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The Medieval Masons' Lodge as Paradigm in Peter Behrens's *Dombauhütte* in Munich, 1922

Ross Anderson

It is my dearest wish no longer to speak of art, rather, that we, those of us who concern ourselves with the field, had the right to call ourselves craftsmen.

It is therefore understandable that we came to give our building the name *Dombauhütte*. Our work should once again make us proud to take part in activity previously considered the craftsman's honor. The fervency of such productivity was at its strongest in the Middle Ages, at the time of the *Bauhütten*, the working communities of the builders and stonemasons, united in a common spirit. Their life and their creations were founded on regulations, whose rules they guarded as strict secrets. . . . —Peter Behrens, "Die Dombauhütte," 1923¹

Something of an enigma, Peter Behrens's temporary exhibition building the *Dombauhütte* at the *Deutsche Gewerbeschau München 1922* (1922 German Exhibition of Applied Arts in Munich) has resisted convincing interpretation.² It is eccentric both on the level of visual appearance and in respect to the architecture of modernism, which Behrens (1868–1940) is generally ascribed a central role in establishing. A small rectangular masonry pavilion with walls executed in polychromatic brick patterns of interpenetrating chevrons, it exhibits a built durability contrary to the transience of its purpose (Fig. 1). It is immediately apparent that the architectural paradigm drawn on is the Late Gothic chapel. Of a similar scale, it is longitudinally symmetrical running east to west and has a single centered entry, an abstract apse, and a regularly divided facade mirroring an internal nave–bay composition. The *Dombauhütte* is complete with buttresses, abstract gargoyles, and stained-glass windows. This impression of a Gothic chapel is further amplified in the interior (Fig. 2). Exposed brick walls and rustic timber rafters are dimly lit by the narrow stained-glass side windows, with the exception of the rendered apse, its smooth white plaster illuminated by skylights out of view from the nave (Fig. 3). It is endowed with carefully placed Expressionist exhibits with the character of church furnishings, including an altar, pulpit, baptismal basin, and devotional sculptures. An array of three large floor mosaics occupies the nave. Though there is much that is symbolically explicit, a great deal has remained either implicit or hidden.

Once the architectural sources that attend the motif of the medieval *Bauhütte* are investigated, a more complete picture of Behrens's intentions reveals itself. The *Bauhütte* has an extensive history in German architecture. Originally the medieval German masons' lodge, it enjoyed a rebirth in the context of a progressively more secular and scientific culture, acquiring a quasi-mythical status in German Romanticism.³ It became a vehicle of aspirations for cultural renewal, embodying a vision of "creative making" that stood up against industrialization. As such, it contributes to an understanding of

the dilemma of "creative culture" that is the ongoing Romantic legacy: the coupling of remorse at current conditions with the confidence to do something about them.

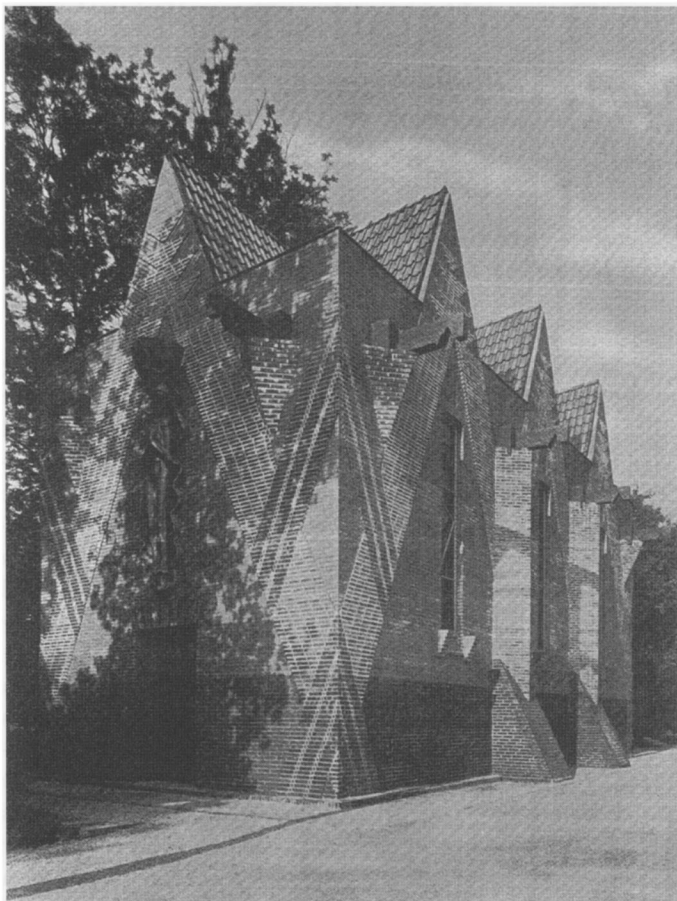
In 1928, Joseph Cremers produced the first critical writing on Behrens's *Dombauhütte*.⁴ He is enthusiastically supportive of the enterprise, labeling the building an ark of post-World War I religious art. He applauds Behrens's rejection of objectivity (*Sachlichkeit*) in favor of returning to the emotive realm of primal Christianity (*Ur-Christentum*) as a more profound reflection of the times, as well as his turning away from the contemporary tendency to exhibit exemplary individual works in favor of the collective product of a working community.

The building has received remarkably little attention from recent architectural scholarship, where it is mostly treated as an adjunct to the much larger Höchst AG Technical Administration Building, alongside which it stands chronologically and thematically.⁵ The grounds for neglect are manifold. As a temporary building, in existence only from May to October 1922, it offers comparatively little documentary material on which to base an interpretation. False conclusions derived from insufficient evidence have been passed from one author to the next. Alan Windsor writes of the wooden beams of the roof structure protruding through the wall to the exterior and being supported by corbels and buttresses.⁶ Wolfgang Pehnt repeats this assertion.⁷ In photographs, this appears to be true, as the beams and "gargoyles" are horizontally aligned. However, Behrens's drawings clearly reveal them to be two distinct elements (Fig. 4). Stanford Anderson provides a concise rendering of the general concerns involving the *Dombauhütte* in the context of Behrens's work in the interwar period.⁸ As his goal is to explicate the meaning of the building within the framework of Behrens's work as a whole, he has little interest in portraying the building comprehensively.

The *Dombauhütte* indeed proves difficult to convincingly situate within the rest of Behrens's work, appearing much darker and unfamiliar. This is partly owing to the general reading of modern architecture as a teleological progression toward *Sachlichkeit*, marginalizing apparently uncomfortably regressive projects, among which the *Dombauhütte* is exemplary. In all, it has remained largely opaque to architectural investigation.

Ultimately, the *Dombauhütte* is neither as insignificant as recent scholarship implies nor as radically innovative as Cremers suggests. Behrens himself evaluated the building as a "modest attempt."⁹ Its study serves to clarify certain aspects of the problematic and only partially understood legacy of aestheticism and historicism that arise out of the Romantic ferment, in particular, the paradoxical claim of modern aesthetics to be simultaneously autonomous and culturally all-encompassing.

Behrens enlists the cultural and architectural legacy of the

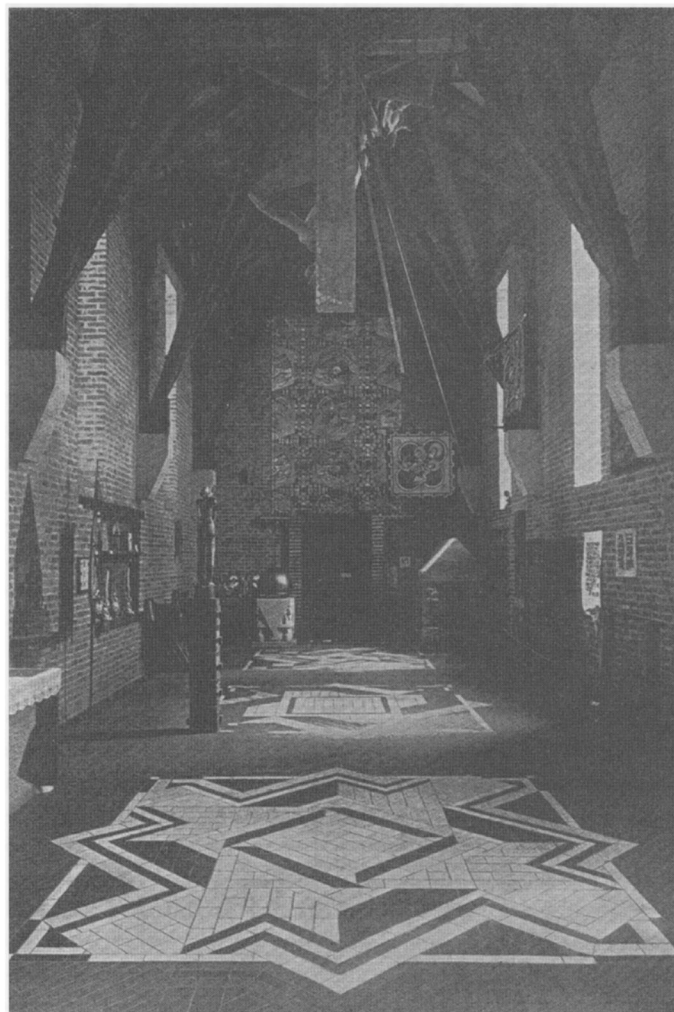


1 Peter Behrens, *Dombauhütte*, exterior. Demolished (photograph from Behrens, "Die Dombauhütte," 220, in the public domain)

Middle Ages in his ambition to revive cultural continuity, viewing it as a time of sophisticated mediation in the manifestation of the highest values. To this end, he effects a decantation of religious experience into aesthetic experience, illuminating the problem of meaning in secular culture. As the receptacle for values initially attached to the Gothic cathedral, the architectural motif of the *Bauhütte* is particularly helpful in pinpointing how architecture stands in respect to attempts to create or reground a culture as meaningful and comprehensive as the medieval society in which the original *Bauhütte* was situated.

Formally, the *Dombauhütte* is unique in Behrens's oeuvre, and viewed in isolation there appears little to warrant intensive study. Yet, when it is explored thematically, one realizes that actually far from being a radically willful one-off building, it raises issues more central both to Behrens's architecture and to modernism more generally.

There are very few sources to aid interpretation, making the building even more enigmatic. The contract stipulated that the building was to be demolished prior to handing back the site to the city of Munich on January 31, 1923, and recent aerial photographs testify to the lack of physical remains. Sources therefore consist solely of photographs, drawings, and contemporary testimonies. Only two exterior photographs have ever been in circulation. One of them has been reproduced particularly often, presumably because of its dra-



2 Behrens, *Dombauhütte*, interior looking toward the entry. Demolished (photograph from Behrens, "Die Dombauhütte," 222, in the public domain)

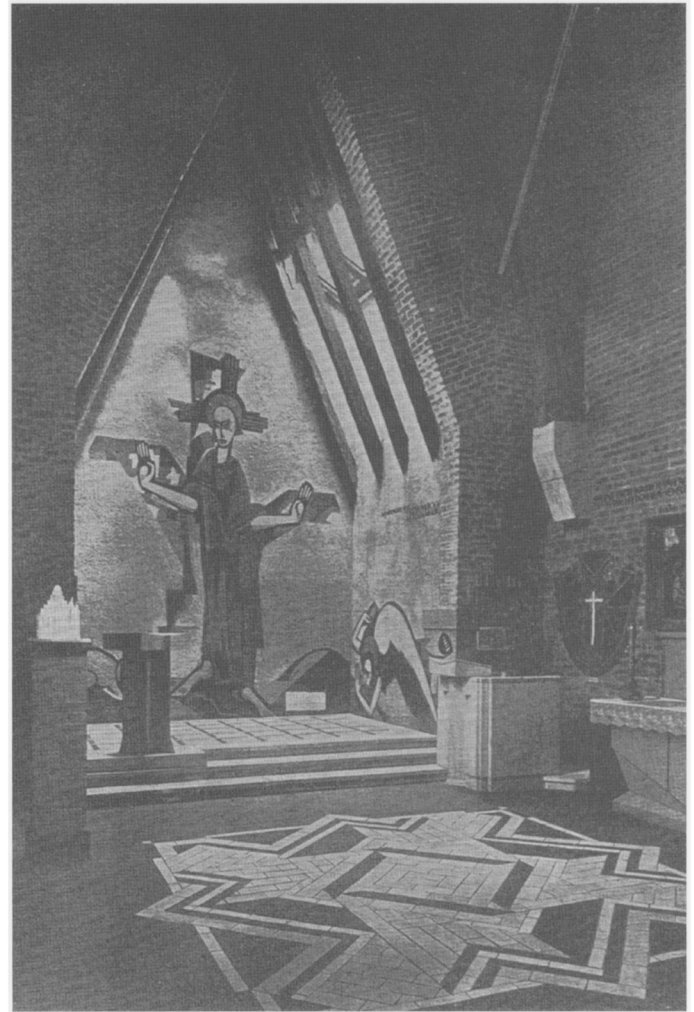
matic perspective (Fig. 1). The original was published in *Deutsche Kunst und Dekoration* in 1923, accompanying an extract from Behrens's speech at the official opening of the building. Since then the image has been poorly reproduced a number of times, tightly cropped with high contrast and significant loss of detail.¹⁰ The dappled shadows cast by the foliage, which subtly textures the facade of the original, appear to consume the building in the latter generations of the image. The *Dombauhütte* has become progressively more rudimentary and mysterious through historiographical study, as contrast has increased at the expense of clarity.

An interpretation of the genesis and architectural content of the *Dombauhütte* must be situated in respect to other responses in the arts to the terrible physical destruction and cultural turmoil caused by World War I. Some artists and architects sought a fundamental reevaluation of the trajectory of modern technology, promoting a collective return to craft that was often modeled on religious working communities. In 1929, Behrens himself revealed in a letter to August Hoff that in the church he recognized "a counterweight for our modern times against the materialism, the all too pervasive *neue Sachlichkeit* of the new age."¹¹ The *Dombauhütte* furnished Behrens with an opportunity to unite his conviction

that craft is the basis for good architecture, outlined in *Über die Beziehungen der künstlerischen und technischen Probleme* (Concerning the Relationship of Artistic and Technical Problems), 1917, and *Reform der künstlerischen Erziehung* (Reform of Artistic Education), 1919, with the spiritual unity of a religious working community.

The primary source for the concrete historical background of the exhibition used here is the *Amtlicher Verwaltungsbericht der Ausstellungsleitung* (Official Administrative Report of the Exhibition Executive), authored by Edwin Redslob. This summary document chronicles the events leading to the exhibition, noting that from 1919 there had been repeated calls for a German exhibition of applied arts, especially through articles in the journal *Münchener Bund*. Munich was selected over other interested cities once its two mayors declared themselves willing to provide substantial financial assistance as well as the grounds for the exhibition, and the Deutscher Werkbund and the Verband Deutscher Kunstgewerbevereine (Federation of German Applied Arts Societies) pledged their full cooperation. The Verein zur Abhaltung einer Deutschen Gewerbeschau 1922 in München (Council for the Production of a German Exhibition of Applied Arts in Munich, 1922) was founded on January 21, 1920, with the express purpose of producing the event and was to be dissolved on its closure. In February 1920 letters were sent out to artists and craftsmen all over Germany asking for expressions of interest. The site was the Theresienhöhe, a large open park in Munich, and most exhibits, divided into sections including ceramics and glass, furniture, sculpture, and graphic design, were housed in large exhibition halls, though a number of smaller pavilions, including the *Dombauhütte*, were specially fabricated (Fig. 5). The report succinctly addresses the aspirations and submissions of the various exhibitors. The events surrounding the decision to construct a building with the name *Dombauhütte* at all, and Behrens's selection as architect, remain unclear. Redslob notes that some of the buildings were commissioned directly and some were the product of invited architectural competitions. One page, specifically dedicated to the *Dombauhütte*, is dominated by a lament that the building and its artifacts were received with such negativity and misunderstanding, particularly given that it was among the entries most concerned to engage communal understanding in its creation and its message. Behrens claims to have contributed to the designation of the building, and Redslob refers to him as "Meister der Dombauhütte." Taking this into account, and given his status as a founding member of the Deutscher Werkbund, a co-convenor of the exhibition, we can confidently assume he enjoyed a great deal of architectural autonomy.

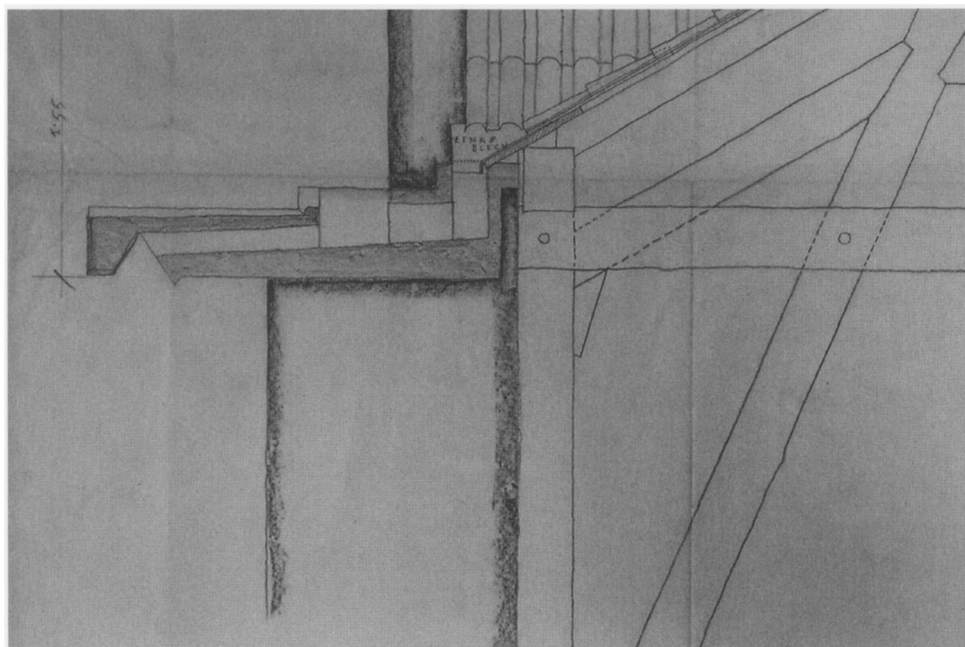
Though Behrens's *Dombauhütte* predominantly seeks to partake in the paradigm of the Gothic chapel, a brief discussion of the architectural identity and the institutional life of the original masons' lodge outlines the attraction of the *Bauhütte* and indicates why it was deemed a worthy architectural motif in the context of a handicraft exhibition. The architectural identity of the masons' lodge stood in a dialectical relation with the cathedral. Devoid of architectural self-interest, the rudimentary and compact *Bauhütte* channels attention toward the cathedral. As an illustration, the *Bauhütte* in Jan van Eyck's oil painting *Saint Barbara*, 1437 (Fig.



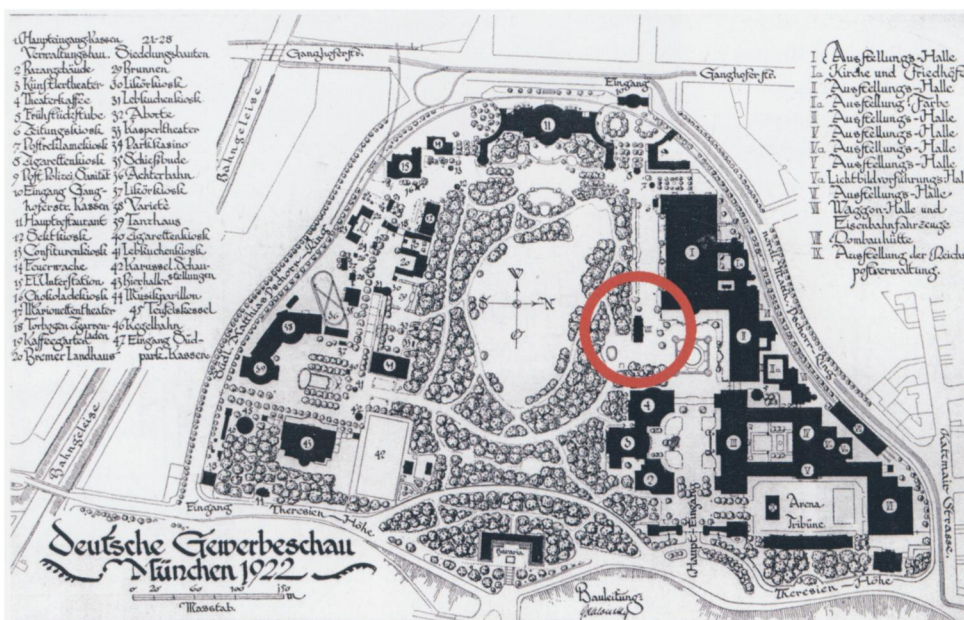
3 Behrens, *Dombauhütte*, interior looking toward the choir. Demolished (photograph from Behrens, "Die Dombauhütte," 224, in the public domain)

6), is a simply roofed but otherwise unenclosed shed—the diminutive complement to the emergent building on which the masons are active. It appeals to the modern mind through the virtues of modesty, earnestness, and, most important, the powerfully creative ability to realize the cathedral's construction. The physical building of the medieval *Bauhütte* belies the sophisticated representational apparatus that its masons deploy. It was the house of the institution, without representational content, whereas the cathedral was the focus of a universal iconographic program.¹² In the medieval situation, decisions regarding the cathedral emerged from dialogue between sophisticated theology and concrete building practice, exercised in an elaborate chain of communication crossing classes and disciplines. It is the post-Enlightenment loss of this common orientation that Behrens laments: "architecture is still not an occasion of what is common, as it was in the Middle Ages."¹³ He saw in the *Dombauhütte* an opportunity to reinstitute a collective creative orientation:

It [the *Dombauhütte*] was not intended to be a showing off of willful objects, rather, a spatial composition achieved by forces of a similar sensibility. Only those with a sensibility



4 Behrens, *Detail Dachdeckung* (Roof Detail), 1922, scale 1:10, pencil on ammonia print, 36 × 28½ in. (92 × 72 cm). Staatliche Museen zu Berlin—Kunstbibliothek, 1978.62-144 (artwork © Artists Rights Society [ARS], New York/VG Bild-Kunst, Bonn; photograph by the author)



5 *Deutsche Gewerbeausstellung München 1922*, Plan des gesamten Ausstellungsgeländes (plan of the entire exhibition site), drawing signed by Gablonsky, Superintendent of Buildings, 1922

for the resonance of the whole were allowed to participate. I know that people have accused our work of not being made in the spirit of our age of the car and the aeroplane; rather, we have taken a “romantic direction” through the strong emphasis on craftsmanship. Okay, good. That is how it should be! There is nothing we need more than a little romanticism, to make life more attractive, to make contemporary life at all bearable.¹⁴

It is pertinent that Behrens should speak of Romanticism, though he was responding to the popular understanding of the romantic as whimsical and backward looking. In actuality, his ideals and architecture are genuinely indebted to early Romantic thinking and are best understood with reference to this cultural movement commencing with Johann Wolfgang von Goethe and August and Friedrich von Schlegel. In *Von*

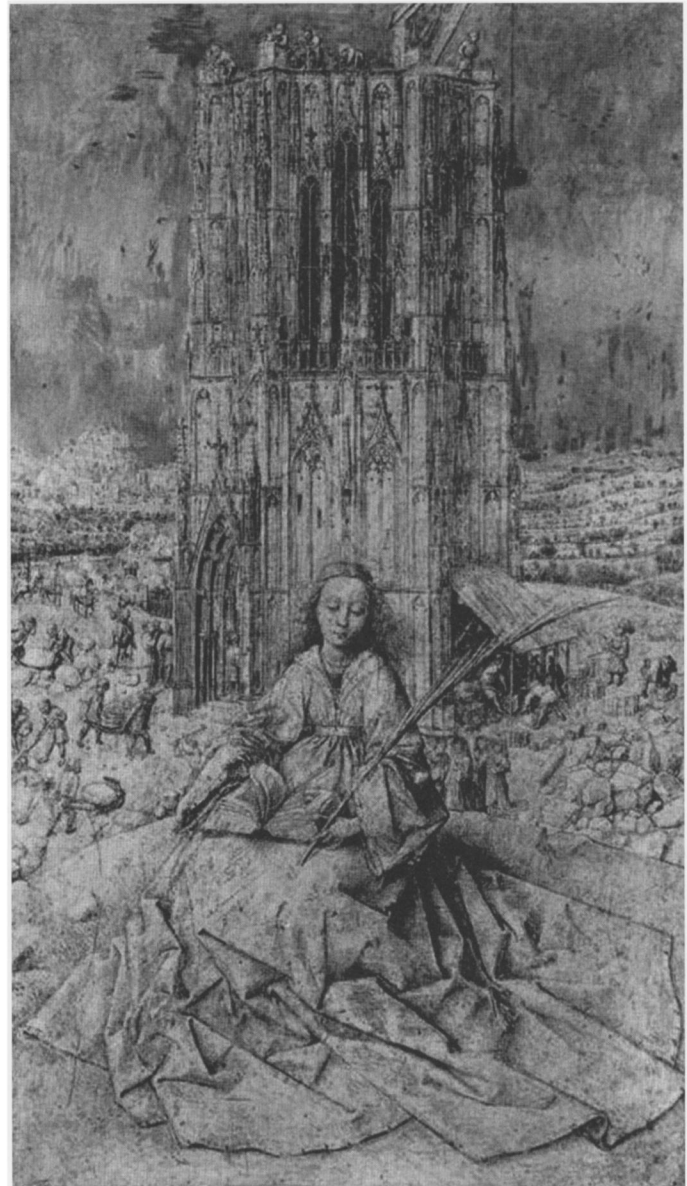
deutscher Baukunst (On the German Art of Building), Goethe wrote provocatively of Strasbourg Cathedral as a work of art created by Erwin von Steinbach, boldly pronouncing that “this characteristic art is now the single true art. . . whether born out of raw wildness or of educated sensibility, it is utterly alive.”¹⁵ Tellingly, Behrens also mentions von Steinbach in his opening speech for the *Dombauhütte*: “at the time of the *Bauhütten* . . . there was no distinction between handicraft and art. Erwin of Steinbach, the designer of Strasbourg Cathedral, belonged to such a *Bauhütte*.”¹⁶ This is at the very least an indication of sentiments Behrens shared with Goethe, and conceivably an intentional reference.

Though it is less easy to speak of a literary prehistory to Expressionism than is the case with Romanticism and the Gothic Revival, there are definitely resonances between the

arts. Two texts serve in tandem to illustrate this coincidence of conviction. Wilhelm Worringer's *Abstraktion und Einfühlung* (Abstraction and Empathy) from 1907 and Karl Scheffler's *Der Geist der Gotik* (The Spirit of the Gothic) from 1917 revive the early Romantic polarity of classical (Greek) and medieval (Gothic).¹⁷ Scheffler's "spirit" of the Gothic is a direct echo of Goethe's "characteristic art"; in fact, he writes that the young Goethe was correct when he announced in his Strasbourg text, "Art creates forms long before it is beautiful, and true, great art is often truer and greater than beauty itself."¹⁸ Though it is unclear to what extent Behrens critically engaged with Scheffler's writings, it may be assumed he was generally familiar with them.¹⁹ Key phrases in *Der Geist der Gotik* read as a rallying cry to artists and may be read into Behrens's specific intentions, such as: "that which is the most revolutionary is also always that which is the most Gothic," and further that the Gothic "stands there in all its glory in turbulent times, when new ideas dawn, when problems are to be solved and duties are to be violently fulfilled. It belongs to the heroic age of the spirit."²⁰ Cremers suggests that "Romantic, as understood by Behrens, is thus the battle of the becoming with that which exists. It is the battle of the personality, in which the strengths of a people are sublimated, with the spirit of the future."²¹

Bearing this debate in mind, Behrens's commitment to the Gothic in the *Dombauhütte* stood as a significant personal gesture. Its contemporary resonance is not to be underestimated, particularly given his previous affiliation with classicism in projects such as his Kunsthalle (Hall of Art) pavilion at the *Nordwestdeutsche Kunstausstellung* (Northwest German Art Exhibition) in Oldenburg, 1905.²² He belonged to a generation with high esteem for traditions, even if reified as formal idioms. The Gothic-classical issue is marginalized in high modernism, as questions of style are suppressed in favor of the twin notions of space and function on the one side and radical personal expression on the other.

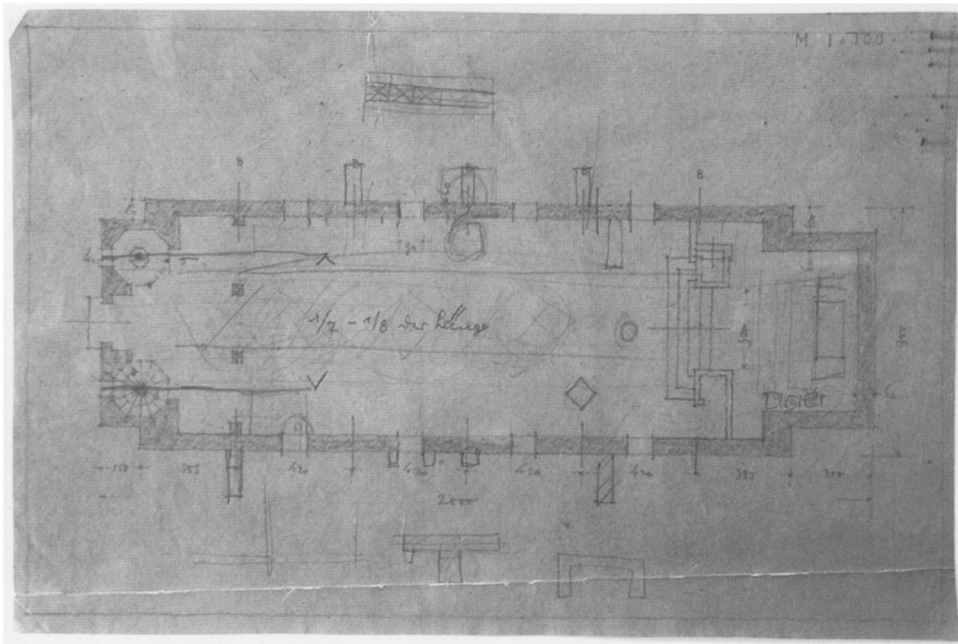
The historical allusion to the Gothic chapel in the *Dombauhütte* was even stronger in early design drawings, which indicate two spiral stairwells flanking the entrance, implying gates for entry into the Heavenly Jerusalem (Fig. 7). The spiral stairwells, however, also provide a compelling link to the symbolism of Solomon's Temple when considered in conjunction with the orientation of the *Dombauhütte*. Whereas it had been the medieval practice to draw plans with east at the top of the page, in recognition of its ontological precedence, by Behrens's time the architectural convention of drawing with north at the top was generally established, as cartographic accuracy had assumed precedence over symbolic import. Most readers of the *Dombauhütte* plans, informed by common architectural convention, would assume north to be at the top of the page, situating the choir to the east and scarcely warranting comment. Yet Behrens never actually provided a symbol for north on the plans. It is not until the site plan for the entire exhibition is carefully consulted that orientation becomes a major concern (Fig. 5). Behrens has drawn his plan with south at the top of the page, inverting general convention. The choir that until now has been implicitly equated with both liturgical and magnetic east actually faces due west. This has never been remarked on. Although such an orientation is evidently contrary to that of the



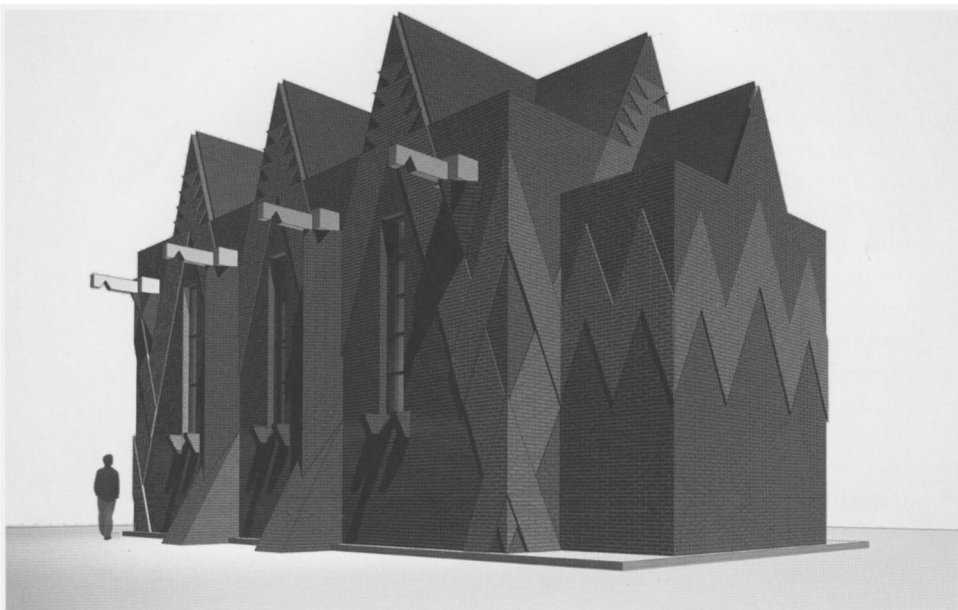
6 Jan van Eyck, *Saint Barbara*, 1437, silverpoint, $13\frac{1}{2} \times 7\frac{1}{2}$ in. (34×18.5 cm). Royal Museum of Fine Arts, Antwerp (artwork in the public domain)

Gothic chapel, it is exactly aligned according to the biblical description of another major architectural paradigm, that of Solomon's Temple in Jerusalem. This realization prompts at least a partial rereading of the twin spiral stairwells flanking the entrance in an early design proposal, an idea that was abandoned during the design process and has subsequently never featured in discussion on the building.

The construction of Solomon's Temple, including a detailed description of its dimensions, layout, and furnishings, is documented in 1 Kings 6–7 and 2 Chronicles 3–4. According to the biblical description, the entrance porch to the temple faced the east, where it received the rising sun. It was flanked by two columns, Joachim to the north and Boaz to the south. Representing universal dualisms, these spiral columns have together become a significant architectural symbol, frequently reinterpreted throughout history both as simple columns and as towers with spiral staircases.²³ Though



7 Behrens, ground-floor plan, 1921, scale 1:100, pencil over blueprint on opaque brown paper, $8\frac{1}{2} \times 13\frac{1}{2}$ in. (22×34 cm). Staatliche Museen zu Berlin—Kunstbibliothek, 1978.62-55-77 (artwork © Artists Rights Society [ARS], New York/VG Bild-Kunst, Bonn; photograph by the author)



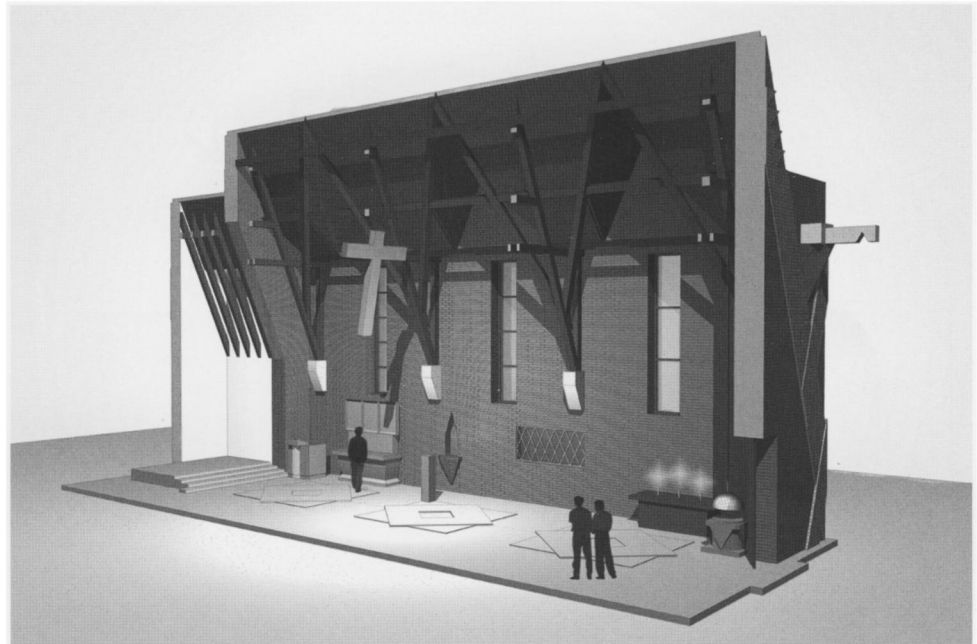
8 Behrens, *Dombauhütte*, oblique exterior perspective looking toward the apse (computer rendering by the author)

not detached from the main body of the building, Behrens's proposed spiral stairwells protruded through the entry facade, forming a porch configuration. The temple symbolism does not negate the medieval reading. It is rather further evidence that Behrens drew sustenance from the paradigm of the Gothic chapel, while reading through it to establish a connection to the more ancient paradigm of Solomon's Temple.²⁴

Though the building was dismantled after the exposition and only a couple of enigmatic, heavily recycled photographs of it are in circulation, folios of drawings yield a remarkably complete rendering of the building. Until now, recourse has rarely been made to these drawings, which are broadly representative of the original sketch and working drawings produced in Neu Babelsberg and Vienna in 1921 and 1922. The most significant collection is archived in the Kunstbibliothek in Berlin, in four folios labeled "Gewerbeschau München

Dombauhütte 1922."²⁵ This set is augmented by a smaller collection in the Pfalzgalérie, Kaiserslautern.²⁶ In addition to architectural drawings, designs exist for features such as the altar, pulpit, and niches. A number of drawings host small, lightly drawn sketches around the edges. Most drawings were made with graphite pencil on drafting paper, and some are ammonia blueprint copies sketched over in graphite or colored pencil. Though an associate has clearly drawn a number of sections,²⁷ the majority of drawings evidence Behrens's drawing and labeling technique, familiar from other projects. To assist interpretation of the building in this study, a faithful three-dimensional computer model was constructed to enable, for the first time, observation of the building in its entirety (Figs. 8, 9).

It is well documented that geometry and proportions were central to Behrens's architecture, particularly in earlier build-



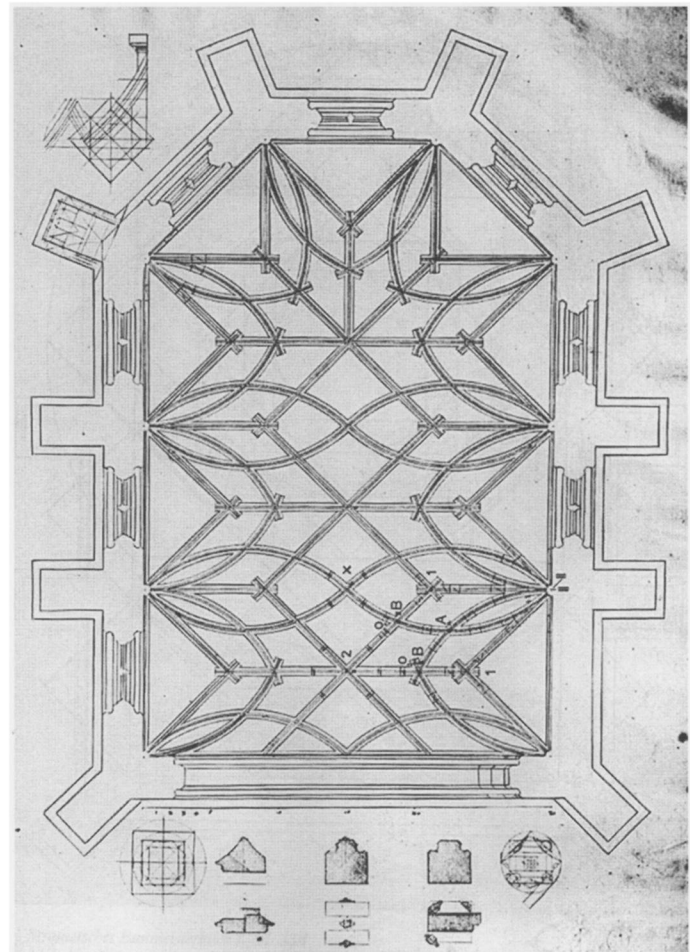
9 Behrens, *Dombauhütte*, longitudinal sectional perspective (computer rendering by the author)

ings where the systems he used are very explicit. In 1913 Fritz Hoeber observed that “in his energetic striving after impressional spatial clarity, Behrens actually only concerned himself with geometric surface-proportions and fearfully avoided purely arithmetic number games.”²⁸ Behrens himself spoke often of the geometric systems used by the “ancients,” claiming that they

composed geometric constructions that provided helping lines and helping figures, which determined the size relationships, the dimensions and the division of the building. This is in contrast to our times, where everything is determined by scale, through numbers that are arithmetically derived. . . . The derivation of proportions through this kind of measure often maintained itself through the Middle Ages as the secret of individual *Bauhütten*.²⁹

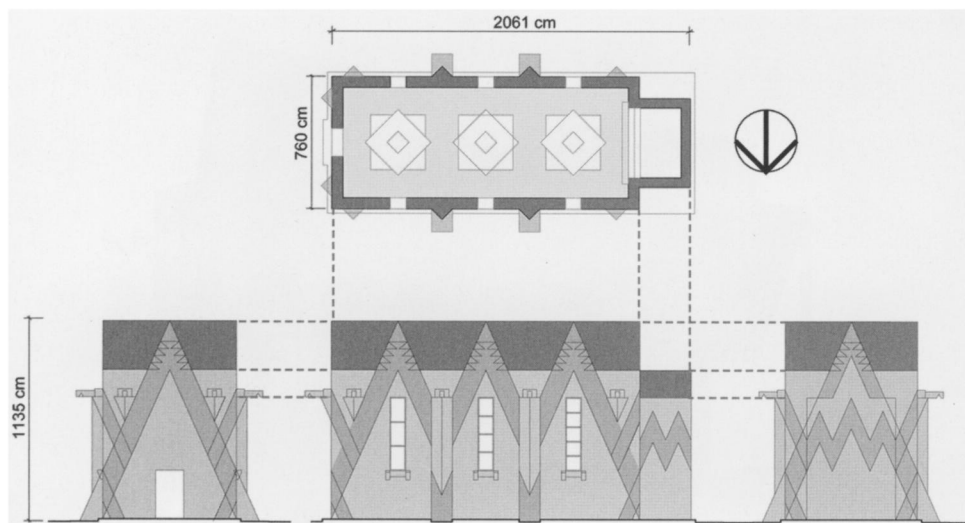
In 1917 he again wrote that it was “above all in the Gothic *Bauhütten* where at all times the laws of architectural design based on regulatory geometrical systems were practiced.”³⁰ Given Behrens’s professed and practiced dedication to geometric systems as generators of architectural form, as well as his repeated references to the medieval *Bauhütten* as the places where building secrets were maintained, it seemed reasonable to assume both that geometry would play a central role in the design of the *Dombauhütte* and that the system would not have been made readily apparent.

A brief review of the typical architecture of the medieval chapel illuminates why and how Behrens worked with it as a paradigm and supplies a standard for the subsequent discussion on the geometric disposition of the *Dombauhütte* plan (Fig. 10). Gothic chapels and drawings are valuable sources, but equally valuable are texts written by masons themselves. The setting out of the plan on the medieval building site as disclosed by Lorenz Lechler in his *Unterweisungen* from 1516 affords a sound vehicle for understanding the origins and meaning of the geometry and its symbolic import. The two

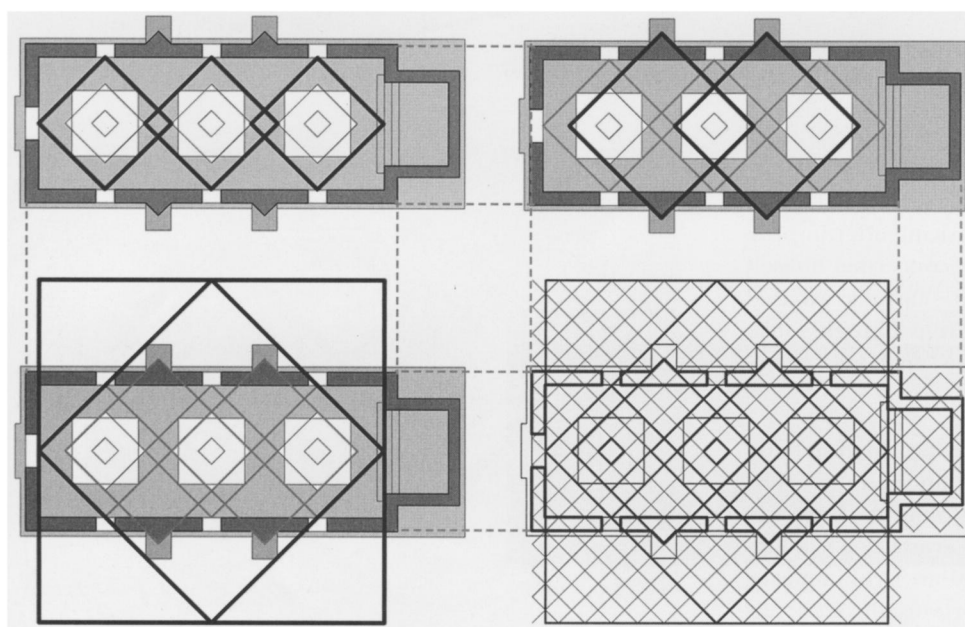


10 Composite plan for a late medieval chapel, *Stromersches Baumeisterbuch 1*, 16th century, fol. 235. Stromersche Kulturgutstiftung Grünsberg / Germanisches Nationalmuseum, Nuremberg (artwork in the public domain)

fundamental operations are derivation of an orientation and the inscription in the ground of a boundary figure. The primary axis and direction of the building are found by



11 *Dombauhütte*, plan and elevations (drawing by the author, after Behrens)



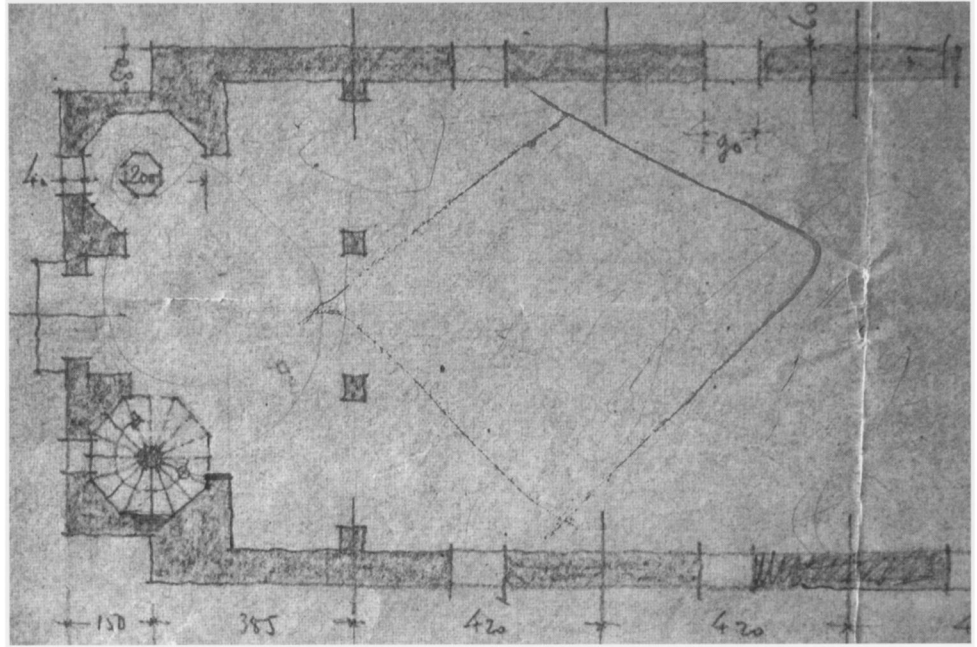
12 *Dombauhütte*, plans, possible geometric schema (drawing by the author)

"turning toward the direction in which the sun rises."³¹ That is, liturgical east is founded anew. The second action is the founding of the primary dimension out of which all others are derived, that of the internal width of the chapel: "The building has its exact law and rules of organization, since all components must correspond to the work, and the entire work must reciprocally correspond to the components. The choir is taken as the foundation and basic regulation of the whole building."³² A geometric procedure known as *Quadratur*,³³ which is an order of rotated, inscribed squares, was then used to extrapolate from the primary dimension measurements required for building components at all scales, from overall internal dimensions to the length of vaulting ribs, wall thicknesses, and even window mullions. The following interpretation of the *Dombauhütte* is made with its medieval precedent kept in mind.

Computer drawings based on Behrens's final drawings serve to recover the geometric system he used (Fig. 11). The fine dimensioning of the original plans made it possible to test the accuracy of reconstructions with a great deal of

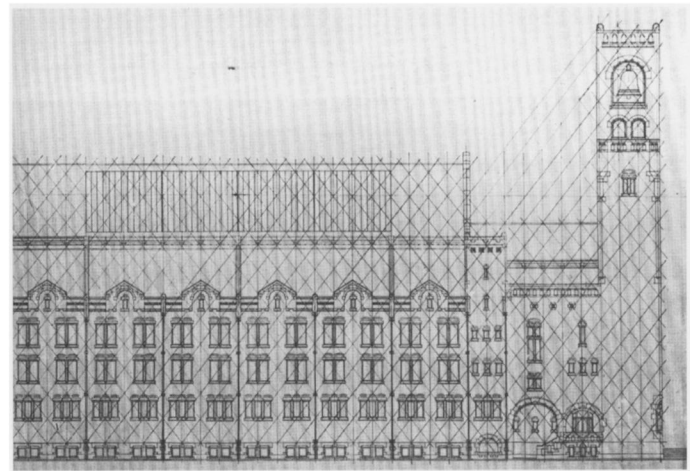
certainty. It becomes apparent that the geometric system is actually a composite of separate initiatives. The first configuration is an order of rotated squares, devolving from the *Quadratur* method of the medieval masons (Fig. 12),³⁴ which resulted in a square grid rotated through 45 degrees that successfully coordinated the disposition of the plan: overall interior and exterior dimensions, wall thickness, location and dimensions of the buttresses and attached piers, location of openings, and location and dimension of the floor mosaics. The central square of each mosaic is exactly one grid unit, furnishing a discreet pointer to the grid's existence and its symbolic centrality. The near miss in respect to medieval *Quadratur* configurations is provocative, as though Behrens wanted it to be *like* the medieval precedent without being the precedent. The question arises why the figures and grid matter, and, just as significantly, why they were so well hidden. A solitary clue exists in an early floor plan that hosts diamond shapes very faintly sketched in pencil (Fig. 13). Perceptually, the grid remains an implicit phenomenon. Speaking more generally, a grid can be read as an extensive

13 Behrens, ground-floor plan, detail, 1921, scale 1:100, pencil on blueprint on brown paper, $8\frac{1}{2} \times 13\frac{1}{2}$ in. (22×34 cm). Staatliche Museen zu Berlin—Kunstbibliothek, 1978.62-55-77 (artwork © Artists Rights Society [ARS]/VG Bild-Kunst, Bonn; photograph by the author)



matrix that is the first step in wresting order from chaos, constituting a new beginning. In this instance, however, the grid is a secondary derivation from the primary rotated square figures. These kinds of intensive geometric figures are qualitatively different, participating in fundamental symbolic orientation, driven by dialectics such as up-down and center-periphery. Examples are masons' marks, mandalas, and labyrinths. When writing on Behrens's Kunsthalle at the *Nordwestdeutsche Kunstausstellung*, Oldenburg, Julius Meier-Graefe points out that "it is not numbers that are used as generators of space, but rather geometric figures. . . . relationships are not determined through calculation but rather through the underlying disposition of the geometric entities. . . ."³⁵

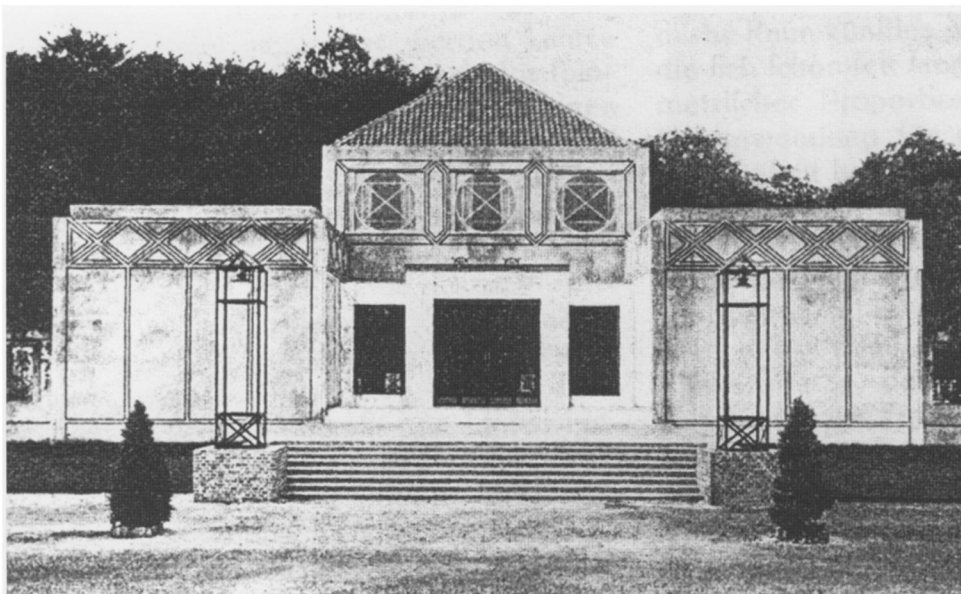
H. P. Berlage's *Nieuwe Beurs te Amsterdam* (New Amsterdam Stock Exchange, 1903) is a precedent famously based on a similar 45-degree grid (Fig. 14). It is often labeled a proportional system, though it is rather a relatively simple means of establishing the general sizing of elements within a field. The 1905 Kunsthalle Oldenburg presents an early example in Behrens's own work. Hoeber tells us that thorough mathematical deliberation suffuses the site in plan and elevation, and he provides a drawing of the geometric framework for the elevation of the Kunsthalle (Figs. 15, 16), noting that "a comprehensively applied system of parallel diagonals determines many of the outer and inner corner points of the body of the building and the outline of the facade as well as all openings. . . ."³⁶ This geometric derivation is made very explicit in the finished building by the black lines scored and painted in the white stucco facade. Two further studies demonstrate instances prior to the *Dombauhütte* of a rotated elevational grid in Behrens's architecture. Annemarie Jaeggi has reconstructed the geometry underlying the facade of the *Arbeiterhaus auf Golzengut* (Worker's House at Golzengut), Pommern, 1910, offering a preliminary pencil drawing sufficient to suggest the schema.³⁷ A more conclusive study is given by Fritz Neumeyer for the Wiegand House in Berlin-Dahlem, 1911.³⁸ His reconstruction demonstrates that facade



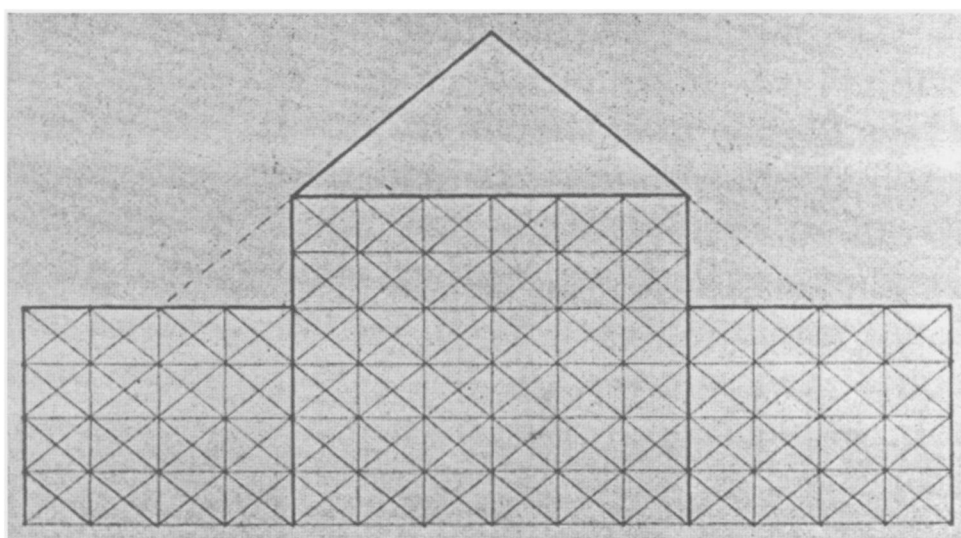
14 Hendrik Petrus Berlage, *New Amsterdam Stock Exchange*, elevation with grid schema, 1903 (artwork in the public domain)

elements conform closely with intersections of an underlying grid. It is significant that the grid functions as a regulating field, and also that larger figures are traced to establish controlling dimensions, as in the *Dombauhütte*.

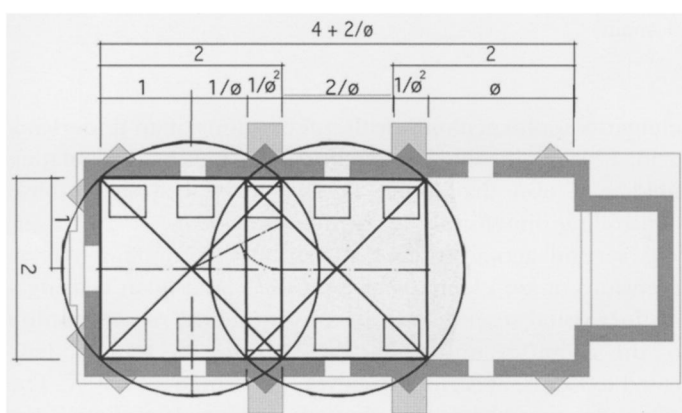
A second geometric reconstruction saw fundamental dimensions of key elements in the *Dombauhütte* plan bearing a distinct visual resemblance to a hypothetical reconstruction of the geometry underlying the Osirion, the temple dedicated to Osiris, at Abydos in Egypt, unearthed in 1901.³⁹ The reconstruction claims the plan was governed by the golden section. This is doubtful, since it predates Euclid by centuries and it has not been proven that the golden section was used systematically before his time. The question of archaeological truth, however, is irrelevant here, since the concern is not whether ancient Egyptians used the golden section but whether Behrens believed they did. In the late nineteenth and early twentieth centuries, Egyptian art and architecture became the focus of broad aesthetic speculation, particularly



15 Behrens, Kunsthalle Oldenburg, front elevation, 1905



16 Behrens, Kunsthalle Oldenburg, diagram of proportioning system, 1905 (artwork © Artists Rights Society [ARS]/VG Bild-Kunst, Bonn)

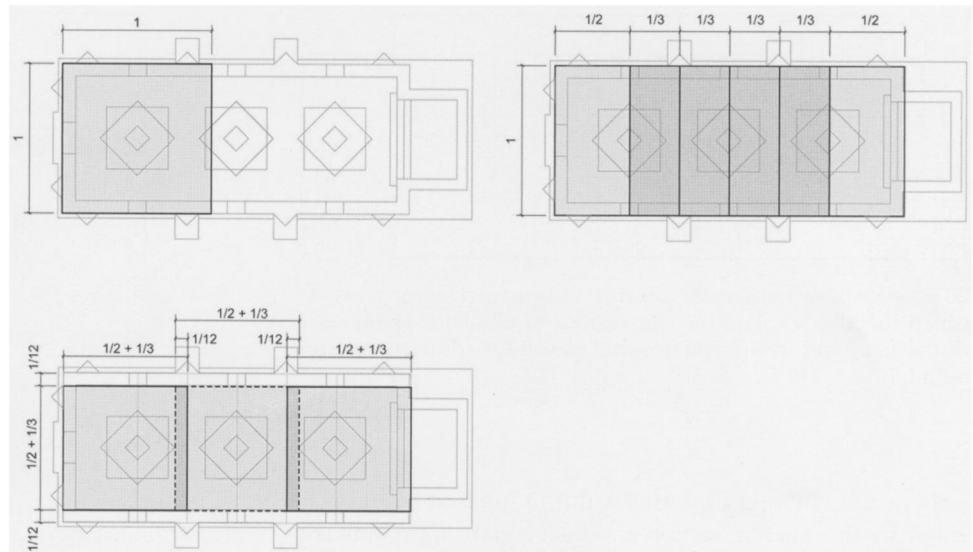


17 *Dombauhütte*, possible geometric schema based on the golden section, following the logic of the geometric schema of the Osirion, Egypt, as drawn by Lucie Lamy and published in Lawlor, *Sacred Geometry*, 62 (drawing by the author)

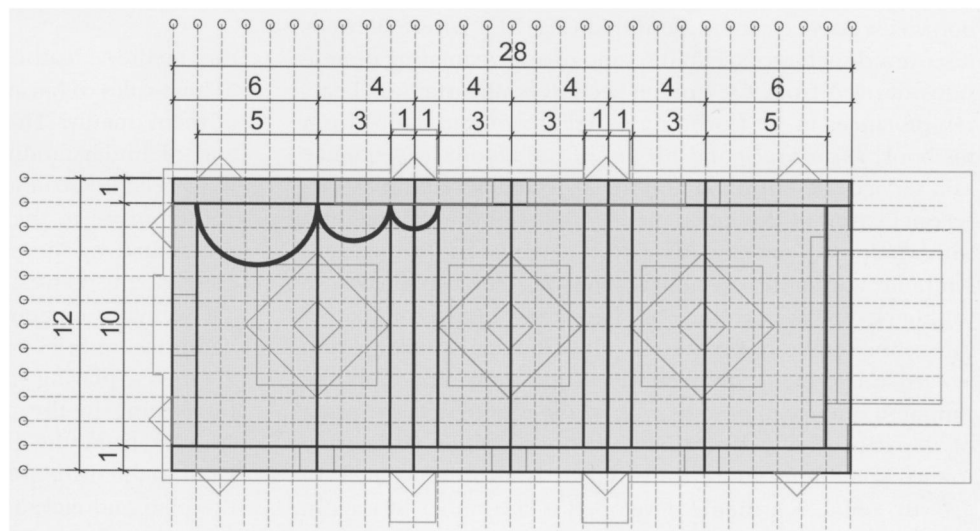
for artists and authors associated with the Beuron monastery in southern Germany, with whom Behrens had an enigmatic affiliation.⁴⁰ In 1898 Peter Desiderius Lenz, co-founder of the

monastery, published *Zur Ästhetik der Beuroner Schule* (Concerning the Aesthetic of the Beuron School). In this summary document of his aesthetic principles, he writes that “one must go back a long way to find the element that embodies above all the soul of religious art: typical, yet great in variation, serious, measured and built in harmony. We find it at the beginning of all art, in Egypt.”⁴¹ What is immediately striking in the Osirion reconstruction in respect to the *Dombauhütte* is the graphic correlation of fundamental dimensions. This resemblance was examined by drawing the *Dombauhütte* plan following the logic of the Osirion plan (Fig. 17), which derives from the golden section progression $1, \frac{1}{\phi}, \frac{1}{\phi^2}$.⁴² The internal width of the nave was adopted as the base dimension. When superimposed on the Osirion plan, the correlation is remarkably precise, revealing a discrepancy of only 0.61 percent (10 over 1639 centimeters, or $3\frac{7}{8}$ inches over 53 feet $9\frac{1}{4}$ inches). This suggested that Behrens likely had in mind application of the golden section in some manner. It will be demonstrated that he deployed the Fibonacci sequence to achieve a serviceable approximation of the golden section.⁴³

18 Square with edge lengths generated out of the width of the end elevation of the *Dombauhütte*, superimposed on the plan (above left); overall external dimensions of the nave of the *Dombauhütte* composed of halves and thirds of the square generated out of the width of the end elevation (above right); squares composed of halves and thirds of the square generated out of the width of the end elevation, overlapped to fit the overall external length of the nave, thereby aligning with the outside of the buttresses (below) (drawings by the author)



19 *Dombauhütte*, plan with primary dimensions expressed as nominators of twelfths of the square generated out of the width of the end elevation, then disposed as a grid (drawing by the author)



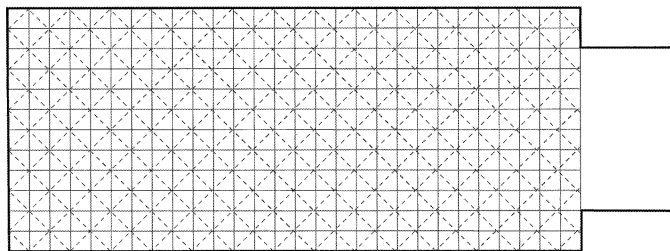
It is necessary to further describe the overall geometric order before articulating how this was achieved.

I began the third geometric reconstruction by scrutinizing the plan for a rational dimension. I identified the overall end width of the building as 7.6 meters (24 feet 11¼ inches), and constructed a square out of it (Fig. 18).⁴⁴ The result is that all significant dimensions may be rationalized as twelfths of the original 7.6 m square and simply expressed as the nominator (Fig. 19), then disposed on a grid.

It is worth noting how very little true dimensions matter during the entire design process in each of the reconstructions, a characteristic that evidently contributes to the “scalelessness” of the building. In fact, assignment of a governing dimension could have been one of the concluding acts of design. An unusual circumstance in modern architecture, this is in agreement with medieval practice. Medieval plans were never dimensioned; instead, all measurements were expressed as proportions of the primary measure: the width of the nave. As the nave became broader, the walls would become stronger in direct proportion in order to support the heavier vault above. This logic holds for the *Dombauhütte*.

The second grid accords with the rotated grid of the first

geometric reconstruction in that it could be generated out of it by projecting vertical and horizontal lines through the points of the grid diamonds (Fig. 20). That both the rotated square and primary square geometric reconstructions, which have symbolic meaning, are “generalized” and disposed as a grid is highly provocative. It implies a geometric framework more akin to the rational, instrumental planning of Jean-Louis-Nicolas Durand, which exemplifies the application of number and geometry in architecture as technical instruments,⁴⁵ than it does to the geometric figures associated with the medieval masons, which were always seen as bearers of transcendental meaning. Yet it is obviously more complex than Durand’s axes and subaxes keyed to circulation, thus demanding to be seen in some sort of larger light. A grid would certainly negate both the medieval *Quadratur* geometry and the golden section in their pure forms, as irrational numbers make a mockery of all systems developed on multiples of regular increments. The Fibonacci sequence emerges as a locus for reconciliation, making it possible to demonstrate why Behrens’s plan corresponds so closely with the ideal golden section Osirion plan. The ideal sequence $1, \sqrt{\phi}, \sqrt{\phi}^2$ is approximated by the Fibonacci sequence 5:3:2. The

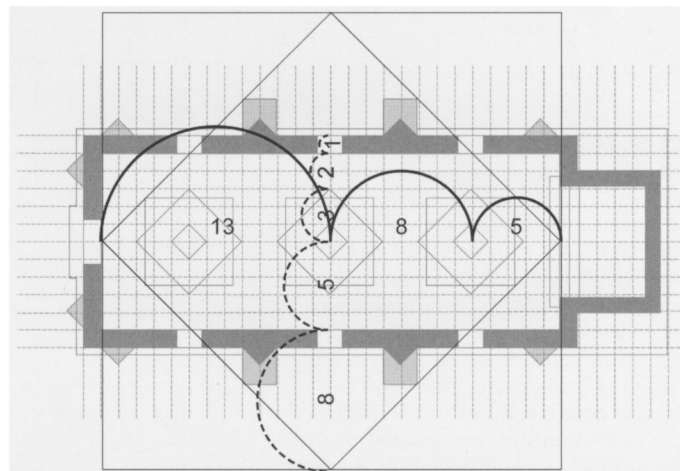


20 *Dombauhütte*, composite drawing of two correlating grids, which together explain the dimensions of all major elements of the plan and its pre-anamorphic elevations (drawing by the author)

ratio of the building's internal width to internal length provided by the golden section method equals approximately 1:2.61803. The ratio provided by the modules method is 1:2.60. Other relationships conceivably governed by the Fibonacci sequence can be identified (Fig. 21). Where Behrens discovered such an excellent system of approximating dimensions derived from the golden section is uncertain. It bears resemblances to Le Corbusier's final geometric figure from his book *The Modulor* and his use of the Fibonacci sequence as a serviceable approximation of the golden section.⁴⁶ As a reconciliation of the incommensurability of the golden ratio with whole numbers, the Fibonacci sequence has tremendous symbolic and practical allure. The ratio of two successive numbers oscillate around *phi*, becoming increasingly accurate as the sequence progresses. This characteristic of striving toward unattainable perfection is significant. It adopts the human tendency to operate with whole numbers as the point of departure for activity that has the ambition of moving toward something more universal. It is also emblematic of growth, which is a theme developed in a number of ways in the *Dombauhütte*.

Given the absence of direct documents from Behrens anchoring the elaborate world of correspondences and echoes through geometry, the project of geometric reconstruction is problematic. That several independent configurations explain the fundamental composition of the building, without violating alternatives, produces the impression that he made several separate initiatives. He appears to have aspired to a synthesis of the medieval *Quadratur* operations, the golden section, and a planning grid, which would have been regarded as a significant accomplishment in a context arguing at once for revival of lost traditions and for a new contemporary architecture. The three geometric propositions can in fact be seen to aspire to be one.

The opening quotation from "Die Dombauhütte" demonstrates Behrens's conviction that medieval masons possessed rules and regulations they guarded as "strict secrets." Fritz Schumacher furnishes further anecdotal evidence: "I once sat together with him for a number of hours on a train and eventually realized that he had just come from the Beuron monastery, which was rumored to possess medieval formulas for beauty. He spoke in a secretive manner of a booty about which one must remain silent."⁴⁷ Throughout his career, Behrens divulged little about his way of designing. Le Corbusier offered insight into contemporary understanding of

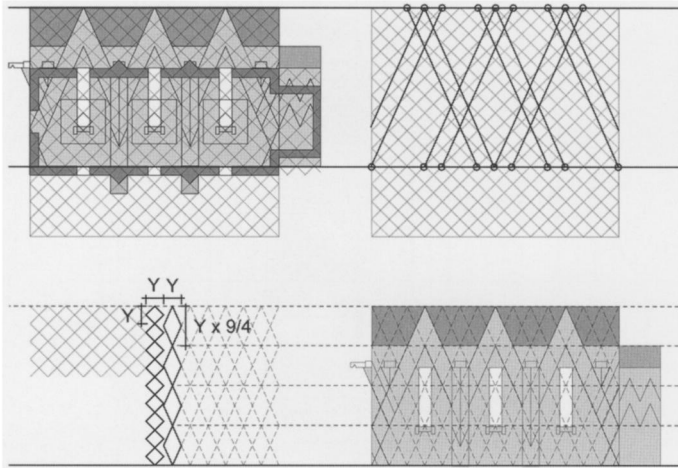


21 *Dombauhütte*, plan illustrating the disposition of elements conceivably governed by Fibonacci progressions (drawing by the author)

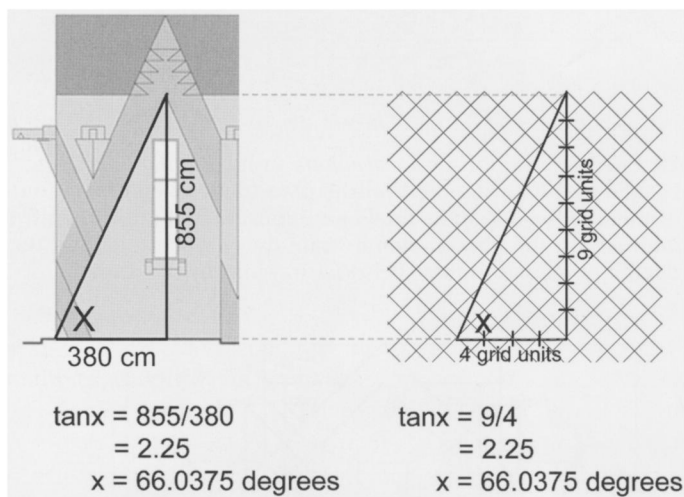
the medieval cathedral builders' maintenance of secrets: "These rules of harmony are complicated, delicate. . . . Speak of them openly? That would be to put them in errors of fact and of understanding; after three generations they would have become grotesque. . . ."⁴⁸

In contrast to the plan, the elevation of the *Dombauhütte*, dominated by the chevrons rising from the ground to the apex of the gables, presents a very different proposition. These major diagonals appear to represent light within the dark mass of brickwork. They would likely mark any primary geometry, playing in elevation a role similar to that of the floor tiling in the plan. The angle, however, measures 66 degrees from the horizontal, apparently completely unrelated to the orthogonal order of the plan. Nonetheless, when the plan and elevation are overlaid, in conjunction with the rotated grid, correspondences emerge. My analysis determined that Behrens set a stretched diamond grid for the elevation by distorting the plan grid vertically by a factor of $\frac{9}{4}$ (2.25) (Fig. 22).⁴⁹ This result can be verified by cross-referencing it with one of Behrens's dimensioned 1:100 elevation drawings (Fig. 23). Both the drawing dimensions and the units derived geometrically arrive at an angle for the chevrons of 66.0375 degrees.

The act of elongating the elevation can be seen as an application of anamorphosis, referring to a drawing technique showing a distorted image that appears in natural form when viewed from a privileged viewpoint.⁵⁰ Explanations of anamorphosis as an autonomous technique based on a thorough understanding of the principles of *perspectiva artificialis* appeared in the early seventeenth century, but primitive or linear anamorphosis was used well before this time.⁵¹ In primitive anamorphosis, images are simply deformed along a single axis, having the effect of collapsing or stretching reality by adjusting the relative ratio of vertical and horizontal dimensions. This is the type of distortion encountered in the *Dombauhütte*. Bearing in mind the overt Christian iconography elsewhere, this act of distortion may be an allusion to excessively elongated Gothic sculpture, of which the biblical figures located around the triple entrance in the west facade of Chartres Cathedral are exemplary. They mediate between



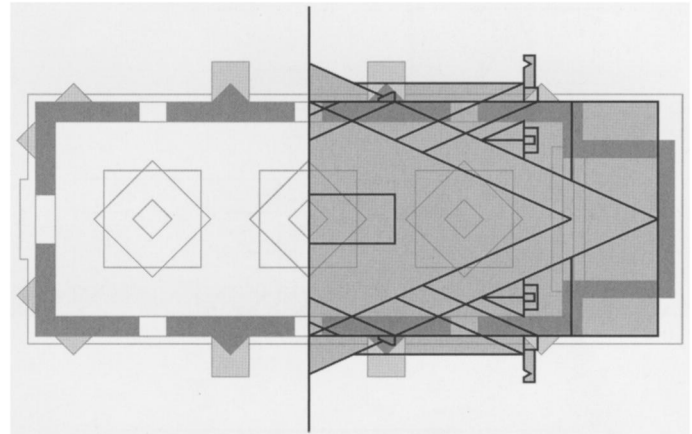
22 *Dombauhütte*, sequence of drawings demonstrating that Behrens established a stretched diamond grid for the elevation by distorting the plan grid vertically by $\frac{1}{4}$ (above left, above right, below left) and that intersections on the grid locate significant horizontal governing lines in the elevation (below right) (drawing by the author)



23 *Dombauhütte*, demonstration of the chevron angle (drawing by the author)

divine and earthly realms and are accordingly represented as “stretched” between the two. This suggestion is supported by the fact that Behrens had originally planned to install figural sculptures on the corbels in the interior.

Only once both the plan and anamorphic grids have been discovered can the primary dimensioning of the choir be resolved. In the medieval precedent, the choir is the place of highest symbolic import and the location of most sustained architectural mediation between the one and the many, traced by the vaulting ribs that rise from the periphery to the center. Though the *Dombauhütte* choir is not polygonal and is devoid of vaulting, one would expect particular care to be taken in its proportioning. It does, indeed, reveal itself as the locus of synthesis. Rotating the end elevation 90 degrees and superimposing it on the plan establishes the depth. The distance from the midpoint of the nave to the far wall of the choir corresponds identically to the overall height of the



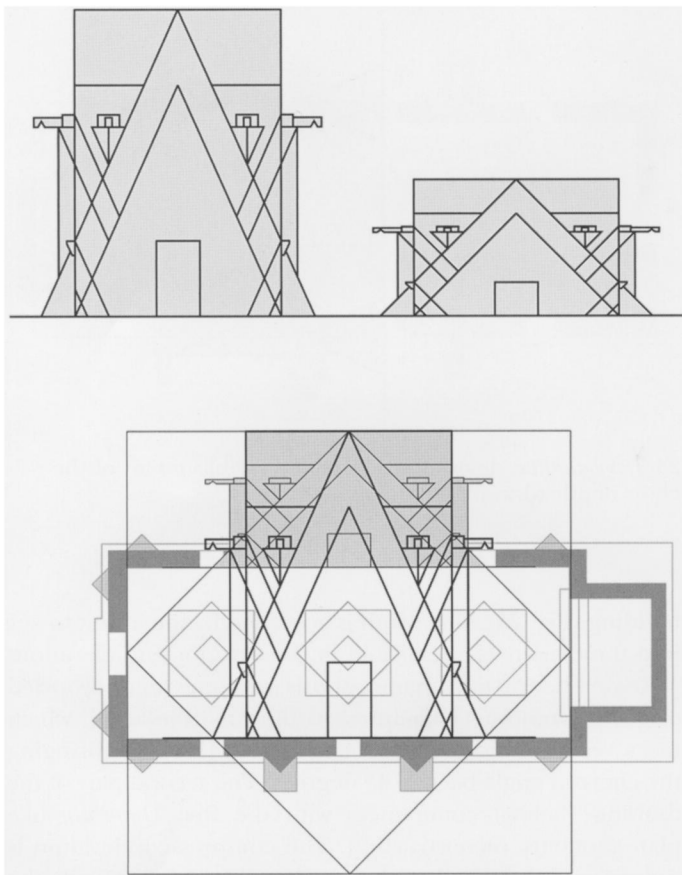
24 *Dombauhütte*, demonstration of the establishment of the choir depth (drawing by the author)

building (Fig. 24). The width is governed by the intent to key into the diagonals established in the exterior end elevation.

Remembering that anamorphosis presumes an undistorted original condition, I compressed the final elevation, which has a vertical ratio of 1:2.25, back to 1:1 (Fig. 25), bringing the chevron angle back to 45 degrees. The second part of the drawing (below) commences with the first *Quadratur*-like plan geometry reconstruction. The compressed elevation is superimposed such that the chevron bands align with the largest rotated square. The base of the elevation aligns with the inside face of the nave wall to the top of the page. The stretched elevation sits on the inside face of the opposite nave wall. Therefore, the elevation has been “stretched” by the width of the nave. It stabilizes the degree of anamorphosis, reinforcing its status as a controlling dimension in accord with the medieval precedent.

If the compressed elevation is rotated and superimposed on the plan, major dimensions correlate exactly (Fig. 26). The overall height of the elevation is eight modules, which is the distance between buttresses in plan. The final anamorphically distorted elevation is eighteen modules, again a ratio of 1:2.25. The ridge now aligns with the inner face of the entry facade. It is significant that the elevation “grows” from the buttresses, which will later be adduced as the bases of metaphoric trees. Once the degree of distortion is stabilized, it is used with conviction, governing both the structure and ornamentation of the body of the building and of secondary elements such as niches.

In a further representation, the compressed elevation is once more brought into dialogue with the rotated square geometry, but here it is circular arrayed (Fig. 27). Again, the importance of the inside face of the nave walls in all directions is apparent. What also emerges is the prominence of the central square, which is the width of the nave. The sides of the nave square are ten modules long and the walls are one module thick, for a proportion of 1:10. This is exactly the proportion stipulated in all three of the early-sixteenth-century texts known collectively as *Werkmeisterbücher*, which concern the correct planning and execution of church buildings, from the disposition and dimensioning of the building as a whole to the proportioning of details.⁵² This lends weight to

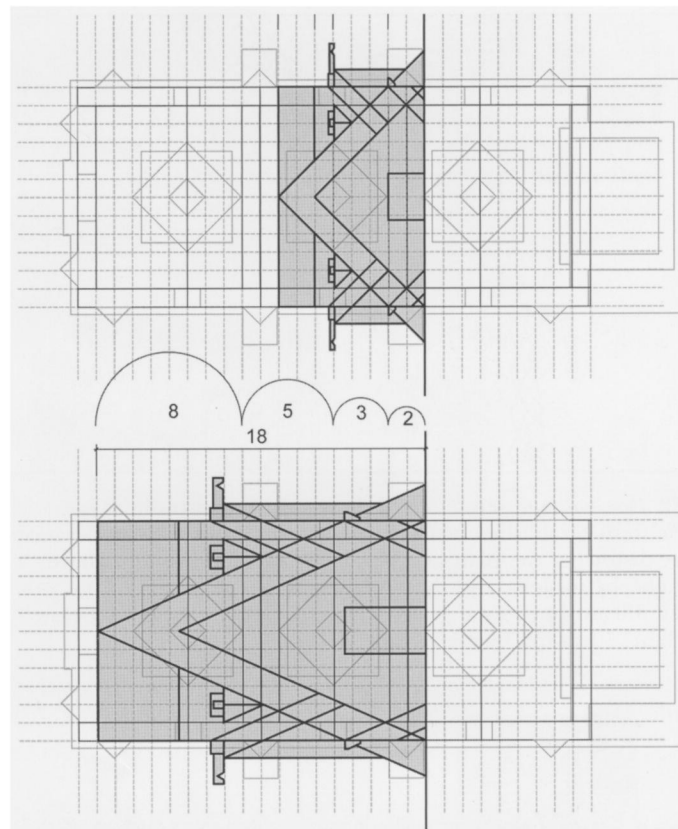


25 End elevation of the *Dombauhütte* in its final condition as built (above left); end elevation of the *Dombauhütte* compressed back into its pre-anamorphic original condition (above right); end elevations of the *Dombauhütte* superimposed on the plan to demonstrate the reasoning behind the degree of anamorphosis (below) (drawings by the author)

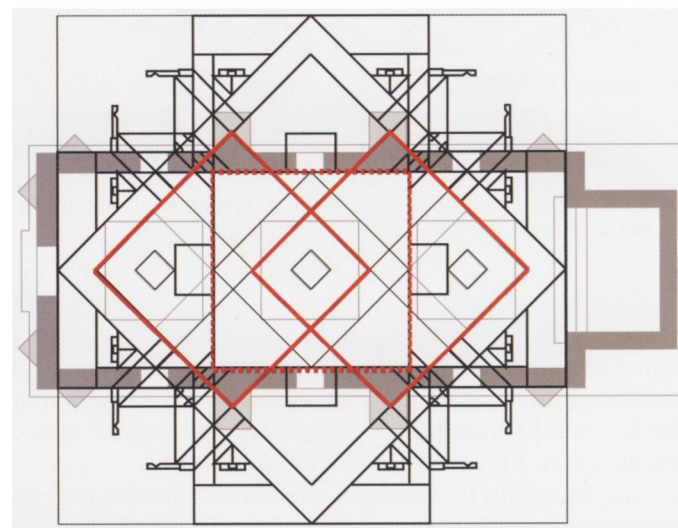
an argument that geometric reconstructions for which the inside face of the nave is determinative are correct. That generation of the plan comes before the elevation concurs with medieval precedent. The elevation was always “drawn out of” (*ausgezogen*) the plan. Similarly, Le Corbusier stipulated that “the plan is the generator.”⁵³

Omission of a *vesica piscis* in the adduced geometries of the *Dombauhütte* is perplexing in a context arguing for continuity with medieval practice.⁵⁴ In fact, there is a complete absence of circles and arcs. The nave square, when rotated through 45 degrees, equals the distance between extremities of the buttresses across the nave. It is possible that Behrens intended these rotated squares to represent a modern *vesica piscis*. Another reconstruction concerns the long elevation and identifies resonances between the masonry bands in elevation and the rotated squares in plan (Fig. 28). The ridge of the upright elevation is aligned with the inside face of the nave wall, and the inverted elevation has been mirrored along the axis of the nave. The bands trace exactly the rotated squares governing the nave width and the floor mosaics. This confirms the initial supposition that the bands play in elevation the same role of “light” within a dark field that the mosaics play in plan.

Drafting the facade at the outset in the nondistorted form

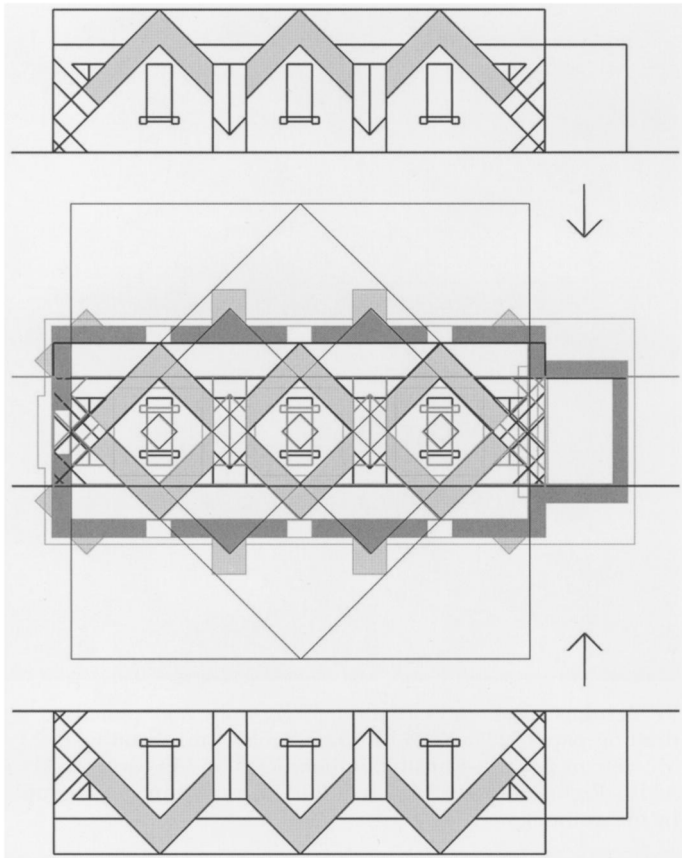


26 End elevation of the *Dombauhütte* in its original condition, rotated and superimposed on the plan (above); end elevation of the *Dombauhütte* in its final condition, rotated and superimposed on the plan to demonstrate the reasoning behind the degree of anamorphosis (below) (drawings by the author)



27 End elevation of the *Dombauhütte* in its original condition, circular arrayed and superimposed on the plan, demonstrating both the primacy of the largest rotated square in the *Quadratur*-like reconstruction and the geometric prominence of the central square that is the internal width of the nave (drawing by the author)

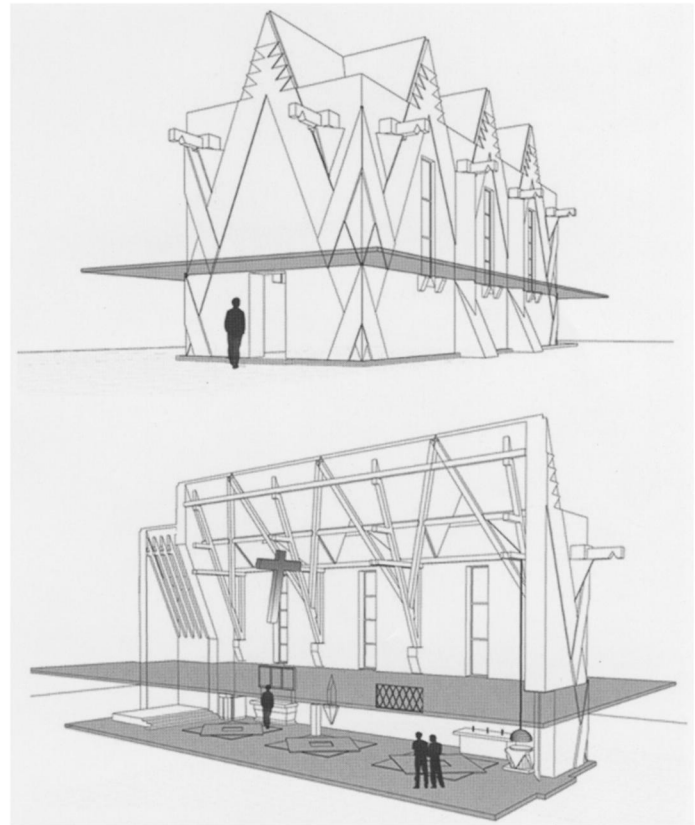
would have been of great practical benefit. The elevation could have been drawn over the plan with a standard 45-degree set square, distinguishing and selecting relations and



28 Side elevation of the *Dombauhütte* in its original condition, superimposed on the plan in alignment with the inside faces of the nave, demonstrating a close correspondence between the outline of the chevrons in elevation and the floor mosaics in plan (drawing by the author)

resonances in plan and elevation. Once the elevation was complete, all dimensions could have been multiplied by 2.25 or else plotted on a distorted grid. The resulting anamorphically distorted elevation masks and sublimates the original accord between plan and elevation. The most interesting aspect of the anamorphic operation is that it is a mixture of the arbitrary and the consistent. On the side of the arbitrary, one could take the point of a polygon and, imagining the sides to be elastic, push the point around at will before fixing it in place. On the side of consistency, there is the memory of the original figure, which is still present in the anamorphically distorted form in some way. The stretched geometry has a vulnerable, human quality. It represents continuity of shape and identity along the lines of extension, and as such becomes a metaphor for analogy. It only alludes to the universality of pure geometric transformation, such as we have seen in the *Quadratur*. Behrens has produced a purely geometric construction in plan, then a second-order manipulation that acts as a bridge between pure geometry and building.

Linked to the geometry, a major horizon is established in the building that marks the division between the realm of the earthly observer looking at objects and that of symbolic heavenly light (Fig. 29). It is established at the height of one stretched diamond of the elevational grid from the ground (Fig. 22). A number of elements demarcate this horizon: buttresses meet the wall, ornament folds around the edges of



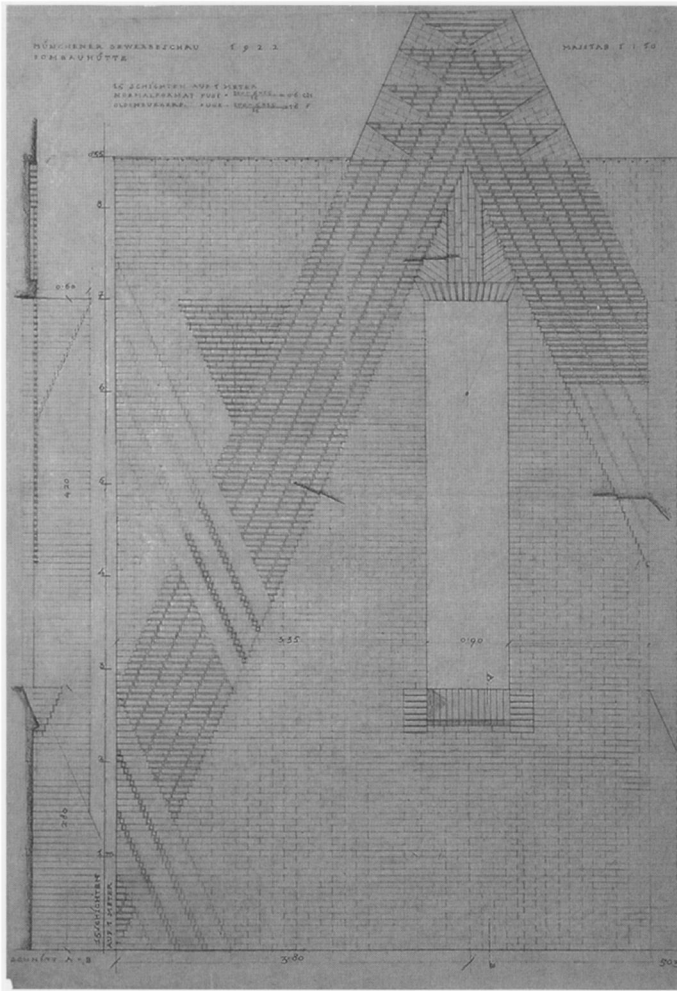
29 *Dombauhütte*, demonstration of a major horizon on which a number of building elements and furnishings align (rendering by the author)

the building, and the entry door soffit and windowsills align. Below the horizon one finds artifacts of art: transformations of material through craft into metaphor and symbol. They are disposed like islands of an archipelago, blurring museum and Christian worship. The window-corbel-window-corbel rhythm further amplifies and animates the horizon, as earth and light are alternately asserted. The crucifix is the major element that rises above the horizon,⁵⁵ appropriate for Christ's mediating role between the God-given remoteness of ultimate reality and human history.

Behrens further endeavored to synthesize two apparently irreconcilable ambitions, that of a return to origins and a continuation of tradition. One of the ways he does this is by deploying cloth symbolism:

The appeal of the masonry wall is effected by the careful work of the bricklayer. . . . In order that the wall becomes a surface invested with life, it requires not only the plumb bob and right angle, rather also the understanding and sensibility of the bricklayer, who can elevate the characteristics of our brickwork, insofar as he mixes it to its advantage, setting dark against light, creating small shadows through setting forward or recessing the masonry, and in this way lends the wall the character of a textile.⁵⁶

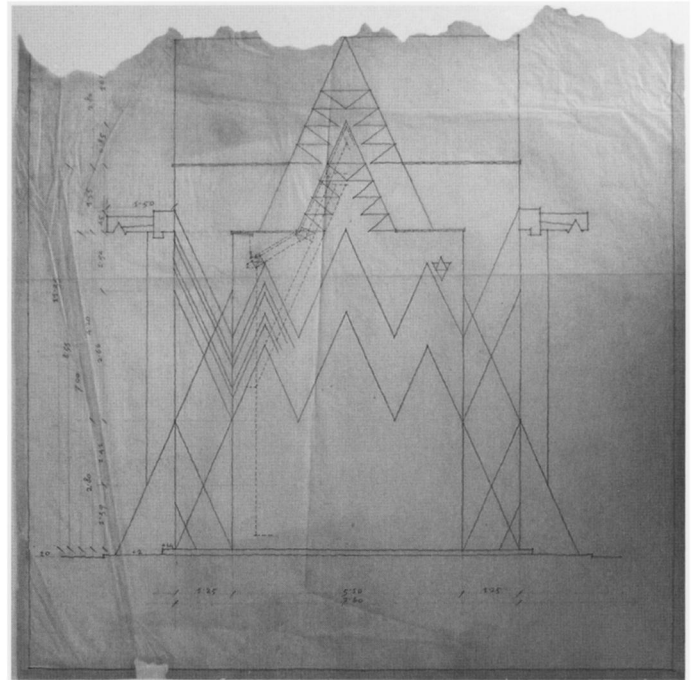
A notion that enjoyed broad acceptance in nineteenth- and early-twentieth-century German art history placed the origin of ornament in the textile art of weaving. Gottfried Semper first sought to trace linear ornamentation back to textile



30 Behrens, *Dombauhütte*, wall section and part elevation, 1922 (artwork © Artists Rights Society [ARS]/VG Bild-Kunst, Bonn)

techniques as part of his thesis that clothing or cladding was the original architectural act.⁵⁷ By appropriating this reading of the weaving of textile as the very first artistic act, Behrens could situate himself at the wellspring of human endeavor and conform to his expressed aspirations for cultural renewal out of handicraft. Further, the *Dombauhütte* served an exhibition of applied arts, for which weaving is emblematic. Treatment of the walls as a textile is best observed in a drawing at 1:50 comprising a partial elevation and a wall section (Fig. 30). Dimensioning of the brickwork is deliberate and thorough. Short equations at the top left-hand side of the page calculate the number of bricks per meter height of wall and the sizes of mortar joints. The width of each chevron is composed of six “strands” of brick. The two outer strands are header bricks and the internal strands are stretcher. A chevron thereby appears as a ribbon “gathered” along its edges. Three simple, local plans illustrate small steps in depth providing the impression of the facade having been “woven” in a single plane but from different-gauge yarns more tightly or loosely knit. The facade, in fact, credibly appears as a translation of textile into architecture.

The second cloth symbolism motif is that of the biblical Tabernacle, whose purpose and fabrication are narrated in Exodus 25–40. The tent symbolism is very clear, especially in



31 Behrens, choir-end elevation, 1922, scale 1:50, pencil on drafting paper, 22½ × 23 in. (57.5 × 58.5 cm). Staatliche Museen zu Berlin—Kunstabibliothek, 1978.62-149 (artwork © Artists Rights Society [ARS]/VG Bild-Kunst, Bonn; photograph by the author)

the end elevation as drawn. The dominant characteristic of orthogonal geometry is to telescope perspectival depth, presenting in a single plane elements that in reality are closer or further away from the viewer. The end elevation is dominated by a triangle whose sides appear to stretch from the ground to the top of the gables, resembling a tent (Fig. 31). The elements that comprise this triangle—the chevrons of the end elevation and the buttresses close to the middle of the long facade—are, however, in reality considerably separated spatially. The form of the building as experienced is rectilinear, whereas its ideal presentation in drawings is, rather, triangular. This would suggest sublimation of the Tabernacle. The translation of the Tabernacle into masonry further strengthens the earlier assertion of the Temple of Solomon as a motif.

With the primary architectural motifs identified, secondary motifs may be provisionally ascertained. Some are circumstantial, arising from Behrens’s immediate circumstances. It is plausible that the articulation of the east elevation was prompted by Koloman Moser’s 1903 Wiener Werkstätte monogram. The graphic correlation is striking (Fig. 32). Commencing his working life as a graphic designer, Behrens was receptive to the medium as a resource. He combined explicitly graphic elements into the architecture of the Oldenburg *Kunstaussstellung*, as we have seen. Further, it could be a small tribute both to Vienna, where he had recently relocated to become Otto Wagner’s successor as professor at the *Meisterschule für Architektur an der Wiener Akademie*, and to the *Wiener Werkstätte*, which had great affinity with the *Deutscher Werkbund*.

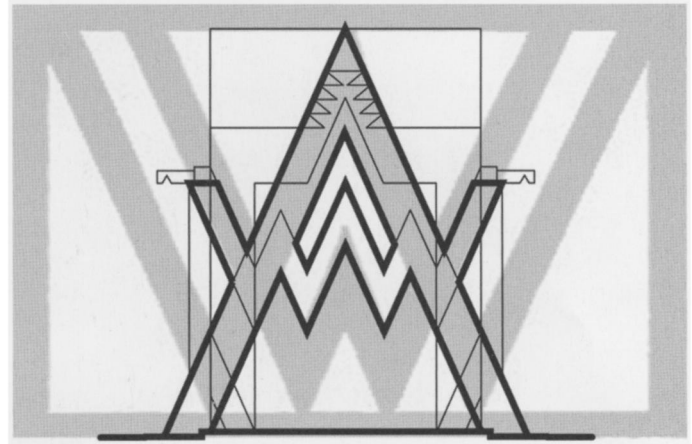
The rhomboid grid and the chevrons imply diamonds. The diamond, a Nietzschean motif Behrens regularly deployed in

both his architecture and graphic work, is a regular feature elsewhere in Expressionism.⁵⁸ It symbolizes the virtues of structural integrity, material unity, and original geometry. Formed by the powers of the earth, it also recalls the alchemical idea of the transmutation of base matter into a noble material. Light is important in the crystal motif, typically appearing as radiant beams in Expressionist drawings, such as those produced by architects associated with the *Gläserne Kette* (crystal chain) initiated by Bruno Taut. The polychromatic aspects of the *Dombauhütte* as well as the recollection of medieval themes of light and ontology through geometry indicate that Behrens was consciously operating with the crystal motif.

The connection with Friedrich Nietzsche may signal his appeal to Behrens as one who insisted on the thematic of making as a fundamental dimension of creativity, and creativity as a fundamental mark of being human. A discussion on the themes of materiality and construction is central to gaining a proper understanding of the architectural nature of the *Dombauhütte* as embodied. Masonry is the leitmotif. It contains an overwhelming chthonic component that effaces the technological apparatus surrounding the fabrication of steel buildings, which had previously so interested Behrens. He wrote that "the opportunity appeared to be presented to us by this building [the *Dombauhütte*], for once to create the opposite of industrial and machine-driven work."⁵⁹ The ground is granted a specific value for orientation, stability, and beginnings, divided between the radically unknown site as a whole and, secondly, a stylobate (Fig. 29). The stylobate, the plane of geometric construction, is an assertion of purified earth: a small acropolis elevating the building out of the landscape. Significantly, its perimeter violates all geometries, affirming its status as a stage between metamorphic earth and sophisticated form. All ground outside the 12-centimeter (4¾-inch) stylobate is contingent, subject to history, unknown, and imperfect. The canted buttresses project beyond, lending the whole the impression of having emerged from the ground. Seen against the heavily wooded background, the building recalls the Expressionist paintings of artists associated with *Die Brücke*. August Wiedmann found that the nature depicted in their work is "not yet disfigured by the 'ravages' of civilization, the deformities of a technological culture. . . . Firmly rooted in the earth, these figures grow out of it to fuse with the surrounding. . . ."⁶⁰

An unusual clay model of the *Dombauhütte* further amplifies the chthonic component (Fig. 33).⁶¹ Produced at an intermediate stage of design,⁶² it embodies a direct transformation from raw earth to sophisticated form, accomplished by the guiding hand of the artist whose fingerprints remain on the work. It is a solid mass, with openings recessed into the body of the building. The masonry is exactly identified and precisely combed in place. The exception is a wild sculpture surrounding the entry, possibly alluding to the amorphous subterranean world of a grotto. Closer inspection reveals this sculpture to be approximately symmetrical, implying draped fabric drawn away for entry, further strengthening the Tabernacle motif.

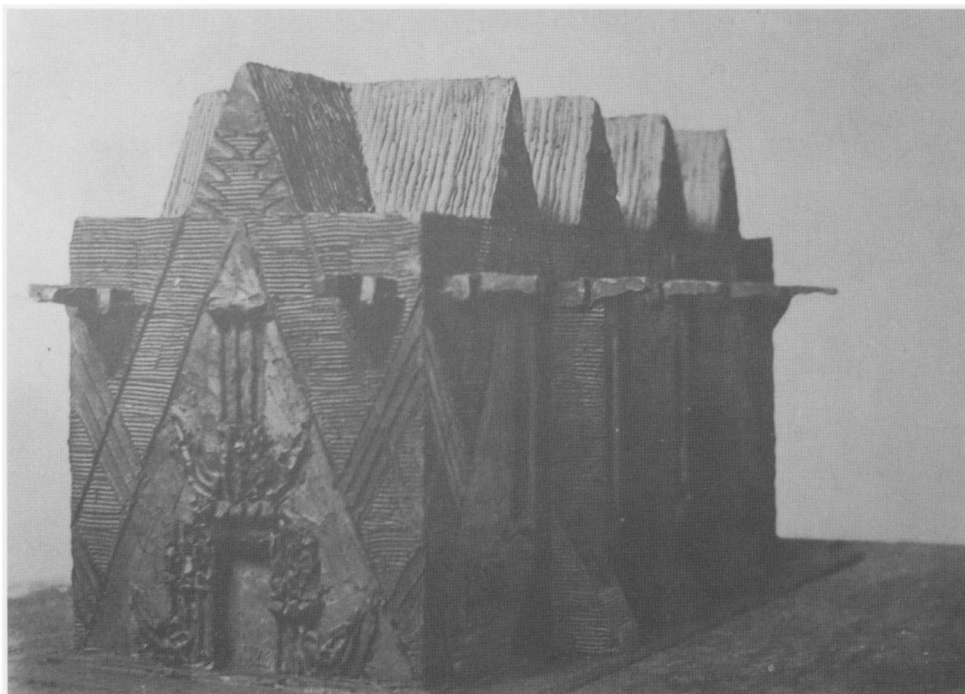
A couple of instances serve to illustrate Behrens's display of virtuosity through the masonry. Drawings specify in such great detail the sizing and construction methods to be em-



32 *Dombauhütte*, end elevation after Koloman Moser, Wiener Werkstätte monogram, 1903 (drawing by the author)

ployed that the mason required only manual rather than intellectual dexterity, nullifying to some extent the architect's claims for the skill of the mason. A drawing that works out the intersection of the attached piers with the buttresses calculates every special brick to be cast or cut, at a scale of 1:10 (Fig. 34). Another strategy concerning the brickwork deliberately contributed to the ambiguous scale of the building, which appears at once diminutive and monumental.⁶³ Behrens used squat bricks (in the Oldenburger format of 22 by 10.5 by 5.2 centimeters or 8⅝ by 4⅛ by 2 inches), amplifying the apparent vertical dimension of the building, while the header-bond jambs of the entry door provide an illusion of greater thickness. The ambiguity of scale is also in part the result of the building's representation in exterior photographs, none of which contain people and which are taken from approximately the same vantage point. This manipulation embodies the conflation of cathedral and *Bauhütte*, which is also implied in the name *Dombauhütte*. The relation is no longer associative or dialectical, as it was in the original medieval situation; rather, an architectural synthesis is sought.

The bricks themselves were a type called Bockhorner Ringofenklinker, produced in the 1920s by the Vereinigte Oldenburger Klinkerwerke in a color spectrum from red and blue through to deep brown-black. As only black-and-white photographs of the *Dombauhütte* exist, it is impossible to confirm the actual colors employed. It is tempting to infer the color range from the Höchst AG Technical Administration Building, although it is unlikely that he employed the same violent polychromy that represented this building's function as a dye works. The color range probably related more to the modestly modulated deep browns of Fritz Hoeger's Hamburg Chilehaus (1922–24), which, according to the firm producing the bricks, is a very good example of Bockhorner Ringofenklinker contemporary with the *Dombauhütte*.⁶⁴ What we can deduce is that changes in the color or tone of bricks carefully articulate the facade as a patterned tapestry. The ultimate authority regarding masonry, for both the *Dombauhütte* and the Chilehaus, are the *Backsteingotik* brick cathedrals of northern Germany, which often served as inspiration for Gothic Revival works in that country.



33 Behrens, Clay model of the *Dombauhütte* at the *German Exhibition of Applied Arts*, 1922 (artwork © Artists Rights Society [ARS]/VG Bild-Kunst, Bonn)

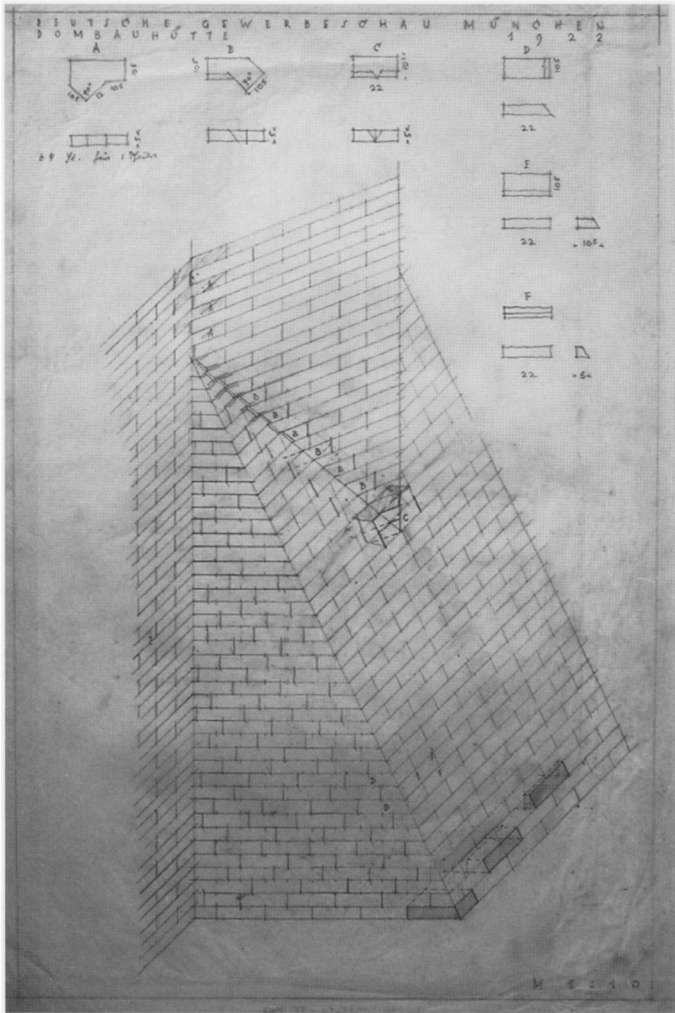
There are a number of ways in which Behrens explored and expressed the latent representational qualities inherent in masonry construction. Contrary bonding patterns are made to adjoin, bricks are cut and set at angles, and projections and niches enliven the facade and interior. The chevrons are set in what can best be described as a canted stack bond. Laid horizontally, they are structurally keyed into the main stretcher bond wall, while remaining visually independent. The chevrons are further accentuated by a different tone of mortar and project marginally forward such that a shadow line is cast. There is a great deal of sophistication in the way that window and door soffits are formed. They are actually flat gauged arches that would have required centering over which the voussoir bricks were bedded. In a temporary modern building, it would have been customary to form the soffits by soldier courses supported on a hidden steel lintel. On the interior, the chancel arch bricks are laid at an angle perpendicular to the perimeter of the “arch,” following the visual line of thrust and approximating the setting of voussoirs in a Gothic vault.

The material other than masonry extensively employed with a representative function is timber. Here Behrens changed tack. The practical dexterity of the mason is replaced by the rustic efficiency of the roof builder. There is nothing sophisticated about the timberwork (either in representation or detail); the emphasis is on direct expression. Joints are solved in a straightforward manner rather than discreetly hidden. Significantly, all timberwork was carried out by the firm of Adolf Sommerfeld, a Berlin sawmill owner and contractor who was the most important patron of the Bauhaus in the postwar years. He was the client for the Sommerfeld residence (Berlin, 1920–21), designed by Walter Gropius and Adolf Meyer (Fig. 35).⁶⁵ Constructed just prior to the *Dombauhütte*, the house evidences similar ambitions: it was heavily and ostentatiously crafted from solid timber and was very much a collective enterprise.⁶⁶

The *Dombauhütte*'s roof work is exposed internally, giving the appearance of the construction above the vaulting of a medieval chapel, introducing a motif of incompleteness (Fig. 9). This motif is reinforced by the inverted half pyramids toward the extremities of the facades supporting the “gargoyles,” which can be read as vestigial buttresses. They also express structural honesty in that their corbels support the reduced load of the outermost, attenuated bays. At the same time, Behrens conflated the typical vault-roof elements of a Gothic chapel, in which the stone vault ribs and the timberwork supporting the roof were entirely independent.⁶⁷ The absence of a fully articulated vault and the prominence of the timberwork remove some of the chapel iconography and assert the *Bauhütte*.

Via the buttresses, the roof reaches outside the perimeter of the building, converting the buttress-roof trusses into metaphoric trees, reaching beyond the pure confines of the stylobate to recover “nature” as a metaphor. In a quarter bay of the *Dombauhütte*, centered on a buttress, a rigorous structural logic is apparent (Fig. 36). The loads carried by rafters are canceled at a “branch,” passing to a corbel and down through the buttress to the deep ground. The tree metaphor is further amplified as the roof-canopy “peels away” from the rafters approximately halfway down from the ridge to the exterior walls, introducing light into the branches.

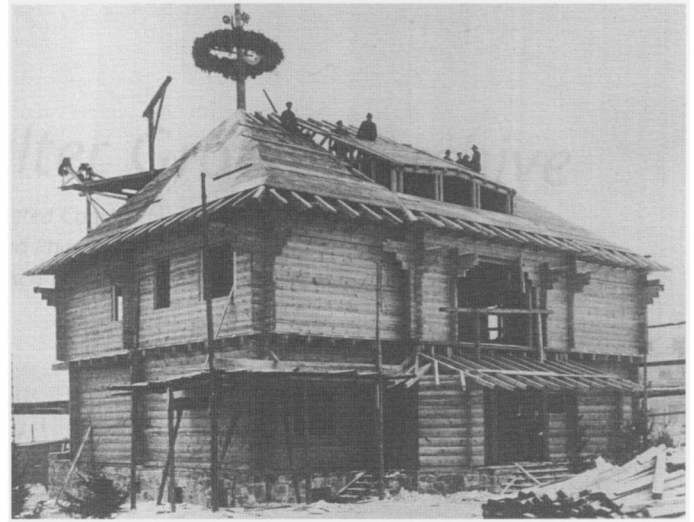
There is an analogical dialogue between Ludwig Gies's raw Expressionist timber sculpture of Christ on the cross, *Kreuzifixus*, high in the roof space, and the rudimentary roof construction. A striking visual correspondence can be seen between the acute angle produced by Christ's arms with the horizontal member of the cross on which he is nailed and the way the splayed rafters lean out from the wall (Fig. 2). Rotated through 90 degrees, the angles are almost identical. Further, Behrens indicated that the members of the roof work were to be “pinned together,” recalling Christ's hands nailed to the cross (Fig. 37). Though Christ's body slumping



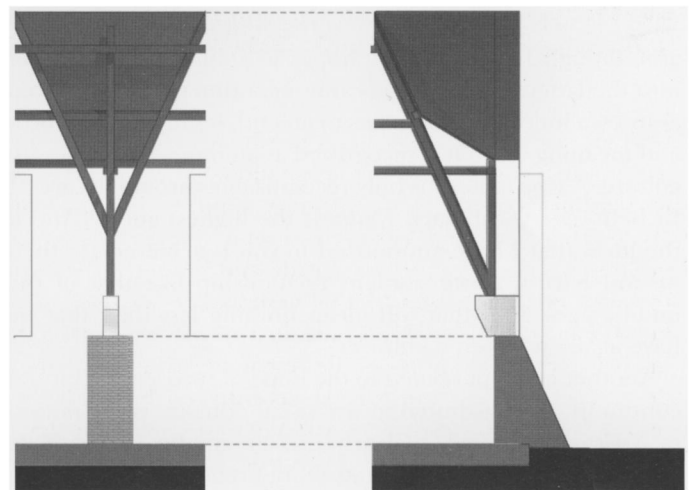
34 Behrens, detail specifying the dimensions of the bricks to be formed to achieve the connection of buttress to pier, 1922, scale 1:10, pencil on drafting paper, 20½ × 13 in. (52 × 33.5 cm). Staatliche Museen zu Berlin—Kunstbibliothek, 1978.62-55-77 (artwork © Artists Rights Society [ARS]/VG Bild-Kunst, Bonn; photograph by the author)

in death and the strong rafters confirming the vitality of the building appear contrary, they can be seen as extremities of a death-rebirth cycle, as the wooden cross has always symbolized resurrection. Further, the accord between sculpture and building asks that one consider the production of “art” (sculpture) and “craft” (roof structure) together, promoting the effectiveness of the former and elevating the cultural status of the latter.

The interior is dimly lit by three narrow stained-glass windows on either side of the nave, and the rafters recede into the darkness of the roof space inhabited by Gies’s Christ. There is no evidence of electric light, and Redslob speaks of the “rafters blackened by candles.”⁶⁸ This peculiar condition warrants particular mention, considering Behrens’s pioneering industrial design work with the AEG (General Electricity Company), including the design of electric lights.⁶⁹ Such negative gestures demonstrate a primitivism that is the product of a sophisticated urban culture. The general darkness of the body of the building directs orientation toward the choir, which, in contrast to the exposed-brick walls, is smoothly



35 Walter Gropius and Adolf Meyer, Sommerfeld residence, Berlin, 1920–21

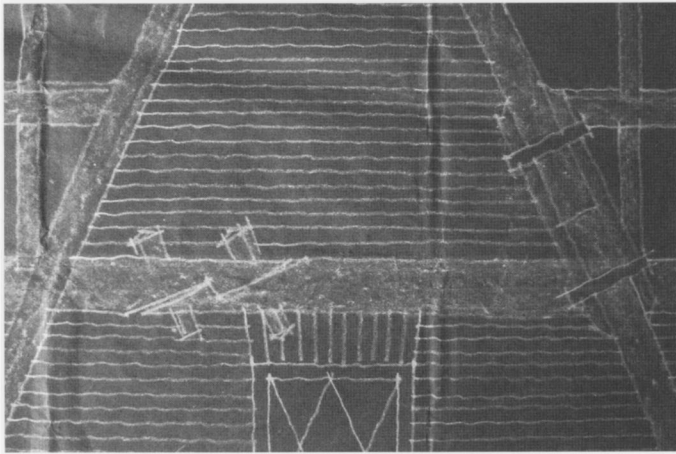


36 *Dombauhütte*, section and elevation of the structure and cladding of a quarter bay (drawing by the author)

rendered white. Skylights invisible from the nave illuminate it from above. Luminous and scaleless, the color and materiality of the apse partake of the celestial while the remainder of the building is most emphatically rooted in the chthonic.

The appeal to the dignity of medieval handicraft has a long history in modernity, from the Arts and Crafts movement, through to associations such as the Wiener Werkstätte and the Deutscher Werkbund.⁷⁰ Though each association had distinct interests and aspirations, they generally shared a belief that craft embodies a residually common world of a culture under threat from industrialization. Craft was the locus of aspirations for creative salvation, tied to the desire to overcome the modern division of art and technology. This is the background to Behrens’s statement at the opening of the *Dombauhütte* that it is his “dearest wish no longer to speak of art, rather, that we, those of us who concern ourselves with the field, had the right to call ourselves craftsmen.”⁷¹

As critical as Behrens is of the self-sufficient technology of the engineer operating autonomously from a background culture, he is equally scathing of the autonomy of the fine



37 Behrens, *Längsschnitt* (Longitudinal Section), detail, 1922, scale 1:25, pencil on ammonia print, 28½ × 46½ in. (73 × 117.5 cm). Staatliche Museen zu Berlin—Kunstabibliothek, 1978.62-143 (artwork © Artists Rights Society [ARS]/VG Bild-Kunst, Bonn; photograph by the author)

arts, though he confusingly hopes to sublimate the former into the latter: “Technology cannot continually be employed as its own independent means to an end, it only attains worth and meaning when it is recognized as an important means to culture. A ripe culture is only recognizable through its art.”⁷² In Behrens’s vocabulary, *Kultur* is the highest good: “And if the ideal that I have announced to you is achieved . . . then we will have a master-student relationship like that of the middle ages. And that will mean nothing less than that we have again achieved a culture.”⁷³

Another concept related to the hope of recovering cultural continuity, as constituted in the visual domain, is the notion of a *Gesamtkunstwerk*.⁷⁴ Clearly present in the *Dombauhütte*, this concept arises frequently in Behrens’s oeuvre, dating from the Darmstadt artists’ colony. Whereas the theater, following Richard Wagner, was the locus for synthesis of the arts at Darmstadt, by the time of the *Dombauhütte*, Behrens had adopted a much more physicalist approach, reminiscent of the sentiments expressed by Goethe in *Von deutscher Baukunst*, where he identified Strasbourg Cathedral as a hewn artifact and where he found the Gothic to be emblematic of complete aesthetic unity. Scheffler wrote in 1917 that “the Gothic knows only the *Gesamtkunstwerk*; she is a mother-art and for exactly this reason an art of the people in the highest sense.”⁷⁵ Behrens was very concerned that the works presented in the *Dombauhütte* “belong” to the architecture:

It doesn’t want to be regarded as an “exhibition object,” in the usual sense of the term. It is not to be a gathering and arranging of available objects in a location that temporarily provides a favorable framework for external presentation; rather, we were guided in our work by the idea of creating something genuine and lasting.⁷⁶

The *Dombauhütte* was indeed an emphatically collective effort. The original exhibition catalog lists thirty-three individual artists and craftsmen as having contributed to either the architecture or furnishings.⁷⁷ Though the artifacts were completed in isolation by a diverse range of artists from across

Germany, they all exhibit primitive religiosity, and the whole is lent coherence by an Expressionist conviction that had by this time taken on distinctive formal qualities.⁷⁸ They are also securely received by the architecture. One sectional drawing in the Berlin Kunstabibliothek folio is entirely dedicated to locating exhibits. As early as 1905, Meier-Graefe noted that, in general, for Behrens “the position where the ornament sits is disproportionally more important than the nature of the ornament itself. Not the ornamental lines, rather the relationships that determine the dimensions are decisive.”⁷⁹

The three large, axially arrayed, mandalalike mosaics clearly reference the labyrinths of medieval cathedrals (Fig. 2). They are securely keyed in to the primary architectural order, situated directly below the nave-bay crossings. The floor tiling outside the mandalas is also carefully articulated. The dark floor tiles of the nave extend the diamonds beyond the geometry of the grid, expanding out in eddies toward the walls. The tiling of the choir, elevated three steps above the nave, is of a different order. It is composed of large white tiles with heavy black borders, set orthogonally (Fig. 3). The implication is that one metaphorically navigates through the sea of the nave to the stable land of the choir.

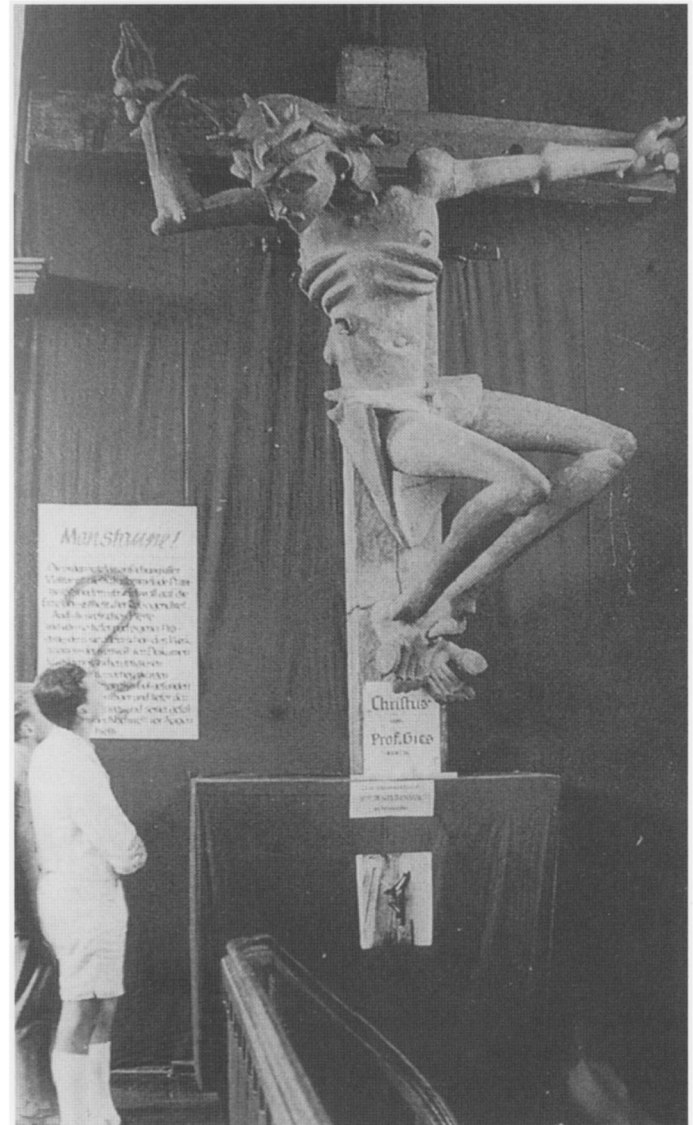
Interest in the exhibits has focused on Gies’s central expressive timber sculpture, *Kruzifixus* (Fig. 38), which Cremers read enthusiastically in 1928 as a symbol of a new direction in art. It was very controversial, and following violent protests from conservatives, the crucifix was removed from the *Dombauhütte*.⁸⁰ The hapless Gies had the additional ignominy of having his *Kruzifixus* exhibited at the 1937 *Entartete Kunst* (Degenerate Art) exhibition in Munich. Emblematic of degenerate art, it was hung above the entry staircase, as the first work that one would encounter on entry to the exhibition.⁸¹

One other exhibit warrants specific comment. Just inside the entry to the left, three sculpted figures crowd an edge of a tall sarcophagus attributed to Richard Scheibe from Berlin (Fig. 39). They may represent the three Magi, which would provide a convincing reference to the Kölner Dom (Cologne Cathedral), as their relics were brought to Cologne in the mid-twelfth century and the cathedral was built to house them. This would further strengthen the meaning of the Behrens’s building as *Dom + Bauhütte*. On the whole, the exhibits appear to be very specific commissions, nestling into niches and complying with critical geometric alignments.

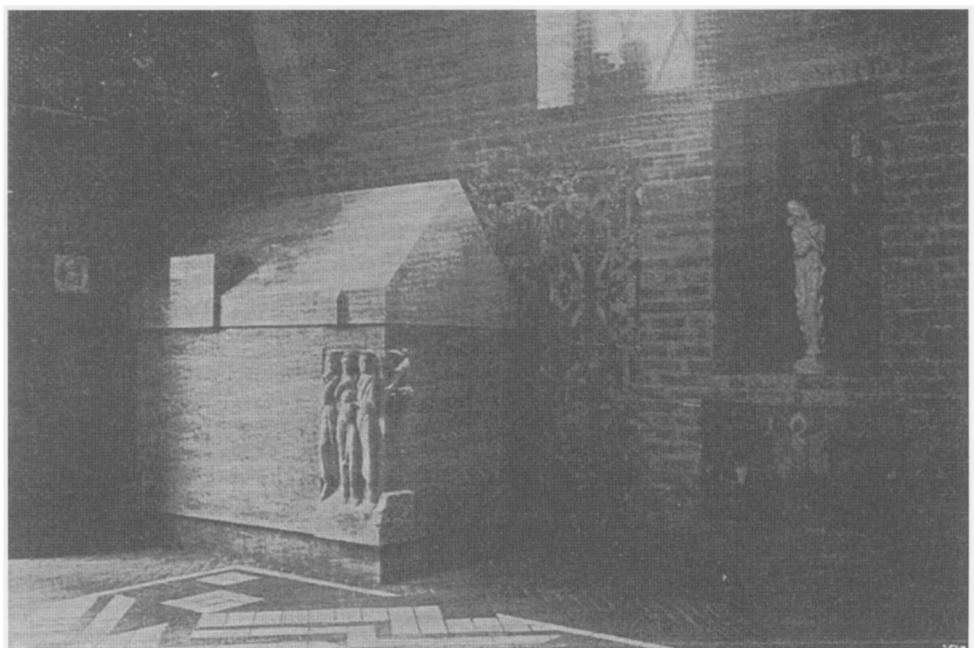
Behrens’s adoption of the motif of the medieval masons’ lodge in the naming and the architecture of the *Dombauhütte* played a role in the architectural thinking of his contemporaries. Walter Gropius worked as an architect in Behrens’s atelier from 1907 to 1910. Although Behrens was not Gropius’s only source of inspiration regarding the *Bauhütte* as a symbol around which to establish a design school,⁸² his influence was significant. Gropius mentioned it explicitly: “He provided me with the foundation on which I established my own development as an architect. . . . He introduced me to the systematic teachings of the medieval *Bauhütten*. . . .”⁸³ The Bauhaus is where the notion of architecture as an isolated harbinger of cultural meaning gains its fullest manifestation, harboring a mystical and abstract evocation of the *Bauhütte*. Less than a year after the closure of the *Dombauhütte*, the Bauhaus produced a *Versuchshaus* (prototype house) in Weimar on the occasion of the *Ausstellung des staatlichen Bau-*

hauses in Weimar (Exhibition of the State Bauhaus in Weimar). An ascetic white box standing alone on a verge, oblique to the street, this dwelling for a single family designed by Georg Muche was to showcase the work of the Bauhaus.⁸⁴ In its aspiration to form a *Gesamtkunstwerk*, it resembled the *Dombauhütte*. All workshops were represented in the aesthetically unified setting. The *Versuchshaus* is also built of masonry (Fig. 40), though the medium is not constitutive of its architectural character. Its materiality and constructive qualities are completely denied, as the rough masonry is hidden under white render. The moment of creation is ecstatic: an expression of the act of fabrication, working with the qualities of materials, is suppressed in favor of the presentation of a building more spatially abstract, or timeless. The floor plan is also generated by rotated squares, though it is simplistic and was highly criticized at the time by Adolf Behne: "To arrange the spaces so as to circumscribe a square exactly in the centre, that exactly a double-sized square results is *Reissbrettgeometrie* [tracing-floor geometry] . . . the 'space' is a part of the surface of the paper and can be named one thing or another."⁸⁵ The principal similarity between the *Dombauhütte* and the *Versuchshaus* is their orientation to attributes read into the medieval *Bauhütte*: collective work toward an achievable good, fraternity, organic coherence, and application of sacred geometry.

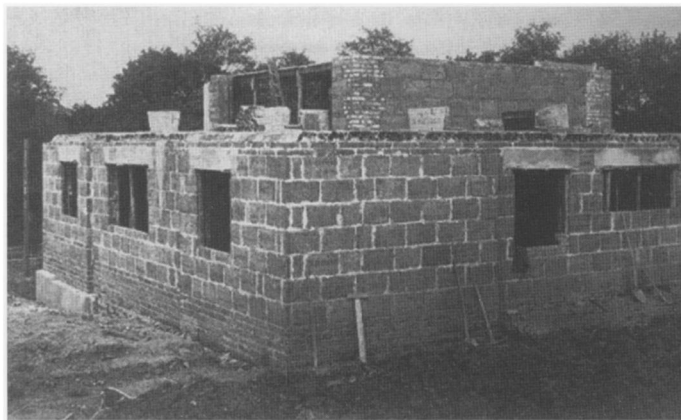
By briefly considering the work of other architects in the 1920s who had a personal connection to Behrens, we further realize how the *Dombauhütte* seems decidedly not of its time. Ludwig Mies van der Rohe's unrealized Friedrichstrasse Hochhaus project, also from 1922, seeks radical autonomy from previous architectural traditions. Standing aloof from its context in the heart of Berlin, the crystalline skyscraper avoids all but obligatory contact with the apparently contaminating ground. Behrens's dark, rustic, and mysterious *Dombauhütte* is intentionally archaic in distinction to the *Versuchshaus* and the Friedrichstrasse Hochhaus, effecting an emphatic rebuttal of all that seemed current in architecture. This re-



38 Ludwig Gies, *Kruzifixus*, 1921, displayed at the exhibition *Entartete Kunst*, Munich, 1937 (artwork © Artists Rights Society [ARS]/VG Bild-Kunst, Bonn)



39 Richard Scheibe (design) and Carl Teich (fabrication), *Sarcophagus*, 1922 (from Behrens, "Die Dombauhütte," 223)



40 Georg Muche, *Haus am Horn*, during construction, 1923

jection is all the more poignant in light of both his earlier projects that helped lead the way to modernism, such as the Turbinenhalle (1909), and his role in mentoring Gropius (1907–10), Le Corbusier (1910), and Mies van der Rohe (1908–11) in his atelier.

In conclusion, there is a degree to which Peter Behrens handled the architecture of the *Dombauhütte* through personal architectural intuition and his practical imagination. However, the creative reinterpretation of primary architectural motifs reveals a genuine dialogue with the cultural characteristics of both the medieval chapel and the *Bauhütte* as architectural paradigms. The drama is engendered by the struggle to be at once anonymous and exceptional. He sought the participatory transcendental meaning embodied in symbolic representation by deferring to the authority of figures and proportions, but he personally made up the rules to which he would adhere.

If modern architecture involves abstraction and sublimation into transparency carried by tectonics and space, there is a recognition that not all meaning can be so accounted for, leading to a paradoxical interest in esotericism, primitivism, and the chthonic—of what was always already there. The Bauhaus produced traditional crafts such as weaving and pottery in parallel with experimental furniture and architecture, in an effort to preserve what is valuable in traditional culture while embracing a vision for the future. The *Dombauhütte* embodies this aspect of modernism, which Joseph Rykwert termed “the dark side of the Bauhaus,” that is just beginning to engage scholarly interest.⁸⁶

Though Behrens shared misgivings about the trajectory of modern bourgeois culture with Expressionist contemporaries such as Bruno Taut and the Gläserne Kette, his method and results are more traditionally architectural. Hence, the architectural and visual sources are here seen as the principal carriers of meaning, based on the conviction that the building’s significance is situated firmly in the domain of architectural making, understood as negotiation between universally available architectural motifs and the material potential available at a particular historical moment.

Behrens was not alone in his recourse to the paradigm of the medieval *Bauhütte* and its practices as a source for architectural making in the modern period.⁸⁷ It resonates with other works, such as Le Corbusier’s chapel at Ronchamp.⁸⁸

Ronchamp is more violent and less obviously pious than the *Dombauhütte*, but the similarity suggests that this type of architectural undertaking has a paradigmatic value of its own: that is, a single room sustaining a deep interaction between earth and light mediated by geometry. It displays throughout an orthogonal complexity, a texture of relations mostly hidden or embedded in a chthonic hall, which offers reassuring sacred meaning in a culture that is by implication its opposite. The sacred is determined by a collection of referential attributes, mostly visual and constructional, not by the larger metabolism of religious life, which requires obligations to gods that are now, as in Friedrich Schelling’s lectures on art, metaphors for concepts.⁸⁹ References are oriented to a viewer who finds all relations precisely calibrated to furnish a comforting invitation to a world both profound and stable. Behrens attaches his aspirations to Christianity as a general symbol of potential meaningfulness while searching for something like Christianity for the twentieth century, as Richard Wagner had done in the nineteenth with Germanic myths. Consequently, the vast cultural program of which the *Dombauhütte* seeks to be a seed solicits a deeply earnest state of mind in the author, who, unbeknownst to himself (modest, sincere, hardworking, competent, and knowledgeable), has put himself in the position of cultural *demiourgos*: the artist-architect as founder of reality. God’s message to Job from the whirlwind was to proclaim his authority as creator through the metaphor of founding the universe as a temple. One line has particular resonance in regard to the *Dombauhütte*: “The earth takes shape like clay under a seal; its features stand out like those of a garment.”⁹⁰

The *Dombauhütte* draws fundamentally on the protocols of the museum, which is partially a consequence of the need to accommodate the auspices of the *Deutsche Gewerbeschau*. However, it is achieved via church furnishings, refracted through the curiosity cabinet of the Renaissance. The careful arrangement of these objects, at which one can only look, and their coordination with niches, steps, floor markings, windows, ultimately even the roof truss and brickwork create the setting for a sort of rooted contemplation. The meaning is purchased at the expense of concrete involvement in the world through praxis, and the effort to lock meaning into the building suggests that Behrens was operating somewhat desperately, ultimately never able to trust the context to provide the conditions for creativity. Rather, one wanders into the special setting as if one belonged to a fallen race—like Cain trying to return to the Garden of Eden—where, in the presence of the miracle of meaning that adds up, we are first awed, then chastened, and finally encouraged to go forth to make a world with these qualities. The semisacred serves as guarantor of a respectful relation to the whole, assuming that it is possible to dispense with the highly mediated institutional apparatus of traditional culture. The result is a concept of continuity and an experience of tactility. It is neither the reconstructed relic of a past culture that an observer might possibly recall nor, obviously, a part of a future culture that an observer might possibly imagine. It is an evocation of estrangement, revealing an anxiety about failure that is focused on salvation from a fallen condition, as if publicly admitting that it is only within the wholly temporary and hypothetical context of the exhibition/museum that it is

possible to be "authentic." All the evident, and largely successful, concern for honesty, craft, fulfillment of meaning is necessarily consigned to references, to a cultural hypothesis. Much as he might have liked it to be, Behrens's own architectural office is not the humble *Bauhütte* of Jan van Eyck's *Saint Barbara*, and he takes the role of bishop or theologian as well as designer. The *Dombauhütte* has the character of a curiously inverted stage set: everywhere outside its enchanted perfection the tragedy is performed.

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Notes

I would like to thank Peter Carl for the ongoing scholarly dialogue out of which the significant themes of this study emerged, and for his contribution to the preparation of the manuscript through incisive, critical readings.

Unless noted otherwise, all translations from the original German are by the author.

- Peter Behrens, "Die Dombauhütte: Aus der Erröfnungsrede von Peter Behrens," *Deutsche Kunst und Dekoration* 26 (1923): 220–30, at 226.
- The German term *Bauhütte* (stonemasons' lodge) did not come into usage until the nineteenth century. The prefix *Dom-* (cathedral) associates the masons' lodge with the construction of a cathedral, as distinct from a smaller church or chapel. The institution of the masons' lodge was most commonly referred to in sources from the high Middle Ages as *fabrica* and from the late Middle Ages as *hütte*.
- See, for example, Carl Alexander Heideloff, *Die Bauhütte des Mittelalters in Deutschland* (Nuremberg: Johann Adam Stein, 1844).
- Joseph Paul Cremers, *Peter Behrens: Sein Werk von 1909 bis zur Gegenwart* (Essen: G. D. Baedeker Verlag, 1928).
- See Bernhard Buderath, ed., *Peter Behrens—Umbautes Licht: Das Verwaltungsgebäude der Hoechst Aktiengesellschaft* (Frankfurt: Prestel Verlag, 1990).
- Alan Windsor, *Peter Behrens: Architect and Designer* (London: Architectural Press, 1981), 157.
- Wolfgang Pehnt, *Die Architektur des Expressionismus* (Osterfildern: Verlag Gerd Hatje, 1998), 96.
- Stanford Anderson, *Peter Behrens and a New Architecture for the Twentieth Century* (Cambridge, Mass.: MIT Press, 2000), 221–53.
- Behrens, "Die Dombauhütte," 228.
- The photograph was reproduced by Cremers, *Peter Behrens*, 83, in 1928, in good quality though cropped slightly. Windsor, *Peter Behrens: Architect and Designer*, 157, shows the image cropped tightly with high contrast and significant loss of detail. Anderson, *Behrens and a New Architecture*, 223, crops the original very slightly. The quality is high, but it is a small reproduction.
- Peter Behrens to August Hoff, February 26, 1929, quoted from the exhibition catalog *Peter Behrens (1868–1940)* (Kaiserslautern: Pfalzgalerie, 1966), 20.
- See Günter Bandmann, *Mittelalterliche Architektur als Bedeutungsträger* (Berlin: Gebrüder Mann, 1951).
- Peter Behrens, *Über die Beziehungen der künstlerischen und technischen Probleme* (Berlin: Ernst Siegfried Mittler und Sohn, 1917), 21.
- Behrens, "Die Dombauhütte," 226–27.
- Johann Wolfgang von Goethe, *Von deutscher Baukunst*, in Johann Gottfried Herder et al., *Von deutscher Art und Kunst* (1773; Oxford: Clarendon Press, 1924), 129.
- Behrens, "Die Dombauhütte," 226.
- For a recent rendering of the ongoing Gothic–classical dichotomy, which also finds itself played out historically in the formulations north–south and German–French, see Werner Oechslin, "The Janus-Head Figure of 'Greek-Gothic' . . . Fragments in the (Never-Ending) Story of Modern Architecture's Search for Identity," in *Fragments: Architecture and the Unfinished: Essays Presented to Robin Middleton*, ed. Barry Bergdoll and Oechslin (London: Thames and Hudson, 2006), 149–82.
- Karl Scheffler, *Der Geist der Gotik* (Leipzig: Insel Verlag, 1917), 13.
- Scheffler maintained sustained critical interest in Behrens's architecture, writing eight articles on his work between 1901 and 1912. It is therefore probable that Behrens sustained a reciprocal awareness of Scheffler's work.
- Scheffler, *Der Geist der Gotik*, 109, 53–54.
- Cremers, *Peter Behrens*, 5.
- See Kurt Asche, *Peter Behrens und die Oldenburger Ausstellung 1905: Entwürfe, Bauten, Gebrauchsgraphik* (Berlin: Gebrüder Mann Verlag, 1992).
- The earliest extant reinterpretation of Joachim and Boaz as spiral stairs is in the plan of the St. Gall monastery, extending out from the church's western apse. The plan, produced at the time of Charlemagne, is legendary for embodying the meaning of building in the Middle Ages. See Walter Horn and Ernest Born, *The Plan of St. Gall: A Study of the Architecture and Economy of, & Life in a Paradigmatic Carolingian Monastery*, 3 vols. (Berkeley: University of California Press, 1979). Similar configurations recur in the eighteenth and nineteenth centuries. A prominent example is Fischer von Erlach's Karlskirche in Vienna, published in his *Entwurf einer historischen Architektur*, 1721.
- Solomon's Temple enjoys leading symbolic status in speculative Freemasonry. See Marcel Valmy, *Die Freimaurer: Arbeit am rauhen Stein mit Hammer, Zirkel und Winkelmaß* (Cologne: Parkland Verlag, 1998).
- The four folios contain a total of thirty-four drawings, comprising floor plans, sections, and elevations at scales of 1:25, 1:50, and 1:100. There are also a number of details at 1:10. Drawing sizes range from 8% by 13% in. (22 by 34 cm) to 46½ by 28¼ in. (118 by 73 cm). Labeling indicates that the earliest drawings are from August 1921, though most are marked "January 1922," and that most were produced in Behrens's office in Vienna. The Kunstbibliothek Berlin obtained the twelve folios of *Dombauhütte* drawings from Peter Behrens's daughter Petra in 1978. She delivered the drawings in twelve folios, which have since been compacted into four.
- This collection comprises fifteen drawings (plans, elevations, and details), one blueprint, and four photographs. I thank Stanford Anderson for drawing my attention to this collection and for his notes on its publication history.
- Helga Griepentrog attributes them to Gregor Rosenbauer. See Tilmann Buddensieg, "Architektur als freie Kunst," in *Peter Behrens: Umbautes Licht; Das Verwaltungsgebäude der Hoechst Aktiengesellschaft*, ed. Bernhard Buderath (Frankfurt: Prestel Verlag, 1990), 58–73. The question of authorship was also raised in *Peter Behrens (1868–1940)*, an exhibition on Behrens's work staged at the Pfalzgalerie in Kaiserslautern, 1966–67 (46): "The designs of the buildings from the twenties until 1934 were produced cooperatively in the atelier of Peter Behrens. Behrens himself sketched only a few lines and gave verbal directions. The drawings themselves were carried out by Hans Döllgast, Munich; Hans Holzbauer, Munich; Karl Mittel, Landau; Hans Schreiner and Rambold von Steinbüchel, Wiesbaden." The question of authorship is one that exists universally in architecture practices. As Behrens was the head architect in an office bearing his name, his authorship is assumed here.
- Fritz Hoerber, *Peter Behrens* (Munich: Georg Müller und Eugen Rentsch, 1913), 37.
- Behrens, quoted in *ibid.*, 38.
- Behrens, *Über die Beziehungen*, 14.
- Lorenz Lechler, *Unterweisungen*, 1516. The original text (one of three existing) is at the Universitätsbibliothek, Heidelberg. It is published in Ulrich Coenen, *Die Spätgotischen Werkmeisterbücher in Deutschland als Beitrag zur mittelalterlichen Architekturtheorie* (Aachen: G. Mainz, 1989), 243.
- Von des Chores Mass und Gerechtigkeit* (ca. 1500), in Coenen, *Die Spätgotischen Werkmeisterbücher*, 273.
- A square is constructed with sides the length of the primary dimension. The midpoints of the sides are then joined, forming a second inscribed square, rotated through 45 degrees. The procedure is repeated until the smallest required dimension is obtained.
- I inscribed a rotated square in the plan whose corners touch the inside walls of the nave at the center points of the entry door and the easternmost windows. These squares were then laid out to the west, centered on the windows. The squares overlap slightly by an apparently arbitrary amount. I then projected the buttresses' diagonals to the interior. The outside edges of these squares fell short of the perimeter of the smaller squares by the same distance that the smaller squares overlapped each other. The outside edges of the two outermost smaller squares were then projected until they met, forming a large square with a diagonal equal to the overall interior dimension of the length of the nave. The perimeter of this square picked up the corner of the

- buttresses. A grid was then produced by projecting 45-degree lines offset by the distance that the small squares overlap.
35. Julius Meier-Graefe, quoted in Peter Behrens, "Das Ethos und die Umlagerung der künstlerischen Probleme," in *Der Leuchter: Jahrbuch der Schule der Weisheit*, ed. Hermann Keyserling (Darmstadt: [Schule der Weisheit], 1920), 321, reprinted in Pehnt, *Die Architektur des Expressionismus*, 92.
 36. Hoeber, *Peter Behrens*, 35.
 37. Annemarie Jaeggi, *Adolf Meyer: Der zweite Mann; Ein Architekt im Schatten von Walter Gropius* (Berlin: Argon Verlag, 1994), 77.
 38. Fritz Neumeyer, *Zwischen Monumentalkunst und Moderne: Architekturgeschichte eines Wohnhauses*, in *Das Haus Wiegand von Peter Behrens in Berlin-Dahlem: Baugeschichte und Kunstgegenstände eines Herrschaftlichen Wohnhauses*, by Wolfram Hoepfner and Neumeyer (Mainz: Phillip von Zabern, 1979), 16.
 39. The proposed geometric schema of the Osirion, Egypt, based on the golden section, was drawn by Lucie Lamy and published in Robert Lawlor, *Sacred Geometry: Philosophy and Practice* (London: Thames and Hudson, 1982), 62.
 40. For a general introduction to the art of Beuron, as well as a chronology of the school and a selected bibliography, see Hubert Krins, *Die Kunst der Beuroner Schule: Wie ein Lichtblick vom Himmel* (Beuron: Beuroner Kunstverlag, 1998).
 41. Peter Desiderius Lenz, *Zur Ästhetik der Beuroner Schule* (Beuron: Verlag der Beuroner Kunstschule, 1927), 16.
 42. For a thorough discussion of the discovery and historical application of *phi*, together with an accessible explanation of the mathematics, see Mario Livio, *The Golden Ratio* (New York: Broadway Books, 2002).
 43. What in the nineteenth century came to be known as the Fibonacci sequence, named by the French mathematician Édouard Lucas, appeared as a mathematical problem in Fibonacci's *Liber abaci* from 1202. He left it as a mathematical curiosity, not recognizing the relation with the golden section. Johannes Kepler, in 1611, was the first to recognize the relation between the Fibonacci sequence and the golden ratio.
 44. A square constructed from this dimension (Fig. 18, above left) falls on the plan at a seemingly arbitrary place beyond the buttress. However, the midpoint of the square finds the centerline of the windows, and further, the distance between the centerline of the windows and the centerline of the buttress is a third of the square. It emerged that the perimeter of the plan is composed of halves and thirds of the original square (Fig. 18, above right). The internal width of the nave is established by constructing a square with sides of $\frac{1}{2} + \frac{1}{3}$ (Fig. 18, below left), which is $\frac{5}{6}$ of the original 760-centimeter square. The buttress width is derived by shifting these squares inside the plan by the wall thickness ($\frac{1}{12}$ of the original square).
 45. See in particular pls. 11, 14 in Jean-Nicolas-Louis Durand, *Précis of the Lectures on Architecture*, trans. David Britt (Los Angeles: Getty Research Institute, 2000).
 46. Le Corbusier, *The Modulor*, trans. Peter De Francia and Anna Bostock (London: Faber and Faber, 1951), 236.
 47. Fritz Schumacher, *Selbstgespräche: Erinnerungen und Betrachtungen* (Hamburg: A. Springer, 1949), quoted in Hoepfner and Neumeyer, *Das Haus Wiegand von Peter Behrens*, 23.
 48. Le Corbusier, *When the Cathedrals Were White*, trans. Francis E. Hyslop Jr. (London: Routledge, 1947), 6.
 49. The overall height of the elevation equals the distance from the inside face of the lower wall in plan to the uppermost edge of the largest generative square (Fig. 22, above left). Secondary alignments strengthened my surmise. I extracted the chevron outlines from the elevation, revealing the logic for obtaining the angle. It is given by drawing vectors from grid intersections on the ground plane through grid intersections at the height of the top of the roof (Fig. 22, above right).
 50. The word *anamorphosis* comes from the late Greek *anamorphoun*, to transform: Greek *ana*, "back," indicating a return toward, and *morphe*, "form."
 51. The earliest example of primitive anamorphosis is in Leonardo da Vinci's *Notebooks*. Other examples appear in sixteenth-century treatises on perspective such as those of Daniele Barbaro (1569) and Giacomo da Vignola (1583). For a comprehensive bibliography of primary texts on anamorphosis, see Alberto Pérez-Gómez and Louise Pelletier, *Anamorphosis: An Annotated Bibliography with Special Reference to Architectural Representation* (Montreal: McGill University Libraries, 1995).
 52. "If the choir is to be 20 feet across, its walls will be made 2 feet strong [wide], if 30 feet across, 3 feet strong"; *Von des Chores Mass und Gerechtigkeit*, in Coenen, *Die Spätgotischen Werkmeisterbücher*, 269.
 53. This assertion is repeated a number of times in Le Corbusier, *Towards a New Architecture* (New York: Dover, 1986).
 54. The *vesica piscis* (fish bladder) is a prominent medieval motif formed by the intersection of two equal-size circles, where a point on the circumference of each circle touches the center of the other. Originally representing an opening and appearance of the divine, it came to mean shared vision and mutual understanding.
 55. A small number of secondary items also above the horizon include a tapestry that hangs over the mantle above the door. There are also two square banners derived from military banners often seen hanging in medieval chapels, alluding here to the *ecclesia militans* of art and craft.
 56. Behrens, "Die Dombauhütte," 222–23.
 57. Gottfried Semper, "Die textile Kunst für sich betrachtet und in Beziehung zur Baukunst," in *Der Stil in den technischen und tektonischen Künsten* (Munich: Friedrich Bruckmann's Verlag, 1878).
 58. For a broad exploration of both the appearance of architecture in Friedrich Nietzsche's own work and the appropriation of his thinking in twentieth-century architecture, see Alexandre Kostka and Wohlfarth Irving, eds., *Nietzsche and "An Architecture of Our Minds"* (Los Angeles: Getty Research Institute, 1999).
 59. Behrens, "Die Dombauhütte," 222–23.
 60. August K. Wiedmann, *The German Quest for Primal Origins in Art, Culture, and Politics 1900–33: Die "Flucht in Urzustände"* (Lewiston, N.Y.: Edwin Mellen, 1995), 82–84.
 61. A full-page photograph of the model and a caption appear in the exhibition catalog *Architektur der zwanziger Jahre* (Kaiserslautern: Pfalzgalerie Kaiserslautern, 1973). There is no indication to which collection it belonged, and its current location is unknown to the gallery.
 62. Four gables and three ranks of buttresses are present. This scheme was ultimately abandoned in favor of three gables and two ranks of buttresses. It was therefore produced either as a working model or for an interim presentation. Its high degree of accuracy would favor the latter interpretation.
 63. Ambiguous scale is a trait shared by the work of a number of modern architects. A particularly effective illustration of the phenomenon is Adolf Loos's American Bar in Vienna, whose mirrored interior architecture oscillates dynamically between the monumental and the highly personal.
 64. Barbara Rabe of Bockhorner Klinker GmbH, e-mail message to author, August 30, 2005.
 65. For a summary of the project and exterior and interior photographs, see Winfried Nerdinger, ed., *The Walter Gropius Archive: An Illustrated Catalogue of the Drawings, Prints, and Photographs in the Walter Gropius Archive at the Busch-Reisinger Museum, Harvard University*, 4 vols. (New York: Garland, 1990), vol. 1, 38–42.
 66. Joost Schmidt carved the beams. Josef Albers designed the stained glass, and Marcel Breuer produced a number of the furnishings.
 67. In the medieval situation, the ribs were properly three dimensional and were composed in bays. The timber frames were two dimensional, arrayed along the length of the nave, bearing directly on the wall.
 68. Edwin Redslob, "Ein Rückblick auf die künstlerische Bedeutung der Deutschen Gewerbeschau München 1922," in *Deutsche Gewerbeschau München 1922: Amtlicher Bericht* (Munich: Knorr und Hirth, 1922), 13.
 69. See Tilmann Buddensieg, *Industriekultur: Peter Behrens und die AEG, 1907–1914* (Cambridge, Mass.: MIT Press, 1984).
 70. For a text that chronicles this trajectory, and that includes short texts by Behrens, Scheffler, and Taut, among others, see Julius Posener, *Anfänge des Funktionalismus: Von Arts and Craft zum Deutschen Werkbund* (Berlin: Ullstein, 1964).
 71. Behrens, "Die Dombauhütte," 226.
 72. Peter Behrens, "Reform der künstlerischen Erziehung," in *Der Geist der neuen Volksgemeinschaft*, by Zentrale für Heimatsdienst (Berlin: S. Fischer Verlag, 1919), 100.
 73. Peter Behrens, "Qualitätsarbeit," *Deutsche Zeitung für Spanien* 7 (1922): 3, quoted in Anderson, *Behrens and a New Architecture*, 225.
 74. For an exploration of the notion of the *Gesamtkunstwerk* in early modernity, focusing on the early work of Peter Behrens, see Gabriele Häusler, "In the Artwork We Become One: The Problem of the Gesamtkunstwerk in the Visual Arts at the Beginning of the 20th Century" (master's thesis, University of Cambridge, 1989). See also Karsten Harries, "The Dream of the Complete Building," *Perspecta* 17 (1980): 36–43.
 75. Scheffler, *Der Geist der Gotik*, 96.
 76. Behrens, "Die Dombauhütte," 221.
 77. *Deutsche Gewerbeschau München 1922: Amtlicher Katalog* (Munich: Werbedienst Kommandit-Gesellschaft, 1922).
 78. The word *Expressionism* was established in 1910 or 1911 as an antithesis to Impressionism. It came to be characterized on the level of visual ap-

- pearance by the crude working of shapes and materials and the depiction of man and nature as an undifferentiated continuity. Pehnt, *Die Architektur des Expressionismus*, 13, cites Adolf Behne as the first author to speak of Expressionist architecture, referring to Bruno Taut in 1913.
79. Julius Meier-Graefe, "Peter Behrens, Düsseldorf," *Die Kunst, Monatshefte für freie und angewandte Kunst* 12 (1905): 390.
 80. Cremers, *Peter Behrens*, 20. Controversy attached itself to the sculpture and to the *Dombauhütte*, initially provoked by conservative religious leaders, but ultimately by the Nazis, with serious repercussions for Behrens's architectural patronage. In an effort to frustrate Behrens's participation in the AEG's proposed new headquarters on the projected north-south axis in Berlin, Konrad Nonn (editor of the Prussian Finance Ministry's architectural journal *Zentralblatt der Bauverwaltung*) wrote about "the so-called *Dombauhütte*, in which the blasphemous Christ by Gies, along with other crude works which made a mockery of art and religion, by degenerate artists, was a special undertaking of Professor Peter Behrens"; quoted in Windsor, *Peter Behrens: Architect and Designer*, 157–58.
 81. The exhibition also contained works by numerous Bauhaus artists. For a reproduction of the original exhibition catalog, see Peter-Klaus Schuster, *Nationalsozialismus und "Entartete Kunst"* (Munich: Prestel Verlag, 1988), 122.
 82. Gropius's biographer Reginald Isaacs wrote, "A study in the history of architecture that came into Walter Gropius's hands left behind a remaining impression: a published version of a public lecture about the medieval *Bauhütten* [Ferdinand Janner, *Die Bauhütten des Mittelalters* (Regensburg, 1871)]. . . . now he began to understand how these massive buildings were completed stone by stone by the artist-craftsmen, guild-like, sworn to each other in the communality of beliefs and aims, who lived and worked on the building sites like a family"; Isaacs, *Walter Gropius: Der Mensch und sein Werk* (Berlin: Gebrüder Mann Verlag, 1983), 76.
 83. Walter Gropius, *Apollo in der Demokratie* (Mainz: Florian Kupferberg, 1967), 124–25.
 84. Though the architectural design of the *Versuchshaus* is attributed to the youngest Bauhaus master at the time, Georg Muche, the design development and working drawings were produced in Gropius and Meyer's Weimar architectural office, and Meyer supervised the construction.
 85. Adolf Behne, "Das Musterwohnhaus der Bauhaus-Ausstellung," *Die Bauwelt* 41 (1923): 591–92.
 86. Joseph Rykwert, "The Dark Side of the Bauhaus," in *The Necessity of Artifice* (London: Academy Editions, 1982). See also Christoph Wagner, ed., *Das Bauhaus und die Esoterik* (Bielefeld: Kerber Verlag, 2005).
 87. The meaning and implications of the *Bauhütte* as an aesthetic and cultural paradigm since Romanticism is a much larger question, which I address in my forthcoming PhD dissertation for the Department of Architecture at the University of Cambridge.
 88. I owe this formulation to Peter Carl.
 89. For example Friedrich Schelling, *Philosophie der Kunst* (Darmstadt: Wissenschaftliche Buchgesellschaft, 1976).
 90. Job 38:14 (New International Version).