *par excellence* due to the *presentia Dei*. In this way, the architectural framework demarcated the sacred space, which was further defined by the placement of objects of worship and liturgy inside it.

The sacred aspect of the objects inside a church was closely related to the functionality and ways in which the objects were used. Architecture outlined the boundaries of the sacral, liturgical and artistic space, whilst providing a backdrop for the furnishings that introduced additional meanings to the architectural interior.



Fig. 5. Domachowo, Krobia municipality, Gostyń county. Excavation 1/2020. Southern profile (photo by A. Różański)

The responsibility for adding splendour to a church with appointments for liturgy and devotions rested directly on its patrons, caretakers and parishioners (Reinle 1988; Suckale 1999, pp. 15–25; Labuda 2004, p. 29). Caring for the appearance of a sacral building was also a privilege of sorts that wealthy people could exercise, expressing their piety with financial donations, or using the furnishings as a visual representation of individuals, groups or institutions in the spirit of the ‘economy of salvation’ (Vavra 1986, pp. 299–303; Schleif 1990, p. 45; Borgolte 1994, p. 93; Oliński 2008, p. 348). The donations were quite varied. In addition to architectural and liturgical objects, a whole range of other artefacts was available to equip and adorn a church.

One category of donated objects was what is now called ‘movable furnishings’, namely paintings and sculptures³. Because they were not permanently attached to buildings, in many cases it is difficult to determine when and how they found their way into particular churches, as in the case of the Pietà from Domachowo, which is associated with the Wrocław school and dated to the early 15th century (Kowalewska

³ Modern medieval history and art studies aim to distinguish the individual categories of such objects that were typical for the Middle Ages, e.g., devotional paintings (Ger. *Andachtsbild*) (Noll 2004, pp. 297–328).



Fig. 6. Domachowo, Krobia municipality, Gostyń county. Uncovered discovered Polychromes in St. Michael the Archangel Church; northern wall. Figural scenes (photo by P. Marciniak)

1969; *Śląsk – perła w koronie* 2007, cat.I.5.19, p. 136). Today, the Pietà seems to be the most mysterious historic object in the Domachowo church.

The conservation work in Domachowo covered the main altar and three side altars, a pulpit from the end of the 18th century, a sacristy wardrobe dated after 1775, rood beam sculptures of Christ Crucified (2nd half of the 17th century) and Our Lady and St John (19th century), three crucifixes, a sculpture of Christ Resurrected with Ten Apostles (18th century), two reliquaries from around 1700, a monstrance cover, patrons' benches and a communion balustrade, as well as the organ front with the choir balustrade. In addition, as far as fixed elements were concerned, the polychromes on the ceiling above the chancel and nave, dating to 1775, were restored. In the second phase, the boards on the wall and ceiling were removed from the nave and chancel to expose the original paintings, and new boards and flooring were installed in the nave extension, the choir, on the staircase, in the aisle and in St Barbara's Chapel⁴.

The walls of wooden churches often served as support for monumental paintings, which were one of the most permanent decorative features. Unfortunately, as a fixed part of the construction they are among the category of most fragile paintings, threatened over the years by damage from biological and chemical processes, in addition to changes in taste, function, structure and décor, not to mention inept

⁴ <http://drewnianekoscioly.pl/language/pl/domachowo/> (28.12.2020).



Fig. 7. Domachowo, Krobia municipality, Gostyń county. Polychromes in St. Michael the Archangel Church. Figural scenes; visible sodium light image (after Kłyszcz, Majewska 2020)

conservation (Jankowski 2009, p. 11; 2014, p. 47 *ff*). Vulnerability to damage is a key factor that makes it easy to overlook the importance of this type of decoration. Layers of paintings overlapped over the centuries and the oldest ones, if they survived, are still waiting to be discovered and interpreted. Indeed, the paintings preserved in Greater Poland only confirm that the process was very dynamic, as exemplified by the church in Domachowo.

The chronology of the recent conservation work in Domachowo was largely determined by activities focusing on the interior of the church. In July 2018, work began on the conservation of the polychromes on the boards of the walls and ceiling in the nave and chancel. Just after some of the work on the ceiling paintings above part of the chancel was completed, an earlier log construction and a later frame one was exposed behind the 18th-century boards on the walls in the nave and chancel.

The gaps between the 18th-century boards on the wall in the northern part of the chancel revealed fragments of previously unknown polychromes from the mid-16th century. Subsequently, the boards were removed to expose not only the paintings, but also elements of the log construction, which later raised questions about their dating and structure.

At the same time, a gothic rood beam with an inscription was also uncovered, as well as the log walls and the inner frame structure. These were covered with polychromes with clear figural and floral ornamental motifs depicting biblical themes, in addition to numerous inscriptions. The condition of the polychromes was very poor and required interventive conservation. There was also significant



Fig. 8. Domachowo, Krobia municipality, Gostyń county. Polychromes in St. Michael the Archangel Church. Figural scenes; UV image (after Kłyszcz, Majewska 2020)

damage and blurring in their structure. Furthermore, signs of active woodworms were spotted throughout the church. Subsequently, it was fumigated, and its wooden surfaces were treated with a chemical agent.

The painting layer discovered during the conservation project covers the log construction and is determined by the frame construction. It shows figural scenes relating to both the Old and the New Testaments. The frame construction outlining the scenes is also covered with a polychrome of an ornamental and illusionistic character. The painter's intention was to make the vertical elements imitate superposed columns illuminated from the east through the window. Under the abovementioned painting layer, there is yet another, older one hidden behind elements of the frame construction. This means that the painting must have been created earlier. Not much of this layer has survived. Many features are illegible, and their continuity on the southern wall is obscured, since the wall has been punctured by the arcades. Nevertheless, the outlines of the figures are discernible, as are the marks left between each of them by *zacheuszki* (small candleholders symbolising the Twelve Apostles). On the northern wall,⁵ the first figure from the east is wearing

⁵ On the southern wall, an outline of a figure holding a sword has survived. Slightly below, in the polygonal termination of the chancel, another figure has been discovered. Unfortunately, both are obscured by the frame structure.



Fig. 9. Domachowo, Krobia municipality, Gostyń county. Polychromes in St. Michael the Archangel Church. Figural scenes; IR image (after Kłyszcz, Majewska 2020)

a tunic. It has a long beard and a nimbus adorning its head. The second figure, also with a nimbus, is very different, with a youthful face, in a fur-lined coat, holding a chalice (St John?). Another figure, whose outlines are in the nave, holds the cross of St Andrew. These attributes, as well as the presence of the abovementioned *zacheuszki*, lead to the conclusion that the subject matter of the oldest painting layer included depictions of the apostles: six each on the northern and southern walls, both in the chancel and in the nave.

In 2020, during basic interventive conservation the discovered paintings were disinfected and protected against further damage. In addition, the conservators cleaned the preserved paint layers, and the wooden sublayer. They created full photographic documentation of the state of preservation before, during and after conservation. Furthermore, photographic documentation was made of the whole paintings and the details in visible sodium light, ultraviolet light (UV) and infrared light (IR). The composition of pigments was analysed using XRF X-ray spectrometry, and samples of the paint layers were chemically tested to identify the composition of the pigments and binding agents (Kłyszcz, Majewska 2020).

Simultaneously, in July 2020, under a grant from the Archdiocese of Poznań, an inventory was carried out to document the existing condition of the building. The church was scanned using a 3D FARO® FocusS scanner. Using information

obtained from a 360-degree point cloud, the building was modelled in virtual space with 1.0-mm accuracy. This provided for documenting and making 2D architectural drawings of the church. The virtual model was made in natural colours measured in RGB standard during the scanning process. The output material was a point of departure for subsequent analytical and designing studies regarding the architecture and construction.

The aforementioned discoveries made it necessary to change the scope of the conservation project, and to undertake a number of other diagnostic and intervention measures. The schedule was extended to include the protection of the discovered structural elements and polychromes, as well as restoration work on the actual building.

In view of the potential verification of the dating hypothesis, the project required archaeological research, which aimed to review the previous findings, especially with regard to the chronology of the site. Unfortunately, this is not a standard procedure in this type of conservation assignment, and as a result, the scope of the research carried out as an 'addition' to the 'core' project was kept to a minimum.

In the light of the research carried out so far, the origins of the church could be traced back to different times: 1293 (uncertain mention in a historic source), 1369 (dendrochronological dating of the log construction of the existing church), the 15th century (confirmed priests of the Domachowo Parish), and finally, 1568 (accepted date of the erection of the church).

Considering the scholarly belief in the continuity of a holy place, the continuity of the altar, the first excavation of 3.5×2.0 m was made in the chancel on the N–S axis, intersecting the longitudinal axis of the church. Unfortunately, the archaeological image of the stratigraphic layers did not differ from those known to the authors both from literature and direct experience. The removed wooden floor revealed a 14-cm layer of light-grey dusty humus, and underneath it, almost to the undisturbed soil, a 145-cm 'funeral' layer formed during intensive burial activity in the church. As this paper is not intended to be an archaeological study, it suffices to conclude that no traces of objects or buildings predating the erection of the present church were found in the excavation. Among the archaeological artefacts that can be used for the purpose of dating, two decorative elements of the church floor from different periods were discovered: a handmade gothic flooring brick (x=46, y=130, z=285 mm) dated to the late 14th or early 15th century, and three ceramic floor tiles (188×188×27 mm) dated to the 16th century.

Moreover, 44 numismatic artefacts were discovered around and inside the church. Chronologically, the earliest are two Jagiellonian denarii, the first of which is attributed to Władysław III of Poland, thus dating to 1434–1444. The second is a 15th-century forgery. This is followed by a collection of 15th-century coins that includes a relatively rare denarius from the Duchy of Głogów, dated to

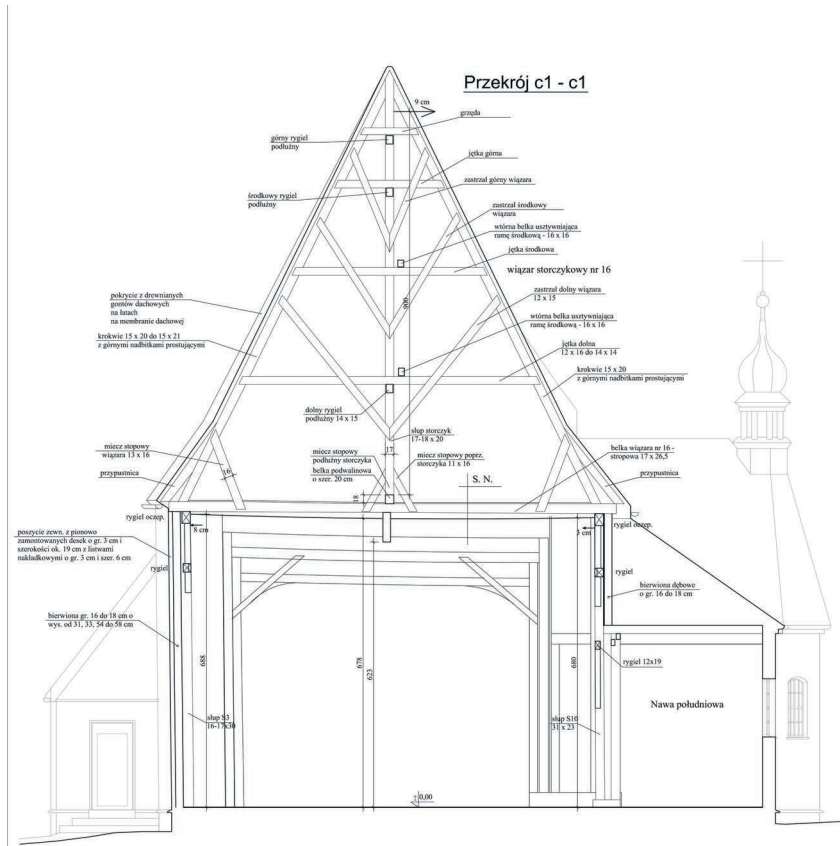


Fig. 10. Domachowo, Krobia municipality, Gostyń county. Construction deformation in St. Michael the Archangel Church. Cross section (after Szymanowski 2020)

ca 1493. Slightly more numerous are coins from the 16th century, including a small Czech coin minted in Kutná Hora. Another chronological finding is a Toruń denarius of Sigismund I the Old, dated to 1526–1548, followed by a Gdańsk denarius of Sigismund II Augustus, dated to 1558, and a denarius of Albrecht Hohenzollern, minted in 1569 in Königsberg. The last of the 16th-century coins is a Gdańsk denarius of Sigismund III Vasa minted in 1594⁶.

The brief review of archaeological sources shows that no artefacts were discovered to support the dating of the Domachowo church to the late 13th century. The timing that we can support with certainty is between the late 14th and early 15th century. One can only hope that these were not the last archaeological excavations

⁶ We are very grateful to Piotr Chabrzyk of the Department of Numismatics at the Archaeology and Ethnography Museum in Łódź for his analysis of the numismatic finds.

in Domachowo, and that a full research programme will be implemented to dispel all doubts.

While analysing the investigations carried out so far, a number of questions concerning the actual church building emerged. Is it really the oldest, almost entirely preserved church in Poland? If not, how many and which structural elements from the first log construction (1360s) were reused in the log construction of a second church at beginning of the 16th century? Would the reused structural elements from the 1360s provide a basis for a theoretical reconstruction, in the form of drawings, of the original church? What is the construction type of the foundations, and how old are they? What construction techniques did the carpenters use in the first church in the 1360s? What techniques did they use in the early 16th century, in the 1760s and the 1930s? How do the building techniques of the subsequent stages compare with the history of construction technology, especially with medieval and early modern log and half-timbered constructions, in addition to roofing systems?

Regardless of the above, the *in situ* investigation showed, after removing the boards covering the church construction, that the technical condition of the building is far from good. Inside the church, in the chancel and the original nave, the uncovered oaken logs and a secondary reinforcing pine post-and-beam construction reveal damage to individual elements of the building and their joints. The log construction is bulging, parts of the foundations are damaged and there is visible displacement and loss of structural elements. Also apparent is the slanting of the chancel and nave ceilings, as well as the slanting of roof framework (Szymanowski 2020).

The outcomes of the measurements made in the church show that its structure and individual elements are tilted, both in the chancel and in the nave. The columns of the northern wall are tilting to the south and the west. The inclinations are of differing degrees, depending on the direction. In general, the whole chancel structure is slanting consistently in the longitudinal western direction by about 16 to 21 cm, and in the transverse direction, the columns of the northern and southern walls are slanting towards the centre of the church. The ceiling is dropping towards the west.

The results of the nave measurements also point to significant deviations in the structural elements in this part of the church. Furthermore, in this case it can also be concluded that the whole structure of the original nave is slanting longitudinally to the west and transversely to the north, with the maximum variation occurring at the rood beam and decreasing towards the west (Szymanowski 2020)⁷. The assessment of the technical condition of the construction clearly indicates that it should be continuously monitored geodetically. This also applies to the elements that affect the church's stability and the safety of its users.

⁷ A LEICA TS 16 total station, steel measuring tapes and a LEICA rangefinder were used for the geodetic survey between 30 October and 20 November 2020.

In the second phase of the project, between 2019 and 2020, the boards in the nave and the extension were re-created, as were the floorboards in the music choir, on the staircase, in the aisle and in St Barbara's Chapel. The terrazzo floor from the 1930s was replaced with a damp-proof membrane and an oaken floor in a colour similar to that of the movable furnishings.

A separate task, important from the users' point of view and compliant with the current provisions of the Building Law Act, is the remodelling of the external stairs, which is necessitated by the change in the height of the church floor level. A fire alarm system is also required, and the building must be adapted for wheelchair access. Access to the ground floor will be provided through the side entrance from ground level, and then by a ramp to the vestibule of the aisle (Litoborski, Marciniak 2020)⁸. Subsequent to statutory requirements, the restoration work is being coordinated by qualified architects.

Conclusion

The surprisingly wide scope of works, which result largely from the discovery of the previously unknown polychromes and structural elements in the church, raises a number of questions concerning the methodology of conservation and construction work, as well as the scope of the required research and interventions. These can be divided into three groups of problems: a) the area of the necessary research, b) the monitoring of the building's technical condition, and c) the procedural methodology, which requires a wide interdisciplinary range of diagnostic research and intervention work.

The first group of problems concerns the scope of the necessary research based on different fields of science. The interventive and technical conservation completed to date needs to be continued in the scope of comprehensive conservation and extended specialised research (Kłyszcz, Majewska 2020), including technical and mycological analyses determining and systematising the degradation factors of the structural elements and the sublayer of the paintings (Jankowski 2020).

It is also necessary to analyse the construction system of the church. This includes a critical evaluation of the built-in material and its treatment, the carpentry joints and the relationships between the elements of the construction systems of the walls and the roof framework in the individual parts of the building (Jankowski 2020). The study of the construction system in connection with detailed dendrochronological analyses on a larger number of samples, as well as historical research of archival sources and archaeological reconnaissance of the area around the church, will make it possible to determine both the historical relationships

⁸ At the time of preparing the paper for print, these works were not yet completed.

between the individual parts of the building, and, likely, to verify the dating of these parts.

In consideration of the identified permanent deformations of the construction system, it is necessary to carry out further diagnostic and intervention work, including monitoring the condition of the individual construction elements. The technical condition of the church is not good and shows significant displacements of the wooden construction. This needs continuous geodetic monitoring. It will be particularly interesting to monitor the dynamic displacements of the wooden elements. This will make it possible to unambiguously determine the condition of the entire system and its reinforcement, which is necessary in order to make the building safe for users.

Finally, the last group of problems concerns the cooperation and coordination of the members of different research areas involved in the project⁹. For obvious reasons explained in this paper, this is an essential issue. Although the methodology of dealing with the restoration of historic architectural monuments has already been described (Tajchman 2009; Korpała 2018; Kadłuczka 2019), there is no doubt that this matter needs to be approached from a new, multidimensional perspective, due to the wide range of intersecting issues: a) identification of written (historical) and physical (archaeological) sources; b) modern diagnostic methods, inventories and studies of physical constituents (including structural elements and spatial solutions); and c) analysis of furnishings, supported by stylistic, iconographic and comparative studies. All this makes the problem of wooden sacral architecture an interdisciplinary issue that can be approached in a comprehensive manner only with cooperation between various scientific disciplines.

Translated by Marta Walkowiak

⁹ The authors wish to emphasise the role of Rev. Paweł Minta of the Domachowo Parish, who coordinated all the work in the church and its vicinity, and to thank him for his commitment and knowledge, which greatly contributed to the project and its success.

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