BRUNO TAUT AND THE GLASHAUS— THE INFINITE DREAM OF TRANSLUCENCY

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INTRODUCTION

The object of this paper is to explore the origins of a language of glass construction and to unfold the notion of its materiality in the field between representation and tectonics. The inquiry will be based on a study of the Glashaus, designed by the German architect Bruno Taut (1880-1936) and built for the Werkbund Exposition of 1914, in Cologne.

Throughout architectural history the Glashaus has been characterized as an icon of Expressionist Architecture. Previous research has mainly emphasized its symbolic significance and focused on the historical and cultural circumstances that influenced its design. However the Glashaus also represents a visionary and experimental playground for the application of glass in construction being a showcase for the young architect Bruno Taut and the glass manufacturer; The Luxfer Prism Company.

The Glashaus was Taut's first independently designed building and it represents the building project that in great part lead him towards his visionary Expressionistic discourse of the years that followed 1915-1922. In Taut's development of a visionary approach to the project he was much inspired by Paul Scheerbart, one of Germany's conspicuous avant-garde poets, who had expressed his fascination with glass in his book Glasarchitektur (1914). Therefore it seems essential to look at Scheerbart's work. However I will first examine one of Taut's own utopian treatises; Alpine Architektur,[1] in which he proposes an ideal world constructed of crystals and glass.

In order to understand the frame in which Taut was operating when dealing with the Glashaus, the history of the Crystal Metaphor[2] must be mentioned as well as the origins of cast glass as building material.

Finally, it is the aim of the paper to introduce a discussion on glass as matter and symbol of utopian or dream-like space. In order to do so the spatial construction of the-Glashaus is analyzed and the properties of the material glass, as well as the human perception of the phenomenon of transparency, translucency and reflection are studied more closely.

Also Bruno Taut's own reflections on matter and technology, defined as instruments between man and nature, helps us to identify what can be characterized as a universal language for material representation and architectural discourse.[3]

THE CRYSTAL VISION OF BRUNO TAUT—ALPINE ARCHITEKTUR

The enigmatic concept of Alpine Architektur[4] originates from Bruno Taut's own graphic sketches which he drew from 1917-1919, during World War One, a time in which there was a low demand for architectural building work. During this intermission in his career, Bruno Taut spent his time on political activities, philosophy writings about architecture and envisioning a new order for society—as expressed in his utopian design proposals and ideal city plans, Alpine Architektur (1919), Die Stadtkrone (1919) and Die Auflösung der Städte (1920).

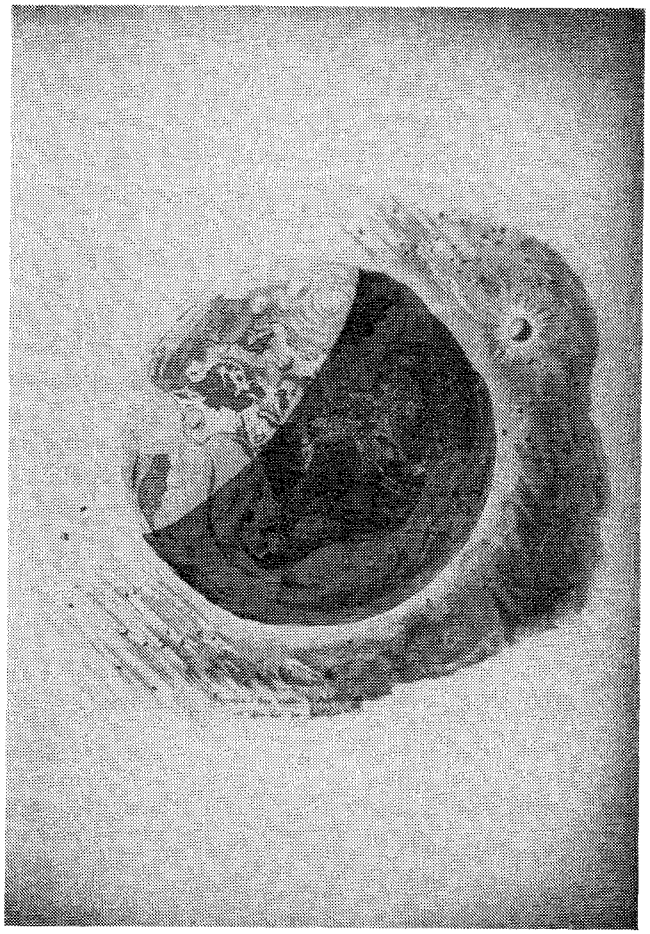

Figure 1: Bruno Taut, Alpine Architektur, Hagen, 1919, plate 25

Alpine Architektur consists of fairly large drawings and color paintings flanked by tortuous handwritings. Taut describes an abstract world of wonder by praising the natural elements; the mountains, the sky, night and day, the sun, the moon, the stars, ice and crystals and their reflection of light and colors—a simple purified and ideal world. The text proclaims visions of a new world, a utopian way of constructing and dwelling, as well as images of pure fantasy.

In his utopian treatises, Taut could approach design with absolute freedom. In Alpine Architektur he suggests that mountains are, reconstructed into glowing crystal houses and castles. These crystal houses for quiet contemplation and sparkling

mountain lakes are embellished with floating, ever-changing glass ornaments. The idea of transparency, transformation and movement is achieved by means of illuminated glass architecture, floodlit at night by colored light beacons, Like a gigantic kaleidoscope the constructions would dissolve and regroup into new configurations.[5]

Taut imagined these alpine constructions to be built communally by the masses in the same way he assumed Gothic cathedrals had been built. He wanted people to unite physically as well as spiritually which he expressed as follows: "You cottage builder were initially an artist! Build—build us! We do not want to be simple grotesque, we want to be beautiful through the Spirit of Mankind! Build us the World Architecture!"[6]

Taut as well as many other artists within the cultural elite proclaimed the crystal utopia as their ideal and expressed this affection in free and peculiar designs.

One may wonder why it was that glass and crystal was a recurring motive in many of the Expressionist's designs, but its transparency and flexibility and illusionary world of reflections, might have provided the perfect abstract quality for their idiosyncratic designs.

SCHEERBART AND HIS UTOPIAN WORLD

Taut and his contemporaries were deeply inspired in their work by the avant-garde poet and novelist, Paul Scheerbart (1863-1915).

Scheerbart was a unique phenomenon in German literary life around the turn of the century and his work consisted of phonetic poetry, fantasy novels and an advocacy of glass architecture.

In his novels *Die Grosse Revolution* (1902) and *Lesabendio* (1913)7 he developed the cosmology originally proposed by Gustav Theodor Ferchner in his book, Zend-Avesta (1851), According to Ferchner, not man, but the heavenly bodies were the ultimate expressions of universal consciousness, and the search for earthly harmony and beauty should be pursued within this astral context.[8]

Lesabendio was probably his most utopian work, which describes a utopia within a utopia and is full of symbolic dualism. Scheerbart envisions the inhabited double-star, Pallas, which shaped like a timeglass divides and combines an upper and lower world, Lesabendio a controversial leader of the star, persuades the Pallasianians to improve the life on their planet by constructing enormous steel towers in order to connect the two worlds, By the construction of the towers a drastic transformation of the cosmos of Pallas begins. Moreover Lesabendio undertakes both a slow physical and mental transformation that change him into color energy and mutable light in which he finally dissolves into the light of eternity. The story is one long movement of transformations, of ever changing light and meaning.

And finally the novel, *Das Graue Tuch und Zen Prozent Weiss* (1914),[9] portrays the adventures of the glass architect, Edgar Krug. He constructs fabulous glass buildings in exotic locations and decides to marry the woman Miss Weber, provided that she always wears gray dresses with 10 % of white in the fabric—he does not want a wife who dresses disturbingly to his architecture.

Scheerbart recognized the power of architecture and insisted on a direct connection between the architecture we live in and our thoughts and feelings; this fully expressed in his final piece of work, *Glasarchitektur.*[10]

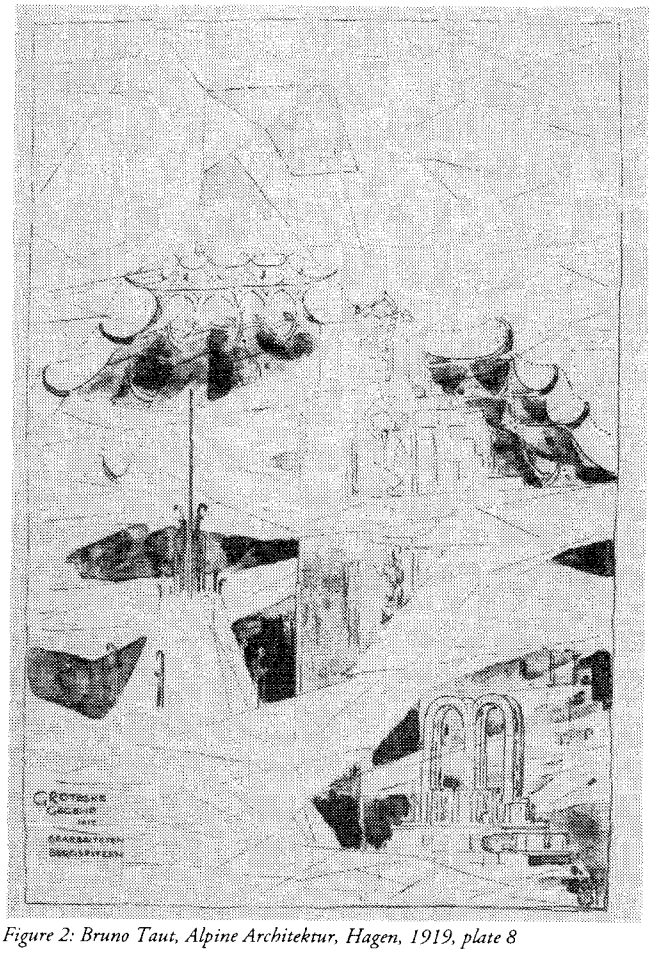

Figure 2: Bruno Taut, Alpine Architektur, Hagen, 1919, plate 8

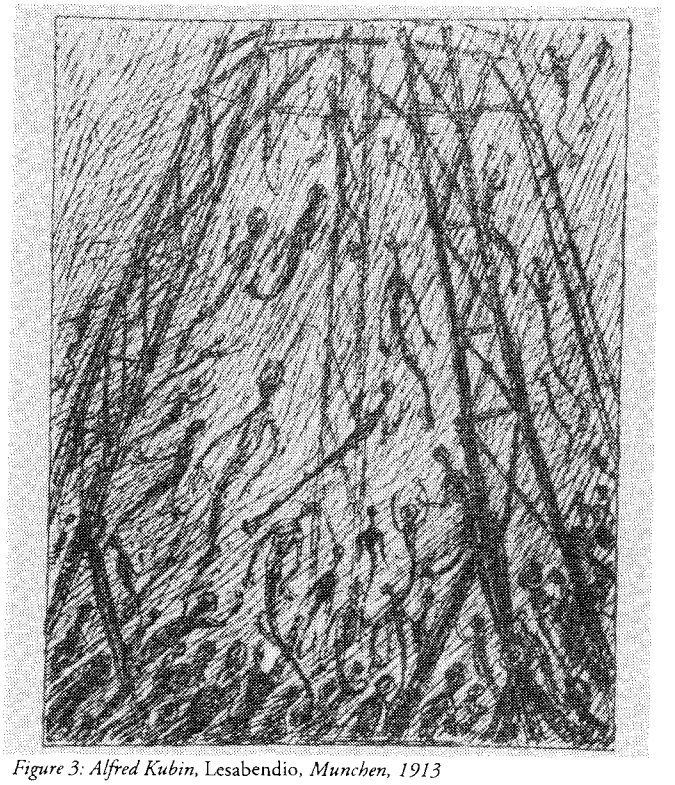

Figure 3: Alfred Kubin, Lesabendio, *Munchen, 1913*

Figure 4: The water steps of the Glashaus, Werkbund Exposition, 1914

GLASARCHITEKTUR AND THE GLASHAUS— A REALIZED UTOPIA

The small book *Glasarchitektur* deals systematically with the qualities and constructural advantages of glass in architecture. He envisions various vehicles, constructions and architectural landscapes made of this modern and unexplored material.

He turns his back on the Biedermeier culture and criticizes brick buildings, the style of heavy wooden furniture and dark enclosed rooms, which he believes symbolize cultural narrowness. Scheerbart himself was fascinated with the great Palmhouses that had been built, towards the turn of the century in Berlin and in other capital cities of Europe.

Around 1912 Scheerbart and Taut had met through the circles of Der Sturm, a small controversial publisher, and it was here they developed a close and inspiring relationship. Scheerbart's book *Glasarchitektur* was dedicated to Bruno Taut and the Glashaus of the Werkbund exposition in Cologne of the same year was in turn dedicated to Scheerbart.

Glasarchitektur contains elaborate descriptions of architectural designs that reveals great architectural knowledge and the Glashaus appeared so amazing and poetic, that it obviously had emerged from a special building program. The program was the book *Glasarchitektur*, a work which the prominent critic at the time, Adolf Behne characterized as "a piece of poetry on architecture."[11]

Many of Scheerbart's ideas were literally realized in the Glashaus by Taut. In order to experience this, one would have to climb the stairs of the concrete base and continue up the glass stairs between the double glass brick wall to the second floor. Bere the dome-shaped room would reveal itself, with non colored translucent glass bricks, framed by slender concrete bars. The exposed concrete construction would compliment the interior decoration.

Through a durchsicht (a connecting opening) in the center of the floor, one could glance down into a water fountain of the floor below and see the reflection of light and colors, hear the sound of the water flowing dawn the watersteps and sense the concealed mystery. To enter this wunderkammer, one would have to take another glass staircase down. The room of the water fountain would be enclosed by walls of Tiffany glass and the floor consisted of colored glass lenses.

The water steps of the fountain would lead down to the ground level, into a kaleidoscopic room from which one could exit. The reflection and constant transformation of light, color and water would carry one through the building and create a virtual reality of ever changing spaces and images."[12]

The exterior of the Glashaus did not reveal its internal life. The plate glass cupola and the glass brick wall appeared simple and comprehensible, though curious golden balls decorated the concrete base, which maybe referred to the fortune tellers crystal ball and aphorisms were inscribed on the concrete band under the done, authored by Scheerbart, saying:

Glass brings a new era. Building in brick only does us harm— Without a Palace, Life is a burden—Colored glass. Destroys hatred—Light seeks to penetrate the whole cosmos. And is alive in the crystal.[13]

GLASS AS METAPHOR AND MATERIAL

The Glashaus was an extraordinary building of its time concealing mystery and symbolism.

In the article, "The Interpretation of the Glass Dream— Expressionist Architecture and the Crystal Metaphor," Rosemary Haag Bletter describes the Glashaus as: "an icon of the crystal-glass metaphor." Her article traces the iconographic tradition of glass back through history and describes how the imagery of transcendence through glass and crystal has undergone transformation through time. In the Solomonic legends, Moslem architecture, Grail legends and the Gothic cathedral, the glass-crystal metaphor was expressed through more or less architectonic concepts. But with later the Romantic and Symbolist movements it became an image of the soul or brain.

Within this history of glass and crystal imagery metamorphosis, the Glashaus of Taut and his symbolic use of glass architecture are, for the first time since Gothic architecture, reinstated in built form.[14]

Through the history of crystal symbolism seemed to have shaped the Glashaus into a small gothic-like dome, it appeared like a double projection of both the crystal metaphor and the building material glass in various applications.

The Glashaus was also a simple showroom of the Luxfer Prism Glass Company,[15] with the explicit purpose to display the firm's products. Glass was presented in every form: mirrors, glass prisms, colored and clear glass, glass tiles, glass mosaic, window glass and balls and beats of glass.

Glass was launched as a new material though it has been known to mankind in its natural form—obsidian as early as 75,000 years B.C.[16]

The earliest manmade glass origins from ceramic glazes in pottery making and early glass manufacturing was developed by the Egyptians, based on cast and pressed procedures. Up until and during the time of the Romans, glass was mainly looked at, than looked through and not until the invention of the blow-pipe, glass becomes somewhat transparent in the sense we recognize today.[17]

Glass applied in construction does not really occur before the middle ages and was mainly applied in church buildings as stained glass windows.

Until the eighteenth century the main goal in glass making had primarily been to achieve greater transparency and making of larger individual parts, whereas the plate glass procedures had been in focus.

During the early industrialization, the craft of the glass blower went through a phase of semi-industrialization, in which methods and technologies were adopted from the craftsman and later transformed into industrialized processes. This development improved the control of the material and homogeneity of the final product.[18]

In the history of glass manufacturing, cast glass products such as the glass prisms and the glass brick were fairly young construction materials and were mainly developed to intensify and redirect light into dark rooms as found in basements or on ships.

As construction methods changed at the end of the eighteenth century, with the use of iran and reinforced concrete, the depth of manufacturing and office buildings increased and the need far daylight rose. The Luxfer Prism Company challenged that problem by launching competitions where Glass Prisms were to be incorporated in masonry and concrete construction.

In American high-rise buildings and large department stores, the glass prism became a natural design element and had great success, especially in works by Sullivan and Frank Lloyd Wright.

At the Werkbund exhibition in Cologne in 1914, the Luxfer Prism Glass Company had previously developed a new construction system—the Keppler system, based on thin reinforced concrete bars holding heavy glass tiles in place. It was their intent to introduce this building system in Germany. Until then the glass brick was only used in smaller building parts, due to its weak load-bearing capacity and lack of tensile strength."

The Keppler system was a flexible and dynamic building system. Bruno Taut welcomed the new material and technology by which he was able to freely express his utopian ideas.

Taut did not officially focus on technical issues in his Glashaus, since he in the program for the Werkbund Exposition only wrote on the symbolic aspects of glass. But his through all detailing and attention to the various glass products suggests a genuine interest in issues of technology

Moreover, Taut's interest in technology is explicitly expressed in his final architectural text, *Architekturlehrer—Grundlagen, Theorie und Kritik* (1936). In the chapter Teknik he says:

Technology is the instrument between Man and Nature, between him and the weather... The more distinct and pure the form is, of what it communicates between Man and Nature, the deeper does it touch our feelings. The climate/weather is a part of the universe, which Man by building houses steps into close (direct) relation with. In architecture technology then provides the connection between Man and the Universe.[20]

Taut continues unfolding his own understanding of materials and suggests that one can speak of a language of "proportions of materials" as well as proportions between various forms. This language originates in the properties of materials and the technologies connected to them.

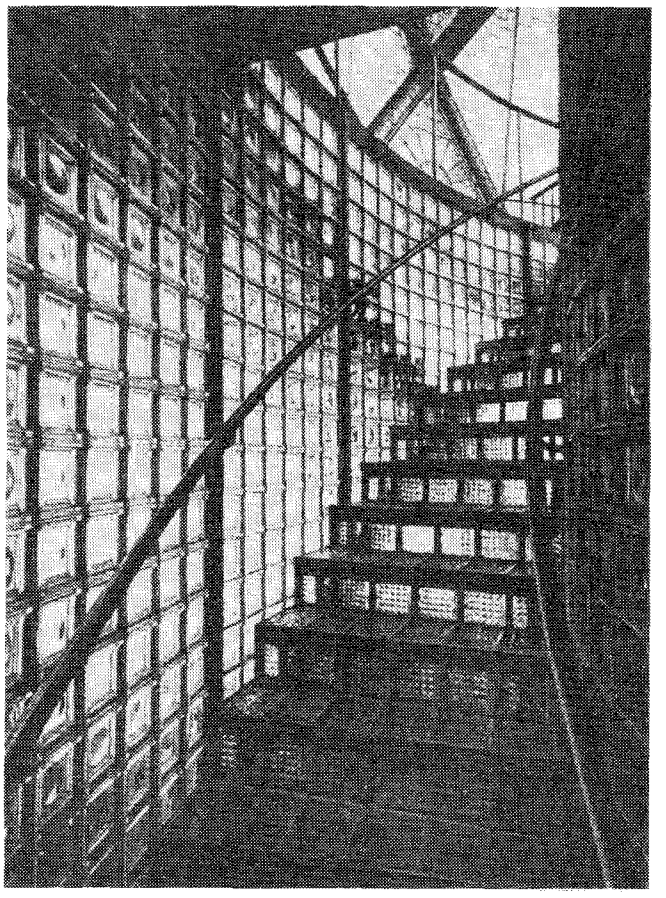

Figure 5: The glass staircase of the Glashaus, Werkbund Exposition, 1914

GLASS AS UTOPIAN SPACE

Etymologically, the English word "glass" originates from the natural occurrence of amber and resin, which in old English and Old German was called "Glare," referring to the golden shiny substance, which also relates to words as "glaze" and "glow." The Latin etymology is rooted in a different interpretation of the phenomenon of glass. Where it originates in "vitrum" which means a greenish hue and in Medieval Latin is referred to as "defectively transparent."[21] When I first began to seriously consider the material of glass the Swedish word for ice-cream came to mind, "glass." Personally I have always wondered about this word, because it has no resemblance whatsoever with the Norwegian or Danish terms that are, "is."

The similarity between glass and ice suddenly seemed obvious; the frozen image of water and ice crystal could be interpreted as nature's materialization of glass in the sense that it holds the same properties of transparency, translucency and reflection.

Ice is also an ancient building material known to mankind for more than 3000 years, where igloos were some of the first original structures.[22]

Another ice building tradition arose in Russia around the eighteenth century, where Ice Castles were built for entertainment of the nobility. Fantasy castles and spectacular constructions reached their peak more than a hundred years later in America and Canada and they surely provided an illusionary world to the spectators, an eye witness reports:

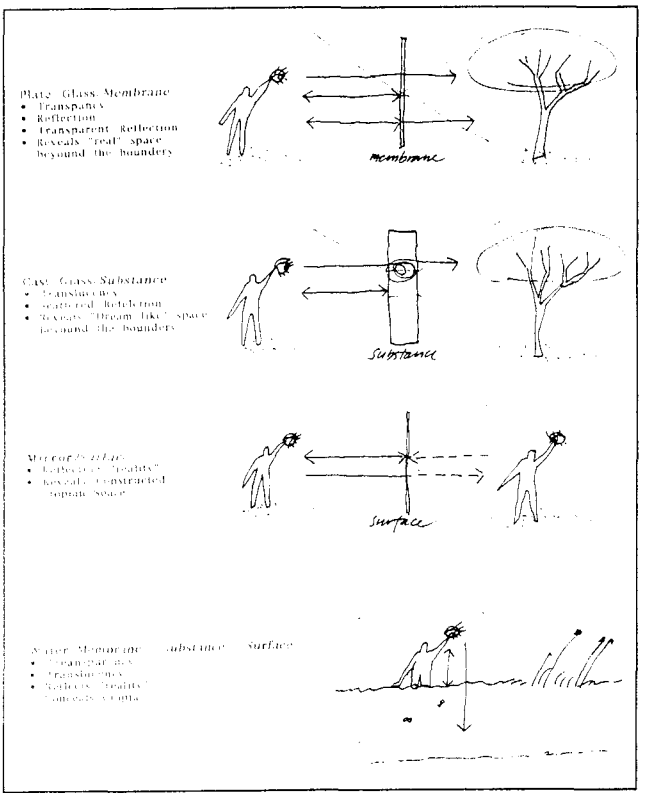

Figure 6: Cosmology of glass, analysis Anne Beim

The delightful material gave a new, fantastic beauty to every feature, sometimes clear green—dark and opaque where the shadow fell, and almost transparent in the sun... The wonder of their fabric gives ice palaces a feeling of magic; fragile and massive, transparent and solid, colorful and dazzling white, ice shimmers with contradictions by its very nature.)[23]

Unfortunately most ice palaces of today are built as safe spectacles people can only watch from a distance, They are destined simply to long for and dream of being within this dematerialized world of illusion.

The same transparent, reflective and imaginary world is connected to water. And looking into Greek mythology, one finds the Sea God, Glaucus (resembling the word Glass), described as the dark greenish-blue color that the sea assumes when the winds begin to rise. This was also the color of the early ceramic glazes that later were to become the material of glass.

In one of the legends about Glaucus he is a humble fisherman, who one day when returned from fishing sets his fish among some herbs that grew besides the shore. He saw they immediately leaped up and flung themselves back into the sea and tasted the herbs himself whereby he felt drawn into the sea and became a triton.[24] And then of course—the story of Narcissus, who gazes into the pond fascinated by his own reflection—using the water surface as a mirror.

All of these stories deal with the notion of transcendence from one level of consciousness to another—from a lower to a higher level. However, the mirrored reflection is a distinctly different perceptional experience from the reflection of a transparent material—of this I will speak very briefly.

The material representation of glass can be characterized as a membrane that is plate glass or as a substance that is cast glass. In both cases its material representations define and divide spaces—the inside from the outside, the viewer from the object, reality from utopia. Glass in these two conditions of membrane and substance provides various kinds of perceptional experiences.

The membrane or the plate glass lets the viewer see the true image (reality) on the other side of its boundary. Due to its thinness the glass becomes transparent—the clear penetrating gaze provides an unlimited space. Though the homogeneous smooth glass surface reflects the viewer and the space he is within, he is defined by the surface, the self-referential gaze limits the space to itself. And this leaves us with the fact that plate glass, (membrane) usually provides the viewer with both experiences at the same time, the transparent and the reflective. The viewer now deals with a phenomenon that may be characterized as a "transparent reflection," a multi-layered experience of spaces projected on to themselves and each other, a transient gaze of ever changing and redefining spaces.

The cast glass that can be identified by its substance, holds some properties of plate glass, but does not provide the viewer with transparency, that is the clear gaze. The cast glass block appears translucent. Its solid or hollowed substance lets light through and sometimes even intensifies the light by prism outings of the inside. The cast glass block lets the viewer only sense an image of the other side of its boundary. Its substance distorts the true image (reality) where in the hazy gaze provides a dreamlike space. And due to the fact that cast glass block is a fairly small construction element most often used in glass block walls this experience of dualism is intensified. The glass block wall provides the viewer with a multiplication of small surfaces and reflections, therefore the scattered gaze defines a wide range of spaces, which can be identified as the space the viewer is within, the space within the cast glass block and the dreamlike space one sees through the substance.

The mirror, however, defines a space which is completely different. Its material basis is also very different from that of glass, since it originates from polished surfaces of solid materials such as; metals (silver) or black stone. In the mirror the viewer deals with a different concept of space, an unambiguous reflection of the space he is within.

The notion of reality and utopia is maybe the essential question of this inquiry into glass, The mirror reflects the immediate reality and maybe that is why it becomes boring after a while, a mirror is too civilized, too geometrical, too easily handled an object; it is too obviously a dream device ever to adapt itself to oneric life."[25] Its not concealing and its utopia is more so a construction, than a dream like space related to reality, nothing is left for wonder. The mirror does not bridge the gap between reality and utopia as glass with its dream like world of transparent reflections and translucency.

The mirror a fountain provides, is the opportunity for open imagination and it is maybe the natural depth of a watery reflection we long for, the infinity of the dream, expressed by Louis Lavalle in his text "L'Erreur de Narcisse:"

If we imagine Narcissus in front of a mirror, the resistance of glass and metal sets up a barrier to his ventures. His forehead and fists collide with it; and if he goes around it, he finds nothing. A mirror imprisons within itself a second-world which escapes him, in which he sees himself without being able to touch himself, and which is separated from hint by false distance which he can shorten, but cannot cross over. On the other hand a fountain is an open road for him.[26]

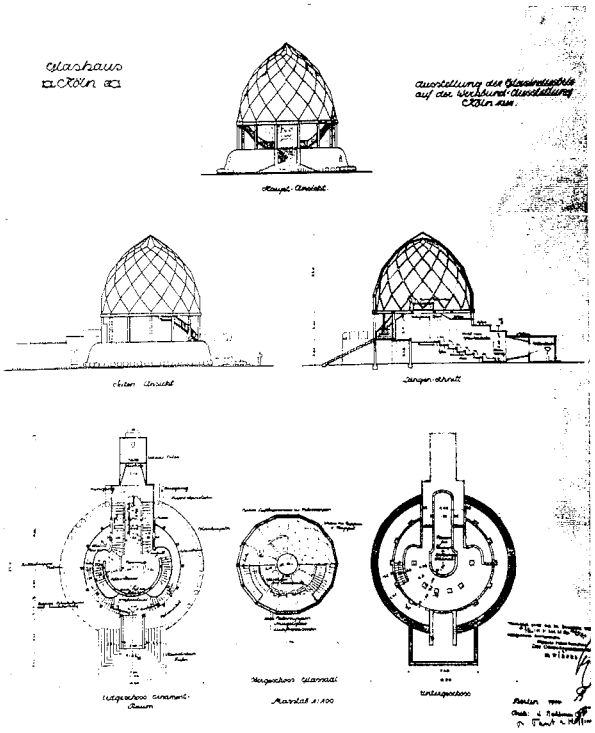

Figure 7: Project drawing of the Glashaus, HAdStk, 1914

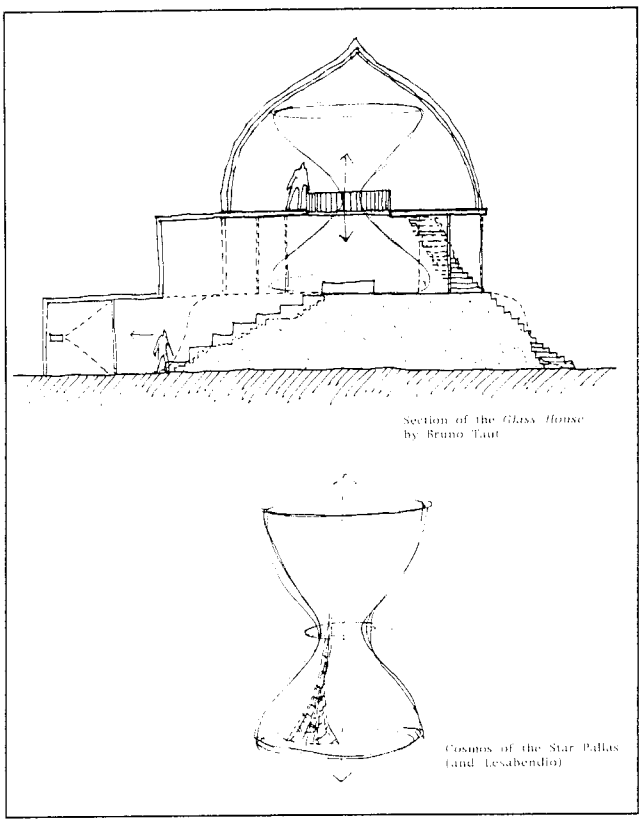

Figure 8: The cosmology of the Glashaus and the Star Pallas, analysis Anne Beim.

CONCLUSION

The materials that define the cosmos of Bruno Taut and to which he refers to in his utopian work, *Alpine Architektur* are crystals, ice and water. This vision Taut turns into reality in the building of the Glashaus, with his use of water, glass and light in the forming of space. By the changability of the material nature, he creates an ongoing movement, a dialogue between two worlds, reality and utopia,

The spatial construction of the Glashaus also reflects this dialogue. Where the project consists of two main spaces defined by an upper and a lower level, From the upper level one senses the wonder of the level below through the durchsicht of the floor. Looking down, one gazes into the water fountain, like Narcissus. This water is moving and seduces the viewer down into this room and onwards down along the watersteps, to a kaleidoscopic experience of color and light.

Taut's vision of movement in space, between spaces and transformation by dealing with matter, leads back to Lesabendio, who transcendence by moving in space, time and matter. Lesabendio literally transforms through the "time glass cosmos" of Sallas, which space-figure can be transferred into the Glashaus and even to the cast glass brick, which translucent substance conceals a utopia, a world of dreams. In order to emphasize this final argument Gaston Bachelard can be quoted:

I could go on endlessly if I wanted to follow the daydreams of Bomo Faber who abandons himself to the imagination of matters. A substance will never seem sufficiently worked over for him because he never stops dreaming of it. Forms reach completion. Matter never. Matter is the rough sketch for unrestricted dreams.[27]

NOTES

1. Taut had begun the graphic sketches in 1917, that later were to become Alpine Architektur. Due to the increasing political tension in early 1918 he envisioned mountain peaks as glowing and sparkling leitmotifs for peace. Kurt Junghanns, Bruno Taut, 1880-1939, Elefanten Press, Berlin, 1983, pp. 29-32
2. The notion of the Crystal Metaphor in architectural history was introduced by Rosemary Haag Bletter, "The Interpretation of the Glass Dream—Expressionist Architecture and the History of the Crystal Metaphor," *Journal of the Society of Architectural Historians*, Vol XL. No. 1, March 1981, pp.20-43
3. Bruno Taut, *Architekturlehre—Grundlagen, Theorie und Kritik*, Beziehung zu den anderen Künsten und zur Gesselschaft, VSA, Hamburg/Westberlin, 1977, pp.65-92
4. Bruno Taut, *Alpine Architektur*, Folkwang-Verlag, Ragen, 1919
5. Bletter, "The Interpretation of the glass Dream..", p.35
6. Taut, *Alpine Architektur*, p.13
7. Paul Scheerbart, *Lesabendio—Ein Astroiden Roman*, G. M(ller, Munchen, 1913
8. Ian Boyed Whyte ed., *The Crystal Chain Letters*, MIT Press, Cambridge Massachusetts, 1985, pp.6-8
9. Paul Scheerbart, *Das Grue Tuch und Zen Prozent Weiss-Ein Damenroman*, Munchen, 1914
10. Paul Scheerbart, *Glasarchitektur*, Verlag der Sturm, Berlin, 1914
11. Adolf Behne's review of the Glass House in which praises the inspiring influence that Scheerbart had on the design and spirit of the pavilion. Adolf Behne, "Das Glas Haus," *Architekturkritik*—in der Zeit und uber die Zeit hunaus Texte 1913-1945, Birkhauser Verlag, Basel, 1994, p.26-29
12. ibid, p.27
13. Paul Scheerbart's aphorisms written on the Glass House are reprinted in "Glashauebriefe," Bruno Taut, *Frülicht*, Verlag Ullstein GmbH, Frankfurt, 1963, pp.19-20
14. Bletter, "Expressionist Architecture and the History of the Crystal Metaphor," p.33

15. Dietrich Neumann, "The Century's Triumph in Lighting—The Luxfer Prism Companies and their Contribution to Early Modern Architecture," *Journal of the Society of Architectural Historians*, vol.54, no.1,1995, pp.24-54. Neumann's article contains a detailed account on the history of Luxfer Prism and bridges the gap between rational technological development of a material and the intuitive aesthetic architectural production, by holding the two parts closely together.
16. Charles J. Phillips, *Glass—The Miracle Maker, its History Technology and Applications*, Pitraan Pub. Corp., N.Y./Chicago, 1941
17. Pittsburgh Glass Co., *Glass—History, Manufacture and its universal Applications*, PPG, Pittsburgh, 1923
18. Cecil D. Elliott, *Technics and Architecture—The Development of Materials and Systems for Building*, MIT Press, Cambridge Massachusetts, 1986, 127-129 Elliot's book, "Tecnics and Architecture" provides a historical record of the development and application of materials and the technics of building form. Concentrating on Europe and North America from the Industrial Revolution to the present.
19. Neumann, "The Century's Triumph in lighting," 42-46
20. Bruno Taut, *Architekturlehrer—Grundlagen, Theorie und Kritik*, pp.129-130
21. Eric Partridge, *Origins—A Short Etymological Dictionary of Modern English*, The Macmillan Co., N.Y., 1958
22. "The Polar Home," *Canadian Heritage*, Feb/Mar 1987, pp.28-31
23. Andres/Agranoff, Ice Palaces, Abbeville Press Publisher, N.Y., 1983, pp.5-9
24. *Larousse Encyclopedia of Mythology*, Prometheus Press, N.Y., 1960, pp.166-170
25. Gaston Bachelard, *Water and Dreams*,The Pegasus Foundation, 1983, (orig. 1942), pp.19-45
26. Bachelard, *Water and Dreams*, p.21
27. Bachelard, *Water and Dreams*, p.113