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Topic: Architecture

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Paper: Innovation, Identity and Sustainability in H.P. Berlage’s Stock Exchange

Abstract:

This article tries to bring some insights into the on-going worldwide Globalism-Regionalism debate. It is part of a project to study on how Dutch architects in the 20th century faced questions of identity, innovation and sustainability. In this project a representative case study is carried out per selected architect.

This particular article shows the study of H.P. Berlage (1856-1934)’s Stock Exchange (Beurs) in Amsterdam. The choice in studying a project of H.P. Berlage was in first instance due to the place that Berlage takes in the history of Dutch architecture.

He is regarded to have influenced the Amsterdam School, De Stijl and the Delft School.

This article first shows, a brief description of the socio-cultural, economic and political context in which Berlage was working; second, a brief description of Berlage’s design principles and precedents; third we describe the research method and criteria used in our case study. Fourth we describe and discuss Berlage’s seminal design: the Stock Exchange the Beurs in Amsterdam, which is the most referred project when one is discussing Berlage in his search for a Modern architecture. During the analysis of the Stock Exchange, we make some questions such as: what is the relation with our main themes: identity, innovations and sustainability; how his architecture is linked to the social, economic and political context; whether he was concerned to the socio-cultural, political and physical context where he built or not; and how innovative and sustainable was his ideas behind the creation of a building to accommodate a capitalist Stock Exchange.

This analysis is not exhaustive, but it focuses on our three major themes: identity, innovation and sustainability. Hereby we are indebted to numerous authors who wrote about it extensively, such as Pieter Singelenberg, Wessel Reinink, Manfred Bock, Ian Boyd White and Jan Molema. This fourth part is subdivided into 4 parts starting with the physical context, then the functional-morphologic organization, followed by the study of facades and spatial organization and finalizing with a study of the relation between form, program and construction. Finally the sixth part gives some insights into the three major themes of this study dealing with the quest for identity, innovative projects and sustainable environments. The article reflects on whether the critique toward Berlage’s architectural production was really well placed and on what Berlage’s architecture possibly meant to the Amsterdam School, Traditionalists and to the development of a modern Dutch architecture.

Keywords:

Innovation, Identity, Sustainability, Stock Exchange, H.P. Berlage

Innovation, Identity and Sustainability in H.P. Berlage' Stock Exchange

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Premise

This article is part of a project to study how Dutch architects in the 20th century faced questions of identity, innovation and sustainability. In this project a representative case study is carried out per selected architect.

This particular article shows the study of H.P. Berlage's Stock Exchange (1898-1903) in Amsterdam. The choice in studying a building produced by H.P. Berlage (1856-1934) was in the first instance due to the place that Berlage occupies in the history of Dutch architecture. He is regarded to have influenced the Amsterdam School, De Stijl and the Delft School.

The article provides a brief description of the building in its socio-cultural, economic and political context; a reflection between the identity of the building and the identity of the place; an account and possible relation of Berlage's design principles and potential precedents; a reflection on sustainability in Berlage's Stock Exchange; and some insights on the three themes in relation to Berlage's Stock Exchange, the project most often cited when discussing Berlage in his search for a new style.

1. Introduction

During the analysis of H.P. Berlage's Stock Exchange in Amsterdam, we examine which relations are between the selected project and our main themes: identity, innovation and sustainability following three main questions. The first question refers to the concept of identity: how Berlage deals with the identity of the building and the identity of the place. The second question deals with the innovation issue: how Berlage, aiming to find a new style, used past information hidden in design precedents. The third question refers to sustainability: how Berlage linked his project with the socio-cultural, political and economic context.

2. Berlage's Stock Exchange, Amsterdam, 1898-1903

From 1870 onward, the labour movement started to grow in The Netherlands in reaction to the precarious housing and working conditions which the laborers were experiencing and would continue to experience for several decades to come. Around 1900, Noud de Vreeze notes in his *Honderd Jaar Woningwet en wooncultuur in Nederland*: Particularly in the cities, workers were living in slums (*Krotten en slopende wijken*), unsanitary alleys without water and sewage infrastructure, in basement flats (*kelderwoning*) or overcrowded one-room flats (*eenkamerwoning*), which often

accommodated families of five or more children in a humid, dark and vermin-infested space. Moreover, children were also working, and school attendance was not obligatory. In the 1890s the labour movement started to grow and become a factor in the state, demanding improvements in living conditions [1].

The labour movement was based on unions which defended the socio-political and economic interests of workers, in particular in industry. Through the last decades of the 19th century, the 'radical movement' and later the 'workers party', SDAP (*Sociaal-Democratische Arbeiderspartij*, 1894-1946), became the political expression of the labour movement in government [2]. According to Boyd White in the introduction of *Hendrik Petrus Berlage: Thoughts on Style*, the Radicals "hovered in the space between demagogic socialism and what was considered bourgeois liberalism. Radicalism proposed this undogmatic socialism "based on realism and flexibility, aimed at the plausible goal of the maximum benefit for the largest part of the community." Boyd White mentions that Berlage was closely involved with the radicals in the late 1880s and in 1891 he was even invited to run for the city council as a Radical candidate; he was active in a campaign that proposed shorter working hours and improved wages for construction workers and also wrote articles on architecture for their journal: *De Kroniek* [3].

It was in this period that there was an ongoing discussion about whether to replace or refurbish the older Stock Exchange (1840-1845) designed by Jan D. Zocher. In 1884 an international competition was held in Amsterdam for a new Stock Exchange. Berlage and his then business partner Sanders ended up in fourth place among the 199 entries. However, no building was erected because some accused Codornier, the prize winner, of plagiarism due to the resemblance of his entry to the La Rochelle town hall [4]. It was not before the victory of Mr. M.W.F. Treub, a 'radical' politician running for a position in the municipality of Amsterdam, that the new building for the Stock Exchange of Amsterdam was proposed, accepted by the Stock Exchange Committee and City Council and finally built.

This link between Berlage and the politicians is very important since Berlage became in charge of the design of the Stock Exchange through his political connections with the Radicals. According to Boyd White, the Radical and then alderman for public works M.W.F. Treub "appointed Berlage as technical adviser to the committee, and between them the two hatched a scheme for a completely new building, which was designed behind closed doors, and whose existence was revealed to the public only after it had been accepted by the City Council in October 1896" [5]. This building accommodated, among other functions, the Commodity, Grain and Stock Exchange, and some civic services; also, it would provide space for meetings of labour movement members, who had been 'homeless' until then.

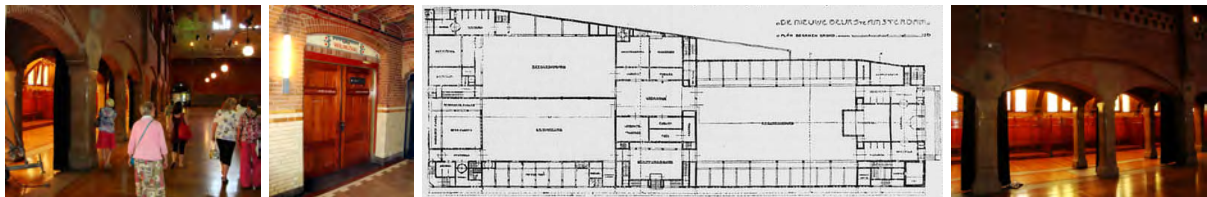
During the years between 1896 and 1903, Berlage's Stock Exchange took several forms, each a further step toward order and simplicity, two of his dearest principles.



1st Design, Stock Exchange, 1896



2nd design, Stock Exchange 1896-7



Berlage's Stock Exchange, Amsterdam, 1903

3. Reinforcing the Identity of the Place

The Stock Exchange measures 143 meters long at the Damrak, 36 meters wide on the southern side with the main entrances and 55 meters wide on the northern side. This building, reasoned Berlage, should not be as high as was customary with such measurements: “Firstly, a great height is not necessary, but a too high building would most certainly not fit on the spot. Added to this comes the proximity of the tower of the Oudekerk, which both from the side of the Dam and from that of the station, has most certainly got to preserve its dominant character” [6]. With this observation Berlage shows a deep respect not only for the buildings surrounding the Stock Exchange but also for the city landscape. Berlage, notes Singelenberg, took into

account the character of the houses on the Damrak and the Beursstraat, which would have been affected very negatively by a high 'monumental' building [7]. The modular treatment of the façade and some variations of its parts is probably one of the strategies to avoid bringing an excessive impact on the aspect of the street.

Despite having these variations to counteract with the surrounding buildings, the Stock Exchange finds its balance of form. As Fanelli observes, the asymmetrical general composition is balanced by the symmetrical arrangement of elements, symbolic decorative details and the expressive building logic [8].

One might say that this building was meant to fit in its surroundings, rather than contrast with them and compete with the monuments surrounding it to become a new star in the city. It reinforces the identity of the place.

As mentioned earlier, the building was primarily planned to accommodate the Commodity, Grains and Stock Exchange and secondarily (though not for Treub or Berlage) to provide a space for socialist meetings. But Berlage was not planning his building for these functions strictly, he might have understood that it would cause his building to become obsolete over the years.

Certainly he hoped that the future would bring more social equity and other forms of exchange would be carried out with more justice (these ideas are pictured on the walls of the building main entrance). In fact, the interior of the building is filled with symbols representing the socialist movement; even the masonry has a symbolic meaning (each brick represents a worker and the total building represents society). The interior is much more about awakening the workers to their new identity than the reinforcement of the capitalist world.

However, in its general composition, one would easily say that Berlage's building, contrary to its functions, looks more like a church. It does not show or signify any of its function. Though adaptable to numerous and unseen functions yet to come, the building is "quiet". It does not express a definitive identity.

4. Principles: capsules of Innovative Ideas

"In lectures given previously, I had the opportunity to argue that one can only contest principles and that the debate over 'beautiful or not beautiful' – over the dispassionate identification of beauty – was, as we know, seen already by the Romans to be hopeless" [9].

Design principles might be generated by theoretical studies but also by analysis of buildings or both. A principle is the description of an idea and may reinforce others. It guides the design but it is not often used as a rule because it must adjust to the particularities of each design such as site constraints, or conflicts with the building program, the use of different construction techniques, or even due to a shift in the architect's beliefs.

The principles that we describe in this section are derived from Berlage's theoretical studies (such as Eugène Emmanuel Viollet-Le-Duc's *Dictionnaire Raisonné de L'Architecture Française du XIe au XVe siècle* and Gottfried Semper's *Der Stil*) and his observation of nature and buildings in the journey which Berlage made in his early years as a young architect.

4.1 Unity in Diversity

The main principle in Berlage's world view is "Unity in Diversity". All other principles are subordinated or intrinsically related to it. So, style is unity in diversity. Unity in diversity requires simplicity and this simplicity generates calm or quietness. Geometry, order and regularity are means to achieve this calm. According to Singelenberg, who studied Berlage's texts and projects in depth, Berlage's transformations in architecture are in large part characterized by the trinity of moderation (control), simplicity and calm. Singelenberg affirms that this trinity took form in Berlage's world view by his reflections at the Alban hills at the end of his stay in Rome; these hills would have no angular glaciers, but a simple silhouette and also points to Berlage's remark on Raphael's loggie and stanze in the Vatican: "This is the highest point that art can reach, and for which it must constantly strive if a work of art is to be created: 'Unity in Plurality!'" [10]. However, according to Boyd White, the origin of this principle might be found in his observations of Raphael's loggie and stanze but would be probably triggered by his reading of Hegel [11].

As Giovanni Fanelli notes in his essay "Unity Within Diversity, The Architecture of Berlage", the Stock Exchange is characterized by a search for this unity in diversity and the result is one of 'quiet' clarity. In his words, "The exterior design is both monumental and simple; everything, from the general to the particular, is arranged in a carefully balanced composition" [12].

Berlage's concept of 'unit in diversity' transcends its expression in architecture and refers to Berlage's political positions of equality for all men, this equality being social and political [13].

4.2 The Wallness

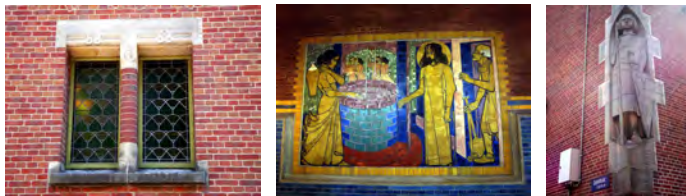
"Since architecture is the art of spatial enclosure, we must emphasize the architectonic nature of space, in both a constructive and decorative sense. For this reason a building should not be considered primarily from the outside" [14].

Architecture as the art of spatial enclosure becomes an important issue for discussion in understanding the façades of the Stock Exchange. Being the main element of enclosure, the wall should be treated in such a way as to be seen and not hidden under decorative elements. To emphasize the spatial enclosure on the façades, Berlage notes that the wall should be flat and not 'strongly modelled'.

This reinforces once more the concept of simplicity.

Berlage commented: “The architecture of the wall is therefore limited to decoration on the plane. Projecting elements remain limited to those that are suggested by the construction, such as window lintels, water spouts, gutters, single cornices, and so on” [15]. The architecture of the wall also falls under the programme of the composition of the spaces, and as such the decoration of its plane is performed by windows which are “naturally located only where they are necessary, and then in various sizes as appropriate” [16]. These are the main performances that the wall must fulfil: enclosure, and function. Its decoration is subordinated to these two performances.

A building should be perceived only by its silhouette, and its interior is expressed on the outside as a more or less complex arrangement of walls and its main element: the window. This gives the building unity in diversity through simplicity. As Berlage argued, “Above all, we should show the naked wall in all its simple beauty and scrupulously avoid any tendency toward over ornateness” [17].



5. Innovative Ideas Based on the Use of Precedents

Buildings analyzed during a journey or a lifetime are not yet or necessarily precedents. Precedents are those buildings which are or were recollected due to their power to solve problems or to express meaning during a design process. The precedent is mostly recollected due to a particular characteristic and its use does not necessarily imply ‘copying and pasting’ from the source to target.

Precedents may be recombined with others and then adapted into the design work at hand. The recombination and adaptation often mean that conflicts among the desired precedents and the design in process must be resolved.

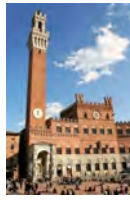
If the architect is a tinkerer then he may start directly from the precedents and try to make something from them. However, it is more likely that recollections happen by necessity. The process of recollection is thus triggered by a question.

For example, questions such as how one can express the idea that architecture is about the creation of space, and how one can show simplicity and quietness on the building exterior, could have brought Berlage to recall the Romanesque façades and their nakedness. In this section we show two examples of these hypothetical recollections.

5.1 Romanesque: simplicity and the wallness



Palazzo Pubblico, Siena



Palazzo Pubblico, Siena

Fanelli notes in his essay “Unity Within Diversity [18], The Architecture of Berlage” that Berlage’s quotations or reinterpretation of period forms were beyond historical references. He cited numerous references suggested by historians such as Sant’Ambrogio in Milan, the Broletto in Pavia, the Bargello in Florence, the Stock Exchanges in Antwerp and Bremen, the Basilica in Vicenza, a palace in Madura, the town hall in Amsterdam, and the cathedral in Modena [19]. Fanelli says that these possible examples are assimilated into an “extraordinary ‘superhistorical’ style” [20].

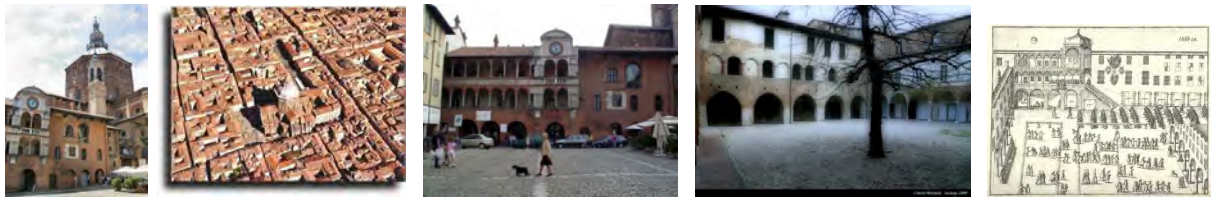
During Berlage’s journey at the beginning of his career, he visited the Palazzo Pubblico in Siena built between 1297 and 1310, a Romanesque building with Gothic influence, and its tower, Torre del Mangia, built between 1325 and 1344. The tower was built taller than the tower D’Arnolfo of the Palazzo Vecchio of Florence, so as to represent the political and economic power of Siena above the power of the concurrent city of Florence. As Singelenberg observes [21], Berlage’s “notes on the tower of the Palazzo Pubblico in Siena are of importance in connection with the tower of the Exchange in Amsterdam: ‘I find that this building fully deserves the dignity conferred upon it (...)Therefore, the architecture of the tower must be simple, dignified. The Tuscans have understood this perfectly. The tower of the town hall in Siena is square, and it rises into the air in this form, ‘without any architecture’. On top only is there a battlement with a belfry. The description makes it sound boring, but just go and see the effect; how full of dignity, majesty, and power” [22].

According to Singelenberg [23], ‘without architecture’ meant without decoration. From this precedent, one may note, what interested Berlage most was what made the tower del Mangia simple and ‘dignified’, its configuration: “The tower... is square, and it rises into the air in this form...”; he is therefore interested in a fragment of the type, or more precisely: its configuration, its proportions and, probably, the (visual) solidness of its construction.

As mentioned earlier, Berlage believed that architecture is about the creation of space, and thus the walls should not be hidden by decorative elements or their materials. Berlage acknowledged his preference for the Romanesque style above the Gothic which was promoted by Viollet-le-Duc and followed by, among others, Cuyper (architect of the Rijksmuseum in Amsterdam). Berlage’s preference might rely on the simplicity of the style. Without wishing to generalize the characteristics of a style which had spread all over Europe, but in order to simplify what probably caught the attention of Berlage, one may say that the main characteristics of the Romanesque include the use of solid and thick masonry walls, masonry vaults,

round arches, narrow slit-windows, large towers, decorative arcading [24], and its naked façades. These façades are composed of windows and ornaments which do not dominate the whole composition.

After analyzing the elements of recollection, one might agree with Fanelli in observing that Berlage's recollection is "beyond historical references". Berlage seems to have been more interested in the abovementioned characteristics to answer to his rational quests toward a new style, and architecture is understood as the art of spatial enclosure. It is clearly not based on aesthetic quotations. All the buildings mentioned by Fanelli must have interested Berlage due to their similar characteristics.



The Broletto in Pavia, 12th century, but the façade with its loggia is from the 16th century



Sant' Ambrogio, 1080-1099, Milan



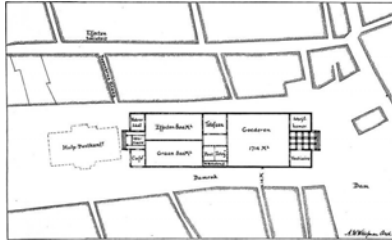
The Bargello in Florence

One may conclude that Berlage recollected operations by understanding how a building functions and how its structure works, rather than making direct quotations or imitations.

The idea of assimilating some characteristics and recombining with other kinds of precedents might have supported his search for a new (superhistorical) style. However, for Berlage the search seems to be the goal in itself, because he knew that less material concepts were involved in the "production" of a style. As Berlage says in his 1905 article "On the likely Development of Architecture", "a style can be developed only on a spiritual foundation", meaning that a "style is nothing but the material form of a universal idea, and – lacking such an ideal – its development is for the time being out of the question" [25].

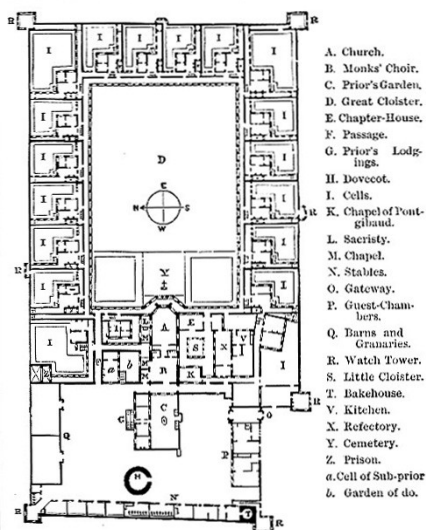
5.3 Weissman's plan layout and the Monasterio de la Cartuja, Seville

The overall disposition of the Stock Exchange was already decided and fixed from the very beginning. According to Singelenberg, it "arose from the programme of requirements, from the agreements in the Exchange-Committee, the shape of the ground, and from Berlage himself."



Weissman's proposal for the renovation of Zocher's Exchange

For the refinement of this general disposition, one must look further. Singelenberg refers to the Clermont-Carthusian Monastery restored by Viollet-le-Duc and illustrated in his *Dictionnaire*. He gives an insightful explanation of this plan: "The plans of this are suggestive partly of those of the great Western European monasteries. These complicated structures, which reached a high development mainly in the Middle Ages and in the Baroque period, must have come under Berlage's eyes already during his training in Zurich. [...] The restoration plan of the Carthusian monastery near Clermont is represented in the *Dictionnaire*: a great rectangular court surrounded by a covered corridor onto which the cells come out on three sides. On the west side there is a complex of rooms in line with the church and the monks' choir. Berlage has carefully studied these and similar plans, complicated but conveniently arranged; they find their expression mainly in and around the produce [commodities] exchange. The cells become offices, the church the Chamber of Commerce. The News-Room is in part pushed into the produce [commodities] exchange, like a chapel or a chapter-room in a monastery quadrangle. It is once again a striking example of the ingenious way in which Berlage was able to assimilate such historical data into a strong personal conception" [26].



Monasterio de la Cartuja, Seville

At first glance, Berlage seemed to borrow the plan layout from the Monasterio de la Cartuja to use it on the refinement of his own plan for the Stock Exchange. One must

say that the configuration of this plan layout seems to be a good source since the monastery's courtyard is surrounded by galleries and adjacent to them are the cells which in the case of the Stock Exchange became offices. But Berlage did not need to go so far from the Exchange type to come up with that configuration. As Jan Molema observed, the exchange as a type existed. "Essentially exchanges are, says Molema, a more or less covered or enclosed place where commerce takes place [...] Until the late 19th century they were nothing more than (enclosed) courtyards." In Catalonia they were called Llotjas and were uncovered, secluded spaces surrounded by small covered offices in a gallery [27]. Our question is, therefore, why Berlage would prefer the Monasterio de la Cartuja above the Llotjas or the much closer stock exchange of Antwerp as a reference if the exchange type was common knowledge.

We believe that these interesting sources reinforce one another and show their adaptability to accommodate diverse functions.



Stock Exchange in Antwerp

5. Sustainability in the work of Berlage's Stock Exchange

Sustainability is here used in a broad sense. We refer to Jon Hawkes approach to sustainability in his "The Fourth Pillar of Sustainability". According to Hawkes, sustainability is about cultural vitality, social equity, environmental responsibility and economic viability. He calls them the four pillars of sustainability [28]. Reflecting on these four pillars, we may briefly note the following:

In the case of Berlage's Stock Exchange, one thinks primarily of the use of bricks and no plaster or iron, and not many stones. Holland is producing bricks and that would prove that the building is at least partly sustainable. However, its structure almost collapsed a few years after the opening of the Exchange. As Molema describes, "In 1906 a major investigation was executed by a group of celebrated architects and professors of Delft Polytechnic, concerning serious defects in the building's construction." This committee pointed to very small deformations at the root of the trusses, and remarked that the structure should have been adequate if laid on compact sand which, says Molema, is not easily found in "muddy" Holland. Finally there was also a problem of stability due to the distribution of the functions with large open space on the lower levels and smaller rooms above [29]. However, the building survived. This was probably due to its cultural value.

It is in part due to its cultural vitality and in particular what it represents for the development of modern architecture in The Netherlands that Berlage's Stock Exchange endures. For the citizen, its cultural vitality is about what the building can

generate in terms of events. The cultural sustainability is therefore inbuilt in the adaptability of the building to other functions over the years. The building today houses diverse functions. It is a conference center, a concert hall, a café/restaurant, a place for exhibitions and shows; and it even hosted the wedding of the future king of Holland, Willem Alexander.

But, if he was asked, Berlage would probably like to add a new pillar for design sustainability, and that would be geometry. In his lecture “Foundations and Development of Architecture” (1908), he initiated the lecture with the following sentence: “Time alters fashion... but that which is founded on geometry and real science will remain unalterable” [30]. His building has several geometric systems working together, and thus for the façades there is the so-called Egyptian triangle and for the plan layout a grid of 3.80 by 3.80 meters combined with the combination of squares and double squares. Would that please our eyes? Would that, being above fashion, be likely to remain in contrast to fashionable buildings?

6. Some Insights

This case study is a first step in understanding the position of Dutch architects in the regionalism-globalism debate. We selected these three themes (identity, innovation and sustainability) because we believe that they are key aspects in the search for a culturally engaged, innovative, sustainable world. As a first step toward extensive research it is very difficult to evaluate why some buildings are cherished by the users, surviving and generating developments over the years. But in summarizing our findings we could say:

Berlage consciously reinforces the identity of the place by keeping the height of the building on the eastern and western façades not above the buildings that it faces and by the subdivision of these façades into modules, referring to the width of the plots that the Stock Exchange faces. Contrary to the identity of the place, Berlage chose to not represent functions. Berlage made his building timeless by not attaching it too much to its two primary main functions: Exchange and meeting place for the labour movement. Creating adaptable spaces, cultural activities such as shows and exhibitions give the building what we would call temporary identities.

The Stock Exchange is a strange building. Few people would say that it is beautiful. But when we do, as Berlage suggests, look to its principles, then we can agree on the resourcefulness of this building. Berlage thought of architecture as the creation of space, something new at that time, and managed to link the past to the present, escaping from the dead end of Eclectism and neo-styles.

Berlage argued that if the architects did not compromise with the capitalists, the engineers and industry would take over by producing buildings quickly and cheaply. His compromise with the capitalists brought him to the necessity of creating buildings under concepts such as simplicity and order, which implies that the design would be based on essential elements focusing on durability, flexibility, functionality and construction. In the particular case of the Stock Exchange, the grid and orderly plan layout did not help in producing a building with no constructive faults. But culture, the fourth pillar of sustainability, gave the building its permanence due to its inbuilt adaptability.

As a Radical and maybe also a critical regionalist, Berlage makes use of the old and the new, traditional and new materials. His architecture was “based on realism and flexibility, aimed at the plausible goal of the maximum benefit for the largest part of the community” [31].

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