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## MEDIEVAL HALL CHURCHES IN SILESIA PART 3. CHURCHES BETWEEN THE 15<sup>TH</sup> AND MID 16<sup>TH</sup> C.

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### 1. Projection and body

Spatial designs of churches are varied and generally can be divided into three groups (Fig. 2):

- hall churches with single-nave presbyteries,
- hall church with hall presbyteries finished with three polygons or a straight wall,
- hall church with hall presbyteries with an ambulatory.

**The first group** encompasses hall churches with single-nave presbyteries ended with a polygon, and there are two cases when a presbytery is closed with a straight wall (Fig. 3-5). In two churches presbyteries come from the 13<sup>th</sup> c. (Żary<sup>1</sup>, Żory<sup>2</sup>), and in all other churches they were built in 15<sup>th</sup>-16<sup>th</sup> c. In most churches naves are short, with three spans, only in Żary and Żory, where earlier walls were used, there are five spans. In six churches there

are towers, they come from various times and differ in their location in churches. A tower in Żary in the northern corner between a presbytery and a nave was built at the end of the 13<sup>th</sup> c., the lower part of a tower massif in Żory is probably earlier, however, in the other churches towers were built at the same time as churches or were erected at the second stage of construction. In the Bernardine church in Jawor it is located in the same way as in the 14<sup>th</sup> c., in the northern corner between a presbytery and a nave. In Kąty Wrocławskie and in Wrocław-Ołtaszyn one tower was erected at the western elevation. In St. Barbara Church in Wrocław two western towers were built. Naves were covered with one or three roofs. In St. Barbara Church in Wrocław over aisles there are transverse roofs. In most churches naves are twice as wide as aisles. Aisles are slightly wider in churches in Jawor, Kąty Wrocławskie and in Żary.

**The second group of hall churches with hall presbyteries ended with three polygons encompasses four buildings – parish churches in Namysłów, Lwówek Śląski and Bytom as well as the collegiate church (now the cathedral) in Opole (Fig. 6).** The construction of the church in Namysłów was started in the 14<sup>th</sup> c. with reconstruction of a 13<sup>th</sup>-century nave<sup>3</sup>. A three-aisle hall with three spans which are square in the nave and rectangular in aisles. In the 15<sup>th</sup> c. a single-nave presbytery was turned into a three-aisle hall with similar proportions to those of the nave, closed with polygons. The church had an older northern tower, chapels in aisles and a sacristy was built in 1526 on the northern side of the presbytery. Its long nave was covered only with one common gable roof.

The collegiate church in Opole was erected using a thirteenth-century elevation with two towers and a part of nave walls<sup>4</sup>. In the 1<sup>st</sup> half of the 15<sup>th</sup> c. a five-span hall of rather significant width was built, it was closed with three polygons on the eastern side. In the middle of church length, on the southern side, the sacristy was located and on the turn of the 15<sup>th</sup> and 16<sup>th</sup> c. a few chapels were built along longitudinal walls. The body of the church was covered with one gable roof.

The parish church in Lwówek Śląski was erected as a new structure and only the 13<sup>th</sup> c. elevation with two towers have been preserved<sup>5</sup>. The body with five rectangular spans in the nave was built in the second half of the 15<sup>th</sup>, and a presbytery with three spans which were planned as square spans in the nave, was finished in the first quarter of the 16<sup>th</sup> c. The presbytery was ended with three polygons. On the northern side of the presbytery there is a sacristy with an additional floor added later. The construction work during which chapels and porches were erected lasted until 1559. The monumental body of the church was covered with a uniform gable roof.

The parish church in Bytom, of which only a 13<sup>th</sup> c. single-nave presbytery has been preserved, was developed for a long time<sup>6</sup>. There was a three-aisle hall with a three-arcade rood screen separating the presbytery and two chapels on the sides, at the height of aisles. In the 19<sup>th</sup> c. the architectural style of the church was turned to Gothic again, arcades were made in presbytery walls and then the presbytery obtained its three-aisle hall design closed with three polygons, the middle polygon is projected in the eastern direction by the length of one span. Each aisle

<sup>1</sup> J. Rozpędowski, *Sprawozdanie z badań architektonicznych kościoła NM Panny w Żarach*, C. Lasota, *Sprawozdanie z badań archeologicznych*, Wrocław 1973, mpis in Biblioteka Instytutu Historii Architektury Sztuki i Techniki Politechniki Wrocławskiej (IHASiT. PWr.); S. Kowalski, *Zabytki...*, pp. 290, 291; C. Lasota, J. Rozpędowski, *Dwunawowy kościół z pierwszej połowy XIII wieku w Żarach*, [in:] *Z badań trzynastowiecznej architektury na Śląsku i w Czechach*, Prace Naukowe IHASiT. PWr., Wrocław 1981, No. 15, Seria: Studia i Materiały No. 8, pp. 49-52.

<sup>2</sup> A. Weltzel, *Geschichte der Stadt Sohrau in Oberschlesien*, Sohrau O. S. 1888; G. Chmarzyński, *Sztuka górnośląska*, [in:] *Górny Śląsk*, ed. K. Popiołek, M. Suchocki, S. Wystouch, S. Zajchowska, Poznań 1959, p. 381; *Katalog Zabytków Sztuki w Polsce (KZSwP)*, vol. VI, Z. 11, ed. I. Reduch-Samkowa and J. Samek, Warszawa 1964, pp. 33-36.

<sup>3</sup> J. Froben, *Annales Ioannis Frobenii ab anno 1347*, Archiwum Państwowe we Wrocławiu, Rep. 135, E 99a, sygn. 679; K. Bimler, *Der Breslauer Dombaumeister Peter Rote aus Halle. Zur Baugeschichte von Stadt und Kreis Namslau*, [in:] Quellen zur

Schlesischen Kunstgeschichte, brochure 6, Breslau 1941, pp. 22, 23, 59-65; M. Niemczyk, *Kaplice mieszczańskie na Śląsku*, "Roczniki Sztuki Śląskiej", R. XIII, Wrocław 1983, p. 501; C. Lasota and A. Legendziewicz, *Badania gotyckiej architektury Namysłowa. Kościół parafialny miasta lokacyjnego*, Architectus, Wrocław 2005, No. 1-2 (17-18), pp. 21-33; H. Kozaczewska-Golasz, *Średniowieczne kościoły halowe na Śląsku, część 2*, op. cit.

<sup>4</sup> H. Tintelnot, op. cit., pp. 136, 137; U. Popłonyk, *Opole*, ser. Śląsk w Zabytkach Sztuki, Wrocław-Warszawa-Kraków 1970, pp. 51-79; T. Chrzanowski, M. Kornecki, *Sztuka Śląska Opolskiego*, Kraków 1974, p. 60; *Architektura gotycka w Polsce...*, pp. 176, 177.; H. Kozaczewska-Golasz, *Opole – katedra pw. Znalezienia Krzyża Św.*, "Architectus", w druku.

<sup>5</sup> H. Tintelnot, op. cit., pp. 122, 123; M. Zlat, *Lwówek...*, pp. 122-141.

<sup>6</sup> G. Chmarzyński, *Sztuka w Bytomiu*, [in:] *Dziewięć wieków Bytomia. Szkice z dziejów miasta i ziemi bytomskiej*, ed. F. Ryszka, Stalinogród 1956, pp. 121-139; H. Andrzejak, *Świątynia starsza od miasta. Szkice z dziejów kościoła Wniebowzięcia NMP w Bytomiu*, Opole 2002, pp. 42, 82.

is covered with a separate roof. A late Gothic tower was added to the western span on its southern side.

All churches with three-aisle presbyteries are significantly long. In Namysłów and Bytom a three-arcade wall separates a presbytery from a nave, while in Opole and Lwówek the interiors are uniform without any divisions. In Lwówek and Bytom aisles are relatively wide, their proportions to the nave are 1 : 1.28 and 1 : 1.25 respectively.

Two churches had three-aisle presbyteries closed with a straight wall (Fig. 7). In Lubsko a rectangular presbytery from the 13<sup>th</sup> c. which was rebuilt and the whole church was reconstructed<sup>7</sup>. Only a 13<sup>th</sup>-century tower was saved, it was built in the western bay of the nave. The church in Lubawka consists of six narrow spans in three-aisle hall design, on the eastern side a baroque semicircular apse was added, and the whole interior was reconstructed in Baroque style<sup>8</sup>. The body of the building is fragmented with high buttresses. In Lubsko the nave is 10.70 m wide, while aisles are only 1.90 and 2.05 m wide; this is the biggest difference in width among all the discussed churches.

**The third group** encompasses five parish churches with a hall design and a hall ambulatory (Fig. 8). One of the largest of them is the church in Nysa, its construction started in the second half of the 14<sup>th</sup> c. with a nave<sup>9</sup>. The eastern part which is an elongation of the nave, was erected in 1424-1430, it is closed with a polygonal ambulatory. The nave and the presbytery, except for the polygonal part, have chapels between buttresses. This is the reason why the body of the church resembles a basilica. The hall part is covered with one gable roof, over chapels there are rood pitches. The church has a detached tower.

The church in Szprotawa is by far the smallest, it was built in first quarter of the 15<sup>th</sup> c. by widening and lengthening the 13<sup>th</sup>-century church<sup>10</sup>. On the eastern side it is closed with a polygonal ambulatory. The church is covered with a gable roof, and the northern single tower from an earlier period was increased in height.

The body of the church in Gubin was built in the second half of the 15<sup>th</sup> c. (the presbytery) and the first half of the 16<sup>th</sup> c. (the nave and tower) at the place of a 13<sup>th</sup>-century church which was developed in the 14<sup>th</sup> c.<sup>11</sup> The presbytery with an ambulatory is separated with an blind arcade from the nave. Along aisles and the ambulatory there are chapels. The body of the church in the lower part inside is closed with full-bodied walls, and higher with walls with buttresses. Two 13<sup>th</sup>-century towers were knocked down and one western tower was built on the axis.

The late Gothic church in Góra from the 15<sup>th</sup> c. replaced an earlier church, probably only the western wall was reused<sup>12</sup>. A presbytery is separated from a nave with a blind arcade. Arcades between aisles reach the eastern polygon without creating an ambulatory in architectural design. However, placing an altar in line with eastern pillars contributed to the creation of an ambulatory. Around the presbytery there are chapels located between buttresses. The western elevation is made of two towers.

In the first half of the 16<sup>th</sup> c. a small church was erected in Mirsk, it replaced an earlier building<sup>13</sup>. Arcades between aisles and transverse arches have the same cross-section as ribs, therefore longitudinal divisions reaching the eastern wall are identical with transverse divisions. Nevertheless there is an impression that in the church there is no ambulatory.

<sup>7</sup> *Ziemia Lubuska*, Poznań 1950, p. 409; S. Kowalski, *Zabytki środkowego Nadodrza*, Zielona Góra 1976, p. 143-147; H. Golasz (H. Kozaczewska-Golasz), *Lubsko, Kościół parafialny p.w. Wniebowzięcia NPM*, Wrocław 1980, mpis, BDZ w Zielonej Górze.

<sup>8</sup> H. Lutsch, op. cit., Bd III, pp. 390, 391; J. Pilch, *Leksykon... Dolnego Śląska...*, p. 197.

<sup>9</sup> H. Tintelnot, op. cit., pp. 128-130; J. Kęłowski, *Nysa*, Wrocław 1972; *KZSwP*, vol. VII, brochure 9, Warszawa 1963, pp. 66-73; T. Chrzanowski, M. Kornecki, *Sztuka Śląska Opolskiego...*, p. 48-54; *Architektura gotycka w Polsce...*, p. 169; J. Jarzewicz, *O artystycznych i funkcjonalnych uwarunkowaniach architektury kościoła w Nysie*, Sztuka około 1400. Poznań 1995, pp. 158-160; H. Kozaczewska-Golasz, *Średniowieczne kościoły...*, część 2, op. cit.

<sup>10</sup> C. Baier, *Geschichte der Stadtpfarrkirche zu Sprottau*, Sprottau 1905; S. Kowalski, *Zabytki...*, pp. 235, 236; K. Barczyńska, *Opis badań i prac inwentaryzacyjnych kościoła parafialnego p.w.*

*Wniebowzięcia NM Panny w Szprotawie*, Lubuskie Materiały Konserwatorskie, Zielona Góra 2010, pp. 27-32.

<sup>11</sup> K. Gadner, *Geschichte der Stadt Guben*, Guben 1925; A. Peter, *Kościół farny w Gubinie. Dzieje w zarysie*, Gubin 2008; M. Małachowicz, *Badania architektoniczne fary gubińskiej w 2008 roku. Stan badań fary gubińskiej*, [in:] Lubuskie Materiały Konserwatorskie, Tom 5, Zielona Góra 2008, pp. 55-61; H. Kozaczewska-Golasz, *Średniowieczne kościoły...*, op. cit.

<sup>12</sup> H. Tintelnot, op. cit., pp. 131, 132; B. Krzyślak, *Góra, woj. leszczyńskie. Kościół parafialny pw. św. Katarzyny*, Studium historyczno-architektoniczne, mpis, Poznań 1984, BDZ we Wrocławiu; *Architektura gotycka w Polsce...*, pp. 89, 90; J. Adamski, *Hale z poligonalnym chórem zintegrowanym w architekturze gotyckiej na terenie Polski*, Kraków 2010, pp. 23-46.

<sup>13</sup> U. Gentz, *Der Hallenumgangschor in der Städtlichen Backsteinarchitektur Mitteleuropas 1350-1500. Eine kunstgeographisch vergleichende Studie*, Studien zur Backsteinarchitektur, Bd 6. Berlin 2003, pp. 216-218; J. Adamski, *Hale z poligonalnym chórem...*, pp. 104-108.

On the southern side of the presbytery there is an angular tower. All churches with hall ambulatories were rather long. Only in Gubin and Góra a three-arcade wall separates a presbytery from a nave.

## 2. Construction and vaults

The construction system of hall churches was made of buttresses connected with longitudinal walls with wide and high windows and pillars a great majority of which is connected with arcades between aisles. Only in a few churches it was decided to reduce thickness of outside walls by introducing window niches reaching the floor (Nysa), ogival blind windows below windows (Góra) and thin blind arcades leading to chapels located between buttresses (Nysa, Gubin), (Fig. 8, 9).

Two churches, in Gubin and Lubsko, stand out in term of their construction system. In Gubin (Fig. 8, 9) exceptionally long buttresses were used, and between them there are chapels at the ground level, they are connected with a plain wall. Above the chapels, in the middle of buttress length, external walls with windows were erected, they divided buttresses into external and internal ones. Between internal buttresses deep window niches were created, they are covered with ogival transverse arches. In buttresses, passages are left along the window wall. The wall with windows is relatively thin, it is based on vaults of lower chapels. In this way a stabile and at the same time light construction of external walls between buttresses was created. The construction is completed with massive pillars between aisles longitudinally connected with aisle arcades.

In Lubsko (Fig. 7) earlier walls without buttresses were used and internal half-pillars were added. Bays in aisles are separated with transverse arches based on half-pillars at external walls and pillars between aisles. They create a transverse construction which take over thrust from nave and aisle vaults. The interior is divided into three parts whose widths are considerably different: a nave is 10.70 m wide and is covered with a net vault, aisles are very narrow and their average width is only 2.00 m.

Buttresses and pillars make a frame construction, which forms the basis for vaults, which could be spread like a net over the whole interior. This possibility was used only in two churches in Kały Wrocławskie and Mirsk, in which vaults cover the whole nave, their spans are separated with transverse arches with the same cross-section as

ribs (Fig. 10). In Mirsk there is a uniform system of cross vaults, while in Kały Wrocławskie above the nave there is a net vault, and above aisles – a cross vault. In most buildings arcades between aisles were introduced as well as walls based on them which gave independence to particular aisles and frequently various types of vault systems were used.

In churches from the 15<sup>th</sup> to the mid 16<sup>th</sup> c. a few types of vaults were used: cross, star, five-support (some are asymmetrical), net and cell vaults. **Cross vaults** have been preserved in 8 churches, and possibly also in Lwówek Śląski and Nysa. Such vaults were used to cover presbyteries, aisles and naves, sometimes they were connected with other types of vaults in a nave.

**Star vaults** have been preserved in 7 churches (Fig. 11, 12). They have a square or a rectangle plan, in the Bernardine church in Jawor vaults have no diagonal ribs, just like in the Church of the Holy Cross in Wrocław, in the other churches there are vaults with ribs but star arms have various proportions.

Star vaults were enriched with additional ribs and one more star rotated by 45 degrees. The most decorative star vaults are in the church in Gubin (Fig. 11). In the preserved vault in the basement of the tower basement one can see a vault design with short ribs forming two octagons connected with each other with ribs in a way which takes a star shape. In the nave bays had the proportions of wide rectangles, while in aisles they were close to a square. Ribs forming a star were connected with diagonal ribs with central octagons, in the nave they were doubled (Fig. 8). Between octagons, on the axis of perpendicular arches there was a double rhombus. The composition with rhombi resembles a more modest solution used in the Opole Cathedral, however, the proportions are different (Fig. 12). Vaults in aisles form one composition along the whole church length. Perpendicular ribs were interrupted by rhombi to which subsequent ribs are connected on its longitudinal axis.

The vaults in Lubsko were created by copying ribs in the tower in Gubin, and with thicker net of ribs, the obtained design is star-like (Fig. 12). Three ribs descend to pillars of each bay, they resemble a star vault, however, higher intersecting ribs make octagonal designs with a key-stone alternating with rhombi designs on pillar axes. In the vault there is a ridge rib and perpendicular ribs on pillar and arcade axes.

A few star vaults with various rib designs cover the chapels of the church in Gubin (Fig. 8). One of them is a star vault with a central rhombus with triangular arms of diagonal ribs. In two other chapels there are vaults without diagonal ribs, just like in the Wrocław collegiate church, they are made on a rectangular plan of various proportions of star arms. In a rectangular chapel of the church in Żary, there is a star vault with a central rhombus in which extra diagonal ribs were added as well as small bosses in all connecting points. The middle part of the vault makes an impression of a net vault.

In comparison with 14<sup>th</sup>-century star vaults, in the 15<sup>th</sup> c. and later until the mid 16<sup>th</sup> c. vault shapes became much richer – apart from square projections, rectangular projections of various proportions appeared. Proportions of star arms were also changed, there were vaults with and without diagonal ribs. The introduction of rhombi in the place of perpendicular arches resulted in joining bays along the whole nave, like in a net vault. A very decorative type of vault is a vault with an eight-pointed star with four arms reaching supports and four lateral arms reaching transverse arch keystones. An increased number of ribs gives vaults a rib-net design.

**Five-support vaults** were used in three churches in aisles. In Syców bays are rectangular and rib design is the same as in 14<sup>th</sup>-century churches in Wrocław – the Collegiate Church of the Holy Cross and the Church of Virgin Mary on the Sand (Fig. 4). In an aisle in the church in Namysłów the vault is based on four supports and five brackets on walls. The vault design of an earlier nave (Fig. 6) was reconstructed. Trapezoid bays at opposite ends are based on four supports, their design follows the “crazy vaults” in the cathedral in Lincoln, middle bays based on five supports have no diagonal ribs. Similar solutions were used in aisle vaults of the presbytery of the church in Góra (Fig. 8).

**Net vaults** in hall churches were used from the 15<sup>th</sup> c. and they occur in 11 buildings (Fig. 13,14)<sup>14</sup>. Usually they have a shape of a barrel with lunettes, and only exceptionally – a sail vault (Gryfów Śląski). The simplest design of a uniform rib network can be seen in the sacristy in Góra, under the matroneum in Nysa and in a chapel in the nave of the church in Gubin. The design follows the

Parler vault in its cathedral version<sup>15</sup>, it was used in the church in Gryfów Śląski and Szprotawa in aisles, in ambulatory aisles of the presbytery of the church in Gubin and in the sacristy of the parish church in Złotoryja. Two pairs of parallel are guided diagonally and intersect on the line of pillars. There are no divisions into bays, similarly to the cathedral in Prague, only short sections of perpendicular ribs were left at the place where ribs bend. Net vaults, with perpendicular ribs dividing them into bays, is in the nave of the church in Kały Wrocławskie and in the sacristy of St. Barbara Church in Wrocław.

An enriched version of the Parler vault is in the nave in Szprotawa (Fig. 13). Parallely to rib pairs, long ribs are located they skip every other support. Three parallel ribs occurred also in the presbytery in Gubin. On the sides they were completed with small lunettes.

In the church in Bytom, in the nave and two aisles there are net vaults coming from the Parler “old bridge” version<sup>16</sup>, they differ in the number of ribs (Fig. 14). The basic design occurs in the northern aisle. Along its axis there are elongated rhombi, their ribs intersect in the middle of bays and are connected with side parallelograms (trapezoids), making a kind of six-pointed star. In this design there are no divisions into bays, central rhombi are simultaneously a part of two bays. In the southern aisle of the church in Bytom the design of northern aisle is reproduced, only ribs intersecting in central rhombi were added, they are connected with ribs separating side trapezoids. In the nave bays are wider and the proportions of the outline of ribs are changed, however, the design is the same. In the nave of the cathedral in Opole, the net vault received a design originating from the “old bridge”, however, it is was “condensed” in one bay (which is not separated) (Fig. 14).

In two chapels in the presbytery in Gubin there are **cell vaults** (Fig. 15). In the northern chapel there are quite big elements, while in the eastern chapel they two-fold smaller. These are designs of parallel lines, similarly to a net vault. Another type of cell vaults was constructed in the cathedral in Opole, in the vestibule between towers and under the western matroneum. The latter is composed on eight identical elements of star vaults with a rhombus in the centre.

<sup>14</sup> At the end of the 14<sup>th</sup> c. net vaults were made only above the porch of the v in the porch of the Collegiate Church of the Holy Cross in Wrocław.

<sup>15</sup> D. Hanulanka, op. cit., p. 93, time of building the vault in the cathedral in Prague (Czech) 1377-1385.

However, in the vestibule the vault is asymmetrical because of arcade passages. On the external side of stars are based on 4 supports and on the internal side on three supports.

### 3. Interiors

Interiors of churches with single-aisle presbyteries are not very high (see table), apart from the parish church in Żary and the Bernardine church in Jawor. (Fig. 3-5). A few churches received naves with exceptionally low proportions, about 1 : 1.5, or even 1 : 1 in Gryfów Śląski.

In three churches bays in the nave have a square plan, in all the others they are rectangular. In most of them pillars are octagonal with slender proportions, which contributes to the impression that the interior is spacious (Fig. 16). Side walls are plain, with no divisions, there are only tall windows, except for two churches. The construction of the church in Żary was started in the 14<sup>th</sup> c., lower parts of its walls are plain and on the line of window aprons there are thinner walls with pilaster strips. In Syców the nave on a rectangular plan has only one pair of pillars, which are octagonal and elongated with pilasters and details from the 19<sup>th</sup> c.<sup>17</sup> Pillar pilasters correspond with pilasters on side walls, however, there is no certainty if they are original, because in the presbytery they were added later. Single-aisle presbyteries come from various periods and their widths and heights were influenced by the time when they were built.

Two churches received a hall design of the body and the presbytery closed with a straight wall (Fig. 7). In the church in Lubsko, which was reconstructed a few times, and the earlier walls were partly reused, the straight wall of the presbytery nave is a relic of the 13<sup>th</sup>-century presbytery. The interior of the central part is wide and not very high, covered with a decorative net vault (Fig. 17). Aisles are very narrow with large windows. This unusual design of the church resulted from using earlier walls without buttresses, which meant that internal buttresses and strengthened pillars had to be added. The other church with a three-aisle presbytery was erected in Lubawka. Only external walls with high buttresses have been preserved and the interior was turned into the Baroque style. Thickly spaced pillars are located

on the axis of buttresses and it is possible that their shafts come from the Middle Ages.

Three churches received a hall body and a hall chancel closed with three polygons (Fig. 6, 18). A similar design can be seen in the church in Bytom, however, it results from a reconstruction conducted in the 19<sup>th</sup> c. Earlier there was a presbytery and chapels added on side as early as the Middle Ages, at that time they were not connected the presbytery by today's wide arcades. Interiors of the churches in Namysłów and Opole are long, high with 1 : 2 proportions and widely spaced pillars. In Namysłów nave bays are square, covered with a star vault, and in aisles there are five-support vaults, similarly to the 14<sup>th</sup>-century nave. In the mid 16<sup>th</sup> c. in Opole a net vault was made over the nave, there was no division into bays and in aisles there were connected star vaults which interconnect the interior of the whole building in each aisle. Vaults are located lower than it was initially planned, they cover the top part of windows. Side walls in the lower part of the nave are plain, they come from an earlier stage, higher they are fragmented with pilasters. In the presbytery pilasters reach the floor. Bays are rather wide, while windows are high but narrow. In the nave there is one window on the bay axis, and in the presbytery – two windows in each bay, in the eastern bay outside there is a buttress between them.

The church in Lwówek Śląski is the largest in this group, with a wide and very high interior. In the 19<sup>th</sup> c. every second octagonal pillar was removed, pilasters and shafts were added to the remaining pillars and walls, destroyed vaults were not reconstructed. Thanks to these changes the interior is very spacious. It is not known what vaults were used in the church earlier. Interior walls were plain, without pilasters, only with very big windows.

The nave of the church in Bytom has thickly spaced pillars with corresponding half-pillars (Fig. 6, 18). This design of supports is the basis for net vaults in three aisles, they are separated with arcades. The vaults were made lower than it was initially planned and because of this the whole church interior became lower.

Hall churches with presbyteries with ambulatories are characterised by long interiors and significant height (Fig. 8, 19). In Nysa, Szprotawa and Mirsk there is no division into the nave and

<sup>16</sup> Ibidem, vaults of the Charles Bridge in Prague (Czech), built after 1380.

<sup>17</sup> H. Lutsch, op. cit., Bd II, pp. 566, 567.

<sup>18</sup> It is a reference to the concept from the end of the 13<sup>th</sup> c. (Racibórz) and 14<sup>th</sup> c. used in Austria, England and Czech.

presbytery, while in Gubin and Góra more or less in the middle of the church length there is a three-arcade wall on cross pillars which separates the eastern part from the western part. Interiors of three churches have rectangular bays in the nave and quite thickly spaced pillars. This is the reason why they are not so spacious as churches with square bays. In Nysa where the interior is 27.12 m high and 1 : 2.96 proportions, long rows of octagonal pillars created a “forest” of supports. Horizontal stone belts are located every dozen or so layers of bricks and they make the pillars stand out against plain brick walls.

Also in Gubin, thickly spaced pillars separated aisles. The nave is lower than in Nysa, it is about 20.50 m, however, its proportions are similarly slender 1 : 2.90. The church in Szprotawa has the lowest nave height 15.05 m and 1 : 2.4 proportions.

Although bays in the church in Góra are square, the building is not very spacious because elongated pillars used in this church leave arcade light similar to the previous churches with rectangular bays. Only the church in Mirsk with its slender octagonal pillars and not high proportions can be all embraced with one look. Transverse rib-shaped arches create an impression that over the whole interior there is one uniform network of vaults.

In the churches in Nysa and Gubin there are chapels along aisles. Aisle walls are divided into two levels – chapel arcades and window area. In Nysa windows are the only element dividing plane walls. In Gubin the construction design with internal buttresses added exceptional plasticity to walls above chapel arcades. Deep window niches are connected with high passages in buttresses.

Aisles lead to polygonal hall ambulatories with 5-7 sides (Fig.8, 19). In Nysa, Gubin and Szprotawa arcades between aisles clearly separated an ambulatory. It was built for the first time in Poland in Szprotawa between 1416-1424. Its is made of three sides closing the nave and seven sides of external walls. The width of the ambulatory decreases in the direction of the eastern bay. The bays at extreme ends have two pillars and three buttresses, they are covered by a vault made of two connected rib vaults.

The ambulatory in the church in Nysa is an example of a regular system of vaults spread between four pillars and six buttresses. In Gubin the nave is closed with two sides with a pillar on the axis. Three pillars and five buttresses did not allow to achieve a regular network of vaults (Fig. 8). In

Góra and Mirsk blind arcades between aisles lead to the eastern ambulatory wall. In the vault design one cannot see the ambulatory, however in the lower part of the interior its is separated by the position of altars which are located between the eastern pair of pillars (Fig. 8).

Internal ambulatory walls in three churches obtained different architectural solutions (Fig. 9). In Nysa walls were fragmented with window niches reaching the floor, similarly to the 14<sup>th</sup>-century presbytery in Paczków. Wall surfaces are smooth with a broken line of polygons. In Gubin and Góra around an ambulatory there are chapels. In Góra arcades leading to chapels are located in tall blind windows arcades. Their recessed archivolts rest on triangular half pillars broken in the middle as a result of their polygonal plan. At the level of chapels half pillars become polygonal. Over blind arcades there are ogival windows in steep aprons. In Gubin directly above chapel there is wide window niches, separated with internal buttresses. Between a window wall and a buttress there are slender passages. They are not very wide proportionally to width of a window niche. Ogival vaults of window niches supported ambulatory vaults.

#### 4. Elevations

**Longitudinal elevations** of churches with single aisle presbyteries often have various heights of walls in presbyteries and naves. The same heights occur in Żory, Wrocław (St. Barbara), Kały Wrocławskie and Wińsk (Fig. 20-23). Due to the fact that aisles are covered with one roof, their height decisively exceeds that of a presbytery. Only in the church in Wrocław, over the presbytery and the nave there is one roof, and above aisles there are transverse roofs with gables. Church elevations are fragmented with buttresses between which there are tall windows. However, windows in the majority of buildings are not as big as they could be looking at the bay width. Windows in the church in Żary are exceptionally wide, they are also very tall.

The churches in Lubsko and Lubawka with a long three-aisle body with a rectangular end on the eastern side were covered with gable roofs based on gable walls (Fig. 24). In Lubsko against the background of a plain southern wall there are very big windows, now they are very low as a result of raising ground level. In Lubawka windows were reconstructed during the Baroque period.

Elevations of churches with hall presbyteries closed with three polygons are long, covered with one or three roofs (Bytom) (Fig. 25). In Namysłów between quite thickly spaced buttresses there are wide and tall windows. In the high church in Lwówek there are the largest windows. In the cathedral in Opole in its hall presbytery there are two narrow windows in every bay<sup>18</sup>, and in the body there are single windows, also narrow although bays were quite wide. In the church in Bytom windows were renovated in the 19<sup>th</sup> c.

In the group of churches with a hall presbytery, three churches have a hall ambulatory and their elevations resemble basilica churches, however, their body is significantly wider (Fig. 26). Chapel walls are smooth while nave wall were fragmented with high buttresses, between which there are tall windows, the widest ones are in Nysa. The churches in Szprotawa and Mirsk are not very high, their windows are appropriately tall, they are wider in Szprotawa (Fig. 27).

**Northern elevations** were similar to southern elevations, sacristies were built on this side more often. In Mirsk and Szprotawa there were angular towers, and in Gubin next to a presbytery a two-storey school building was located here, its construction was started before the construction of the existing church and joined with it.

**Western elevations** had no towers, had two towers or one tower on the axis or on the side. In ten churches these elevations had no towers, and in half of the churches they were crowned with decorative gable.

In four churches there are elevations with two towers. In the cathedral in Opole and in St. Barbara Church in Wrocław angular towers have massive buttresses on the extension of walls. The towers in Opole owe their appearance to renovation conducted in the 19<sup>th</sup> c., it is hard to say what they looked like earlier. A narrow wall of the nave between the towers had a tall window on its axis and a small portal. It is crowned with a triangular gable decorated with slender blind windows, which, similarly to all elevations, was made in the 19<sup>th</sup> c., possibly following the Medieval original. In St. Barbara Church in Wrocław the northern tower exceeds a little the coping of the church body, while the southern one

is tall with a few storeys and windows on the axis of each storey. The wall between the towers is covered by a tall porch with a large window and a small portal on the axis. Above a rood pitch of the porch there is a triangular gable of the nave with slender, ogival blind windows, two of them, the ones located on extreme ends, were walled up after increasing the height of the southern tower.

The elevation of the church in Górze is tall, it is crowned with a gable above the nave and tent roofs of the towers which are nearly at the same level. The towers are angular along their whole height, supported on corner buttresses on the western side. Top levels of the towers and the nave gable are decorated with blind windows of various shapes.

In the church in Lwówek the height of 13<sup>th</sup>-century towers was increased in the Late Gothic by adding two polygonal storeys covered with polygonal spires. In Żory only one of two planned towers was built, it is angular with two storeys, windows are located on the wall axis. In Bytom a tower was added to the southern elevation of the church body, it is in line with the western wall. Its angular medieval part has no buttresses or any other divisions, there are small windows on the axis.

In five churches western towers located on the elevation axis have been preserved. In Lubsko an angular, stone tower from the 13<sup>th</sup> c. was increased with stone walls. The tower in Namysłów was started in the 14<sup>th</sup> c., it has massive buttresses and was increased several times. The angular tower in Kąty Wrocławskie was divided into several levels of which the third one is made of brick and the others are probably made of stone. In Ołtaszyn (now a district of Wrocław) the western tower had diagonal buttresses, it was reconstructed in the Neo-Gothic period. A massive, angular tower in Gubin had storeys decorated with blind windows and it was crowned with a battlement.

## 5. Architectural and sculptural details

Architectural details encompass: pillar components, elements related to vaults (ribs, brackets and keystones), windows, portals and gable ends. Sculptural ornamentation is usually modest.

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<sup>19</sup> A similar fully preserved design of a double-arm portal can be seen in the former St. Anne's Chapel, it comes from the end of the 15<sup>th</sup> c.

## Pillars

In hall churches from the 15<sup>th</sup> – mid 16<sup>th</sup> c. there were a few types of pillars: equilateral octagonal, elongated octagonal pillars with pilaster strips, rectangular with pilaster strips, cross and rectangular ones.

The most common type were equilateral **octagonal pillars** (Fig. 28). They had high pedestals crowned with small bases. In the top part a few solutions were introduced:

- profiled cornice, archivolt with polygonal cross-sections or with recesses,
- horizontal finial, on which an archivolt with a recess cross-section was located,
- direct connection with a polygonal archivolt,
- no arcade between aisles and ribs penetrating into the top party of a pillar.

Only last solution was new, not used before. In Kały Wrocławskie and Mirsk pillars were finished with a cornice, however, regardless of this, similarly to the church in Żory, pillars raise to the vault and penetrate it. Ribs penetrate the top part of a pillar.

**Elongated octagonal pillars** with pilaster strips occur in three churches (Fig. 29). In the presbytery in Namysłów skew sides are profiled. Pillar and pilaster strip profiling extends to an arcade. In Syców pillars are stone veneered with forms matrices in the 19<sup>th</sup> c. They are rather large for this building. In Lwówek Śląski medieval octagonal pillars in the 19<sup>th</sup> c. were enriched with high pedestals with extended bases on which columns with early Gothic capitals. Initially pillars had the shape of an elongated octagon with wide pilaster strips and there were no existing half pillars on walls which would correspond with them, they were added also in the 19<sup>th</sup> c.

**Cross pillars** in Góra are located on the borderline between the presbytery and the nave, while in Opole, St. Barbara Church in Wrocław and in Bytom they were used as inter-aisle pillars. Pillars in Opole have an intermediate form between cross pillars and elongated pillars with recesses and pilaster strips. St. Barbara Church in Wrocław has nearly square pillars with pilaster strips on the side of the nave, which results in a cross shaped cross-section. In pillar shafts are octagonal, with pilaster strips on four sides, which results in a cross shaped cross-section.

In Gryfów Śląski and Wińsk **pillars** are **rectangular** with slightly cut corners, and in Góra there are also pilaster strips. In Gryfów bevelled pillar corners

turns into arcades between aisles, whereas in Wińsk arcades received additional recess profiling.

## Ribs, vault brackets and keystones

In churches from the 15<sup>th</sup> – mid 16<sup>th</sup> c. there were ribs with various cross-sections: elongated with double cavettos (Gryfów Śląski, Jawor, Kały Wrocławskie, Nysa - zakrystia, Żory), with single cavettos finished with a trapezoid (Bytom, Góra, Opole) and finished with a pear-shape with a nib (Mirsk, Namysłów, Nysa). A few types of rib supports were used. The most modest one was penetration of ribs into walls, sometimes with an undercut (Jawor). Most often, however, brackets were used, and only exceptionally in aisles of the presbytery in Gubinie there were shafts. Brackets with plant ornaments were rarely used, from the second half of the 15<sup>th</sup> c. in St. Barbara Church in Wrocław and in the parish church in Kały Wrocławskie. In eleven buildings ribs are based on brackets with geometric or figural ornaments (Fig. 30, 31). Polygonal brackets, sometimes with tracery ornaments, are crowned with profiled cornices.

Figural brackets were used in seven churches (Fig. 31). In the presbytery of St. Barbara Church in Wrocław and in Gubin brackets have shapes of ceramic heads with individually designed facial features. A large number of masks and busts used as brackets can be found in the sacristy of the church in Nysa. The most developed figural brackets are in the presbytery of the church in Namysłów on walls and pillars. There are busts supporting with their heads geometric polygonal brackets. Under the rib separating a polygonal closure of the nave there are complete sculptured figures.

In Szprotawa in an ambulatory and on the western wall ribs are based on head-shaped brackets, made in very schematic way. In the presbytery of the church in Gryfów Śląski capitals and pedestals of suspended shafts received sculptural decorations – figures of angels, heads, torsos, they were made in a rather primitive way, now they are painted.

In many vaults there were no brackets, ribs are intersected (Góra, Jawor, Opole). Sometimes on ribs there was a small bracket – in the shape of a disc or an escutcheon (Namysłów). A new decorative motif were ribs crossing intersections and then cut, showing their cross-section profile. Brackets in their richest form can be found in the sacristy in the church in Nysa. On one of them there is a hanging,

praying angel, on the other one – a tracery baldachin with a polygonal dome at the bottom. There is also a head with large eyes and long locks as well as an escutcheon. The most various forms of brackets are in Mirsk. Here Gothic forms were connected with Renaissance elements – brackets and corbels.

**Tracery windows** can be found in only six churches. A large part of them was renovated in the 19<sup>th</sup> c., however, one cannot see any results of this renovation work. Large tripartite or quadripartite windows with rich-composition tracery can be seen in the parish churches in Nysa, Lwówek Śląski and Namysłów. Tripartite or dipartite windows are in the cathedral in Opole and in the Bernardine church in Jawor as well the parish church in Żary.

In terms of composition tracery windows can be divided into central and multi-level ones, similarly to the preceding period. In the first group such motifs as circles, pointed arches and multifoils, enriched with new elements. There are no rotating vesicae piscis. New motifs were semicircular arches and fragments of profiles reaching outside a circle and then cut, similarly to ribs in vaults.

Multi-level tracery windows can be divided into four groups. The first two ones are the continuation of solutions used in the 14<sup>th</sup> c. The next quite numerous group are tracery windows with new skew-line compositions and figures. They were constructed from various, free shapes. The last group are windows with tracery but without elements of circles, ogival arches, multi-foils, so characteristic for tracery windows, and this is the reason why they exceed the definition of tracery windows.

## Portals

In the 15<sup>th</sup> – mid 16<sup>th</sup> c. portals did not play such an important role as in the previous centuries. They have been preserved in only six buildings, they are small in size, with profiled jambs which were not very developed. The majority of 16 portals are ogival, only one (walled up) has a subtly bent archivolt in the shape of a donkey back, four are double-arm portals, including one double portal, and one is crowned semi-circularly. Most portals were made of sandstone, three are made of brick, they were renovated in the 19<sup>th</sup> c.

A few portals can be defined as ogival, modest without decorations. Three portals are made of brick. The largest one is in Gubin and a smaller one in Ołtaszyn, they have expanding jambs on which

a recess archivolt is based. A similar design can be seen in the southern portal in Kały Wrocławskie. In St. Barbara Church in Wrocław jambs are located on an expanding pedestal, they have profiling with slender rolls with a bases but without capitals. The profiling with rolls turns into archivolts, where rolls intersect. Additionally at the base of the archivolt some profiles are separated and some of them go vertically to the top, to the next ogival arch of the archivolt. The northern portal in Lwówek has two rolls of quite a large diameter, they are based on a profiled pedestal finial. Only fragments of this portal have been preserved, in the 19<sup>th</sup> c. it was widened and its height was increased, on the side of the nave a Neo-Gothic portal with a matroneum was added.

Two portals received decorative ogival framing. Both of them are in St. Barbara Church in Wrocław. The northern portal seems to be original. Jambs and the archivolt are profiled with a cavetto caught between two rolls. Around the archivolt there is profiled ogival framing based on brackets covered with plant ornaments and decorated with crockets as well as a cross. At the base of the cross the peak of an ogival arch is slightly bent and goes up to the top.

The southern portal in St. Barbara Church has jambs and an archivolt similar to the portal described above, only with smaller rolls, however, everything was recarved. The framing must be original, it is raised high because of St. Barbara's statue standing on a bracket at the top of the archivolt. The ogive decorated with crockets rests on slender colonettes with plant capitals and bases on high pedestals. The ogive finial was probably destroyed during construction of a vault over a baroque porch.

Three portals have rectangular framing. Two of them, in Kały Wrocławskie and the southern portal in Lwówek Śląski, were made dripstone cornice running at the level of the archivolt and also appropriately raised. The northern portal in Lwówek Śląski is also surrounded by dripstone cornice, however, it also has its own framing. It was made of profiles which exceeded the jambs and were divided into those going to the archivolt and those going straight up. Three rolls as if under the archivolt go up and create a stone framing with horizontal profiles, with which they intersect. The southern portal in Lwówek Śląski received brackets and a tympanum which make the same design as in a double-arm arch. The tympanum is covered with an inscription.

The portal in Sobótka is a Gothic-Renaissance one, with jambs closed with a semicircular archivolt, the

whole portal is crowned with a triangular tympanum with the coat of arms of the Order of St. Augustine.

There are four double-arm portals. The most decorative one is in the sacristy in Nysa. Its profiled jambs are crowned with a horizontal slab with tracery decorations. A small portal leading to a chapel in Nysa received profiling also on its two-arm arch. A small portal leading to a staircase in Lwówek Śląski has profiling with penetrating and intersecting profiles. A portal leading to a porch in Kąty Wrocławskie is exceptionally wide, because the middle post was removed from the original portal and a double opening turned into a single one. This is the only double-arm portal leading outside in the discussed group of churches, all the others are internal portals<sup>19</sup>.

**Gable end ornaments decorations** Gable walls are decorated with ogival blind windows with square sections (Fig.32). In St. Barbara Church in Wrocław, in the cathedral in Opole and in the Bernardine church in Jawor (the eastern gable) all triangular gables are filled with tall, ogival blind windows. In the church in Żary there are four levels of ogival blind windows and a recess framing of the gable. The western gable of the church in Jawor received a richer design than its eastern side: in four levels of blind windows at the top and the bottom level there are ogival blind windows, the two middle ones are latticed windows. There are recess edges with clearances angular pinnacles.

The gable of the church in Góra received the richest composition made of bands of ogival blinded windows, rectangular and latticed blinded windows. Blinded windows with lattices can be seen in the churches in Lubsko and Sobótka. The gable of the church in Nysa, renovated war devastations is divided into two areas: the bottom one with thickly spaced ogival blind windows with lattices and the top one which is a plain triangular gable with slender, angular pinnacles.

## 6. Hall churches versus basilica churches

In the 15<sup>th</sup> – mid 16<sup>th</sup> c. only one completely basilica style church was erected – it is the Bernardine church in Wrocław, 1463-1502. Five basilica churches

were reconstructed or developed, using their earlier design. In Ziębice a three-aisle presbytery was erected in the 15<sup>th</sup> c., it must have been the beginning of a reconstruction of the 13<sup>th</sup>-century two-aisle design, however, the nave was not changed. In the parish church in Grodków and the Franciscan church in Wrocław walls of naves started in the 13<sup>th</sup> c. were increased in height. In Grodków an additional storey was built above the presbytery. The parish churches in Sobótka and Lubin were reconstructed in stages until the beginning of the 16<sup>th</sup> c.

The above mentioned churches received various spatial designs. The most developed one is the church in Ziębice with a three-aisle presbytery closed with three polygons. Such a design was used from the mid 14<sup>th</sup> c. The church in Sobótka has only four bays closed with three polygons on the eastern side. The Franciscan and Bernardine churches in Wrocław have long naves and long presbyteries ended with polygons. In Grodków a rectangular presbytery from the 13<sup>th</sup> century has been preserved, only its height was increased to match the height of the nave. On the western side one angular tower was added. A small tower is located on the western side of the church in Sobótka. In the Franciscan church in Wrocław, in the southern corner between the presbytery and the nave a slender, angular tower was added. In the Bernardine church in Wrocław and the church in Lubin there were no towers.

Three-aisle interiors of basilica churches have wide naves and their aisles are half as wide as their naves (Fig. 33). Proportions of the nave are as follows: the Franciscan church in Wrocław 1 : 2.88 (height 22.90 m and width 7.96 m), the Bernardine church 1:1.87 (height 17.88 m and width 9.55 m) and in the church in Ziębice 1:3.12 (height 22.60 m and width 7.24 m) and this is proportionally the highest nave in Late Gothic basilica churches in Silesia<sup>20</sup>.

In basilica churches in the 15<sup>th</sup> – mid 16<sup>th</sup> c. there were cross and star vaults. Only in the chapels of the church in Lubin there are vaults based on five supports and net vaults. The eastern bay of the southern aisle in Ziębice received a cross vault enriched with intersecting ribs and ribs creating a polygon near the keystone. Star vaults have various proportions of arms and sometimes there are also diagonal ribs.

<sup>20</sup> In basilicas from the 16<sup>th</sup> c. there were the following proportions: 1 : 3.65 St. Nicholas Church in Brzeg (height 28.10 m), 1 : 3 in St. Elizabeth Church in Wrocław (height 29.44), 1:2.89 in

Strzegom (height 25.87 m), 1 : 2.85 in Świdnica (height about 28.50 m).

Pillars between aisles in a few churches are octagonal with pilaster strips. In Ziębice pilaster strips are only on the side of the nave (Fig. 34). They reach only the level of window aprons, higher ribs are supported on geometric brackets. Aisle walls are plain, ribs are horizontally cut and penetrate into walls, on the side of pillars they are based on brackets. In the Franciscan church in Wrocław bays in aisles are separated with transverse arches, which are extensions of pilaster strips on pillars. Vault ribs are based on small heads located at the base of transverse arches, in their corners. In the Bernardine church in Wrocław vault ribs penetrate pilaster strips.

### Summary

From the 15<sup>th</sup> c. to about the mid 16<sup>th</sup> c. in Silesia (in its historical borders) hall churches were built in the area from Gubin to Żory. They had various spatial designs, interior designs and vaultings. More than a half of 21 churches have single-aisle chancels, not very high bodies, about 12-14 m, except for a church in Żary which is 19.10 m high. The churches were covered by groin, star and 5-support vaults. Only in churches in Kały Wrocławskie, Gryfów Śląski and in the sacristy of St. Barbara Church in Wrocław there is a net vaulting. Vaulting ribs are based on supports or penetrate directly into walls and pillars. Walls articulated with pilasters were used in w Żary and maybe in Syców.

In nine churches hall designs of church bodies are accompanied by hall chancels. In three churches (Namysłów, Opole, Lwówek Śląski) each aisle ends with a polygon on the eastern side, similarly to the Church of Virgin Mary on the Sand in Wrocław where such solution was observed for the first time in the 14<sup>th</sup> c. Hall chancels and bodies make churches look much longer. They were covered by a gable roof and polygonal roofs over the eastern part. A church in Bytom, after reconstruction in the 19<sup>th</sup> c., gained a design with a three-aisle hall chancel, however, originally there was a single-aisle chancel with high chapels on its sides, each interior was covered by a separate roof and it was continued over the body. Church interiors differed in distance between pillars,

walls articulation and vaults. Only in Namysłów 15<sup>th</sup> c. vaults have been preserved, in Opole and Bytom net vaults were constructed in the mid 16<sup>th</sup> c. while in Lwówek Śląski vaulting was completely devastated.

In five churches with hall presbyteries, new solutions in the form of polygonal hall ambulatory, which earlier had never been used in Silesia. For the first time it was probably built in Szprotawa (1416-1424).

Hall churches with chancels and ambulatories were also built not far from Silesia, in Western Pomerania and Wielkopolska. The first presbyteries with such design in Western Pomerania was started in about 1375 in the parish church dedicated to St. Jacob in Szczecin. The nave and the ambulatory are closed with polygons. Ambulatory walls received plasticity tans to fragmentation at two levels, it originates from the Blessed Virgin Mary Church in Lübeck (started about 1250)<sup>21</sup>. About 1380 the construction of a hall presbytery with an ambulatory was started in the parish church dedicated to Virgin Mary in Stargard Szczeciński, and between 1389 and 1407 the eastern part of the parish church dedicated too Virgin Mary in Chojna was started. Its aisles have shallow chapels in the basement, and above them there are windows in deepened niches and passages in internal buttresses. Undoubtedly Pomeranian churches with chapels between internal buttresses were a model for the creator of the church in Gubin.

In Wielkopolska churches with hall ambulatories were built later than in Silesia. The first such church was the collegiate dedicated to Virgin Mary in Poznań<sup>22</sup>. The building was started about 1430 and it was consecrated in 1448. The church is short, as if only the presbytery was erected, it has a trapezoid end of the nave with 4 pillars and 5 ambulatory walls. Architectural forms here differed from the Silesian ones, they were similar to forms used by H. Brunsberg<sup>23</sup>. Buttresses are partly drawn into an interior and outside there are pilaster strips decorated with colourful glazed forms. Pillars are hexagonal with subtle rolls on corners, on the nave side there are three rolls. The ambulatory of the collegiate church in Poznań was a model for the creator of the collegiate church in Kórnik<sup>24</sup>. The building is longer and lower, with characteristic pilaster strips.

<sup>21</sup> S. Skibiński, *Pomorze Zachodnie i Nowa Marchia*, [in:] *Architektura gotycka w Polsce...*, pp. 111-123.

<sup>22</sup> J. Kowalski, *Gotyki wielkopolski, architektura sakralna XIII-XVI w.*, Poznań 2010, pp. 179-194.

<sup>23</sup> J. Kowalski, op. cit., s. 435, footnote 111 claimed that there was no confirmation in sources for H. Brunsberg's stay in Wielkopolska, the only mention was related to his stay in Szczecin in 1400-1428.

<sup>24</sup> J. Kowalski, op. cit., p. 191.

More “Ambulatory halls” in Wielkopolska built after 1450<sup>25</sup>. Although bearing the appropriate name, they did not have properly formed ambulatories, and the main aisle vaulting reached the eastern polygon. A model for these solutions could have been Bavarian churches designed by Hans von Burghausen at the beginning of the 15<sup>th</sup> c. and Austrian churches<sup>26</sup>.

Concepts of hall ambulatories in Poland were modelled on western samples from Germany and Austria. A hall ambulatory was built in Germany for the first time in the cathedral in Verden an der Aller (near Bremen) in 1275-1323<sup>27</sup>. A projection of five sides of a decagon was used in its design, it modelled on a basilica cathedral in Reims. Vaults are supported on clusters of pillars with heads, on walls there are large tracery windows.

About 1340 in Austria the construction of two hall churches started in Pöllauberg and in St. Lambrecht. A two-aisle pilgrimage church in Pöllauberg<sup>28</sup> received a presbytery with three aisles based on two pairs of pillars, closed with three sides. They were covered with a cross vault, except for three triangular bays, in which vaults with three supports were used. The vault design does not create an ambulatory yet, arcades between aisles with a rib cross-section unite the space of three aisles. The Benedictine church in St. Lambert<sup>29</sup> has three aisles in a hall design, separated by arcades reach the eastern wall. In the eastern closure with five sides the same vault design was used as in the previous construction – cross and vaults and vaults with three supports. A similar solution was used in the eastern part of churches in Góra and Mirsk.

In 1351 in Germany, in Schwäbich-Gmünd, Heinrich and Peter Parler erected a church with a hall ambulatory surrounded by chapels, they created a compact polygon, not radial chapels as in French churches. Slender cylindrical pillars with a capital zone support a star vault (renovated in the 16<sup>th</sup> c.)<sup>30</sup>. However, later P. Parler’s churches – the parish church in Bamberg (Germany) 1338-1350,

St. Bartholomew Church in Kolin (Czech) 1360-1378 and the cathedral in Prague (Czech) 1370-1385 received polygonal ambulatories of choirs in a basilica design<sup>31</sup>. In an ambulatory of the church in Schwäbich-Gmünd (Germany) the external wall in a form of a heptagon does not a corresponding number of pillars, there are four pillars, in a trapezoid projection<sup>32</sup>. In the Virgin Mary Church in Frankfurt on the Oder (Germany), where in 1367 an altar was consecrated, a hall presbytery also obtained an ambulatory with 7 sides outside and 3 inside, but without chapels<sup>33</sup>. A similar ambulatory solution was used in Silesia in Szprotawa, there are no chapels, pillars are octagonal, there are no clusters of pillars and vaults are different too.

In the second half of the 14<sup>th</sup> c. hall presbyteries started to be used in parish churches in Austria, in Bozen and Pischelsdorf as well as in Salzburg (now it is a Franciscan church)<sup>34</sup>. In the last one of these churches, dated to 1400<sup>35</sup>, 1408<sup>36</sup>, and also 1432<sup>37</sup>, a uniform network of vaults is supported on tall, slender, cylindrical pillars. Contrary to earlier used solutions, the eastern pillar is located on the axis of the eastern window, partly covering it. In Silesian churches a pillar on the axis was introduced only in Gubin, and a broken polygon on the axis only in Nysa, Gubin and Góra.

In Germany subsequent presbyteries with hall ambulatories were built in Late Gothic –in the Holy Spirit Church in Heidelberg, started in 1398, and in the hospital church in Landshut, 1407-1461<sup>38</sup>. In both churches vaults are based on cylindrical pillars, in Heidelberg also with capitals. In both churches single eastern pillars were located on the axis, thus partly covering window light. In the presbytery of the Frauenkirche church in Munich, 1468-1488, the solution with an eastern windows was used again.

In Czech churches with hall ambulatories started to be built in the mid 15<sup>th</sup> c., so much later than in Poland.<sup>39</sup>

<sup>25</sup> Ibidem, p. 203-226.

<sup>26</sup> Ibidem.

<sup>27</sup> P. de la Riesta, *Architektura gotyku w „krajach niemieckich”* [in:] *Gotyk. Architektura, rzeźba malarstwo*, ed. R. Toman, Könemann 2004, p. 198.

<sup>28</sup> W. Buchowiecki, *Die gotischen Kirchen - sterreichs*, Wien 1952, p. 242; R. Wagner-Rieger, *Mittelalterliche Architektur In -sterreich*, St. Pölten-Wien 1988, pp.137-147.

<sup>29</sup> W. Buchowiecki, op. cit., p. 243; R. Wagner-Rieger, op. cit.

<sup>30</sup> P. de la Riesta, op. cit., p. 206.

<sup>31</sup> V. Mencl, *Česká architektura doby lucemburské*, Praha 1948, pp. 85, 94, 143.

<sup>32</sup> R. Wagner-Rieger, op. cit, p. 146, 147.

<sup>33</sup> J. Jarzewicz, op. cit., p. 158.

<sup>34</sup> W. Buchowiecki, op. cit., pp. 260, 269, 306; R. Wagner-Rieger, op. cit., pp. 167, 174.

<sup>35</sup> P. Meyer, *Historia sztuki europejskiej*, Warszawa 1973, p. 233.

<sup>36</sup> P. de la Riesta, op. cit., p. 213.

<sup>37</sup> W. Buchowiecki, op.cit., p. 308.

<sup>38</sup> Ibidem s. 213; R. Wagner-Rieger, op. cit., p. 173.

<sup>39</sup> *České umění gotické*, zpracovali A. Kutal, D. Libal, A. Matějček, Praha 1949; V. Mencl, op. cit.; *Umělecké památky Čech*, Praha 1977-1982, vol. 1-4.

Medieval constructors in Silesia created their own concepts using various elements of churches in the West and also in neighbouring areas: in Góra – with an incomplete ambulatory as in Wielkopolska, in Gubin – with chapels between buttresses, deep window niches and a passage in internal buttresses, similarly to West Pomerania. However, in the church in Gubin the external part of the church remained traditionally “Silesian” – with prominent buttresses, because the window wall was located not in the external elevation but above chapels. The earliest chapels built between buttresses along aisles first appeared in the collegiate church in Głogów (nave 1345-1401)<sup>40</sup> and most probably also in the nave of the church in Nysa (before 1392). In churches from the 15<sup>th</sup> c. to the mid 16<sup>th</sup> c., a hall design with close 1 : 2 proportions of aisles, used from the 13<sup>th</sup> c. in Silesian churches, was preserved, only in Gubin aisle width was bigger, however, not equal to nave width, as it was the case in numerous Austrian churches. Cylindrical pillars were not introduced in Silesia although they were very characteristic for European churches.

In Namysłów, Bytom, Gubin and Góra long church interiors were separated with a transverse blind arcade in the middle of church length, it also played the role of a triple rood passage, separating the priestly area. In the churches in Gubin and Góra, a polygonal eastern part is surrounded by chapels which connected outside with a wall without fragmentation and form a polygon. In interiors there is a new, enriched form of two- and three-level articulation (Fig. 9). In Nysa, where chapels are located only along longitudinal walls, on the eastern side there are window niches reaching the floor like in the 14<sup>th</sup> c. in Paczków. Blind windows, such as in an ambulatory in Góra, occurred earlier in chapels around an ambulatory of the basilica church dedicated to St. Nicholas in Stralsund (Germany) (1270 – 2<sup>nd</sup> half of the 14<sup>th</sup> c.)<sup>41</sup>. In Góra blind windows are taller and they have an additional lower level of arcades leading to chapels.

Apart from a new spatial design with a hall ambulatory, a significant achievement of the architecture from the 15<sup>th</sup> – mid 16<sup>th</sup> c. was a richer outline of

ribs in star vaults and the introduction of net and cell vaults. The oldest net vaults in Silesia were homogeneous uniform net vaults<sup>42</sup>, they appeared in the nave of the church of St. Peter and Paul in Legnica (1380-1390), in the presbytery of the church in Środa Śląska (1388) and in the porch of the Collegiate Church of the Holy Cross in Wrocław (end of the 14<sup>th</sup> c.). In France (in Anjou) the earliest rib network was constructed in a barrel vaults in the church in Toussaint in Angers about 1250 and in St-Serge in Angers (2<sup>nd</sup> half of the 13<sup>th</sup> c.) in a dome vault<sup>43</sup>. In hall churches in Silesia, uniform network vaults were used in the 2<sup>nd</sup> half of the 15<sup>th</sup> c. in Góra (in the sacristy), Nysa (chapels) and in Gubin. The vaults were barrel shaped with lunettes.

In the fourth quarter of the 14<sup>th</sup> c. Peter Parler introduced two types of net vaults in buildings in Prague (Czech). The presbytery of the cathedral in Prague (1377-1385) was covered with a vault with a double network of intersecting ribs<sup>44</sup>. In the tower basement of the Charles Bridge (after 1380) the net was constructed in a slightly different way<sup>45</sup>, external ribs were guided with a broken line, and internal ribs intersect one another. From the first quarter of the 15<sup>th</sup> c. in Silesian hall churches net Parler vaults were used in their cathedral version in Szprotawa (1414-1424), Gubin (2<sup>nd</sup> half of the 15<sup>th</sup> c.), Gryfów Śląski (1512). They differ in proportions of square and rectangular bays as well as the design of a rib net. In Kały Wrocławskie (about the 15<sup>th</sup> c.) and in the sacristy of St. Barbara Church in Wrocław (2<sup>nd</sup> half of the 15<sup>th</sup> c.) perpendicular arches were introduced. In the nave of the church in Szprotawa diagonal ribs were added along two bays. In this way a vault with three parallel ribs was constructed. This triple net was also used in the presbytery of the church in Gubin (1429-1508), where additional ribs started from lunettes.

In the 16<sup>th</sup> c. in the churches in Bytom and Lwówek Śląski (northern porch), in the nave and two aisles there are net vaults coming from the Parler “old bridge” version. The basic design, same as in Prague, occurs in the northern aisle, in aisles the design was enriched with new ribs. In Lwówek Śląski bays are rectangular. The vault in Opole is yet another

<sup>40</sup> H. Kozaczewska-Golasz, *Średniowieczne kościoły...*, część 2, op. cit.

<sup>41</sup> *Kunstdenkmäler der Bezirke Neubrandenburg, Rostock, Schwerin*, oprac. S. Badstübner i inni, Berlin 1975, p. 21.

<sup>42</sup> D. Hanulanka, op. cit., p. 94; M. Zlat, *Najstarsze sklepienia...*

<sup>43</sup> M. Zlat, *Najstarsze sklepienia...*

<sup>44</sup> V. Mencl, op. cit., p. 143.

<sup>45</sup> D. Hanulanka, op. cit., p. 93.

kind of a rib system. Similar vaults can be found in the nave of Peterskirche in Görlitz designed by K. Pflüger in 1495-1515. A slightly different type of a net vault was made in Görlitz above aisles. The vault in Lwówek Śląski is a little similar to it<sup>46</sup>.

Cell vaults were made in the chapels of the church in Gubin (2<sup>nd</sup> half of the 15<sup>th</sup> c.) and under the matroneum in the cathedral church in Opole (16<sup>th</sup> c.). In Gubin they were based on the homogenous type of a net vault, while in Opole – they are similar to star vaults. The first cell vaults were made in the Albrechtsburg Castle in Meissen (started in 1470)<sup>47</sup>, first as a star vault, still with ribs and liernes broken in the top direction, and later in a net design without ribs. In Silesia the first cell vaults were probably built in the chancel of the Franciscan church in Żagań (1486-1495), although it is possible that vaults in the chapels in Gubin were built earlier.

Late Gothic hall churches in Silesia had high elevations fragmented with buttresses, between which there were tracery windows. Gable walls were decorated with ogival blind windows or latticed windows. In church with a small number of architectural and sculptural details, tracery windows played an especially important role and a variety of compositions was used in them. Portals were not considered especially important – they were small, quite modest.

Constructors in the 15<sup>th</sup> – mid 16<sup>th</sup> c., similarly to their predecessors, created churches following models from western countries and neighbouring areas. Their great achievement was popularisation of churches with a hall presbytery with an ambulatory. In long, high hall interiors the main decorating architectural element became varied vaults with rich rib networks and tracery windows. Aisle walls and ambulatories were fragmented at a few levels, which enriched the architecture of these majestic interiors full of light.

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<sup>46</sup> D. Hanulanka, op. cit., on p. 98 there is a slightly different projection of the vault in Zgorzelec, it nearly ideally matches the vault in Lwówek.

<sup>47</sup> D. Hanulanka, op. cit., p. 122; P. de la Riesta, op. cit., p. 228.

Table: Hall churches from the 15<sup>th</sup> – mid 16<sup>th</sup> c.

Town	Church	Chancel	Nave	Dimensions (m)			Transept	Proportions of the nave cross-section	Tower	Construction time
				Nave width	Nave height	Aisle width				
Bytom	parish	8.28 x 22.00	23.52 x 20.65	8.26	14.00	6.92; 6.40	-	1 : 1.68		about 13 <sup>th</sup> -15 <sup>th</sup>
Góra	parish	16.53 x 19.00	16.84 x 18.46	6.81	17.94	3.50	-	<b>1 : 2.63</b>	2 western	after 1457-16 <sup>th</sup>
Gryfów Śl.	parish	8.95 x 10.92	21.00 x 23.90	8.95	9.25	5.53; 3.92	-	1 : 1.03	southern	about 15 <sup>th</sup> ; 1512
Gubin	parish	12.70 x 29.23	11.50 x 25.50	7.07	20.50	5.40; 5.55	-	<b>1 : 2.90</b>	western	15 <sup>th</sup> c.-1559
Jawor	Bernardine	6.30 x 14.40	14.20 x 21.15	5.40	12.83	3.55	-	1 : 2.35	south-west	1485 - 1489
Katy Wrocl.	parish	6.82 x 12.98	16.02 x 18.80	5.75	10.17	4.40	-	1 : 1.77	western	15 <sup>th</sup> c.
Lubawka	parish	19.70 x 35.00		8.64	17.46	3.25	-	1 : 2.02	19 <sup>th</sup>	beginning 15 <sup>th</sup> c.
Lubsko	parish	17.35 x 30.20		10.70	13.20	1.90; 2.05	-	1 : 1.23	western	1496-1517
Lwówek Śl.	parish	24.36 x 53.10		8.70	19.00	6.75	-	1 : 2.18	2 western	2 <sup>nd</sup> half 15 <sup>th</sup> c. -1509
Mirsk	parish	14.55 x 23.60		5.23	10.53	3.75; 3.90	-	1 : 2	south-west	mid 16 <sup>th</sup> -1570
Namysłów	parish	18.75 x 21.79	1 <sup>st</sup> half 16 <sup>th</sup> c.	7.24	14.40	4.20; 4.24	-	1 : 2	western	1 <sup>st</sup> half 15 <sup>th</sup>
Nysa	parish	22.50 x 63.78	+ polygon	9.20	27.20	5.05; 5.20	-	<b>1 : 2.96</b>	free-standing	1424 - 1430
Opole	Collegiate	24.90 x 50.30		9.70	18.20	5.10; 5.48	-	1 : 1.88	2 western	1 <sup>st</sup> half 15 <sup>th</sup> c.
Sobótka	St. Anna	9.30 x 14.05	17.35 x 23.90	6.60	14.00	4.20; 3.80	-	1 : 2.10	-	beginning 16 <sup>th</sup> c.
Syców	parish	7.43 x 14,35	18.55 18.65	7.34	12.92	3.72; 4.25	-	1 : 1.76	-	1 <sup>st</sup> half 15 <sup>th</sup> c.
Szprotawa	parish	17.00 x 41.45		5.55	15.00	average 4.20	-	<b>1 : 2.73</b>	northern	1416 - 1424
Wińsko	parish	7.80 x 14.55	18.30 x 18.05	8.56	14.20	3.45; 3.32	-	1 : 1.67	19 <sup>th</sup>	16 <sup>th</sup> c.
Wrocław	St. Barbara	9.52 x 10.68	19.10 x 10.70 (+ towers 16.44)	8.15	12.45	4.17; 4.28	-	1 : 1.53	2 western	1 <sup>st</sup> quarter 15 <sup>th</sup> – 1 <sup>st</sup> half 16 <sup>th</sup> c.
Wrocław-Ohtaszyn	parish	6.85 x 11.16	14.56 x 13.95	8.00	11.47	2.25	-	1 : 1.43	western	mid 15 <sup>th</sup> c.
Żary	parish	11.10 x 21.54	21.30 x 31.50	8.37	19.10	5.15	-	1 : 2.28	north-west	14 <sup>th</sup> c. - 1430
Żory	parish	8.00 x 16.83	13.90 x 25.70	5.85	12.50	2.95	-	1 : 2.14	2 western	about 15 <sup>th</sup> c.

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