

MODERN TECTONICS

The evolution of tectonics in various architectural styles, since Gottfried Semper



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“Echte pleister is beter dan vals marmer.”
“Real plaster is better than false marble.”
Hendrik Petrus Berlage

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INTRODUCTION



The architecture of the Art Nouveau, in its many forms but originated in Belgium, is known for its sense of movement and dynamism. This was due to the use of modern materials, such as glass, ceramics, iron and later concrete, to create large open spaces and unusual shapes, and as well for the use of whiplash lines or asymmetry (Semback, 2007). The style was a reaction against the academic art, historicism and eclecticism of the 19th century architecture and decoration (classical styles). Instead of classical orders, the decoration and stylized motifs often derived from nature's forms, such as the curves of flowers and plants. Meanwhile, the style also responded to leading theoreticians of the 19th century, such as the French architect and architectural theorist Eugène-Emmanuel Viollet-le-Duc (1814–1879) and British writer and art critic John Ruskin (1819–1900). In Britain, it was influenced by the Arts and Crafts movement and designer and writer William Morris (1834–1896). The Art Nouveau designers endeavoured to achieve the creation of a spiritually uplifting *Gesamtkunstwerk* (total work of art) that would unify the architecture of the exterior and interior in one common style (Gontar, 2006).

These 19th century theoreticians, who often disputed one another's ideas (Lain, 2011), are often mentioned, as was previously stated, in the literature about the Art Nouveau. But there is one name, of arguably the most important theoretician of this time, that is (yet) not seen within this discussion as either a reaction or a connection on the architecture of the Art Nouveau. This is the German architect and art theorist Gottfried Semper (1803–1879), who was responsible for many key writings, such as his theory on tectonics, and who

unlike Viollet-le-Duc and Ruskin did not appreciate Gothic architecture. Instead, Semper was interested in the technical arts of building and craftsmanship, to which he was later often criticised for neglecting technological innovation, such as steel and iron (Lain, 2011). Nonetheless, his works and writings influenced art theoreticians and architects for generations to come. This includes architects of the Art Nouveau movement.

That is why this history thesis will look into Semper, Berlage, van de Velde, Wagner and Kollhoff to answer the research question, which is as followed: *“What is the relationship between the (neo)classicism of Gottfried Semper and Hans Kollhoff and the premodern styles of Art Nouveau, Wiener Secession and Rationalism, in terms of tectonics?”* In order to answer this question, the first chapter will look into Semper and its theory on tectonics, which will be the reference point throughout this thesis. Thereafter, each chapter will be devoted to one of the Art Nouveau architects and includes some literature to find any theoretical or inspirational connection linked to Semper and an analysis of a case study consisting of one of their built buildings. Finally, before stating a conclusion, the final chapter will look into the modern architect Kollhoff to see if the development of Semper his theory corresponds accordingly to the output of the Art Nouveau architects.

By analysing the theory of tectonics, the mentioned examples of Art Nouveau architecture and a recent building that is built in a tectonic way, this thesis will try to find the influence of tectonics in the architecture of the Art Nouveau. The results will thus contribute to the historical discussion and theories of what influenced the Art Nouveau style and how tectonics was passed on

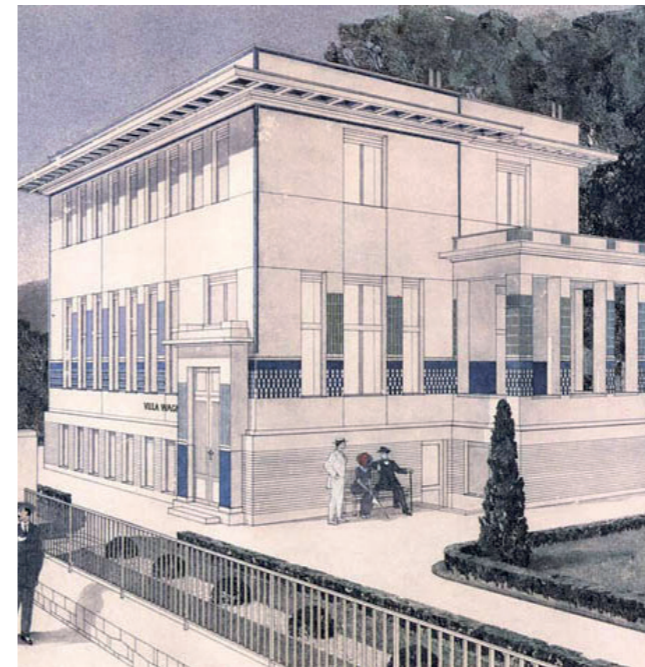
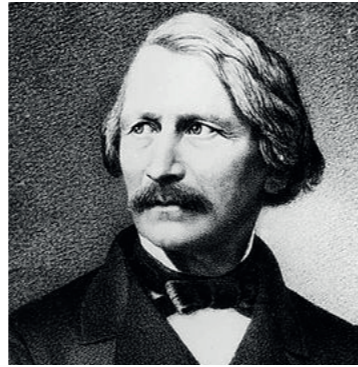


Figure 0.1 (opposite): Art Nouveau painting by Alfons Maria Mucha.
Figure 0.2 (top left): Berlagegebouw, The Hague, by Berlage.
Figure 0.3 (top right): Villa Bloemenwerf, Brussels, by Van de Velde.
Figure 0.4 (bottom left): Villa Wagner II, Vienna, by Wagner.
Figure 0.5 (bottom right): Walter-Benjamin-Platz, Berlin, by Kollhoff.

GOTTFRIED SEMPER

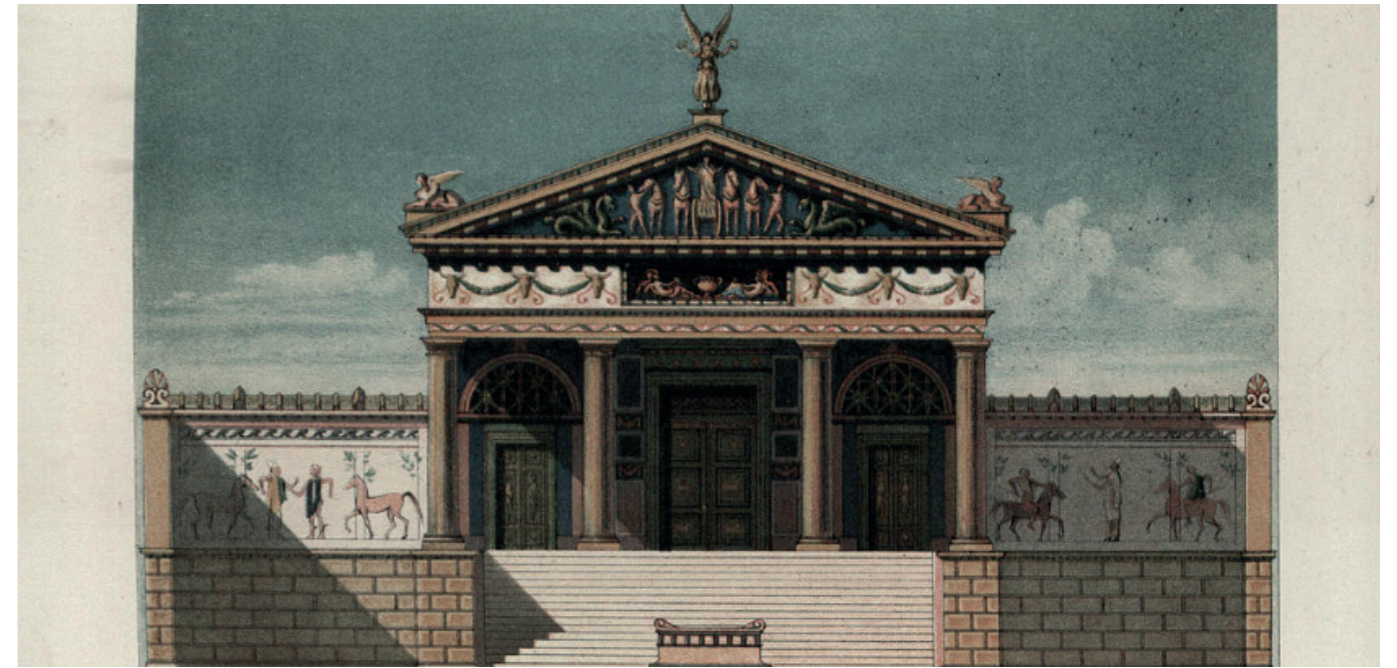


Until the eighteenth century, architecture consisted of a long tradition of architectural treatises, after which the ornamental façade of the building became a predominant focus, forming a new field of research on how architecture elevates and expresses its underlying functional and structural necessity. As will be explained in this chapter, the German tectonic discourse that emerged around the nineteenth century did not fundamentally change the way of interpreting architecture; the requirement that ornament expresses and elevates both structure and function. What had changed by 1800 was that the vast majority of architectural works no longer merely was attributable to Vitruvius his famous three central themes of (structural) strength, functionality and beauty, and the epistemological methods (see figure 1.2). Instead architecture became more based on aesthetic perception and historical development and less on mathematics or rhetoric (Hirt, 1809). The discourse on ruins that emerged in the second half of the eighteenth century, and later in the nineteenth century with the writings of German archeologist and architectural theorist Karl Bötticher (1806–1889) and Gottfried Semper, illustrates well how the new turn towards aesthetics and history profoundly changed the way on how architecture was evaluated (Schwarzer, 2016).

The German architect, urban planner and painter Karl Friedrich Schinkel (1781–1841) was, more or less, the starting point of the discourse on tectonics. He made a clear separation between forms of art and forms of construction; the former represents those derived from a historical language, and the latter represents forms derived from necessities and construction. A

system of historical ornaments that had to represent the constructive reality of another era, which is the present, is what Schinkel described as *Grundformen*. By bringing these new static forces together, the *Grundformen* would create a new representational and objective order for architecture (Wolf, 1996).¹ The term tectonics is first elaborated, as an extended and more precise theory of *Tektonik* based on the idea of *Grundformen*, by Schinkel his pupil, Bötticher in his book *Die Tektonik der Hellenen: The Tectonic of the Hellenes* (1852) and with Semper in his book *Die Vier Elemente der Baukunst: The Four Elements of Architecture* (1851) published in the same time period. The theory is later on further developed by Semper in his unfinished study *Der Stil in den Technischen und Tektonischen Künsten, oder Praktische Aesthetik: Style in the Technical and Tectonic Arts or Practical Aesthetic*, published in 1860 (Schwarzer, 2016).

Schinkel insisted that architecture must have a demanding and precise ornamental language to symbolize the underlying forces and actions, on which Bötticher agreed. Likewise, Bötticher aimed to exceed the German polarizing debate between the medieval and Greek method. His solution was to use the ornamental system of the Greek temple to represent the constructional actions of the present era, mainly consisting of stone and masonry vaults designed as an outgrowth of the experimental medieval constructions. Inspired by Kantian aesthetics, the tectonics of Bötticher sought to turn the architectural *Mannigfaltigkeit* (a building its complexity and variety of mechanical forces) into an *Einheit* (unity) through the methods of the liberal arts. Thus, architectural art, or rather ornaments, must refer to construction and



honesty and, additionally, merge the act of perception into an aesthetic engagement with the mechanical forces of nature and architecture (Schwarzer, 2016).²

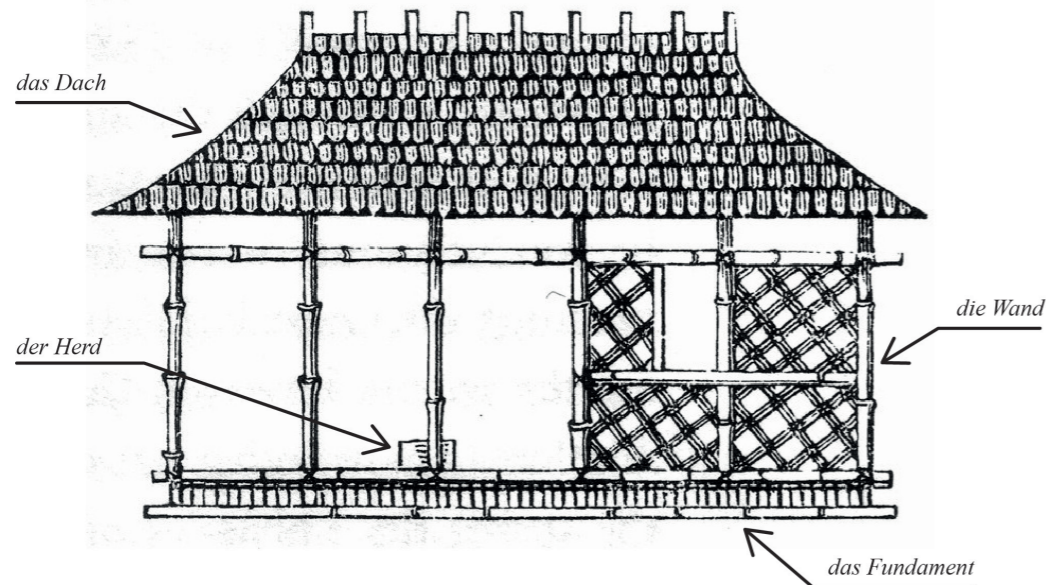
The discourse about tectonics from Schinkel and Bötticher would be continued by Semper. Semper expanded the focus on architectural concerns into a comprehensive and interrelated historical exposition. He did this by elaborating on the evolution of art and technological crafts, which included architecture as well, throughout civilizations. This theory was mentioned for the first time in the fifth chapter of his book *Die Vier Elemente der Baukunst* (1851), inspired by his visit to the Great Exhibition of 1851 in London. In the first part of this chapter, Semper develops his perception of aesthetics in architecture, from which he claimed that architecture derives its essential forms from the primordial, original, state of human society and its motifs found in the technical arts of ceramics. He describes, shown in figure 1.3, this as four basic elements: *der Herd* (the hearth), *das Dach* (the roof), *die Wand* (the enclosure; or wall) and *das Fundament* (the embankment; or foundation). So, according to Semper, art and architecture originated from handicrafts, from which they adopted their ideas. The second part of this chapter is about his theory of *Bekleidung* (dressing or cladding). This archaeological and spatial theme suggests that the textile wall motif underwent a complex process of formal development. According to Semper this is due to the fact that the conceptual principles of weaving evolved into textile wall hangings (see figure 1.5) and later into solid wall dressings (paint and panelling) that emulated their original textiles in style, but mainly in texture.

The theories developed in *Die Vier Elemente der Baukunst* would become the start of a very elaborated theory that Semper would ultimately devise and publish in his unfinished book *Der Stil in den Technischen und Tektonischen Künsten, oder Praktische Aesthetik* (1860). In *Der Stil*, Semper, like Bötticher, recognized ornaments as an essential artistic language that evolved out of material and practical matters. But unlike Bötticher, Semper was not of the opinion that architectural ornaments, and particularly those that are limited to ancient Greece, were meant to enliven and enlighten current building practices to the public. Instead, the purpose of sculptural or painterly ornaments within architecture, whose influence now exceeded beyond Greece and even Europe, was to symbolically refer back to primitive practices; those of craft traditions and former cultural periods (Schwarzer, 2016; Borngässer Klein et al., 2003).

As explained by Semper, covering and embellishing is a basic principle of the artistic expression of humans. Therefore, when form is meant as a remarkable symbol, embellishing is always necessary to achieve cultural and artistic expression. The symbolic form can be achieved by focussing on the structural qualities and the building itself, and by designing the building as a product of a superordinate idea which characterizes the specific epoch it is built in. This symbolic form is borne, not by the internal layout, but by the façade, as it is the skin of the building and it encloses space. Thus,

Figure 1.1 (opposite): Gottfried Semper (1803–1879).

Figure 1.2 (top): Semper his sketch of a Tuscan temple, according to the rules of Vitruvius.



the building gets its visible outwardly symbolic content through the veiling of the interior by the façade. The surface quality of the stone that was used, was of a particular importance for the overall effect of the building. Semper used the great architects of the Early Renaissance masters as an example for this case. He claims that making the masonry visible, offers a way of giving the several finishes a related symbolism, instead of using the traditional orders of columns, thus creating its own characteristic look to the building. Despite the fact that architects constantly meet changing needs, it is this symbolism, through ornaments, that the larger questions of humanity remain visually present. These ornaments mattered the most for him, as they conveyed higher aspirations and traditions. He noted that “even where solid walls are necessary, they remain only the inner and unseen support for the true and legitimate representation of the spatial idea, which is the more or less artfully woven and knitted textile wall”.³ He described this process as *Stoffwechsel*, a material transformation or metabolism (see figure 1.4 & 1.5). Whereas he saw tectonics, through a material and technological metamorphosis, as the reproduction of cultural memory. Remade in different materials and forms, in significations, patterns and its context, these mutating and evolving forms carry with them vestiges or remnants of their previous styles (Schwarzer, 2016; Borngässer Klein et al., 2003).

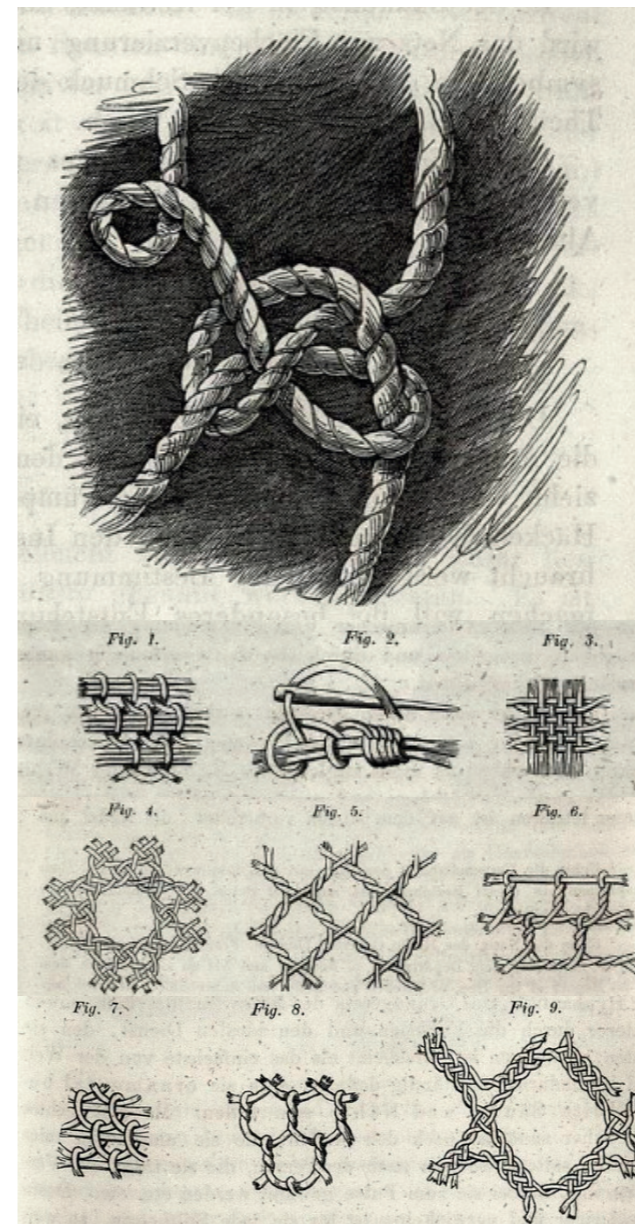
So, art, according to Semper, complements and enriches construction by expressing *Urformen* (primordial motifs). While construction responds to the functional of the present era, artistic ornaments speak of a longer, deeper human legacy. Thus, architecture encompasses both need and reflection, which gives us an impulse toward cosmic spiritual and ritual revival. In addition, according to Semper, the style of building is not just

expressed through technological aesthetics. It is just as important as the expression of a society that is formed by social conditions, religion and political circumstances. Semper refers again to the Renaissance architecture. This time as the basic idea behind the synthesis of two cultural elements. First is the opportunity for each individual to see themselves represented in a glorious and strong manner, and second is the principle of integrating an individual into a larger community. Due to this, Semper considered Renaissance architecture as an example of contemporary architecture (see figure 1.6). As the Renaissance liberated itself from its ties to the treatment of the three Classical orders of columns, through objectivity and freedom in the use of symbols, and discovered its own individual, characteristic form of expression. The principle of exchanging something typical for something characteristic should, according to Semper, be continued and perfected in contemporary architecture (Schwarzer, 2016; Borngässer Klein et al., 2003).⁴

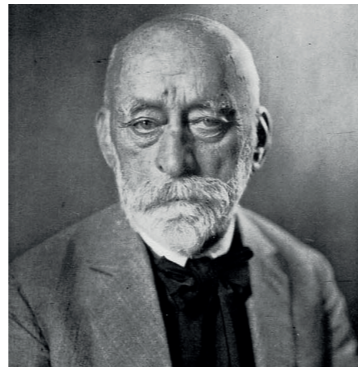
Notes

1. For a more comprehensive description and explanation on the theory of *Grundformen* as mentioned in Schinkel his 'Philosophical Notebooks' which contain his notes for an unpublished *Lehrbuch* (textbook) on tectonics. See K.F. Schinkel, *Das Architektonische Lehrbuch* (1979).
2. For a more comprehensive description and explanation on the theory of *Tektonik* as described by Bötticher, see Karl Bötticher *Die Tektonik der Hellenen* (1852).
3. An important sidenote here is that according to Semper, based on his theory of *Bekleidung*, the ultimate constituent of architecture is the joint.
4. For a more comprehensive description and explanation on the theory of *Tektonik* as described by Semper, see Gottfried Semper *Der Stil in den Technischen und Tektonischen Künsten, oder Praktische Aesthetik* (1860).

Figure 1.3 (top): The Four Elements of Architecture, according to Semper.
 Figure 1.4 (opposite left): Semper his sketches on knotting.
 Figure 1.5 (opposite right): Semper his sketches of woven ornamentations.
 Figure 1.6 (opposite bottom): Semperoper, Dresden, reconstructed in 1985.



HENDRIK PETRUS BERLAGE

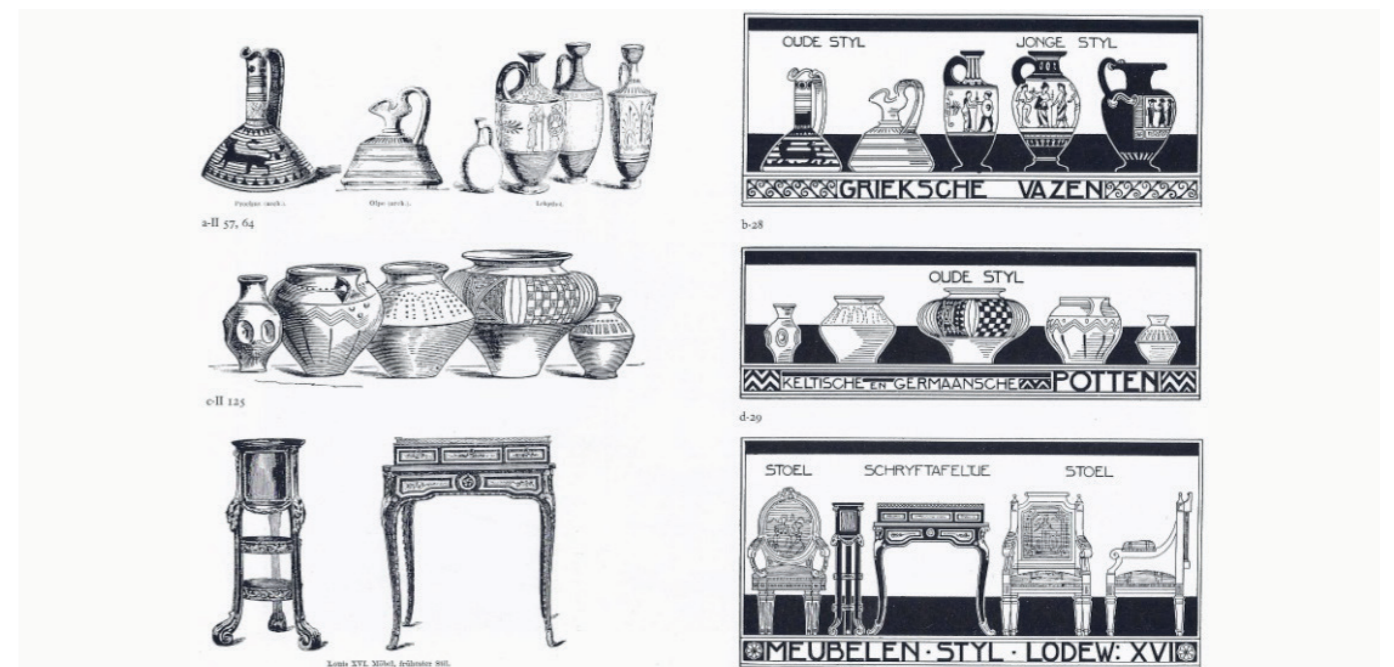


Historiographical sources, articles, publications and lectures of the Dutch architect and urban planner Hendrik Petrus Berlage (1856–1934) show that he was influenced by Gottfried Semper. Berlage regularly mentions Semper in his book *Beschouwingen over Stijl: Thoughts on Style* (1905-a; 1996), where he sometimes quotes him literally, and in his undated cahier he writes excerpts and notes about Semper his theories and practical aesthetics. In his work, it appears that Berlage was influenced by Semper on themes related to theories such as the relationship between construction and decoration, and the origins of architecture. Semper is mainly referred to in the earlier works of Berlage, later on he also starts to mention Eugène Viollet-le-Duc. But remarkably, in his later publications, Berlage continues to hold on to Semper his idea of aesthetic principles of ordering. The fact that Berlage has adopted some of the ideas from Semper is self-evident, considering his educational background¹, notes and literary works (Boekhout, 2014).

Like Semper, Berlage has the opinion that the convergence of arts, including the applied arts, is essential for architecture (Berlage, 1908). The tenet of style is the technical art. The purpose of the technical product remains the same, whilst the circumstances cause the product to change. From this principle his classification of the major arts into four different classes derived: *de textielkunst* (weaving), *de keramische kunst* (moulding), *de timmerkunst* (carpentry) and *de metselwerk* (masonry). Berlage follows Semper in this and directly borrows the illustrations from *Der Stil* (see figure 2.2).² Like Semper, he states in *Beschouwingen over Stijl* (1905-a; 1996) that building forms should be able to be reduced to an *Urform* (primordial motif).

Everything that does not go back to a natural state, the *Urformen*, must be rejected to eliminate a *Valse Schijn* (false appearance). Thereby, Berlage emphasizes that there can be no question of arbitrariness. Both Berlage and Semper thus strive for a unity of form, which creates calmness and is the main condition of style (Singelenberg, 1972). The symmetry and proportion determine the inner value of a building or object. In this way, its purpose will and must be legible. Based on this principle, Berlage criticizes Henry van de Velde. Berlage is of the opinion that the doubtless highly talented Van de Velde, with his Art Nouveau style, does not start from a good basis and therefore his style can be regarded as a failure. The playful lines that Van de Velde uses lead to an excessive imagination, instead of an honest, simple construction at its cleanest, and therefore to deformities (Boekhout, 2014).

In *Beschouwingen over Stijl* (1905-a; 1996), Berlage criticizes the bad taste of architecture at the end of the nineteenth century. Semper and Viollet-le-Duc were, according to Berlage, the first practical aestheticians to give the impetus to oppose this. As previously described in *Chapter 1*, Semper uses Renaissance architecture as an example for his theory in *Tektonik*. Berlage initially shares this preference, but in the last decade of the nineteenth century he gradually adopts some of the theories from Viollet le-Duc as well. Berlage then begins to consider Gothic architecture as the basis for modern architecture (Singelenberg, 1972). Architecture is, as stated by Berlage, the art of construction in which the decoration must be integrated with the internal construction. Later on, in his *Over de Waarschijnlijke Ontwikkeling der Architectuur: On the Likely Development of Architecture* (1905-b; 1996),



Berlage even criticizes Semper for his historicizing architecture. He finds it incomprehensible that the author of *Der Stil* has come to such an architectural inconsistency. Berlage confirms that a revival of the traditional styles is necessary in order to fight against the *Schijnarchitectuur* (kitsch architecture) and the *Constructieugens* (constructional lies), but emphasizes that Semper his historicism is in fact also a form of *Schijnarchitectuur* (Berlage, 1908). Instead, what Berlage aimed at was *Plechtige Statigheid* (solemn gravity), in which the architectural message would be translated by the constructional elements of the building (Berlage, 1905-a; 1996). He uses the most minimal architectural language to arouse the strongest emotional response. Taken from Semper his theory of *Bekleidung*, this relationship between frame and dressing is where he relates the skeleton to the outer skin; implicitly connecting the cladding theories of Semper to the rationalist frame of Viollet-le-Duc. In his next work *Over de Waarschijnlijke Ontwikkeling der Architectuur* (1905-b; 1996), he even takes it a step further by arguing that form and decoration must form an entity. This marked a significant redefinition for his conception on what the ultimate goal of architecture is. No longer did Berlage define style as the harmonious coexistence of various elements that give sensual gratification as a *Gesamtkunstwerk*. Instead, according to Berlage, the ultimate goal is redefined as the creation of neutral spaces contemplation and silence in which the human soul can commune with the transcendental spirit in the search for absolute knowledge. All of

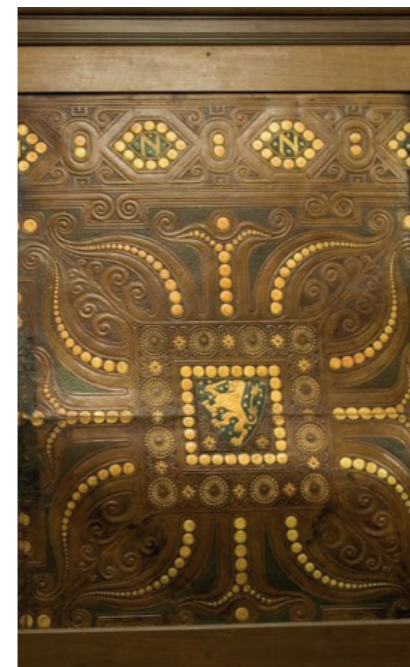
“I believe in a culture of the future, but not in its tectonic reflection without any decoration, for the simple reason that decoration is a natural human impulse.”

Berlage (1905-b)

this, while being undistracted by any decorations or particularity found in its architecture. This *Algemeene Stijl* (universal style), as he described it, was fundamental for the future development of architecture (Boekhout, 2014).

Although built in 1895, before the majority of his writings that are mentioned in this chapter, the Berlagegebouw (see figure 2.3 & 2.4) still represents the framework of his architecture well. The building used to be L-shaped and originally had two floors; between the plinth and attic, according to the building tradition of The Hague (see figure 2.3). Berlage adopted the *Nieuwe Stijl* (Art Nouveau) and modified it to his own taste. Since De Nederlanden van 1845 was experiencing tremendous growth, plans for an extension were already discussed around 1900. This expansion was completed in 1909 (see figure 2.4). Berlage, as discussed earlier, had already taken a different approach on architecture, so only the plinth of the façade retained its Art Nouveau features, like the arched windows. The façade became much more rectilinear and most of the variation in window shapes disappeared (Berlagegebouw, n.d. ; Den Haag Wiki, 2018).

Figure 2.1 (opposite): Hendrik Petrus Berlage (1856–1934).
Figure 2.2 (top): A comparison between the drawings of Semper (left) and Berlage (right), which Berlage used from *Der Stil*.



Berlage used clean brickwork in the design of the Berlagegebouw, both in the exterior and interior. The detailed masonry, the natural stone details, the decorations, the arched windows and the tower characterize the specific style of Berlage. Sixteen coats of arms, of the places which De Nederlanden van 1845 did business with, have been incorporated into the façade (see figure 2.8). Examples of these places are Antwerp, Chile, Havana, Norway, the East and West Indies and Paris. The sculptures were created by Lambertus Zijl, the regular sculptor of Berlage. The integrated sculptures of the façade include the Fire Devil, Woman with House, Death and Time, a horse (agriculture) and a cow (livestock) which represent the issues that could be insured. In the interior, the arms of the Dutch provinces, as well as those of Batavia, are incorporated in the stained glass windows of the meeting room (see figure 2.6). Coat of arms are also used as a decorative element in the staircase (Berlagegebouw, n.d. ; DenHaag.Wiki, 2018).

The design principles, used by Berlage, characterize both the Art Nouveau and Semper his theory on *Tektonik*. The Art Nouveau can, for example, be recognized in the stained glass and wall decoration due to its reference to natural elements (see figure 2.5 & 2.6), the arched windows and the *Gesamtkunstwerk*³. This latter shows a remarkable overlap between the design of Berlage and the theory of *Tektonik*. As through this principle it tries to create a relationship between the façade and the construction, or in Berlage his terms as *Plechtige Statigheid*. This effect is even stronger, as he created a relationship, a unity, with the exterior and interior in his use of materials (natural stone and brick) as well. And in addition, Berlage also decorates

the joins of the building, such as the entrances, corners, eaves and vertical pilasters with stone. Both of these design principles are in line with Semper his theory and Berlage his view on architecture, which was explained earlier. On the other hand, the use of arcs and how tectonics is implied refers rather to Gothic architecture, and Berlage did not design according to the Renaissance model of Semper, but rather in his own Rationalistic style.

Notes

1. Berlage studied from 1875-1878 at the Eidgenössische Polytechnicum in Zurich, nowadays the Eidgenössische Technische Hochschule Zurich (ETH). The ETH was strongly influenced by Semper who had directed the school from its foundation in 1855, up to 1871. During the period that Berlage studied here, the teachings were still in the Semperian tradition. Thus Semper his teachings about style and the spatial organization of buildings formed the basis for Berlage his vision on architecture. Both in his own architecture and theoretical writings (Russell, 1983).
2. In *Der Stil in den Technischen und Tektonischen Künsten, oder Praktische Aesthetik* (1860), Semper conceived four essential categories of making artefacts: *weaving* (producing textiles and patterns); *moulding* (creating pottery from clay); *carpentry* (providing essential structures of timber, especially walls, partitions, and roofs); and *masonry* (involving building with stone for hearth, walls, piers, etc.).
3. As mentioned in the *Introduction: Art Nouveau designers endeavoured to achieve the creation of a spiritually uplifting Gesamtkunstwerk* (total work of art) that would unify the architecture of the exterior and interior in one common style.

Figure 2.3 (top left): Archive image of the Berlagegebouw, before 1900.
 Figure 2.4 (top right): Archive image of the Berlagegebouw, after 1908.
 Figure 2.5 (opposite left): An Art Nouveau detail in the carpentry of the meeting room.
 Figure 2.6 (opposite center): Stained glass in the meeting room.
 Figure 2.7 (opposite right): The coat of arms in the staircase.
 Figure 2.8 (opposite bottom): A fragment of the façade.



HENRY VAN DE VELDE



In contrast with H.P. Berlage, Gottfried Semper is sporadically mentioned by the Belgian self-made architect and originally art painter Henry van de Velde (1863–1957, also see figure 3.1) in the majority of his publications. In his book *Leerstellingen, Op zoek naar een bestendige Schoonheid: Doctrines, Looking for a lasting Beauty* (1944) he only mentions John Ruskin and William Morris as the forefathers of modern architecture. This is in line with other publications, in which he mainly mentions John Ruskin and William Morris as important inspirers (Boekhout, 2014). In La Cambre, where Van de Velde his archive is located, is a number of Semper his publications with notes made by Van de Velde (Boekhout, 2014). The archive also includes a number of lectures that Van de Velde gave under the title *Les Précurseurs: The Precursors* (1932). In this collection the theories of Semper, among other subjects, are discussed by Van de Velde. In addition to Ruskin and Morris, Van de Velde now also mentions Semper and Eugène Viollet-le-Duc as pioneers who form the basis of modern architecture. Van de Velde writes, for example, that Semper was well aware of the crisis in the architecture of the mid-nineteenth century and that architecture and the arts and crafts can only be saved by a return of style (Boekhout, 2014). Van de Velde also wonders to what extent Semper his thoughts have had an influence on the Arts and Crafts Movement and their vision on style and the industrial arts. This was due to the fact that Semper lived in England from 1851 to 1855, and it was here that he laid the foundation for his aesthetic ordering principle (Singelenberg, 1972). According to Van de Velde this was during the time that the Arts and Crafts Movement, around 1850 and led by Ruskin and Morris, was still in full development. Van de Velde therefore speculated whether Semper, in the

middle of the nineteenth century, did not play a larger role in innovative ideas about architecture and the arts and crafts than he has hitherto thought. But that Van de Velde has adopted some of the ideas from Semper seems evident (Boekhout, 2014).

In *Le Précurseurs* (1932), Van de Velde believes that Semper his theory on style can be ranked among the great precursors of modern architecture and positions him alongside Viollet-le-Duc as one of the founders of rational architecture (Boekhout, 2014). Nevertheless, Van de Velde seems to be critical. He emphasizes that Semper sticks too much to traditional styles. According to Semper, a new style will only be possible if a historical event occurs. Van de Velde disagrees with this and believes that Semper ignores the new era with new materials. According to Van de Velde, Ruskin and Morris do this too rigidly as well. So instead he prefers the freer rational concept of Viollet-le-Duc (Van de Velde, 1932). Thus Van de Velde has a preference for Gothic architecture. According to Van de Velde, the Gothic architecture freed itself from the historical styles and the ancient tradition. With this he considers the Gothic as an impetus for a new style. From here a new form of art emerges goes back to the essential forms, free from any prior style. With this in mind, Van de Velde took Gothic architecture as the starting point for his own architecture (Boekhout, 2014).

Van de Velde does praise Semper for his genetic theory about the origin of all architectural forms and ornamental motifs in his book *Les Précurseurs* (1932). According to Van de Velde, Semper brings the attention back to the originated rational principle of all architectural elements. Van de Velde mentions that Semper harks

back to the original form of architecture in order to create good architecture. From this developed *Vorm-typen*¹ (Form-types), as Van de Velde calls them, which form the basis for new types. However, Van de Velde believes that these old forms should adjust to the new needs of their current era. The old forms must be able to be transformed freely and in absolute independence. Van de Velde calls this going back to the *Urform* the *Idee-type* (Idea-type). The original form is adapted to the purpose that is expected of it. This adaptation of the form gives us the aesthetic satisfaction (Van de Velde, 1932). Purity of form is thus realized by sticking to the form of the *Idee-type* (Boekhout, 2014).

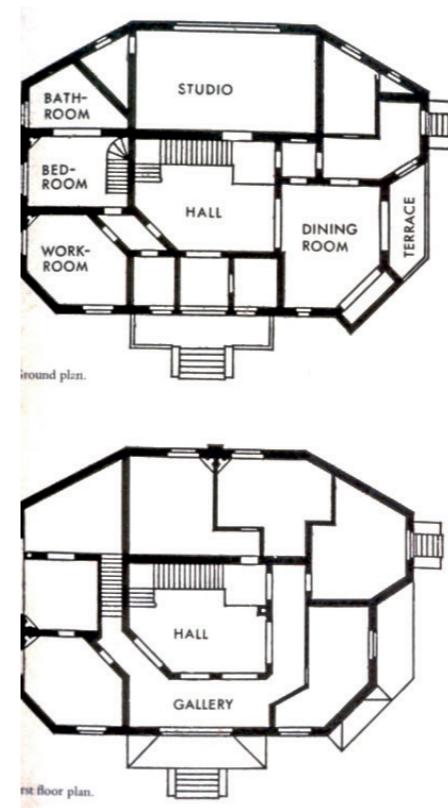
Van de Velde his ideas about the relationship between construction and decoration are not based on Semper.² Nevertheless, Van de Velde, like Semper, does believe that form and decoration are inextricably linked (Hammacher, 1967). The form determines the decoration. In *Les Précurseurs* (1932), Van de Velde criticizes that, in contemporary buildings, the origin of the construction is difficult to identify due to the parasitic ornament. Instead, he believes that the abstraction and stylization of the ornament create a sensorial impression. This reveals a form of communication that can give emotional and aesthetical satisfaction. This is an arbitrary process, according to Van de Velde. The correct answer for this is the curved line that determines the force and the energy. He further explains that the style must be developed on the basis of the *Idee-type*. He believes that all forms that have been developed over the centuries must be rejected. Only then the elements that have retained the original purity will remain. These can only, as claimed by Van de Velde, be expressed by the line. Additionally, he

mentions the properties of the line that can do anything: lift, fold under the weight, widen with the masses of materials, rise, or resist. This is different from Semper, who believes it is a process of weaving. However, Van de Velde, like Semper, does believe that the ornament must be functional and must therefore be integrated into the object (Hüter, 1967; Boekhout, 2014).

Villa Bloemenwerf (see figure 3.3) is Van de Velde his first architectural design. A part of the villa was designed in collaboration with his wife Maria Sèthe. The villa is situated on a large, sloping and forested site, built in an era when Uccle was still a rural area (Inside Art Nouveau, n.d.). The garden was designed by Sèthe, whose flowers create a *Gesamtkunstwerk* with the wallpaper of the interior (see figure 3.6 & 3.7). This wallpaper was designed together with Van de Velde. He also designed the furniture, which was mainly integrated into the architecture, as a *Gesamtkunstwerk* with the façade (Erfgoed Brussel, 2018). For the design, Van de Velde wanted a functional; hence why the furniture was integrated, and rational house. In order to achieve this, he took his inspiration for his design from the English Cottage House, a traditional English architectural style (Erfgoed Brussel, 2018). In addition, all living spaces are designed around a central hall with a light shaft (see figure 3.4 & 3.5).

The façade consists of three, covered with wooden planks, gable ends with broken corners. These gable

Figure 3.1 (opposite): Henry van de Velde (1863–1957).
Figure 3.2 (top): Collage of Henry van de Velde his work as a designer; painter, cabinetmaker, architect and interior designer.



ends give the shape of the roof a playful line, which is what Van de Velde wrote so prominently about in *Les Précurseurs* (1932) is therefore clearly reflected into this design. Besides the playful line of the roof, there is little to none ornamentation in the design. The windows have wooden exterior shutters and the main entrance has a large canopy covered in slates. The rest of the façade is plastered, which gives the whole a monolithic appearance. The oblique angles emphasize both the verticality of the façade and the enclosing of the underlying construction. The ornamentation and finishing have thus been applied in a tectonic and functional manner.

With the design of Villa Bloemenwerf, Van de Velde seems somewhat in contradiction with his own critique of Semper. He uses the English Cottage House, translated into his own idea, as the starting point for his design. This Anglo-Saxon and regionalist interpretation which Van de Velde gave to the villa is neither Gothic nor a new style. Nevertheless, there are some Art Nouveau features in the design, such as the playful line of the roof, which were the first features of a new architectural style back then. However, it was designed in a traditional way, and that is what Semper his theory, apart from the Renaissance model, tried to imply. Nonetheless, Van de Velde would later on design rather in a more Rationalist and in the end Modernistic way. So, he would eventually renounce this traditional principle. But for this specific case study there is indeed a strong resemblance with the tectonic ideas of Semper.

Notes

1. Van de Velde bases his *Vorm-typen* on Semper his *Die vier Elemente der Baukunst* (1851).
2. As mentioned earlier, Van de Velde wondered to what extent Morris and Ruskin had been influenced by Semper. Unfortunately, he was unable to continue his study on this matter. It is therefore unclear to what extent this architectural attitude of Van de Velde does injustice to the work of Semper. The relationship between Semper and Ruskin and Morris, and vice versa, has never been, to the best of my own knowledge and in this thesis, further investigated. That is why the issue on who actually inspired Van de Velde, whether indirectly or not, is still up for debate.
3. As mentioned in *Chapter 2: Berlage*, Van de Velde believing that this process is arbitrary was criticized by Berlage, as there can be no question of arbitrariness.

Figure 3.3 (top): Villa Bloemenwerf.

Figure 3.4 (opposite top left): Floor plans.

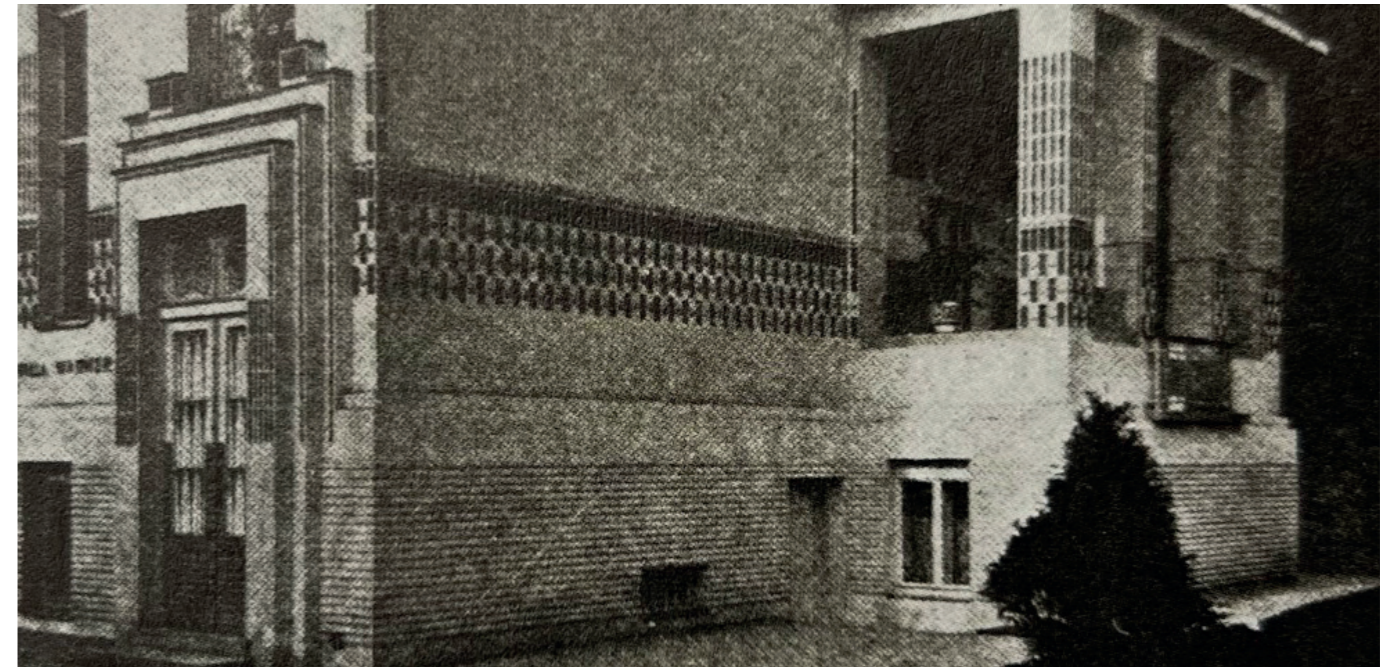
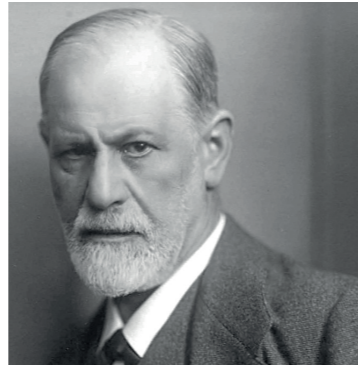
Figure 3.5 (opposite top right): The light shaft of the central hall.

Figure 3.6 (opposite bottom left): Archive image of the dining room, with on the background a flower wallpaper designed by Van de Velde and Sèthe.

Figure 3.7 (opposite bottom right): The *Dahlia* wallpaper of the vestibule designed by Van de Velde and Sèthe.



4 OTTO WAGNER



The Austrian architect and urban planner Otto Wagner (1841–1918), like Gottfried Semper and H.P. Berlage, did believe in the importance of dressing and embellishing in architecture. However, his perspective on the theories of Semper shifts while he develops his own theoretical framework (Mallgrave, 1988). This comes forward, as several authors have analysed the differences between the four editions of his most important book *Moderne Architektur: Modern Architecture* (1896–1914), which allows us to better understand how Wagner changed his thoughts (Mallgrave, 1988). In the first edition of *Moderne Architektur* there are some positive references to Semper, for example on how, despite of the enormous amount of study material that an architect needs to absorb, the Semperian relation in most cases prevails. Nonetheless, this paragraph would be deleted in the 1914 edition, while at the same time Wagner adds two new chapters. One on promoting art and another on criticizing art. In the latter, Wagner criticizes the Vienna National Theatre, designed by Semper. Also, as Mallgrave (1988) states, in the 1898 edition Wagner deletes the adjective from the phrase ‘Semper his immortal design’ from its previous 1896 edition. This omission of both the adjective ‘immortal’ in reference to the design of Semper and the statement on prevailing of the Semperian relation evidences the increasing distancing from Wagner towards Semper. Wagner eventually acknowledges the relevance of Semper, as he has paved the way for new generations. However he criticizes Semper his inability to place his theoretical project in practice (Quintela, 2020).

The fourth chapter of *Die Baukunst unserer Zeit: The Architecture of our Time* (the 1914 edition of *Moderne Architektur*), a chapter many see as the core point of his theoretical work (Mallgrave, 1988), is about construction. Wagner acknowledges, like Semper, that dressing or ornamentation is important, as its purpose is to manifest the form. But, his argument regarding the position of dressing is different from Semper. Instead, Wagner follows Karl Bötticher his notion of the *Kernform* (core-form) and *Kunstform* (art-form)¹ (Suherman, 1995). Like Bötticher, he argues that architecture begins with the structure or *Kernform*, which is established out of necessity and its role is strictly functional. Then this *Kernform* is dressed and embellished into a *Kunstform*. Thus, he perceives structure to be the basis for dressing, as the dressing represents and gives meaning to the structure. These arguments are significant and worthy of consideration. However, Semper his theories of dressing are even more valuable, since they explain a deeper meaning of dressing, being not simply a decorative layer that clothes the structure (Suherman, 1995). Semper (1860) perceived dressing as a basic element and necessity in architecture. In his view, instead of giving the structure a symbolic representation, the dressing bears the true meaning of the wall. Hereby Semper relates dressing to the wall, so its role turns into creating the form, not simply representing the form. Wagner goes on to criticise this romantic idealism of Semper that dressing precedes structure and argues that construction always precedes. No *Kunstform* can arise without it, and the purpose of art, which is to idealize the existing, is impossible without the existence of

“Artis Sola Domina Necessitas.”
“Art has only one mistress, necessity.”

Wagner (1902)



Figure 4.1 (opposite): Otto Wagner (1841–1918).
 Figure 4.2 (top): Fragment of the ornamentations and relief of the façade.
 Figure 4.3 (bottom): Façade of the Villa Wagner II.



the object. According to Wagner, the architect always has to develop the *Kunstform* out of the construction. Dressing or ornamentation, according to Wagner, is a direct emanation of the construction, rather than being separated from the structural material beneath, like Semper argued (Suherman, 1995; Quintela, 2020).

Villa Wagner II, completed in 1912, is the second villa of Wagner in Vienna, designed by himself for himself. In contrast to his first villa, with historicising elements, his second villa is in the style of the Wiener Secession (Boertien, 2014). The façade features a dense arrangement of small and tall windows, emphasized by straight lines and relief (see figure 4.2 & 4.3). Above the door of the main entrance is a stained glass scene inspired by Greek mythology, designed by Kolo Moser (see figure 4.4). The sleek geometric building has a stately appearance due to the refined proportions and subtle decorations. The blue horizontal strip emphasizes one of the floors. The construction is made of reinforced concrete (Kunstkenntnis, n.d.) and is emphasized by the blue ornaments at the balcony (see figure 4.5). The roof is flat and the overhanging eaves function as sunblinds for the façades.

At the time, many of Wagner his other works were popular. For example, the construction of, his arguably most famous building, the Austrian Postal Savings Bank, was completed in the same year of his second villa. In addition, Wagner intended the villa to be the main residence of his second wife after his death. Sadly, she passed away before him, and he sold the villa already in 1916. Thus the design, with a revolutionary construction in a late-Secessionist style with cubic elements, and building of this villa passed in silence. This, unfortunately, did not lead to an abundance of

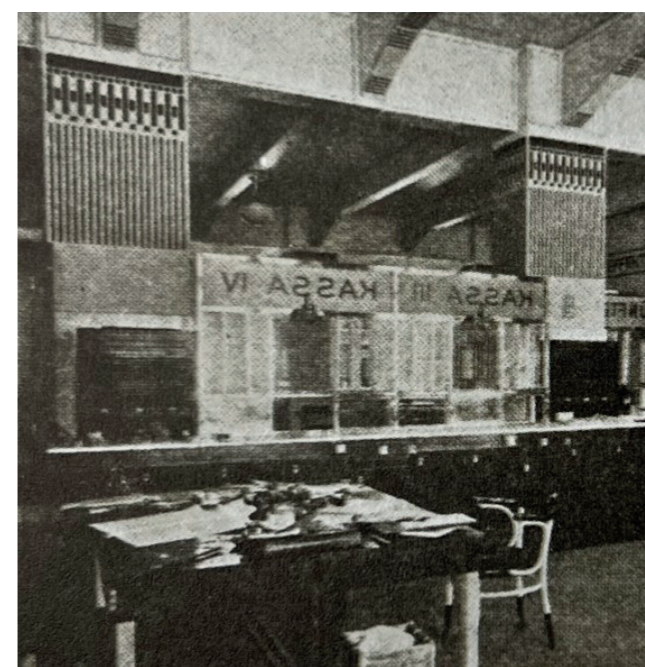
information for later generations. Due to this lack of information, there are no sources of the interior. Yet, the research of Boertien et al. (2014) does indicate that some interior elements the Austrian Postal Savings Bank (see figure 4.6 & 4.7), in Vienna, has similarities with the villa. This would mean that, if this were to be true, the façade forms a *Gesamtkunstwerk* with the interior as they both emphasize the joints with a blue tiled ornamentation.

The design of Villa Wagner II shows indeed that construction had increasing importance to Wagner. This has resulted into a sleek and geometric design with minimal ornamentation. It is debatable whether Wagner is correct that the ornamentation and covering are an emanation of the construction. Or that, as Semper claims, it is an architectural element that gives true meaning to the construction. Nonetheless, the ornamentation has been applied in a tectonic manner by reflecting and emphasizing the structure, such as the concrete floor and columns. Thus, the Villa Wagner II of Wagner, is influenced by Semper his theory of textile dressing, as the construction is enveloped in a tile dressing with delicate embroidery patterns.

Notes

1. Bötticher suggested two elements of *Tektonik*, the *Kernform* (core-form) and the *Kunstform* (art-form), as the essential issues of tectonics. For a more comprehensive description and explanation on the theory of *Tektonik* as described by Bötticher, see Karl Bötticher *Die Tektonik der Hellenen* (1852).

Figure 4.4 (top): Stained glass scene above the main entrance.
 Figure 4.5 (opposite top): Decorated reinforced concrete balcony.
 Figure 4.6 (opposite left): Interior of the Austrian Postal Savings Bank.
 Figure 4.7 (opposite right): Interior of the Austrian Postal Savings Bank.



5 HANS KOLLOFF

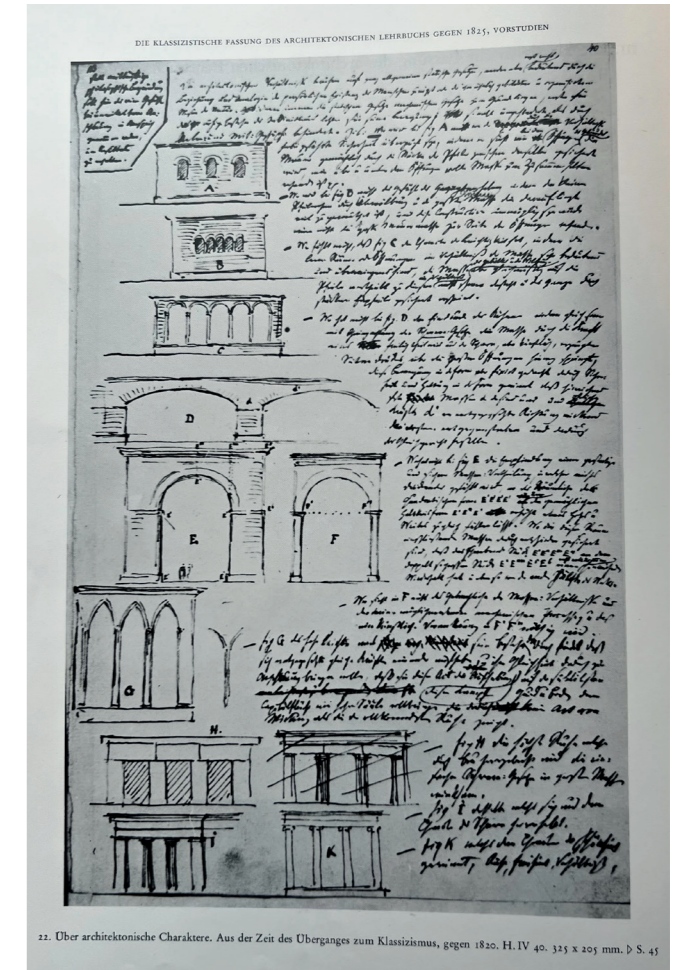
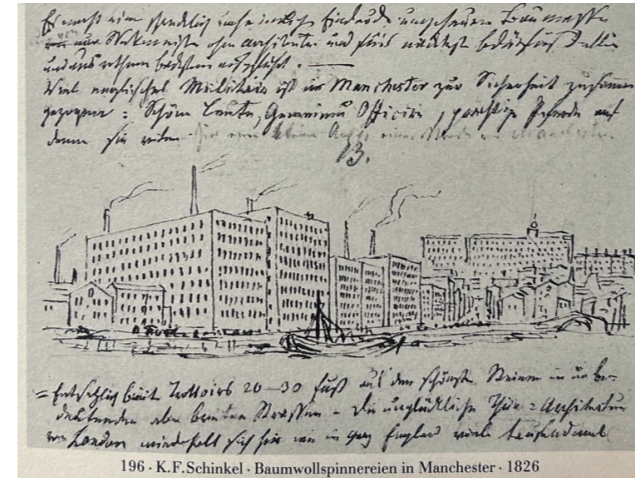


Between the previous chapter, about Otto Wagner, and the German architect and professor Hans Kollhoff (born in 1946) is a gap of almost a century. A relatively short period of time in which a lot has happened. With the rise of modernism, mainly after the Second World War, and due to contemporary technological developments, building according to classical and traditional methods, especially with the use of ornamentation, almost disappeared. Kollhoff writes many critical essays about this change, such as *Der Mythos der Konstruktion und das Architektonische: The Myth of Construction and Architecture* (1993), *Architecture Today* (2009) and *Architektur: Schein und Wirklichkeit: Architecture: Appearance and Reality* (2014). In particular with a view on *Tektonik*. Thus, he criticizes post-war and contemporary architecture¹ and attempts to revive the built environment which builds according to a tectonic logic with a traditional² development.

Kollhoff blames modern architects for changing architecture into a reality that can only be understood by specialists and that it is no longer part of everyday experiences, of habits and the ordinary. He resents the fact that the Modernists chose total abstraction over physical sensibility and that the contemporary world of computer architecture has embraced the machine aesthetics. With the dismissal of ornamentation, there is nothing left for humans to give themselves emotional access. Instead, everything bounces off the created abstract volumes. And it is precisely this emotional access that humans long for, something that the sensations of their body can empathize with, in an environment that they can understand. The modern dictum of constructive honesty has been exaggerated

and perverted in such a reduction. The architecture of dressing, which has been the subject of the architectural theoretical discourse since Gottfried Semper, has thus become a shocking reality. However, this turned into a profession of decoration, whereas the monolithic wall, which fulfilled all functions; translation of forces, insulation, water repelling, changed into a layered wall consisting of a sum of components that individually fulfil their functions (Kollhoff, 1993).

Semper defines in *Der Stil* (1860) the term *Tektonik* as the art of joining rigid, rod-shaped parts into an in itself immovable whole. According to Kollhoff, this meant the doctrine of the internal construction as a form of art. In the term *Tektonik*, therefore, the at first sight opposing pairs of appearance and construction, art and technology, are united. A building its construction is thus not something that can simply be separated from the tasks of an architect, so not as something that is separate from an artistic mastery of building (Kollhoff, 1993). Therefore, according to Kollhoff, the *Tektonik* logic of Semper starts with the fabric and with the ambiguity between ornament and fabric; between how it is made, how it is constructed and how it appears to us. This ambiguity is the significance of the term *Tektonik*. So, within the term *Tektonik* one does not look anymore at whether it is functional or artistic, because both of these worlds; how it is made and how it is appears, are united in the term of *Tektonik* (Kollhoff, 2019). Clarified by Semper, in the layered construction of Ancient architecture a distinction can be made between the load-bearing and the space-separating function of walls. Carpets formed the visible walls, and the thick stone walls were only necessary for secondary functions such as granting strength,



durability and robustness. The term of wall needs a bit more explaining here, as according to Semper, there is a word in German that indicates the visible part that encloses space, namely *die Wand* (the wall). A word that has the same root and almost the same meaning is *das Gewand* (the robe), which denotes a woven fabric. Also, the constructive part of the space enclosure is called *die Mauer* (the wall).³ Thus the dressing is, just as the skin is the dressing part of the human body, removed from any arbitrariness. The skin has a delicate relationship with the construction. It is not shown completely, but it is not hidden either. It shows through, literally and figuratively. The goal is to remind of the construction, not to visualize it. In other words, according to Kollhoff, the essence of architecture lies for Semper in the appearance. In his critique on the construction logic of Gothic architecture, Semper infers not only a right of construction, but also a right of the perceiving eye that follows autonomous aesthetic laws and searches for a sensorially perceptible mediation of a constructive situation through form. In addition, Wagner may have been the first to introduce Semper his

theory of dressing to the modern movement. Whereas a banal constructive fact is converted into an illustrative image (Kollhoff, 1993). Thereby it is important that you should be able to see the parcellation and the individualisation of the façades. Within a certain set of rules there is always a base and a certain movement of the roofline. There might even be wintergardens sticking out, or loggias pushed in, which reveals the function of its building. With this *Tektonik* principle of showing how the building is made, a physiognomy of the façade and individualisation; making them authentic, of the buildings will be created (Kollhoff, 2019).

According to Kollhoff, Semper believed that architecture is ultimately about the functioning of masses (Kollhoff, 1993). This principle leads back to K.F. Schinkel his *Lehrbuch* (1825), who went back to the architectural abstract form of a crude block volume (see figure 5.2). At the same time Schinkel also developed and sketched his architectural theory that is completely different from the Renaissance tractate. In this theory, he does not want to tell someone how thick and high the columns should be. Instead he asks the common man whether he would think that, based on his sketches (see figure 5.3), it is rather heavy or

Figure 5.1 (opposite): Hans Kollhoff (1946–Present).
 Figure 5.2 (left): Sketches of Schinkel his journey in England.
 Figure 5.3 (right): Sketches of Schinkel his *Lehrbuch*.

too filigree. Thus, he gave the authority of judging architecture to the common man (Kollhoff, 2019). This concerns a part of the tectonic doctrine. In order to achieve results, instead of philosophical explanations, when you look at the object, the feeling must be taken into consideration. Architectural relations are based on general static laws, but only become meaningful if they express the individual existence of humans. Here, the static and mechanical laws always form the origin; the first for man at rest, the second for man in motion. These are all characteristics that we can relate to our own body and that can arouse feelings of discomfort or pleasure. For this reason, according to Kollhoff, buildings should be articulated wholes and not abstract art objects (Kollhoff, 1993; 2014).

Additionally, Kollhoff believes that you always have to compare with the history. It is impossible to invent the most beautiful thing ever, without reflecting on architecture of the past, which might have much better things to offer (Kollhoff, 2019). For example, for half a millennium the Ancient architecture had been in ruins before early Renaissance architects discovered an exciting new world of architecture in them. Then they built them all over European and American cities, for centuries, under constant refinement (Kollhoff, 2014). Thus for Kollhoff it is about making good things better, as a quest for perfection.

Kollhoff his design for the Walter-Benjamin-Platz resembles his theoretical framework quite well. The *Tektonik* relief of the façade can be seen as an interpretation of the Renaissance painter and architect Leon Battista Alberti (1404–1472) his architectural theory which states that architecture is about walls. Kollhoff explains in his lectures (2017; 2019) that Alberti interpreted that on the inside of the wall, there is the column as the most beautiful and most important ornament of architecture. So, he interpreted the relief as a sort of projection of the column, which is behind and pushes a bit out of the wall (see figure 5.5). The vertical pilaster strips of the façade resemble the constructional system which lays behind it and the thin horizontal lines emphasize the floors of the building (see figure 5.4). Thus giving it proportions and a human scale to which the human eye can relate to. This rational articulation of profiles, which consists of an interplay of curves and edges, reveal a stimulus of plasticity to the sensitive eye. Additionally, the resembling of the construction can also be seen in the interior design, as a *Gesamtkunstwerk* (see figure 5.6). The walls, openings and floors are embellished in such a manner that they relate to the constructive system. For Kollhoff this is important, as it should be designed as a whole according to the same *Tektonik* logic (Kollhoff, 2017).

Another interesting point in this project is the layout of the columns of the colonnade, that resulted into widening the square, which became too small. Instead of making them edged, like on the façades of the street, Kollhoff decided to make them round (see figure 5.7). In this way they would fit the proportions which the colonnade demanded (Kollhoff, 2017). However, what is interesting, is the fact that the round columns are clad in a Wagnerian way. As it is clad in a seamless stone, it almost appears to be made of another material. This, whilst the construction of the seven meter high columns are made of reinforced concrete, in order to suffice its constructional needs.

So, indeed his theoretical framework is well-resembled. He applied the theory of dressing of both Semper and Wagner, as the façade has a delicate relationship with the underlying construction and the columns of the square are clad in stone. He also goes back to the Renaissance architecture to apply the theory of Alberti, as he projects the columns on the façade and in the decorated columns of the colonnade. At the same time, it shows clearly how the theory of Semper was passed on to contemporary architecture. As a project built a century later than the buildings of the other case studies, the Walter-Benjamin-Platz somehow provides an evaluation on the work of Berlage, Van de Velde and Wagner. It gives sense on how Semper his theory developed and would be interpreted differently by other architects. Nonetheless, Kollhoff tries to stay as close as possible to Semper, whilst also using the theoretical framework of other architects to create specific solutions, striving for perfection.

Notes

1. It is here fair to say that Kollhoff does add some nuance to his criticism. He also speaks in a positive manner about *Tektonik* in modern architecture, such as Mies van der Rohe his design for the Barcelona pavilion (Kollhoff, 1993).
2. The term Traditionalism is not to be confused with Classicism. According to Kollhoff, it is about making good things better; advancing. In the search for perfection, he not only adapts styles, he continues the long tradition of gradual refinements (<https://www.hochparterre.ch/nachrichten/architektur/blog/post/detail/kollhoff-ich-bin-kein-klassizist/1322832112/>). That is why I use the term traditionalism, since Kollhoff his approach is essentially a form of traditionalism; a continuity and improvement of the foregoing.
3. Notice that here *die Wand* and *die Mauer* both translate to the wall, thus giving it a double-meaning in English. Nonetheless, Semper is very precise in his work when it comes to using these terms, thus differentiating between the constructive and decorating part.

Figure 5.4 (opposite top): Walter-Benjamin-Platz by Kollhoff.
 Figure 5.5 (opposite top left): Palazzo Rucellai by Alberti.
 Figure 5.6 (opposite bottom left): Interior design of the Walter-Benjamin-Platz by Kollhoff.
 Figure 5.7 (opposite right): Columns of the colonnade.



CONCLUSION

The influence of K.F. Schinkel and Karl Bötticher on Gottfried Semper led him to creating his theory of *Tektonik*. This theory can be divided into two parts. One that traces architecture back to its origins and the other is about the cladding of the structure as a process of weaving. Semper considered *Tektonik*, through a material and technological metamorphosis, as the production of cultural memory. Thus, through symbolism and ornaments, the larger questions of humanity would stay visually present. In both the theoretical framework and case studies of H.P. Berlage and Henry van de Velde they tend to agree with most of Semper his theories. They both agree on the origins, or *Grundformen*, of architecture, but they take a somewhat different approach in terms of the relationship between dressing and construction, as they are also influenced by Eugène Viollet-le-Duc and the Gothic architecture. Berlage opts to create a *Plechtige Statigheid*, an architectural message which would be translated by the constructional elements of the building. Van de Velde, like Semper although not based on him, does believe that form and decoration are inextricably linked, but that the form should determine the decoration. Otto Wagner agrees with Semper in his early years, but shifts his opinion towards the theory of Bötticher. In contrast with Semper, he argues that the construction always precedes the dressing. The *Kunstform*, derived from Bötticher his theory, always has to develop out of the construction. In comparison to his predecessors, Hans Kollhoff stays the closest to Semper his theory, as he often literally cites him. Nonetheless, he is not hesitant in applying the theoretical framework of others, such as Wagner. As long as it fits the idea of the *Tektonik* logic, whilst learning and trying to perfection the past. These findings have led to answering the research

question: “What is the relationship between the (neo) classicism of Gottfried Semper and Hans Kollhoff and the premodern styles of Art Nouveau, Wiener Secession and Rationalism, in terms of tectonics?”

The literature and case studies used in this thesis have shown that Semper his theory on *Tektonik* influenced the work of Berlage, Van de Velde, Wagner and Kollhoff (see figure 6.1). Sometimes this was due to a direct influence or citation of Semper, or through a reaction to his theory. It thus shows that, despite little recognition for it, Semper influenced the fundamentals of the various architectural styles, such as the Art Nouveau, Wiener Secession and Rationalism. It is of course difficult to measure the precise influence, but it is for sure that for Berlage, Van de Velde and Kollhoff, this had a direct influence on their architectural works. In addition, Berlage and Van de Velde were also influenced by Viollet-le-Duc and they combined his theory with that of Semper. Kollhoff adheres the most to Semper his theory, but also combines it with other theories within a *Tektonik* logic. Wagner, on the contrary, was initially influenced by Semper, but over time deviated from his principle and continued his work on Bötticher his theory. Besides the theoretical framework of the architects, the influence of Semper is best reflected in their work, the case studies. In all designs this has led to a form of Rationalism in their architecture. Semper his theory of dressing is used to create a rational combination of abstraction and ornamentation, in which the underlying construction is articulated in both the façade architecture and as a *Gesamtkunstwerk* in the interior. With this, Semper has not only left a footprint in the architecture of the Art Nouveau, but also one that can still be found in contemporary architecture, especially Kollhoff, and the discourse on architecture and tectonics.

An interesting continuation of this research could be a broader exploration and comparison within the Art Nouveau and its various movements. This is due to the fact that this thesis mainly focused on the geometric and rational side of Art Nouveau, and less on its organic architecture. Especially since Semper rejected new materials, such as iron, which was nevertheless used by Art Nouveau grand masters, such as the Belgian architect Victor Horta (1861-1947). With the results of this thesis, it seems rather that Semper had an influence on both Rationalism and Traditionalism, thus on the rational side of the Art Nouveau architecture. It may also be interesting for future research to fill the theoretical gap of this thesis, found in the period between Semper and Berlage, and Wagner and Kollhoff.

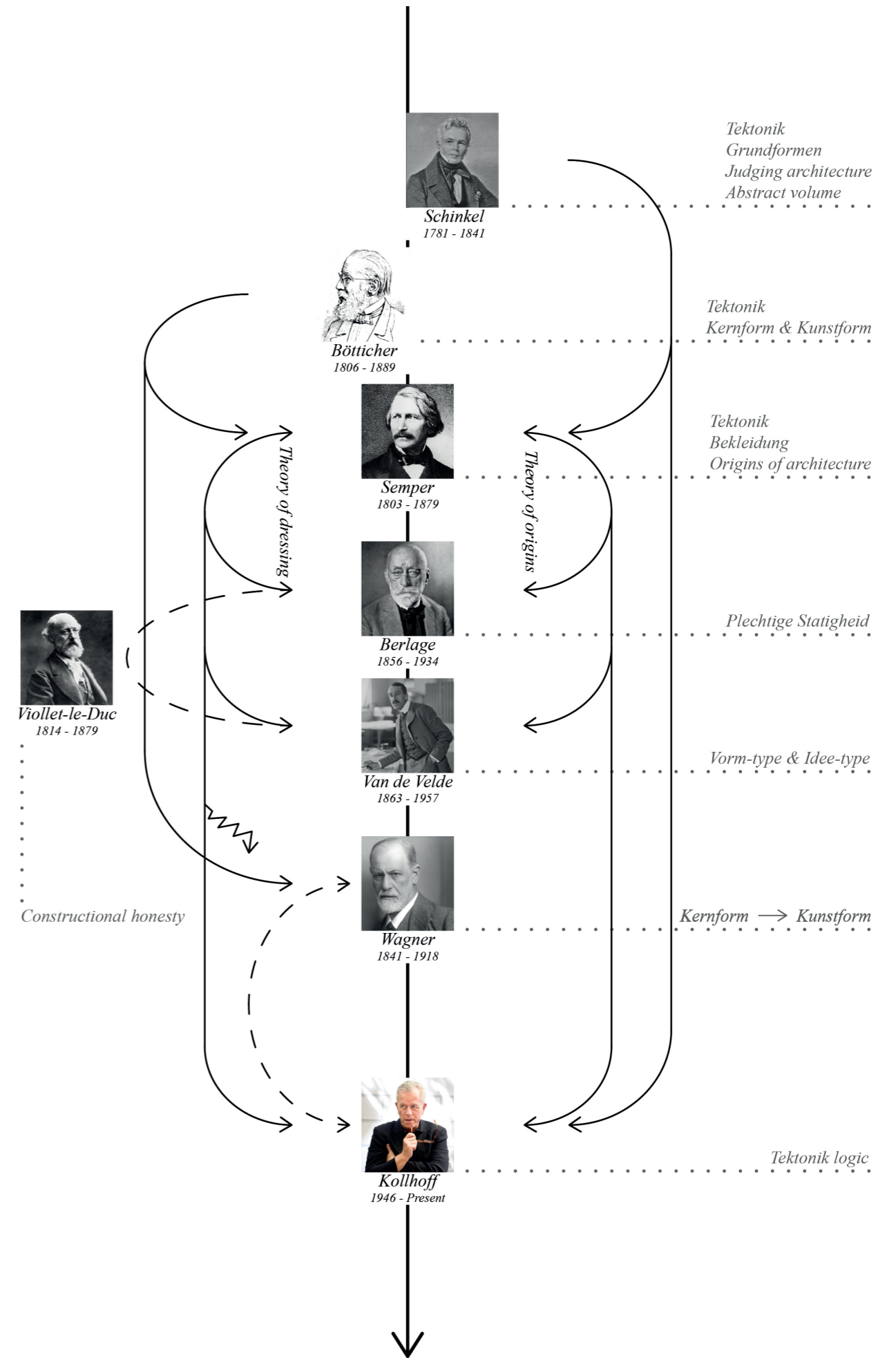


Figure 6.1 (opposite): Concluding diagram.

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Figure 7.1 (opposite): Art Nouveau painting by Alfons Maria Mucha.

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