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Rudolf Steiner's First Goetheanum as an Illustration of Organic Functionalism

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Austrian designer Rudolf Steiner intended his first Goetheanum building in Dornach, Switzerland (1913–1922), among other purposes, to be a dramatic illustration of the principles of a new style of architecture, simultaneously organic and functional. Its unusual forms in carved wood and reinforced concrete, its watercolor murals, and its engraved colored-glass windows were also to be a visual introduction to the metaphysical ideas of Steiner's anthroposophy. The central dynamic of the building was the intersection of its two domes of different sizes, intended by Steiner to express the union of spirit and matter through his treatment of the functions of stage and auditorium. The contrast between the two domed spaces was supported in great detail throughout the interior.

Steiner applied formative principles of the natural world to building designs, attempting to achieve an organism-like relation between part and whole, a harmonious adaptation of building to site, and an organic formal quality sympathetic to the human observer. In particular, he employed the principle of metamorphosis in the abstract forms of the building's ornamentation and ground plan, relating this principle to Goethe's studies of biological morphology. He created forms and spaces that not only fulfilled but also directly imaged *their functions, including their relationship to their human users. He set forth his new architectural approach within the context of an extensively enunciated architectural theory, whose primary thrust was the encouragement of a clear adaptation of the designs of buildings to a holistically conceived human nature. He pioneered new techniques and styles, which, along with his lectures and writings, have influenced a number of significant artists and architects of the twentieth century.*

RUDOLF STEINER, the Austrian-born philosopher, scientist, educator, social theorist, artist, and anthroposophist, designed and supervised seventeen buildings between 1908 and 1925. Yet Steiner, who died in 1925, was rediscovered as an architect only during the 1960s.[1] In recent years his monumental second Goetheanum building in Dornach, Switzerland, initially constructed between 1924 and 1928 (Fig. 1), has been added as an example of Expressionist architecture to several standard surveys of modern architecture, by such authors as Nikolaus Pevsner and William J. R. Curtis, with brief but unilluminating comment. The previously destroyed first Goetheanum building, however, constructed on the same Dornach site between 1913 and 1921, is a more thorough and revealing example of Steiner's design intentions (Fig. 2). This unusual axial composition of two intersecting wooden domes of unequal size, roofed in slate and resting on a concrete base, was constructed as the world headquarters for Steiner's Anthroposophical Society. When the nearly finished building was razed by arson in a dramatic New Year's Eve fire during the first hours of 1922, Steiner immediately began designing the larger but less complex second Goetheanum, to be built entirely in reinforced concrete.[2]

Steiner himself stated that he intended his first Goetheanum and its related ancillary structures to be a primitive, beginning illustration of the principles of a new style of architecture. While this fact has been noted in most of the handful of more extensive scholarly treatments of the first Goetheanum,[3] their authors have been able to provide only partial, and occasionally speculative or even inaccurate, information regarding the principles and essential characteristics that Steiner ascribed to this new style of architecture. Steiner intended the first Goetheanum, among other purposes, to be an example of a *Gesamtkunstwerk,* that ideal union of all the arts which had often been espoused in modern times since the romantic movement; to serve as an artistic, experiential introduction to many of the concepts of the

1. This rediscovery is chronicled in R. Raab, A. Klingborg, and A. Fant, *Eloquent Concrete: How Rudolf Steiner Employed Reinforced Concrete,* London, 1979, 11–22.

2. Although there remain some uncertainty and mystery regarding the identity of the arsonist, he appears to have been a mentally unstable man who was unduly influenced by hearing negative comments by others to the effect that the unusual building ought to be burned down. Steiner's metaphysical and social endeavors, for differing reasons at different times, aroused the ire of such diverse groups as Catholic and Protestant churches, Communists, and Nazis.

3. These include C. Kemper, *Der Bau: Studien zur Architektur und Plastik des ersten Goetheanum,* Stuttgart, 1966; D. Sharp, *Modern Architecture and Expressionism,* New York, 1966, 145–165; W. Pehnt, *Expressionist Architecture,* trans. J. A. Underwood and E. Kustner, New York, 1973, 137–148; H. Biesantz et al., *The Goetheanum: Rudolf Steiner's Architectural Impulse,* trans. J. Schmid, London, 1979; Raab et al., *Eloquent Concrete;* and E. A. Santomasso, "Origins and Aims of German Expressionist Architecture: An Essay into the Expressionist Frame of Mind in Germany, Especially as Typified in the Work of Rudolf Steiner," Ph.D. diss., Columbia University, 1973, 192–322.

Fig. 1. Rudolf Steiner, second Goetheanum, Dornach, Switzerland, 1924–1928. View from northwest (Hans Gross, Riehen-Basel © Verlag am Goetheanum, Dornach).

elaborate philosophical and metaphysical teachings of Steiner's anthroposophy; to pay homage to the scientific and philosophical views of the German poet-scientist Johann Wolfgang von Goethe; to be an appropriately designed theater and world headquarters for the Anthroposophical Society, founded by Steiner in 1913; and to be an indication of a new and fully modern style of architecture, applicable to any type of building or functional design.

It is primarily this last purpose, the demonstration of a style that I will label *organic functionalism,*[4] that I wish to address here, though I cannot completely ignore the other, overlapping, intentions. Although elements of organic functionalism can be discerned in the designs or statements of several other architects of the early modern period, Steiner's language of form and design, as several scholars have noted, shows very little outside influence and is not readily classifiable as an example of some already-recognized style or context.[5] To a large degree I will

4. This same stylistic term has been used—correctly, I would say—by H. Klotz in *The History of Postmodern Architecture,* trans. R. Donnell, Cambridge, Mass., 1988, 24. Klotz independently uses the term in connection with the architectural ideas of Hugo Häring. The possibility of any reciprocal influences between Steiner and Häring is still open.

5. I. Meissner Reese, in "Steiner's Goetheanum at Dornach," *Progressive Architecture,* XLVI, Sept. 1965, 146–153, wrote of the Goetheanum, "Stylistically the building is unclassifiable." Pehnt, in *Expressionist Architecture,* 137, remarked, "In the history of art Steiner's creations . . . stand in virtual isolation." Sharp, in *Modern Architecture,* 148, questions whether Steiner's architecture should be classified as Expressionist ("Steiner commanded a form language peculiarly his own") but apparently decides that it just fits within the parameters of Expressionism. Yet, none of the other "Expressionist" architects—with the exception of Hugo Häring—linked his work so essentially to functionalism as Steiner did. Moreover, Steiner's design was not an empathetic expression of subjective artistic feeling (or at least did not intend to be) but followed clearly articulated design principles for which he made some claim to objectivity. While giving Expressionism his own metaphysical and psychological definition, Steiner himself suggested that his work represented a kind of balance between, or union of, Expressionism and Impressionism and, in general, rejected Expression-

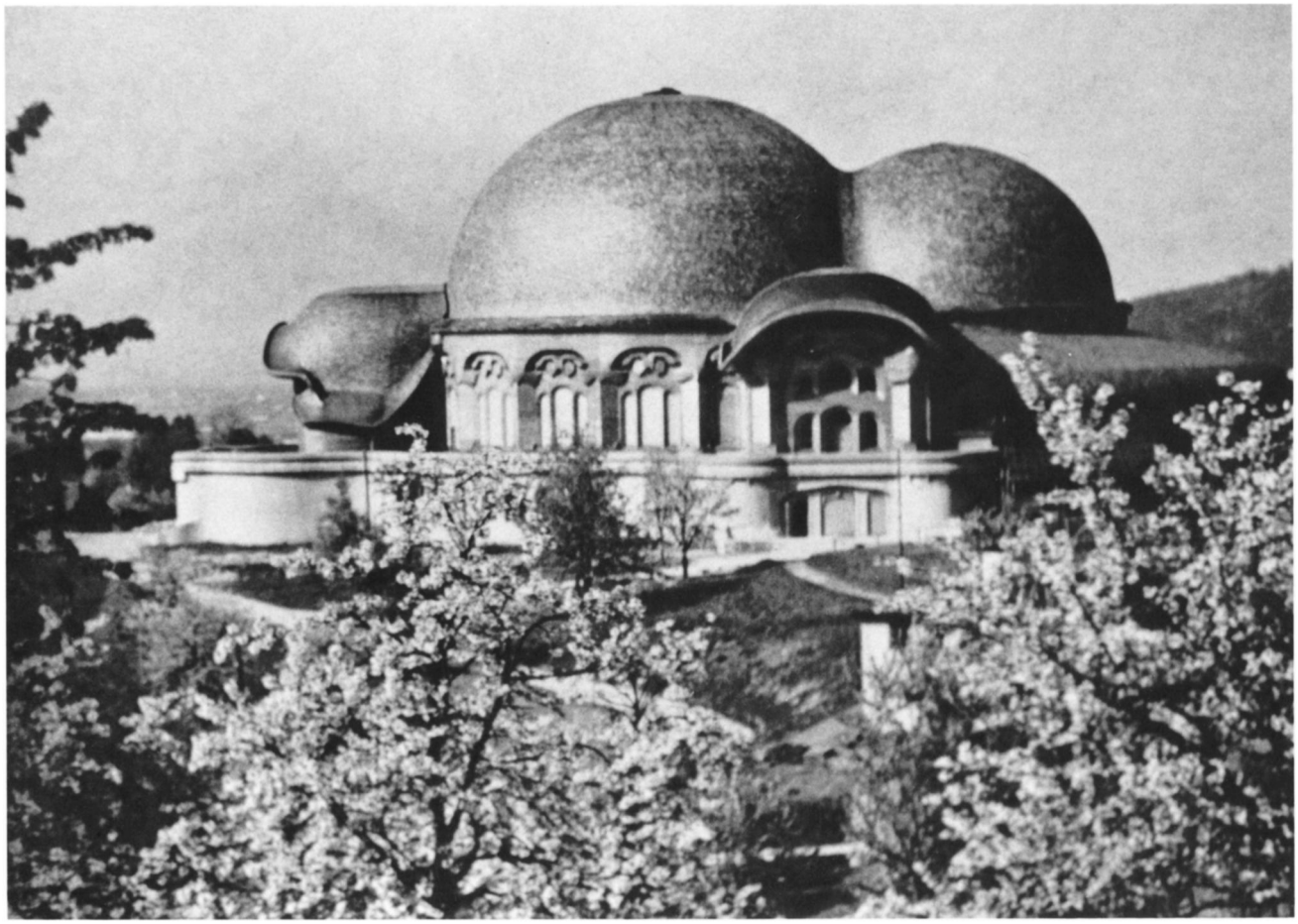

Fig. 2. Rudolf Steiner, first Goetheanum, Dornach, Switzerland, 1913–1922, destroyed 1922. View from south (Atelier Heydebrand-Osthoff, Dornach © Godhard von Heydebrand, Boll).

present Steiner's design philosophy by paraphrasing or quoting his own descriptions of his architectural aims and ideas, as he set them forth in nearly sixty recorded lectures. Steiner held a Ph.D. in philosophy, authored over a hundred books, and was quite articulate about his architectural projects and their theoretical bases. Sources for further reading on additional purposes or design aspects of the first Goetheanum, on Steiner's other buildings, and on Steiner himself will be cited in notes for the interested reader.

A biographical sketch

Rudolf Steiner was born on 27 February 1861 at Kraljevec, Austria (now in Yugoslavia). During his student years in Vienna, beginning in 1879 at the Technische Hochschule, he focused on the sciences, mathematics, and philosophy, but he also gradually discovered Goethe as both a poet and a scientist. In 1882 his strong interest in Goethe led to the opportunity to edit Goethe's natural-scientific writings for the *Kürschners Deutsche National-Litteratur* series published between 1883 and 1901.[6] Steiner grew convinced that the method of modern natural science could comprehend only what was dead in nature, not living processes. Goethe, however, had shown a way to research the organic realm and had provided a seed for a possible methodological bridge between nature and spirit in this respect.

ism as too one-sided an artistic direction. See R. Steiner, *An Introduction to Eurythmy* (1920), trans. G. Hahn, Spring Valley, N.Y., 1984, 31–32; idem, "The Physical-Superphysical: Its Realization through Art" (lecture delivered 15 Feb. 1918 in Munich), trans. V. E. Watkin, typescript, Rudolf Steiner Library, Ghent, N.Y., 21–25; and, especially, A. Turgeniev, *The Goetheanum Windows,* London and New York, 1938, 4–5. While some aspects of Antonio Gaudí's architectural designs in Barcelona, inspired by organic and geological forms, may appear similar to Steiner's designs, Gaudí's work arose from very different sources and design approaches; for example, Steiner based his architecture on what he perceived as the formative *principles* of organic nature, while Gaudí drew inspiration from the finished, perceptible forms of nature. Moreover, there is no reason to believe that Steiner ever knew of Gaudí's work. He never visited Spain, and the chronology of the two men's designs makes it unlikely that he would have seen photographs of Gaudí's buildings before designing most of his own structures, if at all.

6. J. W. von Goethe, *Goethes naturwissenschaftliche Schriften,* ed. and intro. R. Steiner, 4 vols., Stuttgart, Berlin, and Leipzig, 1884–1897 (reprint of volumes first published in *Kürschners Deutsche National-Litteratur*).

In 1890 Steiner left Vienna for the Goethe and Schiller Archives in Weimar to become a collaborative editor for the Sophia edition of Goethe's scientific writings.[7] The following year he received his Ph.D. in philosophy from the University of Rostock and never thereafter resettled in Austria. He moved to Berlin in 1897 to edit an established, weekly literary journal, the *Magazin für die Literatur des In- und Auslandes.* During these years Steiner wrote and published a series of philosophical books—primarily on epistemology, ethics, and Goethe's world view, but also on Nietzsche, Hegel, and Haeckel.[8]

In 1900 Steiner surprised most of his academic colleagues by lecturing at the Theosophical Society in Berlin, and from 1902 to 1912 he became the leader of the Theosophical Society in Germany. His lecture and book topics from 1902 onward gradually expanded to include such areas as the gospels, reincarnation, and occult physiology, as well as economics, education, history, science, agriculture, medicine, and the arts. The Theosophical Society had been founded in 1875 in New York by Madame Helena P. Blavatsky (1831–1891) and Henry Steel Olcott (1832–1907) to promote both Western and Eastern occult spiritual teachings. After the Society moved its headquarters to India in 1879, it grew quite popular both there and in the West, but its teachings took on a more oriental direction.

Steiner always clearly distinguished his independent Christian, Rosicrucian, approach from the Eastern emphasis of the Theosophical Society. When the Society decided to promote the Hindu boy Krishnamurti as the vehicle for the incarnation of the new World Teacher, the Christ, a disappointed Steiner left the Theosophical Society and founded his own Anthroposophical Society in 1913 in Berlin. Steiner felt that in modern times spiritual knowledge should depend, not upon external revelation, but rather upon the development of human mental powers in each individual. He claimed to teach nothing he had not himself known through the methods of "spiritual scientific" research he described, based upon his earlier epistemological writings.

Because of his phenomenological or empirical approach to spiritual knowledge (in tune with Goethe's scientific method), and because of the possibility of personal verification of his findings by anyone who pursued the methodology he had followed for systematically heightening powers of conscious cognition, Steiner regarded his teaching as fully scientific, as a "spiritual science." His subsequent work in anthroposophy aimed to show that effective long-range solutions to the pressing problems of modern individual and social life required a foundation in spiritual knowledge. Until his death in 1925, he worked with a growing group of anthroposophical collaborators in several nations to develop examples of practical applications of anthroposophy in diverse fields, including education, agriculture, economics, medicine—and architecture.[9]

Although one of his teachers, Josef Baier, was an "admirer and disciple" of Gottfried Semper, Steiner had no formal architectural training other than his university studies in physics, chemistry, mechanics, and geometry.[10] He worked collaboratively with a variety of architects and other specialists, conveying his design ideas through verbal instructions, sketches, plasticine models, data concerning plans and dimensions, practical work on the site and in workshops, and periodic critiques of his colleagues' drawings and designs. In his approach to all levels of design, Steiner particularly stressed the relationship between form and function.

An individualizing functionalism

In a recently published study, Larry Ligo describes an expanded conception of architectural functionalism based on five types of function repeatedly cited by twentieth-century architectural critics: structural articulation, physical function, psy-

7. Idem, *Goetheswerke* (herausgegeben im Auftrag der Grossherzogin Sophie von Sachsen), Weimar, 1887–1919. From 1889 to 1897 Steiner worked in the Goethe-Schiller Archives in Weimar on the natural-scientific volumes of this "Sophia Edition" of Goethe's complete works.

8. In chronological order, the most significant of these publications are *Goethean Science* (1883), trans. W. Lindeman, Spring Valley, N.Y., 1988 (or earlier translation by O. D. Wannamaker titled *Goethe the Scientist,* Spring Valley, N. Y., 1950); *The Science of Knowing: Outline of an Epistemology Implicit in the Goethean World View* (1886), trans. W. Lindeman, Spring Valley, N.Y., 1988 (or earlier translation by O. D. Wannamaker titled *The Theory of Knowledge Implicit in Goethe's World Conception,* Spring Valley, N.Y., 1968); *Goethe as the Founder of a New Science of Aesthetics* (1889), trans. G. Metaxa, London, n.d.; *Truth and Knowledge* (1892), trans. R. Stebbing, 2d ed., Blauvelt, N.Y., 1981; *The Philosophy of Spiritual Activity: Basic Features of a Modern World View* (1894, rev. 1918), trans. W. Lindeman, Hudson, N.Y., 1986 (or earlier translation by Michael Wilson titled *The Philosophy of Freedom: The Basis for a Modern World Conception,* Spring Valley, N.Y., 1964); "Friedrich Nietzsche, a Fighter against His Time" (1895), in *Friedrich Nietzsche: Fighter for Freedom,* trans. M. Ingram de Ris, Englewood, N.J., 1960, 37–149; *Goethe's World View* (1894, rev. 1918), trans. W. Lindeman, Spring Valley, N.Y., 1985 (or earlier translation by unknown translator, *Goethe's Conception of the World,* London and New York, 1928); "Haeckel and His Opponents" (1900), trans. B. Keightley, in *Three Essays on Haeckel and Karma,* London, 1914, 52–166; and *Conceptions of the World and of Life in the Nineteenth Century* (1900), later incorporated by Steiner into *The Riddles of Philosophy* (1914), trans. F. C. A. Koelln, Spring Valley, N.Y., 1973, 237–444.

9. For more extensive accounts of Steiner's biography, see *Rudolf Steiner: An Autobiography,* trans. R. Stebbing, Blauvelt N.Y., 1977; G. Wachsmuth, *The Life and Work of Rudolf Steiner,* trans. O. D. Wannamaker and R. E. Raab, 2d ed., New York, 1955; A. P. Shepherd, *Scientist of the Invisible,* London, 1954; S. C. Easton, *Rudolf Steiner: Herald of a New Epoch,* Spring Valley, N.Y., 1980; J. Hemleben, *Rudolf Steiner: A Documentary Biography,* trans. L. Twyman, East Grinstead, England, 1975; and R. Lissau, *Rudolf Steiner: Life, Work, Inner Path, and Social Initiatives,* Stroud, England, 1987.

10. R. Steiner, *Ways to a New Style in Architecture* (five lectures delivered 17 June–26 July 1914 in Dornach), trans. unknown, London and New York, 1927, 2. While acknowledging Semper as "undoubtedly a highly gifted being," Steiner rejected his architectural approach as too materialistic and too centered on external technique.

chological function, social function, and cultural/existential function.[11] Ligo reminds us that allusions to the three latter, "higher," functions, including references to "organic" principles of design, appeared frequently in the verbal statements of such pioneer architects of the Modern Movement as Louis Sullivan, Frank Lloyd Wright, Le Corbusier, Mies van der Rohe, and Walter Gropius. Due to a variety of circumstances, primarily misunderstandings by interpreters and rank-and-file practitioners, a much narrower, utilitarian functionalism (called "absolute functionalism" by J. M. Richards)[12] became so dominant as to be considered almost synonymous with Modern architecture.

Steiner, too, was an early advocate of a broad understanding of functionalism. When asked by Hermann Ranzenberger, one of his architectural collaborators, how to tap the source of architectural imagination so as to create valid and diversified solutions, Steiner replied simply, "You ask yourself what happens."[13] As practiced by Steiner, this self-questioning process (remarkably prescient of Louis Kahn's much later description of contemplating "what a thing wants to be") necessarily involved at every point the multitude of effects of a building on the human user—physical, emotional, aesthetic, psychological, and spiritual. For Steiner, a building was fully (and ideally) functional only when all these aspects were satisified by the built environment, and this was possible only when the building was developed "organically" from its internal functional program and intended user activities.

In 1908, Steiner spoke of his hopes that forms of railroad stations and future airports would express the fact that such places were used for the departure and arrival of locomotives and aircraft.[14] As early as 1907, he had begun to describe the importance of the psychological and spiritual effects of buildings on the mental health of their users and, particularly, on the possibility of making progress in the meditative exercises he had begun to teach while director of the German Section of the Theosophical Society (that is, before 1913). In an article of 1907 he wrote, "Man can only experience true harmony of soul where what his soul knows to be its most valuable thoughts, feelings, and impulses are mirrored for his senses in the forms, colors, and so on of his surroundings."[15] That many of Steiner's projects were actually constructed, while so many designs of Expressionist architects were not, was largely due to the urgent desire of Steiner's supporters and collaborators in the Anthroposophical Society to be able to live and work in buildings that fulfilled such design criteria.

In accordance with a popular conception of early Modernism, Steiner further argued that properly designed buildings would exert a healing and morally elevating influence on both the individual psyche and society as a whole. In 1914 he proclaimed that buildings designed after the approach he tried to pioneer could act as "law-givers," more able to purify wayward human passions and to discourage crime than whole volumes of penal legislation.[16] "In our civilization there is so much falsity in our forms that it can hardly be wondered at that so much of what men say is also false," he commented in 1920.[17] "Buildings will begin to speak," he had earlier declared in 1914; "they will speak a language of which men at the present have no inkling."[18]

In addition to the "organic" aspects I will discuss later, Steiner's approach to functional design added another twist to progressive concerns with the nature of materials, modern construction techniques, and the purpose of the structure. The forms and spaces created by Steiner were planned not only to fulfill their various specific functions but also to *image* them. In fact, individual elements in a Steiner building sometimes seem to express visually their multidimensional functions without themselves necessarily performing all of them, although ideally these two aspects would be united. This distinction often becomes quite subtle with regard to psychological function—where to image such a function in a building *is* to perform it, at least in part.

Steiner's aim seems to have been to achieve a kind of transparency of form to function, whereby a person experiencing the building should be able to "read" the function of the building and its various component elements from their visible appearance.[19] For example, door handles should be designed to fit

11. L. L. Ligo, *The Concept of Function in Twentieth-Century Architectural Criticism,* Ann Arbor, 1984, esp. 7–19.

12. J. M. Richards, *Modern Architecture,* Baltimore, 1962, 37.

13. As reported in R. Raab, "Rudolf Steiner as Architect," *Architectural Association Quarterly,* XII, 1980, 54.

14. On 14 June 1908 in Munich, as quoted in H. Hauck, *Handwork and Handicrafts from Indications by Rudolf Steiner, Part I,* trans. G. Rickett, Forest Row, England, 1968, 12.

15. "Eine wahre Harmonie der Seele kann doch nur da erlebt werden, wo den menschlichen Sinnen in Form, Gestalt und Farbe usw. als Umgebung sich das spiegelt, was die Seele als ihre wertwollsten Gedanken, Gefühle und Impulse kennt." R. Steiner, "Der theosophische Kongress in München: Bericht," in *Luzifer-Gnosis 1903–1908: Grundlegende Aufsätze zur Anthroposophie und Berichte aus der Zeitschrift "Luzifer" und "Lucifer-Gnosis,"* Dornach, 1910, 592; trans. J. Langbecker, in "Forms for the New Architecture," *News and Views of the Los Angeles Branch* (of the Anthroposophical Society), II, 1985, 8.

16. Steiner, *Ways,* 16–17.

17. "Wir haben ja in unserer Kultur gerade in den Formen so viel Erlogenes, dass es schliesslich nicht wunderbar ist, dass wir auch in dem, was die Menschen sprechen, so viel Erlogenes haben." R. Steiner, *Architektur, Plastik, und Malerei des Ersten Goetheanum* (three lectures delivered 23, 24, and 25 Jan. 1920 in Dornach), Dornach, 1972, 19; also see anonymous translation of these lectures, "The Building at Dornach," typescript, Rudolf Steiner Library, Ghent, N.Y.

18. Sharp, *Modern Architecture,* 145; for alternate translation, see Steiner, *Ways,* 17.

19. Louis Sullivan similarly spoke of an observer's "reading through" a building to ascertain its purpose: "Consequently each part must so clearly express its function that the function can be read through the part." *Kindergarten Chats and Other Writings,* New York, 1947, 46–47. The original *Kindergarten Chats* of 1901 was revised by Sullivan in 1918.

Fig. 3. Rudolf Steiner, Boiler House, Dornach, 1914–1915. View of southeast front with Glass House behind to left, 1914 (Hans Gross, Riehen-Basel © Verlag am Goetheanum, Dornach).

closely the irregular form of the grasping hand, to indicate—perhaps by a suitable indentation—where the hand should grasp, and to suggest "push" or "pull" by their very shape. For Steiner, rather than presenting opaque or unclear design that creates obstacles or stirs semiconscious feelings of alienation in its users, architecture should be both physically and psychologically "user-friendly."

The most direct way to apprehend the application of Steiner's functionalism is to examine several smaller, more accessible, examples of his design, all closely connected with his Goetheanum project. Undoubtedly the most dramatic of these is the reinforced concrete Boiler House, completed in 1915 (Fig. 3). Steiner felt it necessary to separate the Boiler House from the first Goetheanum, thereby releasing the main building from the need to express the functions of the heating plant and allowing it an unencumbered architectural development. The heated water from the Boiler House was pumped underground to the Goetheanum radiators. All radiators were fronted with concrete shields, whose varying sculptural forms expressed the shields' dual functions of "containing/protecting" and of "opening out above" to let the heat rise into the room (Fig. 4).

Like the nearby Glass House and Haus Duldeck (Fig. 5), also from the 1913–1916 building period, the Boiler House showed its kinship with the dual-domed Goetheanum through its own two smaller domes. The rounded domes in front are countered by the rectangular, faceted, rear section (Fig. 6). Just where these two differently styled sections meet, the building's flamboyant chimney rises in three stages as plane surfaces give way to curved ones. Each stage terminates in a pair of laterally projecting "flame" forms. The window and door trim below also echoes these flamelike forms. The chimney rises between the formal expressions of the two functions served and connected by the Boiler House—namely, physical utility (the rectilinear rear) and culture (the two small domes).

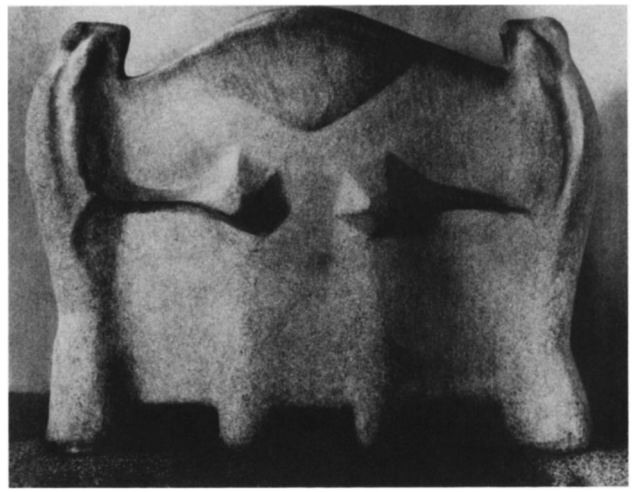

Fig. 4. Rudolf Steiner, radiator shield, first Goetheanum, Dornach, between 1914 and 1920. Coated concrete. Presently in second Goetheanum, Dornach (© Hans Gross, St. Gallen).

Fig. 5. Rudolf Steiner, Haus Duldeck, Dornach, 1915–1916. View from northeast (© Verlag am Goetheanum, Dornach).

In this utility building, Steiner attempted to express the processes occurring within: the combustion in the boiler, the circulation in the piping, the rising and branching of the smoke, and the transformation of electric current. He explained his design procedure with a favorite metaphor for the integral relationship of form and function that he was seeking: "I have to accept the necessary heating and illumination technology; that is the kernel of the nut, around which I have to build the nutshell and model the appropriate chimney stack."[20] He also used the analogy of the close-fitting relationship between a cake mold and a cake to illustrate the kind of harmonious connection

20. "Da ist mir alles dasjenige gegeben, was als Beleuchtungsmaschinerie, als Beheizungsmaschinerie notwendig ist: das ist mir Nusskern, um den habe ich die Nusschale herumzubilden, für den Rauchabzug das Notige zu bilden." R. Steiner, *Das Goetheanum als Gesamtkunstwerk: Der Baugedanke des Goetheanum* (lecture delivered 29 June 1921 in Berne), Dornach, 1986, 27; for alternate translation, see idem, *The Architectural Conception of the Goetheanum,* London and New York, 1938, 10.

Fig. 6. Boiler House. View from south (author).

Fig. 7. Rudolf Steiner, Transformer House, Dornach, 1921. View from southwest (© Verlag am Goetheanum, Dornach).

he intended between the (interior) forms of a building and the activities within it.

In a later utility building, the Transformer House of 1921, Steiner attempted to make visible the conversion of alternating current in a rectilinear language of form (Fig. 7). Roofed prisms of various sizes are attached to each other at right angles so that the structure begins to resemble an oversized electric switch. Not only are the perpendicular changes of direction meant to express the intake, conversion, and output of electricity, but also the ratio of the sizes of the blocks is said to be the same as the ratio of the stepdown of the current.[21] Functionalism could hardly be more literal than this, albeit for a relatively uncomplicated physical process.

Steiner's was an individualizing functionalism, which held that every work of design should have its own functionally appropriate form or structural gesture. When this was true, felt Steiner, one of the root causes of disjunction and alienation between the human being and modern built surroundings would be overcome. All architectural functions would be transparently clear to human users through their formal design. Yet, to relate his architectural forms still more directly and completely to their users, Steiner desired not only a visible functionalism, but also an *organic* visible functionalism.

Steiner's organic principles

Here Steiner was able to draw inspiration from the scientific outlook of Goethe. He accepted Goethe's concept of the presence of "laws of nature," which regulate the visible forms and growth patterns of all organisms.[22] Opposing the arbitrary expression of subjectivity in art, Steiner, with Goethe (whom he praised as "the Copernicus and Kepler of the organic world"),[23] felt that there must be something as true and lawful in art as in nature. Steiner often quoted Goethe's saying: "Art is a manifestation of the secret laws of nature, without which they would never be revealed."

According to Steiner, to understand an organic being and its laws requires a special intuitive form of thinking, which he termed "organic structural thoughts" (*organischen Baugedanken*).[24] Steiner attempted to design his first Goetheanum out of

21. I first heard this mentioned in a lecture by American architect Walter Leicht in Spring Valley, N.Y., on 28 Mar. 1981; but I have not yet found any independent verification of this correspondence between size ratios and electric current stepdowns.

22. "A product of art is no less nature than a product of nature, only the lawfulness of nature has already been poured into the product of art in the way this lawfulness appeared to the human spirit." Steiner, *Science of Knowing,* 118.

23. Steiner, *Goethean Science,* 76. He also referred to Goethe as "the Galileo of the organic" in Steiner, *An Autobiography,* 103.

24. Steiner, *Architektur,* 15, 18, 27.

such "organic structural thoughts" based on essential laws of living nature. He repeatedly asserted that no form in the building was imitated from any existing organic form in nature, nor were any designs intended to be allegories or symbols for anything other than themselves. "Everything included in the building," he stated, "is also in organic union with its whole structural thought."[25]

In addition to the close relationship between form and function, there seem to be at least five ways in which Steiner considered his building to be "organic" architecture—that is, architecture patterned after the formative principles active in organic nature.

The first of these concerned the achievement of a harmonious relationship between the building and its surrounding environment, as between the first Goetheanum building and its adaptation to its subalpine setting in the Jura Mountains.

The second principle reflected an analogy with the organic world that, like the form-function connection, had been repeatedly raised in German architectural theory during the nineteenth century—namely, that the building should show an essential interrelation of parts and whole similar to that which exists in natural organisms, where every form systematically develops out of its relation to the whole and is connected by inner necessity to every other form. I call this principle "holism."[26] Steiner stated about the Goetheanum: "The entire building is conceived out of the whole. Every single part is formed individually according to its own place, and it must of necessity be in just that place."[27] And again: ". . . every single form in this organically conceived building . . . , in that it represents a part of the whole, must make evident in its own form that it is indispensable. The very smallest appendage in the different parts of the building must be as manifestly indispensable as the lobe of the ear, or an arm or a head is to the human organism."[28] Steiner designed in full detail the entire interior and exterior environments of the first Goetheanum, attempting to achieve this organism-like relation between part and whole.

A third organic feature is Steiner's conception of the "living wall." Rather than as mere limiters of space or barriers that shut off experience of the outside, walls were conceived by Steiner as sculptural surfaces growing out of the organic unity of the entire building. Whether seen from the interior or from the exterior, his walls were sculpturally continuous surfaces expressing the play between polarities of concave and convex, above and below, right and left, load and support. "The wall is not merely wall," he remarked; "it is living, just like a living organism that allows elevations and depressions to grow out of itself."[29]

As a model for the living wall, Steiner pointed to the earth with its covering of plant life as "a relief full of meaning": "The earth is the living surface which brings forth its creatures from its own being. Our own art of relief must be based upon the conception that the wall is a living thing even as the earth brings forth her plants."[30] If this was handled correctly, Steiner continued, so that walls "live in accordance with truth itself," then the interior walls would also achieve a psychological sense of mobility and "transparency," an expression of meaningful form which would lead the sensitive viewer so to focus awareness on the artistic expression of psychological and spiritual elements that the physical solidity of the wall would seem to recede. "We are trying to create walls, the forms of which make the walls themselves seem to pass away," he stated.[31]

Several techniques were used to develop this sense of living wall. Steiner devised new methods for luminous, layered wall painting and for engraved colored-glass windows, both of which were used in the Goetheanum. Steiner also attempted to make sculpturally visible virtually every detail of the various tensions and spatial and load-bearing relationships throughout the building. Hagen Biesantz has remarked that in many places, in both concrete and timber, Steiner created "an uninterrupted plastically formed transition from the bearing support to the load supported."[32] Steiner especially emphasized the use of a doubly curved surface—that is, a plane bent in both convex and concave curves with a torsion between them (see, for example, Fig. 12). Not only was this formation typical of living organisms, especially the human being (particularly in the forms of many bones), but it also was the only way to express on a sculptural plane "the life of the surface itself, the soul of the form itself."[33] The doubly curved surface embodied for Steiner both the convexity produced by peripheral, "cosmic" formative forces of nature working inward and the concavity resulting from the

25. ". . . alles dasjenige, was der Bau umschliessen soll, soll zugleich in organischer Verbindung mit dem ganzen Baugedenken sein." Ibid., 26.

26. What I call "holism" Hagen Biesantz has described by the distinction between a building with *paratactically* assembled structural elements and a (holistic) building where every detail is *hypotactically* coordinated with the whole. Biesantz et al., *The Goetheanum,* 39.

27. Raab et al., *Eloquent Concrete,* 31; for alternate translation see Steiner, *Architectural Conception,* 8.

28. ". . . an diesem organisch gedachten Bau jede einzelne Form . . . indem es sich als ein Glied des Ganzen kundgibt, seine eigene Notwendigkeit in der Form offenbaren. Es muss sich das kleinste Anhängsel, das da oder dort auftritt, in seiner inneren Notwendigkeit so darstellen wie das Ohrläppchen oder wie ein Arm oder wie der Kopf am menschlichen Organismus." Steiner, *Architektur,* 16.

29. Steiner, *Ways,* 21.

30. Ibid., 22.

31. Ibid., 25; see also Biesantz et al., *The Goetheanum,* 28; and Rudolf Steiner, *Bilder okkulter Siegel und Säulen* (essays and lectures from 1907, 1909, and 1911), 2d ed., Dornach, 1977, 148.

32. Biesantz et al., *The Goetheanum,* 29.

33. Steiner, "Physical-Superphysical," 19. See also idem, "Das Sinnlich-Übersinnliche: Geistige Erkenntnis und künstlerisches Schaffen" (lecture delivered 1 June 1918 in Vienna), in *Kunst und Kunsterkenntnis,* Stuttgart, 1961, 130; and Kemper, *Der Bau,* 56–62.

polar, centrifugal forces working outward. He called this formation "the simplest *Urphänomen* of life."[34]

Steiner pointed to the fourth organic characteristic of his architecture, the most original and central to his overall conception, with the following words: "One can only develop an organic structural thought of the building if one quite inwardly and intuitively grasps the principle of metamorphosis."[35] Metamorphosis, as the law of form active in all living organisms, had first been recognized and articulated by Goethe as part of plant morphology. He described a plant as fundamentally a "leaf," but a leaf that rhythmically metamorphoses through an ordered process of expansion and contraction to become also a seed, a calyx, a blossom, and a fruit. The orderly sequence of transformation of these different but systematically related "leaf" forms occurs through the seasons, yet all of the organs that belong to a plant can never be observed in a single specimen. They must be seen sequentially in their progression through time. Goethe's study of plant metamorphosis showed that qualities of any form in the sequence are always hidden or prefigured in the previous form and continue to some degree in the succeeding shape.[36]

In a lecture of 1920, Steiner explained that, by introducing the principle of metamorphosis into organic architecture, he was attempting to move from the static conception of support and load characteristic of the traditional post-and-lintel system to the active principle of growth, wherein one form emerges from another in a variety of ways. "Whereas elsewhere the dynamics of geometry are merely presented in repetition so that like balances like, here one is concerned with the *growth* of one out of the other."[37] In this metamorphosing "growth" of one form out of another, Steiner further clarified that he was following the pattern of growth of all more highly evolved organisms along an axis or "spine," rather than the growth from a center characteristic of certain lower organisms.

In his method of designing architectural ornament, Louis Sullivan had somewhat anticipated Steiner's use of organic metamorphosis in architecture, but Steiner used the principle in a more emphatic, visible, consequent, and comprehensive manner than Sullivan, whose method was not published until 1924.[38] Where Sullivan began with a simple organic or geometric form and then subjected it to a series of metamorphic drawingboard transformations to arrive at a single motif to be used as applied ornament, Steiner portrayed a full series of steps in an abstract metamorphic process, integrating the resulting sense of directional progression with specific architectural functions and structures—for example, the progression from rear to front of the Goetheanum auditorium with a resulting formal direction of the viewer's gaze and sense of movement (see Figs. 16 and 19).

This gradual transformation of a motif or form is also related to the way musical themes develop, according to Steiner: "We attempted to bring architectural forms into musical flux, and the feeling one can have from seeing the interplay between the pillars and all that is connected with them, can of itself arouse a muscial mood in the soul."[39] Steiner had founded an art of movement or "dance," called eurythmy, which aimed to translate the elements of speech and music directly into the visual form of a performing art. One can easily imagine that he also explored ways to translate musical experience into the more stable visual forms of architecture, painting, and sculpture—an artistic interchange he declared was necessary for the future development of both music and visual art.[40]

In Steiner's functionalist approach, not only organic formative processes but also human psychological experience, such as that of music and speech, were to help form the building's walls, which would then represent "the living negative of the words spoken and the deeds done in the interior."[41] As an auditorium for lectures and for performances of drama, speech chorus, and eurythmy, and as an environment for conversational meetings among many people, the Goetheanum was essentially concerned with speech. Steiner sometimes called his building the House of the Word, and he linked the mobile element of human communication to the surrounding architectural forms: "Up to our time architectural thought has been concerned with the qualities of lifeless, mechanical rest. Now, however, architec-

34. Quoted in Kemper, *Der Bau,* 57. See also R. Steiner, "Anthroposophy and the Visual Arts" (lecture delivered 9 Apr. 1922 in The Hague), in *The Golden Blade,* XIII, 1961, 28–31.

35. "Man kann nur einen organischen Baugedanken entfalten, wenn man das Prinzip der Metamorphose wirklich innerlich intuitiv erfasst." Steiner, *Architektur,* 17.

36. See J. W. von Goethe, *The Metamorphosis of Plants,* trans. rev. A. E. Marshall and H. Grotzke, Wyoming, R.I., 1974; or idem, "The Metamorphosis of Plants," in *Scientific Studies,* trans. and ed. D. Miller, New York, 1988, 76–97; or idem, *Goethe's Botanical Writings,* trans. B. Mueller, Honolulu, 1952.

37. ". . . wo sonst bloss das Geometrisch-Dynamische in Wiederholungen vorliegt oder so vorliegt, dass sich gegenseitig das Gleiche tragt, hat man es hier zu tun mit einem *Hervorwachsen* des einen aus dem anderen." Steiner, *Architektur,* 28.

38. L. Sullivan, *A System of Architectural Ornament According with a Philosophy of Man's Powers,* New York, 1924. I know of no evidence that Steiner was influenced by Sullivan's writings or that he even knew of them.

39. R. Steiner, "Of the Goetheanum and the Music of Its Architecture" (translation of a lecture delivered 2 Jan. 1915 in Dornach), typescript, Rudolf Steiner Library, Ghent, N.Y., 8; for alternate translation see idem, *Art as Seen in the Light of Mystery Wisdom* (eight lectures delivered between 28 Dec. 1914 and 4 Jan. 1915 in Dornach), trans. P. Wehrle, London, 1984, 117.

40. See, for example, Steiner, *Art as Seen,* 28 and 117. The first reference is to a lecture delivered 28 Dec. 1914 in Dornach; for alternate translation see idem, "Technology and Art: Their Bearing on Modern Culture," *The Golden Blade,* XI, 1959, 14.

41. Steiner, *Ways,* 10.

tural thought becomes the thought of *speech,* of inner movement, of that which draws us along with it."[42]

This leads to the final aspect of Steiner's organic approach. By incorporating a lawfully developing metamorphosis of form, holism, and other organic principles into the design of the Goetheanum, Steiner was not, as has been suggested,[43] attempting to make the building in a vague and general way responsive to universally valid laws. Rather, he hoped to attune his edifice to living human psychology, to fashion in his building an organic "semblance of consciousness"[44] responsive and sympathetic to what might arise within human beings' own consciousnesses as they used and experienced the building. "Our columns and all the forms of architecture and sculpture that belong there have a *soul,* and that can be felt as an invisible music," declared Steiner.[45] He emphasized that, both to announce its several levels of functionalism and to speak holistically to human users, the first Goetheanum "must in a certain sense bring to expression as in one living being, the spiritual, the psychical, and the physical."[46]

Eugene Santomasso has assumed the influence on this aspect of Steiner's architectural thought of the aesthetic theory of empathy proposed by pioneer psychologist Theodor Lipps (1851–1914) and elaborated by Wilhelm Worringer (1881–1965) and others as a theoretical foundation for artistic Expressionism.[47] According to empathy theory, the aesthetically expressive features of either a living organism or an aesthetic object stimulate an impression that affects a viewer physically and psychically. Steiner certainly knew Lipps's work, and probably Worringer's as well; but, as Steiner's own writings amply demonstrate, he had little reason to draw on anyone else's theory to conceive of psychological influence of an outer object on the human psyche.

As explained previously, it was a central necessity of Steiner's organic functionalist approach that he should find the means for his buildings to relate as directly as possible to all dimensions of their human users. In fact, in agreement with architects of earlier ages, he felt that the source of all great architecture ultimately lay in the proportional organization of the human being: "All architecture consists in projecting into the space outside ourselves the laws of our own human body."[48] In a number of often-complex ways, Steiner's Goetheanum incorporated proportions and relationships characteristic of the human being as yet another element intended at some level to communicate directly with the visitor.

The expression of Steiner's principles in the first Goetheanum

Steiner enjoyed an unusually complete control over both form and function in his chief work, the first Goetheanum, and there his principles were unfolded in an intricate relationship with expressions of the elaborate metaphysics of anthroposophy and with the other purposes previously mentioned.

Earlier Steiner projects, beginning in Munich in 1907, developed some of the fundamental elements of the *Gesamtkunstwerk* combination of diverse arts that in 1913 became the design of the first Goetheanum.[49] These projects included the decoration of a hall in Munich rented for a congress of the Federation of European Sections of the Theosophical Society (May 1907), where Steiner first exhibited a serial metamorphosis of seven column capitals similar to those that would later appear in the Goetheanum (see Fig. 19), though these were merely painted on boards; a 1.74-meter-high, ellipsoid model building with carved wooden columns constructed after Steiner's indications by theosophist E. A. Karl Stockmeyer in Malsch, Germany, between 1908 and 1909 (Fig. 8); and a sandstone-columned, crypt-like basement meeting room (also ellipsoid) of the Theosophical Society in Stuttgart, completed in 1911 by architect and theosophist Carl Schmid-Curtius of the Stuttgart firm of Martz and Schmid, who was also the architect for the Theosophical Society building as a whole.[50]

From March 1911 a new and larger, double-domed building was first planned as a vast theater-temple for lectures, performances of eurythmy, and, particularly, performances of Steiner's four elaborately staged "mystery dramas."[51] Following the terse

42. Ibid., 30.

43. In Santomasso, "Origins and Aims," 297.

44. "Scheine der Bewusstheit." Steiner, *Architectural Conception,* 10 and 19.

45. Steiner, "Of the Goetheanum," 8; for alternate translation see idem, *Art as Seen,* 117.

46. ". . . muss sich gewissermassen in ihm als in einem Organischen das Geistige, das Seelische, das Physische zum Ausdrucke bringen." idem, *Architektur,* 47.

47. Santomasso, "Origins and Aims," 298 and 305; and E. Santomasso, "Rudolf Steiner," in *Macmillan Encyclopedia of Architects,* ed. A. K. Placzek, 4 vols., New York, 1982, IV, 123–124. Dennis Sharp also claimed that Steiner "extended the theory of empathy (*Einfühlung*) to architecture." Sharp, *Modern Architecture,* 151.

48. Quoted in Biesantz et al., *The Goetheanum,* 41; for alternate translation see R. Steiner, *Art in the Light of Mystery Wisdom* (lectures from 1914, 1920, 1922, and 1923; the quoted passage is from 29 Dec. 1914 in Dornach), trans. J. Collis, London, 1970, 19.

49. In many lectures Steiner called in different ways for a reunion of the various fine arts. While the development in turn-of-the-century Vienna of the concept of the *Gesamtkunstwerk* might suggest itself as one possible context for Steiner's work, in fact Steiner had permanently left Vienna by 1890, well before the founding of the Wiener Werkstätte in 1903 and the other major developments of that tradition. Moreover, the way the idea developed in Vienna was very different from Steiner's approach. Steiner did mention as an example, however, the ideas of Richard Wagner concerning a union of the arts. See, for example, "Of the Goetheanum," 7; or *Art as Seen,* 117.

50. For further information on these early projects, see Biesantz et al., *The Goetheanum,* 9–14; and E. Zimmer, *Der Modelbau von Malsch und das erste Goetheanum,* Stuttgart, 1979.

51. See R. Steiner, *Four Mystery Plays,* trans. R. Pusch and H. Pusch, Toronto, 1973; or *The Four Mystery Plays,* trans. A. Bittleston, London,

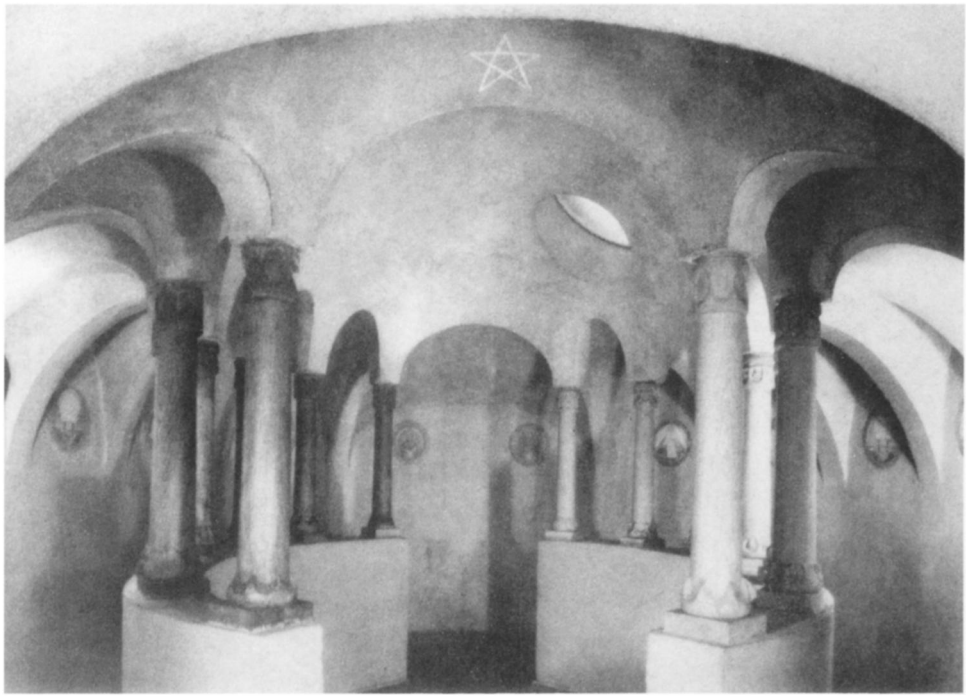

Fig. 8. Rudolf Steiner and E. A. Karl Stockmeyer, model building, Malsch near Karlsruhe, Germany, 1908–1909. Interior view toward east, as restored by Albert von Baravalle, 1957 (© Verlag am Goetheanum, Dornach).

direction by Steiner that "two interpenetrating circles might comprise auditorium and stage," Schmid-Curtius worked out an initial plan that also took into account Steiner's emphasis on the pentagon dodecahedron as an element in the geometry of the design.[52] Where possible, Steiner preferred not to burden the free creativity of his collaborating designers with too much prescribed detail, especially where multiple solutions were possible for a given program. After further consultation with Steiner, Schmid-Curtius then fleshed out this plan into a double-shell, reinforced concrete structure called the "Johannesbau," which was submitted to the City of Munich in application for a building permit and rejected in 1911 (Fig. 9).[53]

Just after this setback, one Dr. Grossheintz, a member of the Theosophical Society, offered Steiner as a building site a large piece of land on a hilltop at the edge of the Swiss town of Dornach, nestled at the foot of the Jura Mountains just southeast of Basel. Again, Steiner gave only spare and challenging direction to Schmid-Curtius for working out the ground plan for the new site. In addition to the interpenetrating domes and the importance of the pentagon dodecahedron, Steiner added that the auditorium should seat about one thousand persons and that the distance on plan between the centers of the two dome circles should be 21 meters. Steiner accepted the architect's proposal for a 3:4 size ratio between the stage and auditorium, as well as the elegantly elaborate ground plan completed by Schmid-Curtius in September 1913. The plan was based on a geometric construction of a circle 21 meters in diameter, in which was inscribed a basic pentagon, from which unfolded eleven additional pentagons (the dodecahedron) in a complex construction involving several golden-section relationships (see Figs. 17 and 22).[54] Steiner laid the foundation stone (in the form of a copper pentagon dodecahedron) on 20 September 1913, and the topping-out ceremony took place less than seven months later, on 1 April 1914. Although World War I slowed progress after that, construction and ongoing design refinements continued, so that by 1920 the structure was far enough completed to be used for some lectures and performances (Figs. 2 and 10).

Only until spring 1914 did Schmid-Curtius remain the chief architect working out Steiner's suggestions for the planning and construction of the Goetheanum. After that time, Steiner continued working out details of the building, as well as designs of surrounding structures, with a team led by architect Ernst Aisenpreis (1884–1949) and including, among others, architect-sculptor Hermann Ranzenberger (1891–1967), sculptor-painter-architect Carl Kemper (1881–1957), and, later, sculptor Os-

1982. Pehnt, *Expressionist Architecture,* 216 (chap. 10, n. 5), gives 3 Mar. 1911 as the date the project was first turned over to Schmid-Curtius.

52. Biesantz et al., *The Goetheanum,* 15; translating from Kemper, *Der Bau,* 187 (see also 193).

53. The building was to be named after Johannes, a character in Steiner's mystery dramas. For additional information on this project, see Biesantz et al., *The Goetheanum,* 15–19.

54. See Kemper, *Der Bau,* 187–234.

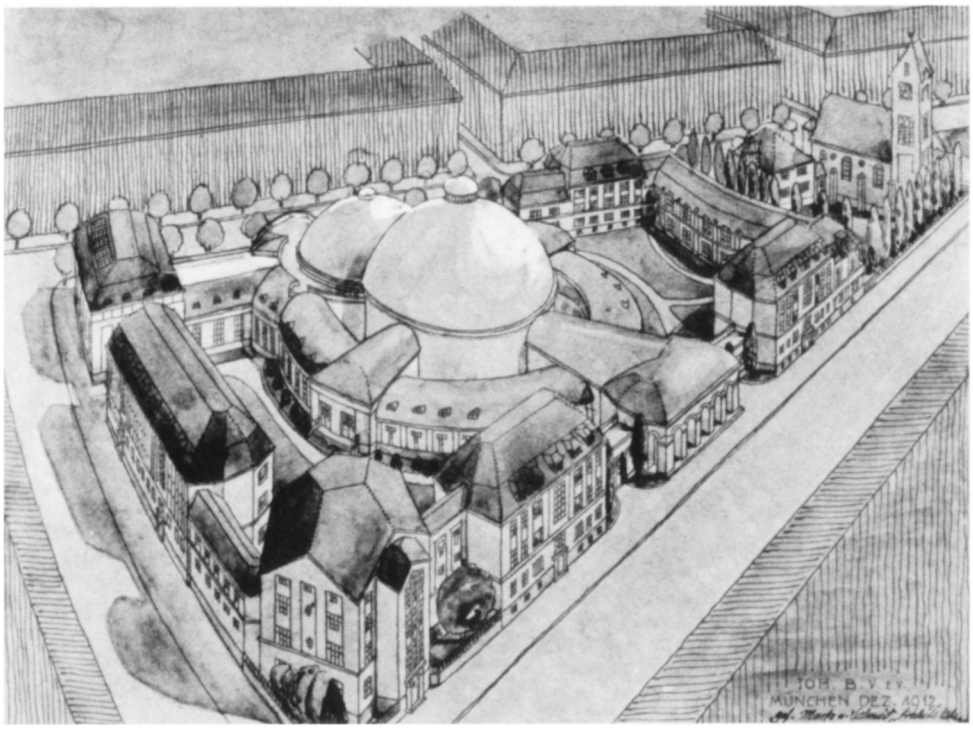

Fig. 9. Rudolf Steiner and Carl Schmid-Curtius, Johannesbau project, Munich-Schwabing, 1912. Aerial view from north, pen and wash on paper. Goetheanum Archives, Dornach (© Verlag am Goetheanum, Dornach).

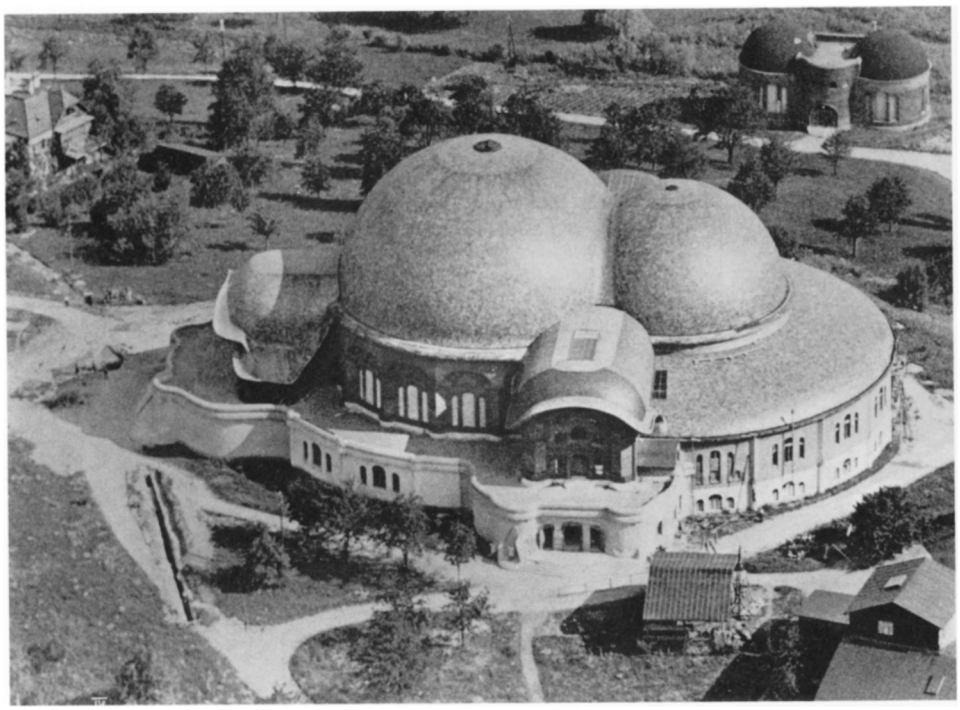

Fig. 10. First Goetheanum. Aerial view. (Ad Astra Flieger © Verlag am Goetheanum, Dornach).

Fig. 11. Rudolf Steiner with model of west front of first Goetheanum, 16 June 1914 (O. Rietmann, St. Gallen © Verlag am Goetheanum, Dornach).

wald Dubach and architect Paul Johann Bay (1889–1952).[55] Norwegian engineer Olé Falk Ebbell (1879–1969) was also a prominent collaborator.

The number of sculptors involved reflected not only the large quantity of woodcarving throughout the building, but also Steiner's own typical design procedure. Rather than sketching in two dimensions, he first worked out much of the Goetheanum's exterior and interior form in three-dimensional scale models of hand-molded plasticine, a material more typical of the sculptor than of the architect (Fig. 11). This method enabled him to develop his conceptions sculpturally and spatially in a free and direct manner. As was particularly visible when he had completed the model for the interior (still extant in the Goetheanum archives) in late January 1914, Steiner's work with models also facilitated an integrated and organic sculptural structure (see Fig. 19).

Raised on a concrete pedestal above the surrounding landscape, the dual-domed Goetheanum was approximately 272 feet long and 243 feet wide. The interior diameter of the larger dome was 110 feet—as Rex Raab has pointed out for comparison, wider than the 106-foot diameter of the dome of St. Paul's in London.[56] The building's curvilinear modeling and organic, carved forms were probably phrased with some influence from the Jugendstil design vocabulary but, according to Steiner, arose from purely architectural considerations (Fig. 12). The forms were intended as a living wall of structural sculpture, or, rather, articulated and integrated ornament, that seemed to "grow" out of the basic architectural framework.

The aesthetic effect has been seen by Santomasso as an interplay between almost-symbolic polarities of linear, curving contours and angular, crystalline elements.[57] In fact, these formal distinctions resulted from Steiner's conviction regarding "truth to materials" in architectural sculpture, as he made an attempt to differentiate between the concave, angular handling he felt appropriate to carved-out wood; and the convex, rounded treatment that seemed to suit stone, where the material's rounded mass helps determine the contour, or concrete, where the pouring process plays a role in developing the form.[58]

In accord with Steiner's organic principles, the rounded shapes of the polished concrete substructure were designed to be, as

55. See Pehnt, *Expressionist Architecture,* 216 (chap. 10, n. 5).

56. Raab, "Rudolf Steiner," 48. Measurements are given in Sharp, *Modern Architecture,* 151.

57. Santomasso, "Origins and Aims," 310–315.

58. See Steiner, *Architektur,* 40; idem, *The Arts and Their Mission* (eight lectures delivered 27 May–9 June 1923 in Dornach and 18–20 May 1923 in Oslo), trans. L. D. Monges and V. Moore, New York, 1964, 104; Raab et al., *Eloquent Concrete,* 37–38; Biesantz et al., *The Goetheanum,* 37–38; and A. Fant, A. Klingborg, and A. J. Wilkes, *Rudolf Steiner's Sculpture in Dornach,* trans. E. Westerberg and A. J. Wilkes, London, 1975, 26–27, which passage is quoted without a full reference from R. Steiner, *Der Baugedanke von Dornach* (lecture delivered 16 Oct. 1920 in Dornach), Dornach, 1942.

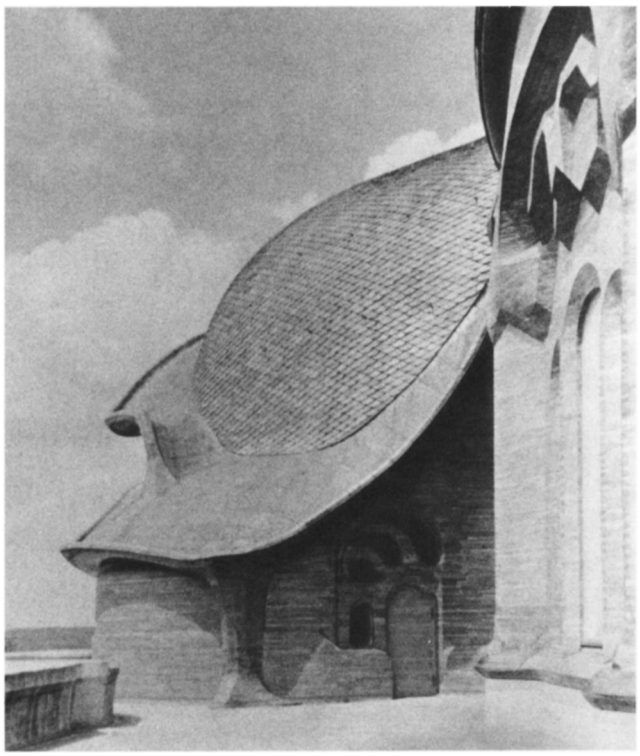

Fig. 12. First Goetheanum. South terrace with entrance to Red Beech Room (O. Reitmann, St. Gallen © Verlag am Goetheanum, Dornach).

he described, "an extension of the rocky subsoil," so that "nature's shapes pass over effortlessly into the forms of the building."[59] On this concrete base rose the enormous sculpture-building, carved out of American oak laminated with a casein adhesive invented by Steiner. The wooden core of the building, with its warm tones and sculptural articulation, stood between the concrete base and the slightly irridescent, scalloped shingle tiles of Norwegian slate that covered the two domes.[60] This threefold composition of materials can also be related to Steiner's trinitarian picture of the human constitution, distinguishing the cool thinking of the head from the rhythmically expressive feeling of the breast and heart, as well as from the supportive and active qualities of the "metabolic-limb system."[61]

A five-lobed motif, based on the pentagram inscribed in the ground plan and related to the form of the human being, was

59. Raab et al., *Eloquent Concrete,* 33; for alternate translation see Steiner, *Architectural Conception,* 9.

60. Steiner felt that this Vossian slate reflected the sunlight in a way that helped integrate the building into the surrounding landscape. See Steiner, *Architectural Conception,* 9.

61. This threefold conception was stated most clearly by Steiner in chap. 7, "Principles of Psychosomatic Physiology," in *The Case for Anthroposophy,* trans. O. Barfield, London, 1970, 69–83. This is a partial translation of Steiner's *Von Seelenrätseln,* Berlin, 1917. The idea permeates Steiner's lectures, especially those on education. For one example, see *Study of Man,* trans. D. Harwood and H. Fox, rev. A. C. Harwood, 2d ed., London, 1966.

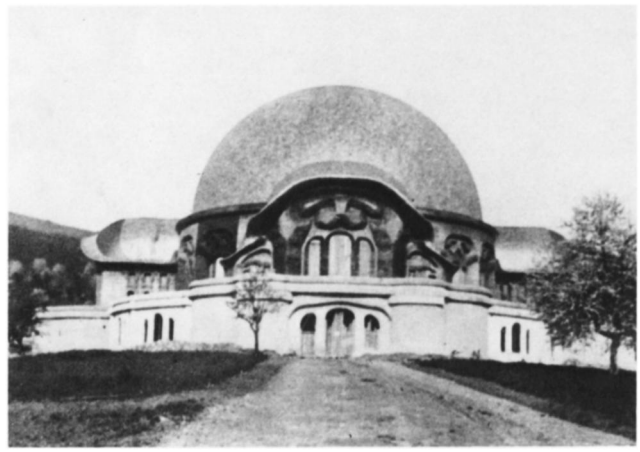

Fig. 13. First Goetheanum. West front (© Verlag am Goetheanum, Dornach).

carved over the main entrance in the west; it reappeared in four variations on the exterior and two further versions on the interior. (Three of these variations are visible in Figs. 13, 14, and 20.) This was only one example of the metamorphosis and organic relationship between small and large forms that appeared throughout the building. Similar connections can be found among the mobile designs for door and window trim, which were intended to make visible the door and window functions, as well as to express architectonic dynamics, as, for example, door jambs leaned inward to image their role within the contrasting tensions of load and support (Fig. 14).[62]

Steiner conceived the interior of the Goetheanum as more important architecturally than the exterior. A processional road from the west, flanked by carved, directional marking stones (partially visible in the lower part of Fig. 1), led to the entrance, within which was a cavernous, concrete entry hall of sculptured, asymmetrical arches with a curving staircase, fashioned in freely modeled, zoomorphic shapes meant to express the structural dynamics of the stairway (Fig. 15).

The stairs ascended past yellow-glass windows to the "red beech room" flooded with an intense scarlet light radiating from an enormous red-glass window, carved with mysterious images of spiritual vision. In a continuation of this mounting, almost-ritualistic experience, the visitor left this anteroom to enter the large hall of the Goetheanum and there discover its impressive orchestration of carved wood, soaring columns, and luminous color (Fig. 16). The interior length of the Goetheanum was about 150 feet, and the auditorium seated something more than nine hundred people.

The most prominent architectural feature of the Goetheanum was the interlocking of two huge domes of unequal size, clearly visible on the ground plan (Fig. 17). This was apparently the first time just such a configuration had been created in the history

62. See Steiner, *Architektur,* 18.

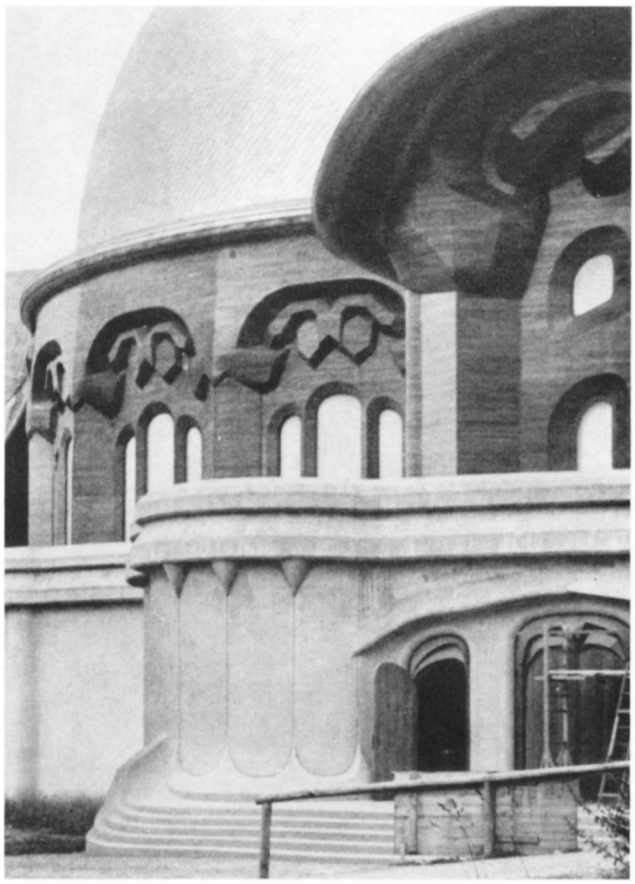

Fig. 14. First Goetheanum. South entrance (© Verlag am Goetheanum, Dornach).

Fig. 16. First Goetheanum. View from auditorium toward organ loft over entrance in west, showing "Sun" and "Saturn" columns (Atelier Heydebrand-Osthoff, Dornach © Godhard von Heydebrand, Boll).

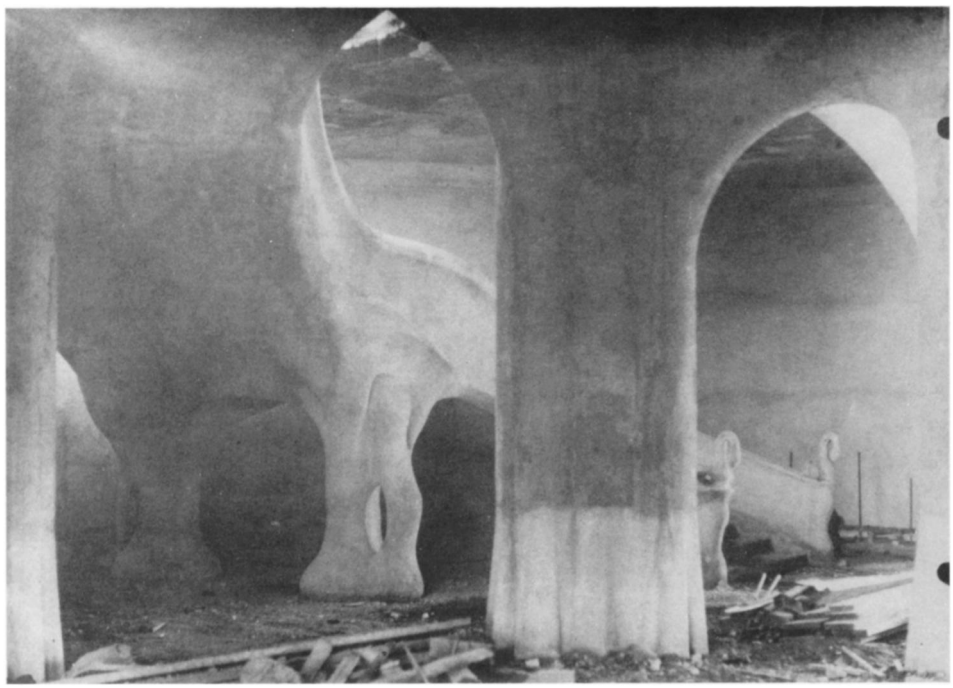

Fig. 15. First Goetheanum. West entrance, interior, with staircase (Atelier Heydebrand-Osthoff, Dornach © Godhard von Heydebrand, Boll).

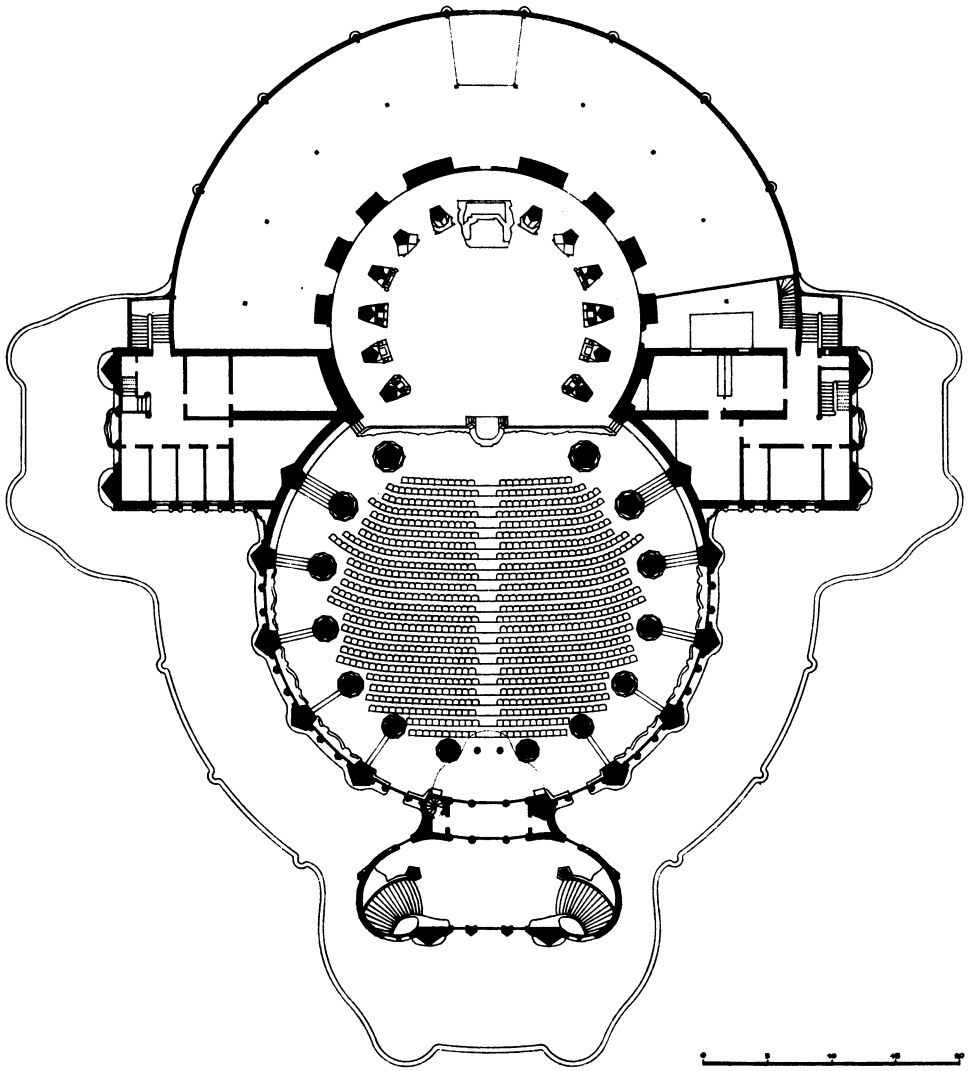

Fig. 17. First Goetheanum. Plan at auditorium level. Goetheanum Archives, Dornach (© Verlag am Goetheanum, Dornach).

of architecture.[63] Steiner later stated that he had first conceived of this design in 1908, although he did not mention it until 1909 and continued to explore ellipsoid constructions until 1911.[64] The building as a whole employed braced timber construction for separate but joined interior and exterior shells of domes and wings. Surprisingly, no solid arch was placed as a

63. Several Islamic mosques appear to join domes of unequal sizes, but, in all cases of which I am aware, their curved surfaces do not actually intersect as in the first Goetheanum. In several mosques the smaller dome intersects the *drum* of the larger dome, not the dome itself. Moreover, the first Goetheanum domes do not use the pendentive structure of the mosques. For examples of other buildings with related interpenetrating dome constructions, we must look to projects of the last decade or so, all of which have been influenced by the Goetheanum. Japanese architect Yasufumi Kijima, inspired by Steiner, has designed several structures with interpenetrating domes, beginning with the unbuilt design for the Aso Golf Clubhouse of 1980. His most notable example, the Cue Saint Domes forestry center of 1984 on the island of Kyushu in Japan, features seven domes joined in a variety of ways. The domes are all of equal size, however. See Y. Kijima, "The Cue Saint Domes," *Japan Architect,* LX, Jan. 1985, 22–28. The 1988 Rudolf Steiner–Bau of the Anthroposophical Society in Salzburg, Germany, whose design and construction were directed by Christian Hitsch, attempts to reproduce something of the interior effect of Steiner's interpenetrating domes without using the same underlying construction. See E. Hitsch, "Wie kann man im Rudolf-Steiner–Bau Salzburg arbeiten?" *Stil: Goetheanistisches Bilden und Bauen,* XIII, 1, Easter 1991, 92; R. Lord, "A New House for Anthroposophy in Salzburg," *Anthroposophy Today,* IX, Spring 1990, 25–27; or M. Walter et al., *Rudolf Steiner–Bau,* Salzburg, 1988 (booklet). Also, two recent designs by Hungarian architect Imre Makovecz—one for a Teacher's Seminar in Witten, Germany, and the other for "Haus der Kultur," a theater in Szigetvarm, Hungary, begun in 1987—apparently repeat Steiner's intersection of two differently sized domes. See J. Gehlen and H. Kurschner, eds., *Mensch + Architektur,* Amsterdam, 1990, 61.

64. Steiner, *Architektur,* 14; and Kemper, *Der Bau,* 187.

support at the juncture of the two domes. Since a portion of each dome was missing, owing to their intersection, the individual domes could not be structurally secured with ring anchors at their bases. This seemed to present a fundamental structural weakness in the plan, the solution for which was reached when the engineers followed Steiner's recommendation to encircle both domes with a braced, egg-shaped band, creating, in effect, one overall tension ring embracing both domes. The engineer Olé Falk Ebbell seems to have been primarily responsible for also adding two perpendicular wings on the exterior north and south to help carry the lateral thrust of the line of juncture between the two domes, which could not be contained solely by the oval ring anchor.[65]

Steiner chose the unusual design of two interpenetrating domes for several functional reasons. The interior of the Goetheanum was to be not merely an auditorium or theater, but also a modern temple, "a building in which people come together to receive supersensible knowledge."[66] In earlier periods of Western civilization, central-plan, domed temple spaces often evoked a protected feeling of peace and security—of resting beneath the dome of heaven. By contrast, rectilinear and axial spaces for spiritual assembly frequently emphasized a sense of movement focused in a particular direction, especially when an altar or apse was placed at one end. Steiner's intersecting domes provided an east-west axial direction, supporting his organic conception of growth along an axis and expressing "aspiration to the spirit."[67] At the same time, however, both domes were of equal importance (though of unequal size) and did not compel movement in one or another direction. As Hagen Biesantz has noted, "The rotunda or cupola effect is brought into a fluctuating equilibrium with the longitudinal axis effect. . . . Thus the visitor himself is able to determine which of the two possible experiences—rest or movement—is to take precedence."[68] Steiner apparently felt this uncommitted, composite arrangement to be consistent with, and sympathetic to, the sense of conscious individual freedom characteristic of modern Western humanity and appropriate, he taught, to modern paths of self-development.

In this connection it might be thought that Steiner was merely imitating effects achieved previously in the round and oval domed and half-domed spaces arranged along longitudinal axes to be found in the German and Austrian baroque and rococo churches of such architects as Lucas von Hildebrandt, Johann Michael Fischer, and Balthasar Neumann—or perhaps also in churches by their Italian predecessors, such as Guarino Guarini. Some likely examples would be Fischer's Benedictine abbey church at Ottobeuren of 1744–1767, with four domed, axial units and two half-domed transepts; Neumann's longitudinal alignment of three domed ovals with domed transepts in his pilgrimage church at Vierzehnheiligen of 1743–1772; or Guarini's earlier use of two equal-sized but non-intersecting "domes" in his influential church of the Immaculate Conception in Turin of 1672–1697.

Reared as a Roman Catholic in Austria and later active in Bavaria, Steiner undoubtedly experienced a number of these great baroque or rococo edifices. While they offered examples of a kind of *Gesamtkunstwerk* in their combination of architecture, sculpture, and mural painting, Steiner criticized their ornamentation and its relationship to the supporting architecture as confused, dishonest, and "subjectively arbitrary":

> We see introduced into the pillars, into the element of support, all kinds of figures which have no architectural function, which . . . are there only for decorative effect. There is no knowledge of the clear distinction between a plastic and picturesque thought and an architectural thought, and yet no power to combine—because of the inability to differentiate between—these different kinds of themes. . . . We see human saints introduced in the most impossible places, not springing from a spontaneous architectural necessity, by which plastic art and painting grow out of the architecture with inevitable rightness.

Perhaps thinking more of the French rococo, Steiner went on to criticize also the "Rococo Voltairianism of thought," whose architectural expression was "simply human champagne-whims poured frothing into forms."[69]

The important distinction here is that Steiner's Goetheanum designs arose as individually formed expressions of a definite functional program, not out of any imitation of spatial or formal features of baroque churches. Also, Steiner aimed at a transparency of the form-function relationship, not the illusionistic fantasy spaces characteristic of many rococo churches. Steiner's outer shell clearly reflected the distribution of inner spaces, while Neumann's designs, for example, were notable for freeing the inner spaces from the contours of the outer shell. While one can imagine that the spatial distribution of the baroque churches may have suggested to Steiner a particular solution to his functional program (especially since he earlier tried out an oval plan in the preliminary buildings at Malsch and Stuttgart), Steiner's intersecting domes of unequal size arose from sources of both function and design philosophy that were quite different from those of the baroque projects. Moreover, despite certain family resemblances in plan, there was no baroque or rococo building containing two intersecting cupola segments without a solid arch at their juncture. In contrast to the Goetheanum, the domed interiors of the churches, however obscured by or-

65. See Raab, "Rudolf Steiner," 48–50.

66. Steiner, *Architectural Conception,* 20. In another lecture that I have thus far been unable to trace, Steiner spoke of the Goetheanum as a "temple in which the human soul could find the spirit."

67. Steiner, *Ways,* 23.

68. Biesantz et al., *The Goetheanum,* 18–19.

69. R. Steiner, *Architectural Forms Considered as the Thoughts of Culture and World-Perception* (lecture delivered 20 Sept. 1916 in Dornach), trans. unknown, London, n.d., 9–10.

nament, were always distinctly articulated spaces with traditional supporting elements.

Perhaps more important than a sense of freely chosen movement for Steiner was his wish that the dual domes and the resulting distinction between stage and auditorium express two different qualities of space within the Goetheanum. He described these two qualities in varying ways, depending on the context. The large dome (the auditorium) represented the physical, temporal world, while the smaller dome (the stage) expressed the spiritual, eternal world. Alternately, the large dome represented the sphere of the human soul, while the smaller dome conveyed the realm of the spirit. Again, the large dome expressed the lower self, while the small dome connoted the higher self.[70] One could add the analogy with Steiner's epistemological argument that real knowledge always involves a union of a percept with a concept.[71] Yet it must also be said that Steiner cautioned against such "neat" or "symbolic" interpretations as speculative abstractions too divorced from the living experience of the building itself.[72]

This distinction between stage and auditorium was carried into intricate detail within the two spaces, beginning with the placement of the two domes so that the completed sphere of the larger dome exactly touched the floor, while that of the smaller dome hovered above the floor (Fig. 18). The large dome was supported on each side by seven wooden columns, each pentagonal shaft with its own distinctive capital and base; and the encounter of each column with its load was associated with a distinct formal response in the continuous entablature running above. The seven resultant, intricately related sets of carved forms (base, capital, and segment of entablature) presented an animated metamorphosis moving along three horizontal bands from the rear entrance toward the stage (Fig. 19). The auditorium floor sloped 10 percent downward toward the stage, but the ratio of the diameter to the increasing height of each column—from approximately 34 feet at the rear entrance to approximately 47 feet for the pair supporting the proscenium arch—remained 1:7. Beneath the small cupola, the capitals of the twelve columns and the carved entablature showed a more gentle metamorphosis; and carved thrones were fixed at the column bases (Fig. 20). Each of the seven pairs of columns supporting the large cupola was composed of a different wood, which, along with the carved forms, Steiner related to one of the seven planetary qualities. Saturn was hornbeam, the Sun was ash, the Moon was cherry, Mars was oak, Mercury was elm, Jupiter was maple, and Venus was birch. The planetary arrangement from rear to front of the auditorium corresponded to Steiner's extensive description of the chief planetary influences during each of the seven so-called Post-Atlantean periods of human cultural evolution.[73] These seven planetary "moving stars" contrasted with the representatives of the twelve, more cosmic, "fixed stars," or zodiac constellations, indicated in the twelve stage columns, each composed of two different woods. In the columns of the stage, simpler and less dynamic metamorphoses of capital and entablature forms progressed in two symmetrically mirrored sequences of six, moving from the proscenium arch at each end toward the center of the stage. The duality in the composition and arrangement of the stage columns was resolved formally and semantically in the central, third element of the stage design, a large wooden sculpture to be discussed shortly.

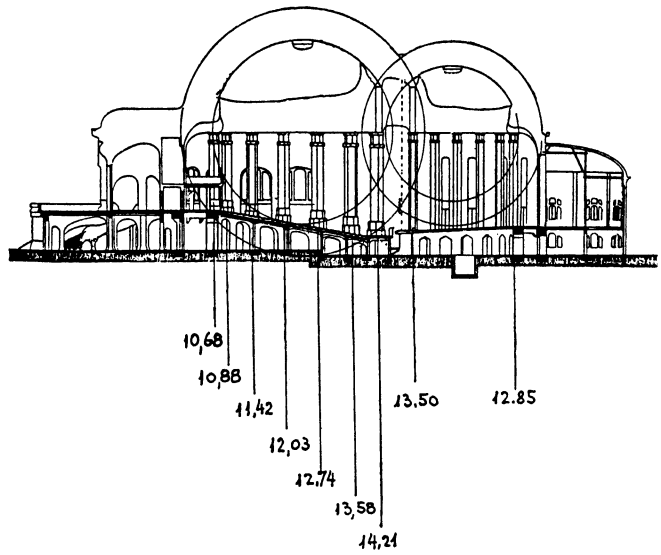

Fig. 18. First Goetheanum. Longitudinal section with added measurements, showing completed circles of interior and exterior dome shells (Carl Kemper, *Der Bau,* Stuttgart, 1985, fig. 4, courtesy of Verlag Freies Geistesleben, Stuttgart).

On the detailed ground plan (Fig. 17), worked out by Schmid-Curtius, one can trace a lemniscate over the two intersecting domes; at its crossing point the speaker's rostrum was positioned in front of the stage (Fig. 21).[74] Lines drawn from the interstices between the columns of the large cupola, passing through the

70. Steiner, *Ways,* 23, 33–34.

71. See Steiner, *The Philosophy of Spiritual Activity;* or idem, *Science of Knowing.*

72. Idem, *Ways,* 34. See also idem, "Concerning Art and Its Future Task" (lecture delivered 24 Aug. 1923 in Pennmanmawr, England), in *Anthroposophic News Sheet,* IV, 4, 26 Jan. 1936, 14.

73. This theme reappears throughout Steiner's work, but two of the most consequent descriptions may be found in R. Steiner, *An Outline of Occult Science* (1909), trans. M. Monges and H. B. Monges, rev. L. Monges, 3d ed., Spring Valley, N.Y., 1972; and idem, *Cosmic Memory: Prehistory of Earth and Man* (1904), trans. K. E. Zimmer, Blauvelt, N.Y., 1959. A useful summary drawing on diverse works of Steiner is the chapter "History of the Evolution of Human Consciousness," in S. C. Easton, *Man and World in the Light of Anthroposophy,* 2d ed., Spring Valley, N.Y., 1982, 20–121.

74. For a detailed analysis of the ground plan, see A. von Baravalle, "Grundriss," and G. Unger, "Qualitative Geometrie im Raum," in Kemper, *Der Bau,* 185–256.

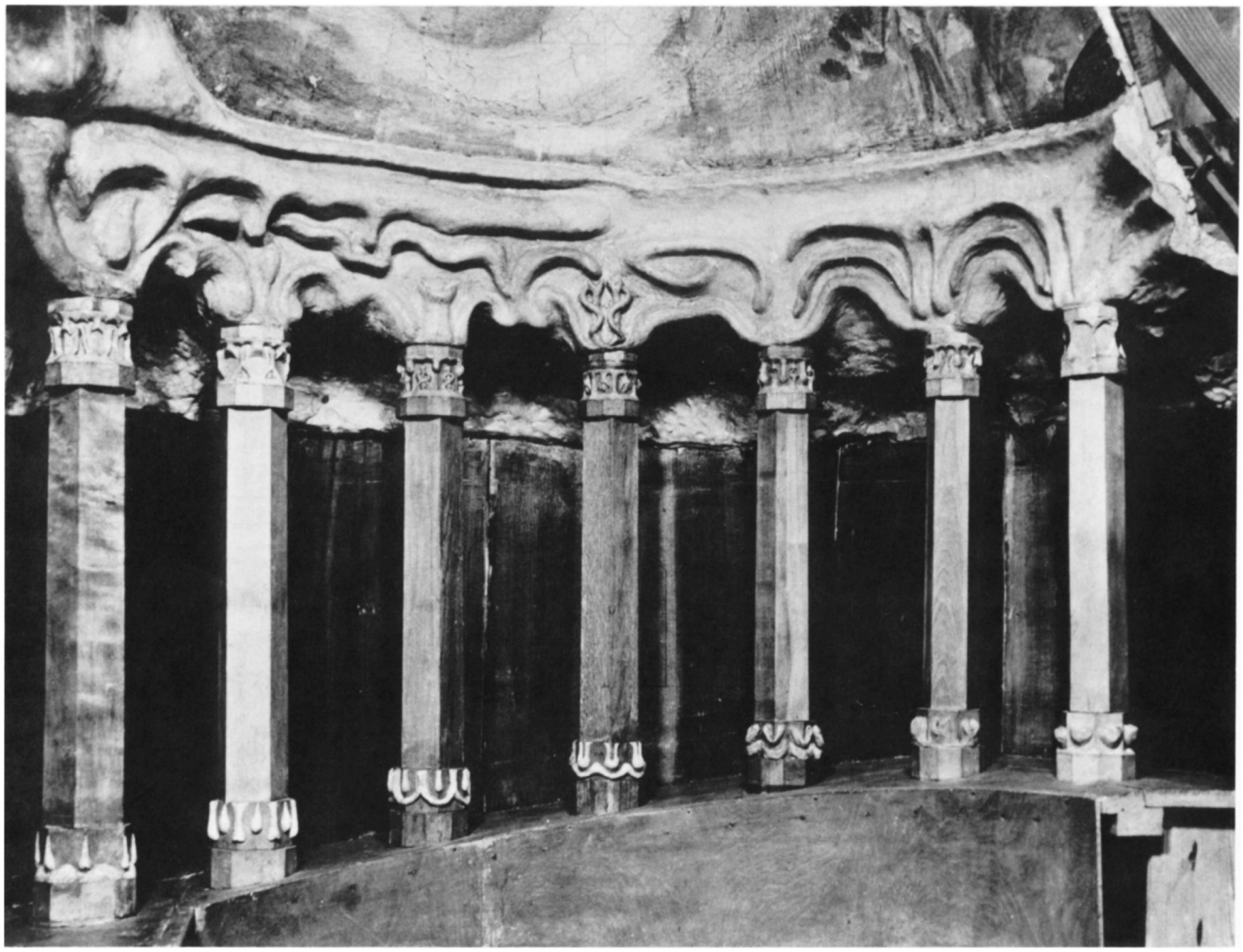

Fig. 19. Rudolf Steiner, interior model of first Goetheanum. Detail of large cupola/auditorium columns and entablature (E. Gmelin, Dornach © Verlag am Goetheanum, Dornach).

central rostrum point, are found to intersect the columns of the small cupola (Fig. 22). What is invisible in the earthly, sensory world of the auditorium is a substantial reality in the supersensible world represented by the stage, and vice versa. Steiner wanted to express how the world of the spirit and idea, the supersensible, interpenetrates the world grasped by sense perception—a process that was a key aspect of both Goethean and anthroposophical world views. If the spectator in the audience properly contemplated the words of the lecturer at the rostrum or the images of the stage performances of eurythmy or mystery drama, a spiritual insight or experience might open up within the mind. Steiner spoke of trying to express in the Goetheanum interior "the duality of that which is revealed and of that which comes to meet it."[75]

This visionary possibility was also represented through the use of color within the Goetheanum. Elaborating the color theory of Goethe,[76] Steiner inaugurated a new method of transparently layered and delicately luminous wall painting (now known in German as *Lasur,* or, in the Anglicized trade names, as Lazur or Lasure) and also covered the two cupolas with flowing painted imagery. He and his assistants formulated bright-hued, plant-pigmented watercolors that were applied in multiple, overlapping washes of diaphanous color on a lining built of paper-mâché laid over sheets of cork.[77] As Steiner argued there were no cast shadows in the spiritual world, painting

75. ". . . jene Zweiheit des sich Offenbarenden und des die Offenbarung Entgegennehmenden." Steiner, *Architektur,* 13. He also used the phrase "revelation of a supersensible world in the sensible." Idem, *Architectural Conception,* 9.

76. Steiner's most concentrated essays in color theory may be found in *Colour,* trans. J. Salter, London, 1970; and *First Scientific Lecture-Course: Light-Course,* trans. G. Adams, 2 vols., Forest Row, England, 1977. See also H. O. Proskauer, *The Rediscovery of Color: Goethe versus Newton Today,* trans. P. Stebbing, Spring Valley, N.Y., 1986; and Steiner, *Ways,* 49–59.

77. As reported in Raab, "Rudolf Steiner," 49.

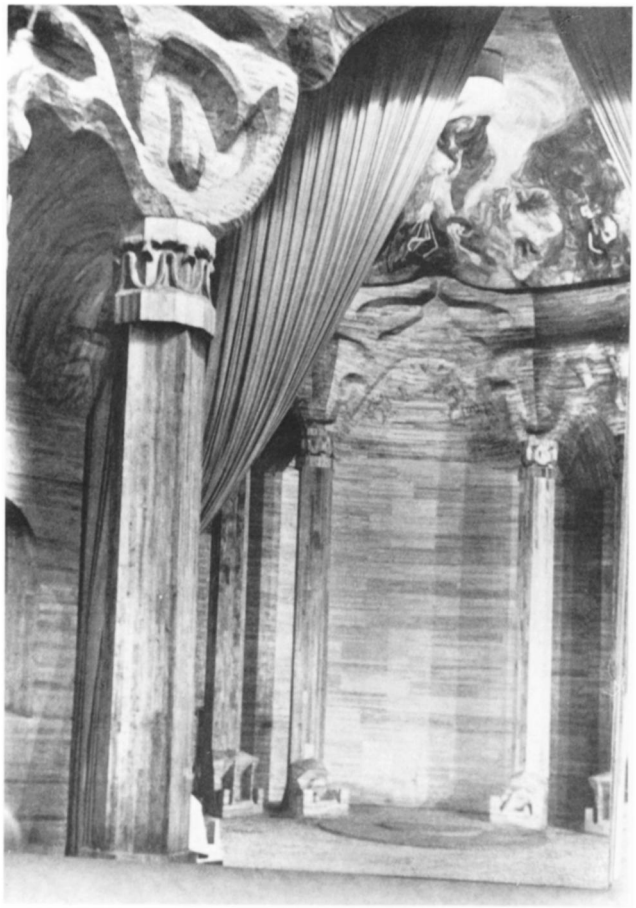

Fig. 20. First Goetheanum. Small cupola and stage (Atelier Heydebrand-Osthoff, Dornach © Godhard von Heydebrand, Boll).

arising from spiritual vision and intended "to convey a psychic impression"[78] must generate effects of form and space, not out of modeling in light and shade, but rather from a heightened sensitivity to the interdynamics and space-creating tendencies of colors themselves. "Form will be born out of the color itself," he promised.[79] In accord with the differing meanings of the two domed spaces, Steiner used a separate color spectrum for the mural paintings of each cupola: the rainbow colors of the so-called day spectrum (Newton's spectrum) for the large cupola murals, and those of the so-called night spectrum (replacing green with magenta) on the small cupola. A similarly deliberate use of color distinguished the four pairs of three-light, intricately engraved, glass windows that lined the sides of the auditorium and provided the only source of natural light in the interior

78. Reported in M. Woloschin, "A Painter's Conversations with Rudolf Steiner," *Journal for Anthroposophy,* XXII, Autumn 1975, 44. This is also included in A. Belyi, A. Turgenieff, and M. Woloschin, *Reminiscences of Rudolf Steiner,* Ghent, 1987, 140.

79. R. Steiner, *Der Dornacher Bau also Wahrzeichen geschichtlichen Werderns und Kunstlerischer Umwandlungsimpulse* (5 lectures delivered 10–25 Oct. 1914), Dornach, 1937, 119. Also, see Steiner, *Architektur,* 45.

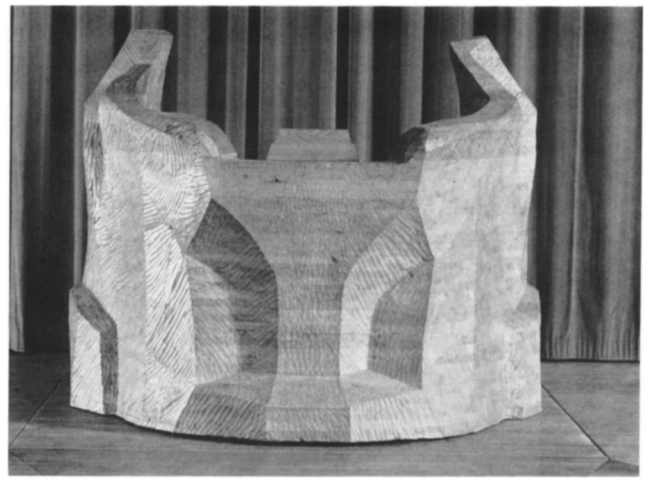

Fig. 21. Rudolf Steiner, speaker's rostrum, first Goetheanum, between 1915 and 1921. Carved laminated wood (Hans Gross, Riehen-Basel © Verlag am Goetheanum, Dornach).

(Fig. 23). Carved with esoteric spiritual images of space, time, life, and death, these monochrome green, blue, violet, and rose/magenta windows created an additional effect of carefully blended colored shadows as their day spectrum colors overlapped and created night spectrum colored shadows of red, orange, yellow, and blue across the auditorium.[80] As in the carved capitals and entablatures, but more figuratively, the anthroposophical picture of human and cosmic evolution was portrayed in the cupola murals (visible in Fig. 20).[81] "We must be able to think in colors, in forms," declared Steiner, "just as we think in ideas and thoughts."[82]

In the center of the small cupola, which was painted almost entirely by Steiner himself, a bright, golden figure was depicted holding at bay a streaming, flame-red figure above and an angular, distorted, mud-brown figure imprisoned within what appears to be an underground cavern below (Fig. 24).[83] This same

80. An explanation of the two spectrums and Steiner's use of colored shadows may be found in D. van Bemmelen, *Rudolf Steiner's New Approach to Color on the Ceiling of the First Goetheanum,* trans. A. W. Mann, Spring Valley, N.Y., 1980. The 15-millimeter-thick glass sheets were engraved after Steiner's designs by Russian artist Assya Turgeniev (wife of poet Andrei Belyi) with a large, water-cooled, glass drill devised by Steiner. For more information on the windows, see Turgeniev, *The Goetheanum Windows;* G. Hartmann, *The Goetheanum Glass-Windows,* Dornach, 1972; and W. Rath, *The Imagery of the Goetheanum Windows: An Interpretation in Verse Form,* trans. W. Mann, London, 1976.

81. In addition to the trinity composed of the two domed spaces and their crossing, Steiner indicated that the internal members of the Goetheanum were also fashioned to speak to the threefold physical and psychological/spiritual membering of the human being through the distinction between carved wood columns and figures, engraved glass windows, and painted dome murals. See Steiner, *Architektur,* 47.

82. "Man muss ebenso denken können in Farben, in Formen, wie man denken kann in Begriffen, in Gedanken." Steiner, *Architektur,* 47.

83. Perhaps in contrast to my interpretation of the flame-red "Lucifer" figure's being held at bay by the golden "Representative of Hu-

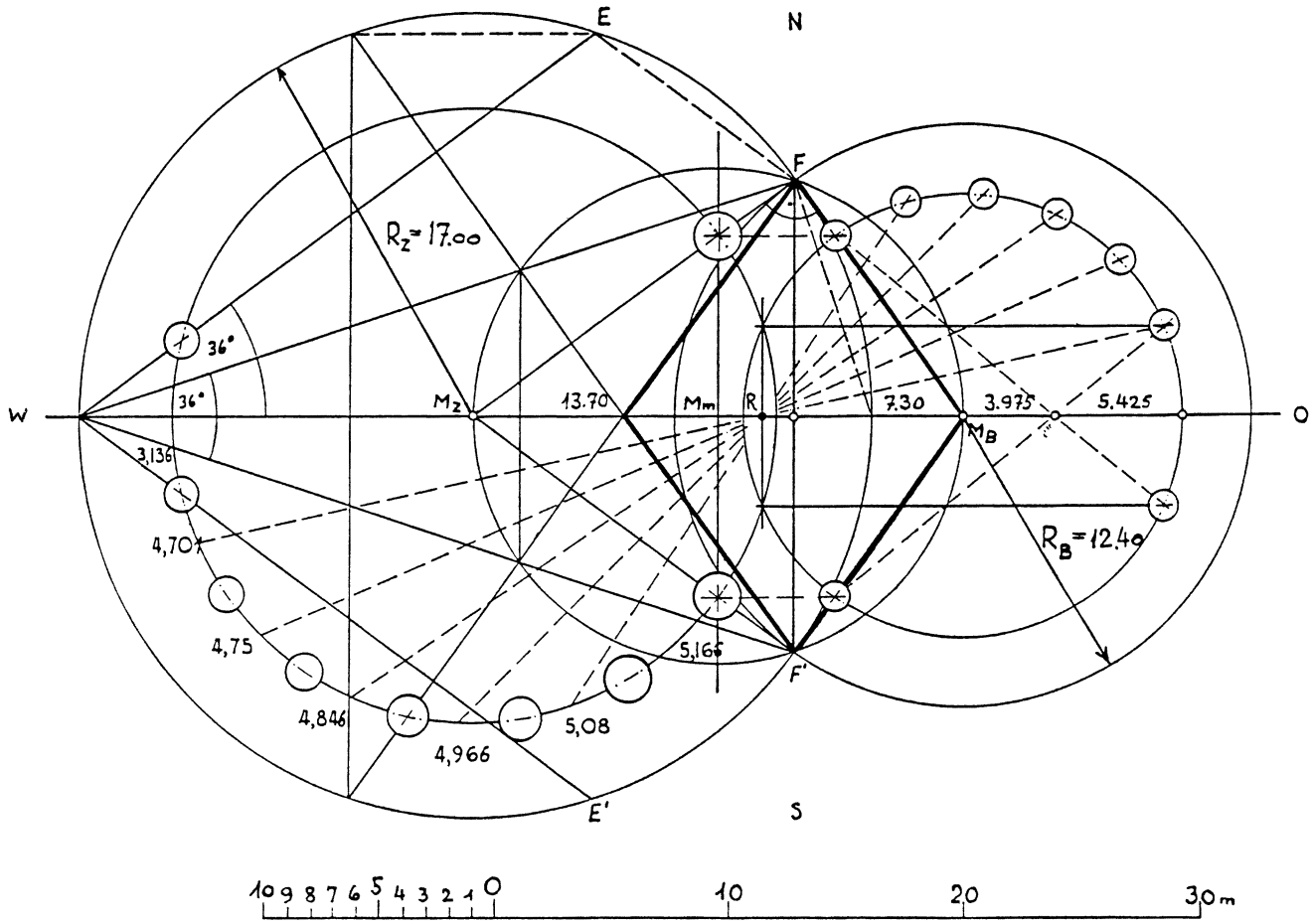

Fig. 22. First Goetheanum. Geometrical schema for the plan (Carl Kemper, *Der Bau,* fig. 1, courtesy of Verlag Freies Geistesleben, Stuttgart).

theme was repeated below in Steiner's nearly 30-foot-high, laminated elmwood sculpture, *The Group,* which was to stand prominently within a carved niche at the center rear of the stage (Fig. 25). Carved by Steiner with some assistance from the English sculptor Edith Maryon,[84] the central figure of this "synthetic epitome" (*synthetische Zusammenfassung*)[85] of the entire building was called by him "The Representative of Humanity" or, occasionally, "Christ." He intended it to express in a more concentrated, pictorial fashion those same forces and relationships to be experienced in the forms of the building as a whole.

The statue and related cupola mural above it both represent Christ as an image of the ideal human being, standing in balance between embodiments of the two extreme polar temptations of evil, often described by Steiner as "Luciferic" (upper figure) and "Ahrimanic" (lower figure). For anthroposophy the ultimate interpenetration of sensible and supersensible realities was Christ, who was said by Steiner both to have made possible and himself to have formed a bridge between these two spheres—the same bridge that the design of the Goetheanum was intended both to express and to facilitate. The wooden statue was the only part to survive the building's destruction by arson on New Year's morning 1922.

The influence of Steiner's architecture

What role, if any, have Steiner's buildings and theoretical conceptions played in the development of twentieth-century architecture? According to standard histories, almost none at all. Yet there are some tantalizing indications that this verdict may be premature. It is documented that in their later years both Frank Lloyd Wright and Eero Saarinen knew at least some-

manity" figure, Margarita Woloschin, a Russian painter who helped with the cupola murals, has written an alternate interpretation, as follows: "out of his [the central golden figure's] heart, like a red flame, the redeemed Lucifer rose aloft into the green Easterly heaven." Woloschin, "A Painter's Conversations," 46. For support of my interpretation of "holding at bay" (done nonaggressively, however, through the central figure's "embodiment of love" that Lucifer cannot endure), see Steiner, *Architectural Conception,* 18.

84. For more on Maryon, see Fant et al., *Rudolf Steiner's Sculpture,* 41–45, 59; and R. Raab, "Edith Maryon, the Selfless Collaborator," *News from the Goetheanum,* X, Nov.–Dec. 1989, 3–4.

85. Steiner, *Architektur,* 38.

Fig. 23. Rudolf Steiner and Assya Turgeniev, violet window, first Goetheanum. North side of auditorium (© Verlag am Goetheanum, Dornach).

thing of Steiner's work.[86] It is reported that Le Corbusier was deeply impressed ("speechless") when he visited the site of Steiner's second Goetheanum during its construction in 1926.[87] Steiner was well known by J. L. Mathieu Lauweriks, a colleague of Peter Behrens and teacher of Fritz Kaldenbach and Adolf Meyer.[88] The anthroposophical background of the Goetheanum was discussed by the original Bauhaus faculty and friends.[89] Even the severely rationalistic Hannes Meyer, a later director of the Bauhaus, had been an anthroposophist from 1909 to 1912 in Berlin.[90]

Steiner also had direct ties with many of the German Expressionist designers and theorists. He spoke warmly as well as critically of the poetic fantasies of his friend Paul Scheerbart.[91]

86. See Raab et al., *Eloquent Concrete,* 161; and "Eero Saarinen: Correspondence with Rex Raab," *Journal for Anthroposophy,* V, 1967, 8–11. Also, Margaret Frohlich of Spring Valley, New York, a longtime student of anthroposophy, reports that Wright knew the first Goetheanum—either through a personal visit or, more likely, through photographs—and remarked to the effect that only a genius or a very daring architectural engineer could have built two intersecting cupolas without a solid arch between them. Unfortunately, Ms. Frohlich cannot recall the source of this information, acquired many years ago.

87. According to Goetheanum engineer Olé Falk Ebbell, as reported in Sharp, *Modern Architecture,* 164; and Raab et al., *Eloquent Concrete,* 15.

88. Pehnt, *Expressionist Architecture,* 45–46, 138.

89. Raab et al., *Eloquent Concrete,* 163.

90. F. Whitford, *Bauhaus,* London and New York, 1984, 179–180.

91. Steiner, *An Autobiography,* 304–306.

Fig. 24. Rudolf Steiner, small cupola mural paintings, first Goetheanum. Detail (Atelier Heydebrand-Osthoff © Godhard von Heydebrand, Boll).

Fig. 25. Rudolf Steiner assisted by Edith Maryon, *The Group,* second Goetheanum, 1914–1921. Elmwood (E. Gmelin, Dornach © Verlag am Goetheanum Dornach).

The ideas concerning transparent plant colors that were advocated by Bruno Taut, Scheerbart's collaborator, after World War I sound suspiciously similar to Steiner's.[92] Other designers associated with Taut or the Crystal Chain circle were either anthroposophists or sympathetic to Steiner's ideas: Hermann Finsterlin, Wenzel Hablik, and Paul Gosch. This was also true of "Expressionists" Fidus (Hugo Hoppener) and Jan Buijs of Holland.[93] Steiner was also an old friend of Expressionist theorist Hermann Bahr and was quoted by Paul Fechter in his book of 1919, *Der Expressionismus.*[94] In 1961 architect Hans Scharoun even extravagantly pronounced the second Goetheanum the "most significant building of the first half of the century."[95] Through the designs and publications of Kenji Imai, Yoshiro Ikehara, Yuji Agematsu, and others, Steiner's buildings have continued to influence postwar Japanese architecture.[96] In recent years several of the continuing anthroposophical practitioners of Steiner's architectural approach in Europe have received international publicity, including Erik Asmussen in Sweden, Antonio Alberts in Holland, Rolf Gutbrod in Germany, and Imre Makovecz in Hungary.

Recent publications and exhibitions have traced the often far-from-negligible influence, both direct and indirect, of Steiner's ideas on such major twentieth-century painters and sculptors as Kandinsky, Malevich, Mondrian, Kupka, and Beuys. Perhaps further research will uncover similarly strong threads of influence on architects. In any case, it is my hope that knowledge of Steiner's theoretical and practical forays into architecture will add supporting evidence for a reinterpretation of the sometimes-noted contrast between "organic architecture" and the International Style in early twentieth-century Modernist design. This seeming stylistic opposition may be better understood as a distinction between two only relatively independent approaches to modern functionalism, both originating in efforts to understand the form-function relationship and interpret it architecturally.[97]

92. A. Fant, "Rudolf Steiner's Architectural Impulse in Modern Architectural History: Working with the Formative Processes of Nature," in *The Goetheanum: Rudolf Steiner's Architectural Impulse: A Documentary Exhibit,* ed. D. Adams, Spring Valley, N.Y., 1982, 3.

93. See Pehnt, *Expressionist Architecture,* 46; Whitford, *Bauhaus,* 52; Santomasso, "Origins and Aims," 145–146, 278–279; I. B. Whyte, ed. and trans., *The Crystal Chain Letters: Architectural Fantasies by Bruno Taut and His Circle,* Cambridge, Mass., and London, 1985, 179; R. Steiner, *Community Life, Inner Development, Sexuality, and the Spiritual Teacher: Ethical and Spiritual Dimensions of the Crisis in the Anthroposophical Society, Dornach, 1915: Lectures and Documents,* trans. C. E. Creeger, Hudson, N.Y., 1991, 119, 176; and C. Rehorst, "Jan Buijs and De Volharding, The Hague, Holland," *JSAH,* XLIV, 1985, 147–160. Fidus had also designed the title page for *Der Freidenker,* a periodical which printed Steiner's first anthroposophical lecture on 1 Nov. 1902. See *Beiträge zur Rudolf Steiner Gesamtausgabe,* LXXIX–LXXX, 1983, 31.

94. P. Fechter, *Der Expressionismus,* 3d ed., Munich, 1919, as cited in Pehnt, *Expressionist Architecture,* 137; and see Steiner's discussion of Bahr in *Toward Imagination: Culture and the Individual* (seven lectures delivered 6 June–18 July 1916 in Berlin), trans. S. H. Seiler, Hudson, N.Y., 1990, 10–21, 59–71.

95. Raab et al., *Eloquent Concrete,* 161–162.

96. See Kenji Imai, "The Goetheanum and the Ronchamp Chapel," *Journal for Anthroposophy,* VIII, Autumn 1968, 6–9; Biesantz et al., *The Goetheanum,* 111, 116; and Raab et al., *Eloquent Concrete,* 18–20, 165–166, 176–177 (bibliography).

97. I have developed at greater length the case for this interpretation—as well as something more about the tradition and context for organic functionalism—in a separate article: "Form Follows Function: The Hidden Relationship between Architecture and Nature," *Towards,* II, Winter 1989, 10–20.