## AN EARLY GOTHIC FRANCISCAN CHURCH IN CRACOW

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Among the several Polish churches built on a Greek cross plan in the second half of the thirteenth century, the Cracow church of St. Francis is distinguished by its monumental size and the most rigorously employed central plan [1-3]. Recent research conducted by Father Adam Zwiercan<sup>1</sup> has thrown a new light on the beginnings of the Franciscans in Poland, stressing the dynamic trend of the order towards foundations, and not, as has been the case up to now, the initiative of the ducal or magnate secular patrons.2 The Friars Minor arrived in Cracow in 1237 from Prague, most probably as a result of their dispersion; the campaign was headed by the Saxon provincial, John of Pian del Carpine, the leader of the Franciscan movement in Central Europe. The land intended for the church and monastery was presumably offered by the Cracow cathedral chapter (although there is no pertinent document) since the buildings were located on its terrain and not that belonging to the duke. A further part of the land was purchased from the chapter in 1277 by duchess Kinga, the wife of duke Bolesław the Pious, who presented it subsequently to the Friars Minor. The settlement of the Franciscans was achieved not only by Bishop Wisław and the chapter, but also by duke Henryk the Bearded, with whom the above mentioned provincial coordinated the introduction of the order to Poland. The group of patrons who provided money for the erection and outfitting of the church included also the ducal couple, although this conclusion is only indirect.

The brick church is composed of three essential elements: the eastern cross part (with an elongated chancel and a polygonal termination from the beginning of the fifteenth century), the sacristy and the nave. Despite the Baroque reconstruction of the nave and the fire of 1850 the building has retained much of its original substance, and the Early Gothic cross plan is easily discerned. The sacristy is probably the oldest, as is witnessed by forms of its details: the engaged half columns and the way in which they support the rib vault, which was described as a Late Romanesque stylistic modus, connected with the range of the Austrian-Bohemian-Moravian workshop.3 By way of contrast, the few original elements of the vault structure (the slender rounded shafts) testify to the original application in the cross part of the Gothic 'baldachin' construction (the present day vault dates from the fifteenth and nineteenth century). The decorations of the elevation is exceedinly modest and consists of blind windows and a northern gable encircled with a frieze construed from crisscrossing small arcades. This element, of Italian origin, was universally used in the North already during the thirteenth century, but another detail provides us with an excellent foundation for dating the church. I have in mind the tracery extant in the northern window and the southern window of the eastern arm [4]. The classically Gothic skeletal structure supports a pentafoil or three trefoils, while the most characteristic feature of the composition is the fact that the figures, which are not framed, are not inscribed into a circle.4 Numerous German, Bohemian and Silesian analogies come from the second half of the

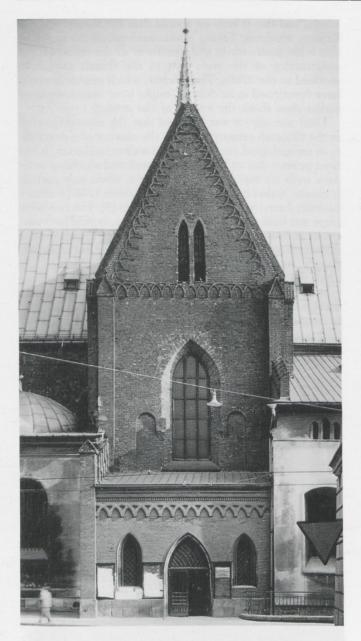
1260s, and this is how we should date the masonry of the Cracow windows. Taking into consideration the fact that this is the most certain and specific of all the elements, the construction of the cross part of the church should be ascribed to the 1260s. The sacristy, which originally could have functioned as an oratory, might have been completed earlier than about the middle of the century.<sup>5</sup>

Until recently, it was believed that the nave originated in the fifteenth century. Despite the absence of a possibility of archeological excavations and wall examination, it has been proven that at least the northern and southern outer nave walls are earlier,<sup>6</sup> and the tracery, albeit only partially extant, makes it feasible to put it at about 1300 (it differs basically from tracery in the eastern part) [5]. The two-nave corps was built probably on a basilica plan, typical for Franciscan architecture especially in the last three decades of the thirteenth century, but applied already earlier in Prague (St. Francis, consecrated in 1234),<sup>7</sup> Germany (Köln-Sionstal, ca. 1235; Selingenthal, from 1247 on), England and Sweden.

It would be a difficult task to solve the question whether the two-nave plan was already foreseen in the original project. In comparison with Italian analogies (which will be discussed further on), the arrangement of the two parts is not organic: instead of a basilica with narrow side naves, the edifice



1. Cracow, Franciscan church. View from east (Photo author).



2. Cracow, Franciscan church. View from north (Photo J. Langda).

is a two-thirds basilica, with a wide northern nave, which creates an empty space between it and the northern arm of the cross. It seems that an attempt was made to retain the independent nature of the centrally planned cross solid.

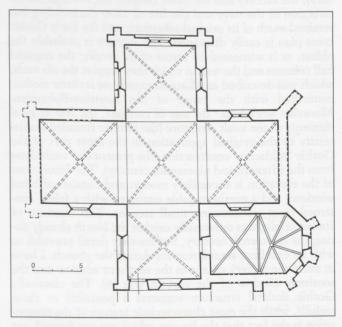
The origin of the cross plan church was examined thanks to fundamental studies by A. Grabar 8 and S. Guyer 9 while a review of the history of this spatial pattern, conducted by E. Hertlein, 10 frees us from the duty of a detailed explication. In the opinion of Grabar, the single-nave cross plan was the outcome of the centrally planned martyria from late antiquity. In turn, martyria with arms of equal length were modelled on ancient tombs. 11 The cross plan church proper emerged in the East and Asia Minor abounds with best developed examples. In Lycaonia and Cappadocia they were originally martyria and ultimately became churches. The oldest cross plan churches were erected over the graves of mar-

tyrs, but owing to the mass said at the altar, they celebrated the passion of Christ and thus His death and resurrection. This is the reason why the cross plan was granted to the presbyterial parts of those churches, which were not devoted to the cult of a martyr. 12

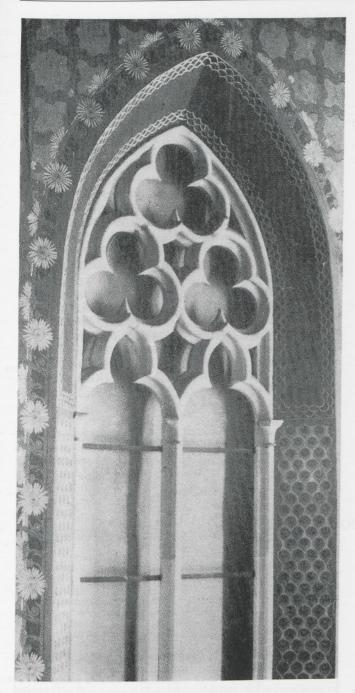
The cross plan churches were, as a rule, single-nave constructions, with tunnel vaults, and the crossing, distinguished by arches, was surmounted by a tower. The first significant mausoleum of this kind comes from Binbirkilise but this pattern became so widely applied in Cappadocia that it was used also in parish and monastic churches. Probably in Constantinople and certainly in Upper Italy the conception of the cross plan construction was adapted from the Roman mausolea by the builders of Christian martyria already in about 400.13 Earlier examples include possibly the S. Anastasia church in Rome (fourth century) and the so-called mausoleum of Galla Placidia in Ravenna (ca. 423) as well as fifth-century buildings in Casaranello, Verona<sup>14</sup> or Como. Examples from Central Italy are numerous from the eleventh and twelfth centuries;15 they occur particularly often in Calabria and Sicily. These are almost exclusively monastic churches, built up to the beginning of the thirteenth

It is possible to distinguish several sub-types of the singlenave cross plan church. A cupola on the crossing was the characteristic feature of the already mentioned buildings in Asia Minor. They were accompanied by constructions with flat roofs. The arms of the 'transept' could be rounded (e.g. S. Nazaro Grande in Milan) or with small apses (Southern Italy). At times, a bay was inserted between the crossing and the apse. While mentioning the different variants of the single-nave cross plan church, one must note that the basic church type was retained for centuries, regardless of changes in style. 17

The variant under examination formed a sizeable group in pre-Carolingian times also in the North. It was known in Gaul but from the point of view of the Cracow church, German examples appear to be more interesting. The oldest



3. Cracow, reconstruction of Franciscan church ground plan, ca. 1270 (Drawing R. Kunkel).

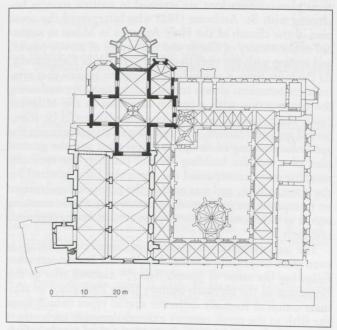


4. Cracow, Franciscan church. Tracery of southern window of presbytery (Photo P. Pencakowski).

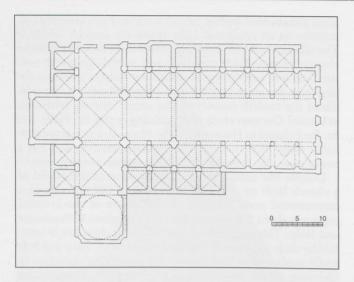
of the latter include the cathedral in Eichstätt (a building erected by Willibald, about 740), 18 and the St. Manges church in St. Gallen (898). 19 Archeologically testified are the Ottonian cross plan churches in Beromünster (predominantly St. Peter and St. Paul, to the west of the collegiate, the beginning of the eleventh century), 20 Schuttern (Baden-Württemberg, to the west of the Benedictine church, an undetermined foundation and date), 21 Riehen near Basel, and Utrecht, partially known as the Holy Cross churches. 22 The Holy Cross chapel in Treves, from the second half of the eleventh century, is regarded as the first Romanesque representative of the type of interest to us; the

arms are covered with a tunnel vault and the crossing culminates in an octagonal open tower on squinch arches.<sup>23</sup> The second cross plan building in this town is the St. Matern chantry chapel which was destroyed in the eighteenth century and was part of the St. Matthew Abbey, probably dating from the tenth century, and expanded prior to the middle of the twelfth century.<sup>24</sup> The oldest existing (although as a ruin) German cross plan building is the St. Peter and St. Paul chapel in Neustadt on the Main. It was erected probably after 1000, next to the monastic church, and has a tower over the crossing and an elongated western arm.<sup>25</sup>

Despite the considerable dissemination of the model of a church built on a Greek cross plan, it did not assume a monumental scale (the side of the square of the crossing measures about 5-6 meters) with the exception of Aquitaine and Italy. The geographic range of these churches is testified by their presence in Portugal (Montelios), Zara and Pola (early medieval) or Catalonia.26 By restricting ourselves to Germany we can mention as examples of Late Romanesque village parish churches two buildings in Rehme (end of the twelfth century)<sup>27</sup> and Widheim,<sup>28</sup> with similar solids. The early medieval tradition of single-nave cross plans proved to be particularly plentiful in Westphalia where its retentions can be understood as a phenomenon which accompanied the centralizing arrangement of space in the majority of local hall churches.29 Among these buildings, very numerous in the twelfth and first half of the thirteenth century, one can distinguish the more frequently encountered patterns with a fully developed transept, the square (or almost) arms of the Greek cross and the less distinct type of a transept with shorter arms. It is a characteristic fact that the central nature of the plan did not correspond to the centralization of the solid, the tower was placed to the west. Both types were often applied in neighbouring Western Friesland and in the regions of Groningen. The majority of



5. Cracow, Franciscan church and monastery. An attempt at a reconstruction of the medieval arrangement (Prepared, supplemented and drawn by R. Kunkel according to measurements by J. Muczkowski).



6. Pavia, ground plan of S. Francesco (According to A.M. Romanini).

the examples date from the second and third quarter of the thirteenth century.

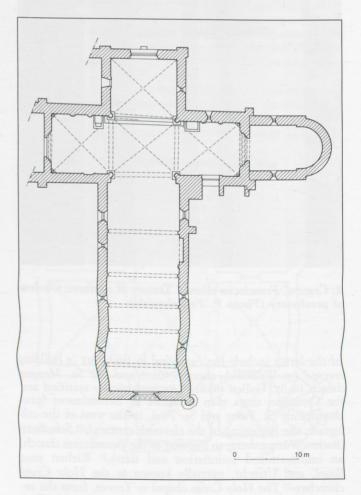
In turn, one could consider the iconography of the discussed type of spatial arrangement. A strong cult of the Holy Cross contributed to its dissemination in sacral architecture in antiquity. In the second half of the fourth century, the cross plan martyria were regarded as a symbol of Christ's passion.<sup>30</sup> The 'representational' meaning of the arrangement of the cross plan building which did not necessarily have to house relics, which were difficult to obtain and were possessed by only some of the churches, was of essential significance.

In a pioneering study dealing with the iconography of medieval architecture, Richard Krautheimer noted31 that cross plan connotations are stressed in written sources beginning with St. Ambrose (382) who interpreted the cross plan of the church of the Holy Apostles in Milan as a symbol of the victory of Christ and the source of mystic power, and ending with the twelfth-century church in Kappenberg. At the same time, it would be erroneous to assume that symbolic connotations always comprised the cause for endowing the construction with a certain shape (as in the Milanese case), since upon other occasions the plan could be interpreted only post factum. As a rule, the relations between the symbolic meaning of the geometrical plan and the ground plan of a definite building are not distinct; the symbolic meaning only accompanied the particular form selected for the given edifice, and was neither the point of departure or an interpretation performed a posteriori. Symbolic meaning occurs as a connotation, more or less certain, and is perceived unclearly.

The 'representational' meaning of cruciform buildings is even more sceptically assessed by Günther Bandmann who, following the steps of Joseph Sauer,<sup>32</sup> claimed that at the beginning of the eleventh century there took place an ultimate union of formally different spatial types (which from the fifth to the ninth century existed alongside each other) that either lost their original meaning or had totally rejected the cross connotation.<sup>33</sup>

K. Wilhelm-Kästner was also of the opinion that the cross plan was devoid of an ideal meaning, a view he expressed in a study about the artistic landscape of Westphalia where Greek cross plan churches are universal.<sup>34</sup> It would be hazardous to ascribe a special significance to specific forms only upon the base of the latter; the tower above the crossing which in Early Christian architecture denoted the martyrium, later lost its meaning. Forms are not automatic carriers of symbolic meaning, and it is dangerous to deduce from a familiar shape about the unknown function or significance of a building.<sup>35</sup>

In his recently published book about medieval centrally planned buildings, the already cited Matthias Untermann clearly distinguished edifices which were erected in the symbolic or representational tradition from those which were deprived of such sources, and whose architectonic form could have been selected for purely artistic reasons. Such artistic accomplishments included not only the majority of the triconches but also, even to a larger extent, the cross plan buildings. It is difficult to resolve what exactly was perceived as a conventional cross plan and what was regarded as a form distinguished according to its meaning. Although the cross plan Holy Cross construction in St. Gallen was erected as a tomb, others — in Kreuzberg near Hersfeld, the above mentioned church in Treves, in Transylvanian Prejmir (Tartlau) and the chapels in the Carolingian-Ottonian crypts did not possess such an unambiguous function, while the majority of churches dedicated to the Holy Cross (and the Holy Trinity or the Holy Sepulchre) were characterized by an ordinary elongated plan. This is why the iconographic in-



7. Viterbo, ground plan of S. Francesco (According to J. Raspi-Serra).

terpretation of a cross plan buildings as a church of the Holy Cross was not feasible for the medieval viewer. The iconology of the cross form, binding in Christian church architecture as a whole, cannot in particular instances totally explain

the meaning of the selection of a form.

Let us now examine the direct context of the origin of the Polish church in question. Attempts had been made to deduce the origin of the plan from Bohemia, but this conception cannot stand up to criticism.36 Decisive for the Cracow building were Italian Franciscan churches which sufficiently explain its origin.<sup>37</sup> The Minorite church in Pavia offered Szczęsny Skibiński an assumption for a hypothesis about the Italian lineage of the spatial arrangement of the Cracow edifice.<sup>38</sup> The Greek cross in Pavia constitutes only the eastern part of the plan which is adjoined by a basilica corps, with vaulted side naves<sup>39</sup> [6]. Its existence was foreseen already in the original project. The church was erected about the middle of the thirteenth century, but the project could date from 1238, especially considering that it was modelled on an analoguous disposition of the main church of the Milanese Friars Minor — the S. Francesco Grande. Even closer to the Cracow building is S. Francesco in Viterbo (1237), where the western arm of the Greek cross adjoins a hall nave of the same width, 40 and there are already no eastern transept chapels as in Pavia [7].

Despite the different, non-apse form of the Cracow presbytery, it reveals a wish to imitate the S. Francesco church in Assisi (1228-1253). The Cracow Franciscans (apart from obvious monastic contacts with Italy) participated in the lengthy canonization of St. Stanisław, conducted by the Roman See; as a result, they were particularly familiar with

the architecture of their Italian brethren.

Since the cross plan of the Cracow church is totally unique, outside Italy, it should be seen as the expression of a desire to imitate the Italian model, by referring to specifically Franciscan contents. To put it differently, the ancient cross plan became permeated with those contents. In the case of the German Friars Minor the reference to the Assisi church revealed itself only in the adoption of selected elements: the second, lower church in Eisenach and (eventually) the engaged columns, the five bays and wide windows, deep incisions into the vaulting in Prenzlau.<sup>41</sup>

Without delving into the origin of the Italian Franciscan churches, it must be noted that the earlier cross plan buildings (S. Lanfranco in Pavia, after 1180-1257, S. Andrea in Piazza Armerina) were sizeable edifices. Hertlein maintains that large single-nave cruciform churches appeared only in Italy in the first half of the thirteenth century (not to mention the monumental cruciform churches in twelfth-century Aquitaine). On the other hand, the buildings from late antiquity mentioned by us are smaller and their length in Cappadocia and Lycaonia did not exceed 20 meters; this holds true also for medieval German churches.

The Cracow church indubitably imitates the Italian monastic model although the latter was neither dominant or specific among Franciscan constructions. The unfunctional nature of the cross plan building eliminated it as a type useful for a Minorite church, and it was not applied to a wider extent either in Italy nor in the churches of that order built in Little Poland during that period. It seems that the Italian plan did not become specifically Franciscan until it arrived in Poland where up to that time it remained unknown in architecture.

## NOTES

<sup>&</sup>lt;sup>1</sup> A. ZWIERCAN, Pierwotny kościół franciszkanów w Krakowie [The Original Franciscan Church in Cracow], «Nasza przeszłość. Studia z dziejów kościoła i kultury katolickiej w Polsce», LX (1983), pp. 77-88; ID., Nowe spojrzenie na początki franciszkanów w Polsce [A New Look at the Beginnings of the Franciscans in Poland], ibid. LXIII (1985), especially pp. 5-51; ID., Franciszkanie w Krakowie [The Franciscans in Cracow], in W nurcie franciszkańskim [In the Franciscan Current], Cracow 1987, especially pp. 19-23.

<sup>&</sup>lt;sup>2</sup> G. LABUDA, Kto był fundatorem-żał ożycielem klasztoru Franciszkanów w Krakowie? [Who was the Founder of the Franciscan Monastery in Cracow?], in Franciszkanie w Polsce średniowiecznej. Część 1. Franciszkanie na ziemiach polskich [The Franciscans in Medieval Poland. Part. 1. The Franciscans on

Polish Lands], Cracow 1983, pp. 369-380.

3 S. SKIBIŃSKI, Pierwotny kościół Franciszkanów w Krakowie [The Original Franciscan Church in Cracow], Poznań 1977, pp. 29-31.

nal Franciscan Church in Cracow], Poznań 1977, pp. 29-31.

A detailed analysis in A. Grzybkowski, Centralne gotyckie jednonawowe kościóły krzyżowe w Polsce [Centrally-planned Gothic Single-nave Cruciform Churches in Poland], «Kwartalnik Architektury i Urbanistyki» (in print).

SKIBIŃSKI, Pierwotny kościół, pp. 29, 32.

<sup>&</sup>lt;sup>6</sup> T. WECLAWOWICZ, A. WŁODAREK, Krakowski kościół . Franciszkanów w wieku XIII [The Cracow Franciscan Church in the Thirteenth Century], «Sprawozdania z posiedzeń Oddziału Polskiej Akademii Nauk w Krakowie», XXXIII (1989), 2 (in print).

<sup>7</sup> H. SOUKOPOVÁ, Anežský klášter v Praze, Praha 1989, passim.

<sup>8</sup> A. GRABAR, Martyrium. Recherches sur le culte des reliques et l'art chrétien antique, Paris 1946.

<sup>&</sup>lt;sup>9</sup> S. GUYER, Grundlagen mittelalterlicher abendländischer Baukunst. Beiträge zu der vom antiken Tempel zur kreuzförmigen Basilika des abendländischen Mittelalters führenden Entwicklung, Einsiedeln-Zürich-Köln 1950.

<sup>&</sup>lt;sup>10</sup> E. HERTLEIN, Die Basilika San Francesco in Assisi. Gestalt - Bedeutung - Herkunft, Florenz 1964, p. 118 ff. In this paragraph we have referred to the interpretation proposed by this scholar.

<sup>11</sup> GUYER, Grundlagen, p. 27.

<sup>12</sup> Ibid., p. 144.

<sup>&</sup>lt;sup>13</sup> R. KRAUTHEIMER, Early Christian and Byzantine Architecture (The Pelican History of Art), Harmondsworth 1975, p. 176.

<sup>&</sup>lt;sup>14</sup> C. PEROGALLI, Architettura dell'altomedioevo occidentale dall'età paleocristiana alla romanica, Milano 1974, p. 53.

<sup>15</sup> HERTLEIN, Die Basilika, p. 123.

<sup>16</sup> Ibid., p. 125.

<sup>17</sup> Ibid., p. 126.

E. LEHMANN, Der frühe deutsche Kirchenbau. Die Entwicklung seiner Raumanordnung bis 1080, Berlin 1938, p. 110; Guyer, Grundlagen, p. 38.
 M. UNTERMANN, Der Zentralbau im Mittelalter. Form, Funktion, Verbreitung, Darmstadt 1989, p. 155, ill. 84.

<sup>&</sup>lt;sup>20</sup> *Ibid.*, p. 238, ill. 196.

<sup>&</sup>lt;sup>21</sup> *Ibid.*, p. 248, ill. 195.

<sup>&</sup>lt;sup>22</sup> B. Schütz, W. Müller, Deutsche Romanik. Die Kirchenbauten der Kaiser, Bischöfe und Klöster, Freiburg-Basel-Wien 1989, p. 544.

<sup>&</sup>lt;sup>23</sup> H. BIEHN, Ein Beitrag zur Geschichte des deutschen Zentralbaus bis zum Jahre 1500, Worms 1933, p. 47; Schütz, Müller, Deutsche Romanik.

<sup>24</sup> H.E. Kubach, A. Verbeek, Romanische Baukunst an Rhein und Maas,

Berlin 1976, II, p. 1117; SCHÜTZ, MÜLLER, Deutsche Romanik. 25 SCHÜTZ, MÜLLER, Deutsche Romanik.

<sup>26</sup> BIEHN, Ein Beitrag, p. 48; HERTLEIN, Die Basilika, p. 121.
27 G. DEHIO, Westfalen, bearb. D. Kluge, W. Hansmann, München-Berlin

<sup>1977,</sup> p. 477 (Handbuch der deutschen Kunstdenkmäler Nordrhein-Westfalen).

<sup>28</sup> BIEHN, Ein Beitrag, p. 45.

<sup>&</sup>lt;sup>29</sup> The fragment below is based on: K. WILHELM-KÄSTNER, Der westfälische Lebensraum in der Baukunst des Mittelalters, in Der Raum Westfalen, II. 1.2, hrsg. H. Aubin, E. Rieger, 1947, pp. 43-45. The author cites numerous examples of single-nave cruciform churches in the thirteenth century, contradicting the statement made by W. GÖTZ, Zentralbau und Zentralbautendenzen in der gotischen Architektur, Berlin 1968, p. 94, about the

diminishing vitality of this variety in about 1200.

<sup>30</sup> GUYER, Grundlagen, pp. 151-152; E. SAUSER, Frühchristliche Kunst. Sinnbild und Glaubenaussage, Innsbruck-Wien-München 1966, pp. 515-517. 31 R. KRAUTHEIMER, Introduction to an "Iconography of Medieval Architecture", «Journal of the Warburg and Courtauld Institutes», V (1942), pp. 8-9. <sup>32</sup> J. SAUER, Symbolik der Kirchengebäude, Freiberg 1902, pp. 289-292. 33 G. BANDMANN, Mittelalterliche Architektur als Bedeutungsträger, Berlin 1951, pp. 188-189.

34 WILHELM-KÄSTNER, Der westfälische Lebensraum.

<sup>35</sup> P. CROSSLEY, In Search of an Iconography of Medieval Architecture, in Symbolae historiae artium. Studia z historii sztuki Lechowi Kalinowskiemu dedykowane [Symbolae historiae artium. Studies in the History of Art De-

dicated to Lech Kalinowski], Warszawa 1986, p. 60.

<sup>36</sup> P. CROSSLEY, Gothic Architecture in the Reign of Kasimir the Great. Church Architecture in Lesser Poland 1320-1380, Cracow 1985, p. 76 and note 410 on p. 289. The present day St. James parish church in Jihlava did not have, despite the view held by A. PROKOP, Die Margrafschaft Mähren in kunstgeschichtlicher Beziehung, II, Wien 1904, p. 310, and P. CROS-SLEY, Gothic Architecture, a cruciform pattern, although the presbytery reveals certain remnants of the previous construction (E. ŠAMANKOVÁ, Jiblava, Praha 1953, p. 6). The St. Nicholas church in Humpolec (*Umělecké památky Čech*, ed. E. Poche, Praha 1977, I, p. 481) are characterised by an elongation of the three-bay presbytery and a shortening by a half of the western arm; the two buildings, therefore, do not constitute a parallel for

the Cracow edifice.

<sup>37</sup> This role is not played by the thesis about the function of a mausoleum of the Piast dynasty with which ZWIERCAN (Pierwotny kościół, p. 87) polemicised convincingly, indicating the customary burial of rulers in Franciscan churches (Béla IV in Esztergom, Venceslaus I in Prague, Henryk the Pious in Wrocław). Let us add that Skibiński does not take into account the enthusiasm of the dukes, and especially the Piast duchesses for the Franciscan idea; Kinga, a tertiary, appeared at her husband's funeral in a monastic habit (1279); cf. J. KŁOCZOWSKI, *Bracia mniejsi w Polsce średniowiecz*nej [Friars Minor in medieval Poland], in Franciszkanie w Polsce, p. 17. The patron saint of the church was from the very outset Franciscan (to which in 1436 the name Corpus Christi was added) and thus it could not have been called Holy Cross, as SKIBIŃSKI (Pierwotny kościół ) assumed (ZWIER-CAN, Pierwotny kościół, p. 48).

38 SKIBIŃSKI, Pierwotny kościół, pp. 35-36, 38.

<sup>39</sup> A.M. Romanini, L'architettura gotica in Lombardia, I, Milano 1964, pp. 98-101.

<sup>40</sup> J. RASPI SERRA, Esempi e diffusione della tipologia architettonica minorita nell'alto Lazio, «Bollettino d'Arte», LVIII (1973), 4, pp. 207-209.

<sup>41</sup> F. MÖBIUS, Kirchliche Architektur, in Geschichte der deutschen Kunst 1200-1350, hrsg. F. Möbius, H. Scurie, Leipzig 1989, pp. 148-149.

 <sup>42</sup> HERTLEIN, *Die Basilika*, pp. 126, 135.
 <sup>43</sup> BANDMANN, *Mittelalterliche Architektur*, pp. 187-189; KRAUTHEIMER, Early Christian and Byzantine Architecture, pp. 174-175.