LESSONS IN COMPOSITION

Beaux-Arts & Bauhaus
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de KUNST in BOUWKUNST.

[The art in building-art]
During my education in architecture my feeling for architecture evolved whereas my vision of how to contribute to this field actually faded. How does one determine one’s role?

So far I have not yet found the words to describe why I like a specific design. Most of my colleagues, however, don’t seem to have any problems in judging designs…. through their own preferred frame of reference. Their self-assurance made me wonder what my frame of reference was. Determined to find my own parameters in order to understand the architecture that was valuable to me, I started comparing designs I liked. Knowing fully well it might only put my mind at ease temporarily.

Varying from Classicism to Modernism, from renowned names as Louis Kahn or Carlo Scarpa to the unknown local architect, from architecture to music, from music to art, from buildings to fabrics. As my catalogue became more diverse, I realised that the common factors were all related to composition. The patterns in textiles, the alternation of repetition and variation in a melody, the balance of colours in a piece of art… they seem to evoke a certain beauty.

“Whichever the support chosen – a wall or a cupola, the page of a book, an object, a woven surface – it is transformed into an autonomous space offering an infinity of possibilities in terms of colour and pattern, repetition and association, all in perfect coherence. The many ways in which beauty is expressed take full advantage of the innate beauty of the materials used, which while sometimes modest, are combined following principles of harmony and proportion.”

Of all the various design approaches that have been taught in Delft, the theme of composition is barely covered. In my opinion lessons focused rather on programmatic and technical requirements than on composition. Even the actual design projects are more likely to be judged on parameters which are easier to value through objective standards. Composition may be considered too vague, un-teachable or too subjective, nonetheless it is intrinsically linked to architecture. Discarding a topic because it corresponds less to our accustomed manner of evaluating, will definitely not bring us further in our understanding.

Reluctantly accepting that I will probably never be able to fully comprehend the versatility of beauty that is expressed in composition, this study is an attempt to reveal the legacy of former education programs that have already tried to fathom this.

Lianne Klitsie - Delft, October 2015

1 Quote of a text accompanying the permanent collection in the Arab World Institute, Paris, 2015. The text is entitled: ‘Expression of beauty’, and describes the difference of how the Western world describes art in the Arab world, compared to how the Arab world intended it.
Paul Klee, Scarecrow, 1935. (Photography: author)
INTRODUCTION

This research will explore how composition was taught in former education programs, and if there exist certain recurring principles which could be of value in the current practice of architecture. The aim of the research is to provide insight in a topic which is often regarded as personal and subjective and therefore difficult to assess. My personal expectation is that a better understanding in this field will lead to an adjusted design attitude in which esthetic values and utilitarian values are developed in coherence.

Motives

Classical antiquity formulated firmitas, utilitas and venustas as the three fundaments for architecture. The architectural discourse is often described as a position relative to this trinity. The increasing complexity and technical requirements of building commissions, but also the possibilities of new materials and building technology of this era, led to an altered interpretation of these old qualities of solidity, utility and beauty. When comparing various architectonic systems, Leupen states that there is no general consensus anymore on what is considered beautiful. The industrial revolution unleashed a desire for a new architectural language, and therefore appearance, more suitable for modern society. Also due to political causes, mass production prevails. The industry is taking over the measurement system through fixed factory dimensions of standardized products, driven by economic reasons. This changed the way we design. For almost two millennia architects used a proportion system based on writings of Vitruvius. Past decades we have abandoned this source of knowledge for cost-efficiency reasons. Proportion is reduced to its absolute character, discarding the qualities of its relative character – the relation between parts and the whole.

Currently, design is considered to be irreducible to any kind of systematic thinking or set of rules. Therefore program requirements, technical demands, economy and standardized products tend to be emphasized over composition principles, since the latter is not convincingly accepted as a design approach. The building brief, square meters and functional requirements are taken as a starting point for the design and deployed as a composition method.

"An understanding of the functional design cannot, however, be satisfactorily translated into an architectural creation unless it is accomplished through a comprehension of the laws of composition, through knowledge of the grammar of design."  

This research is not an attempt to reduce composition to a set of rules, that in case of succession results in universally accepted beauty. But since former education programs did provide methods to become acquainted with the field of composition, the report is written from the angle of incidence that there are general notions on this topic. Insight in these notions might enable us to approach composition on a more substantiated level.

**Research Goal**

The aim of the research is to examine the lessons in composition that were taught in the former education programs of the École des Beaux-Arts and the Bauhaus. Additionally, the value of recurring and forgotten principles in the current practice of architecture will be discussed.

The education programs of the École des Beaux-Arts and the Bauhaus are chosen because of their focus on composition. The Beaux-Arts and Bauhaus might be the two most influential examples of architectural education systems. Both have extensive architecture theories concerning composition which affect practice and education. Moreover, most architectural education systems are based on their pedagogical concepts. The École des Beaux-Arts is considered as the preserver of the great tradition of classical architecture. The Bauhaus on the contrary, on the verge of a new era – is considered the avant-garde of the modern. Therefore previous design methods were, or all history for that matter, declared irrelevant. But this apparent contrast is far from black and white. Although the Bauhaus tried to distance itself from old methods, the tradition is still entangled in the system of the first generation Bauhaus teachers. None of this openly admitted of course. It wasn’t until 1930 when the successors made a clean break with the past. And it is this new direction that is considered typically 'Bauhaus'. This research will focus on the first generation of the Bauhaus to trace back the hidden similarities in the compositional methods of both schools.

**Design Goal**

In practice the aim is that an understanding of composition will lead to architecture which is not merely a functional elaboration of program requirements but a well composed design in which functional and technical elements are taken into account.

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"Those who rejected the academic discipline did so because they felt it to be hostile to their conception of architecture, which they held to be functional, scientific and divorced from stylistic considerations. Yet, the very embodiment of the academy - was as functional, scientific and un-stylistic as they." See Banham, p. 14.
Research Question

The research question for this study is: What are the composition principles that were taught in former education programs of the École des Beaux-Arts and the Bauhaus?

One might argue that this is a rather naïve question since preliminary studies already revealed that composition does not adhere to a set of rules. This study surely doesn’t have the intention to conclude with a complete and absolute list of principles that guarantees a beautiful composition. The research question is phrased as it is because in the end, feasible or not, this is exactly what we would like to know. But an attempt to answer this question will already provide a lot of insights in the field of composition.

The following sub questions are formulated for both schools, to guide the research:

- What is the backdrop of the schools? [zeitgeist, aim, curriculum, pedagogy]
- What are their general lessons in composition?
- What are the specific lessons concerning composition principles as found in handbooks, classes and exercises?

After examining the composition principles of both schools the following questions arise:

- Which principles are recurring in both schools?
- Which were lost throughout the years, and why? And if they are solely forgotten, could they be of value in the current practice of architecture?

Note

This research will deal specifically with the formal and spatial aspect of composition to limit the research field. Other themes related to composition such as colour, material and texture will therefore be discarded.¹ The selection is based on which aspects are most typical for the field of architecture.

¹ Exceptions are made when exclusion results in a short-sighted representation.
Research Methodology

The report is divided in three parts; the first two parts discuss the École des Beaux-Arts and the Bauhaus, the third part is a comparison of both schools.

The literature study per school is divided in three sections; a general introduction of the school, some general lessons in composition followed by case studies and some examples of conducted exercises [by the author]. The introduction informs in the backdrop of the school – the history, aim, pedagogy and curriculum. This section will ensure that the composition lessons that follow can be understood in their specific time frame. The lessons in composition will discuss a general theory of composition and elaborate on the specific pedagogy per school since this is essential in understanding the lessons. The case studies are examples from a student's education concerning composition principles, such as: an exercise, a lesson in class or a written theory in a handbook. These case studies are found in primary sources – printed documents from the teachers themselves. To remain objective in this section was not always possible, since some documents are solely visual, and written texts sometimes rather implicit. Some case studies are small exercises to research the elements of composition. The third section contains visual copies of these exercises that have been conducted by the author. The chapters of the École des Beaux-Arts and Bauhaus conclude with an overview of lessons in composition as found in literature and in personal observations made during the exercises.

From the lessons eight themes are summarized which are evaluated in the third chapter – the comparison of the schools. In the comparison these lessons are discussed in relation to the time frame and aim of the school, and in relation to each other. This discussion leads to a list of implicit principles of composition per school. The conclusion will comment on the recurrence and value of these principles in the current practice of architecture.
H. Labrouste, Rendered cross-section of main courtroom, 1824. Credits: Levine, p. 106.
INTRODUCTION

The École des Beaux-Arts was a French architecture school which was located in Paris, where it taught architecture from 1819 until 1968. The institution changed her name several times and also merged with other schools resulting in a department for painting and a department for architecture. The origins of the school can be traced back to an earlier period in time. The school sprang from the Académie Royale d’Architecture, founded in 1671. Until then, instruction in architecture was hardly institutionalized, it was organized through traditional forms of apprenticeship.

Aim of the school

Already the first establishment of 1671 aimed to “elevate architecture to a higher degree of perfection”. The ambition was to educate ‘timeless’ architecture. According to François Blondel, the first director of the Royal academy, to approach perfection one must critically compare the most respected and authoritative writers. Rather than the established forms of practice, ’correct taste' was developed through extensive studies of Vitruvius and followers of the Virtuvian ideals; Palladio, Scamozzi, Vignola, Serlio and Alberti. In his books and lectures Blondel developed a method of classification according to design problems which are cited throughout the schools existence. Although the texts and precedents are continuously re-interpreted, the search for universal truths and emphasizing correctness/justness remained key for Beaux-Arts education.

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3 François Blondel is the first director of the Royal academy (1671-1686). See: Gerbino, 2010.
Pedagogy

Essential for the education at the École were the ateliers and the ‘concours’ – i.e. competitions. The student learned to draw and design in the ateliers. The atelier was independent from the school, and was organized by the students themselves. Each atelier had a master, a ‘patron’ who represented the atelier. The patron would visit the atelier two or three times a week to guide the students. Each atelier consisted of younger and older students, the ‘anciens’ and the ‘nouveaux’. The older ones advised the younger ones, the younger ones helped the older ones with producing the large amounts of drawings. In the atelier the students carried out the competitions - assignments to practice their skills and to collect credits. These competitions were organized and judged by the professors of the École, so the students knew which rules they had to follow to succeed. Besides the competitions the students attended (public) lectures, varying from theory, history, construction and preparatory courses in drawing. None of these lectures were compulsory, only a few were followed by an exam.\(^{11}\)

\begin{figure}[h]
\centering
\includegraphics[width=0.5\textwidth]{students_in_atelier.jpg}
\caption{Students in an atelier at the turn of the century, c. 2000. Credits: Chafee, p. 91.}
\end{figure}

The handbook was another important pillar of Beaux-Arts training. The handbook was an encyclopedia, a systematic classification of precedents, juxtaposed per category. The precedents were not to be imitated, but through the comparison of existing examples the student could derive solutions for his specific problem. This pedagogical approach was based on the preference for improving existing types rather than to create new types.\(^{12}\) It was in the atelier that the student would put into practice the knowledge he had taken cognizance of.

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\(^{12}\) Ibid.
Curriculum

The curriculum was divided in two classes, the 'seconde classe' and 'première classe'. The student had to collect a certain amount of these credits, and fulfill various other obligations, before he was promoted to the première classe. The credits had to be earned through the competitions, the amount of credits increased simultaneously with the quality of the project. It was possible that a student would promote to the next class only after one successful project but this was highly rare. Normally a student submitted various entries before he accumulated enough credits. Every student studied in his own speed; on average a student spend two to four years in the seconde classe. The première classe had a similar curriculum, which took a student on average two to three years. After accumulating enough credits he could compete in the Grand Prix de Rome, the most important competition of the year, only reserved for the best student who made it this far. Winning the Prix de Rome as the highest award. There was no conventional diploma until 1867, but being an ancien élève de l’École des Beaux-Arts, a former student, already was a valuable title.

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14 Ibid. “Especially since anyone could buy an architect title without an architectural training.” Chafee, p. 85.
LESSONS IN COMPOSITION

Although each atelier had their own master, who assumedly gave specific emphasis to certain topics, there was consensus on the general theory of composition of the École. This general theory is best recorded under the direction of Julian Guadet, professor of the course on theory in 1894.\(^{15}\)

In order to understand what the École tried to communicate to their students a few remarks must be made about the specific pedagogy of the École des Beaux-Arts. In his handbook Guadet describes that both science and art are the basis of study. But whereas science has verifiable principles that are logically proved, the principles of the arts are less tangible, but are implicitly present in the greatest works and texts of Roman antiquity and the Italian Renaissance.\(^{16}\) Guadet continues, he equates beauty with the truth - *art is the representation of the beautiful, to be sought through the truth.* This truth is translated as conscience which is to be found in ourselves.

Guadet discusses two apparent conflicting positions; on one hand the process is led by intuition, on the other hand by reason. **Composition starts with an idea** and this idea is rarely constituted through the course of reasoning, but rather through **inspiration.** And inspiration is derived from intuition.\(^{17}\)

But the verification of the idea and the execution of it is through reason. Reason is fed with knowledge, the part that **can** be taught. So the Beaux-Arts approach is two-fold: imagination and reason.

- Composition is learning through experiments.
- Proportion is to say study - reason logically
- Construction is the checking of study by knowledge

The École tried to evolve universal principles of architecture to elevate architecture to a higher degree of perfection, which is approached by reason. **Beaux-Arts-composition was based on an understanding of these principles derived from juxtaposing precedents.**

The case studies will try to reveal the composition principles. The student learned through three different types of education; the lessons of Guadet, the exercises in the atelier and from studying the handbooks. The case studies are based on each of these three types.


\(^{16}\) Chafee.

\(^{17}\) Guadet, vol. 1, book 2, chapter 2, p. 98.
Case study 1

The course on theory – the rules of composition.

Professor Julian Guadet

The first case study examines the composition principles that are taught in the course on theory, given by Julian Guadet in 1894. The course on theory was devoted to the question of composition. By 1894 the course was divided in three parts:

- 'the elements of architecture' (walls / openings / vaults)
- 'the elements of composition' (dining room / salons / kitchen)
- 'the whole of composition'.

The first two parts were discussed during the lectures, collected in the four volume compendium ‘Elements et théorie de l’architecture’ of Guadet (1901-1904). The third part was assigned to the atelier, because - in the words of Guadet: “composition is not to be taught.” The student had to practice composition, learn through experiment, based on knowledge of the elements which could be taught.

The compendium of Guadet reflects this division of three parts. The largest part of the compilation is devoted to the elements of architecture; which concerns walls, cupolas, vaults, porticoes, and the elements of composition; which are organized per building type accompanied with practical and historical aspects. As architectural historian van Zanten justly observes is that the book focuses on building types rather than on a theory of composition. Although Guadet insists on the importance of composition, the assembly of a building from its components, the actual explanation of how these components are assembled is hardly traceable in his book. Some of these principles are touched upon in ‘unrelated’ sections of other topics that discuss functional matters, but therefore less valuable since they are clouded with other information. Only one brief self-contained section describes some general principles of composition, although this section still acquires a lot of reading between the lines, this section will be analyzed. The lack of written theory is related to the idea that composition cannot be taught, but it is also due to the fact that the principles were taken for granted and unquestioned. Banham accurately points out that there were certain silences “on subjects that held to be too sacred or too obvious” to discuss. Some principles simply seemed to be unquestionable, they didn't need to be substantiated.

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19 Or described in Banham’s words: “In sum, five volumes of pre-digested wisdom on functional matters, all second-hand, much of it out of date, all of it vital to the success of the Beaux-Arts system.” See: Banham, p. 17.
22 Chafee points out that the École took for granted that it was in the position to evolve universal principles through reason, without questioning it. See: Chafee.
23 Banham, p. 15.
This case study will focus on the lessons of Guadet described in the chapter 'the rules of composition'. He concludes this chapter with a list of what can be said about composition in general which will be set out accordingly in this research.

The first notion is about the importance of the program, one should be faithful to the program: “Let the program become a part of your consciousness”. The program must be studied because it gives information on the various divisions and their relations. Although it does not state the combination or proportion of the divisions, the program does indicate a certain measure to be kept - a specific proportion appropriate for the program. It was expected that this approach would enable the student to form a suitable solution, which is above all a proper idea of the proportion of the different departments.

The second remark is to study the implied information on the site or ground and climate, since this influences the expression of the program. Guadet shows this by comparing two buildings in different climates.

"It is curious to make a comparison between two monuments of very great worth, almost contemporaneous, the court of the Louvre [left] and the Palace of the Cancellaria at Rome [right]. Certainly the court of the Louvre is inspired by Italian art in its study and in its decoration. But notice in the Louvre the proportion of the voids, especially in height, compared with those of the Cancellaria. At Paris, with the facade of the Cancellaria one would not see clearly. At Rome, with the facade of the court of the Louvre, one would be blinded and burned up."

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Another aspect of the program that is stressed is that “every architectural composition should be constructible.” This fact frames the field of the architect and should always be the ultimate aim. Moreover, construction also gives the architect the resources to realize the ‘idea’. Guadet touches upon the value of truth in architecture. Architecture should express truth of construction. An idea that is not constructible or is falsified doesn’t have architectural value. An architectural attempt is considered falsified if the construction expresses something else than it is supposed to be or if the building expresses something else than this structure. In addition, when the construction is more complicated than necessary it also cannot be of good quality. Guadet is convinced that in general great beauty is established when this expression of truth arouses the idea of the essential - that it cannot be otherwise - of sincerity.

“Actual solidity is not enough, it must as well be evident.”

The next section distinguishes two distinct parts in every program: useful areas and the other areas, these other areas are appointed together as ‘the necessary means of communication’. The latter are necessary for the functioning of the building but are not the functions that identify the program. These communications are to make sure that the user can find their way easily and that all the parts of the program are conveniently connected. Guadet points this out as the principal difficulty of composition. The simpler the clearer. Intelligent economy is reached when this is accomplished with the smallest amount of effort, in this case space.

“It is here [intelligent economy] above all that you will recognize simplicity as an exquisite quality of composition.”

When continuing Guadets general notions on composition, the next subject is about order. The order of the different departments of the composition is to be determined through the understanding of the program and its requirements. The departments relate to each other in a certain hierarchy, Guadet points out that there is always one principal element which is most central or dominant. Each element should be ranked and given corresponding scale and corresponding position in the arrangement of the plan. Each element ought to be elaborated in comparison to the principal.

But besides these utilitarian qualifications another qualification is addressed: beauty. Guadet asks whether it is necessary to define a beautiful composition. He refrains from a direct specific definition, but first refers to exemplary projects, before he continues.

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"A lie furthermore - absolved perhaps by the glory of the triumph - is that colonnade of the Louvre, those facades of the Louvre of Louis XIV, which are out of harmony with the interior and which necessitated later the addition of a third story on the court of the Louvre, happily studied by Gabriel (fig. 28). Yes, it is a beautiful frontispiece, a beautiful decorative page: but how much more beautiful and admirable if Perrault had known how to produce this same effect without doing violence to and almost ruining a monument which, certainly, did not deserve such disdain!"^9

"These two impressions are strongly felt in one and the same monument, Notre-Dame de Paris. When you see the principle facade (fig. 29) with its monumental towers, its well framed portals, the clear lines of its two galleries, you admire the monument in its magnificent health; no accidents, inclemency’s, no centuries can, it seems, destroy or even weaken this whole, so firmly planted, so strong in its proportions; the satisfaction is absolute, nothing disturbs it, and whether this feeling is analyzed or not, it imposes itself notwithstanding: you gaze with delight giving yourself up completely."^10

^9 Text that accompanied the image in the compendium. See: Guadet, vol. 1, book 2, chapter 3, p. 113.
^10 Text that accompanied the image in the compendium. See: Guadet, vol. 1, book 2, chapter 3, p. 115.
Further on Guadet starts to explain some notions of beauty, starting with stating that symmetry is ‘incontestably a beauty’. He defines symmetry as intelligent regularity, which is noticeable in a glance. This does not necessarily dictate perfect similarity. Guadet advises that, in general, symmetry should be ‘approximated, yet with variety’. Variety is important to preserve oneself from structural monotony. Guadet draws a parallel between this legitimate variety and character. Character, a typical Beaux-Arts term, is one of these terms which was so common that it is hardly specified. Drexler relates character to its purpose.

“A building with character was one that fulfilled its purpose; character was the expression of this fulfillment.”31

Guadet continues with outlining the term variety as: "identity between the architectural impression and the moral impression of the program (the conditions)."32 This rules out that buildings with different purposes could have the same character. ‘Beauty is not a commonplace quality’, but it is inherent to character. Therefore Guadet appoints variety as an element of beauty.

31 Drexler, p. 97.
These first two chapters are followed by many chapters in proportion, a few relevant phrases will be summarized. Especially the relative meaning of proportion is of importance; the relation between parts and the whole. When there is harmony between the different parts of a whole, it is through proportion that the correct relations are established. Guadet describes two types of proportions. The first type are proportions that are based on reason, through logical deductions. The second type are proportions that are generally accepted, determined by taste, based on preferences of the eyes and mind. Guadet stresses the fact that there are no fixed systems for readily applicable proportions. As mentioned before, each program asks for a certain measure. Within the initial composition the proportion between parts must be studied. Not only should the relations of the parts be captured through order and position, but also through corresponding proportions. Inevitably the principal element will exceed all other dimensions.

Another aspect of proportion pointed out by Guadet is that proportion is depending on the surroundings. The scale of a specific situation must be taken into account. There is no harmony when the scale of the context contradicts the scale of the object. Nevertheless, this relativity is less important for elements with prescribed dimensions, the first type, such as the height of stairs.

“[…] proportions in composition are essentially variable. It is the very art of composition with all its infinite combinations.”

Guadet tries to make the reader aware of the fact that proportions in composition are variable. Consistently, this variability is again subject to the architectural impression and the moral impression of the program, i.e. the proportion of appearance and the proportion of requirements.

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“Here are two identical compositions, and of this composition two studies which are two masterpieces, as different as possible: the superimposed porticos of the Theatre of Iarcellus (fig. 45), and the superimposed porticos of the court of the Farnese Palace. (fig. 46). I ask you only to note their identity: on the ground floor, an arch, accompanied by two engaged columns, of Doric order, with entablature; then the first story composed of an arch between two engaged Ionic columns, with entablature. Impossible to describe them differently. And yet what differences, or, better, what a contrast!

But this contrast is not in the ornamentation, nor is it in the profiles, it is above all and before all in the proportions. One might say it is in reality only in the proportions. And one can here lay down this principle as an axiom: The same motive of composition will give rise to absolutely different expressions according to the proportion which the will of the architect will have given it.”

Text that accompanied the image in the compendium. See: Guadet, vol. 1, book 2, chapter 4, p. 147.
PART ONE: ÉCOLE DES BEAUX-ARTS

Case study 2

The atelier

As mentioned in the introduction of the chapter, the design activities were carried out in ateliers outside the school set up specifically to teach design. Since knowledge and exercises were transferred orally from master to student, not much information remained in writing. The famous exercises such as the Beaux-Arts competitions were issued monthly and some of them are well documented. The fact that these competition are already advanced architectural assignments makes them more difficult to extract composition principles from. Therefore the exercises presented in this section will not only discuss these competitions, but will also discuss smaller assignments that possibly have been practiced in the ateliers. This assumption is based on examples as found in literary works that either served as handbook or as excerpts of the Beaux-Arts method of architectural education as coordinated through the Beaux-Arts Institute of Design.35

Rapid tracing of poché. Credits: Harbeson, p. 188.

One of these smaller exercises was the study of ‘poché’. Harbeson, author of an excerpt of the Beaux-Arts method compares the term of poché to fill-in or darkened structure. The method of poché is to blacken the solid parts of a plan to stress the contrast of the open and closed parts. This will indicate the degree of enclosure of the plan and the proportion of rooms, and therefore can be related to the human scale.36

35 In the early to mid-1920s, Harbeson authored a series of articles in the architectural journal, Pencil Points, on the Beaux-Arts method of architectural education (as coordinated through the Beaux-Arts Institute of Design). In 1926 these articles were published as a book. See: Harbeson, J.F. (1926). The study of architectural design: With special reference to the program of the Beaux-Arts Institute of Design. New York: The Pencil Points Press.

Precedents were analyzed by tracing over the poché only. With the use of tracing paper and a fountain pen, students rapidly tried to get the exact size of the poché. The learning objective was to understand the impact of the breaks in the structure; on the amount of enclosure of space and on the character of the structure itself. Harbeson points out that each opening: “means something for the structure - indicating a pilaster, column, arch, beam or vault.” Since a vault or beam has two ends, the breaks are mirrored across an axis of symmetry, resulting in an overall regular pattern which is symmetrical.

In the atelier students prepared themselves for the competitions. One of the formats of the competitions was that of the ‘esquisse’. The esquisse is French for sketch, but in the ateliers it indicated much more. Harbeson describes it as “a preliminary sketch showing the main ideas of a student’s solution of a problem outlined in a program.” This rough sketch was to be completed in twelve hours. The learning objective was to practice to express an idea, to establish a ‘parti’. The term parti, a typical Beaux-Arts term, and originates from ‘prendre parti’ – to make a choice. It concerns the basic scheme of the plan. The choice for a parti is based on the program. Students would prepare themselves to study precedents with a similar program or corresponding problems as found in the handbooks. According to Harbeson it was essential that the scheme would ‘work’, that it satisfied all the specificities of the program. Therefore the brief had to be studied in detail to understand it in order to respond with an appropriate solution to the given problem. Since there was limited time the student had to come up with a solution fast since the student needed to reserve some time to visualize the idea. At the École there was a lot of emphasis on the latter part, ‘to get the message across’. Even the layout was an exercise in composition. Six of nine hours were spent on the presentation!

The competition entries – esquisses – for the Grand Prix of 1824 are well documented and served as case studies in the analysis in architectural education at the École des Beaux-Arts, discussed by Neil Levine. The program called for a Cour de Cassation – ‘the highest court in the French jurisdiction’.

Without elaborating too much on this, two examples of the entries are added to show different concepts – parti’s – as a solution for the program. Since every student worked on the same problem it also asked for a certain originality in the solution in order to distinguish oneself from the others.

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37 Harbeson, p. 188.
38 Harbeson, pp. 7-11.
40 Beyond the analysis of the esquisse it is worthy to note that generally the esquisse is followed by a second part of the exercise, the projet rendu. This is a large scale, finished drawing based on the first sketch. It was important to start with a proper esquisse since the finished drawing was not allowed to deviate from the initial proposition.
41 Harbeson.
Sketch plans on an unidentified subject, c. 1824. Credits: Levine, p. 95.
“The outline of functional requirements forming the main part of the program proceeded in typical fashion from the general to the specific and thus established an abstract hierarchical pattern in the student’s mind. He was told that a Cour de Cassation is divided in three sections, or branches, each needed a courtroom, a council room and at least two offices, one for the president and the other for the vice-president. One of the courtrooms had to bigger for plenary sessions. […] The other major element to be included was a ‘hall of covered atrium’ that should connect ‘directly or indirectly to the various parts of the building according to their importance.’”

Competition entries of H. Labrouste and R. Lignière for the Grand Prix, 1824. Credits: Levine, p. 73.

[Image of competition entries]

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43 Text that accompanied the competition brief of the Grand Prix in 1824. See: Levine, p. 73.
Case study 3

The handbook


The handbook was an important instrument in the schools education. ‘The Recueil et parallèle des édifices en tout genre’ and ‘Précis des leçons d'architecture’, both from Durand, are the most popular examples of reference.44 The Recueil, 1799, was the first systematically arranged survey of buildings, drawn in a common scale, organized per building type - discarding the cultural and physical context.45 This way the underlying composition principles were stressed since the format allowed for easy comparison. The collection of precedents served as a catalogue in which students could find solutions for similar problems. The goal was not to imitate these examples but to form of better understanding of a specific problem by analyzing existing solutions.

The Precis, 1809, focused more on different elements and the assembly of these elements. Especially the latter part is of importance for this research. In this book you will find examples of precedent analyses which study order, symmetry, hierarchy and organization. This case study will show one page from this book to analyze the underlying composition principles.

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44 Another book to which frequently referred to was *Cours d’architecture* (1771-1777), written by J.F. Blondel. Here the five orders are set out, based on proportion schemes of Vitruvius, Vignola, Palladio, and Scamozzi. See: Egbert, D. D., Zanten, D. van
As an example a page is chosen that contains a project – resembled through floor plan, elevation and section – accompanied with four analytical drawings. The title ‘Marche a suivre dans la composition’ literally means: procedure to follow in the composition. With this title Durand evolved a fairly rationalistic approach that should lead to a good design. Architectural historian Joseph Rykwert argues that the method of design that Durand proposed was to compose elements on grids that are ‘directed and organized by axes’. Rykwert continues that in the lectures of Durand set out that the appropriate method to analyze was to abstract architecture to its simplest components. The easiest components to understand is the repertory of elementary geometrical forms.

“These forms we may then compose in various ways according to a particular method. It is a method from which there is no appeal. Nor is it a method which can be improved, tinkered with, or discussed.”

The analytical drawings show that through main axes and sub axes the various parts of the composition are positioned. These parts are placed on a modular measurement system.

- This first analysis has the title of ‘nombre et situation’ - ‘des Parties principales’. The axes and main functions are drawn in diagram. A letter is assigned to the function to show the importance and the hierarchy of the elements. It is a biaxial scheme, with the dominant element in the middle. The secondary elements are located at the end of the axes, the tertiary functions are placed on extra axes intersecting the principal axes.
- The second analysis, ‘nombre et situation’ - ‘des Parties secondaires’, is a continuation of the first scheme. The grid is further elaborated. The grid of the entrance, on the dominant axis, differs slightly from the others.
- The third analysis is named ‘trace des Murs’, in which the walls are emphasized to show the enclosure of spaces. The axes are clearly marked.
- The fourth analysis, ‘trace des Colonnes’, is a continuation of the third analysis in which the columns are also indicated.

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* Rykwert as presenter of Durand his thoughts on the method by which thinking and teaching is to proceed in architecture. Unfortunately I haven’t been able to track this down to see what the particular method is. See: Rykwert, p. 16.
CONDUCTED EXERCISES

In accordance with the philosophy of learning by doing, the exercises are conducted by the author. The following pages are copies of the result. The personal observations are included in the overview of lessons in composition.
[Lepeux, 1824 – Grand Prix Cour de Cassation]
[T. Labrouste, 1824 – Grand Prix: Cour de Cassation]
OVERVIEW OF LESSONS

The lessons of the Beaux-Arts show that the institution did not have the intention to impose a list of pre-determined principles, but there are some consistencies in the lessons. These recurring ‘ideas’ are related to each other, influence each other and seem to have a case-specific hierarchy. Therefore these ideas are difficult to describe in a few words. In the following overview the lessons are grouped according to similarities in their specific topic. This is an overview of the ‘implicit composition principles’ derived from literature and from the personal observations made during the execution of the exercises. In order to see the relations with other lessons, the sections are provided with themes which serve as keywords for these consistencies.

Beaux-Arts-composition was based on an understanding of universal principles derived from juxtaposing precedents.

Literature

One should be loyal to the program, because it gives information on the various divisions and their relations. The program does not state a proportion or combination of the divisions, but a certain measure to be kept. A suitable solution is a proper idea of the proportion of the different departments.

Ground/site and climate changes the expression of the program.

It should be constructible. Architecture should express truth of construction: a building should express nothing else than its structure. Truth of construction also means that it should not be more complicated than is necessary. In general, great beauty is established when the expression arouses the idea of ‘essential’.

The program consists of two parts: the useful areas and the communications. The parts of the program are conveniently connected through the communications. The communications should be arranged in such a way that users can find their way easily. Truth of arrangement also means that it should not be more complicated than is necessary.

The order of the various departments is to be determined through an understanding of program and its requirements. Within every program there is a certain hierarchy, since the departments relate to each other in a certain order. There is always one dominant / principal element. (Variation serves hierarchy) There is a division in the importance of functions. The dominant function is placed on the dominant axis. The rest is located around it. Dominant functions are given dominant form. The importance is related to matching proportions.

Symmetry (=intelligent regularity) is a beauty. In general, symmetry should be approximated, but with variety to avoid structural monotony.
Beauty is inherent to character. \([\text{Character} = \text{proper representation of program}]\)

Variety is an element of beauty. \((\text{through which you seek character})\)

By proportion the correct relations can be established. When the correct relations are established there is harmony: elements are parts to a whole. There are no fixed proportions since each program asks for its own character. Proportion is depending on the scale of the context/surroundings. There is no harmony when the scale of the object contradicts the scale of the context.

The character of the construction determines the overall regular pattern, which is symmetrical.

Space is bounded between mass, as an rectangular entity. There is a strict separation of mass and void. While the void is rectangular the mass is the remaining inverse.

Through main axes and sub axes the various parts of the composition are positioned. Hierarchy is established through axes. When there is more than one axis, one axis will be more important to avoid ambiguity. Dominant element is placed on the center of the principal axes, the secondary elements are located at the end of the axes, the tertiary functions are placed on extra axes intersecting the principal axes.
PART TWO: BAUHAUS

Composition of various form contrasts, 1920. Credits: Itten, p. 73.
INTRODUCTION

The Bauhaus was founded by Walter Gropius in 1919 and was forced to close in 1933, parallel to the history of the Weimar Republic. Although the National Socialists suppressed the institute in Germany, in this short period of fourteen years the school managed to lay the foundation for ‘design’ and developed new pedagogical concepts that have been world spread, and even today, are still of relevance. Postwar Germany was eager to find a new architectural style that would express the industrial society, enhanced by the introduction of new techniques and materials such as cast iron, steel and reinforced concrete. The prevailing spirit was to influence the young generation through reformed education, for future impact on the society. The pedagogical concepts of the Bauhaus were a realization of discussions on education reform during the final years of war and postwar Germany.48

Aim of the school

The goal of the Bauhaus is stated in the founding manifesto written by Gropius:

"The Bauhaus strives to bring together all creative effort into one whole, to reunify all the disciplines of practical art, sculpture, painting, handicrafts, and the crafts- as inseparable components of a new architecture".49

Another important new approach was the reintroduction of the craft ideal of the Middle Ages, where people would work together on a communal idea. The ‘Gesamtkunstwerk’, a total work of art that unites all disciplines, became symbol for social unity. Wick summarizes these two approaches as the main two goals of the Bauhaus; aesthetic synthesis and social synthesis.50

50 Wick describes: "Aesthetic synthesis (the integration of all genres of art and branches of the crafts under the primacy of architecture) and social synthesis (the orientation of aesthetic production around the needs of a broad segment of the population and not exclusively around the demand of a tiny stratum of the socially and economically privileged)." See: Wick, p. 55.
Pedagogy

Striking in the organization of Bauhaus training is the division in three levels of instruction: a course for apprentices (lehrlinge), a course for journeymen (gesellen), and a course for junior masters (jungmeister). The three stages and the accompanying titles for the participant reveal the craft ideal of the Middle Ages, as mentioned earlier. This caused, as intended, a strong sense of community. To enhance social interaction between masters and students they also met outside work for lectures, sports, theatre and parties. The school was not limited to architecture but offered a broad variety of disciplines, such as painting and weaving. From the start the Bauhaus makes the students familiar with different materials such as stone, wood, glass, and ceramics, to develop a certain sensitivity for these materials.  

The pedagogy was based on learning by doing. This had major impacts in the manner of teaching. Handbooks transmit information passively and therefore considered irrelevant. Typical for Bauhaus training are the great amount of exercises the master formulated in class that the students executed to inductively gain knowledge.

The Manifesto of the Bauhaus as written in 1919 promotes the philosophy that art cannot be taught, but the techniques from the crafts could be taught and learned. In 'Bauhaus: 1919-1933', a survey of Magdalena Droste in collaboration with Bauhaus-Archiv, is explained what the consequence was of this philosophy. Each student had two teachers, one would teach the crafts, and the other was responsible for the classes in form – the art-part. These parallel courses from craftsman-perspective and from artist-perspective is essential, and typical, in the training of the Bauhaus.

51 Wick.
52 Gropius.
Curriculum

In its short existence the Bauhaus went through major developments, accompanied by conflicts and contradictions even within their own organization. The early Bauhaus is influenced by expressionism in which the individual is the center of importance, combined with the craft ideal. Later the school is influenced by constructivism, practicality and functionality with incorporation of the industry.54

Due to these changing visions the Bauhaus also introduced various education programs. The focus of this report is on the early Bauhaus, 1923, when the outline of the first teaching plan is more or less consolidated, and the utopian ideals of 1919 no longer predominated.

Three levels of instruction
The training started with a trial period of half a year named of Vorkurs or Vorlehre, a preliminary course in which the students could explore their creative abilities. Instruction in form and exercises with materials are alternated to provide the student with a shared basic understanding of design.55 This course is followed by a period of three years of practical instruction and instruction of form. The practical instruction (crafts) was in one of the workshops, such as stone, wood, metal, ceramics, glass, color, weaving, concluding with a legal certificate of apprenticeship. The form instruction was the artistic complement of the practical instruction, with courses in; material, projection, construction, composition, work drafting and model building for all spatial forms, and nature study. This period of three years is concluded with a certificate as journeyman. In the last phase well qualified journeyman would participate in the architectural instruction. This phase was based on a collaboration in the crafts aspects of building and training in construction. As a result the student acquired a master’s certificate.56

54 Wick.
55 Droste & Bauhaus–Archiv.
56 Wick.
LESSONS IN COMPOSITION

Although each master had their own specific philosophy, the general teaching method to provide the student with a basic understanding of composition is similar. The theme of composition is most remarkable in the preliminary course which is already introduced in the early years of Bauhaus. This introductory course remained present although the outline of this course is remodeled under direction of varying masters.

In the preliminary course the pedagogical concept of learning by doing is clearly present in the exercises. The learning process was through thorough experiments to acquaint the apprentice with “the principles which underlie all creative activity in the visual arts”, one of the three main intentions of the preliminary course formulated by Bauhaus master Itten.\(^57\)

\[\text{“We tried to put him [the student] on a solid foundation by giving him objective principles of universal validity, derived from the laws of nature and the psychology of man.”}^\text{\^{58}}\]

By observing and drawing nature they tried to reveal the underlying natural geometry, to study the intrinsic properties of form and material. This was also approached through scientific courses that stressed the importance of nature’s constitutions like energy, impulse and movement, action and reaction, geometry and construction.\(^59\) Especially the cohesion between these constitutions was of importance. Art and science were closely related.

The experiments can be considered as exercises that had a laboratory-like simplicity to research these regularities. Formal relationships were studied in simple geometric forms in an attempt to reveal these general principles. With systematic rigor these primary forms were transformed to understand the nature of the form.\(^60\) The Bauhaus did not want to establish a fixed set of rules. Principles were sought to understand, to improve the awareness, although they could never be understood completely. But through recognition man could design in harmony with it.\(^61\)

One of the three pillars of the Vorkurs is to develop this intuitive sensitivity. Itten, founder of the Vorkurs, describes in his book ‘Mein Vorkurs am Bauhaus’ that the first step is to liberate and strengthen imagination and creative ability. Therefore it was necessary to discard previous knowledge, emphasizing instinct. One had to experience with the senses to gain new knowledge, but this

\(^{57}\) Banham, p. 278.
\(^{59}\) Goldhoorn.
\(^{60}\) For more information on the study of simple forms, see Montessori and Froebel.
\(^{61}\) Ibid.
experience had to be judged intellectually. Subjective observations are objectively assessed. The
recording of knowledge inductively also uncovered universal formal principles like harmony, rhythm,
scale, proportion and symmetry.\textsuperscript{62} This trust in individual observation and synthetic realization is
typical for Bauhaus education. A similar approach can be found in the theories of Bauhaus masters
Moholy-Nagy and Klee. According to Moholy-Nagy “creations needs intuition on the one hand, and
conscious analysis on the other”.\textsuperscript{63} In the case studies Klee will confirm that the alternation of
imagination and conscious thinking is important.

The case studies will try to reveal the composition principles. The student learned through the
exercises, best documented are those of the preliminary course. The case studies are based on the
lessons of three different teachers: Paul Klee, Johannes Itten and Josef Albers.

\textsuperscript{63} Wick, p. 157.
Case study 1

Course: Practical training in composition

Paul Klee

In 1921 Paul Klee, a Bauhaus master, is responsible for the classes which he calls “practical training in composition”\textsuperscript{64}. His lessons, or rather observations or indications, were compiled in 'Pedagogical Sketchbook', issued as a student manual in 1925. These handwritten notes and sketches are far from straight up composition principles, but an abstract of his inductive vision.\textsuperscript{65} Moholy-Nagy, Klee’s colleague, writes in his introduction for the Sketchbook that Klee set himself the task of “pointing out new ways of studying the signs of nature”.\textsuperscript{66} Although the 'manual' is not meant for practical advice, the following analysis will try to extract some implicit principles.

"An active line on a walk, moving freely, without goal. A walk for a walk's sake. The mobility agent is a point, shifting its position forward.\textsuperscript{67}

P. Klee, A line on a walk, 1925. Credits: Klee & Moholy-Nagy, p. 16.

Klee's first figure of his book starts with the accompanying note 'a line on a walk', and he designates the dot as the mobility agent. In this section he steps back to the basic understanding of the instruments an artist uses. Moving a point result in a line, moving a line results in a plane. Each have, in different situations, different properties, for instance they can be active, medial or passive and they are capable of having a direction. These properties are not fixed, they change according to how they are given shape and how they relate to each other.

\textsuperscript{66} Ibid, pp. 7-11.
\textsuperscript{67} Ibid, p. 16.
Another lesson is in structural rhythm. Simple rhythms are built from the repetition of similar units. These logical sequences could help with organization. These sequences provide structure and therefore stability. An understanding of this structure allows you to disrupt it - since it is not about the severe structure itself. From the stability the variety can grow. 'Purely repetitive and therefore structural’, Klee uses the character of repetition as a tool to provide structure.

“Since the arrangements rest on the principle of repetition, any number of units can be added or taken away without changing the rhythmic character.”


This also makes it possible to divide the sequence. This doesn’t apply for individual (or abstract) numerical divisions since they cannot be reduced to 1, but stop at proportions, such as the Golden Section.

Klee introduces us to a new interpretation of the theme balance. Striking for this lesson is that Klee chose as heading: ‘Non symmetrical balance’, which implies that balance is no longer the bilateral conformity of two parts. Matthew Gale, who curated an exhibition of the work of Klee, gives a new approach for balance: 'the equalization of two unequal but equivalent parts'. In Klee his figures balance can be disturbed and restored through metric, weight and character.

“[..] Bones give support to the total organism: also when in motion.
Muscles have a higher function because they act beside each other.
One bends, the other stretches.
One bone alone achieves nothing.”


Another section of Pedagogical Sketchbook is about how every element has an impact on another. For example, two colors might both have more impact when they are next to each other than if they would be alone. Klee draws a parallel with how relationships work in nature. According to Horowitz, Klee is convinced that art is subject to the same regularities as nature. The mechanics of bones and muscles tell us something about the function, hierarchy and collaboration.70

If we were to ‘translate’ Klee’s parallel with nature, the following observations could be recorded:

- Elements can be grouped in entities, each entity having their own function, ‘being’ or distinct abilities.
- The different entities are organized in a particular manner, based on a certain hierarchy. This order is based on the abilities of the entity, i.e. some entities are more dominant and supersede others.
- Also the entities can be either active, medial or passive, corresponding with the hierarchical order. The active determines the behavior of the passive, through the medial. “The position of two bones toward each other must change if the muscle decide so.”71
- Each action is counterbalanced with a reaction. Even when there is no apparent movement, that doesn’t mean there is no energy transmission: “even at rest they depend on mutual support”, describes Klee on the relation between bones.72
- The independence of a group of entities is relative, since each specific group is on their turn related to the whole.

“As norm for composition we may postulate: a harmonization of elements toward an independent, calm-dynamic, and dynamic-calm entity. This composition can only be complete if movement is met by counter-movement or if a solution of kinetic infinity has been found.”73

71 Ibid, p. 28.
72 Ibid, p. 27.
73 Ibid, p. 59.
Case study 2

Course: Vorkurs

Johannes Itten

Johannes Itten, involved from the beginning of the Bauhaus, developed the Vorkurs, the basic course that would be the core of Bauhaus pedagogy. In his book 'Design and Form' he explains that the basis of his theory on composition was the general theory of contrast. A variety of topics is addressed through the effect of their contrast. He wanted the students to experience the relativity of contrast: “A large dark form becomes more significant next to a small bright form”. These relationships and interdependencies were clarified through contrast. As already mentioned earlier the aim of his lessons was to develop intuitive sensitivity. The exercises were designed to experience with the senses, to then judge these subjective observations objectively. Droste describes his pedagogical approach with the pair of notions 'subjectively experience' and 'objectively recognize'.

“If composition is to be based on a certain contrast, this relativity plays an important role. The two contrasting elements must be chosen so that they result in a definite expression.”

To introduce his students in the study of light/dark-contrasts he gave them the task to produce a white and a black circle. In reaction to this assignment, Itten reflects that drawing just the outline does not result in a white circle. The preserved results show that the students were experimenting with dark tones surrounding the white circle in order to fulfill the assignment.

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75 Ibid, p. 16.
76 Ibid.

Case study 3
Course: Vorkurs
Josef Albers

From 1923 Josef Albers is one of the Bauhaus masters responsible for the basic course. Although there were some differences between Albers and Itten, beyond the scope of this case study, the preliminary course remained quite similar. His exercises covered a remarkable range. Again, the goal was to let the student explore, instead of imposing a predigested theory. In ‘Josef Albers: To Open Eyes’ Horowitz takes the reader through Albers’s life in teaching. He explains that the experience that the student gained through the exercises is that creativity was not an application of a set of rules. Neither was it a ‘free-form experience’. The key to creativity was to get a hold on the specific circumstances.

"Design is not decoration; design means an understandable order... It is understandability. It is not beauty. If it is understandable it is beautiful. Basic design meant the study of fundamental problems underlying all of art." 78

As an exercise to grasp the constitutions/dynamics of abstract relationships Albers let the students draw sequential arrangements of dots, straight lines, squares, rectangles and circles, alternately alone or combined, in a series of small frames. From these simplified compositions the students could extract general principles that determined these constitutions/dynamics. The compositions challenged the student to think about negative and positive shapes, whether the composition is balanced or imbalanced, if there is movement or not, where tension arises, which element dominates. 79

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78 Quote of Albers in Horowitz, p.124.
79 Ibid.
“Albers also concluded that there were no absolutes in design, but he maintained that the persistent and disciplined observation of formal interactions would sharpen awareness and so lead to coherent design.”

In the reordering exercise Albers once more addressed the ‘relational seeing’. The assignment was to study a given order of a material, surface or object, and then manipulate it so that the outcome is more exciting. After examining the pattern the student investigated to what extent the pattern could be transformed while preserving a pattern of significance. The intention was to reach a healthy balance between the element and the whole.

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80 Quote of Albers in Horowitz, p.122.
81 Ibid.
“The spatial experience is the experience of the relationship of objects, […] experienced most directly by movement.”

Other exercises to reveal the underlying natural geometry of form was to draw, consciously, familiar numbers, letters or names. The learning objective was to recognize that every form has distinct characteristics. The students also recorded the spaces between the rungs of chairs or between milk bottles. This way they realized that these were actually inverted shapes, although 'negative' or 'unfilled' - but never merely 'empty', as Horowitz describes accurately. Space is flowing and is able to take on various shapes, but hardly ever is it rectangular. Space is studied as if it were an three-dimensional object. The material or mass defines the boundaries in which space is flowing. The Bauhaus believed that architecture was to be experienced through the experience of space. And space is to be experienced by movement, since this is the manner in which we relate objects to each other.

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83 Horowitz.
84 Moholy-Nagy.
CONDUCTED EXERCISES

In accordance with the philosophy of learning by doing, the exercises are conducted by the author. The following pages are copies of the result. The personal observations are included in the overview of lessons in composition.
OVERVIEW OF LESSONS

The lessons of the Bauhaus show that the institution did not have the intention to impose a list of pre-determined principles, but there are some consistencies in the lessons. These recurring 'ideas' are related to each other, influence each other and seem to have a case-specific hierarchy. Therefore these ideas are difficult to describe in a few words. In the following overview the lessons are grouped according to similarities in their specific topic. This is an overview of the 'implicit composition principles' derived from literature and from the personal observations made during the execution of the exercises. In order to see the relations with other lessons, the sections are provided with themes which serve as keywords for these consistencies.

Bauhaus-composition was based on an understanding of universal principles derived from laws of nature and the psychology of man.

**Literature**
Design in harmony with the laws of nature. Laws of form are based on a underlying natural geometry. Art is subject to the same regularities as nature is. Elements, such as points, lines, planes, have inherent properties.

**repetition**
Elements can form logical sequences that help with organization. Sequences are based on repetition and provide structure; and therefore stability. From stability the variety can grow. (Disruption is absolutely allowed) Sequences have a rhythmic character. Numerical sequences (proportions) are a tool for organization.

**variety**
Shapes have (formal) relationships: every element influences another. Each element has its own function or ability. There is a hierarchy between the elements that determines the order; there is a dominant. Each element has its own role within this hierarchy, dominated by one. Action is always counterbalanced by reaction. Each element relates to the whole, all interdependent.

**rhythm**
Balance is no longer the 'bilateral conformity of two parts' but 'the equalization of two unequal but equivalent parts'. Balance can be achieved through non-symmetrical balance as well. Balance can be disturbed and restored through metric, weight and character.

**proportion**
Contrast is relative. Two contrasting elements must result in a definite expression. Elements mutually affect each other through colour, weight, position and size.

**relations**
Repetition of elements result in a certain rhythm. Rhythm is the movement which connects on object to another.
A clear order, sequence or pattern is easy to understand, but doesn’t capture the attention (i.e. not exciting), needs to be relieved from its static quality. A healthy balance between the individual and the whole is achieved when there is a more dynamic character while remaining a meaningful order. When there is no harmony in the composition, there are tensions.

Forms have a distinct character. There are positive and negative shapes. They are equally important. The positive and the negative have a mutual effect on each other – they are intrinsically linked. Space also has a shape, with three dimensional properties. The shape of space is defined through the boundaries of material/mass. Space is flowing, hardly ever taking a rectangular shape.
PART TWO: BAUHAUS
PART THREE: COMPARISON

Change from area to line, c. 1921. Itten, p. 111.
GENERAL REMARKS

This chapter will compare the lessons in composition of both schools. The comparison is based on the theory of primary and secondary sources, and on the personal observations made during the execution of the exercises. The first part of this chapter will discuss some general notes in relation to the time frame and aim of the school. This will cover some differences and similarities which outlines the background for the rest of the comparison. In the second and third part the implicit principles as interpreted from the lessons in composition are opposed.

Composition cannot be taught
École des Beaux-Arts and Bauhaus share the philosophy that composition cannot be taught. The elements - the vocabulary - can be taught, but the matter of putting them together is a matter of practice. The meaning of what these elements were changed. The Beaux-Arts identifies two types of elements: those of architecture – wall, column, vault –, and those of composition – vestibule, court room, dining room. Bauhaus defined elements as point, line, shape, texture, color, direction, tone, motion. This change is related to the different aims and timeframes of the schools. The Bauhaus wanted to introduce a new architectural language, in which all disciplines are united. The outcome would be a total work of art, established through forms of apprenticeship. Therefore they went back to the basic tools that underlie all visual arts, not only architecture. The École and predecessors wanted to achieve a higher degree of perfection - in architecture. To do so they distanced themselves from forms of apprenticeship but institutionalized architecture in order to introduce a system of reason and logic to approach perfection.

Precedents - nature
Even though the denotation of elements altered, both schools believed in the reciprocity of the element and whole. The element in itself is an autonomous individual: each having their own functions or abilities. The elements are interdependent and since every element influences another it was thought of great importance to carefully study these relationships. The Beaux-Arts states that these relationships are to be found in the program. The program would tell the division and order of the various departments that was intended. The student would analyse precedents to practice how to read the program. The Bauhaus states that these relationships are to be found in the constitutions of the elements. The student would study the laws of nature to gain understanding in this field. While the Beaux-Arts analysis mainly focused on order and proportion, the Bauhaus experimented even further with colour, weight, texture and material.
Science & art
So the Beaux-Arts aimed to improve architecture - refine existing schemes - based on precedents, while the Bauhaus aimed to develop a new architecture - introduce new schemes - based on nature. The manner in which they explain the design process is strikingly similar: both have a two-fold approach of reason and imagination – science and art are the basis of their studies.

Concept of space: 2d – 3d
Another important aspect that is observed during the execution of the exercises is that the Bauhaus developed a new concept of space. In both schools the relations between positive and negative are studied. In the exercises of the poché is visible that space is often rectangular. The structure is the remaining inverse shape of space. But the Bauhaus had a new interpretation on how these two are related. The Bauhaus stressed the importance of space, and saw it as a shape, a three-dimensional object – capable of having transformations. The shapes of mass and space are of equal importance and intrinsically linked: they have a mutual effect on each other. Space was no longer an entity bound between walls, but it was part of the universe – shaped / defined through the boundaries of mass. The new concept of space is possible because new materials and construction techniques allowed for non-symmetrical structures. This enabled space to flow - hardly ever adopting a rectangular shape.85

The last general remark on the lessons regarding the timeframe and the aim of the schools will already touch upon some themes that will be discussed more elaborately in the second half of part three. This remark is vital for the comparison and therefore worth the risk of already revealing some insights.

Pure harmony – definite expression
The most important difference in the lessons in composition is how the schools perceived ‘good’ architecture. The Beaux-Arts considered ‘perfect’ architecture as pure harmony: a composition of total stability and axial balance. The Bauhaus considered ‘good’ architecture as a clarity of statement, a definite expression. Symmetrical balance is not the only way to achieve this, but can also be achieved through contrast. Just as the need for harmony, there is a need for contrast. This seemingly contradicting technique sharpens the composition, and therefore in a way complements harmony. The introduction of contrast indicates the preference for a dynamic composition over static, and the importance of movement.

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85 This changed vision of space is also visible in the tools used in the process and in the representation of the design. Beaux-Arts: 2d, plan first, then section and elevation. Bauhaus: 3d, physical model.
THEMES OF COMPOSITION

The second part of this chapter will continue with the themes of composition. In the overview of lessons of the previous chapters the consistencies are marked with keywords, which have been summarized in eight themes. To arrive at a shortlist is a difficult process, since each theme affects another theme, and is highly influenced by the Zeitgeist. This list does not have the intention to be absolute, but is an attempt to phrase certain regularities and irregularities per theme. In the following table the themes are listed on the left followed by a general definition of the theme and the specific interpretation per school. This table is explained in the section below and ultimately leads to implicit principles of composition.

<table>
<thead>
<tr>
<th>Theme</th>
<th>Beaux-Arts</th>
<th>Bauhaus</th>
</tr>
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<tbody>
<tr>
<td>order</td>
<td>Relationships between the elements</td>
<td></td>
</tr>
<tr>
<td></td>
<td>To be studied in the program</td>
<td>To be studied in nature</td>
</tr>
<tr>
<td>proportion</td>
<td>The relation between parts</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Based on Classical proportion systems</td>
<td>Based on proportion systems of nature</td>
</tr>
<tr>
<td>balance</td>
<td>A state of equilibrium</td>
<td></td>
</tr>
<tr>
<td></td>
<td>By symmetry</td>
<td>By non-symmetry</td>
</tr>
<tr>
<td>harmony</td>
<td>Satisfying relationships between the elements and the whole</td>
<td>By proportion</td>
</tr>
<tr>
<td></td>
<td></td>
<td>By proportion, color, form, tone, etc.</td>
</tr>
<tr>
<td>contrast</td>
<td>Juxtaposition of different elements</td>
<td></td>
</tr>
<tr>
<td></td>
<td>To express hierarchy</td>
<td>Counterpart of harmony to reach balance</td>
</tr>
<tr>
<td>pattern</td>
<td>Arrangement of elements</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Basic structure</td>
<td>Organizational tool</td>
</tr>
<tr>
<td></td>
<td>Refine old schemes (static)</td>
<td>Create new schemes (dynamic)</td>
</tr>
<tr>
<td>rhythm</td>
<td>Movement which connects the elements</td>
<td></td>
</tr>
<tr>
<td></td>
<td>By axes (static)</td>
<td>By the flow of spaces (dynamic)</td>
</tr>
<tr>
<td>elegance</td>
<td>Idea of essential</td>
<td></td>
</tr>
<tr>
<td></td>
<td>By truth of construction &amp; arrangement</td>
<td>By inherent properties of material</td>
</tr>
</tbody>
</table>
PART THREE: COMPARISON

Explanation of the table per theme:
[Text in the margin refers to other themes to show the cohesion between the principles]

<table>
<thead>
<tr>
<th>Theme</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Order</strong></td>
<td>The principle of order deals primarily with studying the relationships of the elements. In a previous section is already mentioned that the Beaux-Arts studied the program and the Bauhaus studied nature to determine the appropriate relationships. Although their source of information differs, their concept of order is similar. Both schools agree that within the elements there is a certain hierarchy that determines the order. Each element has its own role within this hierarchy, depending on its importance. Therefore there is always one element that is most important - the dominant. Variation or contrast is indispensable in hierarchy. Although not literally formulated in the theory, the emphasis on a clear order implies the preference for unity. The Beaux-Arts-technique for developing hierarchy is the use of axes of symmetry. Primary elements were placed on the primary axis, the secondary elements were allocated around the axis and tertiary elements further away from the main axis. The Bauhaus did not have rules concerning the location of the elements related to their importance, nor did it use axes to express hierarchy. The Beaux-Arts relates the importance of elements to matching proportions. The Bauhaus also uses proportion as a tool to support order, although less pervasive as the École. This might be a result of the multidisciplinary approach - lessons of the Bauhaus were also focused on other concepts to express the order, such as colour, tone and texture.</td>
</tr>
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<td><strong>Proportion</strong></td>
<td>Proportion has two meanings, the absolute and the relative. The absolute refers to the literal dimensions of a part, the relative to a certain ratio or relation between parts. Especially the latter one is of importance, for both schools. This interpretation of proportion is directly related to harmony. For this 'type' there is no set of rules. In contrast to the absolute proportions the relative proportion cannot be taught, but had to be practiced in order to develop a certain feeling for measurement. For the Beaux-Arts the proportional relations of elements to the whole is considered as one of the fundamental principles of architecture. The lessons of the Bauhaus do not stress the importance of proportions as much as the Beaux-Arts. The Beaux-Arts student could withdraw information for proportioning from the writings of Alberti and Palladio who had very specific proportion systems. These systems were applied to create harmony and balance in the composition. Since the Bauhaus tried to break with history, the students did not study these handbooks anymore. It seems that they did not use the classical proportion systems anymore, but based their proportions on modular systems derived from nature. Since the regularities in nature…</td>
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also were the inspiration for Vitruvius, there are probably more similarities between the proportion systems than the Bauhaus would admit. But the Bauhaus did manage to break with the symbolic character that had become inherent to the classical proportion system. The topic of symbolism is not part of this research, but presumably this must have had an influence on how the proportion system was applied.

Balance
When both sides are equally distributed there is balance – a state of equilibrium. Although both schools strived for balance, there is a fundamental difference in their approach. The Beaux-Arts achieves balance through symmetry: equal parts on both sides of the axis. Just as proportion, the concept of symmetry is derived from nature, specifically in the symmetry to be found in the shape of the human body. In the patterns of a Beaux-Arts design the symmetrical relations are clearly traceable. This axial organization is one of these unwritten rules which is dominating every composition, but hardly justified in text.

At the Bauhaus balance is no longer achieved through symmetry, but through a-symmetry: 'the equalization of two unequal but equivalent parts'. With non-symmetrical balance the position or weight does not necessarily have to be equal. The tensions between the positive and the negative – elements and space / space and elements - can achieve parity. The Bauhaus examined the limits to which composition can be modified while still retaining balance and unity. The aim was to break with the static compositions that were dictating classical architecture. Although admitting that a clear order is easy to understand, it was not considered exciting. The Bauhaus believed that a healthy balance between the individual and the whole is achieved when there is a more dynamic character while remaining a meaningful order. Contrast and harmony complement each other. As mentioned 'good architecture' was above all a clarity of statement. Whether this sense of clarity is achieved is less formalized than the Beaux-Art methodology and relied to some extent on the creator's subjective judgment.

Harmony
Harmony can be explained as a satisfying combination of elements in a whole. The École and Bauhaus both stress the importance of studying the relationships between the parts of a whole. When the correct relations are established there is harmony. According the Beaux-Arts it is proportion that is able to establish the correct relations. The Bauhaus not only appoints proportion to establish these relations, but also themes as form and color.
**Contrast**
The schools agree that contrast is an important aspect of composition, because it is mandatory to establish hierarchy. For the Beaux-Arts the importance of contrast comes from a fear of duality. Contrast is especially present in the varying proportions of elements to emphasize an explicit order. Although contrast is indispensable because of its ability to express hierarchy, it is definitely inferior to harmony and balance. The Bauhaus grants another value to contrast. Students studied every conceivable type of contrast in form, scale, tone, color etc. They looked at extremes and gradations. Contrast was deployed to make the composition more dynamic, while harmony guarded the clarity. Contrast and harmony were dualities, that were of equal importance to arrive at a balanced composition.

**Pattern**
The theme of pattern refers to figure/ground or positive/negative, it is the repetition of elements in sequence or arrangement in a design. It is a blueprint of the theme order. Where the Beaux-Arts and Bauhaus have a similar concept of order, the representation of this order in a pattern is quite different. Where the Beaux-Arts still relied on a selective range of pre-determined organizational schemes – parti’s, the Bauhaus no longer relied on these past schemes. They utilized grids for spatial modulation and structural layout. The grid is used for organizing the composition, but it is solely a tool, not an end in itself. The Beaux-Arts was more strict in following the organizational scheme. The pattern of the Beaux-Arts is most influenced by the number of axes and how the hierarchical order is established. The patterns are striking for their regularity, partially determined by the unwritten rule of symmetry, but also due to the construction limitations. Not only questioned the Bauhaus all these unwritten rules, but new materials and construction techniques also allowed for rethinking the role of symmetry. The pattern of the Bauhaus can be described as a more liberated composition, which is no longer determined through axes of symmetry, but instead was influenced by the flow of space.

**Rhythm**
Rhythm can be understood as the moving force, or flow, which connects elements within a composition. The relevancy of this topic is especially stressed in the case studies of the Bauhaus. Although the Beaux-Arts did not mention the subject of rhythm as such, it is apparent in the floor plans, especially in the exercise of the poché. Although rigid, the sequence of the blackened structure has a rhythmic character. But the Bauhaus discusses this topic on a more conscious level. Their theory is that space is best experienced by movement because this shows the relationships between objects. The composition of spaces is to be experienced from walking through the building. Past architectural compositions were characterized as static and hierarchical. The shift from symmetrical composition to non-symmetry makes the flow of spaces possible. The composition became fluid and dynamic, yet balanced, liberated from its static character. The concept of movement determined the pattern of the plan.
Elegance
This principle did not necessarily stand out while discussing theory of composition, but is apparent in both schools. The Beaux-Arts touches upon this principle when explaining the value of truth – when it is not more complicated than necessary. It is regarded as 'beauty' when architecture arouses the idea of essential. The Bauhaus shared this philosophy. Both studied the inherent properties of the elements to understand the particular structure, qualities and limits. Once again, the meaning of elements of the Beaux-Arts differ from those of the Bauhaus but the principle is the same. The Bauhaus assigned specific qualities to different materials. During exercises, that have not been mentioned in this research, students tried to make something that could only be made of specific material, to reveal its characteristics. The Beaux-Arts also stresses that the building should express nothing else than its structure. Also in the arrangement of the elements the theme of elegance recurs. The student of the École studied how to connect the different departments of the program. When the departments were conveniently connected and as simple as possible, intelligent economy was reached. This didn’t mean minimal measurement, but maximum result with minimal use of effort.
PART THREE: COMPARISON

IMPLICIT PRINCIPLES OF COMPOSITION

The principles are formulated based on the recurring themes per school:

**order**
- **Beaux-Arts**: Order should be sought by establishing the correct relationships between the elements, to be studied in the program.
- **Bauhaus**: Order should be sought by establishing the correct relationships between the elements, to be studied in nature.

**proportion**
- **Beaux-Arts**: The correct relationships between the elements should be established by proportion, based on Classical proportion systems.
- **Bauhaus**: The correct relationships between the elements should be established by proportion, based on proportion systems of nature.

**balance**
- **Beaux-Arts**: Balance should be sought by symmetry.(harmony)
- **Bauhaus**: Balance should be sought by non-symmetry.(harmony & contrast)

**harmony**
- **Beaux-Arts**: Harmony should be sought by establishing the correct relationships between the elements and the whole, by proportion.
- **Bauhaus**: Harmony should be sought by establishing the correct relationships between the elements and the whole, by proportion, color, tone, form, etc.

**contrast**
- **Beaux-Arts**: Contrast should be sought by juxtaposing different elements, to establish hierarchy.
- **Bauhaus**: Contrast should be sought by juxtaposing different elements, to establish a definite expression.

**pattern**
- **Beaux-Arts**: A pattern should express the arrangement of elements, which serves as the basic structure for the design.
- **Bauhaus**: A pattern should express the arrangement of elements, which serves as an organizational tool for the design.

**rhythm**
- **Beaux-Arts**: Rhythm should be sought to establish movement that connect the different elements, by axes.
- **Bauhaus**: Rhythm should be sought to establish movement that connect the different elements, by the flow of space.

**elegance**
- **Beaux-Arts**: Elegance should be sought to arouse the idea of essential, by truth of construction and arrangement.
- **Bauhaus**: Elegance should be sought to arouse the idea of essential, by the inherent character of materials and form.
This study is an attempt to write down the principles of composition taught in former education programs of the École des Beaux-Arts and the Bauhaus. Both schools considered composition to be a practice of design rather than a theory. From this practice they postulated universal principles, each inspired by different sources. Beaux-Arts derived them from juxtaposing precedents, Bauhaus from laws of nature and the psychology of man.

The comparison distinguished eight themes, which are all apparent in a greater or lesser extent in both the École as the Bauhaus. There are striking similarities in the general concepts of the principles. But the time frame and therefore the aims of the schools result in different interpretation of the principles. While the principles of order, proportion, harmony and elegance are recurring in a similar fashion, the principles of balance, contrast, pattern and rhythm recurred with an altered interpretation, that had a major impact on the expression of the composition. The shift from a preference for dynamic over static, the new materials such as glass and steel, and the new concept of space are most decisive for the changed perception of the principles.

After examining the composition principles of both schools the question arises if there are principles that are lost throughout the years and whether they could be reintroduced in the current practice of architecture. Since the general outline of the themes are recurring in both schools, although the Zeitgeist changed tremendously, one could assume that the themes themselves are less time bound and therefore are still of value in our current practice. The value of writing down the principles does not lie in the direct application of them, but rather in the characteristics they reveal. It is up to the designer to interpret the themes resulting in specific principles. This study does not have the intention to express a preference for certain principles, but could provide insights in the distinctive features of principles and the relation with other principles.
BIBLIOGRAPHY

Primary sources


Secondary sources


Tertiary sources


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