

# Nature's muses in Bruno Taut's Glashaus

D. Nielsen & A. Kumarasuriyar  
*Queensland University of Technology, Australia*

## Abstract

Constructed for the 1914 *Werkbund* Exhibition in Cologne, Germany, the *Glashaus* was both a seminal example of early modernist architecture and Bruno Taut's signature building. Over time, metaphors have come to be applied to the *Glashaus*. Within the realm of nature these metaphors include cosmic, geological, botanic and sexual. However these metaphors, like the history of the *Glashaus*, are not a foregone conclusion. Recently it has been argued that the majority of our current knowledge regarding the *Glashaus* derives not from the perspective of Bruno Taut as the architect, but rather directly from the perspective of the art critic Adolf Behne. This argument goes further and proposes that Behne's official history of *Glashaus* is possibly fabricated propaganda. So, if indeed the official history of the *Glashaus* is questionable, then too are the natural metaphors commonly applied to the building. By revisiting Bruno Taut's pre-1915 writings, this investigation reveals that botanic metaphors appear to have been Taut's primary source of inspiration for the design of the *Glashaus*. Through the exposure of this fact, this research contributes significantly to the current debates surrounding Bruno Taut, the *Glashaus* and the re-evaluation of the official histories of the modern movement.  
*Keywords: Bruno Taut, Glashaus, nature, gothic, Victoria regia, Stiftskirche.*

## 1 Introduction

References to nature are common-place in descriptions of Bruno Taut's *Glashaus* (Figure 1). It has been proposed that the *Glashaus* looked like the earth had literally broken open, exposing the building as it erupted toward the light. In bad weather the reflecting glazed facets of the *Glashaus* dome apparently assumed a greenish-yellow colour. This resulted in the visiting public naming the building *Spargelkopf*, or 'Asparagus-head'. Alternatively, when approached from a distance the *Glashaus* supposedly looked like a sprouting seed, or a



flower bud that was about to bloom [1]. Adolf Behne [2] described the glazed cupola room that crowned the *Glashaus* as being vaulted like a sparking skull. This sentiment is also later shared by Thiekotter [1] where she described the night-time appearance of the *Glashaus* as having been like a glittering, sparkling jewel.

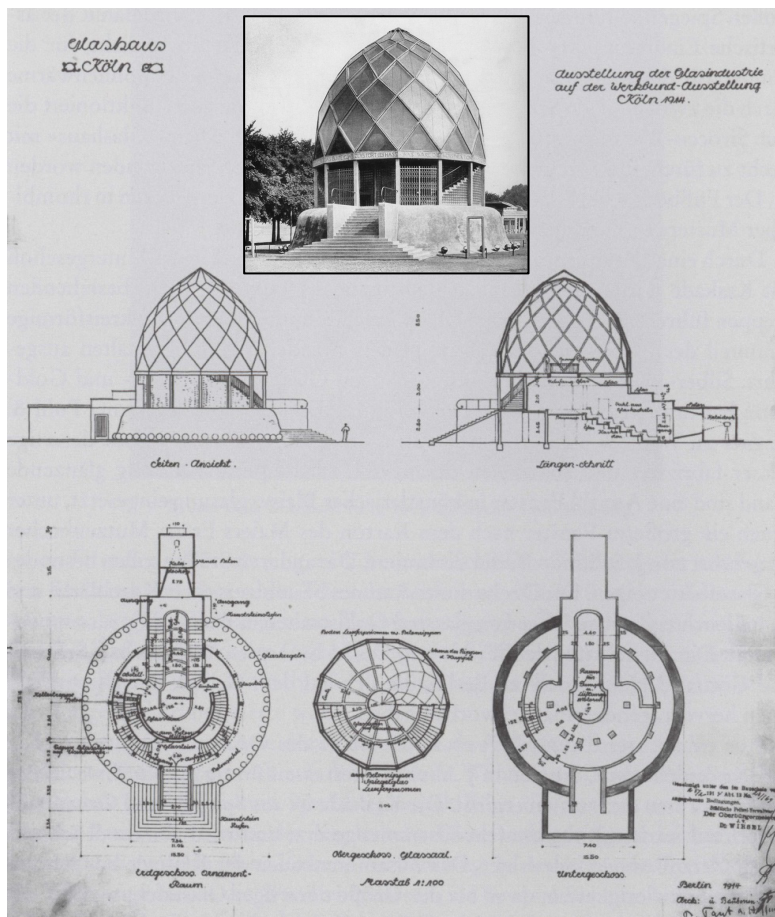


Figure 1: Images of Bruno Taut's *Glashaus*. The main image comprises the original building approval drawing submitted to the Cologne City Council [3]. The inserted photograph in the top centre is not part of the building approval drawing and was taken after the *Glashaus* was complete [4].

The *Glashaus* is readily accepted as Expressionist architecture. However this Expressionist label applied to the *Glashaus* is itself the subject of current debate. Recent studies have indicated that the Expressionist labelling of the *Glashaus* was a retrospective act by the art critic Adolf Behne. Behne sought to create an

Expressionist connecting to architecture, through the *Glashaus*. This despite the fact that possibly no such link ever existed. Thus, the Expressionist labelling of the *Glashaus* is possibly fabricated propaganda [5]. So, if the Expressionist label is not wholly applicable to Taut's *Glashaus*, then too are some of the natural metaphors that are commonly applied to the building.

In this debate concerning the validity of the Expressionist labelling of the *Glashaus*, Taut's own thoughts appear to have been overlooked. This might be primarily due to the fact that Taut wrote very little before the construction of the *Glashaus*. However, what he does write before 1915 is rather revealing. The following investigation reveals that the earlier connotations applied to the *Glashaus*, like Asparagus-head, flower bud, sparkling jewel or skull, are simplistic. Through an investigation the references the *Glashaus*' dome, initial findings tend to indicate that Taut appears to copy existing sources of natural inspiration found in gothic architecture. However, the final result reveals that Taut was inspired by the leaf of the *Victoria regia* lily.

## 2 Nature, art and architecture

Bruno Taut wrote 4 articles before 1915. The first two of these, *Taut and Natur und Kunst* (Nature and Art) [6] *Taut and Natur und Baukunst* (Nature and Architecture) [7] were written in 1904. In 1914 Taut published a further two articles namely, *Eine Notwendigkeit* (A Necessity) [8] and *Glashaus: Werkbund-Ausstellung Cöln 1914 – Führer zur Eröffnung des Glashauses* (*Glashaus: Cologne Werkbund Exhibition 1914 – Guide to the opening of the building*) [9]. While the later 1914 dated articles have little connection to Taut's thoughts on nature, the 1904 dated articles are directly relevant.

In Taut's first article, *Natur und Kunst*, he wrote that modern architecture was less about the authenticity of a particular style and more about the 'free will' of the artist. This 'free will', while taking into account both the technical and aesthetic aspects of the period, should never renounce tradition. According to Taut, this 'happy development' owed its circumstances to the fact that young architects returned to the study of nature. Taut argued that if architects ignored the dictates of an imposed style, they could see the traditional works of the old master architects in the fresh light of nature. To reinforce his argument, Taut illustrates the nave of a gothic church and a forest (*Tannenwald*) of either fir or pine trees (Figure 2). Taut continued by stating that while the gothic pointed arch and vaults were not directly present in the forest, they were there as the 'free will' interpretations of the architect. This was because the architect could never directly reproduce nature, but only offer a picture or image (interpretation) of its glory. To further emphasize his point, Taut then quoted directly from John Ruskin's *The Stones of Venice*:

"We are forced, for the sake of accumulating our power and knowledge, to live in cities; but such advantage as we have in association with each other is in great part counterbalance by our loss of fellowship with nature. We cannot all have our gardens now, nor our pleasant fields to meditate in at eventide. Then the function of our architecture is, as far as may be, to replace these; to tell us

about nature; to possess us with memories of her quietness; to be solemn and full of tenderness, like her, and rich in portraiture of her; full of delicate imagery of the flowers we can no more gather, and of the living creatures now far away from us in their own solitude” [6].



Figure 2: Bruno Taut's illustrations from *Natur und Kunst*. On the left is the illustration of the fir plantation and on the right is an illustration of Stuttgart's *Stiftskirche* [6].

Taut's second article, *Natur und Baukunst*, can be seen as a refinement of *Natur und Kunst*. In *Natur und Baukunst* Taut further elaborates on nature as a source of inspiration for architecture. According to Taut, nature offered an extremely delicate sense of space organisation. Taut proposed that the gothic cathedral triggered in the viewer a sense similar to that of the space formation of nature; but only when viewed as an entirety and in a peaceful and devoted manner. From this Taut then proposed that the ultimate role of the architect was to interpret nature and create architecture that unconsciously and involuntarily evoked in the viewer the sense of a natural environment – be it the starry sky or the mountains. Taut then once again referred to the two images published earlier in *Natur und Kunst*; stating that while both images were different in their detail, they are essential the same. However, one image is not directly imitating the other; rather the result was an independent creative natural architecture that was achieved through the architect's 'free will' to imagine space [7].

### 3 Imitating the gothic masters

From the two images published in *Natur und Kunst* it becomes clear that for Taut the gothic nave of Stuttgart's *Stiftskirche* (Collegiate Church) evoked in him the image or sense of being in a fir plantation to the outskirts of Stuttgart (Figure 2). In comparing the two images it is relatively easy to see why Taut would have made this comparison. For example, the overall space organisation of the two is similar in that the space depicted between the two parallel rows of trees could be the volume of the nave as defined by the two parallel rows of columns; the flared bases of the trees could relate directly to the expanded bases of the gothic columns; the trunks of the trees are clearly the shafts of the church columns; and the top of the trunks could be the column capitals. Further, the high branches of the trees could be the projecting ribs to the underside of the nave's vaulting. However, most interesting in comparing the sketch of the forest and that of the *Stiftskirche* is the portion that proposes the forest branches are like the rib vaulting above the nave.

The *Stiftskirche* was constructed according to the *Staffelhalle* (Pseudo-Basilica or Hall-church) principal. This dictated that when viewed in section the central nave is the tallest portion of the building and that the outmost aisles are not as tall as the innermost aisles. The *Staffelhalle* principal also dictated that the nave should have no clerestory windows. The architect of the *Stiftskirche's* nave was initially Hänslin Jörg who begun work in 1433. It was not until 1495 that Hänslin's son Aberlin, completed the rib vaulting over the nave [11].

No contemporary image is available of the *Stiftskirche's* original nave as it was destroyed during the Second World War. However, a plan of the *Stiftskirche* is available which clearly indicates the original 1495 arrangement of the rib vaulting over both the nave and aisles (Figure 3). From this it is proposed that the rib vaulting above the nave of the *Stiftskirche* was in all probability similar in appearance to that above the naves of St. Martin (14421-83) in Amberg and St. Lamberti (begun in 1450) in Münster (Figure 4). Furthermore, the rib vaulting to the lower aisle of the *Stiftskirche* is proposed as similar to that above the aisle of St. Mauritius (1433-83) in Olmütz (Figure 5). When the general aesthetic of the space organisation inherent in these gothic rib vaults is compared to the dome structure over Taut's 1914 *Glashaus* (Figure 6), it becomes apparent that they are, as Taut would have contended, essentially the same thing.

However, while the gothic rib vaulting in Stuttgart's *Stiftskirche* was undoubtedly influential in Taut's formative thinking for the dome structure of the *Glashaus*, it could be seen as simply a direct imitation rather than a 'free will' interpretation.

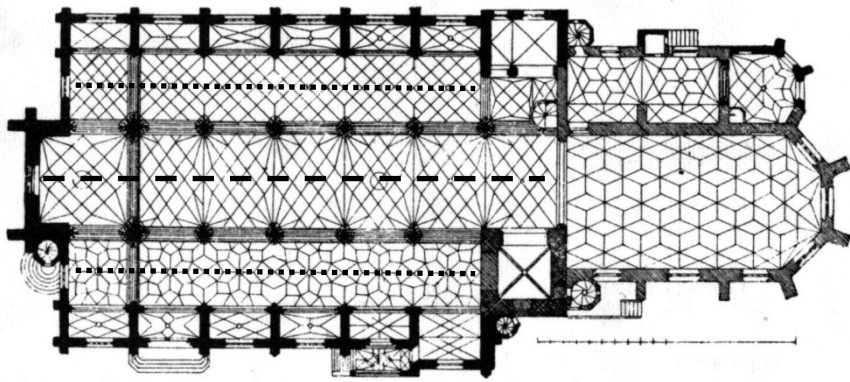


Figure 3: Floor plan of the *Stiftskirche* in Stuttgart [10]. The heavy dashed line indicates the central nave and the lighter dashed lines indicate the aisles. The rib vaulting to the nave can be argued as similar to that of St. Lamberti in Münster or St. Martin in Amberg (Figure 4). The rib vaulting to the lower aisle can be argued as similar to St. Mauritius in Olmütz (Figure 5).

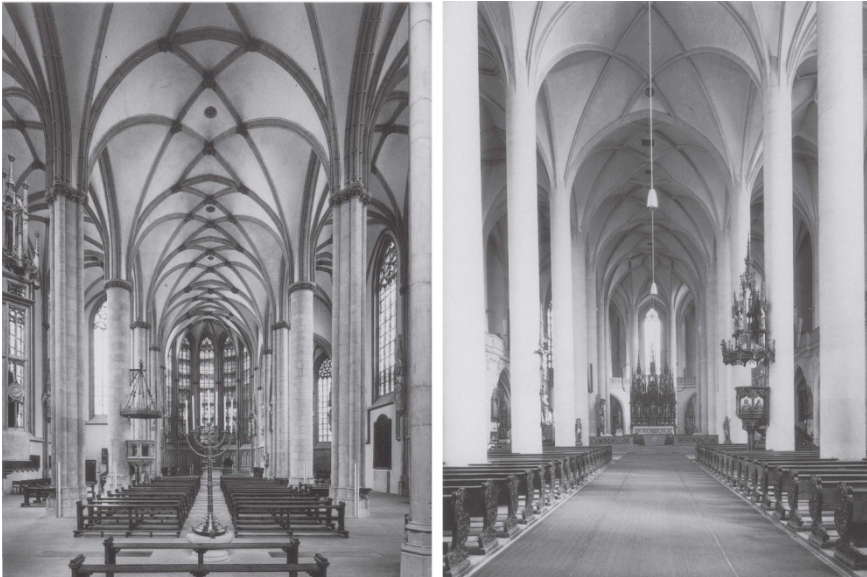


Figure 4: Interior if the naves of St. Lamberti (left) in Münster and St. Martin in Amberg (right) [11].



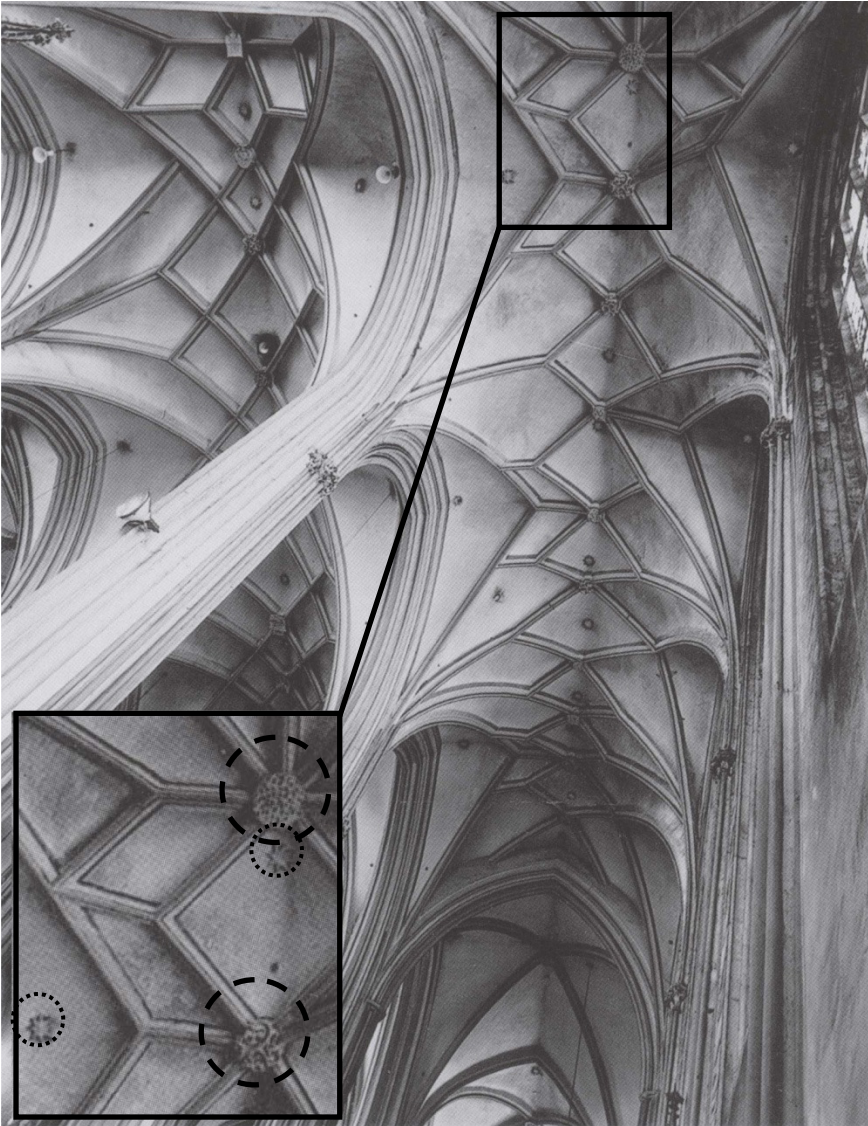


Figure 5: Rib vaulting to the nave and aisle of St. Mauritius in Olmütz [11]. In the aisle, note the star motifs (faint dashed circles) located in the infill areas between the ribs. Could a similar occurrence in the *Stiftskirche* be the 'starry sky' inspiration that Taut references in *Natur und Baukunst*? Further, note the 'leaf' motifs (heavy dashed circles) located at the intersections of the ribs. Could a similar occurrence in the *Stiftskirche* be the inspiration for the central electric light (Figure 6) that hung at the centre of the *Glashaus* dome?

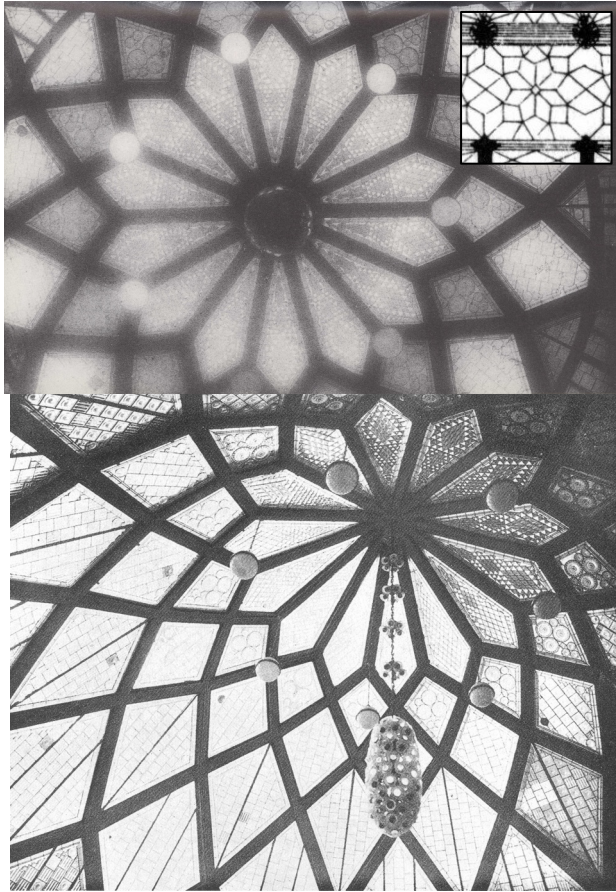


Figure 6: The interior of the *Glashaus*' dome. The top photo was taken perpendicular to the apex of the dome [1]. Taut was apparently very fond of this image [12] arguably because its layout derives from the rib vaulting above the *Stiftskirche*'s lower aisle (inserted top right). The bottom photo [1] shows the infill of pressed glass tiles between the rhombic structural elements made from reinforced concrete.

#### 4 Taut's 'free will' and the *Glashaus* dome

As previously mentioned, Taut quoted a passage from *The Stones of Venice* in *Natur und Kunst*. *The Stones of Venice* consists of three volumes and Chapter 20 of Volume One is the sources of Taut's quote. In this chapter, Ruskin explains his thoughts on the 'The Material of Ornament'. Amongst other things, Ruskin proposed that the forms of leaves are both the general source of subordinate decoration and one of the main characteristics of Christian architecture. Ruskin quotes two examples of relevant leaves; these being the Egyptian lotus (Figure 7)



and the Greek acanthus (Figure 8). Ruskin continued by proposing that the inspiration for the designs of column capital found in northern European gothic was primarily based on the leaf of the acanthus. Similarly, he also proposed that

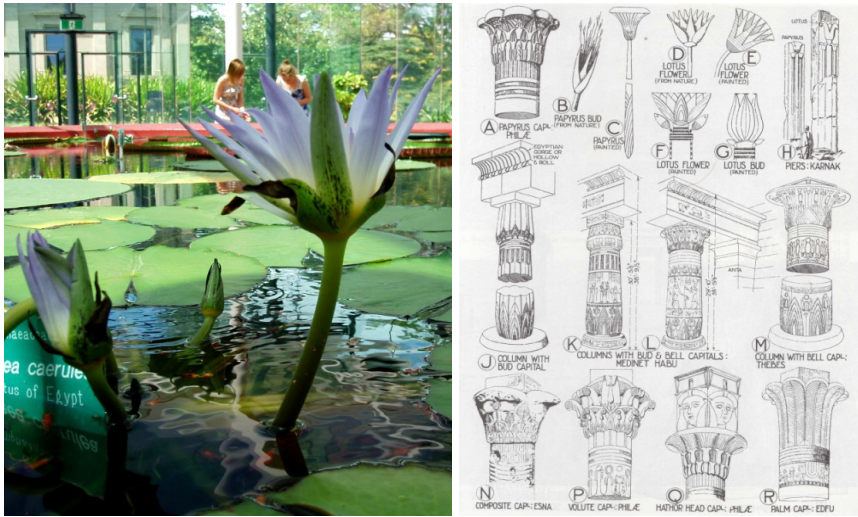


Figure 7: Images of the *Nymphaea caerulea* or Egyptian blue lotus [13] and its application as a source of architectural inspiration in ancient Egyptian column capitals [14].



Figure 8: Images of the *Acanthus mollis* or Greek acanthus [16] and its application to European classical architecture [14].

the capital designs of ancient Egypt derived their inspiration mostly from the lotus. In a footnote, Ruskin then names the giant South American waterlily, the *Victoria regia* (Figure 9). Ruskin continued by proposing that, by grouping the Egyptian lotus and *Victoria regia*, there might be a further third source of inspiration to be found in what he termed, the 'Lily capitals' [15].

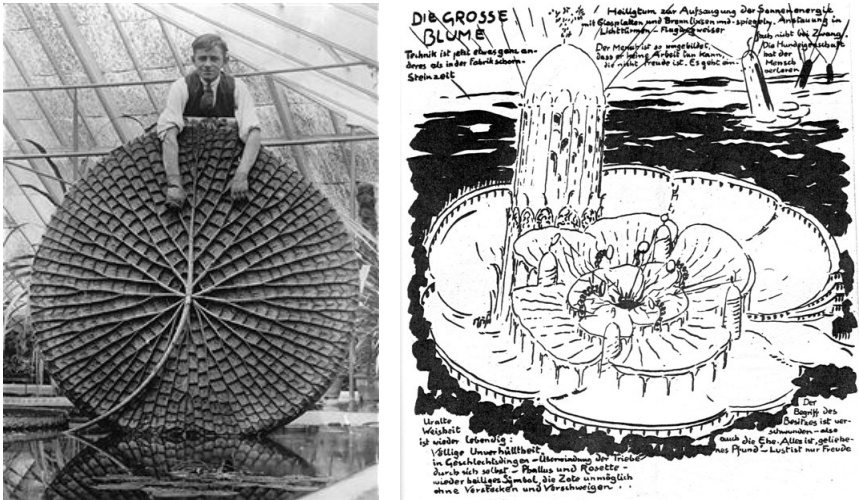


Figure 9: On the left is an image of the underside of *Victoria regia*'s leaf. Note the prominent structural lattice of air filled members that supports the leaf surface [19]. On the right is Taut's *Die Grosse Blume* illustration [20].

Taut mentioned *Victoria regia* in his 1920 film script *Die Galoschen des Glücks* (The Lucky Shoes) [17]. It has already been proposed that *Die Galoschen des Glücks* was an indirect chronicle of Taut's architectural thoughts until 1920 and included his views concerning the *Glashaus*. It has also been proposed that both the actual flower and the specialist greenhouse built to cultivate the *Victoria regia* in the European context are directly inspirational in the design of the *Glashaus* [18]. However, this paper concerns the leaf of the *Victoria regia*.

The underside *Victoria regia*'s leaf (Figure 9) comprises a prominent lattice of air filled members that supports the leaf surface. A comparison between this leaf lattice and the dome structure of the *Glashaus* (Figure 6) reveals immediate similarities. But as with the gothic ribbed vaulting, this could be argued as direct copying. The question still remains as to how Taut uses his 'free will' to offer an interpretation from natural inspiration.

The answer to this question can be found in how Taut dealt with the infill between the structural members of the *Glashaus*' dome. As previously mentioned, Ruskin proposed that *Victoria regia* could contribute to his categorisation of 'Lily capitals'. It is highly probable that Taut read *The Stones of Venice* and encountered Ruskin's reference to *Victoria regia*. Taut proposed

that the architect i.e. himself should not simply copy nature but rather interpret it. In the image of the forest (Figure 2), the light appears to filter along a central line in the branches. In comparison, the vaulting to the nave in the *Stiftskirche* is dark and gloomy. This contradiction must have made an impression on Taut and driven him to 'free will' interpretation.

In the *Glashaus*' dome, Taut filled the voids between the reinforced concrete structural members with glass prismatic tiles, which are often mistakenly referred to as Luxfer prisms. In reality, patented Luxfer prism tiles were generally 100mm square, had carefully aligned prismatic surfaces applied to one side and were produced by the Luxfer Prism Company of the United States of America. In the *Glashaus*, the main financial sponsors of the building the German Luxfer Prism Syndicate, being the German subsidiary of the Luxfer Prism Company, mandated the use of 'simplified prismatic tiles'. Instead of the carefully aligned prismatic ridges of true Luxfer tiles, these 'simplified tiles' they had a plain surface design of circles and lines. Additionally, they were also thicker and less transparent than patented Luxfer prisms [21].

Thus, in the *Glashaus* Taut created a light filigree of glass prismatic tiles that was framed by the heavy rhombic structure of reinforced concrete. By doing so he arguably created a 'free will' interpretation of the leaf of *Victoria regia*.

## 5 Conclusion

Taut placed a 'lily capital' onto of the 14 columns that supported the *Glashaus*' dome. By opening up the gaps between the structural ribs and infilling then with glazing, Taut created a 'free will' interpretation of being under the 'starry sky'; all inspired by the leaf of the *Victoria regia*.

In 1920 Taut published a hand drawn image entitled *Die Grosse Blume* (The Giant Flower) (Figure 9). Previously, it has been proposed that the illustration has a direct connection to both the *Glashaus* and the *Victoria regia* [18]. One of the quotes that surround the image is translated as: "A sanctuary to absorb solar energy with glass panels..." [22]. In a similar manner as the leaf of *Victoria regia* harvests sunlight to sustain its prolific growth, Taut projects the divine cosmic light of his 'starry sky' over the *Glashaus* so that "The people may then use it to educate themselves or else wait until their educators come" [8]. Thus, for the viewer the *Glashaus* dome could also have allowed the 'free will' interpretation of being under a 'starry sky' full of cosmic energy.

## References

- [1] Thiekotter, A., *Kristallisationen, Splitterrungen: Bruno Taut's Glashaus*. Birkhauser Verlag: Basel, 1993.
- [2] Behne, A., *Gedanken Über Kunst Und Zweck Dem Glashause Gewidmet*. *Kunstgauerbeblatt* 27(4), 1915.
- [3] Taut, B., *Glashaus Köln*. Cologne City Historical Archive, 1914.
- [4] Speidel, M., *Bruno Taut: Ex Oriente Lux, Die Wirklichkeit einer Idee*. Mann Verlag: Berlin, 2007.



- [5] Gutschow, K., *The Culture of Criticism: Adolf Behne and the Development of Modern Architecture in Germany*. Columbia University Press: New York, 2005.
- [6] Taut, B., Natur und Kunst. In *Bruno Taut: Ex Oriente Lux, Die Wirklichkeit einer Idee*. Speidel, M., Mann Verlag: Berlin, pp. 50-52, 2007.
- [7] Taut, B., Natur und Baukunst. In *Bruno Taut: Ex Oriente Lux, Die Wirklichkeit einer Idee*. Speidel, M., Mann Verlag: Berlin, pp. 53-55, 2007.
- [8] Taut, B., *Eine Notwendigkeit*. Der Strum 4, pp. 174-5, 1914.
- [9] Taut, B., *Glashaus: Werkbund-Ausstellung Cöln 1914 – Führer zur Eröffnung des Galshauses*. Werkbund: Cologne, 1914.
- [10] Dehio, G. and von Bezold, G., *Die Kirchliche Baukunst des Abendlandes*. Arnold Bergsträsser Verlag: Stuttgart, 1901.
- [11] Nussbaum, N., *German Gothic Church Architecture*. Yale University Press: New Haven, 2000.
- [12] Speidel, M., Personal communication, 8 January 2011, Professor, RWTH Aachen University, Aachen, Germany.
- [13] Image of the Egyptian Blue Lotus (*Nymphaea Caerulea*), Flickr Web Site, <http://www.flickr.com/photos/pikerslanefarm/3429902326>
- [14] Cruickshank, D., (Ed). *Sir Banister Fletcher's: a History of Architecture*. Architectural Press: Oxford and Boston, 1996.
- [15] Ruskin, J., *The Stones of Venice* (Vol.1). John Wiley and Sons: New York, p. 233, 1880.
- [16] Image of the Acanthus mollis, Wikimedia Web Site, <http://en.wikipedia.org/wiki/File:AcanthusmollisPalatineHill.jpg>
- [17] Taut, B., Die Galoschen des Glücks. In *The Crystal Chain Letters: Architectural Fantasies by Bruno Taut and His Circle*. Boyd Whyte, I., (Ed) Cambridge, MIT Press: Massachusetts, pp. 1118-22, 1920.
- [18] Nielsen, D., Victoria regia's bequest to Modern Architecture. *Proc. of the Fifth International Conference on Comparing Design in Nature with Science and Engineering*, eds. Brebbia, C.A. and Carpi. A., WIT Press: Southampton, pp. 65-76, 2010.
- [19] Nielsen, D., Deceit and Bruno Taut's Glashaus. *Proc. of the 28th Annual Conference of the Society of Architectural Historians, Australia and New Zealand*, eds. Moulis, A & van der Plaats, D., Society of Architectural Historians, Australia and New Zealand: Brisbane, 2011.
- [20] Image of the underside of the Victoria regia's leaf. Getty Images Web Site, <http://www.gettyimages.com.au/detail/news-photo/leaf-of-the-victoria-regia-waterlily-a-plant-which-grows-in-news-photo/82092353>
- [21] Taut, B., Die Grosse Blume In *Die Auflösung der Städte*. Folkwang: Hagen, 1920.
- [22] Neuman, D., The Century's Triumph in Lighting: The Luxfer Prism Companies and their Contribution to Early Modern Architecture. *The Journal of the Society of Architectural Historians*, 54(1), pp. 24-53, 1995.
- [23] Portoghesi, P., *Nature and Architecture*. Skira Editore: Milan, p. 357, 2000.

