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The Palace of Aachen
Settlement and Architectural History

ABSTRACT

Excavations and building research that were conducted since 2006 have yielded new results on the development of the palace of Aachen, such as regarding settlement continuity since the Roman Age. Antique buildings – among them a late-Roman *castrum* – continued to be used during the Merovingian and Carolingian periods and into the 12th century. Into these structures the large Carolingian buildings were integrated in several building and planning phases by the second half of the 9th century. The first to be erected was the Palatine Chapel (Marienkirche), then the administrative buildings, and finally the so-called Central Building (Mittelbau). During this process, church, hall, and *castrum* were combined into an ensemble by an internal system of corridors and staircases. With this design concept, the Carolingians followed the model of Antique palaces; but they adapted the structural forms to their traditional ceremonial requirements. To carry through the large-scale construction, skilled artisans from several regions were invited to come to Aachen.

KEYWORDS

Aachen / Carolingian Palatine / settlement continuity / Aula / architectural history

Under Charlemagne and his son Louis the Pious, Aachen was the most important palace in the Carolingian Empire. Since the second half of the 8th century, the Royal Court used to winter here more and more often; here, the great holidays were celebrated, and envoys were received from all over the world. Constructed at the turn from Antiquity to the Middle Ages, the monumental Carolingian stone buildings in Aachen are among the key structures of European architectural history. To date, many questions regarding the development, planning, and functionality of the palace in Aachen remain unanswered, however.

Apart from Palatine Chapel (Marienkirche), the octagonal dome of which still exists and forms the core element of today's Cathedral, there are several other, but less well known remains of Carolingian-Age buildings in Aachen (**fig. 1**). Aachen's Gothic town hall, for example, is built on top of the foundation walls and parts of the south wall of the palace's *aula regia* (Königshalle), which measured 47.4 m × 20.8 m. To the east, the latter was flanked by a stair tower, of which four floors from the Carolingian Age survive. They form the lower 20 m of the Granusturm, which was raised in height during the Gothic period. Between the Aula and the church ran an approximately 135 m-long connecting Gallery (Verbindungsgang). The existence of the so-called Central Building (Mittelbau) that once divided this hallway into two nearly equal halves has been established by excavation. Only the south end of the Gallery survives, integrated in the walls of the Aachen Stift. It abuts on the church's Atrium, the size of which is represented by the Domhof (Cathedral close), but original building structure only survives in its northeast corner. Apart from the stump of a column, only the foundations remain of the two auxiliary buildings that adjoined the church to the north and south, respectively. Flagstones indicate their ground plans in the pavement today.

Current Research

The last comprehensive research campaigns at the Aachen palace took place during the 1960s[1]. After this, there was a long period of stagnation; exposure and destruction of some of the historic building fabric was the result[2]. In response to the new awareness for the need to protect public spaces, Aachen's Stadtarchäologie (Municipal Archaeological Service) was re-established in 2006. Since then, numerous new features of Aachen's settlement history during the Roman and medieval periods were documented. Occasions for these investigations were, among other things, the internal renovation of the Cathedral, the securing of the town hall's foundation, and extensive construction projects on the sewers, cables, and streets of the entire old town.

Most recently, a comprehensive reappraisal took place both of the excavations of Cathedral and palace conducted by E. Schmidt[3] more than 100 years before and of the extensive archaeological-historical research history of the Aachen palace[4].

At the same time began the systematic building research of the secular administrative buildings. This included the survey of the buildings according to modern standards, the processing of unpublished documentations from archives and bequests, and the comparison of architectural structures and archaeological features. The building documentation took place within a cooperation between the project »Die Aula Regia in Aachen – Karolingische Königshalle und spätmittelalterliches Rathaus« (The *aula regia* in Aachen – Carolingian royal hall and late-medieval town hall), which was funded by the Deutsche Forschungsgemeinschaft (DFG; German Research Foundation), and the »Investitionsprogramm nationale UNESCO-Welterbestätten« (Investment programme national UNESCO world heritage sites); both were located at the Lehr- und Forschungsgebiet Denkmalpflege und Historische Bauforschung der Rheinisch-Westfälischen Technischen Hochschule (RWTH) Aachen (Department for Historic Building Conservation and Research at the North Rhine-Westphalia Technical University of Aachen)[5]. It was the aim of the DFG project to utilise this documentation as a basis to understand the operating principle of the palace's architecture: to point out possible construction phases, create reconstructions, investigate methods and techniques of construction, and to align the architectural characteristics with the development of the palace buildings.

In order to guarantee the direct comparability of the surveys of building materials and construction phases and the features of the Carolingian central component of Aachen Cathedral, the documentation followed the methods of the examinations carried out earlier at the building of the Palatine Chapel by the LVR-Amt für Denkmalpflege im Rheinland (LVR office for the preservation of monuments in the Rhineland)[6]. A close cooperation in regard to processing and correlation of architectural features and archaeological and historical sources was established with Aachen's Stadtarchäologie and the Department of Medieval History at the RWTH Aachen[7]. This interdisciplinary and interinstitutional knowledge transfer was coordinated with the Arbeitskreis Pfalzenforschung (Work Group Palace Research), which through annual thematic workshops maintains a lively exchange with the research group of the palace of Ingelheim. In the following, the authors – both directors of the Arbeitskreis Pfalzenforschung[8] – would like to present the latest results.

Settlement Continuity

Significant results were achieved by the excavations in connection to settlement continuities from the Roman period into the Middle Ages (**figs 2. 4a**)[9]. In the entire area of Aachen's old town, objects made of clay and (to a lesser degree) metal demonstrate a settlement during the early Merovingian period that in its early stages was rather limited in extent. Noticeably more find spots dated to the 7th and 8th centuries. In this period at the latest, a cemetery existed in the location of the later Palatine Chapel. It has been suggested for a long time that the remains of walls – among them two apses – in the area of

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1 Cf. e. g. Hugot 1965; Kreusch 1965. For a summary of the research history of the Aachen palace, see Pohle 2015.
2 Cf. Meckseper 2005.
3 Cf. e. g. Ristow 2014a; 2016.
4 Cf. Pohle 2015.
5 DFG project »Die Aula Regia in Aachen - Karolingische Königshalle und spätmittelalterliches Rathaus«, directed by J. Ley (RWTH Aachen); »Investitionsprogramm nationale UNESCO-Welterbestätten - Bauforschung«, directed by C. Raabe, M. Wietheger, and M. Krücken (Abteilung Denkmalpflege Stadt Aachen, RWTH Aachen); cf. an initial report on the research: Krücken 2016.
**6** Cf. Pfalzkapelle Aachen 2012.
7 Cf. Müller et al. 2013.
8 After 2010, J. Ley was the organizational director of the Arbeitskreis Pfalzenforschung Aachen; since 2017, this position is held by A. Schaub.
9 Schaub 2008.

Fig. 1 Three-layer model: The area of the Aachen palace as it is today, surviving Carolingian building material, and reconstruction of the palace buildings. – (Reconstruction J. Ley; drawing F. Schnee).
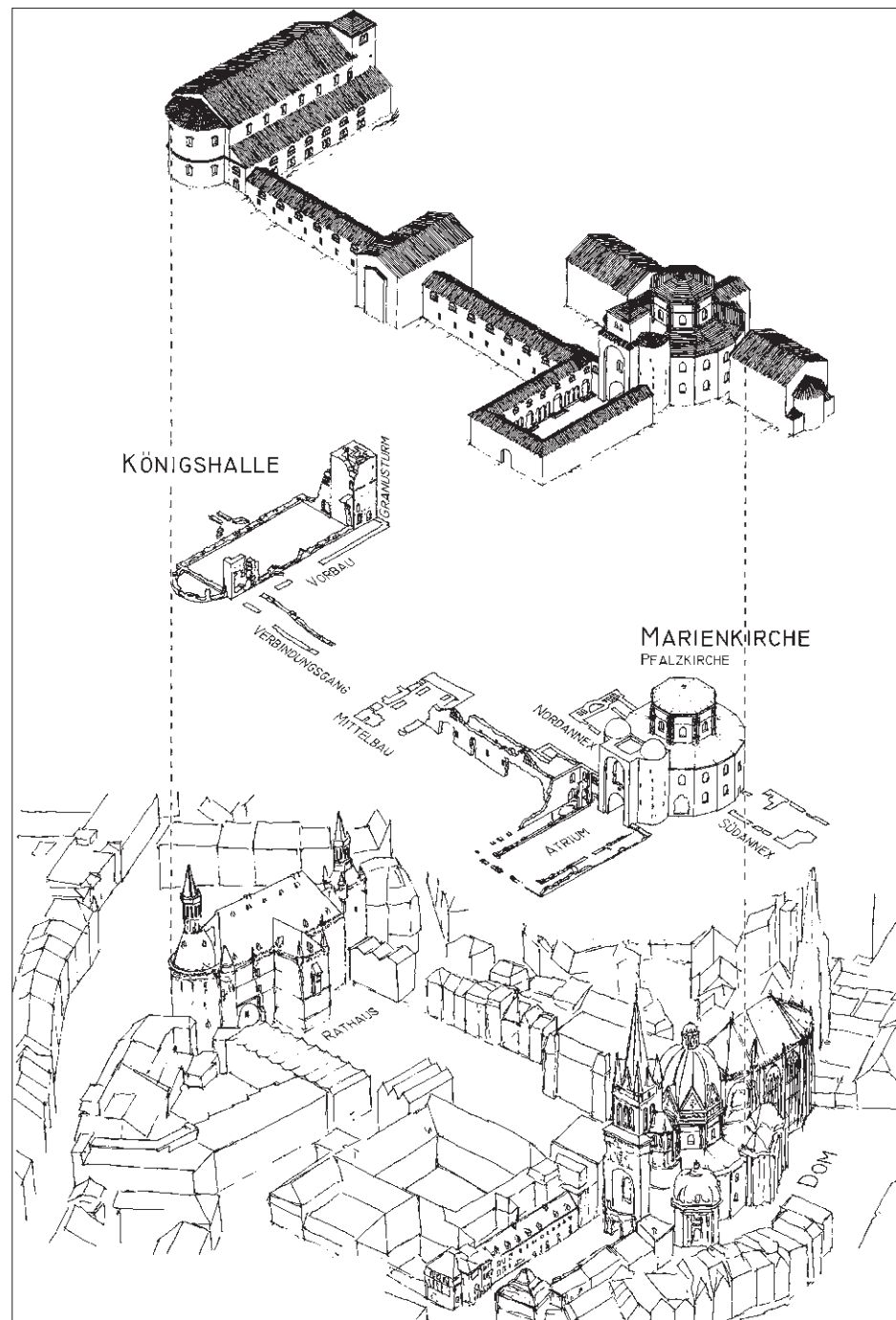
the Roman baths below the Cathedral were part of church buildings from the time before Charlemagne had his buildings erected. To this day, however, it was not possible to produce a reliable reconstruction.

Despite the widespread distribution of early-medieval objects, hardly any contemporaneous buildings have survived. Excavations in 2022, directly in front of the Palatine Chapel's atrium, on the Fischmarkt, established multi-phase Carolingian-period wooden buildings that were abandoned when the Palatine Chapel was built and replaced by a square-like structure. It has been established that modifications at the baths took place as late as during the 4th

and 5th centuries. Particularly remarkable is a building that was constructed at the foot of the Markthügel (market hill) during the second half of the 4th century at the earliest: some of its rooms were heated and equipped with floors and walls of marble. New research suggests that this was not a new construction of this period, but the modification of a previous building (cf. Kremser, this volume). The degree to which Roman buildings shaped the later townscape, can best be seen in the fact that for the most part, it happened only since the 12th century that streets and residences were abandoned and demolished or built over; to a striking extent, this also pertains to
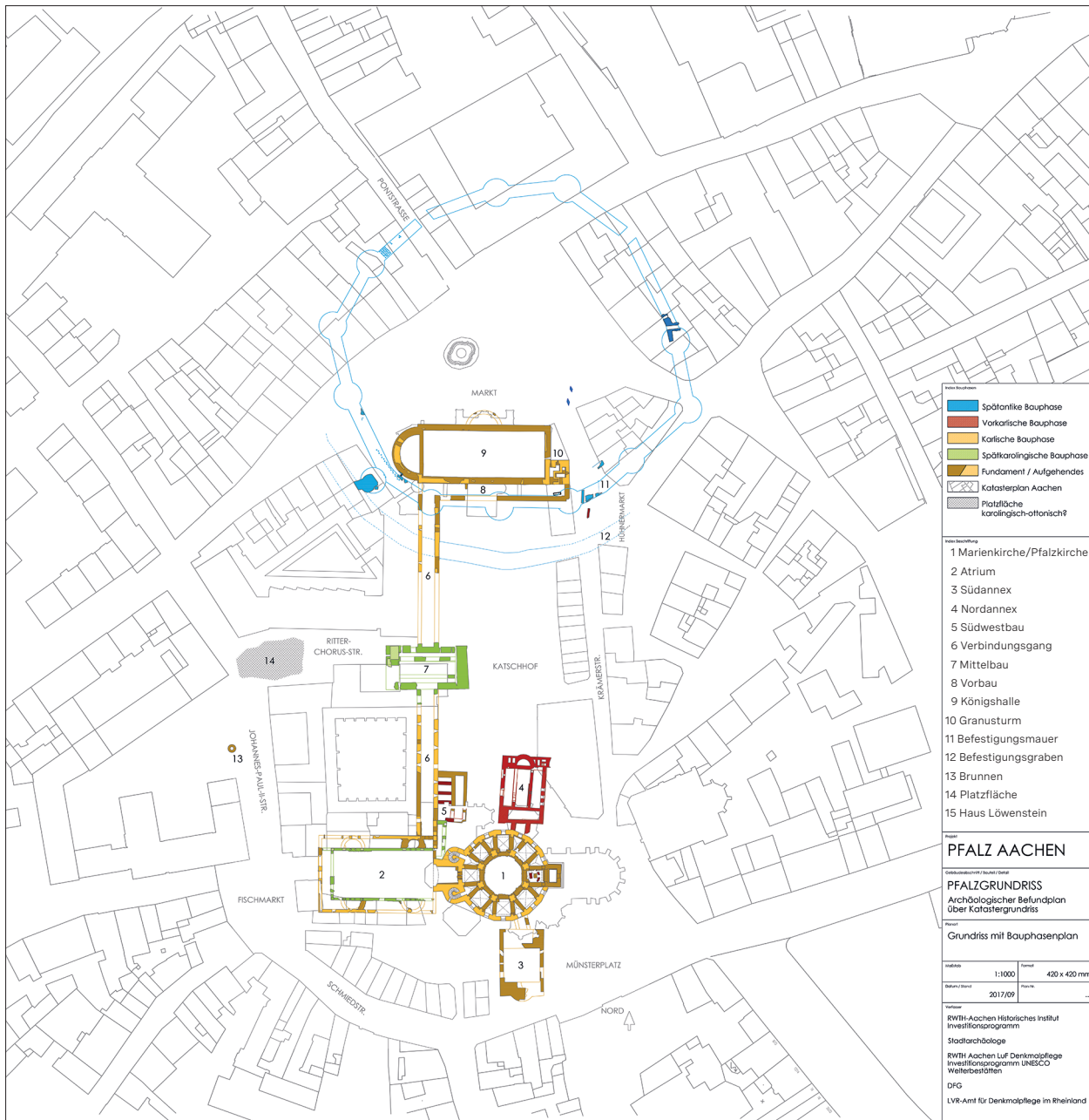
Fig. 2 Phased plan of the core palace in Aachen (as of Sept. 2017; updated after Ristow 2014b, 66 fig. 29, on the basis of earlier plans and new measurements): **1** Palatine Chapel. – **2** Atrium. – **3** South Annex. – **4** North Annex. – **5** Southwest Building. – **6** Gallery. – **7** Central Building. – **8** Porch. – **9** *aula regia*. – **10** Granusturm. – (Prepared by the Gesellschaft für Bild und Vortrag e. V. Müllheim-Feldberg, Dombauleitung Aachen, J. Ley, T. Kohlberger-Schaub, D. Lohmann, J. Richarz, A. Schaub, SKArchaeoconsult, Stadtarchäologie Aachen, M. Wietheger; graphics M. Wietheger / J. Ley).

a Late-Roman fortress, the existence of which had been suspected for a long time and was verified in 2011 (**fig. 3**)[10]. A wall – in its foundations about 5.3 m wide – with round towers ran polygonally around the Markthügel and enclosed an area of about 1 ha (**figs 2. 4-5**). This structure presumably was constructed following the Germanic incursions during the last quarter of the 3rd century. To date, there are four places in which the course of the wall is not only recorded, but it also was established that the re-spective dismantling and destruction layers date to the 12th century. While the accompanying defensive ditch along the south side was filled in as early as the 5th or 6th century, the walls apparently continued to be in use. For the construction of the Carolingian *aula regia* only a portion of the wall was removed; to the hall's sides, it remained intact. This hardly can have been the result of coincidence or carelessness. The positioning in and on the Roman *castrum* probably had less fortificatory than symbolic reasons.

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10 Kyritz/Schaub 2015.

Phases of Planning

The regularity of the Carolingian-Age architectural ensemble initially gives the impression that the palace of Aachen is a uniformly planned and constructed structure. Recognisable building phases and modifications, identified by construction joints and changes in materials, make it clear, however, that this ensemble is in fact the result of diverse phases in planning and development (**fig. 4**)[11]. Some of these phases can be dated by using scientific methods, archaeological finds and written evidence.

First, St Mary's church, the Palatial Chapel, was erected between c. 794 and 813[12], replacing an earlier church building at the same site (**fig. 4b**). The new, two-storey church was not an institutional part of the palace proper. This is demonstrated by its position some way apart from the late-Antique fortification. The unusual central structure, which already had been admired by contemporary visitors, had been built by Charlemagne as a collegiate church in honour of the Christian religion. The building's architectural quality gives a lasting expression to Charles' demonstrative reverence of God to this very day. The collegiate church – which simultaneously took over the parochial functions from its preceding building for the settlement and accordingly also for the Frankish court[13] – thus served the Church and the Empire in a special way.

The Northern Annex possibly already had been part of the earlier church, the one to the south was constructed at the same time as the new church. In front of the church's west face, there was an atrium, which initially enclosed the forecourt with four representative niches. From the northern stair tower of the western building, a door led from the church to the adjoining buildings. These structures now cannot be established with any certainty anymore; thus, it can only be speculated whether they constituted monastery buildings adjoining the atrium or earlier connecting structures leading to the fortress on the Markthügel[14].

In a second phase of construction, the *aula regia* was erected with a main apse in the west and a smaller side apse in the north, a stair tower in the

Fig. 3   Excavation in front of the Marienturm (2014/2015). Features of the Late-Roman defensive wall. – (Photo A. Schaub).

east, the elongated Porch on its south side[15], and the connecting Gallery leading from the hall's southwest corner to the Atrium of the church (**fig. 4c**). The date these buildings were constructed can only be defined by few and uncertain features to about AD 800 or the first quarter of the 9th century[16].

The south side of the *aula regia* was built directly into the late-Antique fortification in such a manner that its two-storey Porch replaced a section of the curtain wall (**fig. 5**). The Aula's floor was at about the same level as the church's upper storey. Thus, the Gallery was able to connect both structures without sizeable differences in level. The Atrium's architecture, too, underwent an adjustment to this level: in order to add a second storey, the original niche construction was removed. Finally, a narrow hallway led from the Atrium and the Gallery to the stairwell of the church; to this, a second doorway was inserted at the new floor level.

Only during its third construction phase, the Central Building, also two storeys high, was inserted into the Gallery (**fig. 4d**). It dates from the second half of the 9th century[17]. Also part of a later construction phase is the Southwest Building, a rectangular building that was divided into several compartments and built adjoining the connecting Gallery as the northern extension of a stone hallway.

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11   Cf. Ristow 2014a. The recently prepared true-to-size map of the construction phases of the Aachen palace is continuously updated and adjusted to the new results of excavations and surveys of the buildings.
12   Heckner 2012; Schmidt et al. 2009.
13   Cf. Bayer 2011; Bayer 2014.
14   In Carolingian sources, a wooden portico is mentioned, the position of which, however, cannot be established anymore with certainty; for the different research hypotheses, cf. Pohle 2015.

15   Since the recent reappraisal of previous excavations (S. Ristow), the southern apse is not regarded as verified anymore. This corresponds with the architectural evidence of the rising masonry.
16   Cf. Ristow 2014a.
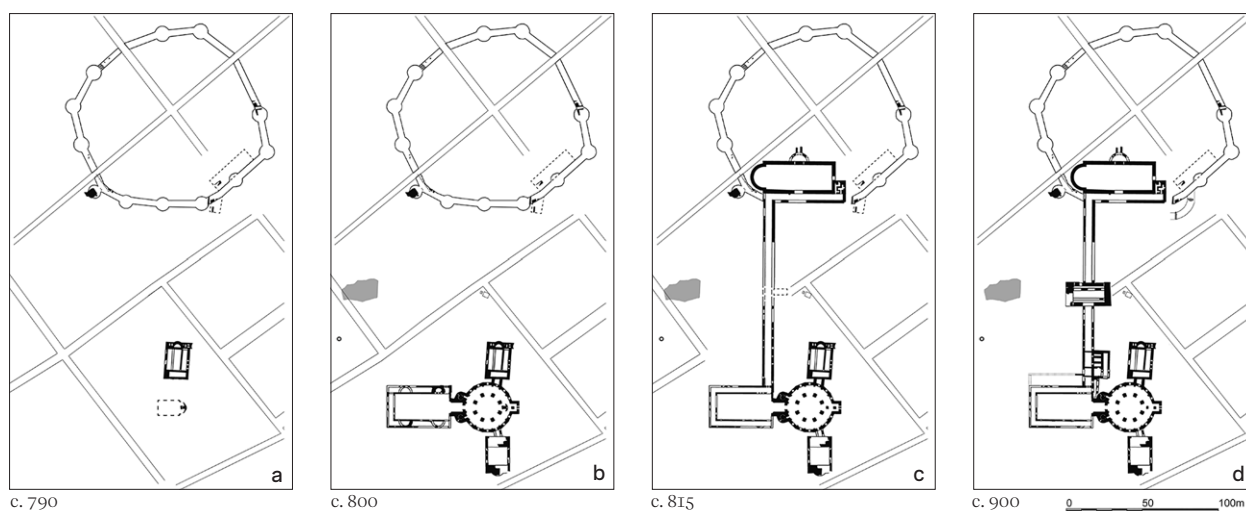17   Giertz 2005/2006, esp. 69-71; Schaub 2016, 79.

Fig. 4   Construction phases of the Carolingian-period Aachen palace. – (Reconstruction J. Ley).

c. 790   c. 800   c. 815   c. 900

Function

The Aula, the stair tower, its Porch, and the Gallery thus go back to a common planning and form a functional unit. It was this construction project's task to integrate a large and representative hall building into the palace and to create a connection between the demarcated area of the fortress and the two newly built churches. For this, the new buildings were inserted into the older structures to tie them together into an ensemble. In order to achieve the effect of a coherent ensemble, the extension plans not only adopted the strict east-west orientation und the church's alignments, but also created a system of paths within the buildings that negotiated the differences in the current levels of church, Markthügel, and fortification.

The entire structure followed a clearly structured additive design concept (**figs 2. 5**). There were three levels, which at various points were connected vertically by spiral staircases: the ground-floor level of the church, on which also were the Atrium's courtyard and the area between church and Aula (today's Katschhof); the level of the church's upper storey, to which was aligned the Aula's new level as well as the upper storeys of the Gallery and of the Atrium; and finally as a third level (which probably was defined by the fortification's floor level) with the upper storey of the Aula's Porch.

Of the stairs only that in the western part of the Palatine Chapel and the stairwell of the Granusturm survive to this day[18]. The latter allowed the ascent to the upper storey of the Aula's Porch and thereby the transition to the adjoining fortification wall and from there potentially to other buildings that were attached to the fortress (**figs 4-5**). Other spiral staircases can be reconstructed on the wide foundations of the Annex buildings and of the Central Building.

Of the three levels, the middle one in particular allowed the Court and the Stift to pass directly between the buildings of the monastery and of the palace in order to attend prayers and divine services as well as festivities and receptions. At the same time, the corridors could be used as representative vestibules and waiting rooms of the Aula. Visitors arrived at this area of the palace on an old Roman road, which crossed the Katschhof as late as the 14th century[19]. It probably led to a staircase that today cannot be determined anymore, as in its place the Central Building was inserted into the Gallery during the 9th century. It supposedly served the function of a representative and more secure entrance building[20].

Based on its floor plan, the Southwest Building repeatedly was interpreted as a vestibule, too[21]. Its construction possibly had the aim of separating the entranceways to the Stift and to the palace at a later date.

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18   Cf. Ley/Wietheger 2011.
19   Schaub et al. 2011, 268.
20   There are various hypotheses regarding the Central Building's function, including gatehouse, courthouse, or Charlemagne's residence; cf. Pohle 2015, 368-372.
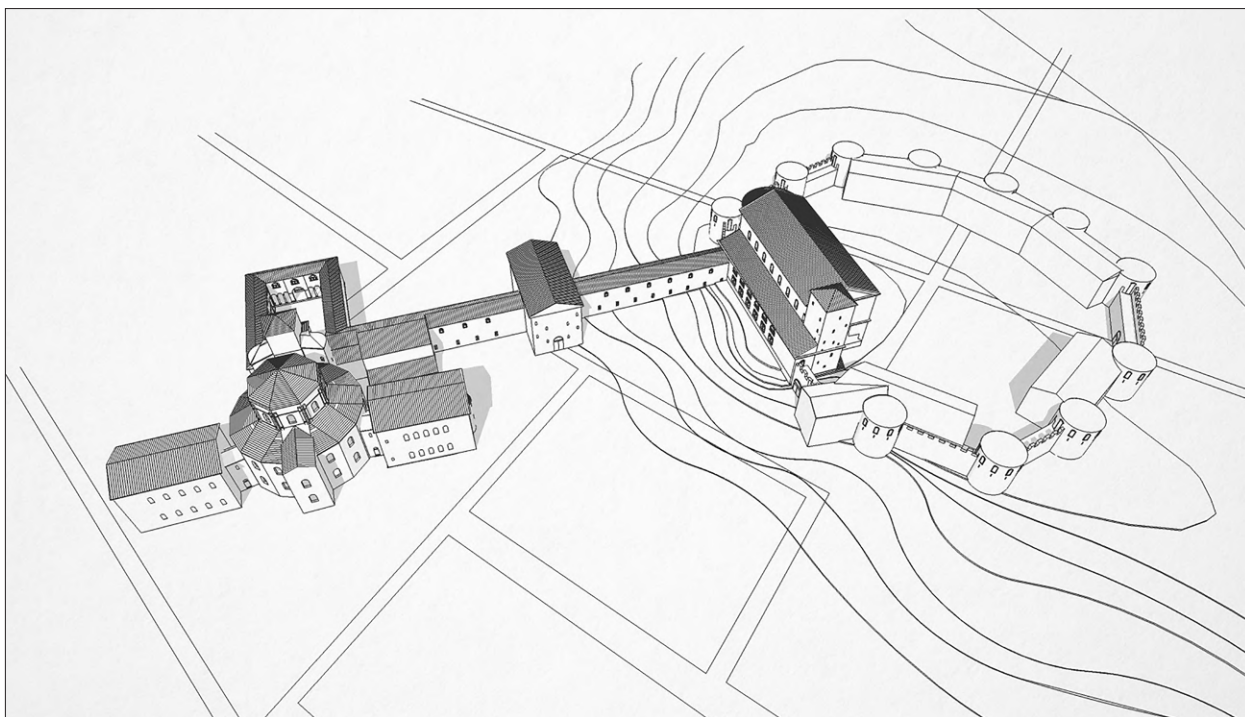
21   Cf. Pohle 2015, 376-384.

Fig. 5   Reconstruction of Aachen palace. – (Design J. Ley; model J. Ahn).

Classification and Interpretation of the Architectural History

The architectural concept of the Aachen palace adopted construction models from Antique palace-building, such as the apse hall or the connecting system of corridors. This was a schematic reception of types and proportions that was based on the knowledge of numerous halls that either still were functional in surviving palaces and monasteries[22] or which even were constructed currently north of the Alps[23].

For this adoption, the building types handed down from Antiquity were adapted to the new needs and local traditions. It is noteworthy, for example, that despite their apses, the emphasised main access into the Carolingian halls was not via their longitudinal, but via their transverse axis, as can be seen in traditional Frankish houses or in the refectory in the Plan of Saint Gall[24]. This indicates that the reason for the adoption of forms was not the accommodation of ancient ceremonials.

Based on new reconstructions, the analysis of the building types shows that the designers did not intend to imitate either the Aula Palatina in Trier or the Lateran Palace in Rome, with the aim of creating politically motivated references to previous rulers. Metaphors used in Carolingian written sources to describe the palace of Aachen – such as the »second« or »future Rome«, the »Palace of David«, or »sacred palace« – also do not provide conclusive evidence for an original design idea for the Aachen palace complex[25].

In the end, it can only be surmised that for the buildings in Aachen, elements were borrowed from a representative and particularly ambitious architectural language that was well known beyond the borders of the early-medieval realms in Europe, in order to illustrate the comprehensive claim to power that characterised the Franks' rule[26]. Thus, the new combination of architectural forms derived from different cultural areas probably not only impressed the Franks themselves, but also was comprehensible for the emissaries who travelled to Aachen from Rome, Constantinople, Jerusalem, and Baghdad.

22   The Aulas of the Praetorium in Cologne, in the bishop's palace in Geneva, in the palaces of Ravenna, and in the now-lost palace of Pavia, for example.
23   For example the triclinium of Pope Leo III in the Lateran Palace.
24   Cf. Ley/Wietheger 2014.
25   That architectural forms were designed on the basis of linguistic images only can be established when this equation is based on a tradition the

development of which can be traced in surviving buildings: cf. Ley 2018; Luchterhandt 2015; cf., however, the theories of early research, which are derived solely from historical sources: Ley 2015.
26   For the Frankish claim to power, see Weinfurter 2011, esp. 45.

Construction Style

The structural quality of the Palatine Chapel and the importance of the palace of Aachen repeatedly have been highlighted in Carolingian written sources[27]. At the same time, it becomes clear that these ambitious construction projects – at a time when since the end of the Roman Empire only few large-scale stone buildings had been erected to the north of the Alps – posed a special challenge. To realise them, the engineering knowledge and crafting skills of the time had to be brought together in Aachen[28]. This is demonstrated in the architecture of the buildings in Aachen, which is based on carefully considered logistics and in which – like the construction forms – current and ancient techniques were recombined[29]. Inspired by old traditions are the red mortar, which was mixed with brick chippings and -dust and as a result had hydraulic-setting qualities, the use of claw chisels, or the use of wooden and iron tie anchors for the construction of vaults[30]. These were techniques that either still could be observed in surviving Roman buildings, or could have been brought to Aachen from Byzantium and Italy, for instance by Langobard craftsmen. Other methods – such as the construction of load-bearing areas out of large ashlars and their rough dressing with flat tools as well as vaults featuring mortared, usually light arch stones that rest on a vault springer made of hard stone – refer to techniques that were used by artisans who introduced their knowledge of construction styles employed in present-day Spain[31]. As with other Carolingian buildings, regional material resources systematically were utilised – in this case, greywacke from the vicinity of Aachen and travertine from the Eifel mountains in particular. This requires a high quality of local craftsmanship, too.

It has been established that already during the Merovingian period, qualified craftsmen from the areas mentioned above were recruited and exchanged between work sites[32]. They were the keepers and preservers of skills and knowledge that had survived only sporadically after the end of the Western Roman Empire. Thus, their skills had to be transferred from one construction site to the other. Any large-scale building site, such as the one in Aachen, where various building crews came together, in turn constituted a focus for the increase of knowledge and a melting pot for the development of new building styles. As specific skills were tied to the only very coarsely networked construction crews, there neither existed in the Carolingian Age a standardised building technique, nor did one develop evenly[33].

Residential Buildings and Periphery

The residential buildings are depicted so richly in the written sources that we have to imagine the representative buildings described above as embedded in an urban framework. Unfortunately, there are few archaeological finds to corroborate this: on the one hand, there is a relatively high volume of Carolingian-Age objects in the immediate vicinity of the core buildings of the palace, but on the other hand, no newly founded building structures can be associated with it. In 2020, part of a Carolingian-Ottonian building on Hartmannstraße, close to its junction with Münsterplatz, was excavated that featured a combination of posts and walls set in clay. Even pit houses, usually so characteristic for early-medieval settlements, are completely absent in Merovingian-/Carolingian-Age Aachen. In contrast, the dismantling and demolition layers of the last-phase Roman-Age stone buildings date as late as the 12th century. This allows the conclusion that throughout the entire Early Middle Ages, numerous Roman buildings – at least in parts – remained usable[34]. In the area to the west of the core palace, the existence of a square-like structure was established that included a substantial stone well (**fig. 2**). Perhaps this was the site on one of the markets. Within a radius of about 500 m around the core palace, several find spots are documented where evidence was found for rich building décors – such as tesserae of glass and gold-leaf or fragments of cut coloured marble platelets that were part of the floor decoration called *opus sectile* – that has survived, for instance, in its original condition in small areas in the upper floor of the Palatine Chapel. Ditches also have been encountered, which probably

27 Einhard, Vita Karoli Magni, ch. 17, p. 20; cf. ch. 26 (ed. p. 30 sq.).
28 Weise 1919/1920; Erb 1983.
29 Heckner/Schaab 2012; 2016; Ley 2016; Schaub 2023.
30 Cf. Maintz 2016.

31 Cf. e. g. de los Ángeles/Agudo 2010; Arbeiter 1996, 12-43.
32 Claude 1981.
33 Ley/Papajanni 2020.
34 Schaub 2014.

surrounded hall-like residential houses rather than having a fortificatory function. Possibly, this was supposed to concentrate the accommodations of higher members of the imperial administration in settlement islands.

It is still unclear where the residences of the ruler himself were located. Perhaps they also might be found inside the Late-Roman fortification on the Markthügel. The answer to this question, however, must be left to future investigations.

Supplement

While the article for this volume was being written, a limited excavation was conducted on the east side of the Katschhof, about 20 m north of the so-called North Annex (**figs 2. 4**), which produced evidence of a previously completely unknown stone building belonging to the Carolingian-Age palace. This is represented by a wall foundation, running in a NNE-SSW direction, and flooring on the wall's eastern side, which originally consisted of greywacke floor slabs in a thin mortar bed. Constructed during the Carolingian Age, the building was torn down in the early 12th century. The levelled demolition debris yielded diverse evidence of craft activities (e. g. slags, crucibles, quartz fragments).

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