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The Interpretation of the Glass Dream—Expressionist Architecture and the History of the Crystal Metaphor

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German Expressionist architectural design is generally noted for its free, frenetic forms, for design that left behind all conventions. The futuristic Expressionist glass projects in both amorphous and crystalline arrangements can be seen as an expression of the utopian expectations for a new society after the German Revolution of 1918. Expressionist manifestoes and literature, on the other hand, reveal a thoroughgoing interest in a literary-architectural convention associated with glass and crystal, an iconographic theme that stretches from King Solomon, Jewish and Arabic legends, medieval stories of the Holy Grail, through the mystical Rosicrucian and Symbolist tradition down to Expressionism. Expressionist architects, familiar with the various earlier conventions, in a highly eclectic fashion reinterpreted the meaning of the glass-crystal symbolism as a metaphor of transformation to signify a changed society. This article, though it begins and ends with a discussion of Expressionist design, deals primarily with the sources and changes of this iconographic tradition.

EXPRESSIONIST ARCHITECTURE is well known for its lack of constraints and its freedom from traditional norms. In Expressionist design the basic orthogonal system that underlies most of Western Architecture is mainly ignored. Like Wassily Kandinsky's introduction of abstract forms in painting, Expressionism brought to architecture a nonobjective approach. But just as we know today that Kandinsky's presumed abstractions retained a variety of allusions to representational art, so too in Expressionist architectural design it can be shown that ancient images lurk beneath the surface impression of totally revolutionary forms.[1]

1. The basic outline of this paper was first presented in a talk to the New York chapter of the Society of Architectural Historians in February 1968. In its current form it is an abbreviated and adapted version of Chapter IV of my dissertation on *Bruno Taut and Paul Scheerbart's Vision—Utopian Aspects of German Expressionist Architecture*, Columbia University, 1973. For help with the dissertation I am indebted to George R. Collins, Edgar Kaufmann, Jr., my sponsors, and Theodore Reff. For helpful advise on the present manuscript I wish to thank Richard Brilliant and François Bucher.

Most Expressionist projects were produced after World War One by a group of architects belonging to the circle around Bruno Taut and the Arbeitsrat für Kunst (Work Council for the Arts), loosely based on the workers' soviets active in Germany during the November Revolution of 1918. Members of the Arbeitsrat had welcomed the overthrow of the Prussian Empire. And although few architectural commissions were to be had during the immediate post–war years because of a disastrous economy, these architects were euphoric about architectural experimentation possible under the new regime. At the inception of the Weimar Republic both its supporters and detractors assumed that a full-fledged socialist revolution had taken place, one that at the time seemed comparable in its impact to the Russian Revolution of the previous year. The architects' fervent belief in a new society at a time when they were without meaningful work led to a paradoxical union of intense optimism coupled with a feeling of impotence. The result can be seen in the uninhibited, free-form sketches produced by both the Arbeitsrat and by members of the Gläserne Kette (Glass Chain), an offshoot of the former group. These sketches show a frenetic attempt both to challenge and conquer at once. The style of these drawings is not easily categorized: precisely because traditional norms had been abandoned and the general preference for abstraction did not allow for the establishment of new rules, Expressionist design does not seem to have a characteristically consistent language of forms. Soft, amorphous shapes, as in Hermann Finsterlin's "Interior" (Fig. 1), can be found alongside raw, jagged sketches, as in Hans Scharoun's "Glass House" (Fig. 2). Or, even within the work of one architect, Taut (in two designs for a "Crystal House in the Mountains"), the building is expressed on the one hand in gentle, arcuated forms (Fig. 3), and, on the other, it has sharp, faceted excrescences (Fig. 4). The best one can say in defining the Expressionist style in terms of its forms is that no inhibiting principles seem to have been adopted. It appears to be the first style without at least a few rules. This freedom—or what some might characterize as lawlessness—in Expressionism is conventionally assumed to be an indication of extreme self-expression. The variety of forms found in both Expressionist painting and

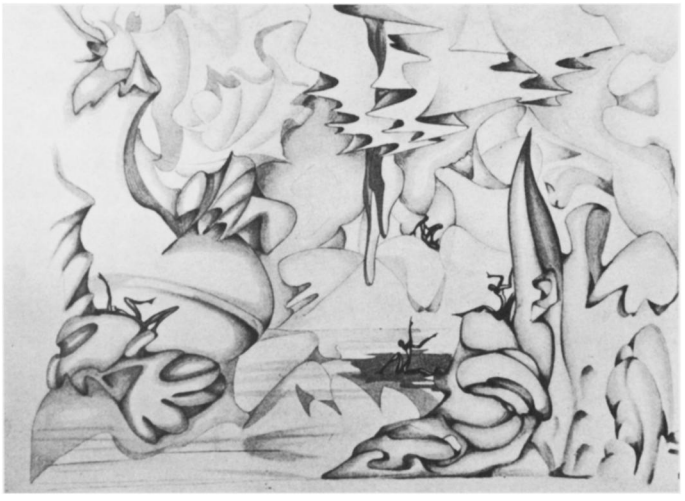

Fig. 1. Hermann Finsterlin, "Interior" (*Frühlicht*, No. 2, Winter 1921/22, 34).

architecture are ascribed to a kind of artistic self-indulgence, as it were.[2]

A definition of style, however, cannot simply be made on the basis of characteristic forms, but must include shared attitudes and common intentions. An iconographic analysis of Expressionist design reveals a widespread adoption of specific symbolic images that belies its formal open-endedness and abstraction. Many Expressionist projects have in common the use of glass or crystal as proposed construction material. The fact that glass is a viscous material that can be molded into any desired shape may lead us to assume that it might have been chosen as the perfect embodiment of Expressionism's idiosyncratic forms. Concrete, however, could also have been used to do the same job. Hence another property of glass, aside from its malleability, must have been the reason for its frequent use. A recurring motive in many of these designs (in addition to glass and crystal as material) is transparency and flexibility. Such projects, had they been built, would have produced a rich, shimmering, and illusory world of reflections. This extraordinarily unstable conception of architecture would have further enhanced the incomprehensible and abstract quality of Expressionist design. But behind such intentionally disorienting and novel forms lies an extended, if not always continuous history of glass and crystal symbolism. Bruno Taut's statement "The Gothic cathedral is the prelude to glass architecture" and one of the couplets written by the poet Paul Scheerbart for Taut's Glass House of 1914, "Light seeks to penetrate the whole cosmos / And is alive in crystal",[3] give a

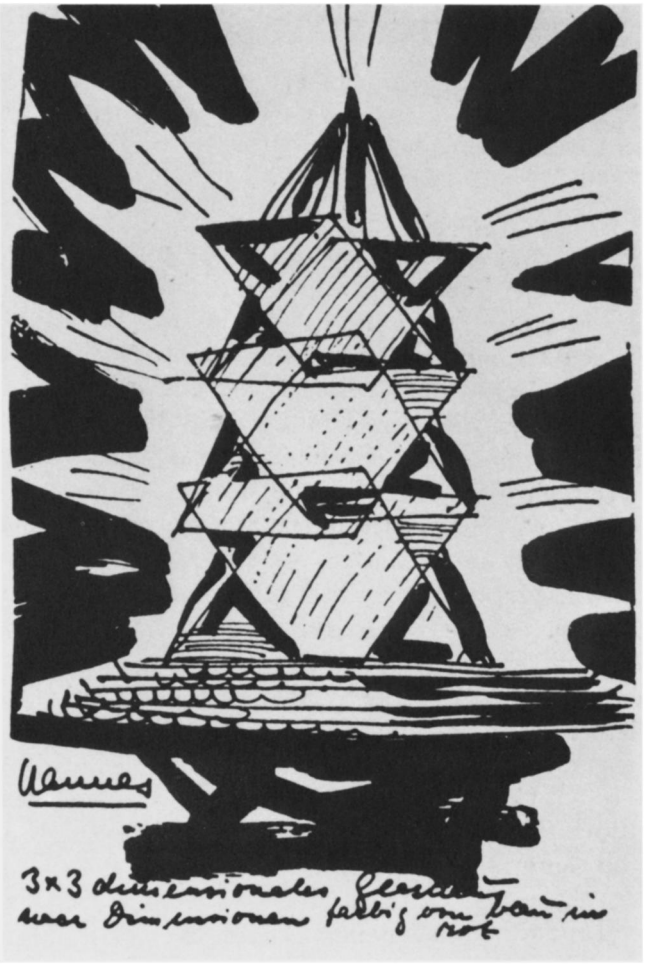

Fig. 2. Hans Scharoun, "Three by Three Dimensional Glass House" (*Stadtbaukunst-Frühlicht*, No. 10, 1920, 158).

Fig. 3. Bruno Taut, "Crystal House in the Mountains" (*Alpine Architektur*, Hagen i.W., 1919, 3).

2. Such an attitude is implied in W. Pehnt, *Expressionist Architecture*, trans. J. A. Underwood and E. Küstner, New York, 1973. See my review of this book in *JSAH*, XXXVII, 1978, 131–133.

3. B. Taut, *Glashaus—Werkbund-Ausstellung Cöln 1914*, Berlin (1914), motto for drawing of Glass House (Fig. 7). Scheerbart's aph-

Fig. 4. Bruno Taut, "Crystal House in the Mountains" (*Die Auflösung der Städte*, Hagen i.W., 1920, 26).

clearer indication than the designs themselves of the mystical tradition behind this imagery. That the wild, exuberant Expressionist projects quite consciously allude to a traditional, if esoteric, iconography is remarkable for a style whose formal framework seems so rebellious.

Wolfgang Pehnt in his *Expressionist Architecture* of 1973 writes correctly that the use of crystalline imagery is a characteristic motive of Expressionism. He even cites several sources for this iconography, but then obscures its meaning by saying that Taut used crystal in a "vague, ecstatic sense."[4] Numerous statements by Expressionist architects, artists, and writers make it clear that the Expressionist crystal-glass metaphor represents a 20th-century reincarnation, with only a few changes, of an ancient and specific iconography. If we look at the Expressionists in isolation, their preference for glass and crystal does indeed appear merely as a vague motive, like the preference for the "S" curve in Art Nouveau, for example. But it is only when we examine closely the checkered history of this symbol that we can understand its exact significance in Expressionism.

* * *

Isolated fragments of this iconographic tradition are known from medieval and Moslem architecture. Paul Frankl in his *The Gothic—Literary Sources and Interpretations through Eight Centuries* cites numerous legends containing descriptions of fantastic glass buildings, but he discusses them only in relation to the use of Gothic form and stained glass.[5] Concerning Moslem architecture, Frederick P. Bargebuhr in *The Alhambra—A Cycle of Studies on the Eleventh Century in Moorish Spain* cites many Arabic myths that allude to mysterious and powerful glass structures that might have been an inspiration for the first Alhambra palace.[6] Neither Frankl nor Bargebuhr attempt to deal with the meaning of glass imagery outside their own areas of special interest. The significance of this iconography has never been looked at in a wider historical context. Such a comparative analysis is a necessary first step in proposing links between cultures and epochs. It is meant to be suggestive, not exhaustive.

One of the main reasons why the iconography of glass and crystal has not been traced before is that its most frequent manifestation by far has occurred in architectural fantasies, largely as written proposals. These proposals represented ideal constructs. And because of the preciousness of glass in preindustrial periods, coupled with its structural weakness, such projects usually remained in the realm of wishful thinking. Diaphanous structures so easily conjured up in a literary format did, nevertheless, eventually affect built form. In any case, architectural drawings and even executed buildings can speak to us only indirectly through their forms, while myths concerning architecture are often more explicit.

The source for the earliest known versions of the glass metaphor is in the Old Testament, specifically in the person of that great mainstay of arcane wisdom, King Solomon. The biblical description of Solomon's construction of his Great Temple was to become the nucleus of later fanciful Jewish and Arabic legends concerning his architectural feats. The Old Testament story does not actually include a building of glass, but the materials that are mentioned, gold and water, will be found in close association with the later glass symbolism, forming a kind of iconographic

orisms for the Glass House appear in a letter to Taut of 10 February 1914, which is reprinted in "Glashausbriefe," *Frühlicht*, supplement of *Stadtbaukunst Alter und Neuer Zeit*, No. 3, 1920, 45–48.

4. Pehnt, *Expressionist Architecture*, 37–41. The Song of Songs, cited by him as a source, does not contain any reference to this imagery. Though he mentions Ernst Toller's play *Die Wandlung* (*The Transformation*), he overlooks the clue to the meaning of the crystal iconography contained in its very title.

5. P. Frankl, *The Gothic—Literary Sources and Interpretations through Eight Centuries*, Princeton, 1960.

6. F. P. Bargebuhr, *The Alhambra—A Cycle of Studies on the Eleventh Century in Moorish Spain*, Berlin, 1968.

constellation. Possibly the reflective qualities of gold and water led in the later apocrypha to their being misinterpreted as, or intentionally magnified into, translucent buildings of glass.

According to I Kings 6:30, the original inspiration for most of the subsequent architectural glass fantasies, the whole floor of Solomon's Temple was overlaid with gold. In I Kings 7:23–25 a round "molten sea" (a font) of brass resting on figures of 12 oxen is described. The long lasting influence of such brief passages on later myths and actual buildings is not due to the architectural brilliance of these references, but to the forceful representation of King Solomon as a figure of both tremendous secular and spiritual power: he "exceeded all the kings of the earth for riches and for wisdom" (I Kings 10:23) and the Lord himself in an apparition approved the construction of the Temple (I Kings 9:3), making Solomon and his architecture an example well worth following.

These biblical descriptions contain only the germ of the allegorical tradition that concerns us here. The apocrypha surrounding the figure of Solomon, however, has a closer bearing on the development of architectonic symbols of glass. In a number of Jewish legends and subsequent Arabic stories inspired by them, King Solomon is said to have built a palace of glass (with glass floors) to reveal to him whether the visiting Queen of Sheba was a real woman or, as was suspected, a genie. Genies were rumored to have hairy legs and the glass floors were intended to settle that question. The Queen of Sheba, not familiar with the illusory effects of glass architecture, upon entering Solomon's palace (as the legend would have it) believed that the king was sitting in the midst of water. To step over to him across the imagined pool, she lifted her skirts to keep them dry, but thereby exposed her hairy legs.[7]

In this particular Solomonic legend, the meaning of glass architecture and its suggestion of shimmering water is quite direct and literal: it helps to reveal what would otherwise remain hidden—the true supernatural nature of Sheba.[8] In any case, the allusion to a glass floor suggesting a watery surface is most probably a coalesced vestige of the golden, reflecting floor of the biblical passage, and the "sea," or font of Solomon's Temple. This legend was then codified in Moslem tradition: a reference to Solomon's glass palace occurs in the Koran (chapter 27).[9]

In Arabic legends of the early Middle Ages, Solomon's role as patron of glass architecture expands to truly fantastic proportions. He is said to have commanded genies to construct for him an underwater dome of glass and an aerial palace or city of crystal. The following account by Abu Mansur was written approximately in the 10th century:

> Solomon sees rising from the bottom of the sea a pavilion, tent, tabernacle, or tower, vaulted like a dome, which is made of crystal and is beaten by the waves. . . . The aerial city is erected by the genii at the order of Solomon, who bids them build him a city or palace of crystal a hundred thousand fathoms in extent and a thousand storeys high, of solid foundations but with a dome airy and lighter than water; the whole to be transparent so that the light of the sun and the moon may penetrate its walls. . . .[10]

Crystal and water here have replaced the glass of the earlier story as the imagery of translucence. In later allegories these materials—glass, crystal, and even water—will be used almost interchangeably. King Solomon is also no longer just a wise and wealthy ruler, but a man imbued with supernatural powers. He has become lord of sea and air. In fact, he seems to have taken on those very powers of sorcery attributed to the Queen of Sheba in the Judeo-Christian tradition (it is as if in unmasking her, he was able to acquire her magic for himself). Solomon as a figure of supernatural powers was to influence the mystical, esoteric side of the glass metaphor during the later Middle Ages.

Of greater real consequence for the later dissemination of Solomonic architectural lore were the echoes of these legends in the built architecture of Islam. For example, the first Alhambra Palace of the 11th century clearly evoked biblical as well as apocryphal Solomonic architecture. The Alhambra was not, of course, a glass palace, but it was intended as an analogue both to Solomon's palace described in the Old Testament and to his Koranic glass palace.

The 11th-century Alhambra was erected for Yusuf ibn Naghralla, who was a Jew and the powerful chancellor to the Zirid kings of Granada. The fact that he belonged to a Jewish minority within a Moslem culture made the selection of a meaningful architectural prototype quite a delicate task. Solomon, whose attributes in the Moslem tradition belonged largely to the fantastic realm of magic, but who could at the same time evoke visions of a Solomonic kingdom for Jews, provided a generally acceptable paragon. Yusuf's father, Ismail ibn Naghralla, had been chancellor before his son. Both father and son were not merely important statesmen, but also intellectuals who surrounded themselves with poets and philosophers. Both were intent on a romantic revival of the Solomonic age.[11]

Ismail ibn Naghralla had been interested in the creation of fantastic structures. This is attested by a poem he wrote describing a fountain he had built in his house:

> Tell me what is the torch upon the lamp
> that spouts its crystals onto a crystal base?

7. L. Ginzberg, *The Legends of the Jews*, Philadelphia, IV, 1954, 145 and VI, 1946, 289.

8. However, Solomon's apparent immersion in water also has erotic implications: Sheba's Arabic name is Bilkis which seems to be related to the Hebrew word for concubine (Ginzberg, *Legends*, VI, 289).

9. F. P. Bargebuhr, "The Alhambra Palace of the Eleventh Century," *Journal of the Warburg and Courtauld Institutes*, XIX, 1956, 229.

10. Bargebuhr, "Alhambra," footnote 116, 257–258.

11. Bargebuhr, "Alhambra," 197.

A stream that will not kill fire in its midst,
its waters standing like a wall and missiles,
A sky encrusted with an onyx skin
stretched over a ground of bdellium.[12]

Ismail's equation of water with crystal, and his reference to onyx and bdellium (a biblical name for rock crystal, carbuncles, or pearls) as part of the building materials for his imagined structure, bear a striking resemblance to later medieval Christian legends about the Holy Grail. The poem's architectural metaphors were based on the features of an actual fountain. Yusuf, who collected his father's poems, verified the accuracy of the images in an editorial note which precedes the poem:

This poem describes a fountain which was in his house; from its head, water poured forth and fell in the form of a dome upon a floor of alabaster and marble; lights were set inside this 'dome' and were thus covered by it; there was also a wax light on top.[13]

The combination of glass, water, and light to form a playful architectural effect was not exceptional in Islamic court architecture of that period. A glass pavilion reportedly built for Yahya ibn Ismail al-Mamun, King of Toledo, also dates from the 11th century:

The King of Toledo constructed in the Middle [of his palace area] a lake, in the center of which lake he built a pavilion of stained glass, and encrusted with gold. The water was caused to rise to the top of the pavilion, owing to an artful device invented by his engineers, so that the water used to descend from the summit of the pavilion, encompassing it, the various streams uniting themselves with one another. In this fashion the glass pavilion was within a sheet of water which was shed across the glass, and which was flowing incessantly while al-Mamun sat within the pavilion without being in the least touched by the water; and even torches could be lighted in it, producing, thereby, an astonishing and marvellous spectacle.[14]

This report of the King of Toledo's glass and water pavilion may be partly imaginary, but it illustrates at least that the creation of an architecture having a dematerialized and fluid nature was found desirable.

Yusuf ibn Naghralla, inspired by his father's interest in the creation of a fairy-tale architecture, had as a youth engaged in the design of elaborate water gardens.[15] And the father's vision of a new Solomonic kingdom was realized in part when Yusuf built his own palace on the Alhambra hill. Today this structure can be appreciated only indirectly (the portion of the Alhambra we see today dates from the 14th century) through a panegyric poem by the Hebrew poet and Neoplatonist Solomon ibn Gabirol, one of Yusuf's circle. The poem is addressed to Yusuf and contains references to his new mansion. A paraphrase of Solomon's Song of Songs, it reads in part:

The dome is like the Palanquin of Solomon
hanging above the rooms' splendours,
That rotates in its circumference, shining like
bdellium and sapphire and pearls
Thus it is in the daytime, while at dusk it looks
like the sky whose stars form constellations.
. . . . . .
And there is a full 'sea,' matching Solomon's Sea,
yet not resting on ox;
But there are lions, in phalanx on its rim
seeming to roar, for prey. . . .[16]

The poem's allusion to a dome which rotates and appears to be made of precious materials is almost certainly allegorical in this context. Nevertheless, the rotating dome has a long tradition in visionary architecture which may have its source in the legendary rotating dome in Nero's Domus Aurea. In Yusuf's palace the rotation was probably only implied by means of small oculi placed in the dome which would have cast fleeting light across the ceiling during the course of a day. A more direct model for such an apparently moving dome would have been the "Hall of Caliphs" in the palace of Abd ar-Rahman III, the 10th-century caliph of Cordoba:

The ceiling, which was made of gold and dull alabaster, was within the hall's bright-coloured body of various colours. . . . In its centre the pearl was placed which the 'King of Constantinople,' Leo, had presented to an-Nasir. The roof tiles [visible from within the hall] of this palace were of gold and silver. In the middle of this *majlis* [audience hall] was a huge cistern filled with quicksilver. On each side of this *majlis* were eight doors joined to [vaulting] arches of ivory and ebony, encrusted with gold and various kinds of jewels, and which rested upon columns of coloured alabaster and clear beryl. Whenever the sun entered these doors, and whenever its rays struck the ceiling and the walls of the *majlis*, then a light would be created which would suspend eyesight. Whenever an-Nasir wished to awe a man present in his . . . company, he would signal one of his Slav slaves to put in motion that quicksilver, thereby light would be produced like lightning flashes which would arrest the hearts of those assembled, until it would appear to all in the *majlis*, as long as the quicksilver was in motion, that the place was rotating about them. It was said that this *majlis* circled and oriented itself toward the sun. . . .[17]

The later 14th-century Alhambra palace clearly continued the spirit of Yusuf's Solomonic fantasies. For instance, a 14th-century inscription at the Alhambra speaks of "that palace of glass,

12. Bargebuhr, "Alhambra," 212.
13. Bargebuhr, "Alhambra," 211–212.
14. Bargebuhr, "Alhambra," footnote 60, 248.
15. Bargebuhr, "Alhambra," 211.
16. Bargebuhr, "Alhambra," 199. Bargebuhr uses the reference to the lion fountain as major evidence that the 14th-century Alhambra was based on and continued many of the ideas introduced by Yusuf's palace. Further evidence is the typical Zirid construction (horizontal lines of bricks inserted between oblong patches of small, usually round, unshaped stones), found in the lower walls of the Alhambra, which Bargebuhr believes to be remains of Yusuf's palace.
17. Bargebuhr, "Alhambra," 228–229.

whoever saw it, thinks it is a body of water"[18] and another one speaks of the "palace of crystal,"[19] all references to the Koranic passage about Solomon's glass palace. And, as in some of the earlier legends, glass, crystal, and water are used as synonymous images. Because an actual glass or crystal palace was not technically feasible, the semblance of such a building was attained through allusion: water and light were used to suggest a dissolution of solid materials into a fleeting vision of disembodied, mobile architecture.

Although no other Moslem palace emulated the Solomonic legends as closely as did the Alhambra, strong evidence indicates that this grand example influenced later Moslem architecture. Even in the 16th century we find echoes of this tradition in the great palaces of the Mogul emperors; with their pools and water channels (which in illuminated manuscripts are often reproduced in silver like the quicksilver pool of the "Hall of Caliphs") and with semiprecious stones and mirrors inlaid into their walls, these buildings still participate fully in this Solomonic fairy-tale architecture.

* * *

The second element of the tradition that will help in understanding the meaning of the later glass-crystal symbolism comes from the New Testament: the Revelation of St. John. This aspect of the iconography is better known than the Moslem strand, and at least its importance for medieval Grail legends and the Gothic cathedral has generally been acknowledged. But that the Revelation of St. John contains a number of vestiges of Solomonic legends needs to be pointed out.

In John's vision of the Lamb he sees in front of the throne "a sea of glass like unto crystal" (Revelation 4:6). This is presumably a pastiche of the biblical references to Solomon's "molten sea" and the apocryphal story in which Sheba sees Solomon enthroned in his glass-floored palace and is misled into thinking that he is sitting in water. And in this passage from Revelation, glass is again likened to crystal, an identification which had also occurred in the earlier Solomonic legends.

John's vision of the New Jerusalem, too, points up the interchangeability of light, glass, crystal, precious stones, and gold as metaphors of a transcendent life. St. John writes of the New Jerusalem: "... and her light was like unto a stone most precious, even like a jasper stone, clear as crystal" (Revelation 21:11). After describing the city's foundations, measurements, and number of gates, John goes on to some of the building materials used:

And the building of the wall of it was of jasper: and the city was pure gold, like unto clear glass.

And the foundations of the wall of the city were garnished with all manner of precious stones. The first foundation was jasper; the second, sapphire; the third, a chalcedony; the fourth, an emerald;

The fifth, sardonyx; the sixth, sardius; the seventh, chrysolite; the eighth, beryl; the ninth, a topaz; the tenth, a chrysoprasus; the eleventh, a jacinth; the twelfth, an amethyst.

And the twelve gates were twelve pearls; every several gate was of one pearl: and the street of the city was pure gold, as it were transparent glass (Revelation 21:18–21).[20]

The city and its streets of gold are apparently another echo of the golden floor of King Solomon's Temple. The reflective intensity of the gold is compared to glass (" . . . pure gold, as it were transparent glass"). Such an analogy may explain the origin of the legends of Solomon's glass structures. The gilt Temple described in the Old Testament may have been compared with glass in its general effect, as is done in John's vision of the New Jerusalem. At some later point this purely metaphorical use of glass was probably misinterpreted as a reference to real glass. In any case, the association of light, gold, precious stones, crystal, and glass with the New Jerusalem, the supernatural city inhabited by the saved, was to be of tremendous importance in the conception of the Gothic cathedral and its stained glass program, as it was for the further evolution of the glass myth during the Middle Ages.

* * *

In the Middle Ages the Old Testament, Moslem, and New Testament traditions finally coalesce into a single highly eclectic whole: the apocrypha of Solomonic architecture, which had become separated into two distinct strands—a Judeo-Christian one and an Arabic one—are reunited because of the increasing contacts between the Moslem world and the West. Indeed, in the many legends surrounding the Holy Grail this syncretism be-

18. Bargebuhr, "Alhambra," 229.

19. Bargebuhr, "Alhambra," footnote 117, 268.

20. Revelation was also influenced by Ezekiel's vision, in which the splendor of the spiritual realm is associated with precious stones. However, the meaning of the crystal metaphor is not as lucid as in Revelation, as can be seen in these passages from Ezekiel:

And the likeness of the firmament upon the heads of the living creature was as the color of the terrible crystal, stretched forth over their heads above. (1:22)

And above the firmament that was over their heads was the likeness of a throne, as the appearance of a sapphire stone; and upon the . . . throne was . . . the appearance of a man. . . . And I saw as the color of amber, as the appearance of fire round about within it from the appearance of his loins even upward, and from the appearance of his loins even downward, I saw as it were the appearance of fire, and it had brightness round about. (1:26–27)

Later Jewish commentaries on the Scriptures also refer to crystal and precious materials in describing paradise (Midrash Konen and the Midrash attributed to Rabbi Joshua ben Levi, for example). Though they are claimed to be old texts, they were most likely written in the early Middle Ages. See *The Jewish Encyclopedia*, ed. I. Singer, New York, 1964, IX, 516.

comes quite complex, for often Solomonic fantasies are superimposed on those connoting the New Jerusalem. From the Old Testament was taken the concept of the priest-king, from the Koran and Moslem legends the idea of a transparent and sometimes mobile structure created by magic powers, and from Revelation the notion of edifices of precious materials as an architecture of spiritual salvation and transcendence. As is to be expected, the most fantastic examples are again to be found in literary works, not in built architecture.

For example, the *Letter of Prester John* of 1165 describes the palace of a priest-king that has at its apex a carbuncle that shines at night. Outside the building, next to an arena with an onyx floor, a giant mirror reveals approaching dangers to the ruler inside.[21] The onyx floor and the mirror suggest both Solomon's glass floor and his magic powers. Nearly a century later, ca. 1250, a scribe added to the *Letter of Prester John* what appears to be the description of a building in the tradition of mobile Solomonic glass architecture: he details a *Capella vitrea*, a magic glass chapel which automatically expands to accommodate as many worshippers as enter it.[22]

One of the Grail legends, Wolfram von Eschenbach's *Parzifal*, written in 1205–1214, is even more directly inspired by Islamic culture. It depicts the Holy Grail as a precious stone, dislodged from the crown of God by Lucifer's lance when he was cast out of Paradise. According to this story, the divine gem is then preserved inside a cave by Adam.[23] Most legends surrounding the Grail have at least some Near Eastern sources. Wolfram von Eschenbach's version specifically was inspired by a Provençal poet who in turn had derived his own story from an Arabic manuscript.[24] *Parzifal* bears Gnostic and alchemical overtones in its allusion to the holy stone containing the spark of divine light, hidden in the bowels of a dark cave. In this instance the Grail story suggests a dualistic image of light and dark—the Grail and the cave—a contrast also implied by the very names of the protagonists, Lucifer (bearer of light) and Adam (earth), a mystical usage that will recur in later alchemical lore.

In another legend about the Grail, Albrecht von Scharfenberg's the *Younger Titurel* of about 1270, Montserrat near Barcelona, in this story portrayed as a cliff of onyx, is chosen to bear the Holy Grail.[25] Titurel is instructed to polish the onyx cliff, after which a building plan miraculously appears on the polished surface of the rock. The exterior of this divinely designed sanctuary for the Grail is like a gigantic crown, encrusted with jewels, with a roof of gold and enamel that sparkles in the sun. At night, glowing rubies atop subsidiary towers and the light of a carbuncle at the apex of the central tower help to guide the way of the Templars to the shrine. The windows and interior are jewelled also, and the floor is described as a "crystal sea" through which one can see, as through a layer of clear ice on a lake, water and fish. This reference to the floor as a "crystal sea" betrays the origin of at least this aspect of the story as deriving from Solomonic legends.[26] The bejewelled exterior of the Grail temple, on the other hand, seems to be related to the vision of the New Jerusalem.

Whereas the earlier Grail legends may have affected Gothic architecture, later Grail stories in turn were as much influenced by the visual experience of Gothic architecture. The jewelled interior and in particular the jewelled windows of the Grail temple in the *Younger Titurel* suggest that Albrecht von Scharfenberg had in mind a temple suffused with light where a mystical union with God is made tangible through an apparently bodiless colored light, an effect comparable to that of the Gothic cathedral with its profusion of stained glass windows.

Precious metals and stones were considered the best carriers of divine light. From Abbot Suger's description of his building program at St. Denis, we know that such materials were used extensively for reliquaries, crosses, and small liturgical utensils.[27]

21. Frankl, *The Gothic*, 168–169.

22. Frankl, *The Gothic*, 175.

23. Wolfram von Eschenbach, *Parzifal*, trans. H. M. Mustard and C. E. Passage, New York, 1961; *Wolfram von Eschenbachs Parzifal und Titurel*, ed. K. Bartsch, 4th ed., Leipzig, 1927; Frankl, *The Gothic*, 177–179.

24. Wolfram von Eschenbach's own claim as to the Arabic source of his material is discounted by R. S. Loomis in his "The Origin of the Grail Legends," *Arthurian Literature in the Middle Ages*, London, 1959, 292–293. Loomis believes that the origin of the Grail legends must be sought in Welsh and Irish lore. See also A. C. L. Brown's similar attitude in *The Origin of the Grail Legend*, New York, 1966. Indeed a number of motives in Welsh and Irish stories would seem to justify this contention. Several of the legends include references to a city of glass, to a castle of glass, island of glass, glass pillars, etc., associated with fairytale settings originally, but very early on confused with the Land of the Dead (Brown, *Origin of the Grail Legend*, 89). The meaning of such references is, therefore, not very clear, and, in any case, citations of glass imagery are quite cursory and certainly not as fully developed as glass architecture is in the Arabic tradition. Interestingly, F. Anderson in *The Ancient Secret —In Search of the Holy Grail*, London, 1953, has suggested that Celtic folk tales were influenced by Solomonic legends (see particularly her Chapter XII, "The Sea of Glass"). In any case, many architectural motives in the Grail legends indicate a quite direct connection with the Solomonic tradition. Near Eastern and Solomonic sources for the Grail legends are discussed by L.-I. Ringbom, *Graltempel und Paradies; Beziehungen zwischen Iran und Europa im Mittelalter*, Stockholm, 1951, and F. Kampers, *Das Lichtland der Seelen und der heilige Gral*, Cologne, 1916. Frankl also believes that the source for *Parzifal* is an Arabic one (*The Gothic*, 179), though it must be said that the variously proposed influences on the Grail legends are not necessarily mutually exclusive.

25. B. Röthlisberger, *Die Architektur des Graltempels im Jüngeren Titurel*, Bern, 1917; G. Trendelenburg, *Studien zum Gralraum im Jüngeren Titurel*, Göppingen, 1972; and Frankl, *The Gothic*, 176, 180–182.

26. Such a figure of speech depends probably on Solomon's "molten sea" and its mongrelization in later legends into a glass floor.

27. *Abbot Suger on the Abbey Church of St.-Denis and its Art Treasures*, ed., trans., and annotated by E. Panofsky, Princeton, 1946. For the influence of reliquaries on architectural conceptions see F. Bucher's "Micro-Architecture as the 'Idea' of Gothic Theory and Style," *Gesta*, XV, 1976, 71–89.

Although these same materials would have been desirable for the large windows of the cathedrals, it is obvious that this was impracticable. A plausible substitute for the translucence of precious stones was stained glass. That Gothic stained glass windows often alluded to precious stones is revealed by the names given in the Middle Ages to various stained glass colors, i.e. "ruby glass" or "sapphire glass."[28] The true function of stained glass was within the scope of a mystical, transcendent light: a light that illuminates the soul of the worshipper.

The religious import accorded precious materials and glass naturally affected the secular imagery of the Middle Ages as well. Luminosity became an important attribute in the definition of beauty in the 12th and 13th centuries. In philosophical and courtly literature, the most commonly used adjectives of beauty were "lucid," "luminous," and "clear."[29] While the Gothic cathedral's stained glass program continued the Biblical and Koranic traditions in which translucent and reflective materials symbolize transcendence, spiritual light, or divine wisdom, we begin to find in the secular literature of the later Middle Ages new meanings in the iconography of glass and crystal: the imagery reveals more private and personal attitudes, a change in meaning that will gradually affect its outward form.

Gottfried von Strassburg's *Tristan* of the early 13th century contains the description of a grotto that houses a bed of crystal. Significantly, in an appended allegorical interpretation of *Tristan* this crystalline bed is said to stand for pure and transparent love.[30] A further association between translucent matter and love is made in Chaucer's poem *House of Fame* of ca. 1381, which relates that the temple of Venus appears as if it were a temple of glass. And a similar theme is versified in *Temple of Glass* by John Lydgate, a Chaucer imitator.[31] On the other hand, folk legends from around 1300 onward, usually attributed to the minnesinger Tannhäuser, depict the abode of Venus as the interior of a mountain.

The crystal bed and grotto still found in association in *Tristan* and quite comparable to the light/earth metaphors of the Grail inside the cave of *Parzifal*, are separated into two seemingly opposing ideas in the legends surrounding the goddess of love and become a glass temple in Chaucer or the interior of a mountain in the legends attributed to Tannhäuser. Such a drastic division between the abodes of Venus, the temple of glass or the *Venusberg*, may well allude to the segregated concepts of pure and earthly love.

In the troubadour or minnesinger tradition of the 13th and 14th centuries, glass and crystal are secularized. They now symbolize pure love. More importantly, glass and crystal no longer solely represent the upward movement toward a transcendent realm, as the Grail legends had suggested. In larger terms, this trend may be regarded as a movement away from the extreme spirituality of the earlier Middle Ages toward a concept of man which includes both his spiritual *and* earthly manifestations. In this context it is extremely significant that in literature from about 1410 onward the site of the Holy Grail and the *Venusberg* become one and the same.[32] The quest for god and love could now be undertaken simultaneously!

Nearly all the Medieval literary traditions of the glass-crystal symbolism covered to this point are summarized in a Renaissance work, Francesco Colonna's *Hypnerotomachia Poliphili* (*The Dream of Poliphilo*). In highly syncretistic fashion, this book unites the metaphors of religious mysticism and of courtly love poetry. It is interesting that *The Dream of Poliphilo* was regarded from the Renaissance until the 17th century as a great model for classical forms by both architects and sculptors. That they could mistake the book's mystical-medieval references for actual descriptions of ancient structures makes it clear that its symbolic language, containing the kind of spiritual message well known to the Middle Ages, had fallen into disuse. Its appeal for the post-Renaissance period lay primarily in its rich architectural fantasy, which is of interest to us also, though not because of its "classicism."[33]

In this work Poliphilo, in his quest for his ideal love, Polia, encounters Queen Eleuterilida's palace, the roof of which consists of vines and honeysuckle made of gold and precious stones. One of Eleuterilida's gardens is similarly a faithful copy of nature in gold and glass. It is a world in which all of nature has been transmuted into what mystics regarded as higher forms of matter. Later in the book, when Poliphilo is reunited with Polia, they arrive at an amphitheater on the island of Cythera. Its bases and beams are made of copper gilt, and the rest of the building is a single piece of Indian alabaster which is as transparent as glass. The floor of the amphitheater's interior is a single block of polished black obsidian, reminiscent of the *Younger Titurel*'s Holy Grail site. When Poliphilo enters the building his senses are confused by the reflective floor and, believing that he is falling into a black abyss, he stumbles. But by keeping his eyes on the surrounding walls, he regains his balance and sees that the sky, the clouds, and the colonnades visible through the transparent

28. J. R. Johnson, *The Radiance of Chartres*, New York, 1964, 53–66.

29. O. von Simson, *The Gothic Cathedral*, New York, 1956, 50.

30. Frankl, *The Gothic*, 173. See also *The "Tristan and Isolde" of Gottfried von Strassburg*, trans. and annotated by E. H. Zeydel, Princeton, 1948.

31. Frankl, *The Gothic*, 194.

32. Frankl, *The Gothic*, 194–195. Though Frankl cites these examples and describes architectural references contained in them, he does not discuss the meaning of these legends.

33. For Colonna's influence on post-Renaissance architecture see M. S. Huper, *The Architectural Monuments of the Hypnerotomachia Poliphili*, University Microfilms, Ann Arbor, 1956; and A. Blunt, "The Hypnerotomachia Poliphili in Seventeenth Century France," *Journal of the Warburg Institute*, 1, October 1937, 117–137. Frankl, who is only concerned with the Gothic quality of Colonna's architectural descriptions, does not relate this work to the Solomonic tradition.

alabaster are reflected in the polished black floor as if in a calm sea. The translucence and reflection of clouds in the obsidian floor produces a sensory dislocation which is close in spirit to the legendary encounter of Sheba with Solomon in his glass-floored palace. The fountain of Venus is in the center of this amphitheater and is, like the floor, of black obsidian. Seven columns of precious stones support a canopy of pure crystal on whose summit is a carbuncle as large as an ostrich egg, the last perhaps another echo of the *Younger Titurel*'s Grail building. In the center of this fountain Venus is revealed standing half submerged in water.[34]

The amphitheater's floor, which appears to be a sea, and the crystal-roofed fountain seem like a double reflection of the Solomonic glass legends. While *The Dream of Poliphilo* borrows quite heavily from the imagery of the Grail stories, it seems at the same time indebted to the source for earlier glass mythologems, the Solomon and Sheba story. Like Sheba, who had been deceived into lifting her skirts by being made to think that Solomon was enthroned in water, so Poliphilo encounters a metaphorical "sea" which makes him believe he is falling. But, in addition, the inner sanctum in *The Dream of Poliphilo*, its Venusberg so to speak, is a crystal-topped fountain in which Venus is immersed, transforming the original "as if" conditions of the Solomon-and-Sheba myth into something more palpable. This reference, in what might be called a back-formation from the Grail legends, is apt in the Poliphilo-Venus context, since the Solomon and Sheba story had always contained greater erotic possibilities than the rarefied, masculine world of the Holy Grail. In any case, as in the earlier medieval courtly love literature, the primary intention of *The Dream of Poliphilo* is to signify transformation from base instinct to purified love.[35]

* * *

The symbolism of transmutation suggested through glass, crystal, water, precious stones, and gold in the later Middle Ages is not only kept alive through its partial secularization in the minnesinger tradition, but is also retained as a quasi-religious, though now highly subjective, image in alchemy. The exact origins of alchemy are not known. Most sources connect it to the late Hellenistic world and specifically to Gnostic ideas. Alchemical beliefs were transmitted to the West via Arabic writings and the Jewish Kabbala. Through both these sources, the wisdom of Solomon became an important inspiration for the medieval alchemist.

The basic desire of all adherents of alchemy consisted in wanting to transmute base matter into a noble material, variously called simply the *lapis*, the philosopher's stone, or *elixir vitae*. Gold, but particularly the diamond—because of its fire, transparency, and hardness—often appear as the specific carriers of this symbolism.[36] For the alchemist the search for this *lapis*, a kind of personalized Grail, was a mystical quest for gnosis and transubstantiation. Like the Grail, the philosopher's stone of the alchemists is frequently equated with Christ's transfigured body.

Despite its original spiritual intent, alchemy retains few of the altruistic principles associated with the quest for the Holy Grail. The finding of the Grail had suggested communal salvation—according to most Grail legends, the finding of the Grail promised not just the salvation of the knight who found it, but spiritual renewal for the whole realm. In the later alchemical tradition, by contrast, the quest for the Stone of Wisdom leads only to self-knowledge and individual metamorphosis. Because the Stone of Wisdom is only a symbol of the self, the crystal imagery loses all its earlier architectural dimensions. That is, when this metaphor of transformation, whether spiritual or secular, implies a general social change, it takes on architectural form, but when it stands for individual gnosis alone, the image is reduced to the shape of a stone. Gnosis and immortality, with the *lapis* as the image of the transmuted self, are discovered within oneself, and consequently introspection and self-searching attitudes become the hallmarks of the alchemist. It was precisely this egocentric mysticism that was to appeal to the sensibilities of the Romantics later on.[37] For it was basically in the hermetic form of the alchemists, as the *lapis*, that the cryptic meaning of crystal and glass was transmitted to the 19th century. And though the crystal metaphor during this period is stripped of its older architectonic, i.e., social, connotation, even in its reduced, vestigial form as the Stone of Wisdom, the image retains the idea of transcendence and metamorphosis.

Given the esoteric nature of alchemy, it is appropriate that the alchemists chose as their guiding spirit not the biblical Solomon, but the master sorcerer of Arabic legends with power over air and land. Alchemy's uneasy balance between religious gnosis

34. For a mystical, alchemical interpretation of this work see L. Fierz-David, *The Dream of Poliphilo*, trans. M. Hottinger, New York, 1950.

35. Similar glass and water images together with architectural fantasies can also be found in Hieronymus Bosch's "Garden of Earthly Delights." The general theme here, however, no longer refers to the gentle courtly troubadour tradition, but is shown in a more earthly manifestation, lust. Thus the ladies depicted half-submerged in a circular pool of water and the couples enclosed by glass spheres are not transmuted by their environment, but are trapped as in prisons. This is comparable to the depiction of the original fairyland as a nether world in Celtic folk tales (see fn. 24).

36. C. G. Jung, *Psychologie und Alchemie*, Zurich, 1944, 574.

37. According to C. G. Jung, alchemy was based on fantasy and illusion, but at the same time served a psychotherapeutic function in that it projected the psychic process of individuation onto chemical transformations. In Jung's opinion this represents an emerging conflict between individuality and collectivism, between the self and society, a conflict which does not fully surface until the 19th and 20th centuries (*Psychologie und Alchemie*, 644).

and occult science makes it clear that it could easily be debased into black magic. The metaphoric transformation of base matter into gold could be presented by the unscrupulous alchemist as a distinct possibility. The fortune-teller's crystal ball is another mongrelized form of the philosopher's stone. Because of the abuses of the pseudo-alchemists, but more because of the increasing secularization of society in the later Middle Ages, the mystic unity of alchemy broke into two separate strands: on the one hand, divested of its mystic import, it gave rise to such modern sciences as chemistry and geology. On the other hand, retaining its hermetic, occult elements, it affected the Rosicrucian movement of the 17th century, as well as Freemasonry.[38]

The overt crystal and glass symbolism of the Middle Ages that had become highly esoteric and had gone underground during the post-Renaissance period, was consciously resurrected by writers of the Romantic age. This was usually done in an effort to bolster the quest for identity with spiritual intensity, but also to create a harmonious portrait of the past that would show an inevitable continuity between the presumed social and religious strength of the Middle Ages and the present. This was true particularly in Germany, where the lack of political unity inspired strong yearnings for a golden age, yearnings that were to increase after the Napoleonic invasion.

In the 1790s the early Romantic writer Ludwig Tieck began to renew interest in old German stories, in the legends of the Grail, and in alchemy through his own writings and through his transcription of medieval German love poetry.[39] Sulpiz Boisserée, better known for his involvement in the completion of Cologne Cathedral, his study of Gothic architecture in general, and for his collection of old German and Netherlandish paintings (which made a deep impression on Goethe), also wrote a book about the description of the Grail temple in *Titurel*.[40] Goethe too used many elements of the Grail legend, alchemy, and Masonic imagery in a number of his works, particularly in his *Faust* and *The Parable*.[41]

Of the many Romantic works,[42] Novalis' incomplete work *Heinrich von Ofterdingen* (1802) goes back most clearly to the imagery of mysticism, the Grail legends, medieval love poetry, and alchemy. In this novel, the protagonist, Heinrich, encounters a palace with a crystal garden[43] comparable to the garden described in *The Dream of Poliphilo*, and is told about an even more precious garden in which silver trees with fruit of rubies stand on a crystal floor.[44] And, as in *Tristan*, Freya, the daughter of Prince Arthur, is seen on a bed of crystal,[45] echoing accurately the medieval metaphor for pure love. During Heinrich's long wanderings, as if he were in search of the Grail, he has a dream in which he sees a cave containing a fountain of trembling, moving colors. This fountain reflects a bluish light against the cave walls, and water flows from the fountain into the cave's interior.[46] The dream is intended as a sign to Heinrich of his search for the true self detailed in the later sections of the novel. The metaphor of the sparkling fountain within the dark cave is similar to the Grail hidden in a cave or the alchemists' philosopher's stone or *elixir vitae* created from dark, ignoble matter. The blue color projected from the water against the cave walls prefigures the Blue Flower, concrete symbol of Heinrich's quest for a purified identity. In-

38. M. Eliade, *The Forge and the Crucible*, trans. S. Corrin, New York, 1962; G. F. Hartlaub, *Alchemisten und Rosenkreuzer*, Willsbach and Heidelberg, 1947; W. E. Peuckert, *Die Rosenkreuzer; Zur Geschichte einer Reformation*, Jena, 1928; F. L. Pick and G. N. Knight, *The Pocket History of Freemasonry*, London, 1963. In addition to the better known rose and cross, the Rosicrucians also used the crystal as a symbol. Both Rosicrucians and Freemasons claimed ancient Arabic origins. The Freemasons, in particular, used the Temple of Solomon as an archetypal model. What interested them, however, was not so much Solomon's biblical attributes, but more his prowess as a sorcerer associated with him in Arabic lore.

39. In Tieck's story "Der getreue Eckart und der Tannenhäuser" (1799), for instance, the medieval story of the Venusberg served as inspiration. Also, in his "Runenberg" (1802) crystal imagery is used in connection with a supernatural, seductive woman, comparable to Tannhäuser's Venus (*Märchen und Geschichten*, ed. P. Ernst, Munich and Berlin, n.d., 1, 121).

40. S. Boisserée, *Über die Beschreibung des Tempels des Heiligen Grales in dem Heldengedicht: Titurel*, Kap. III, Munich, 1834.

41. A. R. Raphael, *Goethe and the Philosophers' Stone; Symbolic Patterns in 'The Parable' and the Second Part of 'Faust,'* London, 1965. Goethe's *The Parable* of 1795 (*The Parable*, trans. A. R. Raphael, New York, 1963) is also discussed by 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*, dissertation, Columbia University, 1973) as one of the sources for Wenzel Hablik's use of crystalline forms in his drawings. Though Goethe's story is full of alchemical and Masonic images—there is gold hidden in a cave and there is a crystalline bridge as in some Grail legends—the temple described by Goethe is not "crystalline," as claimed in Santomasso, 150. Goethe's use of the crystal metaphor is basically Romantic, i.e., nonarchitectural. Santomasso's inclusion of *The Parable*, together with medieval and later sources, as a precedent for Hablik's use of crystallinity to signify very broadly a paradisaic setting or the presence of a divine will is, however, appropriate, because Hablik himself seldom transformed the crystal imagery into anything more than proto-architectural conceptions (see also fn. 69).

42. The resurrection of alchemical lore is by no means confined to works of the German Romantic period. For instance, there is the early Romantic tale *Vathek* by William Beckford, the patron of Fonthill Abbey, that well-known example of Neogothic taste (W. Beckford, *Vathek*, with an introduction by R. Carnett, London, 1924. This book was first published in the 1780s in English and French editions). The metaphors of alchemy are commingled with those of romantic love. *Vathek* contains the description of a labyrinthine subterranean palace in which the hero encounters the king and prophet "Soliman." Soliman's heart, enveloped in flames, is visible through his bosom, which is "transparent as crystal" (166).

43. Novalis, *Schriften*, ed. E. Heilborn, Berlin, 1901, 1, 126.

44. Novalis, *Schriften*, 89.

45. Novalis, *Schriften*, 121.

46. Novalis, *Schriften*, 7.

deed the Blue Flower appears to be Novalis' equivalent of the elusive *lapis*: Novalis at one point compares the Blue Flower to a carbuncle,[47] a reference that would be gratuitous without the medieval mystical background.[48]

In Novalis, then, the by-now familiar imagery still carries mystical, alchemical overtones, but with this difference: the old imagery of metamorphosis is no longer introduced in conjunction with spiritual salvation. The emphasis in Novalis' exploration of dreams and the darker passages of the mind is rather on self-exploration, in finding the center of his individuality. In Novalis the dark cave and the sparkling fountain have a new coexistence. The sparkling fountain does not signify transformation of lowly matter, as it would have in the alchemical tradition, but instead, though it arises from the cave, is depicted as flowing back into the earth. This would seem to exclude any sort of spiritual transcendence. The fountain (or carbuncle) and cave here have come to stand simply for the mind in general and for the regeneration of the self specifically.

The use of mystical imagery like that found in Novalis becomes widespread in Romantic literature, but the mythological power of the older legends is usually missing. Like the mysticism of the Rosicrucians, the mystical symbolism of the Romantics loses the earlier, wider significance and becomes a language of the initiated, meaningful only to those who are already versed in it.

In the later 19th century this mystical tradition can still be discerned in vestigial forms. It seems to reach its most esoteric heights in Nietzsche's *Also Sprach Zarathustra*. Light/dark opposites are used to delineate Zarathustra's road to self-knowledge. He inhabits a cave on a mountain peak, a clear metaphor for the mind. The two beasts attending him, eagle and snake, are an even older variant of the ancient chthonic and celestial forces. Images of Zarathustra's self or soul are as eclectic as Nietzsche's metaphors for the struggle between earthly body and disembodied mind. Zarathustra compares his soul to a fountain,[49] a child offers him a mirror for self-reflection,[50] and he is himself addressed as the "Stone of Wisdom."[51] Alchemical metaphors of transmutation now only stand for a narcissistic self-apotheosis.

The mysticism of the Symbolist movement of the late 19th century brings us within the youthful experience of Expressionist architects and writers. In their attempt to redress some of the

Fig. 5. Peter Behrens, frontispiece (*Feste des Lebens und der Kunst*, Leipzig, 1900).

19th-century excesses of scientific confidence and positivism, the Symbolists turned away from the descriptive, naturalistic style of the preceding generation and embraced a mode of expression that was tinged with Romantic sensibility, interest in the irrational, and heightened sensory awareness. Given their general anti-materialist notions, it is fitting that the Symbolists also unearthed occult Rosicrucian symbolism. Such esoteric spiritualism must have fulfilled a quest for emotional relevance for men who might have been embarrassed to turn to any established church. This latter-day mysticism catered not merely to man's spiritual needs, but satisfied his speculative nature and his thirst for knowledge at the same time. Salvation through knowledge is a proposition of some attraction for malcontent artist-intellectuals. That the Stone of Wisdom represents the mind can only be deduced in Novalis and Nietzsche. But in a work by the Symbolist writer Alfred Jarry, in his *Exploits and Opinions of Doctor Faustroll* written in 1895, the philosopher's stone is literally located in Vincent Van Gogh's brain.[52] The German poet Alfred

47. Novalis, *Schriften*, 191.

48. The general association of diamond and Blue Flower is also mentioned by Jung, *Psychologie und Alchemie*, 151. In addition to such an esoteric symbol as the Blue Flower, Novalis also makes use of the better-known alchemical imagery: the search for the philosopher's stone is symbolized more generally by a miner who searches for gold in the bowels of the earth (Novalis, *Schriften*, 72).

49. F. Nietzsche, *Thus Spake Zarathustra*, trans. T. Common, New York, 1917, 117.

50. Nietzsche, *Zarathustra*, 95.

51. Nietzsche, *Zarathustra*, 165.

52. *Selected Works of Alfred Jarry*, ed. R. Shattuck and S. W. Taylor, New York, 1965, 236. Jarry's *Dr. Faustroll* was published in part in 1895; the complete work was published posthumously in 1911—Jarry had died in 1907. During Faustroll's travels in search of knowledge, the

Mombert and Paul Klee also identified the crystal with the brain and with images of the self.[53]

Another instance of an essentially Symbolist use of the crystal metaphor returns us to the artistic-architectural realm which is at the root of this investigation. Peter Behrens, the Jugendstil artist turned architect presented to the assembled audience at the opening festivities of the Darmstadt Artists' Colony in 1901 a "Zeichen" (Sign), which was a great crystal. Its reference to Nietzschean mysticism is clear: the last section of *Also Sprach Zarathustra* in which Zarathustra emerges from his cave like the sun, is entitled "Das Zeichen."[54] The fact that Behrens reinte-

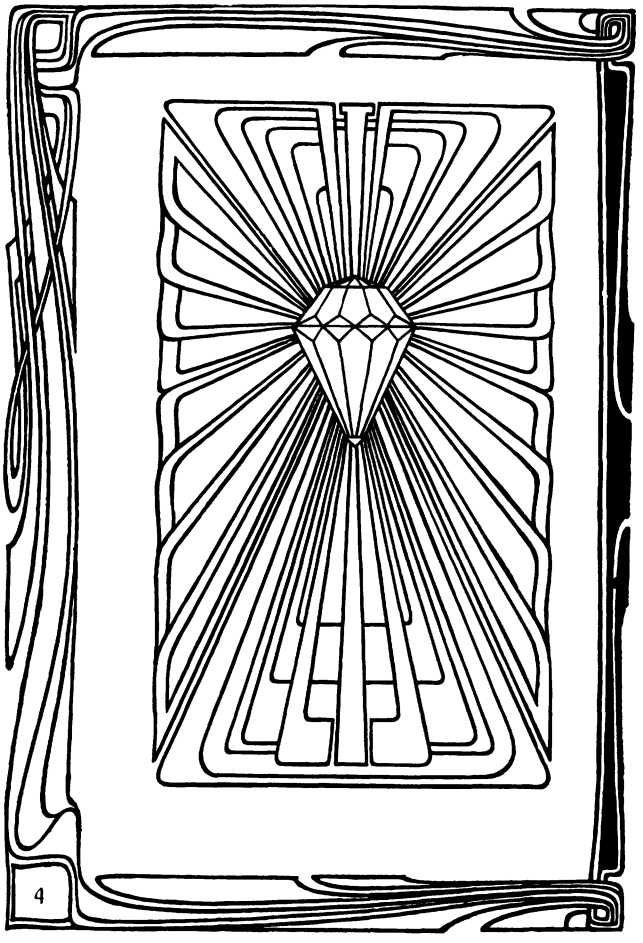

Fig. 6. Peter Behrens, decorative illustration (*Ein Dokument deutscher Kunst: Die Ausstellung der Künstler-Kolonie in Darmstadt—1901*, Munich, 1901, 4).

grates the image of the philosopher's stone with its older alchemical substance, crystal (something Nietzsche had not done), points to the eclectic and historicist approach of Behrens (Figs. 5 and 6). He seems to return to the mystical tradition in which crystal signifies transformation. But he gives the tradition a slightly new direction: crystal stands for the metamorphosis of everyday life into a heightened artistic experience. In essence, crystal represents for Behrens an escape from reality into a world of the artist's own making, above the squalor of common life. Like Zarathustra's cave at the top of a mountain, the Darmstadt Artists' Colony, built on a height overlooking the city, suggests in clear visual terms such a stratification of society. The artist has taken up the position at the apex of the social pyramid formerly occupied by the aristocracy.[55]

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hero encounters nearly all the symbols of spiritual transformation current at one time or another. Jarry's eclecticism takes us all the way back to the probable origins of this mythology, Solomon's glass palace, as is clear from this passage:

His female retainers, whose dresses spread out like the ocelli of peacocks' tails, gave us a display of dancing on the glassy lawns of the island; but when they lifted their trains and walk upon this sward less glaucous than water, they evoked the image of Balkis, summoned from Sheba by Solomon, whose donkey's feet were betrayed by the hall's crystal floor, for at the sight of their capripede clogs and their fleece skirts we were seized with fright and flung ourselves into the skiff lying at the foot of the jasper landing-steps. (*Selected Works*, 209–212).

Jarry's work was better known in the early 20th century than it is today. Marinetti in his proto-Futurist periodical *Poesia*, for example, published Jarry alongside the German poets Arno Holz and Richard Dehmel, both friends of Peter Behrens and Paul Scheerbart.

53. Mombert, whose intensity and gnostic imagery make him a forerunner of Expressionist poetry, as early as 1896 had identified the crystal with the self in his poem "Der Glühende" (The Glowing). See A. Mombert, *Dichtungen*, Munich, 1963, 90. The crystal becomes totally identified with the brain in his poem "Der Held der Erde" (The World Hero) of 1914:

Felsen aus Opal, aus Bergkristall.
Die hüten das Obere.
Sie sammeln das Welt-Licht. Und senken es
grünbläulich, schillernd, herunter ins Haus—:
Purpur; Gold; violette Bläue—:
herunter in mein kristallen Hirn.

Rocks of opal, of rock-crystal.
They protect the higher.
They gather the world-light. And lower it
Green-blue, scintillating, down into the house—:
Purple; gold; violet blueness—:
Down into my crystal brain.
(*Dichtungen*, 471; Bletter translation)

Paul Klee also identified the crystal metaphor with the self, as is clear from this phrase used in his *Diaries* in 1915: "I thought I was dying, war, and death. But can I really die, I crystal" (V. Miesel, ed., *Voices of German Expressionism*, Englewood Cliffs, N.J., 1970, 80).

54. S. O. Anderson, *Peter Behrens and the New Architecture of Germany—1900–1917*, dissertation, Columbia University, 1968, 47–67. Anderson's thesis contains a detailed discussion of Behrens' dependence on Nietzschean imagery. He also explains Behrens' use of the crystal as a symbol for transformation:

The symbolism of the crystal relies on a metaphorical relationship between transformations which take place at the micro- and macrocosmic levels; for example, just as mere carbon under intense conditions assumes a particular crystal structure and becomes the prized diamond, so the power of art may transform everyday life into a resplendent life filled with meaning. (*Peter Behrens*, 24)

A briefer discussion of Behrens and the Darmstadt Artists' Colony appears in S. Anderson, "Behrens' Changing Concept," *Architectural Design*, XXXIX, February 1969, 72–78.

55. The new social order suggested by this undertaking is made even

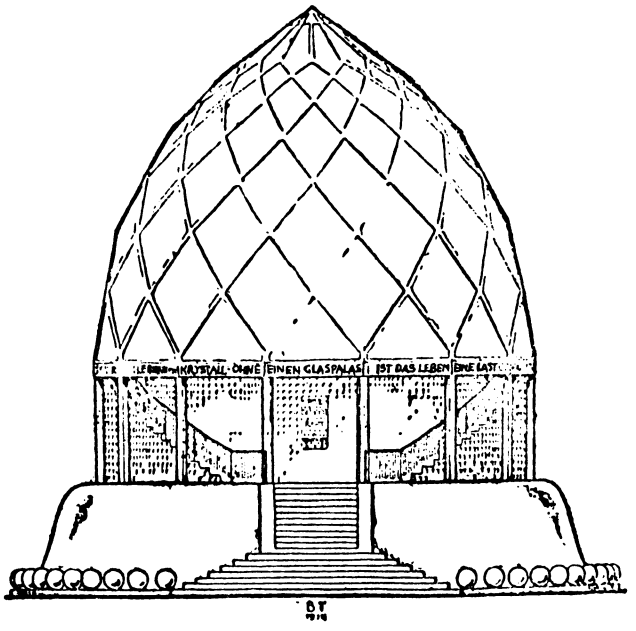

Fig. 7. Bruno Taut, drawing of the Glass House for the opening program of the Werkbund Exhibition in Cologne, 1914 (*Glashaus—Werkbund-Ausstellung Cöln 1914*, Berlin, 1914, n.p.).

Fig. 8. Bruno Taut, exterior of Glass House (*Wasmuths Monatshefte für Baukunst*, I, 1914/15, Fig. 204).

Although Behrens returns the crystal imagery to an architectural setting, his specific usage is not architectonic, but is still within the Romantic literary tradition. He reifies the self-contained symbol of the philosopher's stone. It is not, of course, the Stone of Wisdom depicted in alchemical legends: Behrens' crystal Zeichen is a dramatic prop and, therefore, merely a theatrical symbol.

* * *

Not until early manifestations of Expressionism is the crystal-glass iconography again associated with architectural models. This occurs earliest, not surprisingly, in literature, in the short stories and novels of the Expressionist writer Paul Scheerbart.[56] His whimsically witty science fiction stories often have as their hero an architect of glass and crystal buildings. At the outset of his career in the 1890s, Scheerbart's imagery is not far removed from that of Symbolism or Jugendstil: crystalline architecture is introduced as the metaphor of individual transcendence. But in his writings of the early 20th century (Scheerbart died in 1915) this symbolism is less solipsistic. As his proposals for glass structures grow more architectonic, there is a concurrent increase in these buildings' flexibility. Scheerbart describes a mobile glass architecture of rotating houses, buildings that can be raised and lowered from cranes, floating and airborne structures, and even a city on wheels. This interest in the literal flexibility of architecture is further augmented by the suggestion of apparent motion through the use of constantly changing lights, reflecting pools of water, mirrors placed near buildings, or glass floors which reveal the movement of waves and fish of a lake below (the last is very much like the effect of the Grail temple in the *Younger Titurel*). Such actual and apparent transformations of glass and crystal architecture—terms used interchangeably by Scheerbart—in his later works come to stand for the metamorphosis of the whole society, an anarchist society, which through its exposure to this new architecture, has been lifted from dull awareness to a higher mode of sensory experience and from political dependence to a liberation from all institutions.

Thus, the older, alchemical notion of metamorphosis, signi-

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more explicit by the fact that the Artists' Colony was financed and supported by the ruler of Hesse, the Grossherzog Ernst Ludwig, whose palace in the city was in a real sense below the artists' settlement overlooking the city. Wassily Kandinsky in his *Concerning the Spiritual in Art*, first published in 1912, was to speak of a similar social pyramid with the artist at its apex (trans. M. Sadleir, F. Golffing, H. Ostertag, New York, 1947).

56. See my "Paul Scheerbart's Architectural Fantasies," *JSAH*, XXXIV, May 1975, 83–97. Scheerbart had been using crystal imagery long before 1901, and because he was a close friend of the writers Richard Dehmel, Otto Julius Bierbaum, and Otto Erich Hartleben, who had all been associated with Peter Behrens at the Darmstadt Artists' Colony, it is quite possible that Behrens' overt use of the crystal was influenced by Scheerbart.

Fig. 9. Bruno Taut, one of the outer stairways of the Glass House (*Jahrbuch des Deutschen Werkbundes*, 1915, 82).

fied by the change of lowly matter into precious substance, is intensified by Scheerbart through the proposal for continually shifting forms. Although we have encountered such a conjunction of transparent materials and flexible forms in the Arabic legend concerning Solomon's airborne glass palace, in the mobile effects of Arabic architecture, or in the medieval *Capella vitrea*, whose elastic skin flexes to accommodate any number of worshipers, this heightening of images of transmutation through apparent and actual movement becomes the norm in Expressionism. The notion of a flexible, mobile architecture is used to underline the promise of the crystalline metaphor: metamorphosis and transcendence. The Expressionist architectural style is difficult to define precisely because its forms are not perceived as fixed and measurable. There is not an ideal conjunction of forms. On the contrary, if there is an ideal, it is incompletion and tension: shifting, kaleidoscopic forms are forever moving out of chaos toward a potential perfection, a perfection which is, however, never fully attained. This is not unlike the quest for the Grail or Stone of Wisdom, which in most legends was sought but seldom or never found.

While most of Scheerbart's architectural proposals appear to spring full-fledged from his unfettered imagination, he was in reality quite aware of historical precedents. For instance, he saw his suggestions for glass architecture as improvements on 19th-century botanical gardens and on Joseph Paxton's Crystal Palace in particular. But he considered the mystic effect of Gothic stained glass with its suffused, colored light more suitable as a model for the synaesthetic experience he himself wished to achieve than the clear glass of 19th-century industrial architecture. Most important, Scheerbart had thoroughly studied Arabic culture and Sufi mysticism, and because he regarded the Near East as the cradle of glass architecture, he always held Moslem traditions in the greatest esteem. As a case in point, he regarded the dematerialized effects of the Alhambra's honeycomb vaults a worthwhile prototype for his ethereal glass architecture. Even though it is not clear whether Scheerbart knew that the Alhambra was meant to allude to Solomon's glass palace, he seems to have been aware of the general intentions behind it.

Around 1912, in the circles of Herwarth Walden's periodical *Der Sturm*, Scheerbart met the young architect Bruno Taut who was to become one of the central figures of Expressionist architecture. During Scheerbart's few remaining years their friendship became truly symbiotic. Scheerbart dedicated his book *Glass Architecture* of 1914 to Taut, and Taut that same year dedicated to Scheerbart his Glass House, a pavilion at the German Werkbund Exhibition in Cologne (Figs. 7 and 8).[57] In the Glass House, the literary fantasies about glass architecture are, for the first time since Gothic architecture, again reinstated as built form.

This gem-like Glass House, with its colored glass dome set in a concrete frame, is a replica of Scheerbart's architectural ideas. Its small scale is reminiscent of late Gothic chapels and its pear-shaped dome recalls Moslem architecture. The exterior aspect of the Glass House is curious and insignificant, except for the glass spheres resembling crystal balls placed mysteriously around its base. The progression through the building was carefully controlled. From the entrance two curving stairs of luxfer prisms (Fig. 9) led up to the space under the dome, the "cupola room." This cupola room was enclosed by a double skin of colored glass, one of Scheerbart's proposals to avoid the tremendous heat loss from which glazed botanical gardens suffered. This uppermost space under the dome was bathed in light, but no visual contact was possible with the outside world. From the cupola room a second set of curving stairs led back to the interior of the middle

57. P. Scheerbart, *Glasarchitektur*, Berlin, 1914. This has been republished, Munich 1971, with a postscript by W. Pehnt and with a Scheerbart bibliography. An English translation can be found in *Glass Architecture by Paul Scheerbart and Alpine Architecture by Bruno Taut*, ed. D. Sharp, trans. J. Palmes, S. Palmer, New York, 1972. Taut's Glass House was discussed and illustrated in P. Jessen, "Die Deutsche Werkbund-Ausstellung Köln, 1914," *Jahrbuch des Deutschen Werkbundes*, 1915, 1–42, and in F. Stahl, "Die Architektur der Werkbundausstellung," *Wasmuths Monatshefte für Baukunst*, I, 1914–15, 200.

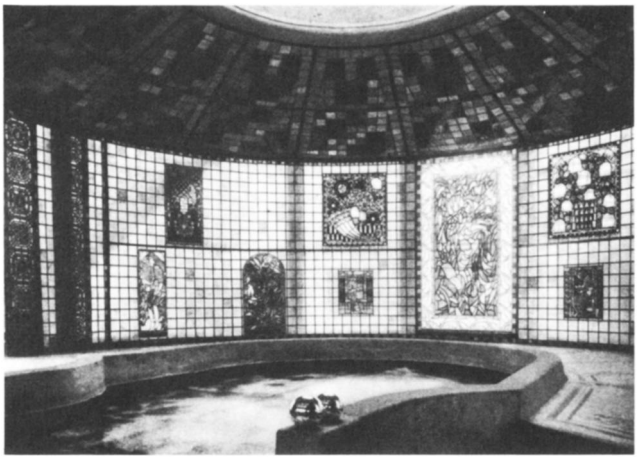

Fig. 10. Bruno Taut, Fountain Room of Glass House (*Jahrbuch des Deutschen Werkbundes*, 1915, 79).

level, the level of the entrance. This circular space was enclosed by a wall of translucent silvered glass set between larger stained glass panels created by several Expressionist painters, including Max Pechstein (Fig. 10).[58] The real centerpiece of this room was a sparkling fountain which was surrounded by a glass mosaic floor in a white, blue, and black pattern. Red case glass and gilded glass tiles covered a conical ceiling leading up to a circular opening directly above the pool of water. The light admitted through this oculus from the brighter cupola room above produced a flickering, disorienting impression as it was reflected by the fountain and the glazed surfaces. From the fountain room a water cascade flanked by two stairs led to the semidarkness of the basement. The walls enclosing the cascade stairwell were covered with polychrome glass mosaics. This display of sound, light, and color was further enhanced by long chains of glass pearls placed in the water and lit dramatically from below by lights situated under the water basins of the cascade. At the lowest level a dark tunnel, lined in soft purple velvet led to a cave-like, completely dark "kaleidoscope room" in which abstract patterns of colored light were projected onto an opaque screen.

A walk through this building was like an alchemical rite of passage: it began in an aura of crystalline lightness but the most intense experience occurred, paradoxically, at the end of a long, dark corridor. In Novalis-fashion the kaleidoscope inside the Glass House was hidden in the darkest recess of a cave. The primary impression of the building was theatrical, synaesthetic, and mystical. The contemporary architectural critic, Adolf Behne, a friend of Taut, clearly understood the mystical intention behind the Glass House when he wrote:

> The longing for purity and clarity, for glowing lightness, crystalline exactness, for immaterial lightness, and infinite liveliness found in glass a means of its fulfillment—in this most bodiless, most elementary, most flexible, material, richest in meaning and inspiration, which like no other fuses with the world. It is the least fixed of materials transformed with every change of the atmosphere, infinitely rich in relations, mirroring the "below" in the "above," animated, full of spirit and alive!
>
> The thought of the beautiful cupola room which was vaulted like a sparkling skull, of the unreal, ethereal stair, which one descended as if walking through pearling water, moves me and produces happy memories.[59]

Although the Glass House was one of the earliest executed Expressionist buildings, to the degree that it stood for a "sparkling skull," it also clung to the Romantic-Symbolist tradition in which the crystalline *lapis* was identified with the self or brain. Another key to the hermetic nature of this building was provided by couplets composed by Scheerbart for the Glass House, such as "Light seeks to penetrate the whole cosmos / And is alive in crystal" or "Colored Glass / Destroys Hatred."[60] These were inscribed on the 14-sided concrete band under the dome.

The Glass House and the Werkbund Exposition were closed prematurely in August of 1914 because of the outbreak of World War One. Paul Scheerbart died in 1915. His ideas were transmitted to the post-war generation of young architects by Taut. Because few architectural commissions could be had during and immediately after the war, Taut turned to the publication of books, pictorial treatises about glass architecture as the ideal of a utopian, generally anarchist society. In his *Alpine Architektur*, published in 1919,[61] Taut was able to respond to Scheerbart's proposals even more directly than was the case with the Glass House. Functional requirements for the Glass House had been minimal because it was an exhibition pavilion. But in his utopian tracts Taut could approach design with absolute freedom. Any limits imposed by site, materials, or economic factors were now totally absent. In *Alpine Architektur*, as if it were some megalomaniac earth art, whole mountain ranges are recut and peaks are decorated with colored glass (Fig. 11). Crystal houses high up in

58. At the time Taut was engaged in the design of the Glass House he published an essay, "Eine Notwendigkeit" (A Necessecity) in *Der Sturm*, IV, February 1914, 174–175, which contains his proposal for an ideal building in which all the arts would be unified. This essay reveals his awareness of the work of Kandinsky and other Expressionist artists and sculptors.

59. A. Behne, "Gedanken über Kunst und Zweck dem Glashause gewidmet," *Kunstgewerbeblatt*, N.S. XXVII, October 1915, 4; Bletter translation.

60. The whole set of aphorisms composed by Scheerbart for the Glass House—not all were used because the building was not big enough—are listed in Scheerbart, "Glashausbriefe," 45–48. An English translation appears in *Glass Architecture*, ed. D. Sharp.

61. B. Taut, *Alpine Architektur*, Hagen i.W., 1919. A poor English translation of this appears in F. Borsi and G. K. König, *Architettura dell'Espressionismo*, Genoa, 1967. A better translation can be found in *Glass Architecture*, ed. D. Sharp, though the claim made in the introduction that Taut was an untrained architect is not correct.

Fig. 11. Bruno Taut, the Matterhorn studded with crystalline ornaments (*Alpine Architektur*, Hagen i.W., 1919, 20).

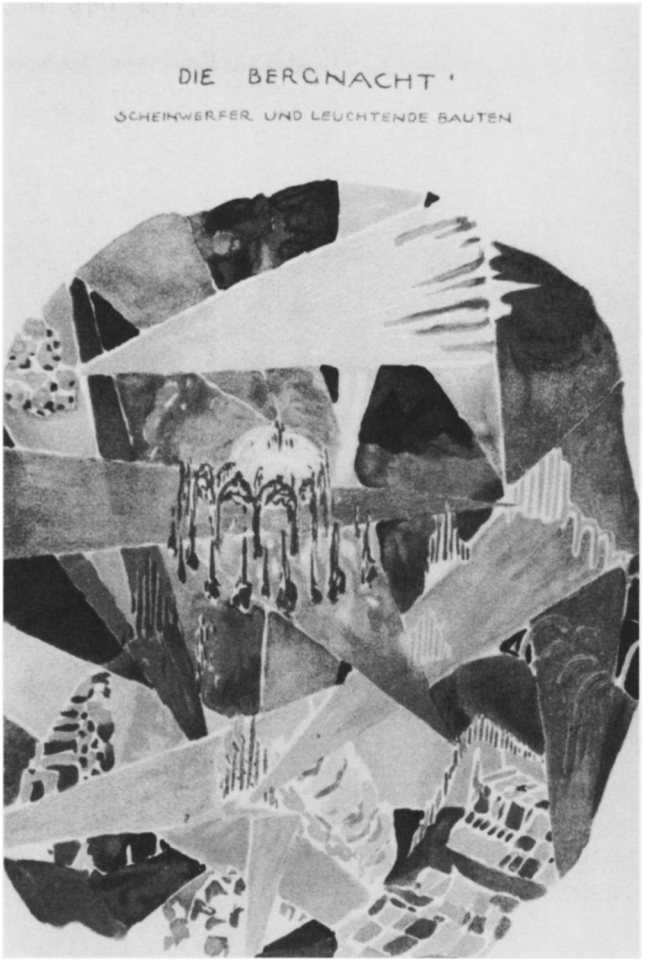

Fig. 12. Bruno Taut, illuminated glass architecture floodlit at night by colored light beacons (*Alpine Architektur*, Hagen i.W., 1919, 21).

the mountains are for quiet contemplation (Fig. 3), and sparkling mountain lakes are embellished with floating, ever-changing glass ornaments. The idea of transparency, transformation, and movement is achieved by means of an illuminated glass architecture, floodlit at night by colored light beacons (Fig. 12). This notion of constant change and dissolution was to become even more graphic in Taut's *Der Weltbaumeister* (*The World Architect*) of 1920,[62] in which structures, like in a kaleidoscope, form an impermanent architecture, only to dissolve and to regroup into new configurations (Figs. 13 and 14).

The cyclopean reconstruction of nature in *Alpine Architektur* has no utilitarian purpose. Its sole function is to edify and to bring peace. The very process of construction is meant to serve a social, if highly Romantic, purpose: these alpine constructions are to be built communally by the masses in the same way Taut assumed Gothic cathedrals had been built. The general pacifist intent is clear from the following passage:

PEOPLES OF EUROPE!
CREATE FOR YOURSELF SACRED POSSESSIONS—BUILD!

. . . . . .

The Monte Rosa and its foothills down to the
green plains is to be rebuilt.
Yes, impractical and without utility!
But have we become happy through utility?
Always utility and utility, comfort, convenience—
good food, culture—knife, fork, trains, toilets and yet also—
cannons, bombs, instruments of murder!
To want only the utilitarian and comfortable without
higher ideals is boredom. Boredom brings quarrel, strife, and
war . . .
Preach the social idea . . .
Engage the masses in a great task, which fulfills everyone,
from the humblest to the foremost . . . Each sees in the great
communality clearly the work of his own hands: each builds—
in the true sense. . . .[63]

62. B. Taut, *Der Welbaumeister—Architektur-Schauspiel für Symphonische Musik*, Hagen i.W., 1920. All illustrations and an inferior English translation of the captions appear in Borsi and König, *Architettura dell'Espressionismo*, 246–255.

63. Taut, *Alpine Architektur*, plate 16; Bletter translation.

Fig. 13. Bruno Taut, the unfolding of space (*Der Weltbaumeister*, Hagen i.W., 1920, n.p.).

Fig. 14. Bruno Taut, the collapse of forms (*Der Weltbaumeister*, Hagen i.W., 1920, n.p.).

Fig. 15. Lyonel Feininger, "The Cathedral of Socialism," woodcut for the opening manifesto of the Bauhaus, April 1919 (L. Lang, *Das Bauhaus 1919–33: Idee und Wirklichkeit*, Berlin, 1965, Fig. 1).

Taut's own evolution in giving the crystal-glass metaphor architectural form leads him from the egocentric image of the crystal brain as used in the Glass House to the utopian socialism of *Alpine Architektur*. Glass, transparency, and flexibility all signify here a purified, changed society. This new attitude was no doubt a reaction to the devastation of the war.

In 1920 Taut published another visionary tract, *Die Auflösung der Städte* (*The Dissolution of the Cities*).[64] In this text his Romantic preoccupation with the reworking of mountain ranges for a consummate society is replaced by his concern for more existential conditions. The general social structure is totally anarchist: no governments, schools, or institutions such as marriage. There are no cities, but only some small, nearly self-sufficient communes. Glass architecture is no longer as ubiquitous as it was in *Alpine Architektur*. Glass structures in *Auflösung der Städte* are centralized and few: they function as communal gathering points. In this they are the visible symbol of these anarchist communities.[65] Thus, as the notion of a perfect society is subjected to at least a modicum of political reality, the proposed change is for a new kind of social nucleus rather than for the heady idealism of *Alpine Architektur*. Hence the glass structures become more programmatically focused in this later book. Taut's social concepts are elaborated on in a series of mostly socialist and anarchist quotations, listed at the end of the book, by such men as Rousseau, Lenin, Engels, Kropotkin, and also

64. B. Taut, *Die Auflösung der Städte*, Hagen i.W., 1920. All illustrations and an English translation of the captions can be found in Borsi and König, *Architettura dell'Espressionismo*, 276–287. The quotations by other writers and political theorists at the end of the book, however, are not reproduced in Borsi and König.

65. This notion of the glass structure as the focus of society is stated even clearer in Taut's *Die Stadtkrone* (*The City's Crown*), Jena, 1919. A few of its illustrations appear in Borsi and König, *Architettura dell'Espressionismo*, 273–275, but without the supporting text. *Die Stadtkrone*, though published in 1919, was begun in early 1916 and completed in early 1918, i.e., it was written before the Revolution (K. Junghanns, *Bruno Taut—1880–1938*, Berlin, 1970, 29) and to that extent reflects earlier attitudes to city planning.

Fig. 16. Wenzel Hablik, "Fantasy" (*Ruf zum Bauen*, Berlin, 1920, Fig. 5).

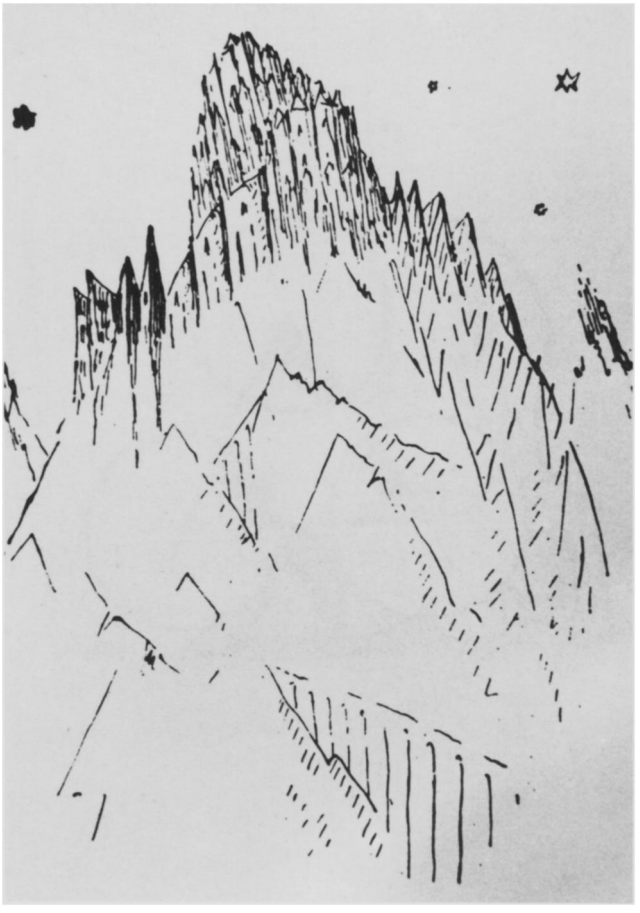

Fig. 17. Carl Krayl, "Rock Castle" (*Stadtbaukunst-Frühlicht*, No. 3, 1920, 48).

Scheerbart. The crystalline glass house in *Die Auflösung der Städte* concretizes for Taut the kind of unstructured society he envisions. Glass is here no longer the carrier of spiritual or personal transformation but of a political metamorphosis.

Aside from publishing these utopian tracts, Taut also became the initiator of several working groups after the November Revolution of 1918. One of these, the Arbeitsrat für Kunst, produced manifestoes in which were debated hypothetical architectural questions inspired by the rise of a socialist government. Among many other matters discussed were the place of architectural education in the new society, whether decisions on architectural commissions should be controlled by professionals alone or whether they should be shared by laymen, and the place of architects in fostering public awareness of architecture, which was presumed to play a leading role in the reconstruction of the country. Several exhibitions of architectural designs were held, some in the workers' districts of Berlin. By the spring of 1919 the Arbeitsrat had become too large and unwieldy for Taut—by 1919 it had grown to over 100 members from its initial membership of just over 50. Some of the better known members of the Arbeitsrat in 1919 were the architects Otto Bartning, Paul Gösch, Walter Gropius, Ludwig Hilberseimer, Carl Krayl, Hans and Wassili Luckhardt, Paul Mebes, Eric Mendelsohn, Adolf Meyer, Hans Poelzig, Max and Bruno Taut; the painters Heinrich Campendonck, Viking Eggeling, Lyonel Feininger, Hermann Finsterlin, Wenzel Hablik, Erich Heckel, César Klein, Ludwig Meidner, Otto Muller, Emil Nolde, Max Pechstein, Christian Rohlfs, Karl Schmidt-Rottluff; the sculptors Rudolf Belling, Bernhard Hoetger, Georg Kolbe, Gerhard Marcks; and the critics and historians Adolf Behne, Paul Cassirer, Karl Ernst Osthaus, Wilhelm Valentiner, and Paul Zucker. Although Taut stayed on as a member, the leadership was passed on to Walter Gropius in February 1919. Gropius, however, left for Weimar shortly thereafter to become the director of the Bauhaus. Taut continued to proclaim the virtues of Scheerbart's writings in his own books as well as in the publications of the Arbeitsrat. Indeed, Gropius seems to have read Scheerbart with great interest,[66] for the Scheerbartian crystal iconography becomes in-

66. M. Franciscono, *Walter Gropius and the Creation of the Bauhaus in Weimar—The Ideals and Artistic Theories of its Founding Years*, Urbana, 1971, 124, note 93.

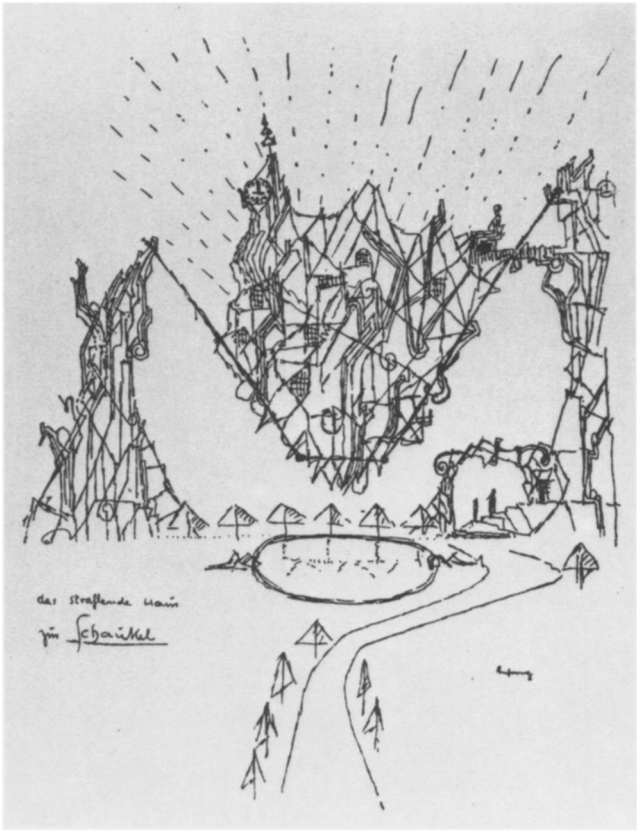

Fig. 18. Carl Krayl, "The Gleaming House on the Swing" (*Stadtbaukunst-Frühlicht*, No. 10, 1920, 157).

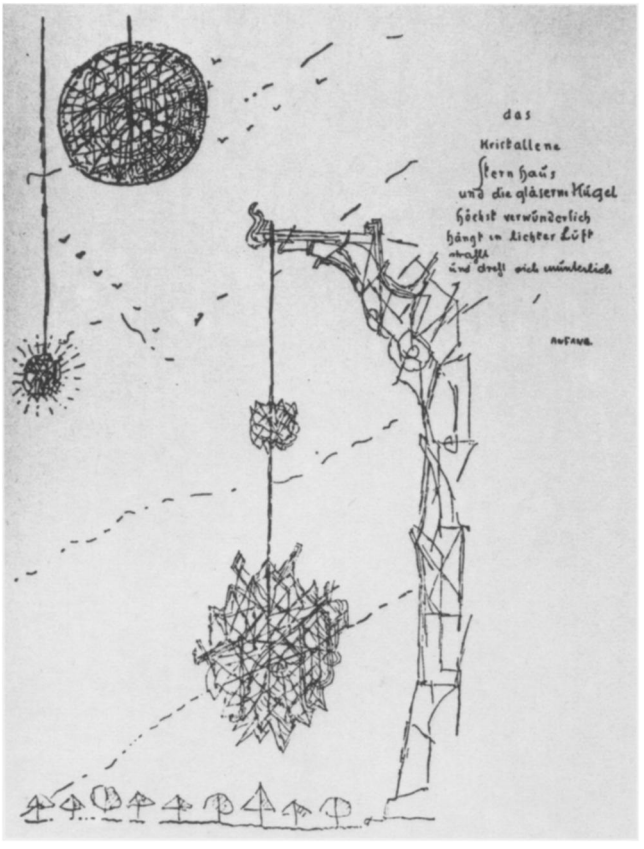

Fig. 19. Carl Krayl, "The Crystalline Star House and the Glass Sphere" (*Stadtbaukunst-Frühlicht*, No. 8, 1920, 124).

corporated into the text of Gropius' opening manifesto for the Bauhaus of April 1919:

Together let us desire, conceive, and create the new structure of the future, which will embrace architecture and sculpture and painting in one unity and which will one day rise toward heaven from the hands of a million workers like the crystal symbol of a new faith.[67]

The text by Gropius at the same time reveals an almost medieval model of handicrafts and communal work (the interest in creating prototypes for industry, for which the Bauhaus is better known, did not become part of its curriculum until about 1923). The same attitude is borne out in Lyonel Feininger's woodcut, "The Cathedral of Socialism," made to illustrate the manifesto by Gropius: sparkling faceted objects are affixed to the towers of a Gothic church like some visual palimpsest of the Grail temple's carbuncles and the Gothic cathedral (Fig. 15).

While still a member of the Arbeitsrat, Taut had formed a small working group in late 1919, called the Gläserne Kette (Glass Chain) which continued most clearly the Scheerbartian tradition of glass architecture in both its statements and designs.[68] Many of the Gläserne Kette projects were later published in Taut's magazine *Frühlicht* (*Dawn*) which appeared from 1920 through 1922, and which was the only Expressionist periodical dealing exclusively with architecture. The designs of the group of mostly architects (a few were painters, who during this period turned to architectural drawing) show just how much their conceptions were indebted to the crystal-glass iconography. There are floating crystalline forms and crystalline extrusions by Wenzel Hablik (Fig. 16)[69] and Carl Krayl (Fig. 17) reminiscent of

67. H. M. Wingler, *The Bauhaus*, trans. W. Jabs, B. Gilbert, Cambridge, MA, 1969, 31.

68. *Die Gläserne Kette, Visionäre Architekturen aus dem Kreis um Bruno Taut 1919–1920*, Ausstellung im Museum Leverkusen, Schloss Morsbroich, und in der Akademie der Künste, Berlin, 1963.

69. Hablik seems to have been the only one of these designers whose crystal imagery derived from an interest in crystals in nature. He began to design aerial, mobile colonies as early as 1908 and continued such projects into the mid-1920s. These flying settlements were not usually of glass or crystal, however. On the other hand, when he discussed the use of crystal and glass, as late as 1922, it was done in terms of the older Romantic and Symbolist manner: he writes of changing the darkness of houses, hearts, and brains into transparent glass (W. A. Hablik, "Die Freitragende Kuppel," *Frühlicht*, No. 3, Spring 1922, 94–98). For further discussion of Hablik see also Santomasso, *Origins and Aims of German Expressionist Architecture*, 129ff.

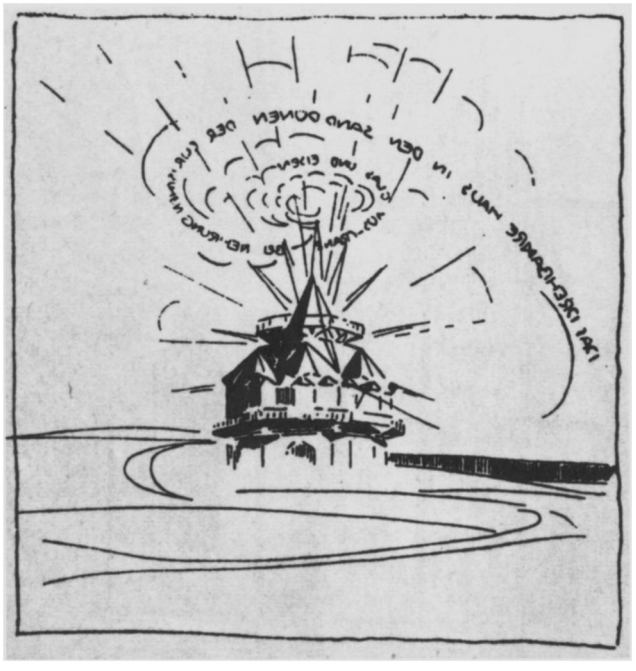

Fig. 20. Bruno Taut, "The Rotating House" (*Stadtbaukunst-Frühlicht*, No. 2, 1920, 31).

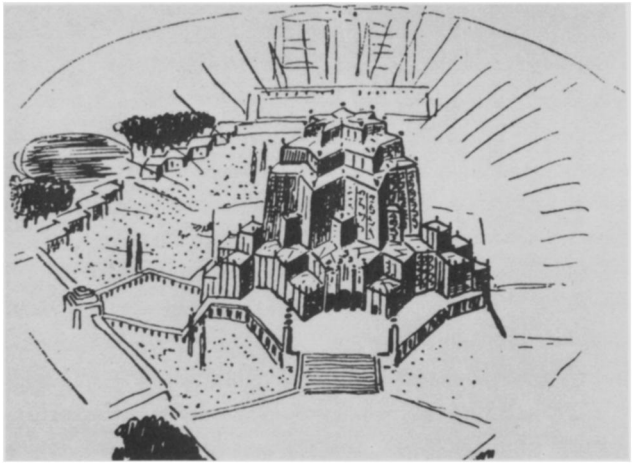

Fig. 21. Bruno Taut, "House of Heaven" (*Stadtbaukunst-Frühlicht*, No. 7, 1920, 109).

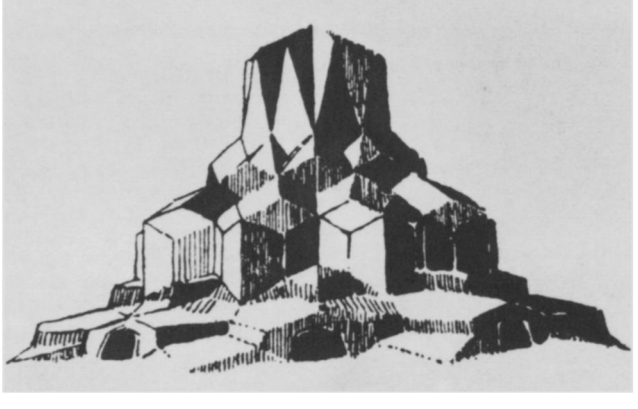

Fig. 22. Wassili Luckhardt, untitled (*Stadtbaukunst-Frühlicht*, No. 4, 1920, 61).

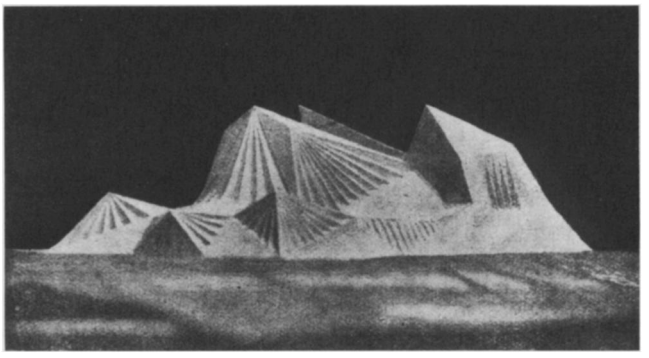

Fig. 23. Wassili Luckhardt, "Cinema" (*Ruf zum Bauen*, Berlin, 1920, Fig. 14).

Scheerbart and Taut. Such drawings, which are at best proto-architectural, demonstrate how the general interest in crystallinity as a metaphor could also become the inspiration for specific architectural form. In the pages of *Frühlicht* appeared designs that further clarified the association of crystal and glass with transformation, expressed in some instances quite directly as actual movement. Krayl's proposal for a swinging house, whose forms and movements are mirrored in a pool of water (Fig. 18), and his design for a "crystalline star house" which rotates and which is precariously suspended in midair (Fig. 19), both reflect similarly fanciful suggestions by Scheerbart. Taut's design for a revolving house of colored glass and iron is the least fantastic of these (Fig. 20).[70] It looks almost like a mobile version of the Glass House of 1914. Other proposals that demonstrate the influence of the crystal metaphor on architectural conception are designs by Taut (Fig. 21), by Wassili Luckhardt (Figs. 22 and 23), and by Hans Scharoun (Fig. 24). This relationship between meaning, the symbolic content of crystallinity, and its expressed form was not always made explicit, however. Gently undulating forms, as long as they were meant to be executed in glass, could also be carriers of this iconography. Most of Finsterlin's designs fall into this less clearly stated category (Fig. 1).

Despite the use of untraditional forms, the meaning of the crystal-glass imagery can be seen as basically traditional, though pointed in a slightly new direction. Especially in Taut's hands the metaphor signifies change and transformation, but it is given a somewhat more political turn. The revival of this metaphoric tradition did not only occur through the inspiration of Scheer-

70. According to the index in *Stadtbaukunst*, of which *Frühlicht* was a supplement in its first year of publication, this is a design by Bruno Taut. Pehnt in *Expressionist Architecture*, fig. 377, and D. Sharp in *Modern Architecture and Expressionism*, New York, 1966, 69, attribute this design to Max Taut. In the republication of *Frühlicht* (*Bruno Taut—Frühlicht*, ed. U. Conrads, Ullstein Bauwelt Fundamente 8, Berlin, 1963, 17, 68) the same design is attributed to Hablik. The handwriting seems to be that of Bruno Taut, however. The caption states that it was to be built in 1914 for a Mr. Mendthal.

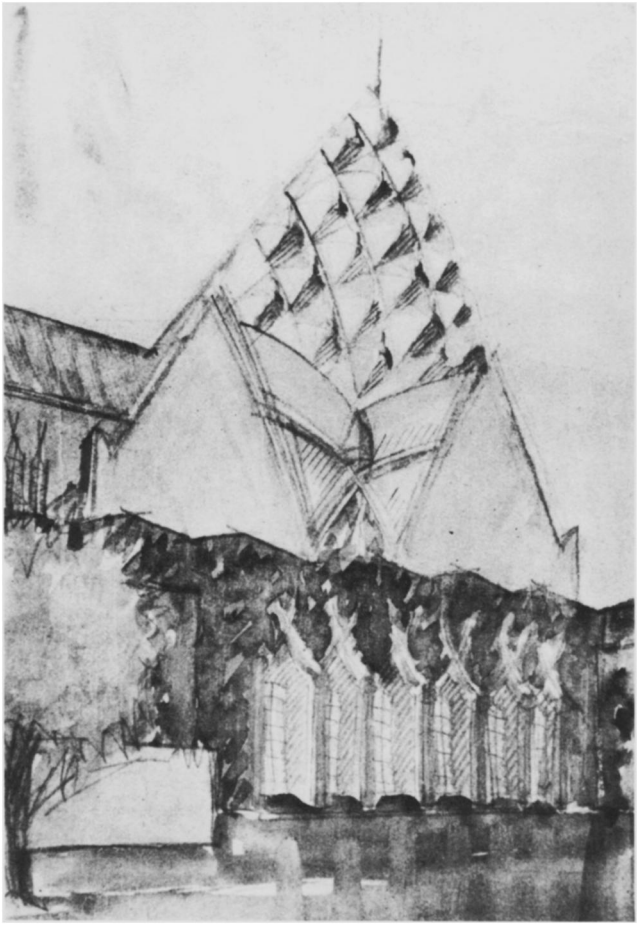

Fig. 24. Hans Scharoun, "Communal House" (*Ruf zum Bauen*, Berlin, 1920, Fig. 34).

bart's writings which went back to its Moslem and Gothic aspects. The Expressionist architects around Taut seemed to have been quite aware of many of the older forms of this tradition as well. In *Frühlicht*, together with designs and essays on contemporary issues, is a description of the vision of the Flemish medieval mystic, Sister Hadewich, who had a Grail-like revelation in which precious stones were the carriers of the divine presence. Equally mystifying, without an understanding of the meaning of this metaphor, is the quotation, also in *Frühlicht*, of John's vision of the New Jerusalem.[71] The vision of the New Jerusalem is especially significant for it contains elements of the crystal-glass metaphor. But more importantly, in contrast to an image such as the philosopher's stone, the vision of the New Jerusalem is an urban vision, not a Garden of Paradise, but the city of the saved. One could say that for Taut it represented the salvation of society.

71. "Aus den Visionen der Schwester Hadewich," *Frühlicht*, No. 11, 1920, 188. Revelation, Chapter 21, is cited in *Frühlicht*, No. 8, 1920, 125. In the slightly abridged republication of *Frühlicht* most of these references to the older mystical tradition have been left out.

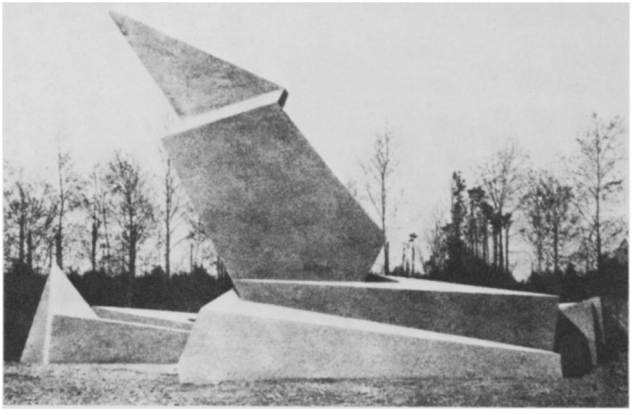

Fig. 25. Walter Gropius, Memorial to the March Victims, Weimar, 1922, rebuilt after it was destroyed in World War II (*Frühlicht*, No. 4, Summer 1922, 107).

By around 1920 the most intense visionary planning for glass architecture diminished. The country was still in a state of near civil war, with frequent street battles between left- and right-wing factions and a large number of political murders. The political weakness of the young Weimar Republic was becoming abundantly clear during these immediate post-war years.[72] Along with political disillusionment came the gradual demythification of the crystal metaphor. Echoes of the Expressionist crystal-glass iconography continued after 1920, but such instances become much rarer. Most often architects either turned away from glass as the suggested building material or, when glass was still suggested, the forms of Expressionism were recollected without their metaphoric content.

One example of the former is Walter Gropius' Memorial to the March Victims in Weimar (Fig. 25). This memorial was dedicated to workers who had been killed in Weimar during riots following the right-wing Kapp Putsch in March 1920. The local Trades Council commissioned this memorial and it was inaugurated in May of 1922.[73] This monument is of concrete and would seem to have little to do with the iconography of glass. But when the writer Johannes Schlaf discussed the memorial in *Frühlicht* shortly after its completion, he explained its meaning in terms of crystalline transformations that to him suggested a change from inorganic to organic forms, from death to life.[74]

72. For a general history of this period see A. J. Ryder, *Twentieth-Century Germany: From Bismarck to Brandt*, New York, 1973, and F. Stern, *The Failure of Illiberalism: Essays on the Political Culture of Modern Germany*, New York, 1972.

73. The dating of this memorial varies widely from publication to publication. The Bauhaus leaflet reproduced by J. Willett, *Art and Politics in the Weimar Period—The New Sobriety, 1917–1933*, New York, 1978, 50, however, states that the inauguration took place on 1 May 1922.

74. J. Schlaf, "Das Neue Denkmal in Weimar," *Frühlicht*, No. 4, Summer 1922, 107.

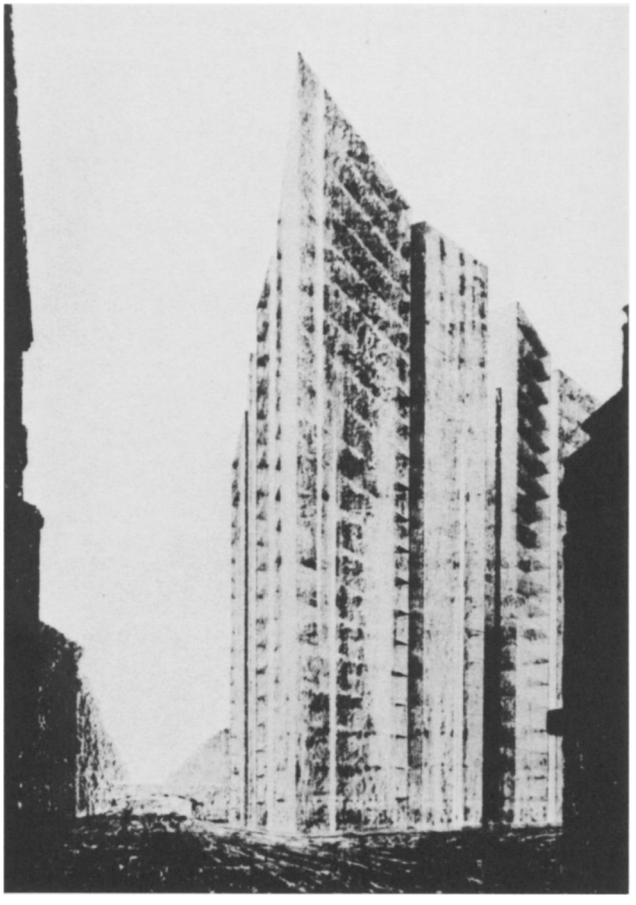

Fig. 26. Ludwig Mies van der Rohe, skyscraper project, Friedrichstrasse, Berlin, 1920 (*Frühlicht*, No. 4, Summer 1922, 124).

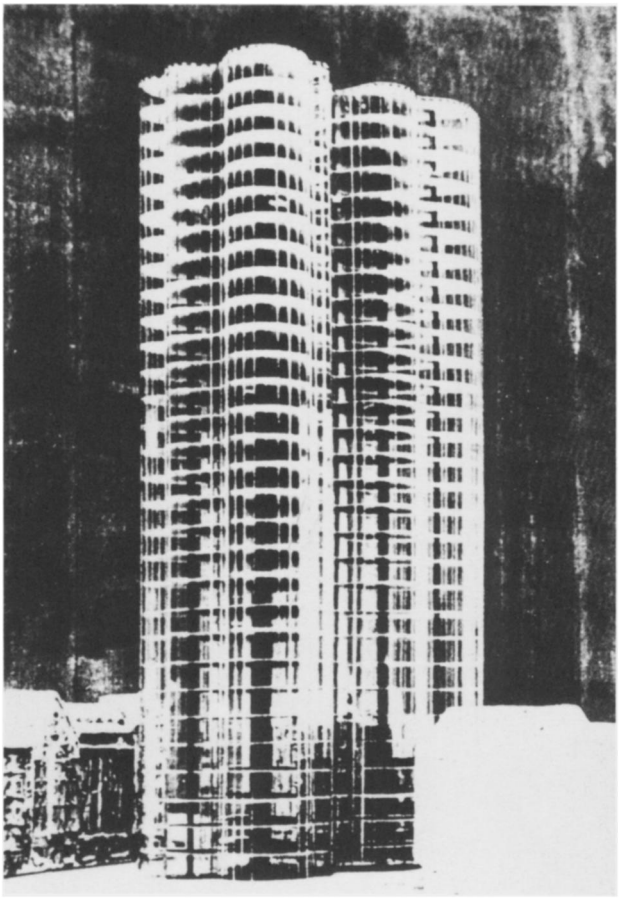

Fig. 27. Ludwig Mies van der Rohe, glass skyscraper project, 1920–21 (*Frühlicht*, No. 4, Summer 1922, 122).

Hence, even though the building material is not transparent, the basic meaning of the crystal is maintained.

On the other hand, in the same issue of *Frühlicht* in which the Weimar monument by Gropius was published, there appeared a brief illustrated essay by Ludwig Mies van der Rohe on his designs for glass skyscrapers (Figs. 26 and 27).[75] Mies apparently was affected by the abstract forms of Expressionism in these proposals: both crystalline and curving forms are present and the use of glass is more extensive than it had been in any previous skyscraper design. Mies wrote that new problems cannot be solved with traditional forms and that the acutely angular plan of the Friedrichstrasse project (Fig. 26) was determined by the triangular site. But despite Mies' basic pragmatism, one can say that he was, at least superficially, influenced by Expressionist designs. For he wrote further that in using glass, the forms should not be conditioned so much by the effects of light and shade, as by the interplay of reflected light. This belief, more than the specific configuration of any site, explains Mies' use of unorthodox forms. The full metaphoric content of earlier Expressionist glass architecture, however, is not alluded to.

Expressionist forms, stripped of their original meaning, still affect contemporary architecture. Reyner Banham, in an article of 1959, "The Glass Paradise,"[76] for the first time called attention to Paul Scheerbart, who had been forgotten in the histories of the modern movement. Banham pointed to the connection between the visionary proposals of Scheerbart and Taut and their eventual fulfillment in Mies' Seagram Building. Today this connection seems even clearer: it can be extended to Philip Johnson's recent faceted glass buildings, such as the IDS Center in Minneapolis of 1973 with its Crystal Court, Pennzoil Place in Houston of 1976 (Fig. 28), and the "Crystal Cathedral" of the Garden Grove Community Church of 1980 (Fig. 29). Johnson's inspiration seems to have come not so much from the Seagram Building, in whose design he had collaborated with Mies, but straight from Mies' earlier Expressionist glass-skyscraper de-

75. [L.] Mies van der Rohe, no title, *Frühlicht*, No. 4, Summer 1922, 122–124.

76. R. Banham, "The Glass Paradise," *Architectural Review*, CXXV, February 1959, 87–89.

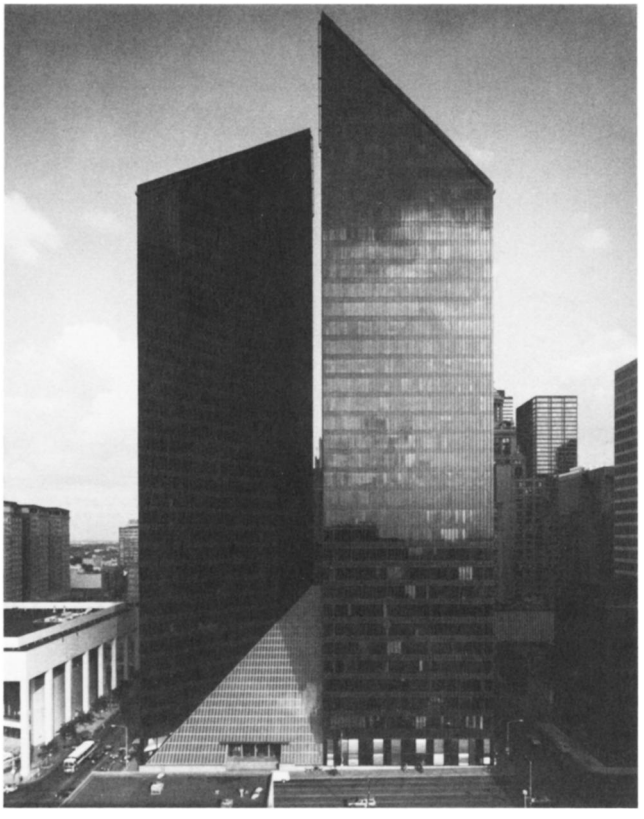

Fig. 28. Philip Johnson and John Burgee, Pennzoil Place, Houston, 1976 (Richard Payne AIA).

signs.[77] This revival of Expressionism is, of course, interesting, but it is a continuity of forms only. One might compare this with the fate of the International Style when it was promulgated in this country in the 1930s (in which Philip Johnson also played a role). The formal characteristics of the style were praised without much discussion of the social reforms with which they had for the most part been associated. Numerous versions of faceted, crystalline designs have proliferated, especially in recent American skyscrapers. The stated justification for such forms is that they are more interesting than monotonous slabs. Changes in meaning from the Expressionist association of crystallinity could be expected in a different setting more than 50 years later. No new associations seem to have evolved, however, and any relationship to Expressionism is one of outward form, not content.

* * *

For Bruno Taut, who became one of the most important architects of workers' housing after 1923 when Germany's rampant inflation had come to a halt and building resumed, the utopian social ideal of his Expressionist phase continued in surprisingly pragmatic ways. The crystal-glass metaphor disappeared from his executed architecture at this time. First of all, glass was simply too expensive a material to use extensively. To be sure, there were indirect references to stained glass in the vividly colored stucco Taut used for most of his housing schemes. It must be said, though, that color was used not just as an aesthetic or metaphoric device, but to give visual and urbanistic coherence to large groups of buildings, resulting in a fair balance between the utopian and the down-to-earth sides of his architecture. Secondly, once Taut was engaged in large-scale social housing programs—he was responsible for about 10,000 dwelling units during the 1920s in Berlin—the yearning for a transformed society seemed no longer necessary. The crystal image, symbol of the new society for Taut, had become obsolete: the change had taken place.

Fig. 29. Philip Johnson and John Burgee, Crystal Cathedral, Garden Grove Community Church, Garden Grove, CA, 1980, model (Louis Checkman).

Within the glass and crystal tradition then, the imagery of transcendence and metamorphosis has itself undergone a transformation. Beginning with the Solomonic legends, continuing in the Revelation of John, Moslem architecture, Grail legends, the Gothic cathedral, and culminating in that late echo of the Middle Ages, Colonna's *Hypnerotomachia Poliphili*, the glass-crystal metaphor had generally been expressed through more or less architectonic concepts. But with alchemy and later the Romantic and Symbolist movements, the imagery of transformation shed most of its architectural manifestation. It became a rudimentary pebble, an image of the soul or brain as this symbol became identified solely with the transformation of the self. The return in the early 20th century to the older, more architectonic, format in the works of Scheerbart, Taut, and a large number of other Expressionists signified a turning away from introspection toward

77. See for instance pages 38, 226, and 271, in *Philip Johnson—Writings*, foreword V. Scully, intro. P. Eisenman, commentary R. A. M. Stern, New York, 1979.

a search for social identity and community. Though this metaphor was often a rather cryptic sign, it could become such an enduring mythologem precisely because it could be adapted from a religious to a personal and finally to a social context. Looking at the whole iconography of glass, one can no longer insist that Expressionist architecture constitutes mere idiosyncratic self-expression. Those very aspects of Expressionist design that appear on first glance to be its most revolutionary ones—transparency, instability, and flexibility—on closer examination turn out to be its most richly traditional features.