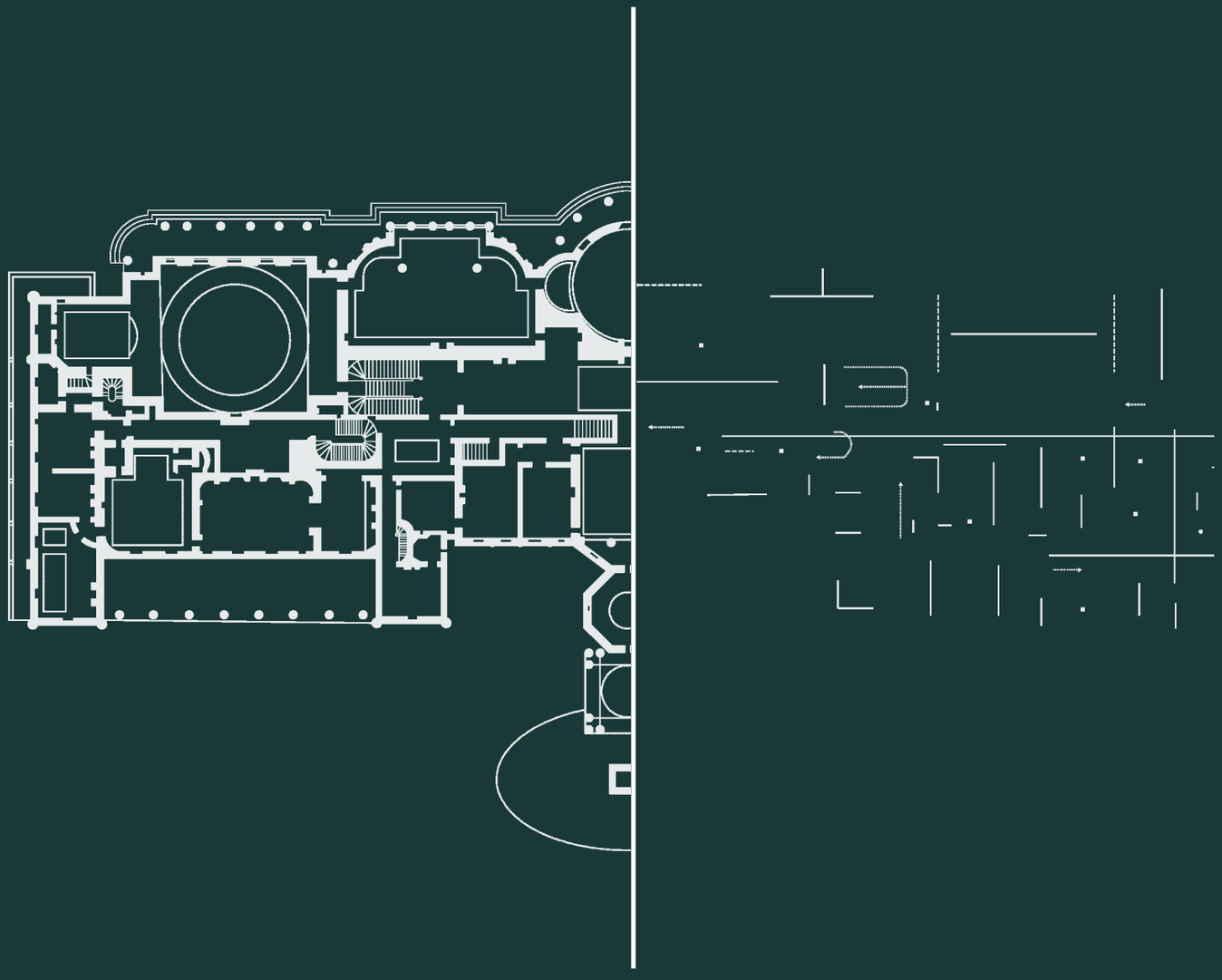

THE EPISTEME OF THE PLAN

RESEARCH ON PLAN DESIGN FROM 1800 UP AND UNTIL 1950

Eindhoven University of Technology
Faculty of the Built Environment

7QX5M0 | Seminar Urbanism and Architecture
The épistémè of the plan
Wouter Hilhorst

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1. INTRODUCTION | SEMINAR

INTRODUCTION

This report is a result of seminar The épistémè of the Plan, held in the fourth quartile of academic year 2018-2019, at Eindhoven University of Technology. The goal of the seminar was to find out whether thinking about space, or more precise thinking about the configuration of floor plans, is determined by sets of constraints, by systems of thought: whether such a thing as an architectural épistémè could be found.

In his book Les mots et les choses ('the words and the things', English title The order of things - 1966) French philosopher Michel Foucault proposed the concept of épistémè. Epistémè is the set of conditions for what is possible to be thought in a certain period of time: Foucault argues, writing about the human sciences or humanities (in his case, to be more precise, linguistics, biology and economics), that what people are able to hold true is determined and restricted by a set of implicit rules. Every mode of thinking is determined by its own system. "If we can uncover these rules, we will be able to see how an apparently arbitrary constraint makes total sense in the framework defined by these rules" (Gary Gutting in Foucault – A Very Short Introduction). Modes of thinking can change in history, and so can épistémès. Foucault talks about three consecutive systems of thought: that of the Renaissance, of the classical period of the 17th and 18th centuries, and the modern épistémè.

In order to find out whether such a thing as an architectural épistémè exists, the seven students of the seminar – the authors of this book: Arghavan Khaefi, Alissa Los, Danny Meijer, Jesper van Peer, Jade van Pelt, Ubaid Ibrahim and Marta Waloszková – started with reading texts about épistémè, configurations of architectural plans, and ways of analyzing these. From this reading, and from the discussion in the first meeting, the group decided to approach the question with case studies, which would have to cover a certain period of time, to see whether, if specific sets of rules could be found, these rules change over time. The time frame was determined: the cases would have to cover the time from 1800 until 1930.

The second step was to determine the method of analysis. Experimenting in the first few weeks of the seminar, three methods were chosen: the first would be drawing just the outlines of all interior spaces, to see what kind of pattern such an abstraction would yield. The second was to try to determine the spatial 'skeleton' of the plans of the buildings by using a technique commonly used in computer pattern-recognition, grass fire transformation. The third was drawing Space Syntax diagrams. As an additional fourth step, the grassfire-transform patterns were translated into graphs.

In a collaborative effort, in weekly discussions towards the end of the seminar, possible coherences between developments observed with the different analytical techniques were traced. All plans and diagrams abstracted from them were compared, in an effort to find trends in time in the development of the configuration of the plans.

This book is a direct reflection of this working process. It starts with the summaries of the texts read. Then it proceeds with the case studies, presenting all analysis drawings. The comparisons, to trace possible trends, form the conclusion.

Looking back, the experiments with the method of grass fire transformation, because as yet seemingly unexplored territory in architectural analysis, yielded most new insights, and exciting discussions: we had to find out ourselves how to apply this method, experimenting and developing the method in discussions along the way. With the very engaged group of students, and the feeling of discovering new things every week, this made for an exciting journey. Hopefully, these first findings with the architectural épistémè, and the method of grass fire transformation to trace it, will be developed in subsequent seminars and studies.

The reading guide aims to break down the type of experiments used to find a general footing behind the building plans. It introduces three different types of experiments, each with their own set of rules. The first experiment is called the 'interior spacing experiment'. It aims to better understand the shapes that define the rooms and how the nature of these spaces may have some co-relation to their functions. The second experiment is called the 'grass fire experiment'. It means to simply each walled space, as a dash or a dot. It is a metaphor for how fire would travel through grass, and the marking it would leave behind is what is definitive in this experiment. Each space within the grass fire experiment is considered and dealt with differently. And lastly the space index diagram is an experiment that aims to study the plan. Using simple shapes, it codifies the entirety of the plan and shows the cluster of rooms in one space as opposed to another.

Room outlines

The floor plans of the different buildings show us different characteristics of the building, but by simplifying the floor plan in just showing the outlines of the inner rooms, other characteristics come forward. In the example there is shown a simplistic floor plan with different shapes of the rooms. What is often showed in the outlines of the rooms is that the room with the round shapes comes forward. This also shows the contrast with the outside line and the inside spaces. Some buildings have a straightforward shape, for example the square or rectangle, you can see in the these drawings how the relation is between the exterior and the interior. In this example there is a strong exterior shape with irregular rooms placed inside.

Openings, like doors and windows, are left out of the drawing, this to really focus on the qualities of the spaces itself and not put you attention somewhere else. In this way it looks like separate figures put together. You only look at the spaces of the building, you loose the structural patterns, therefor the circulation within the building becomes more clear.

Space syntax

In order to analyze the organization of the rooms in relation to each other, a space syntax experiment is used. This experiment elaborates on the way the building is organized on the inside. In order to compare the different buildings, there has been made use of a graph. In each graph circles and connection lines are visible. Each circle represents one room, this room is connected with other rooms by openings, these are represented by the lines.

An example is given to briefly introduce the experiment. Since you enter each building from the outside, the outside is represented by a circle with a cross in it. The outside is connected with room A, which in turn leads to two different rooms, B and C. And B leads to one room, room D. Room C, leads you to room E and F. Each time you enter a new room, the space index diagram goes one level up.

The example is simple, but clearly shows how the program inside the building, with the different spaces, relate to each other. In some of the buildings in this time lines, it somethings occurs that rooms have relations with more surrounding rooms, this means that there are more connecting points. As the example shows, there is tried to prevent the lines from intersecting. Here rooms E and F are connected by room D by using a arch in the line. This to make the space index diagram as clear as possible.

In this way the spatial characteristics of the building, relating to the organization of the rooms is visualized.

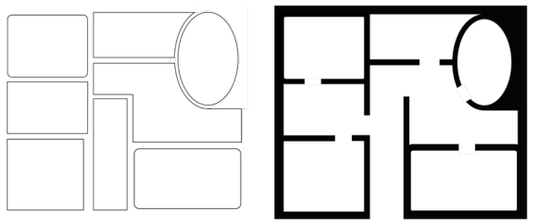


image 1.1
example room outlines

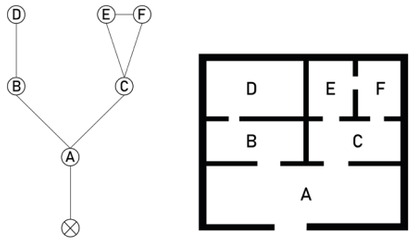


image 1.2
example space syntax diagram

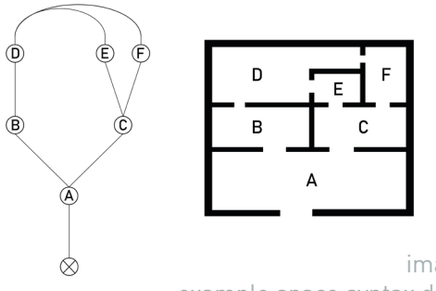


image 1.3
example space syntax diagram

Grass Fire Experiment

The grass fire experiment uses different line types depending on the type of spaces. Spaces are categorized differently depending on the line types. The primary space that includes the rooms, terraces, corridors, and areas around atrium spaces. Rectangular rooms are represented by a dash, at the center of the room. Irregular shapes such as a trapezium or others follows the angle of the room itself. Any equilateral space such as a square or circle is represented with a dot at the center. The lines always partition the room from the center. But the lines never completely split the room. The secondary spaces are represented with a dashed line. The secondary spaces are mostly spaces with columns. A column divides the room but essentially, it is only a partial division. Hence we consider these spaces as 'zones'. The idea of 'zones' was introduced because of the building plans of the mid 90's, where spaces became increasingly abstracted. Many spaces consisted simply of minor partitioning walls, but it led to the idea of perceiving spaces as zones. Hence to have a coherence, columns also create secondary spaces. There are several diagrams below to understand how the secondary spaces are perceived. The dashed lines usually extend from the center of one column to the other. The lines are always placed in the center of the space between the column so as to equal zones. Lastly circulatory spaces are staircases. They are represented by a dotted line, with an arrow to show the direction of the circulatory elements. Elevators however are perceived as primary spaces.

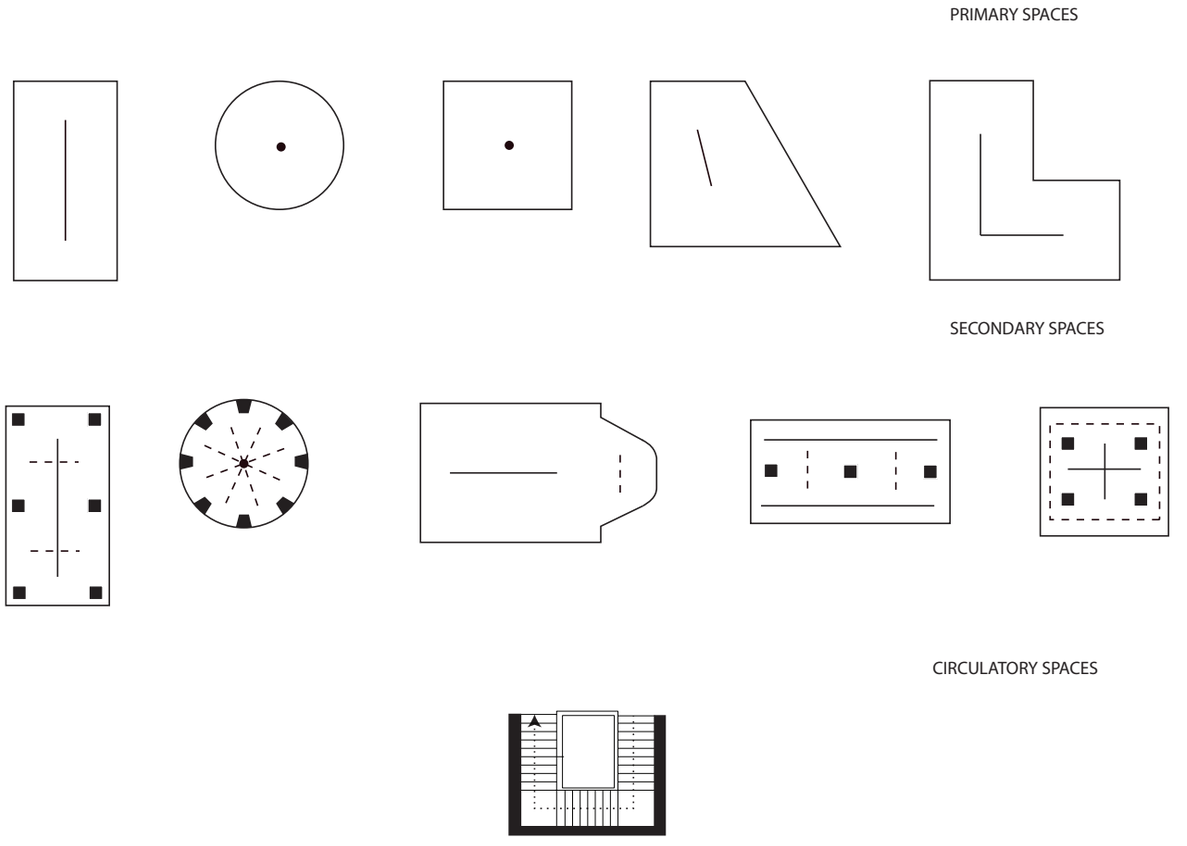


image 1.4
example grass fire diagram

2. SUMMARIES | LITERATURE STUDY

Image of book cover: https://www.uni-kl.de/FB-ARUBI/gta/Lehrveranstaltungen_WS_2009-10/Seminar_Architektur_analysieren.html

IN THE BEGINNING THERE WAS A FLOOR PLAN

Architecture can be seen as an art that marks, differentiates and specifies concepts, such as inside-outside, public-private, nature-culture etc.

Firstly, there was no such thing as a scaled floor plan, but a builder who directed the craftsmen where to put walls, columns, floors etc. Everything was about the real life scale. Later on, in the 1300's, the smaller scaled floor plans in form of a drawing was introduced, which was since then considered as the building script of the building, the plan comes first.

A floor plan has to be able to not only depict what the division of rooms have to look like, but also to depict and explain the high differences, shapes and ambiances of the spaces and the manner in which they have to be built.

THE PLAN AS GENERATOR | French plans of the 19th century

The plan as generator is a concept that has been used by many architects such as Le Corbusier, but finds his origin in the École des Beaux-Arts in Paris and perfected by Quatremere de Quincy in the 18th century. This way of designing became almost a state doctrine, used by all architects.

Around 1800, Durand (professor of the École Polytechnique) says that architects in this time are used to firstly design the floor plan, from which the section arises and viewing the building envelop to be no more than a projection of an already completely invented building. Durand's doctrine is identified by two main concepts: the introduction of a universal grid and the rigid modularization of designing work and processes.

The colleagues of the École are rejecting Durand's ideas in their way of working and teaching, because they are not used to this methods and see no added value in using them to design architecture.

Violet-le-Duc is one of the fathers of pragmatism in architectural design. He criticizes the École des Beaux-Arts and its purposeless repetitions of generic concepts, which are not fitting to the particular purpose of an individual building. Le-Duc sets forth a certain movement within architectural design, which focusses on the fulfillment of heterotopic spaces of the modern city and the exclusiveness of modern architecture around the individual object in infinite and abstract space.

THE FLOOR PLAN AS COMMUNICATIVE STRUCTURE

The École des Beaux-Arts forced the design work to the level of distribution, which was about the functional reasoned differentiation of different room elements (main rooms, side rooms, building envelop) and the corresponding elaboration of the building block. The focus lays on the moment between inside and outside, which takes place around the building envelope and walls. Julien Gaudet wrote Élements et théorie de l'architecture, in which he says that one composes architecture trough rooms, atria, exits and staircases.

Three of those four elements serve the circulation of the building, but the most important functional element, the corridor or floor is being forgotten.

Alber Geul distinguishes in so called communicational spaces: entrances, atria, corridors, staircases and courtyards. This type of planning is essentially based on the criterium of inner transport; the fundamental distinction between closed and developed spaces, between public communication structures and connected semi-public spaces for specific functions. All these elements are serving the circulation of the building, which ties in with a rather known quote by Le Corbusier: "Architecture is circulation".

Georg Simmel was the first to derive a theoretical interest in considering the plan as a communicative structure. In his Sociology of 1908 he founded a sociology of space, which he brought under the heading of "space fulfillment": "If a number of people within certain spatial boundaries in isolation next to each other, so each fulfills with their substance and their activity directly their own place and between this and the place next is unfulfilled space, practically speaking: nothing. The moment these two interact, the space between them appears fulfilled and animated.

Kant defines space as 'the possibility of being together'. The interaction makes the previously empty and nothingness something for us, space is fulfilled by making the interaction possible.

Norbert Elias writes about the relation of social units to the spatial form they give themselves: "But they are all characterized by certain types of interior design. They are always units of interrelated, intertwined people; and although the nature or type of these relationships can never be expressed to the last and the essentials by spatial categories, they can always be expressed by spatial categories. [...] This refutes the idea of a social unity in space, the type of its interior design, as a tangible, a - in the literal sense - visible representation of its peculiarity.

Society' is represented in the premises of the social space. These occupy the main and middle part of the representative ground floor.

FIGURES, DOORS, PASSAGES

A revolution in floor plan analysis came to be, made possible by English historians and systematics. In the ideal case, analysis is not about different functions, which are divided into different rooms and zones, but it is about 'connection types' that materializes communicational structures and social formations.

Robin Evans writes in his article 'Figures, Doors and Passages' that: If anything is defined by an architectural plan, then it is the nature of human relationships. Every element that is drawn, like walls, doors and windows, are designed to firstly divide uninhabited space and then selectively reconnect those separate departments.

There is a distinction between rooms with multiple doors and rooms with a single door. This distinction is mainly according to German and Italian architects. German architects strive for as few doors in a room as possible, in order to achieve as little excessive routing through the building as possible. The Italians think that the existence of only one door per room limits the interrelations of the different rooms and causes a number of individual rooms that have no connection to one another. It is much more preferred to have a room be connected to multiple surrounding rooms, to create a building with interrelated rooms through which one can freely move themselves.

There is also a distinction between corridors traffic and traffic through spaces. A corridor can be used as a central routing element which has as an end to regulate routing in a specific direction and even importantly keeping traffic out of spaces.

The most elaborate application of the new principle can be found in the estate of Coleshill, Berkeshire (circa 1650-67). On each floor, Pratt created corridors that open up the entire length of the building. At the ends there were back-stairs. In the middle a two-story entrance hall with a staircase which, in spite of its grandeur, was in fact only an atrium, since life took place in the rooms behind it. Each room had a door leading to the corridor or the hall.

In his notebooks, Pratt noted that the 'common path in the middle through the full length of the house' was designed to prevent the permanent passage of the rooms and 'disrupting any activity' and to continue to achieve that in the rest of the house, the common servants never appear in public when they are doing their jobs there.

Evans: "Compositionally, the difference was that, in terms of communicating spaces, the rooms were each architecturally defined and then joined together like the pieces of a quilt, which in terms of differentiation, the connection as the primary structure arranges from which spaces are connected like apples hanging from a tree.

Thus, passages were 'regarded in the 19th century as the backbone of a plan and not just because hallways looked like spines, but because they separated functions and this continued through its own distribution related to each other. 'Since the connection of spaces with each other is through doors, the only function of the passageways is to bring these doors into a proper system of communication.' (Kerr, 1864) In other words, these corridors caused distant spaces to move closer and closer together.

ROOMS

The hall is no longer reminiscent of its old medieval purpose (dividing functions and social classes), it has become an entrance hall, the mediator of access to the other rooms of the house.

The 19th century is the renaissance of the hall, meaning that the history of a floor plan pattern returns to its origin after more than 700 years. This return also has something to do with historicism and a new "lust for the irregular" (Muthesius), but for such an extensive dedication of a room to succeed in daily practice, something had to be done in the whole organism of the house. In the 17th century, the Great Disconnect begins, which Girouard calls the 'moral ground plan'.

The already cited Robert Kerr, in his standard work The Gentleman's House, or, How to Plan Residences (1864), established this form of arrangement as follows: "The basic idea is that the family forms one community, the servants another.

Whatever they feel for mutual respect and trust as residents under the same roof, each group has the right to close the door in front of the other and to be alone. This privacy is strictly respected on both sides.

THE FLOOR PLAN EVALUATION/ASSESSMENT OF FUNCTIONALISM

From the 20th century on, priority will be given to the objectives of functionality and effectiveness of floor plan planning. In the 1920s, a new type of floor plan appeared in architectural manuals, introducing two innovations in comparison to the previous standard: it depicts the outlines of furniture and, in the remaining space, hydrographs that trace the most frequent movements of the day's run.

Alexander Klein, presented his "method of objective floor plan assessment" in Wasmuths Monatshefte far architecture in 1927. His approach, if not the method, was adopted and codified in detail on a large scale: first by Ernst Neufert, in his book Bauentwurfslehre. The subtitle says in uncharacterized German what it is all about:' Fundamentals, norms and regulations on installation, construction, design, space requirements, spatial relationships, dimensions for buildings, rooms, with humans as measure and purpose.

Klein proposed a graphical procedure that effectively got to the bottom of the floor plan by making the arrangement of the traffic routes and the course of the hydrographs visible and thus assessable in terms of force and area loss for traffic strips.

"The activity of the architect is an activity of the organization" is a central concept of Bauhaus functionalism, written in 1921 by one of the most famous architects of the 20th century, Margarete Schütte-Lihotzky.

Even the most advanced and well-thought-out planning methods have not prevented the great separation and planning of the area from becoming obsolete. "Habitable" (instead of "chambering"), "use neutrality" (instead of "monofunctional") are again real alternatives in housing today. Late in his life, Mies van der Robe wiped the whole topic of floor plan standardization off the planner's green table with a nonchalant, but also very impractical

gesture: "You are torturing yourself to find out exactly what people want. Build the shed big enough and let people do what they want in it."

THE FLOORPLAN AS CONCEPT

William Hubbard's analysis of the complex of the Chaux saltworks clearly shows that a closer look at the floor plan as a "symbolic abbreviation" (Fritz Schumacher) is also worthwhile. This factory, planned by Nicolas Ledoux from 1773-79, belongs to the Favorite objects in the history of architecture, it does not need any more to the overall structure.

It is said that in the center of the circular structure are the housse of the management and next to it the two main production sites, the salt-flake sheds, while all other functions such as apartments, warehouses, workshops, guards and courthouses form the outer circle.

A complex of one piece, and on top of that the work of an enlightenment architect, promises a maximum of functional, pragmatic disposition.

Following Alberti, he believed that geometry would give him the appropriate means to express these relationships in the spatial dimension. Although the need for salt was the motive for the construction of Chaux, Ledoux and his patrons wanted to go further and realize the idea of a productive social community. The model of a productive community was France under the King's control.

SPACE IS THE MACHINE

Ben Hillier is the third influential English space analyst missing in our presentation. What he has generally said about the social topology of space summarizes much of what moves Norbert Elias and his followers Evans and Girouard. He writes in a central passage: "A building becomes socially significant through its physical functions in two ways: First, by working out spaces into socially effective patterns that generate and conserve socially sanctioned and thus normative patterns of encounter and avoidance. And secondly, by working out concrete forms and surfaces into patterns expressing culturally or aesthetically sanctioned identities. "Space forms social patterns, society forms spatial patterns".

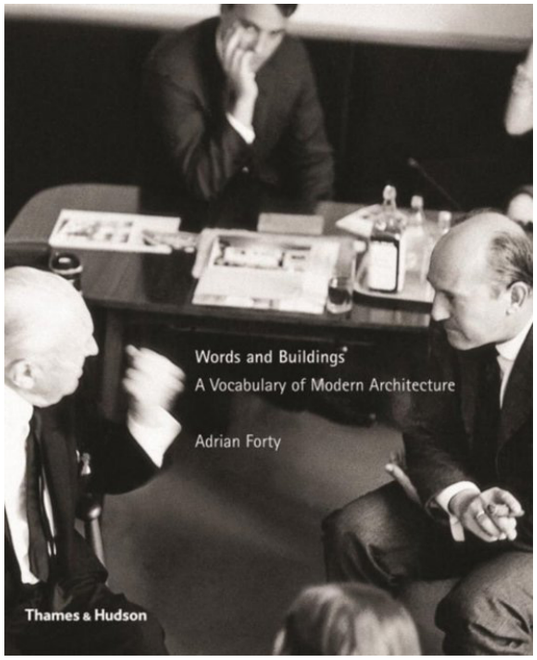


Image of book cover:
https://www.architectura.nl/words-and-buildings-a-vocabulary-of-modern-architecture-pbk-reprint.html

Function was an important concept in modern architecture. Through critique it has come into its own. The definition, name and meaning has developed by critics of architectural modernism. This started about 1960. To understand what function currently means, it is important to take a look in what function meant before.

"A function describes the result of the action of one quantity upon another" from here it is important to ask what is acting upon what. The first use of function occurred in the late 18th century up until the end of the 19th century. The quantity acted upon was the building structure. The quantities that performed the actions were the building's principal mechanical forces.

During the 20th century, 'function' was given a new use. Buildings got more described as acting upon people, environment thus relations with its context.

The difficult part of the concept is that it is a metaphor and its translation of terms that originated from Italian, French and German. Metaphors of function borrows information from mathematics, biology and maybe sociology. Each are separately discussed in the following paragraphs.

Function as a mathematical metaphor

In 1740, Carlo Lodolí stated first thoughts on the use of function. He stated the following: 'unite buildings with reason and let function be the representation'. His statement resulted from his objection to the classical system of ornaments. Imitation of objects in stone originally constructed from timber is against the representation of the material. It should be derived from the mechanical forces acting upon the material. Francesco Milizia supported Lodolí by stating: 'whatever is seen should always have a function'.

Function as a biological metaphor

In biology, organs were analyzed according to their functions they performed within the organism as a whole and the relations to the other organs. Identifying the structure made it possible to deduce the structure. Therefore function in this way was related to structure. This idea of function was not in use up until 1850, where Viollet Le-Duc stated the following about walls: "In every specimen of mason-work each piece taken separately in the case of dressed stone, or each section in concrete works, should clearly indicate its function. We ought to be able to analyze a building, as we take a puzzle to pieces, so that the place and function of each of the parts cannot be mistaken". Function to Le-Duc was important to his theory of rational construction.

A different use of the biological metaphor for function was developed by the romantics that derived from the organic notion of form. They distinguished two types: mechanical or organic. This distinction was made by A.W. Schlegel in 1818. The mechanical form is not a pre-determined form, whereas the organic form is innate which shapes itself from within.

Function was still more seen as characteristic of the expression of the building. The focus was not on human needs, but the character of the building. Louis's Sullivan famous quote 'form follows function' was not based on utility or human needs, but based on the expression of organic essence. To Sullivan function was: "the inner spiritual force that determined 'organic' form; 'environment' is an external agency, a determinate of mechanical form.

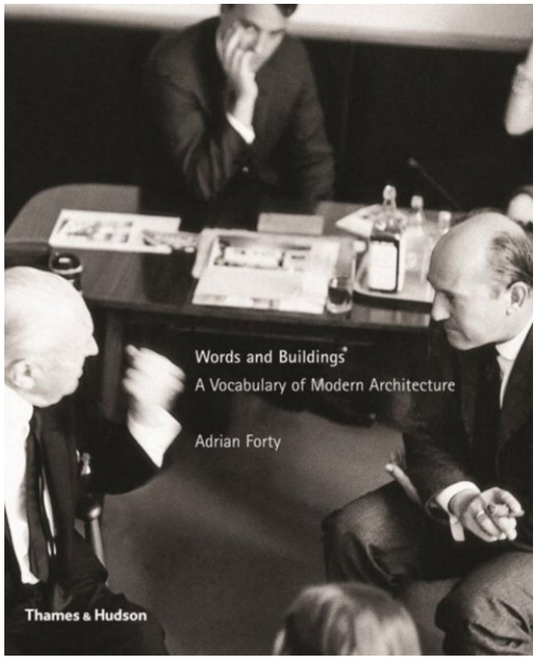
Function translated from German terms

Function was translated from three German terms: sachlich, zweckmässig and funktionell. Sachlichkeit means thingness. Sachlichkeit was equated to realism. In architecture this meant for example for a home: conditions of physical comfort, representing the idea of homeliness. It was anti ornamental, non-aristocratic, based in the vernacular, found in everyday objects, rational, scientific, sober, practical, genuine, modern.

Zweckmässigkeit, meaning purpose, was used by German speakers to signify the fulfillment of immediate material needs but also in the sense of inner organic purpose, in the sense of Sullivan.

Frankl claimed that purpose is incarnated in the form of a space. When parts are organized by function of use, the aesthetic space becomes living space.

From 1960 on function was not so much a rationalist process. It was related to the physiological problems including irrational values and symbolic meaning. Modern functionalists claim that human society exists through its interaction with the physical and social surroundings. Throughout history it has appeared that function representing the relationship between buildings and the life within has always existed.



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In 'space' we have found the purest, irreducible substance of architecture. As a term, 'space' simply did not exist in the architectural vocabulary until the 1890's. Its adoption is intimately connected with the development of modernism.

Since the eighteenth century, architects have talked about volumes and voids. Much of the ambiguity of the term 'space' in modern architectural use comes from a willingness to confuse it with a general philosophical category of space. Space is also a property of the mind, part of the apparatus through which we perceive the world. And simultaneously a thing within the world, that architects can manipulate.

The development of space as an architectural category took place in Germany, and it is to German writers that one must turn for its origins and purposes. The word Raum, at once signifies both a material enclosure, a room, and a philosophical concept. In neither English or French can a material enclosure so easily be linked to a philosophical construct, and consequently space, as a translation for the German 'Raum'.

The reasons for valuing 'space' in the 1990's are not the same as those in 1930.

1890 – 1920 The preconditions of modernist architectural space

In the case of space, there seems to be clear evidence that the development of a discourse about space within philosophical aesthetics preceded its coming into use within architecture. There are two distinct traditions of thought to be taken into account. One, the attempt to create a theory of architecture out of philosophy rather than out of architectural traditions. The other, concerned with a psychological approach to aesthetic.

It was German architect and theorist Gottfried Semper who was responsible for the introduction of space as the principal theme of modern architecture. He proposed that the first impulse for architecture was the enclosing of space. The material components are only secondary to spatial enclosure. He suggested that in space creation lay the future of architecture. No one went so far as Semper in suggesting that spatial enclosure was the fundamental property of architecture.

More architects followed his example; H.P. Berlage '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'. This insight, that space belonged not only inside buildings but also outside them, was to be crucial during the 1920s. Also Nietzsche had a lot of influence on young artists and architects. What concerns us here is Nietzsche's contribution to the theories of space, about which he wrote little directly. He argued that culture in general derived from two instincts. The apollonian, mind and dreams and the Dionysian, song and dance.

Adolf Hildebrand argued that attention to the process of perception of things in the world might itself lead to grasping the inherent themes not only of sculpture but also of painting and of architecture. 'By a spatial continuum we mean space as three-dimensional extension and as a three -dimensional mobility of kinesthetic activity of our imagination. Its most essential attribute is continuity. Hildebrand suggested no fewer than three of the ideas about space that were to be of so much significance in the 1920s: That space itself was the subject matter of art, that it was a continuum, and that it was animated from within. After this, Semper's idea of space as enclosure is left far behind, looking decidedly leaden.

Like Hildebrand, Schmarsow equates space in architecture with form. But at this point, any similarity between the two writers conception of space dissolves, and Schmarsow embarks on his wholly original aesthetics from

within. For Schmarsow, space exists because we have a body – 'The spatial construct is so to speak, an emanation of the human being present, a projection from within the subject, irrespective of whether we physically place ourselves inside the space or mentally project ourselves into it'. His ideas had a limited impact.

Alos Theodor Lipps has an added value to this concept of space. He is best known for his development of the theory of empathy; in his essay he argued that there were two kinds of seeing, optical, which was concerned with matter, and aesthetics, which was concerned with what was left after matter removed. Space was this dematerialized object. He has no conception of space as enclosure – rather interest in space is a way of visualizing the inner life of matter.

Up to this point we have been looking at the intellectual, philosophical preconditions for a discourse about architectural space before it had yet become a theme talked about by architects.

From space to spatiality

If modernity had any meaning as a new phase of historical development, it must be accompanied by a new spatial perception, which must in turn be manifested in a new sort of architecture.

The more one is aware of the infinite formless, universal space without. In buildings of this period, one sees the desire to present the entire interior space as a fragment, as something incomplete.

1920 till 1980 built space

By 1920 space was well established as a category in the architectural vocabulary, but in terms of built work there was little to be seen that could be said to justify the claim that architecture was an art not of materials, but of space.

The only architect whose buildings could be identified as spatial was Frank Lloyd Wright_– though Wright himself did not describe his work in terms of space until 1928.

It was to identify and legitimate the modern, and to establish a way of talking about it. In this, space served their purposes. In the first place the concept of spatiality in its definition of the distinctive and historically specific features of modern perception, offered as good a case as there could be for a new sort of architecture. Secondly space offered a non-metaphorical, non-referential category for talking about architecture, and one which at the same time allowed architects to rub shoulders with the socially superior discourses of physics and philosophy. In so far as architecture had always suffered the slur of being no more than a trade, or a business, the claim to deal with the most immaterial of properties – space – allowed architects decisively to present their labor as mental rather than manual.

There was almost no limit to the production of meanings of space in this period. Space could be seen as enclosure, this is the most commonly understood sense of space. Space could be seen as a continuum. And the notion that inside and outside space were continuous and infinite was important to the Dutch De Stijl group and the Bauhaus

We might note both the idea that space is not concerned with materials, but also that space is achieved by detaching the structural members, so that in the voids between them is created a continuum of space that runs through the buildings and connects inside with outside. This could be seen in Maison La Roche of Le Corbusier

For an architect like Mies van der Rohe, the problem in the 1920s was to be modern. Among the means than available to realize this aim there were two that Mies was particularly concerned with. The first was, following Nietzsche, to live in the present, free form the constraints of history, of culture; translated into building, this meant affirming the free movement of the subject, the opportunity for the unfolding of life, as against the previous idea that building was solid physical mass that contained and constrained the life of the subject. Also the rejection of everything 'historical', the massiveness and materiality. The second approach was the eradication of symbolism; the line of thinking developed in pre-war German circles was that architecture, to be modern, should be sachlich (real); and should not achieve its end through symbolic means. The Barcelona pavilion is a good example of architecture that has broken free from both these properties. His aim seems to make architecture that would bring to consciousness the modern spirit; in particular, this was to be achieved by the freedom of movement, and the opportunity to seize life, unrestricted by mass and matter.

When therefor, Mies talks about space it is a way of signifying his engagement with an aesthetic property which is modern, and the antithesis of everything represented by traditional architecture, but in terms which privilege subjectivity. For Mies, space was without question the pure essence of architecture – but not of the architecture of all times, only that representative of the modern.

By the 1950s and 1960s 'space' had become a normal category in architectural discourse throughout the world, leading Robert Venturi and Denise Scott Brown to remark in 1972.

What has above all kept interest in 'space' alive in architectural circles during the 1980s and 1990s, however, has been resistance to the linguistic models or architecture, prevalent form the late 19050s and 1970s.

Around 1950 Heidegger and Lefebvre

Turning to the two major philosophical investigations undertaken in the twentieth century. Some of the limitations of specifically architectural notions about space will be made apparent.

Heidegger's understanding of space was that space is neither, a property of mind by means of which the world is perceived, nor does it exist previous to one's being in the world; in short, there is no space independently of one's being in it. Space can only be something in their relation to other things. His notion of space contradicts almost all the notions about space developed by architects between 1890 and 1930. His influence upon architecture, not noticeable until the early 1960s was twofold: Firstly, place superseded space as the buzzword. Secondly, his insistence that space is unmeasurable and non-quantifiable may be seen as relevant to attempts in some recent architecture to draw attention to these aspects.

Lefebvre's starting point is the neglect of what space is; the mind thinks of space, but it does so within a space, a space that is at once both conceptual, but also physical , a space that is the embodiment of social relations, and of ideology. He drew a distinction between architectural space and the space of architects.

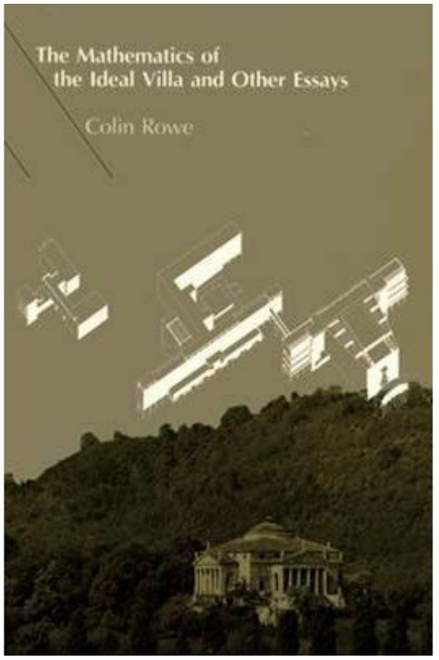


Image of book cover:
https://www.architectura.nl/words-and-buildings-a-vocabulary-of-modern-architecture-pbk-reprint.html

Palladio's Villa Capra Rotonda is an example of an ideal villa. The chapter begins with an emphasis on the mathematical abstractions necessary to design such dwellings. An account is given by Palladio defining the surroundings of his buildings, sort of poetically. Le Corbusier's Villa Savoye, though in a completely different context and scale is still relatable to Palladio's house set in a more agrarian space. While both buildings have several characteristics, however Rotonda retains 'the good life' , while Poissy has a lyrically efficient background.

Ionic order columns are placed under a triangular roof structure, while the pillars in Villa Savoye are placed under the massive first floor, taking the same approach by simplifying it.

The facades of Villa Malcontenta are brick, while the Savoye has a clearer façade, in simplified white.

The author later compares Palladio's Villa Foscari and Le Corbusier's Stein House. Both buildings follow a mathematical sequence, in a grid pattern. This grid is subdivided. The entire block itself measures 8x5x5.5 for both the buildings. There are alternating spatial rhythms in between as well.

Palladio's building employs a solid bearing wall while Le Corbusier believes the entire design is based on the structure.

Palladio's building also employs repetitive floor plans, leaving little space for variation. His buildings style is more 'equilaterian'. Le Corbusier has columns carrying the weight of the entire building, enabling his designs to consist of a more diverse form as the floors move upwards.

While the walls in Malcontenta comprise of solid piercings with vertical openings, The one at Garches is a series of horizontal wall arrangements, placing immense emphasis on the center and corners of the housing.

Palladio's centralized scheme, with a circular shape originating from the center, has said to originate from the mathematical and musical concord. The most ravish of all consonants are the Fifths and the Octaves, which is the ratio on the length and breath of Palladio's building scheme.

The first rises radically, from the proportions of two and three. Hence the 1.5 divisions, and the 0.5 divisions in their mathematical scheme. It is a literal translation of what is audible into what is visible.

Sayings like the formation of cosmos was within a triangle formed inside a square, hence the emphasis on the numbers 1,2,3

Numbers up to 27 have rhythmic qualities, they're said to be used by god in his schemes, which leaves them quite ideal to be used my man.

'Nature is sure to act consistently and in constant analogy in all her operations'

Palladio projected mathematical harmonies into the built environment.

While Palladio's Malcontenta seems to distribute the weights and visual aspects equally throughout the building, Le Corbusier believes in the obscurity, and the structural elements that hold the entire structure together, so the rest of the elements express the continuity.

Proportion is a matter of individual sensibility.

Palladio's mathematic ingenuity lies in his plan, so the numerical divisions within his elevations almost always must be related back to the plan. While Le Corbusier made his mathematical divisions through the golden ratio in his elevations A:B=B:(A+B)

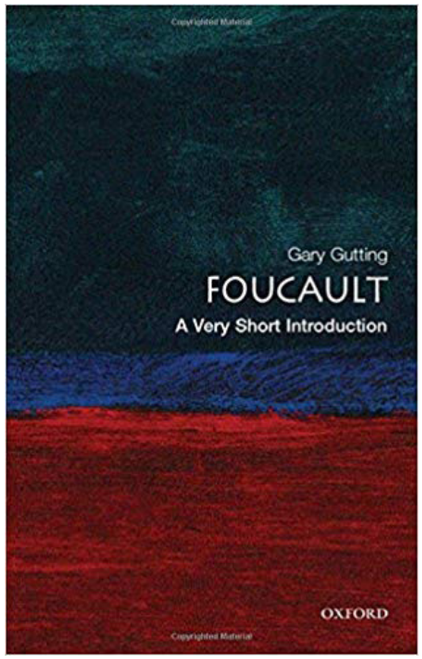


Image of book cover: https://www.amazon.com/Foucault-Short-Introduction-Gary-Gutting/dp/0192805576

Paul Michel Foucault, generally known as Michel Foucault was born on 15 October 1926 in France. It is a debate on whether he was a philosopher or a historian. He presumably insisted on being called an archeologist of thought. Foucault's theories were primarily addressing the relationship between power and knowledge and how the power is normalized among the society using societal institutions such as university, hospitals, prisons...

As to give a short summary regarding his theories, it is best to start with his book "discipline and punishment". The book starts with illustrating a public execution scene in 1750. Executions at the time were barbaric and consisted of torturing the criminals in public in order to create an atmosphere of fear. Thus people understand where power lies and know they have to obey the rules in order to be safe. The government's aim was not to create a reign of justice but to remain in power. However, there were some problems with this sort of representing power. Sometimes things could go wrong; a criminal not dying and people would assume maybe the government is not eligible anymore. Or sometimes the punishments were too brutal the public start asking themselves if anyone deserves such pain? The problem lies here, at this moment, when the public doubts the system of power.

If somehow they decided to riot and change the people in power, they knew where to look at and who to destroy. Because the system of power was so visible and lied on the hand of the king and his army.

As a result of this way of thinking, the power started to change its way of presentation. Now the ways of punishing the criminals are more humane and less barbaric. But one main thing is still the same. The punishment of criminal is still not about serving justice, yet again, is about remaining in power for a much longer time.

There is one main difference between the ways of punished in the 17th century and now. Before, the punishments were limited to physical violence; Tortures to pure the soul. But now, it is about discipline; changing and controlling the criminal's mind and soul. As for this matter, there was a pattern created to achieve this goal: Surveillance, Normalization, and Examination.

This format of subjecting power can be used in all types of institutions. One of the institutes that obviously works within this pattern is prison. But this is more than just disciplining the criminal. Another example could be an office. Cameras and card attendance machines work as ways of observing the employees. The dress codes, behavior tips such as being a team player and being efficient at your job... which are ways of normalizing and at last, the yearly, monthly, weekly evaluation of employees which are ways of examination. It is clear now that not only every institute works this way but also the society works in the same way.

Now is a good time for a step back to describe power in terms of Foucault. He divided power into 2 forms: Repressive Power and Normalizing Power. Repressive power is a more visible way of power that forces people to do what they do not want to do. On the other hand, Normalizing power is a kind of power that makes you want to do what you have to do anyway. For example, we do not think about stealing. Not because we are scared of going to prison. We simply do not steal because we do not even think about it. Because we know it is not accepted in our society. Normalizing power is everywhere and we are being subjected to it from different institutes and even from different people in society. Not only this but also each individual is subjecting this power to others every day.

To understand this type of power, Foucault suggests trying to understand the institutions that apply Normalizing power in society. He believes that power lies in science. In other words, science is the hand for applying this sort of power.

[1] Gutting, G. (2005). Foucault: A Very Short Introduction. New York: Oxford University Press.

[2] west, S. Michel Foucault: power, YouTube, Philosophize This!, (2018), 21 minutes, https://www.youtube.com/watch?v=W9PXyulZQAw&pbjreload=10

[3] Gijsbers, V. Michel Foucault: Power, YouTube, Leiden University, 2017, 10 minutes, https://www.youtube.com/watch?v=keLnKbmrW5g&t=536s

[4] Gijsbers, V. Michel Foucault: Episteme, YouTube, Leiden University, 2017, 11 minutes, https://www.youtube.com/watch?v=fa7pgE_qWJU&t=2s

Now, by living in a society as such, it is a good time to ask this question: "where is this power?" Foucault says that today, power cannot be identified easily as the result of it being spread and defused throughout the society. Now, Foucault introduces the term "Power-Knowledge". He believes in order to understand the power-knowledge you need to go back to history and not just to observe the fundamental scientific facts, but to observe Biology, Linguistics, and economics. With doing so, one can understand the whole underlying rules that are the background of all scientific inquiries that make inducting science even possible.

In the book "Order of Things", Foucault says that we live in a world that there is a clear dichotomy between discursive formation (articulable) and non-discursive formations (visible). A dichotomy between saying and seeing. He uses the term scientific discourse through his theories several times. He uses this term to reflect on a series and networks of meanings that get smuggled whenever a scientist claims to have knowledge about the way things are. People give so much credit to the scientist because of all the breakthroughs in the early 20th century. Therefore, they look at history subjectively. They see history as people who have accomplished things. However, Foucault suggests a new way of looking at history. He wants to focus on larger structural shifts that occur throughout history; to observe the paradigm shifts.

Foucault, in his book, "Birth of the Clinic", uses the same viewing at history as mentioned. He is viewing history in terms of vast periods and epochs that occur. In this book, he makes a comparison between the same topics in two different epochs. In the 18th century when people are sick they go to a building called a clinic, in the 19th century they go to a place called a hospital. In other words, the language has changed between these two periods. When the fundamental language we use to describe things changes so does the way we see them.

This is the time when Foucault introduces the term Episteme: "the historical but nontemporal, a priori which grounds knowledge and its discourses and thus represents the condition of their possibility within a particular epoch". Foucault breaks down history into episteme. Therefore, all of the discourses, the entirety of the way we think and talk about things is filtered through a set of background assumptions given to us by the cultural and historical conditions we are born into. A set of rules so deep into the society that dictates what a scientific community as a whole, decides what to accept and what not to accept. These rules become norms of the society and they get extended to the entire way of thinking.

When an episteme changes, it affects all of the sciences simultaneously. For example, Foucault says, if you go back in time, in the 17th century, you could see that the background epistemological assumptions that they brought to bear unconsciously whenever they tried to make sense of things was that they were always looking for similarities between things. In the 18th century, however, you would witness the rise of philosophy and sees the world in terms of differences between things rather than similarities. In the early 20th century, the modern episteme may dictate that you're done with things like taxonomy and are more in the business of categorizing what it means to be a human. But what about now? What is the episteme of the 21st century? He believes to answer this question, you need to go back and look back at history with this new perspective and understand each era and its characteristics.

A very important question may rise and it is that who creates the episteme? He answers that all of this discourses ultimately put in place and maintained by people and positions of power. The NORMALIZING POWER that we mentioned earlier.

Foucault is interested in finding things that we think are necessarily true and showing them to be subjective contingent and grounded in history.

Most of Foucault's works lies in questioning and taking aim at some widely accepted narratives about the way the things are. The narratives that when looked at from a different angle show themselves to be narrow, arbitrary and potentially damaging to the people caught in the mix of that narrative. For example, take Foucault 1961 work "History of Madness". In this book, he illustrates the comparison between today's ways of treating the mad with the previous times. In the past, the mad lived among other people, they were thought to be different and somehow touched by God! But now, the mad are supposed to be cured because the assumption is that madness is an illness of the mind. So instead of tolerating them, they are locked up in some mental institutes in order to be cured and to become normal.

Foucault later introduces a new term for explaining the way the changes in episteme happens. He uses the term Genealogy of the Thoughts.

In his latest work "The History of Sexuality", Foucault talks about the Repressive Hypothesis. In this book, he uses the same method as questioning the things that everyone is completely sure about. He says it is said that for over centuries, topics about sexuality have been repressed in different ways.

Sometimes regarding the religious, sometimes as a political game. The result was that you, as a person in society, were not allowed to talk about it since it is a shameful topic. He continues by saying that in the 20th century, sex becomes normal. It is no longer a thing to be covered but on the contrary, it is being studied. So now, people are less repressed.

Foucault then declares his disagreement. He strongly disagrees with the idea that there's some natural type of sexuality that's installed in us or some scientific truth about the nature of sex that can even be arrived at. He says by looking back at history, the idea that people possess a set of qualities that make up their own personal sexuality really is something that is only existed since about the 19th century when science for the first time in human history directed its gaze towards sex and tried to study and categorize it. Thus, until around the 19th century, nobody ever thought of themselves as heterosexual versus homosexual versus any other form of sexuality.

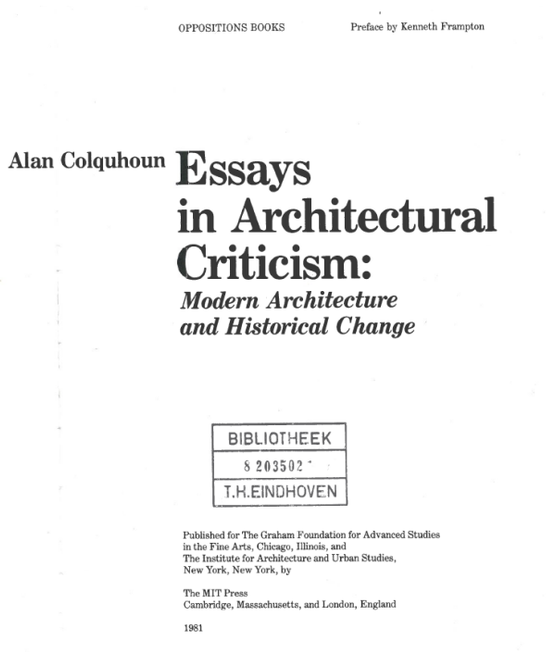
Foucault then goes on, comparing these two different eras. How nowadays we talk about the topic of sexuality with a therapist and wait for them to tell us what sort of sexual behavior is normal. Whereas previously, the priests controlled the discourse surrounding sex and people confessed to him and waited for his final judgment. The same is with scientists, psychologists, and doctors who control our modern discourse. When the discourse that surrounds the behavior is controlled so does the behavior itself. Simultaneously we internalize norms given to us by the sciences and accept them as the way we should be and then we actually monitor ourselves to make sure we conform to that standard.

Foucault then claims his disagreement about the Repressive Hypothesis. He believes the entire theory is built on top of an understanding of the way power works. Foucault would say that most people when they think of power, they look at it in an overly simplistic way. Most people look at power in the same way it was looked at the time of monarchies in the 1300s as though power is executed from a single source (Repressive Power). However, when it comes to our modern societies this is just not the kind of power we come face to face with anymore. Foucault then asks: what are the types of power that actually touch you and affect you in your life? The answer is as described previously, the Normalizing Power. To Foucault, power is an unstable network flowing in all directions from every point at once. We all, whether we realize it or not, are exerting our power over everyone else around us every single day through constant surveillance cultural norms, advertisements... To most people power is invisible.

The ability for this power system to change the behavior has become so subtle. The micro-tactics of power have become so normalized in our world that most people do not even notice themselves gradually being shaped into a mold of normalcy.

Foucault calls this a BioPower. Throughout the last 300 years or so the more science has made society the object of scientific study the more tactics scientists have come up with to optimize life and productivity and to categorize people within a society. Because of science and the way it tries to organize the world for the first time in our history we are looking at brand new ways of objectifying people. To Foucault power is not repressive in our modern world but productive. It produces through cultural norms in scientific discourse. The people that are truly in power are the thought leaders within the science that control the dominant narratives about the way things are in the universe. Knowledge is intrinsically connected to power and they are the ones that produce all the knowledge. They control the parameters, the language, and the concept. They control the entire discourse that everyone uses to determine who they are, what they care about and what things are worth spending effort on. Foucault calls this biopower because "the exercise of power over living beings no longer carries the threat of death, but instead, takes charge of people's lives."

All in all, it is clear that the power dynamics at this point are an inexorable part of the world we live in. Thus, no matter how much we resist the micro-tactics of power and how much we question the dominant narratives of our time, all we can ever hope for is a different set of dominant narratives that may for all we know in the long run oppress more people than the current set of dominant narratives. Therefore Foucault would probably want us all to take a second. To stop and understand what we are replacing those meta-narratives with.


OPPOSITIONS BOOKS Preface by Kenneth Frampton

Alan Colquhoun **Essays in Architectural Criticism:**
Modern Architecture and Historical Change

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T.H.EINDHOVEN

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1981

Charles Garnier transformed the Beaux-Arts plan into a vehicle for an architecture of ostentation and splendour. Viollet-le-Duc rejected it for the sake of functional efficiency and the honest expression of bourgeois values. This differentiation can be seen when floor plans of both re compared. Voillet-le-Duc's plan lacks all immediate aesthetic qualities and its virtues emerge only after a detailed study of its circulation and distribution.

The typical seventeenth century hôtel shows, although it displays few of the formal complexities of the developed Beaux-Arts plan, homologous. This means that open spaces of the plan are treated like rooms. In plans this could leave it unclear if a space is interior space or exterior space.

When looking at hôtel particulier by Viollet-le-Duc demonstrates a new attitude toward architectural space. Space is no longer an ideal field which is ordered and totally humanized, as it was in the classical tradition taken over by the Beaux-Arts. The homeotopic concept of space has been abandoned in favour of heterotopic space.

Professor Joseph Rykwert has drawn attention to the epistemological break which took place when the classical tradition in architecture took place for the rationalistic critique of Jean Nicolas Louis Durand. The iconic and the classical forms took place a purely syntactic and formal repertoire. The notion of composition was opposed by the organic wing of nineteenth-century rationalism. According to the organic theory, architectural forms should emerge from the application of correct principles and not from the manipulation of a repertoire of forms.

Composition are used in both architecture and in music. The most striking analogies between the Beaux-Arts plan and the symphony lies in their generalized programs. Both are characterized in by a strong idealism and a certain degree of abstraction.

After the 1830s the Beaux-Arts programs became more particular and pragmatic. The grand abstraction of the eighteenth century began to be replaced by programs whose moral and social meanings were weaker. There was a new need for railway stations for example.

3. ANALYSIS DRAWINGS | 14 CASE STUDIES

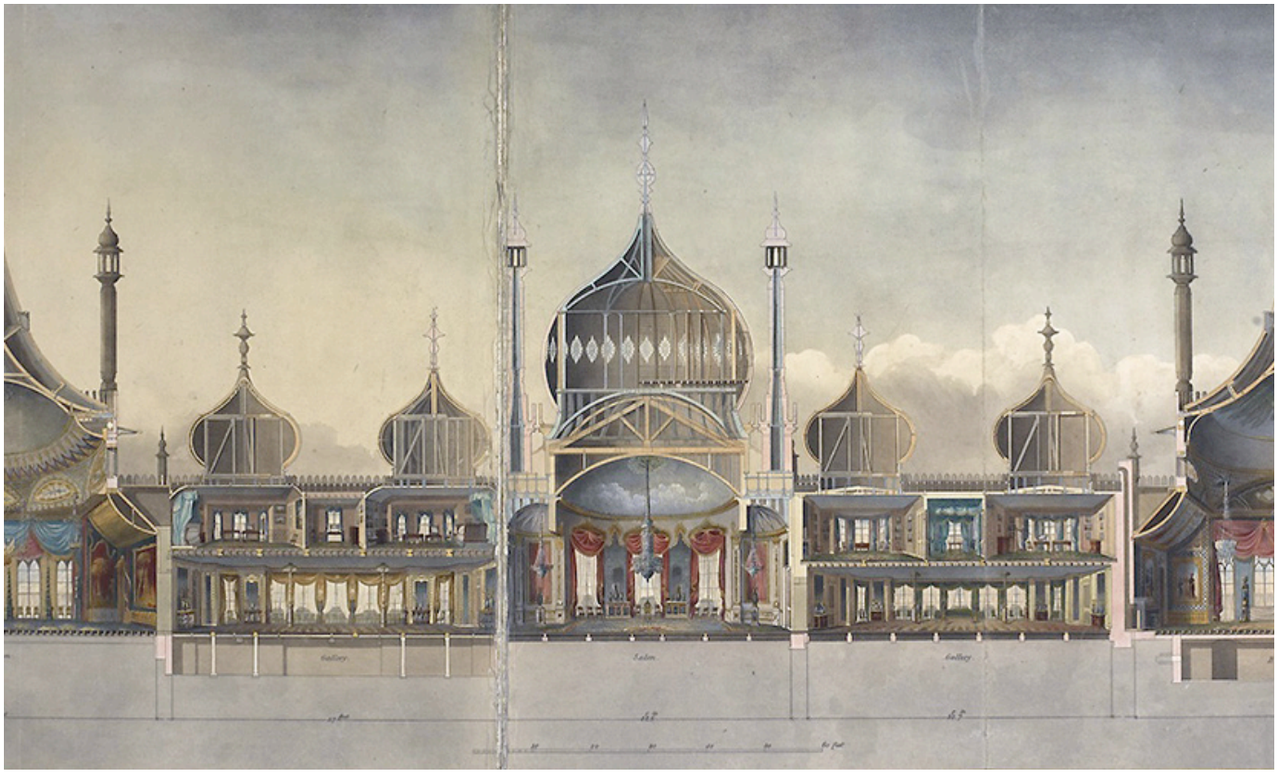

image 3.1.1
Illustration of the section of the Royal Pavilion
source: *https://www.khanacademy.org/humanities/becoming-modern/romanticism/england-constable-turner/a/john-nash-royal-pavilion-brighton*

ROYAL PAVILION | JOHN NASH

The Royal Pavilion, also known as the Brighton Pavilion, is located in Brighton, England. Beginning in 1787, it was built in three stages as a seaside retreat for George, Prince of Wales. It is built in the Indo-Saracenic style prevalent in India for most of the 19th century ("The Royal Pavilion," 2019).

The first renovation of this building started in 1787. The Prince commissioned the designer of Carlton House, Henry Holland, to transform his Brighton lodging house into a modest villa which became known as the Marine Pavilion ("Short History of the Pavilion," n.d.). It became one wing of the Marine Pavilion, flanking a central rotunda, which contained three main rooms: a breakfast room, dining room, and library, fitted out in Holland's French-influenced neoclassical style, with decorative paintings by Biagio Rebecca.

Later, in 1801–02, the Pavilion was enlarged with a new dining room and conservatory, by Peter Frederick Robinson, who worked in Holland's office ("The Royal Pavilion," 2019).

The current appearance of the Pavilion, with its domes and minarets, is the work of architect John Nash, who redesigned and greatly extended the Pavilion starting in 1815. The palace is striking in the middle of Brighton, for its Indo-Islamic exterior is unique. The fanciful interior design, primarily by Frederick Crace was heavily influenced by both Chinese and Indian fashion ("The Royal Pavilion," 2019).

1800 1810 1820 1830 1840 1850 1860 1870

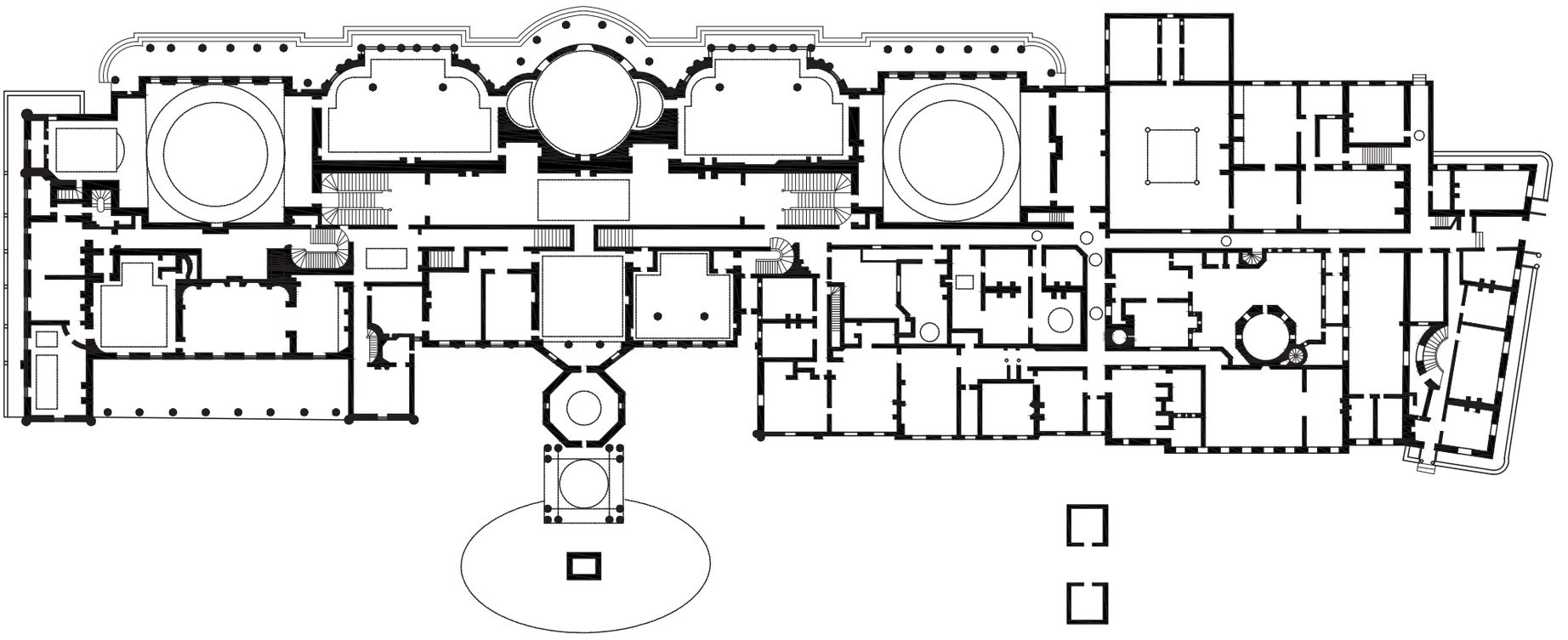

image 3.1.2
ground floor plan
scale 1:1000

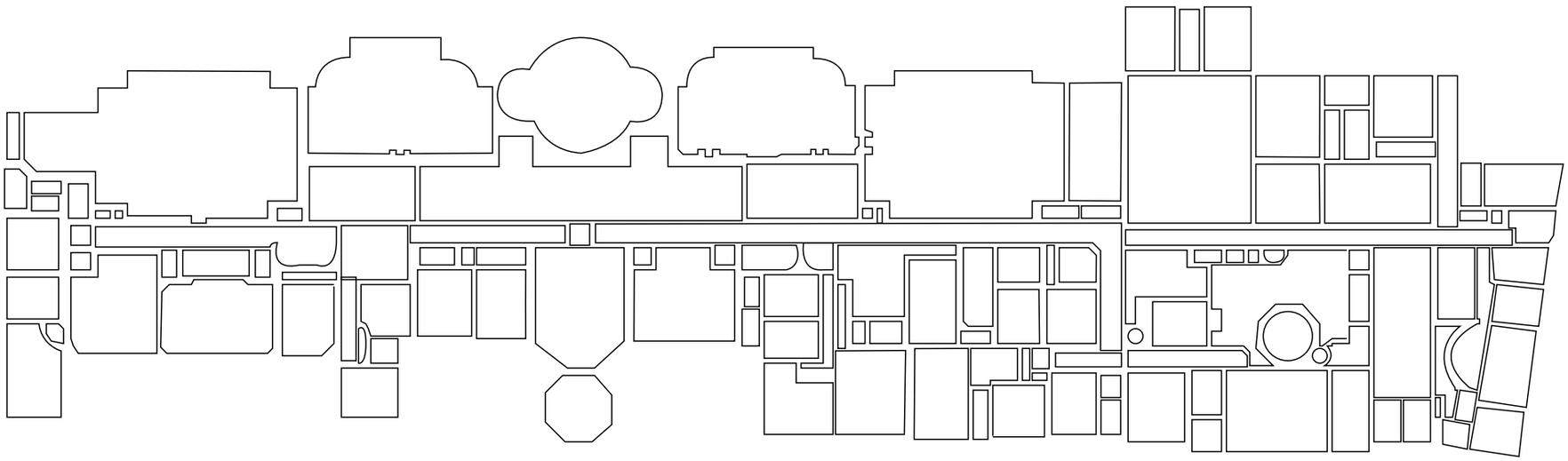

image 3.1.3
room contours
scale 1:1000

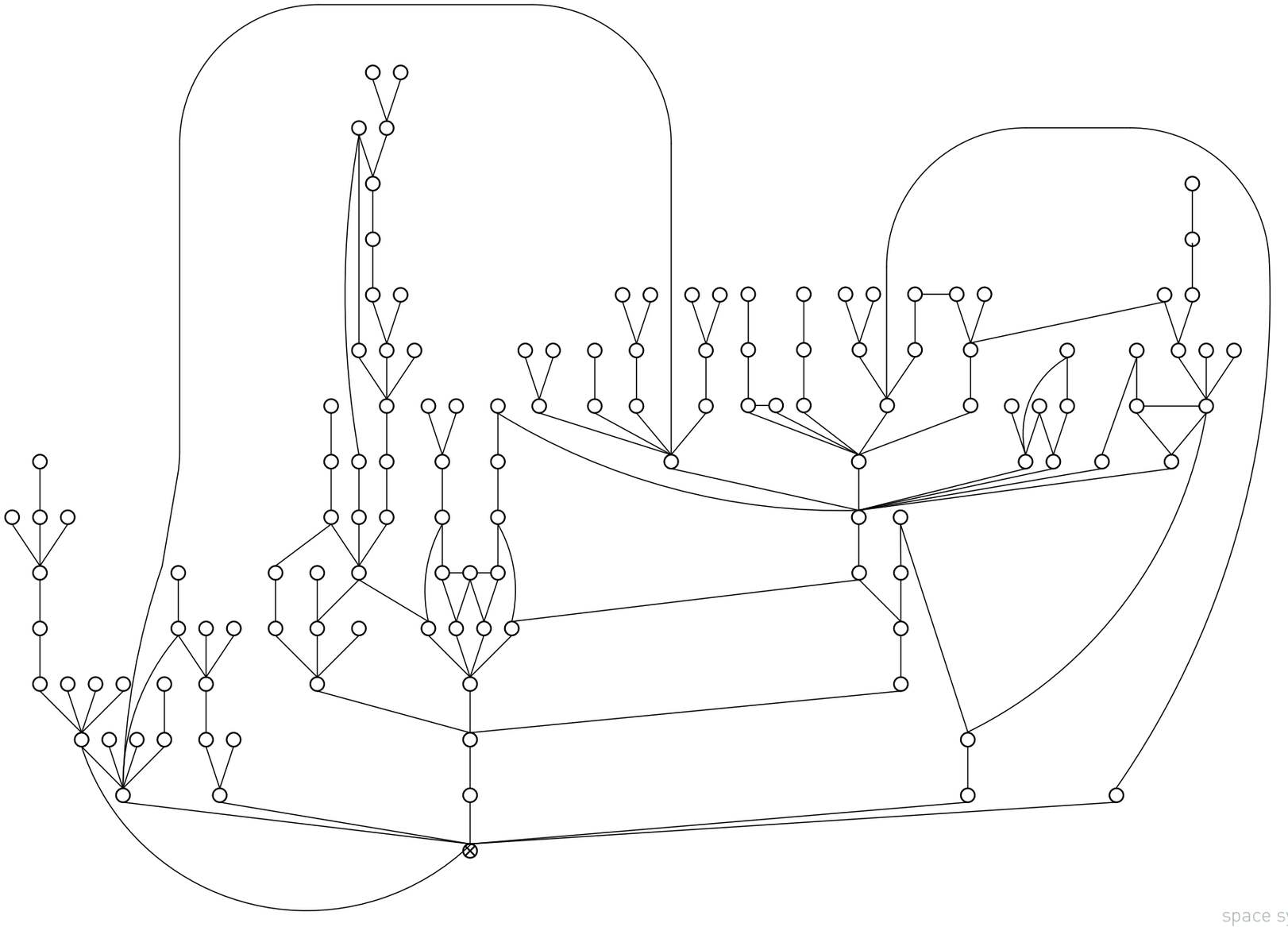

image 3.1.4
space syntax diagram

1880 1890 1900 1910 1920 1930 1940 1950

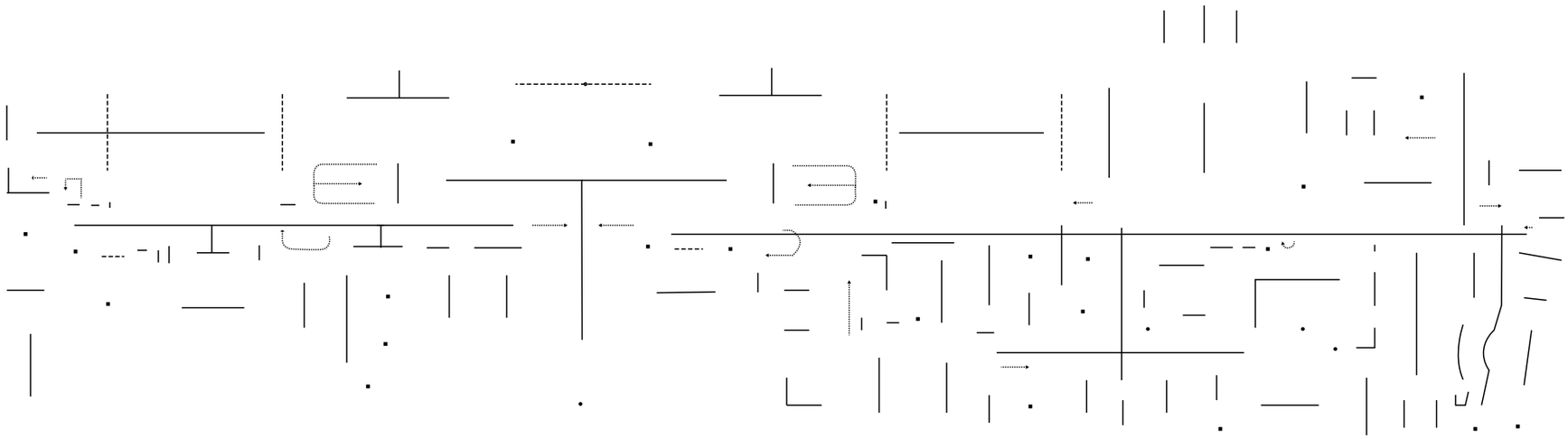

image 3.1.5
grass fire diagram
scale 1:1000

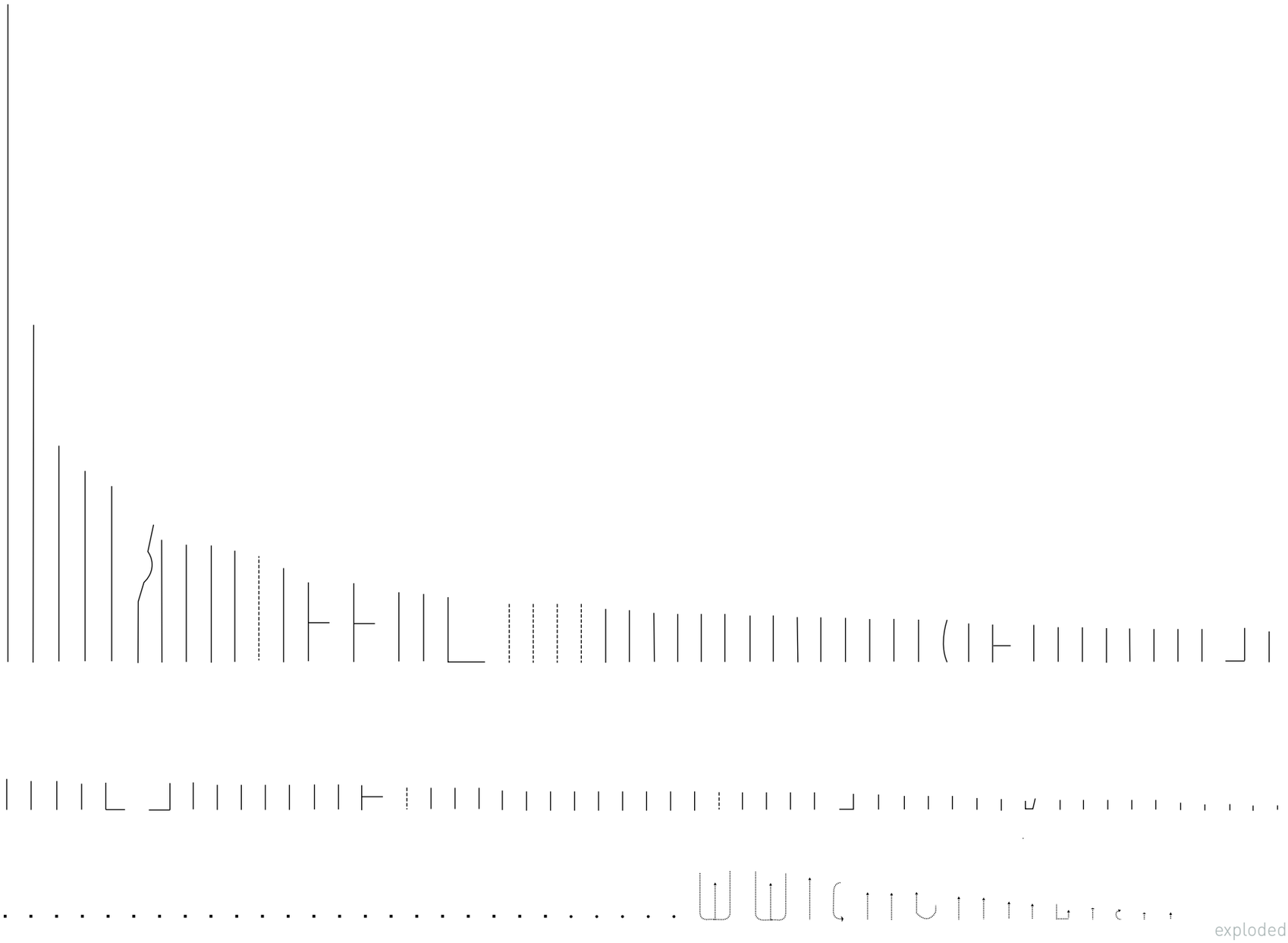

image 3.1.6
exploded grass fire diagram
scale 1:1000

1880 1890 1900 1910 1920 1930 1940 1950

PELL WALL HALL | SIR JOHN SOANE

image 3.2.1
Photograph of Pell Wall Hall
source: *https://alchetron.com/Pell-Wall-Hall*

PELL WALL HALL | SIR JOHN SOANE

Constructed around 1830, Pell Wall Hall is the last completed residential house designed by Sir John Soane. The building is a neo-classical country house located in Shropshire, England. It was designed for a iron merchant called Purney Sillitoe.

After that, Pell Wall Hall has been inhabited by several residents and even companies. Later on it became a theological college and a boys boarding school. In 1962, the building was abandoned and struck with a huge fire in 1986 which burnt three days long. Nowadays, the building is owned by the Pell Wall Preservation Trust.

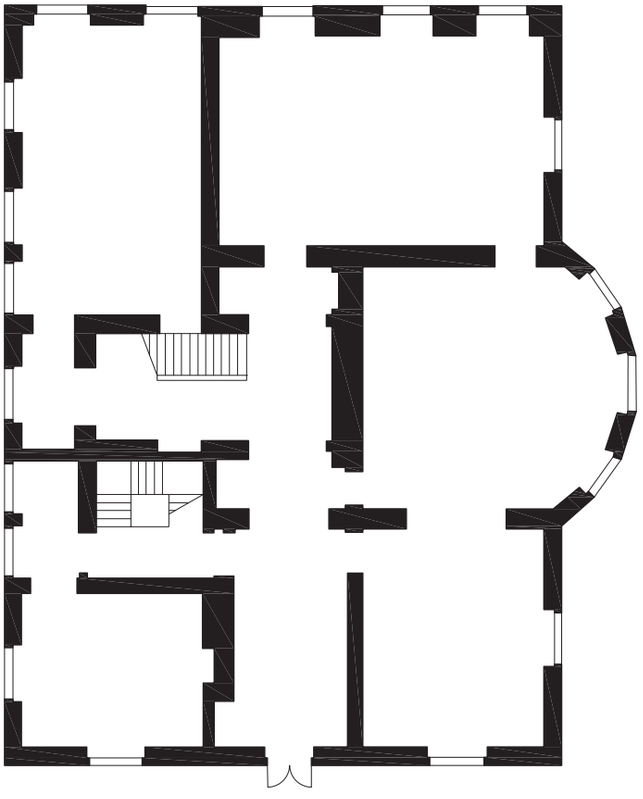

image 3.2.2
ground floor plan
scale 1:200

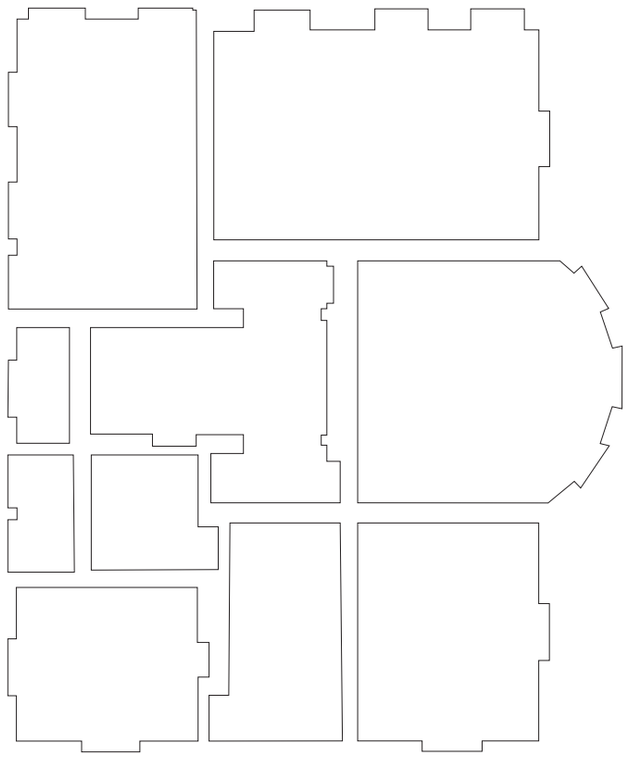

image 3.2.3
room contours
scale 1:200

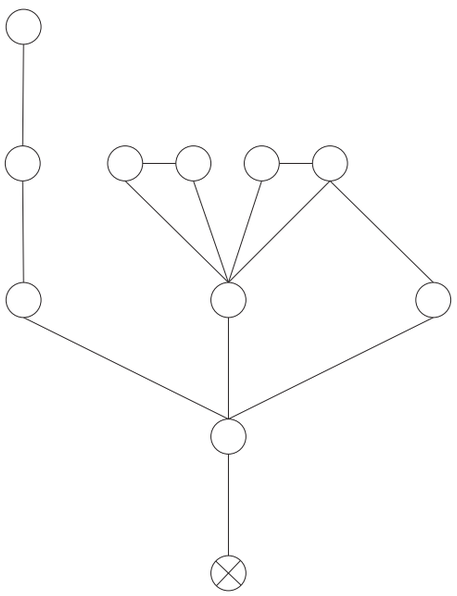

image 3.2.4
space syntax diagram

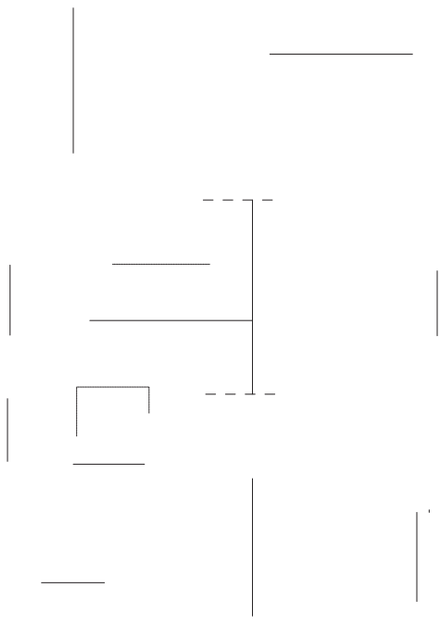

image 3.2.5
grass fire diagram
scale 1:200

image 3.2.6
exploded grass fire diagram
scale 1:200

1880 1890 1900 1910 1920 1930 1940 1950

BAUAKADEMIE BERLIN | KARL FRIEDRICH SCHINKEL

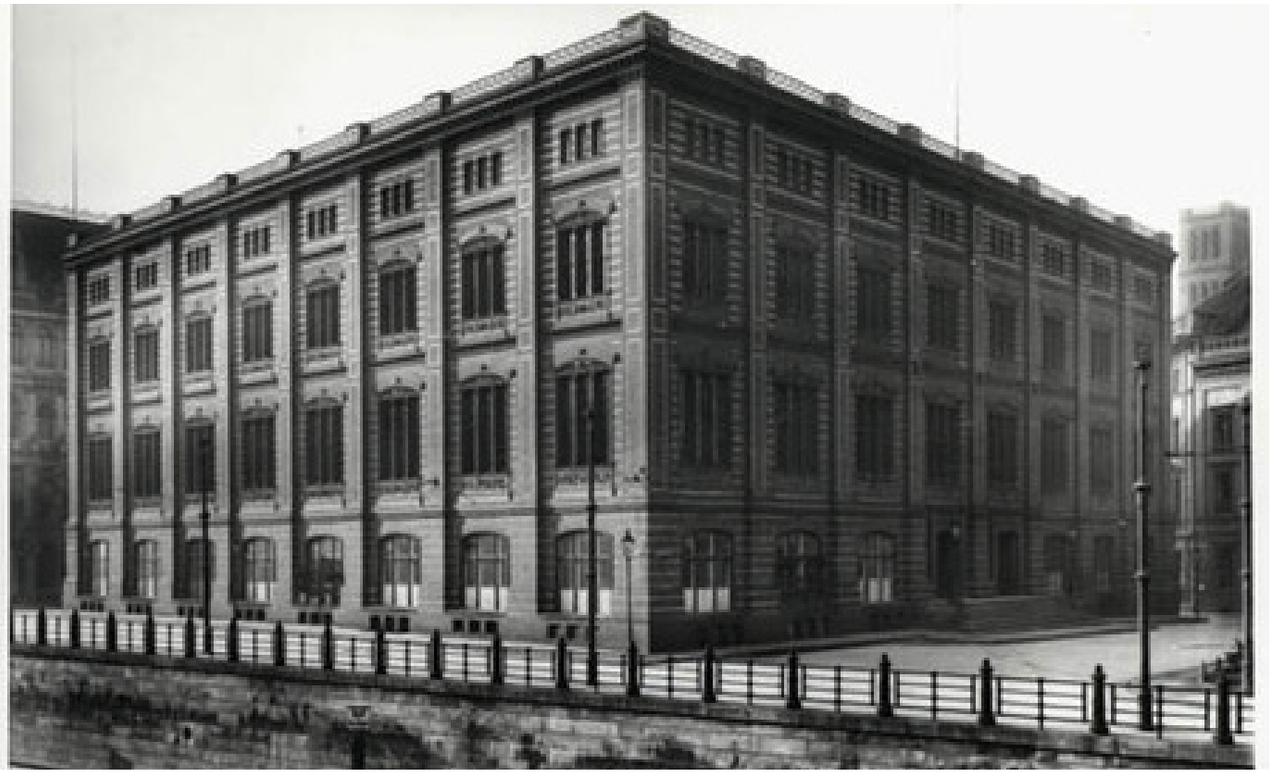

image 3.3.1
Photograph of Bauakademie Berlin
source: *https://www.bbr.bund.de/BBR/DE/BBR/Presse/Pressemitteilungen/2018/180507_wettbewerb_bauakademie.html*

BAUAKADEMIE BERLIN | KARL FRIEDRICH SCHINKEL

The Bauakademie (Building academy) building, located in Berlin was built in 1830s with purpose of accommodating two institutions, Building Academy and The State Construction Commission (Oberbaudeputation). Fourth-storey brick building with orderly facade rhythm, coherent proportions and arch lintels above windows became an icon and was a source of inspiration for architects in its time.

When looking into the plan itself, the logic of a building is clearly readable. Almost - square proportion of the plan designates the compactness of the building. The structure is clearly defined by a grid, which is disrupted only by the atrium in the middle. Basement is the most dense in terms of numbers of rooms and the walls are thickest. Compared to the lowest floor, the upper floors are less dense with thinner walls.

Four floors are connected with two staircases, one of them representative and the second particularly functional. The access to the rooms is thus first through staircase and then with corridors to the rooms. Also, the rooms are connected within each other and sometimes accessible only through different rooms. Even so,, the grid of the inner walls is clearly defined.

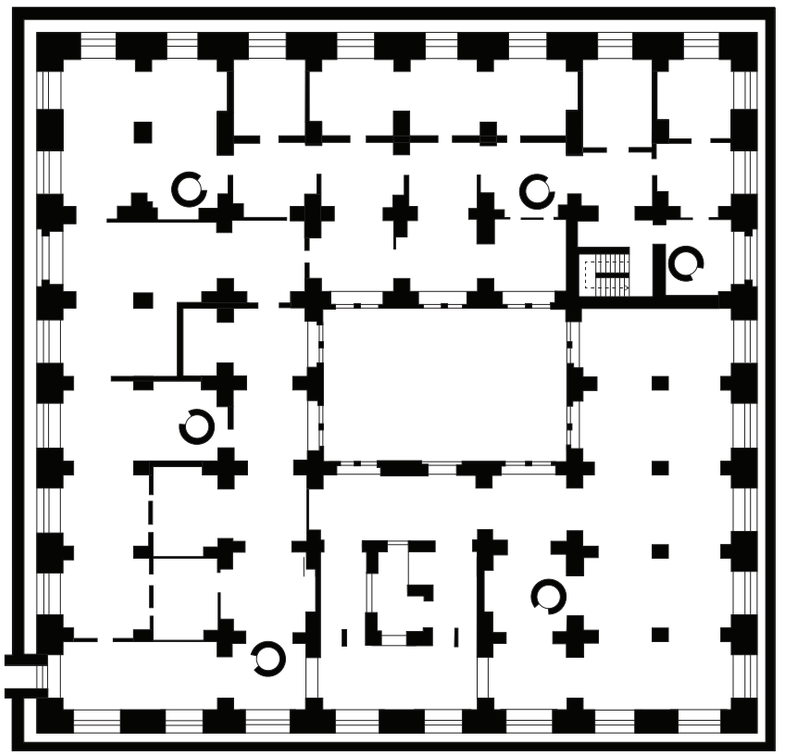

image 3.3.2
basement floor plan
scale 1:500

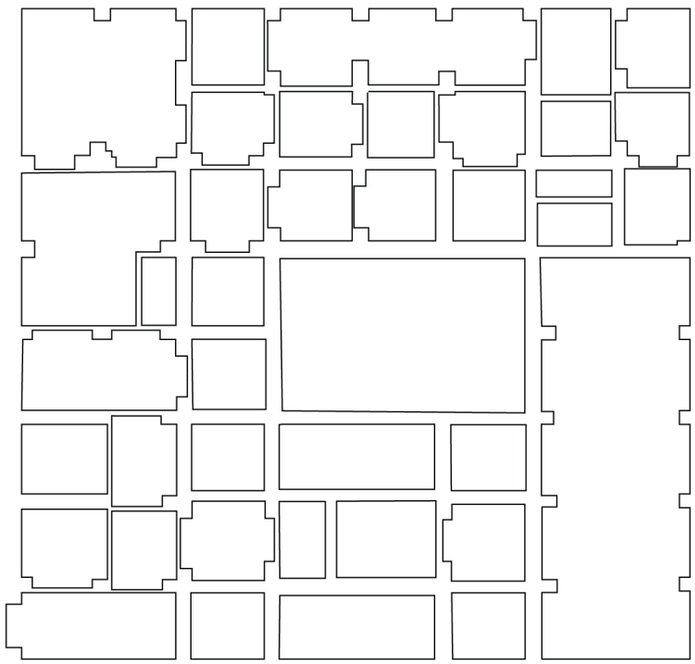

image 3.3.3
room contours
scale 1:500

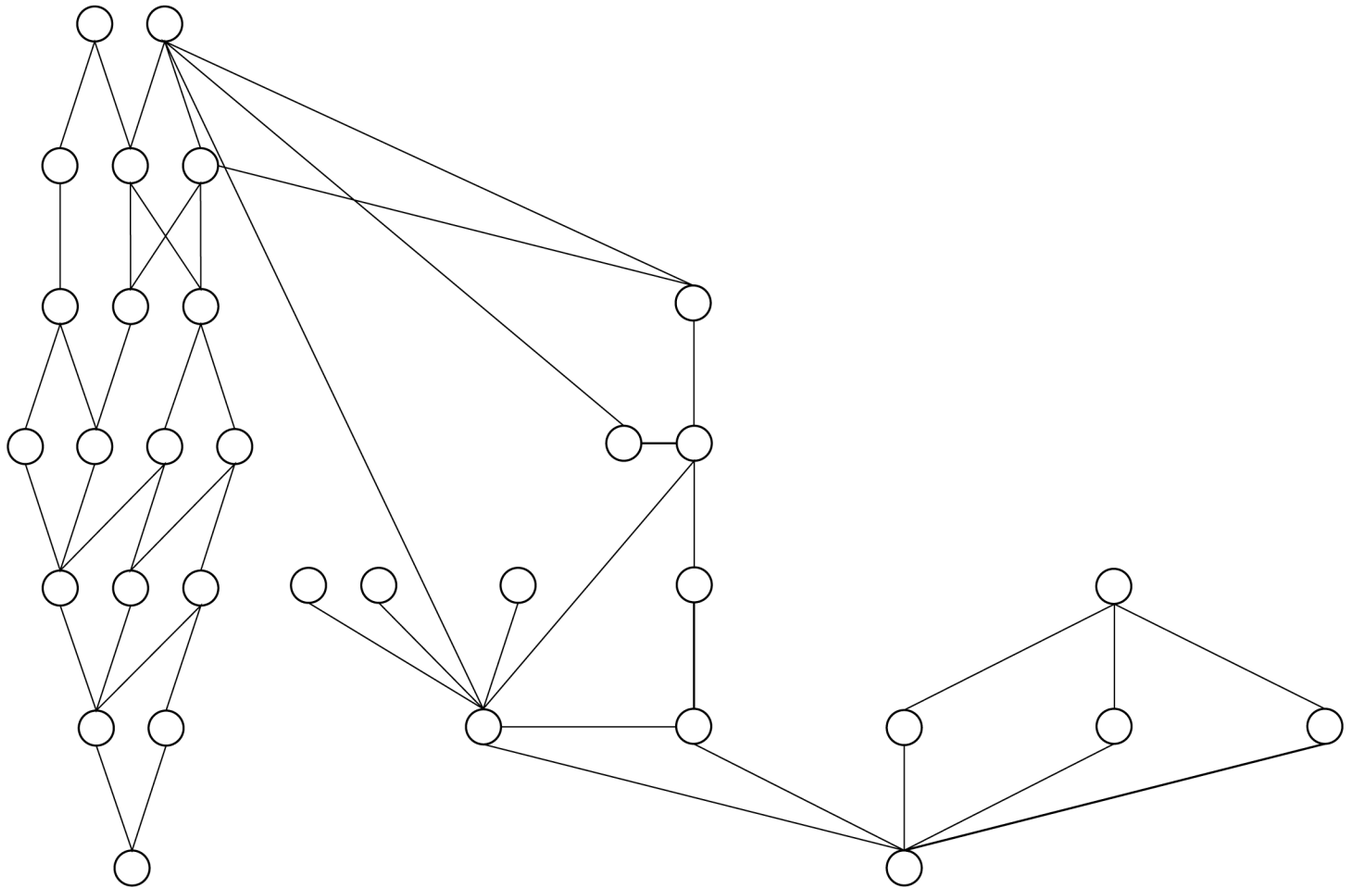

image 3.3.4
space syntax diagram

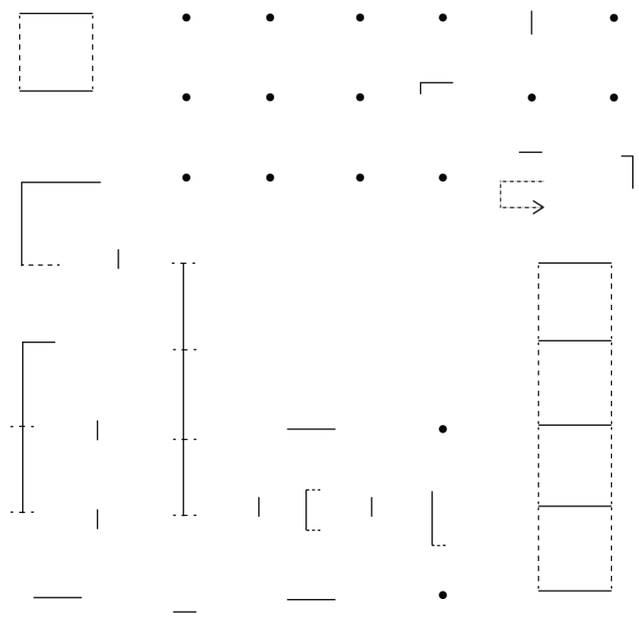

image 3.3.5
grass fire diagram
scale 1:500

1800 1810 1820 1830 1840 1850 1860 1870

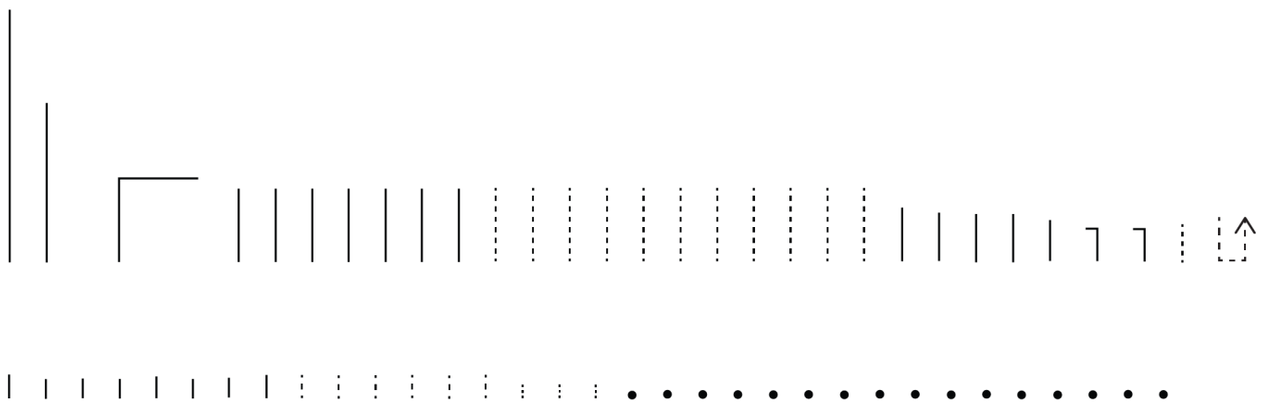

image 3.3.6
exploded grass fire diagram
scale 1:500

1880 1890 1900 1910 1920 1930 1940 1950


1800
1810
1820
1830
1840
1850
1860
1870

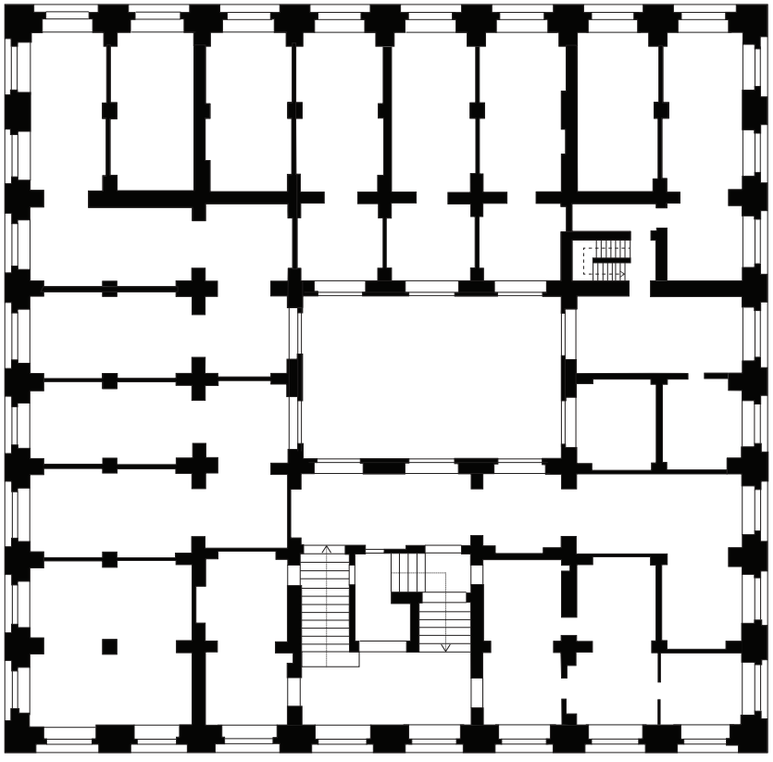

image 3.3.7
ground floor plan
scale 1:500

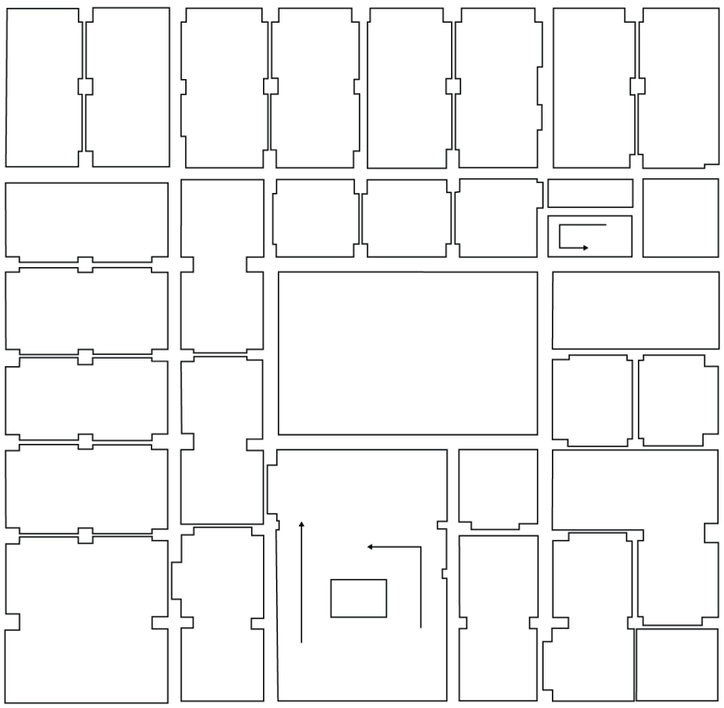

image 3.3.8
room contours
scale 1:500

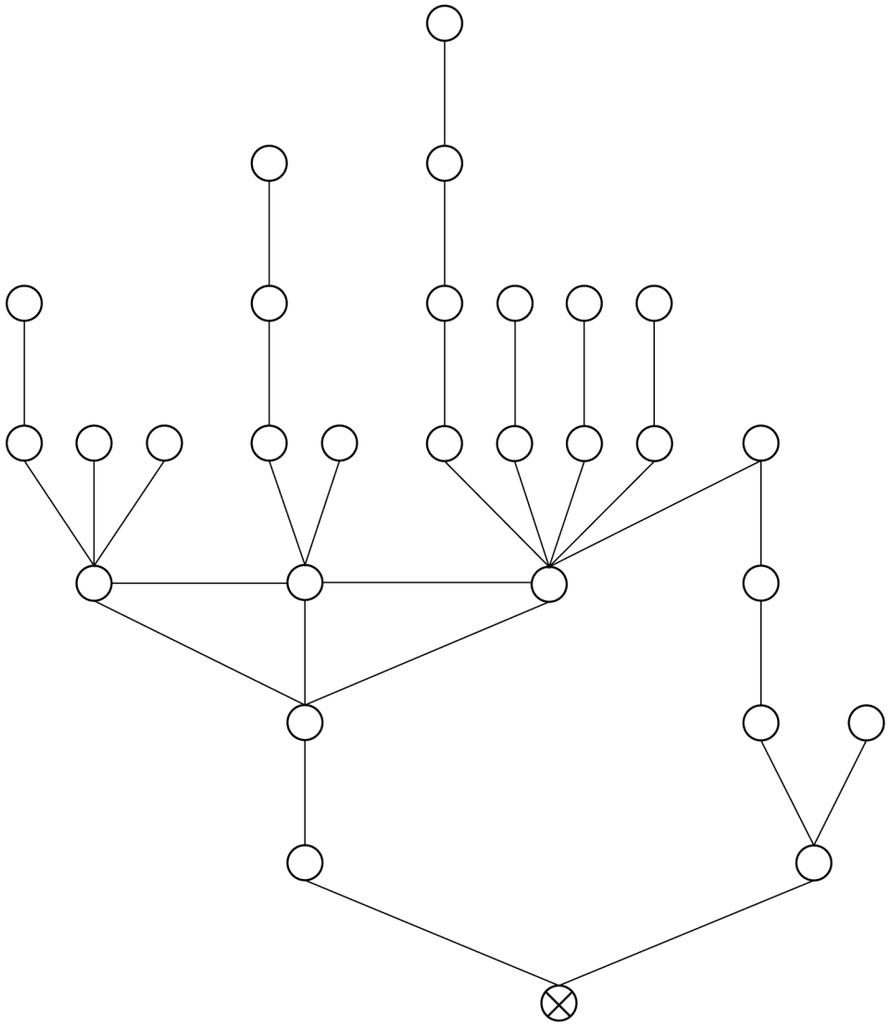

image 3.3.9
space syntax diagram

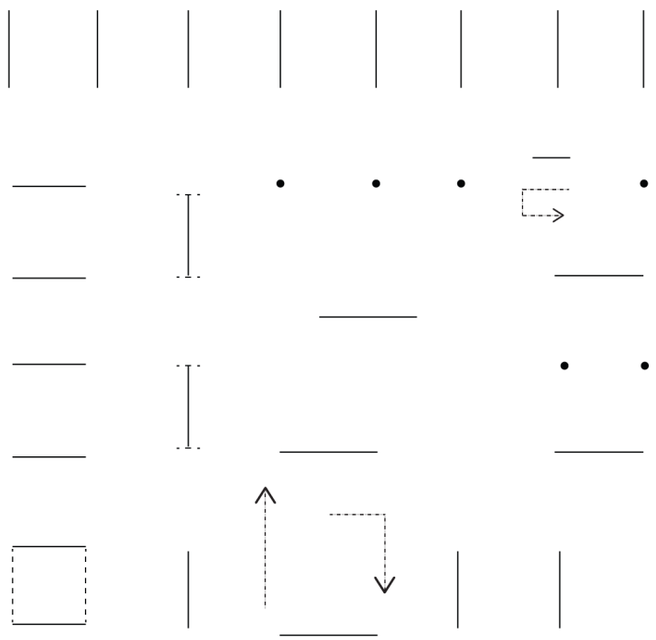

image 3.3.10
grass fire diagram
scale 1:500

image 3.3.11
exploded grass fire diagram
scale 1:500

1880 1890 1900 1910 1920 1930 1940 1950


1800
1810
1820
1830
1840
1850
1860
1870

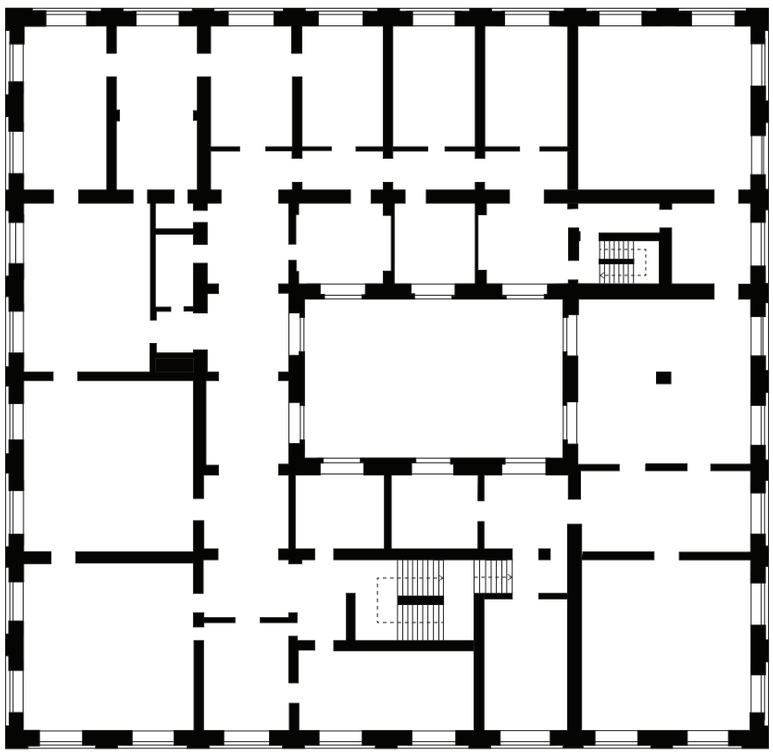

image 3.3.12
first floor plan
scale 1:500

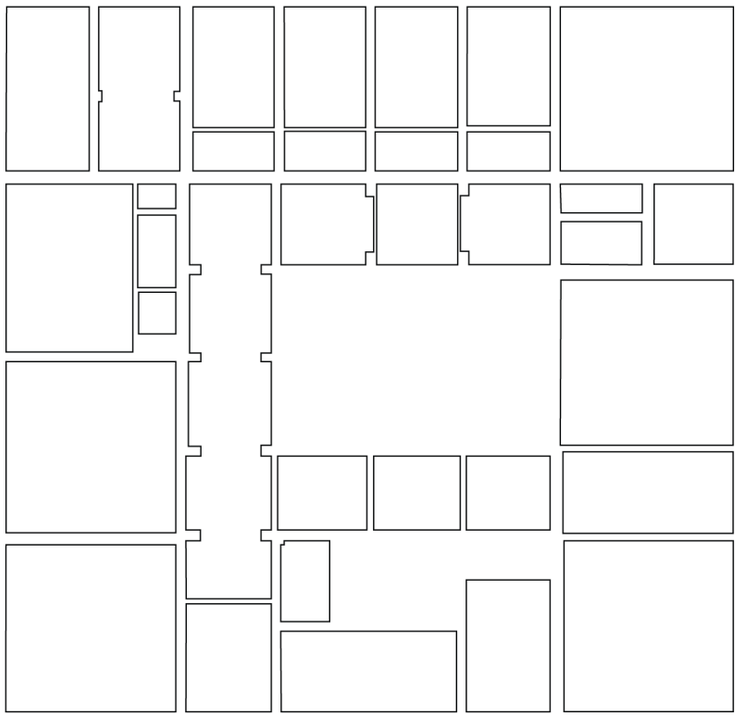

image 3.3.13
room contours
scale 1:500

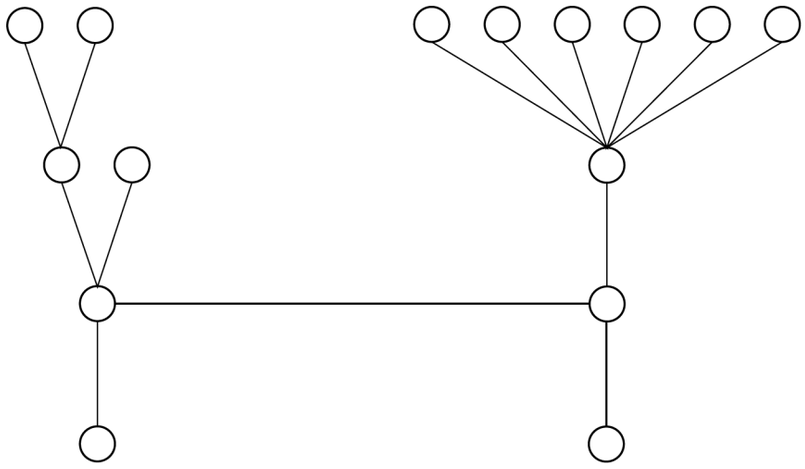

image 3.3.14
space syntax diagram

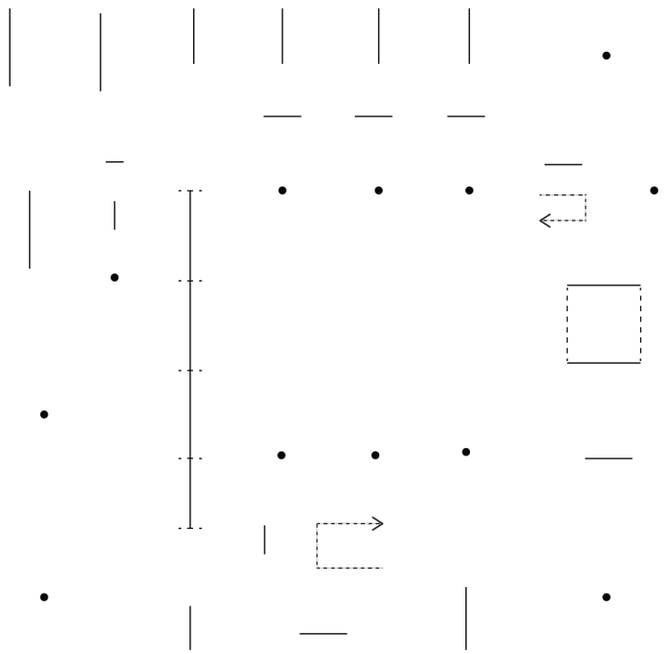

image 3.3.15
grass fire diagram
scale 1:500

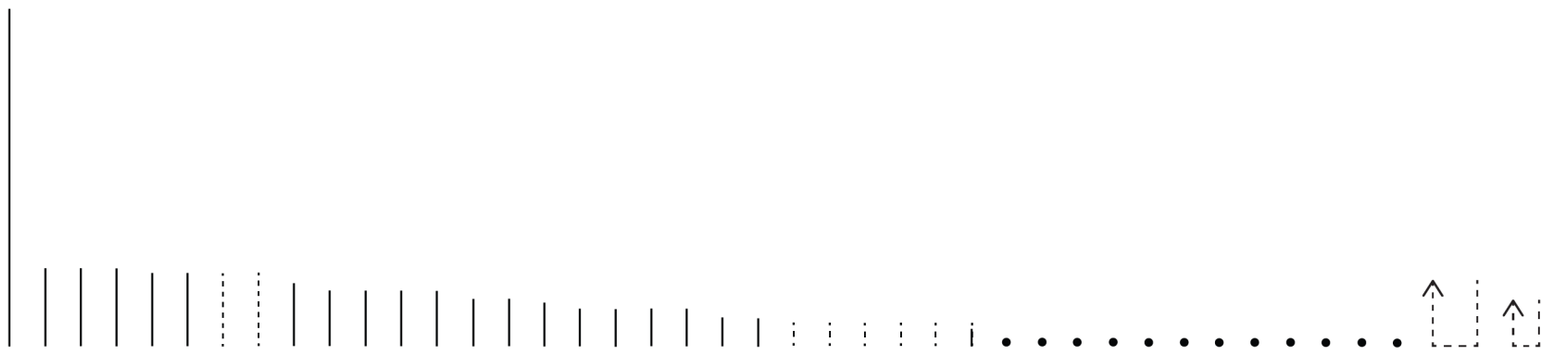

image 3.3.16
exploded grass fire diagram
scale 1:500

1880 1890 1900 1910 1920 1930 1940 1950


1800
1810
1820
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1840
1850
1860
1870

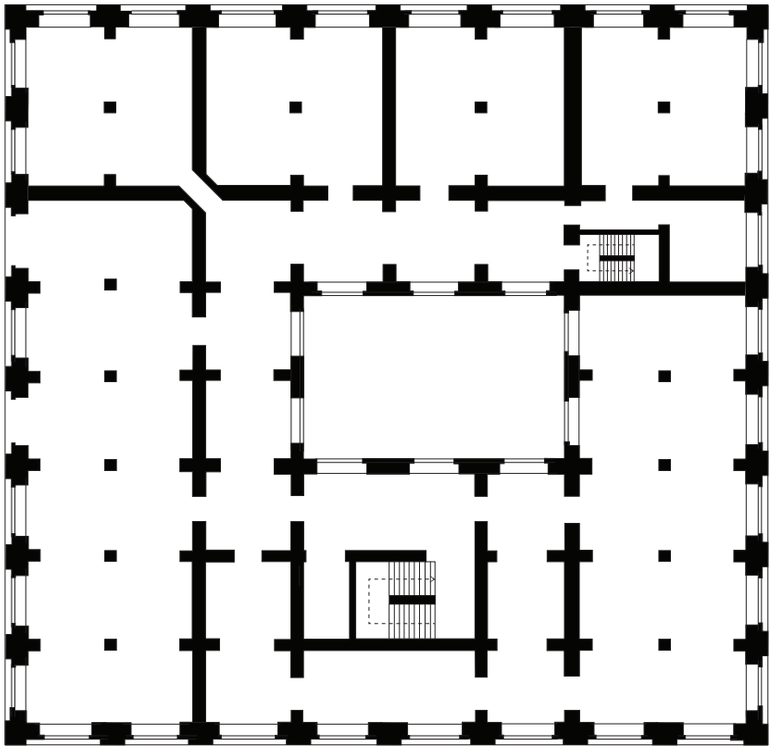


image 3.3.17
second floor plan
scale 1:500

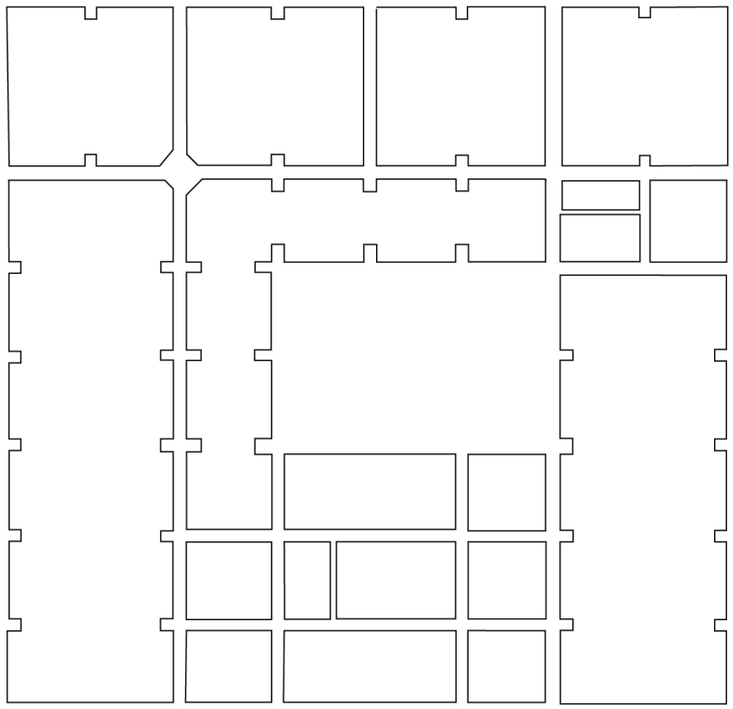


image 3.3.18
room contours
scale 1:500

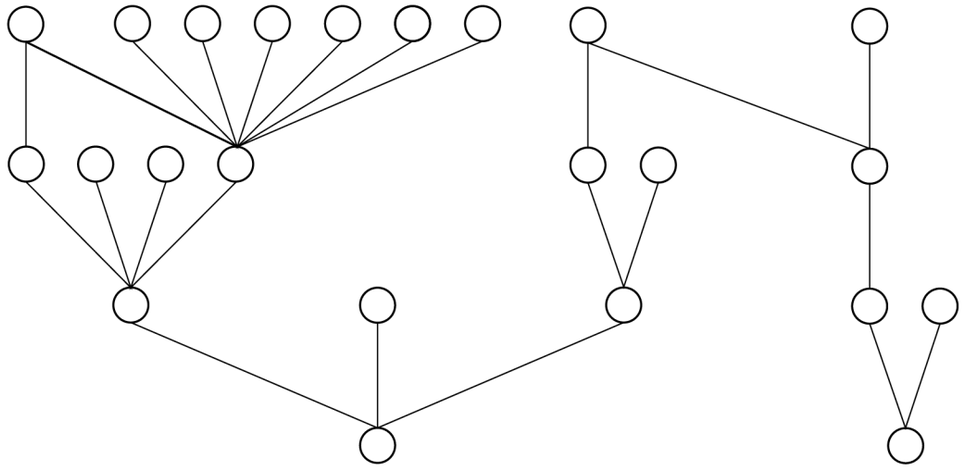


image 3.3.19
space syntax diagram

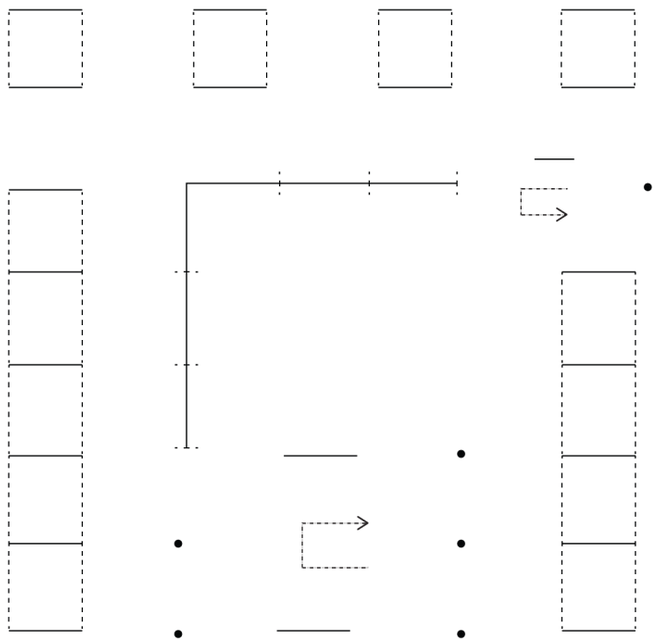


image 3.3.20
grass fire diagram
scale 1:500

image 3.3.21
exploded grass fire diagram
scale 1:500

1880 1890 1900 1910 1920 1930 1940 1950

SLOT BABELSBERG | KARL FRIEDRICH SCHINKEL

image 3.4.1
Photograph of Slot Babelsberg
source: *https://www.golocal.de/potsdam/freizeitanlagen/schloss-babelsberg-YUDfZ/fotos/*

SLOT BABELSBERG | KARL FRIEDRICH SCHINKEL

Schloss Babelsberg, built in Germany near Berlin between 1835 and 1849, had been built as a summer residence of former prince Wilhelm I.

The castle is characterized by its many towers which all have different shapes and heights. This differentiation in shapes is clearly visible in the floor plan of the building. The clearly heterotopic floor plan is a conglomeration of different geometrical shapes. The octagonal, round and rectangular rooms create, when pulled upwards, and assemblage of towers and cubic volumes, which give the impression of a completely fort, rather than merely a castle.

Located on the hills in a national park this extraordinary building displays power, status and decency. Since 1990 this building has been included on the list of cultural world heritage by UNESCO as a part of the "Palaces and parks of Postdam and Berlin".

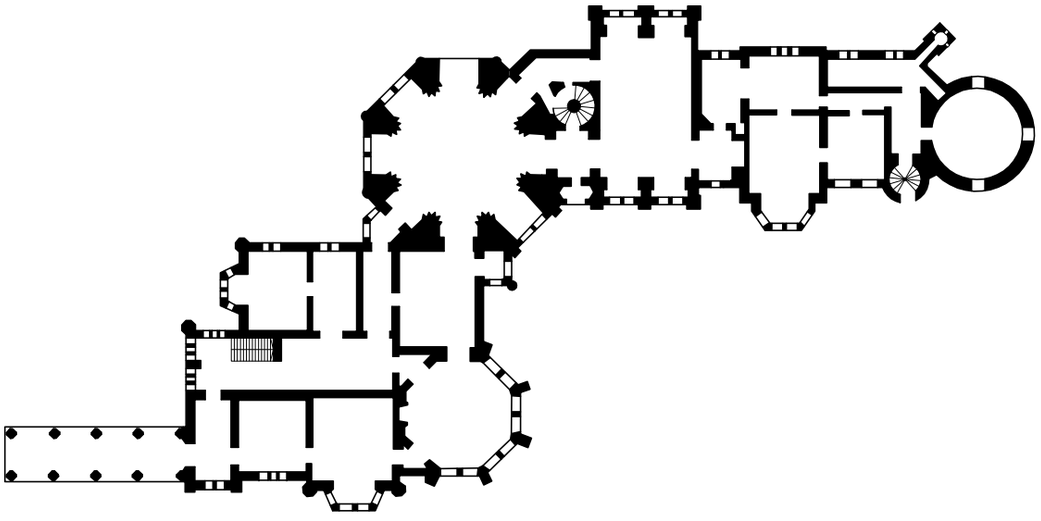


image 3.4.2
ground floor plan
scale 1:500

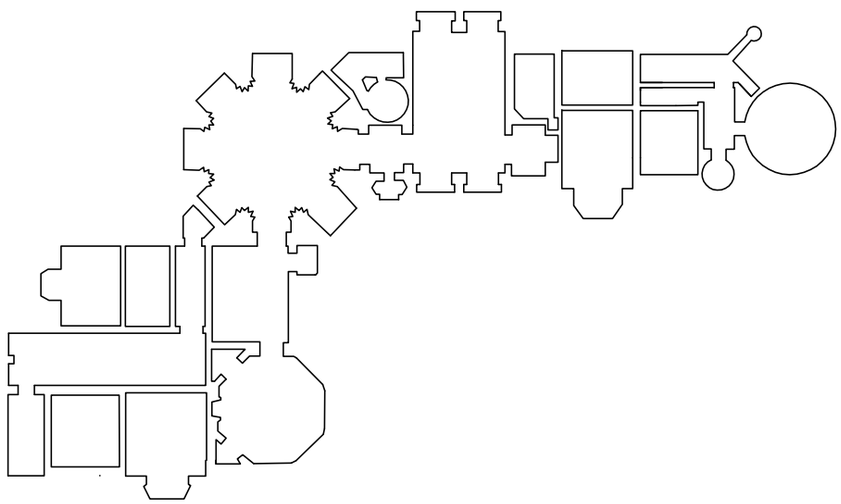


image 3.4.3
room contours
scale 1:500

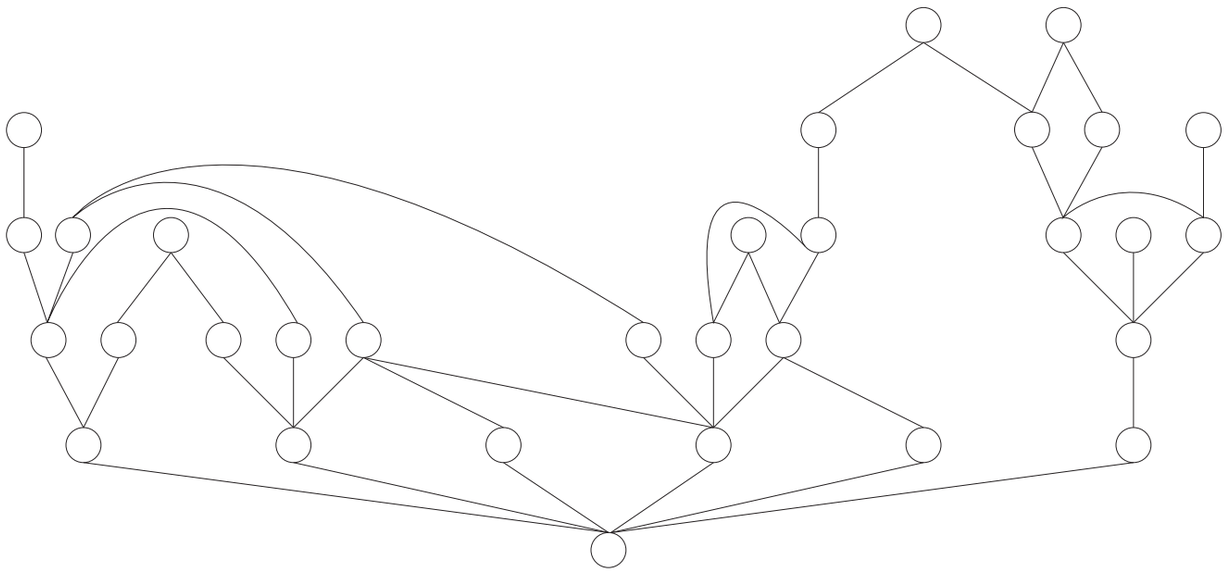


image 3.4.4
space syntax diagram

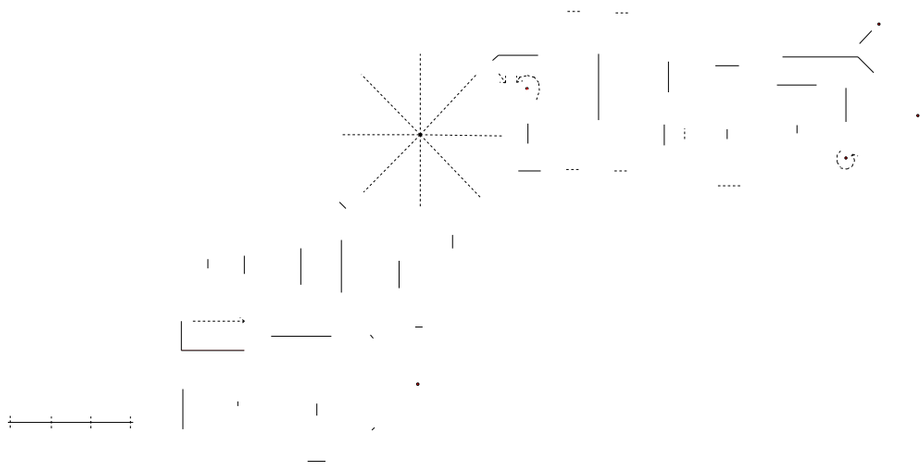


image 3.4.5
grass fire diagram
scale 1:1000

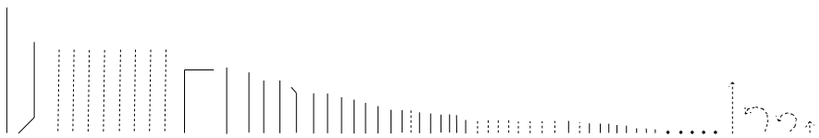


image 3.4.6
exploded grass fire diagram
scale 1:1000

1880 1890 1900 1910 1920 1930 1940 1950

ALBERT HALL MANSION | RICHARD NORMAN SHAW

image 3.5.1
Photograph of Albert Hall Mansion
source: *https://www.designingbuildings.co.uk/wiki/Richard_Norman_Shaw_and_the_construction_of_Albert_Hall_Mansions*

ALBERT HALL MANSION | RICHARD NORMAN SHAW

The Albert Hall Mansion was built by Richard Norman Shaw in 1877, who also worked on the Lowthers lodge nearby to Kensington Street. The idea was to make affordable mansions within the fabric of a city.

It has façades made entirely of red bricks , with elements derivative of 18th century Dutch and English Architecture. Deemed the 'Queen Anne' or 'Kensington Style'. It retains its formal character from its symmetry. The idea is based on many French examples. The layout consists of two lower stories and three dominant upper stories capped by a Steep pitched Roof.

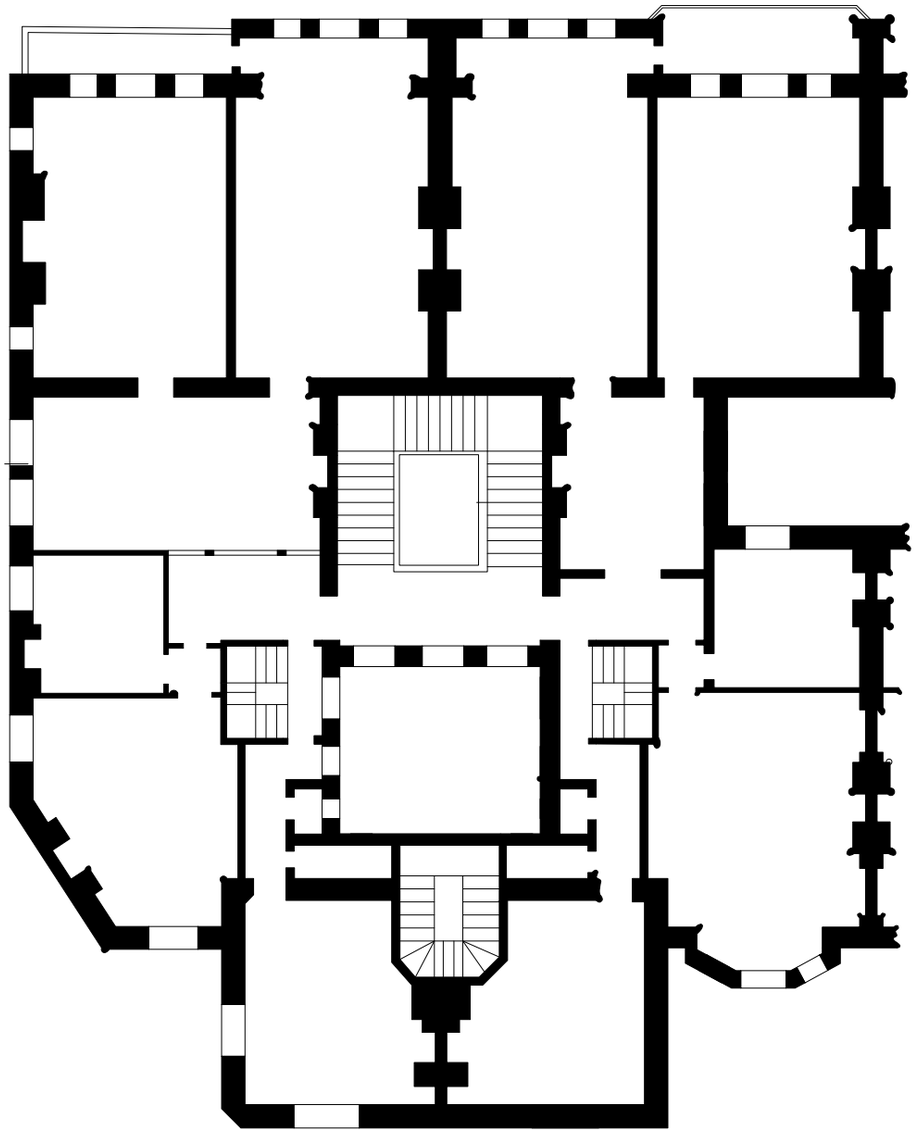


image 3.5.2
ground floor plan
scale 1:200

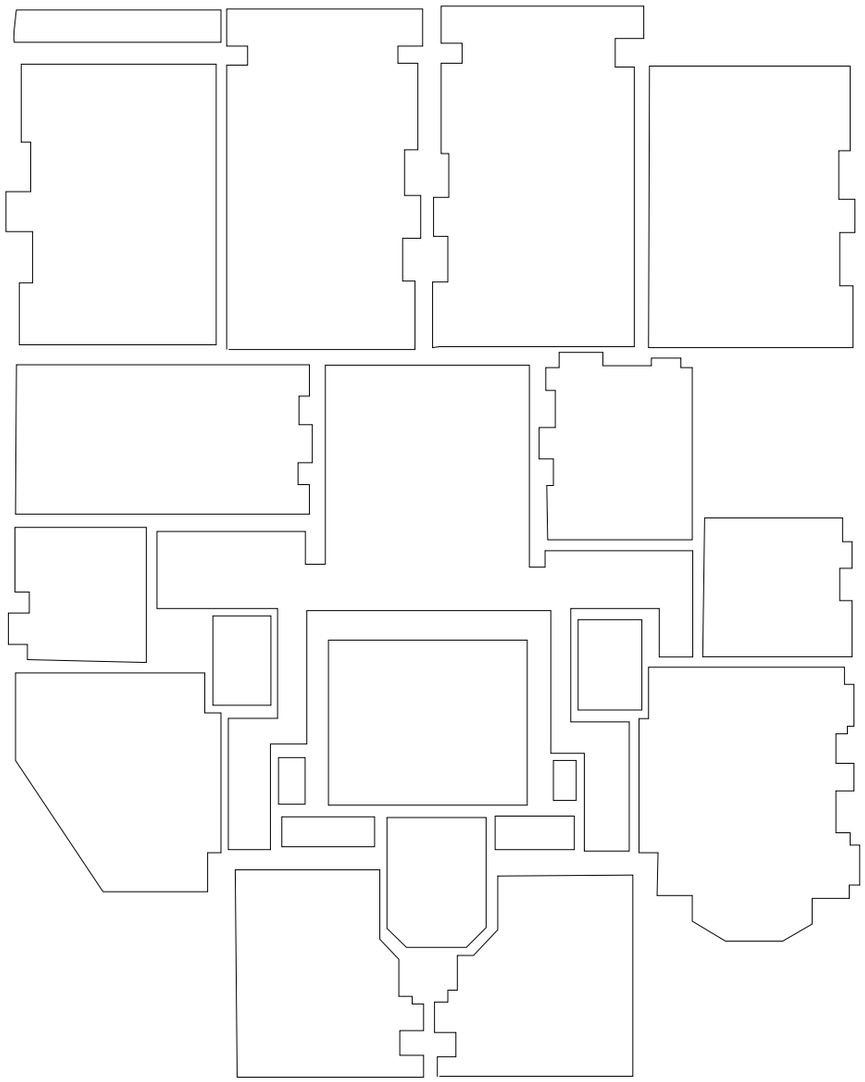


image 3.5.3
room contours
scale 1:200

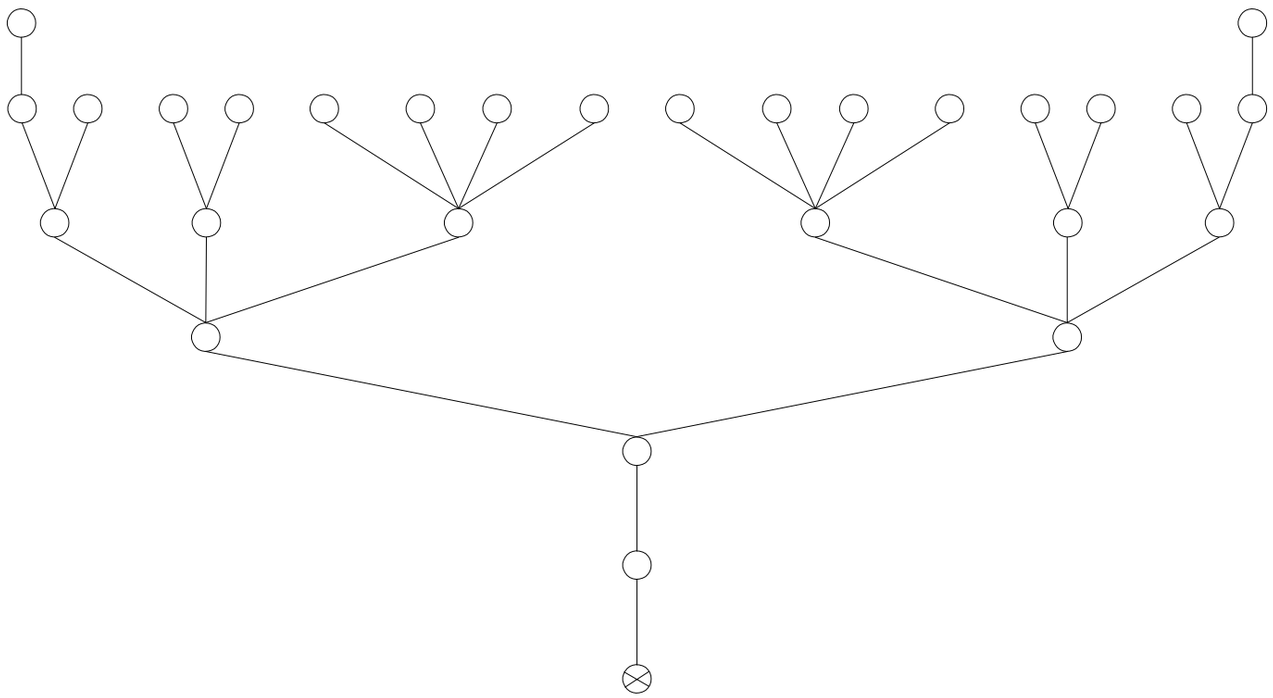


image 3.5.4
space syntax diagram

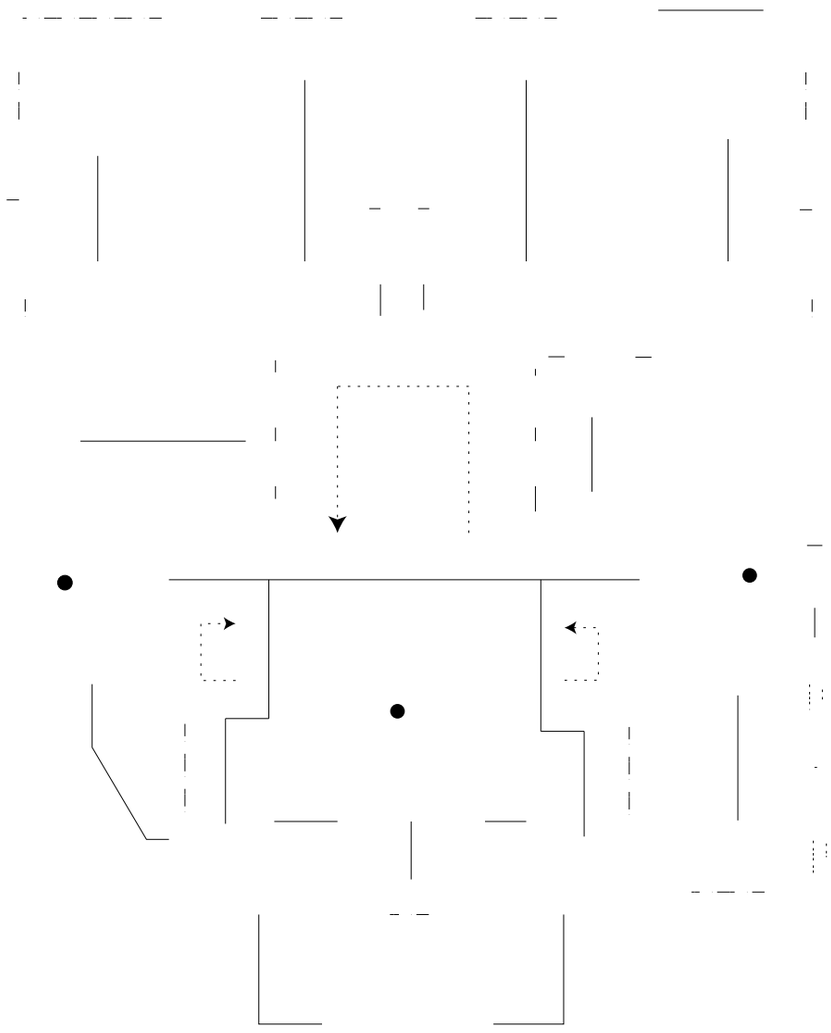
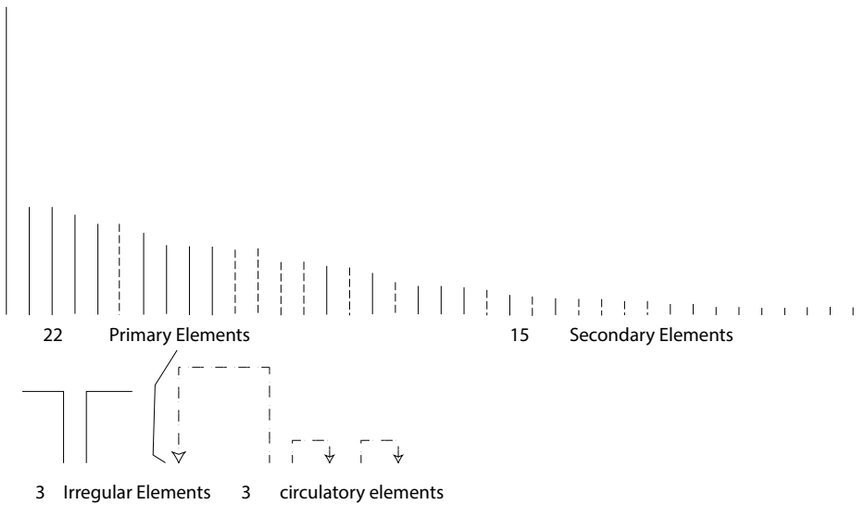


image 3.5.5
grass fire diagram
scale 1:200

Mezannine



First Floor

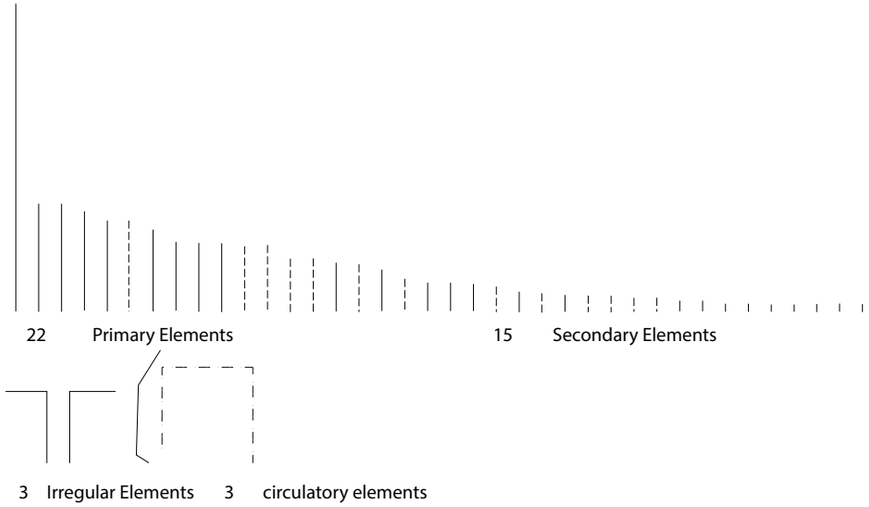


image 3.5.6
exploded grass fire diagram
scale 1:200

CASA BATLLÓ | ANTONI GAUDÍ

image 3.6.1
Photograph of Casa Batlló
source: *https://barcelonasecreta.com/casa-batllo-facha-da/*

CASA BATLLÓ | ANTONI GAUDÍ

Casa Battlo is located on one of the main roads in Barcelona and was build and renovated between 1877 and 1906. Casa Battlo is a residential building and forms a part of a row of houses.

Architect Antoni Gaudi contradicts the plain and linear street scene with a waving façade. Casa Battlo, which is considered as one of Gaudi's masterpieces, has floor plans just as curved as the exterior façade. Just as the façade, the floor plan is anything but typical. The amount of recognizable geometrical shapes in the plans is little.

The free form is the form that rules in both the plans, the sections and the façade of the buildings. The waving ordering of spaces and the use of odd shapes could rather give an impression of nature than of the built environment. However, the plans of Casa Battlo might be in some case comparable to the more structured and more typical architecture of the era. Despite all deviations from the normal, the analysis might reveal that Casa Battlo is not so different after all.

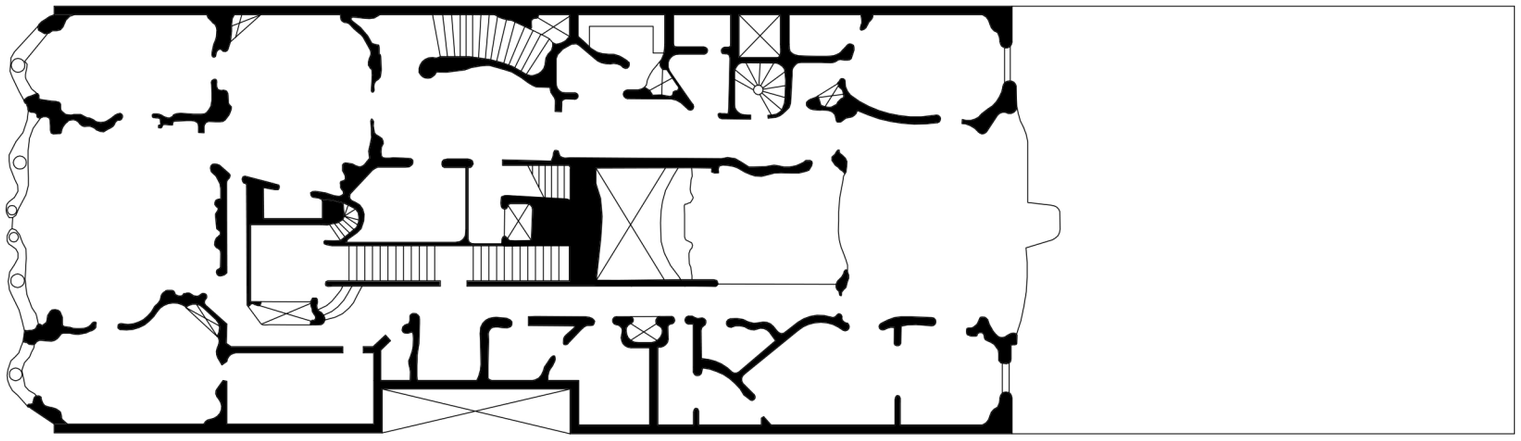


image 3.6.2
ground floor plan
scale 1:200

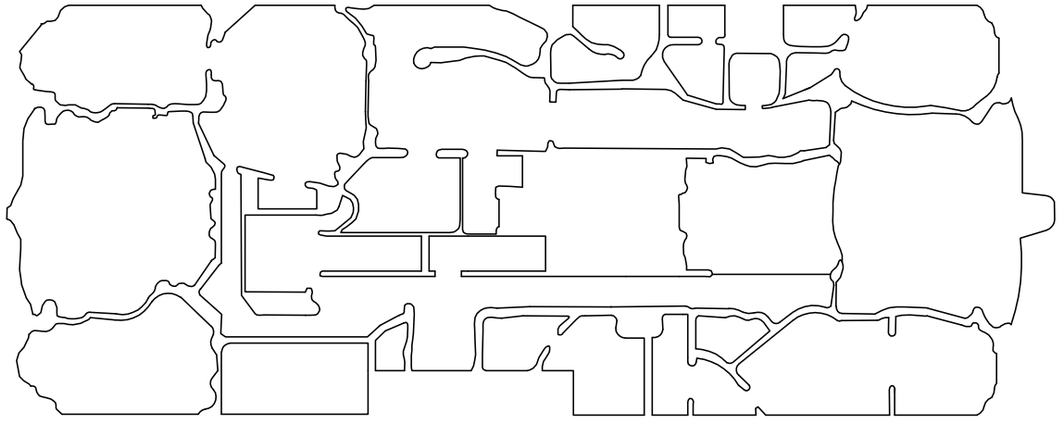


image 3.6.3
room contours
scale 1:200

1800 1810 1820 1830 1840 1850 1860 1870

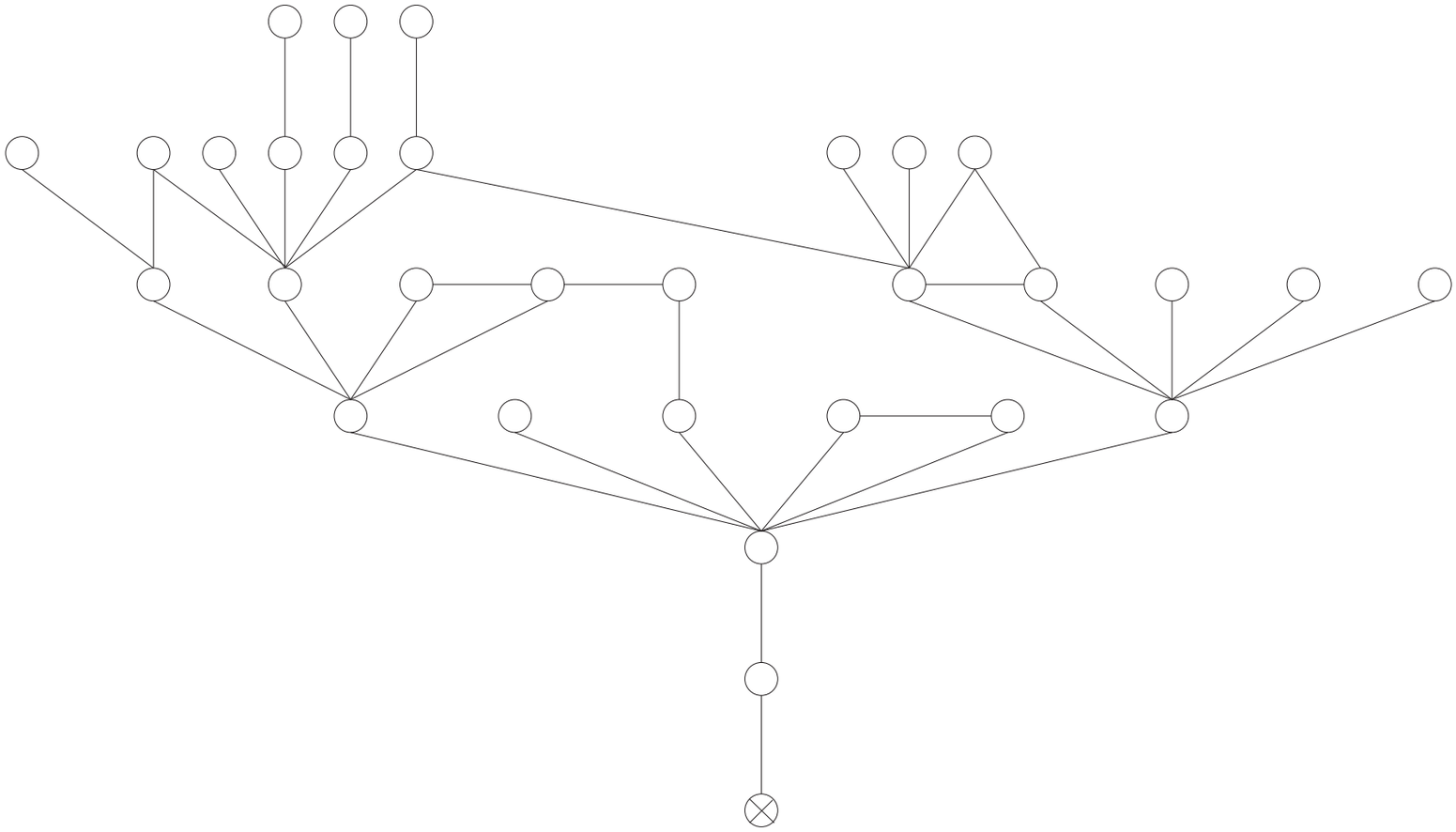


image 3.6.4
space syntax diagram

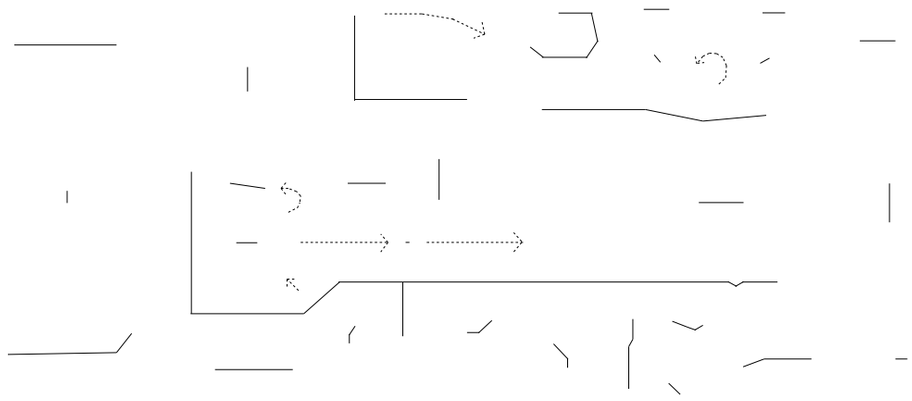


image 3.6.5
grass fire diagram
scale 1:200

image 3.6.6
exploded grass fire diagram
scale 1:200

BOSTON PUBLIC LIBRARY | CHARLES FOLLEN MCKIM

image 3.7.1
Photograph of Boston Public Library
source:https://www.arrowstreet.com/portfolio/boston-public-library-central-library-wayfinding/

BOSTON PUBLIC LIBRARY | CHARLES FOLLEN MCKIM

The Boston library was founded in 1895 in Boston, Massachusetts. It is the largest municipal public library in the United States. The building was designed by Charles Follen McKim. The building style is Renaissance Revival. It was the first library that was publicly supported by the municipality. The library stores a total of 15 million books. The official opening of the library took place in 1854. In 1887, McKim was assigned to redesign the library. The new concept was 'the palace of the people'. This concept is clearly displayed in the floor plan. The clear entrance hall is emphasized strongly by its thicker walls and shapes. The hall has on each side an equally sized room, which is a mainly responsible for the symmetrical appeal. Special about this building is that it has a courtyard with an arcade, two wings and a large reading room (the Bates room) at the first floor. The marble stairs are remarkable because of its attention that it draws, which makes visitors want to go upstairs.

In the analysis drawings, the contour of the library seem looks very similar to the floor plan. The space syntax shows the two wings clearly. The grass fire shows the great amount of secondary spaces present in the floor plan.

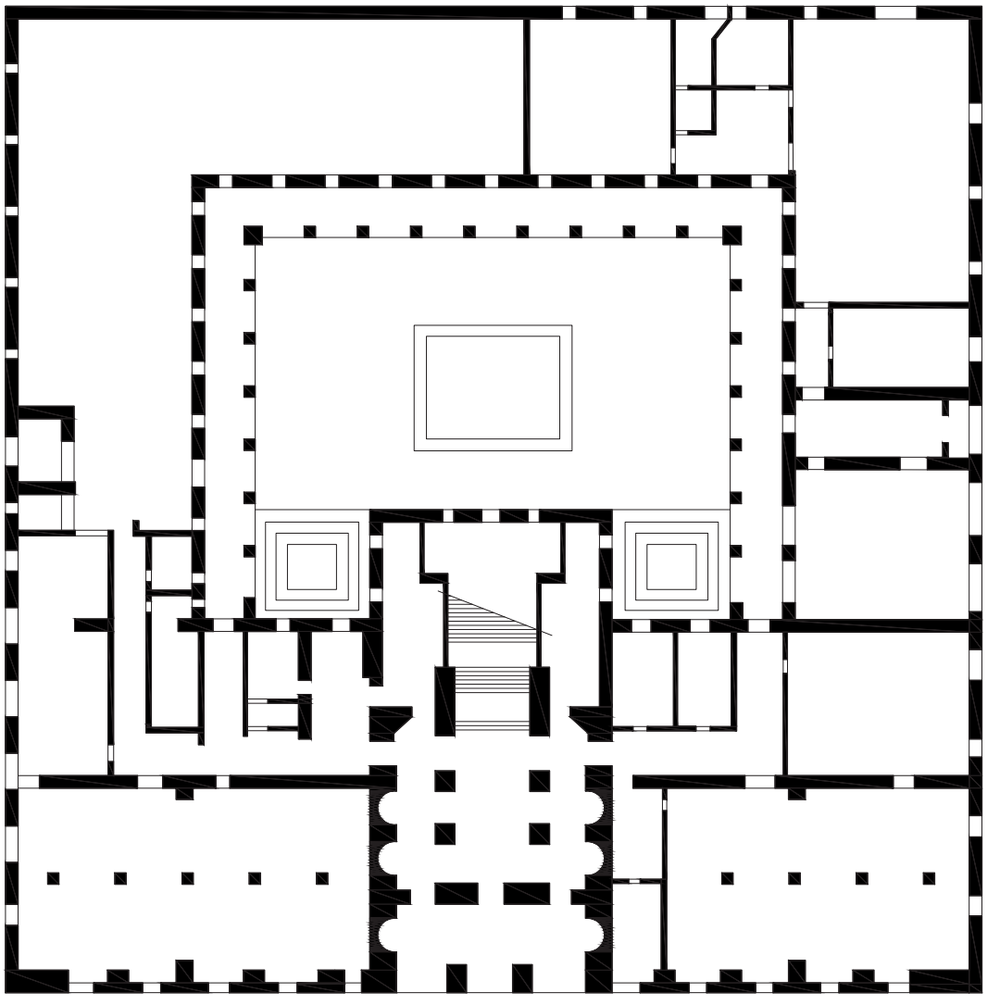


image 3.7.2
ground floor plan
scale 1:500

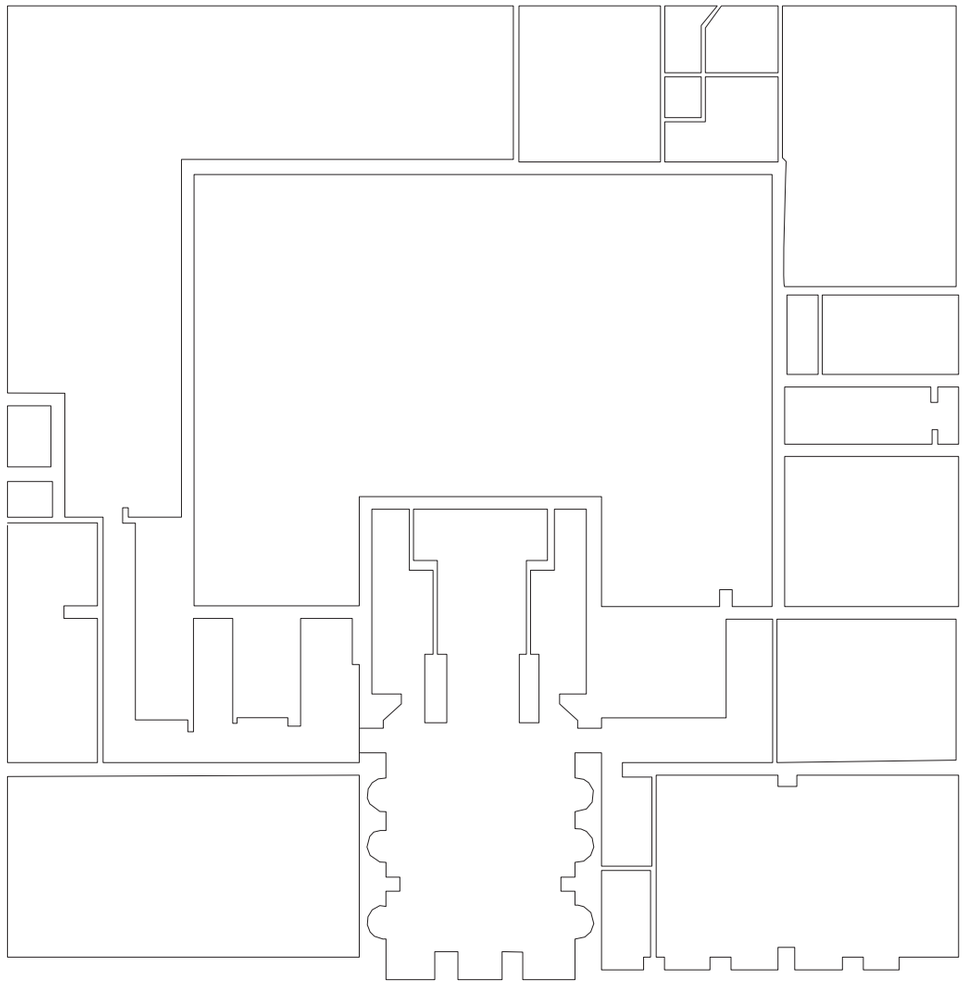


image 3.7.3
room contours
scale 1:500

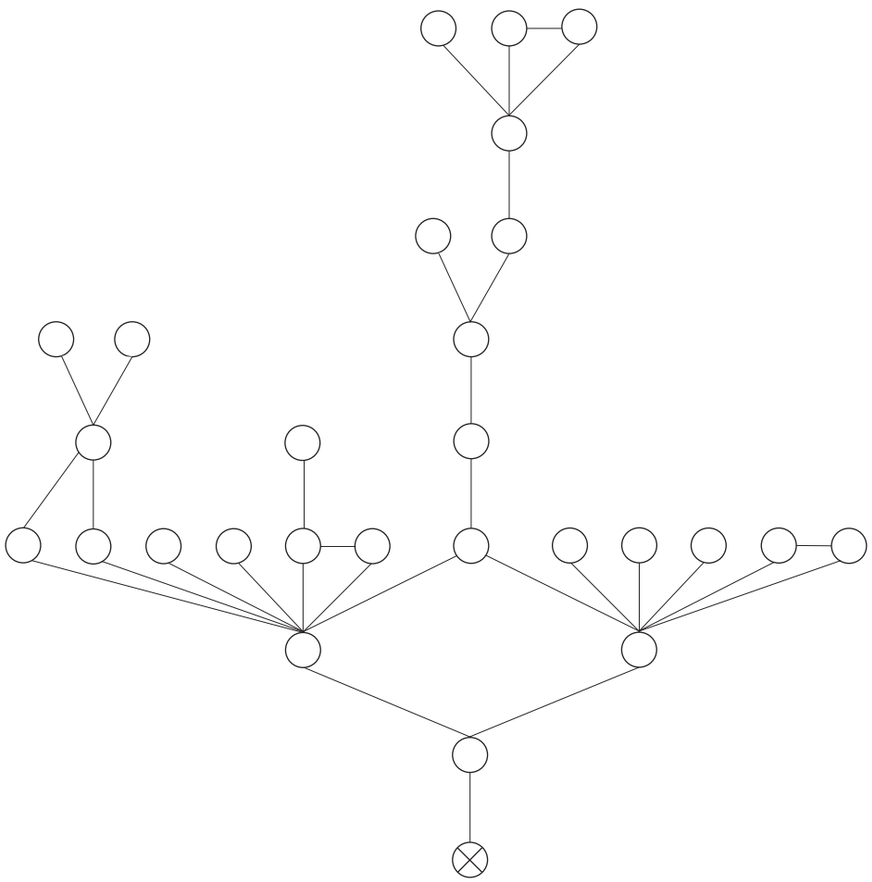


image 3.7.4
space syntax diagram

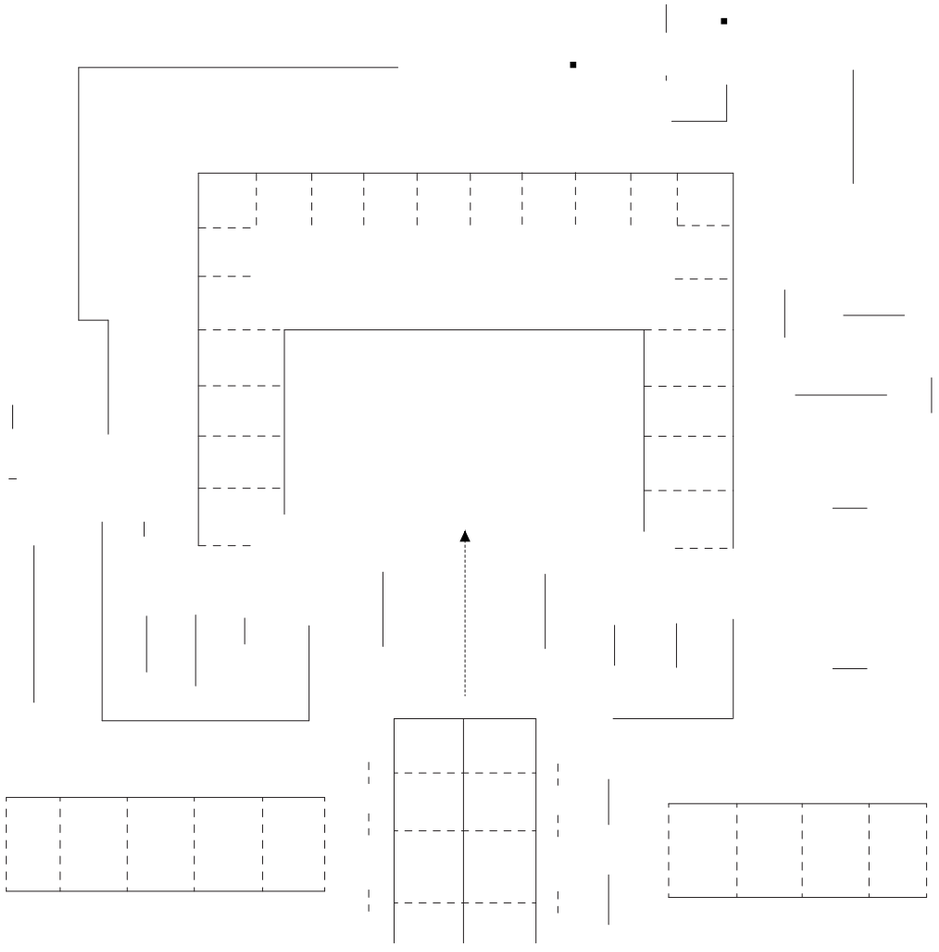


image 3.7.5
grass fire diagram
scale 1:500

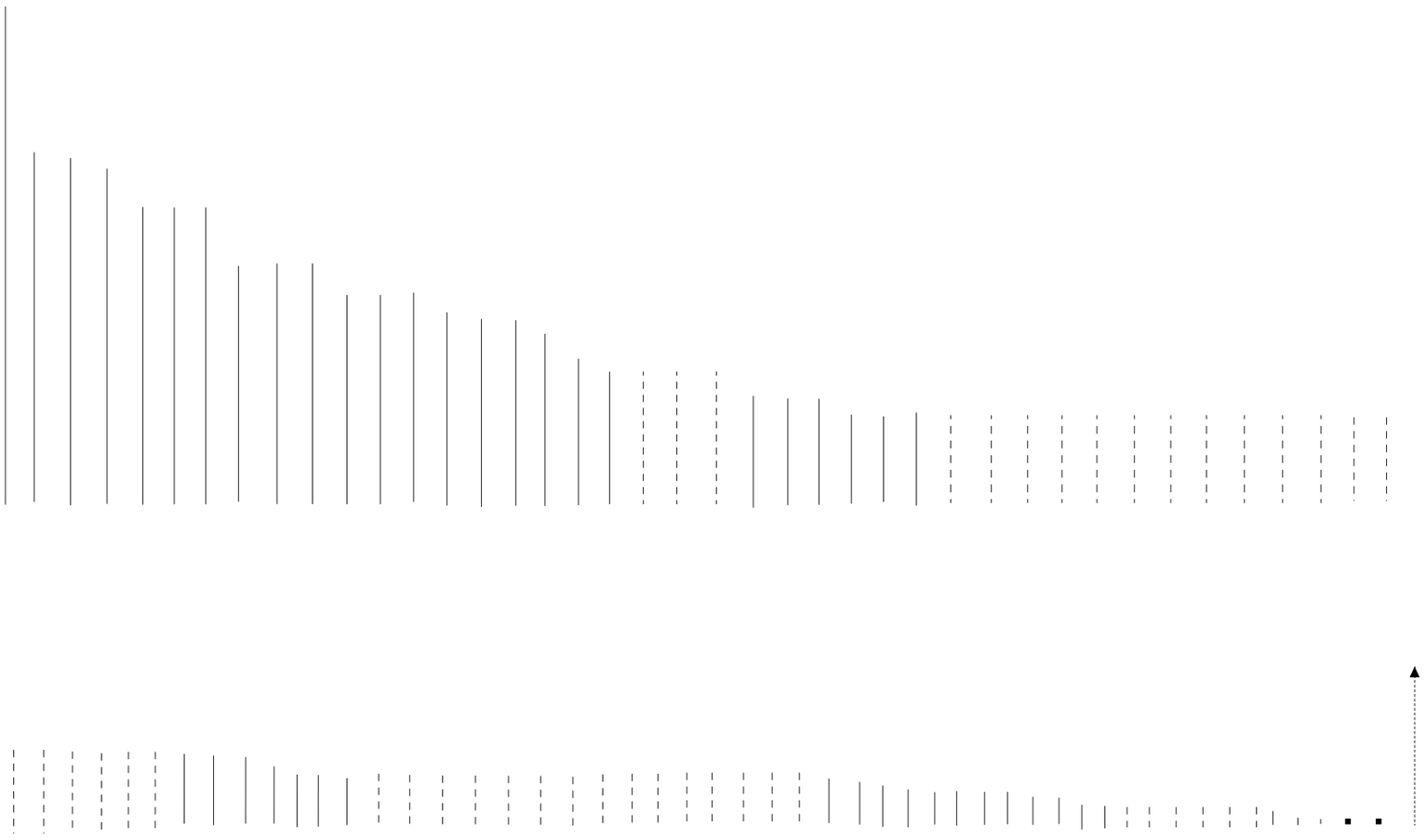


image 3.7.6
exploded grass fire diagram
scale 1:500

PALAIS STOCLET | JOSEF HOFFMANN

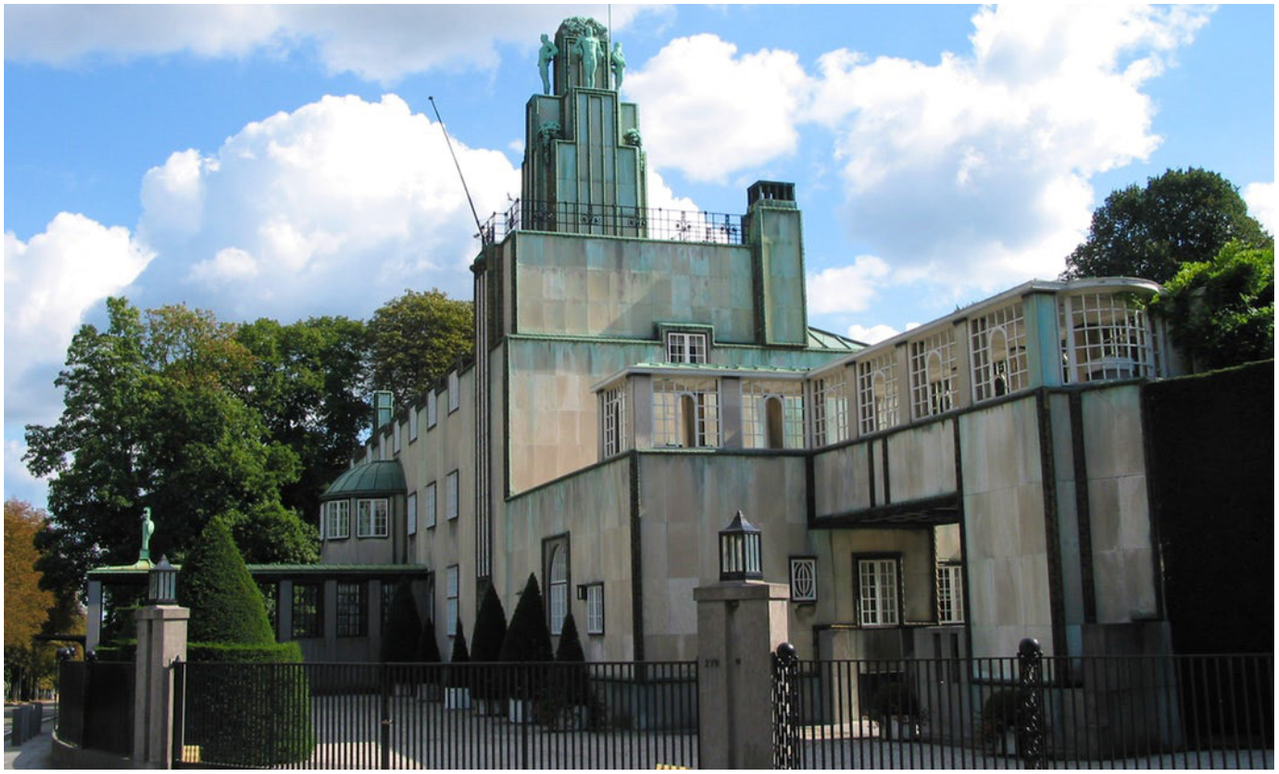


image 3.8.1
Photograph of Palais Stoclet
source: *https://www.itinari.com/nl/location/the-stoclet-palace*

PALAIS STOCLET | JOSEF HOFFMANN

The Stoclet Palace,located in Brussels, Belgium is a masterpiece built by Joseff Hoffman for art lover Adolf Stoclet. Enriched with Art Noveau elements, The Stoclet palace boasts art pieces by Gustav Klimt, marble pieces and several ornamentation to represent the owners rich tastes. It was built between 1905 and 1911.

Its rear facade consists of bay windows and many balconies and terraces. It was thus an urban mansion up front and a country house at the back. It is a UNESCO world heritage site, and is still private property.

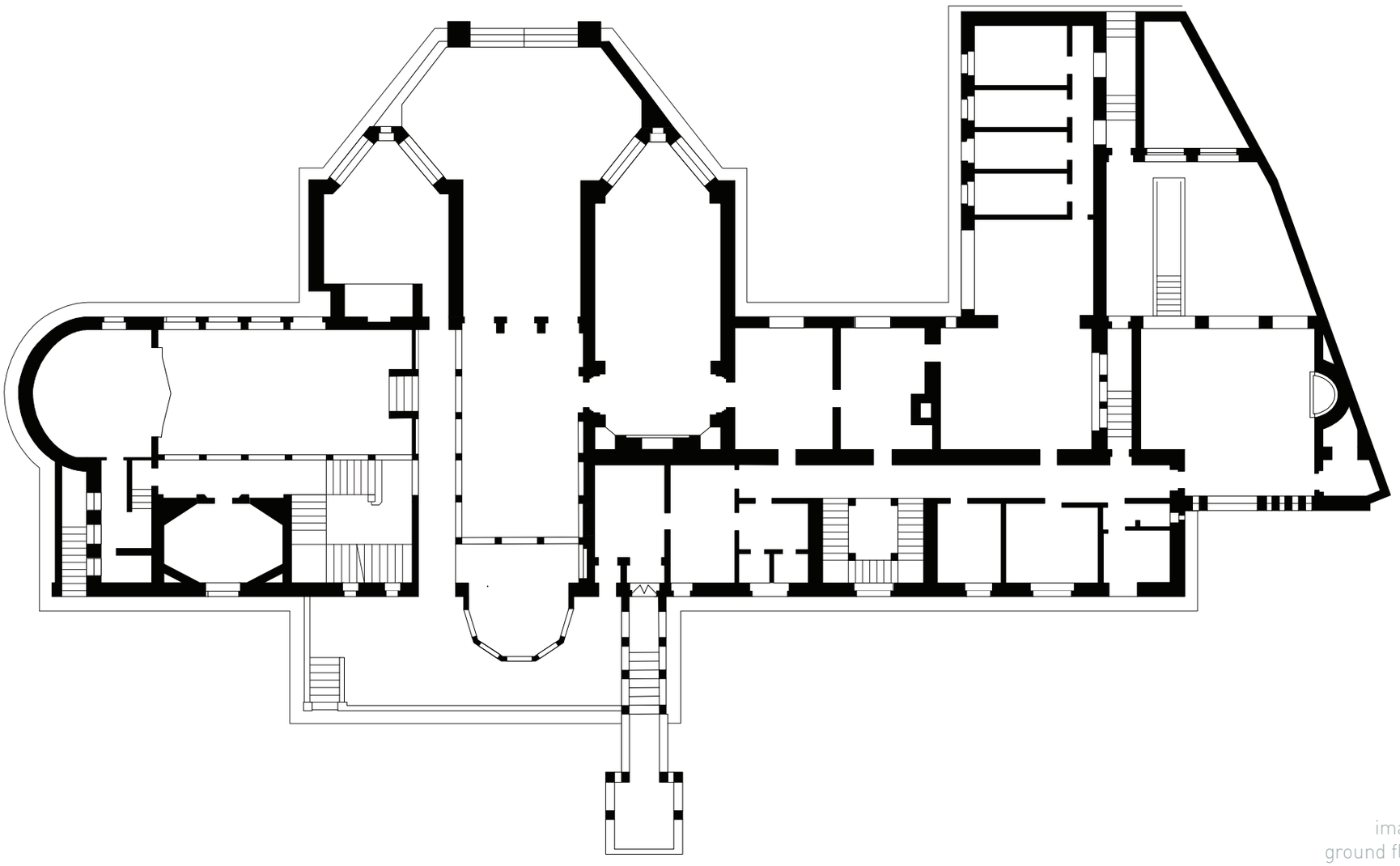


image 3.8.2
ground floor plan
scale 1:200

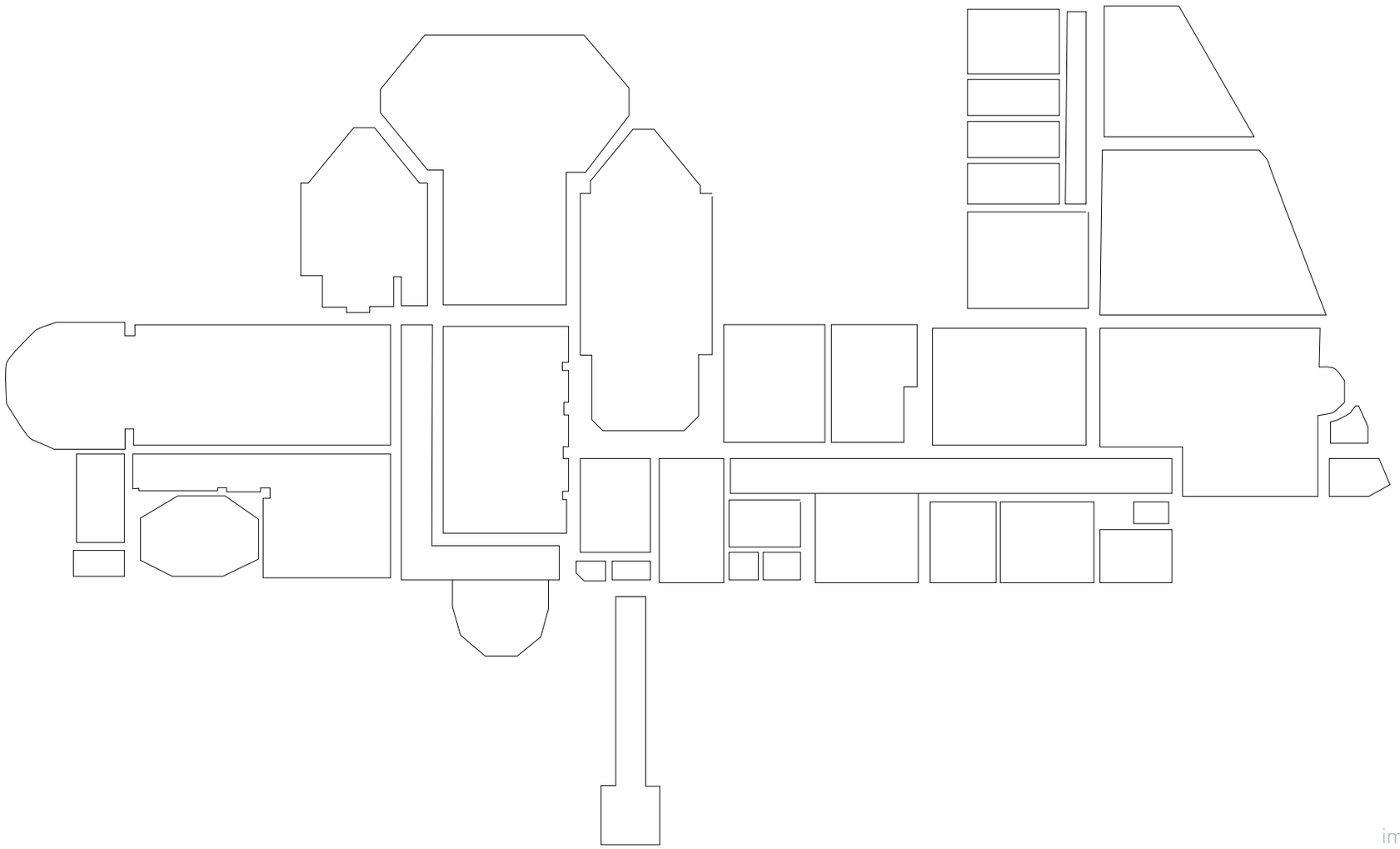
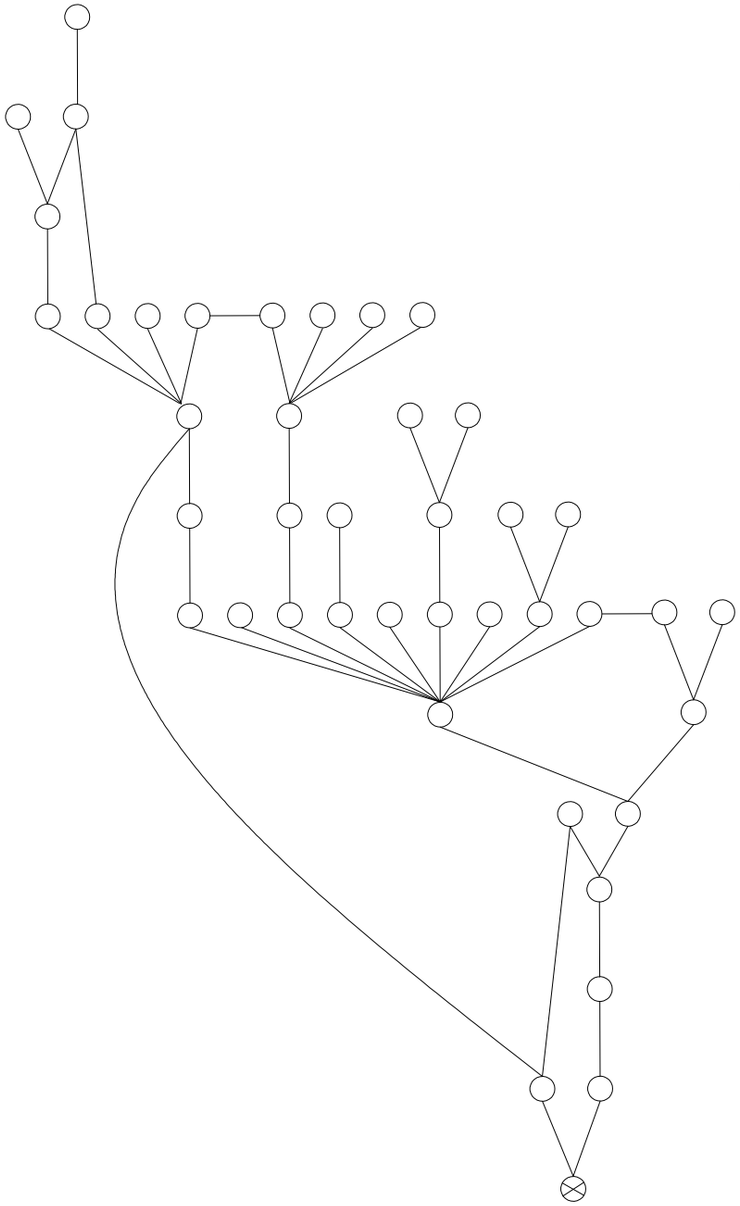
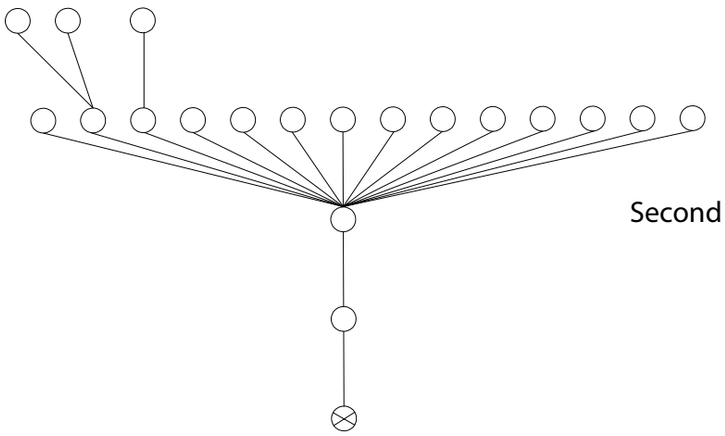


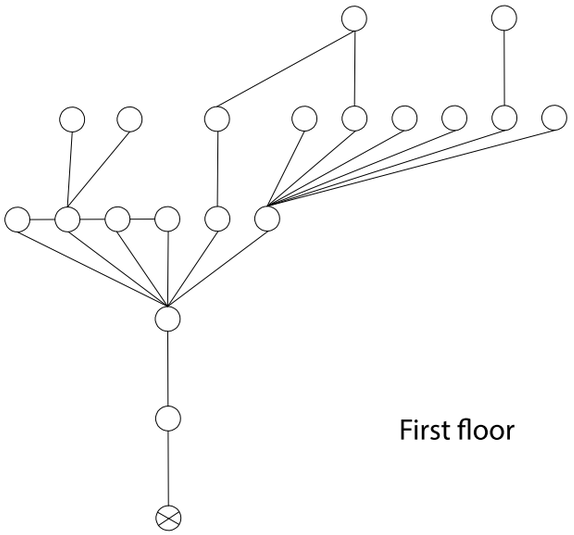
image 3.8.3
room contours
scale 1:200



stoclet palace
ground floor



Second Floor



First floor

image 3.8.4
space syntax diagram

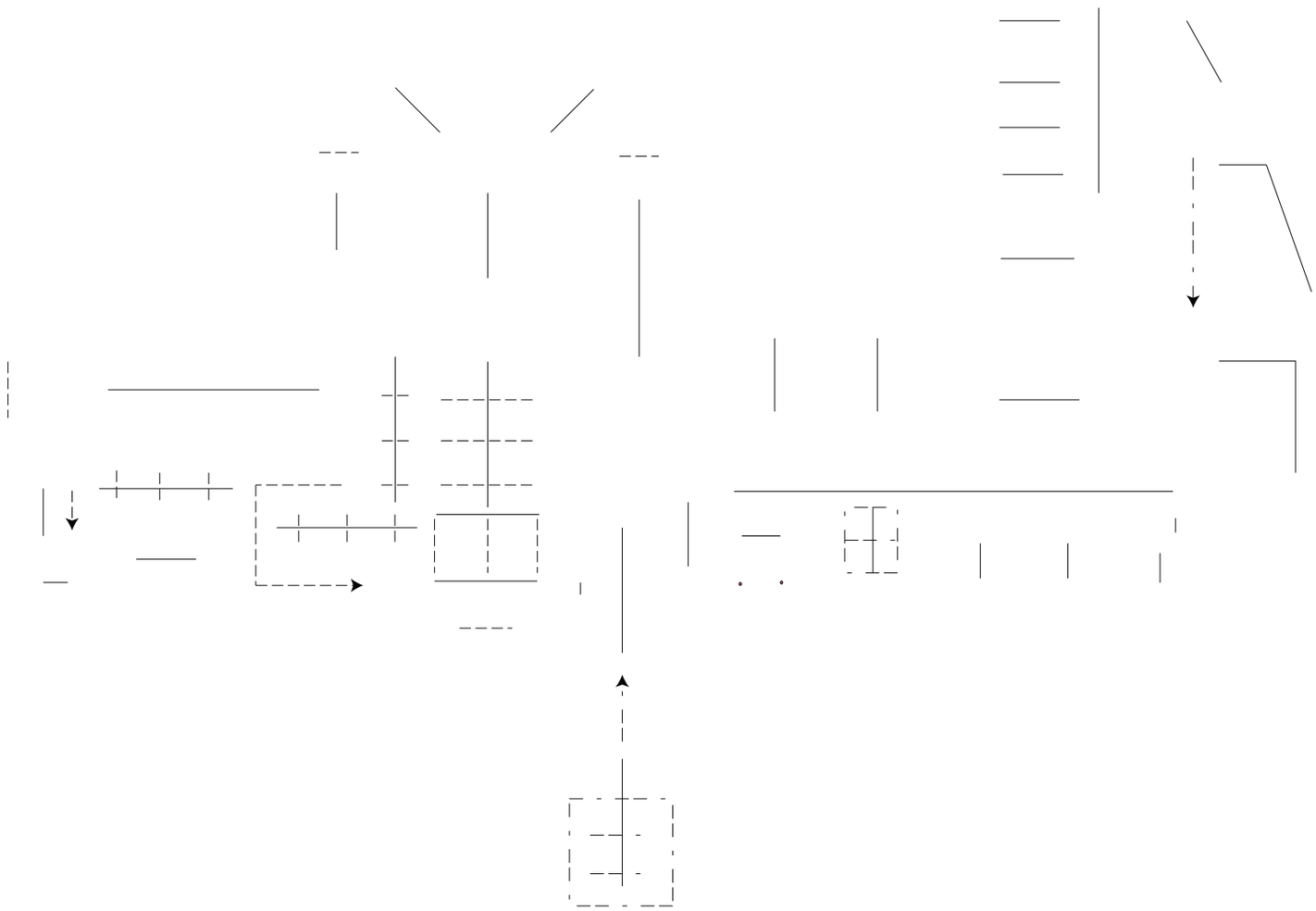
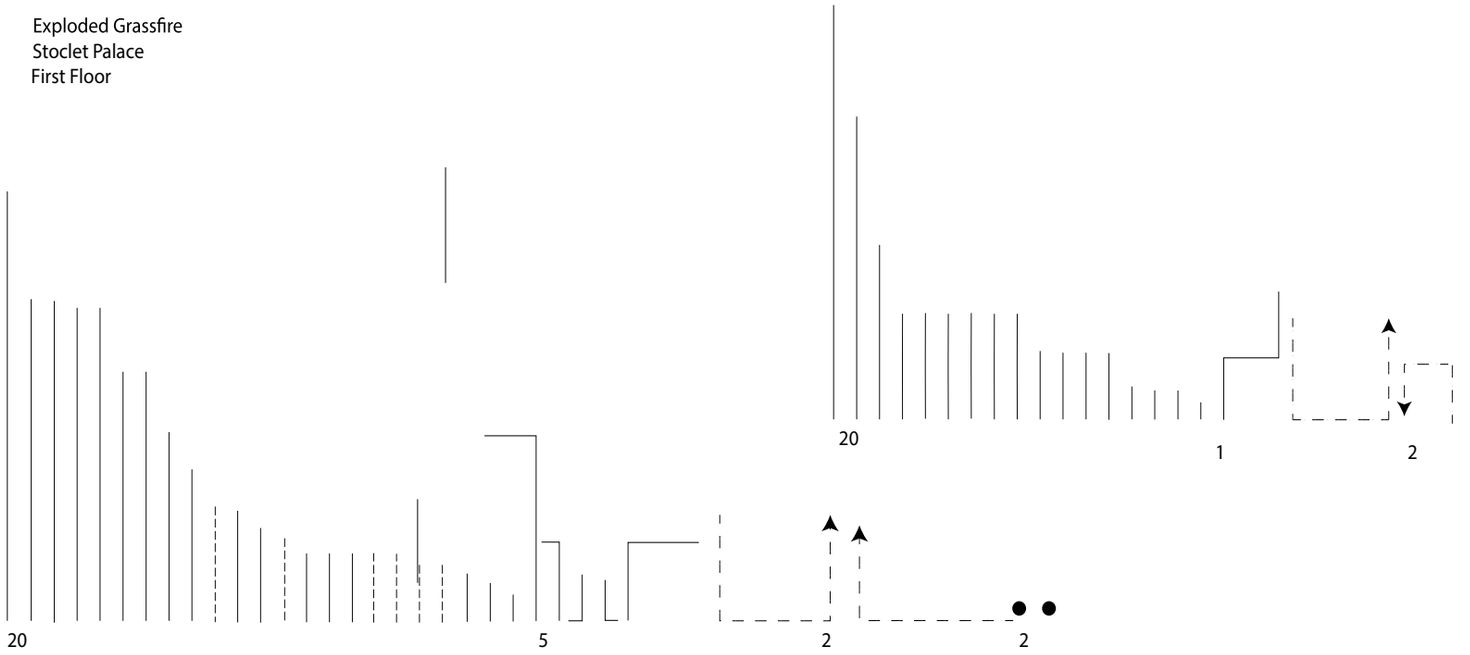


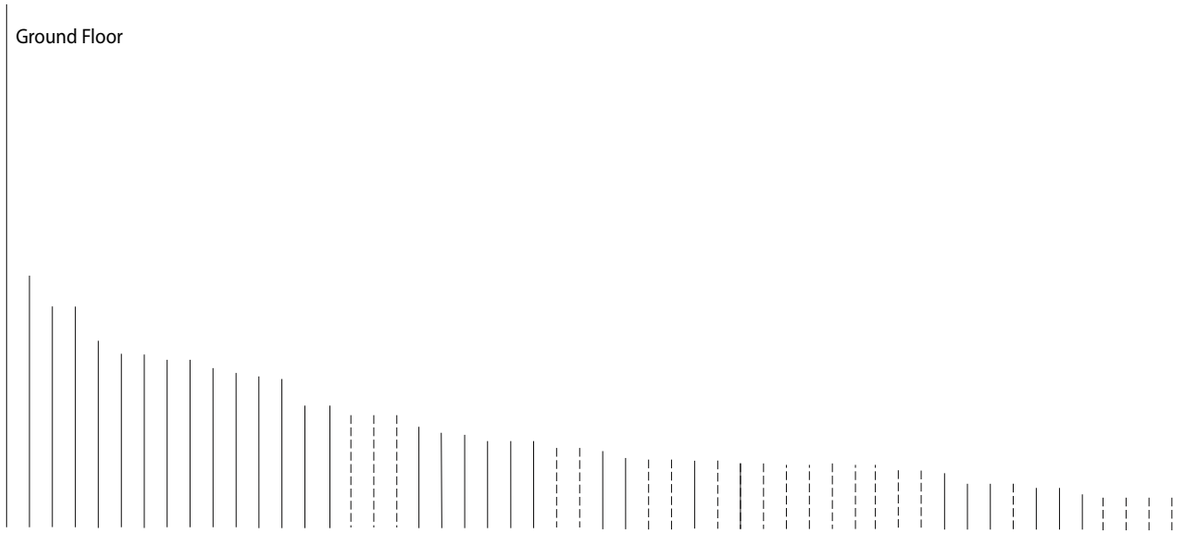
image 3.8.5
grass fire diagram
scale 1:200

1800 1810 1820 1830 1840 1850 1860 1870

Exploded Grassfire
Stoclet Palace
First Floor



Ground Floor



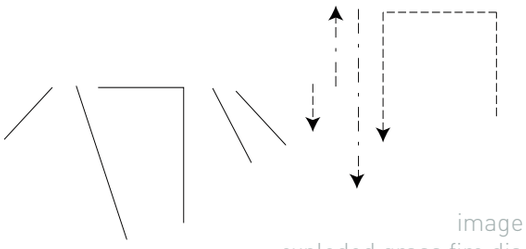


image 3.8.6
exploded grass fire diagram
scale 1:200

31 Primary Elements

22 **Dotted lines**

5 Irregular Element

4 Circulatory elements

NATIONAL FARMERS BANK | LOUIS SULLIVAN

image 3.9.1
Photograph of National Farmers Bank
source: *https://en.wikipedia.org/wiki/National_Farmer%27s_Bank_of_Owatonna*

NATIONAL FARMERS BANK | LOUIS SULLIVAN

National Farmer's bank was the first of Sullivan's bank design. Massive brick building with two large arch windows and green terracotta ornamentation was meant to show a new fresh approach, in comparison to conventional bank architecture of its time.

The architecture of the building is also reflected in the plan. The prominent hall with high ceiling and arch windows is clearly readable in the plan because of its proportion and the thicker walls around it. Other spaces are connected to this hall and the functional division of spaces is distinct.

The composition of the plan also reflects the time in which it was built, the building is composed primarily with emphasis to functionality, not only the aesthetics. The main hall is very compact and representative whereas offices and other supplementary spaces are not strictly composed.

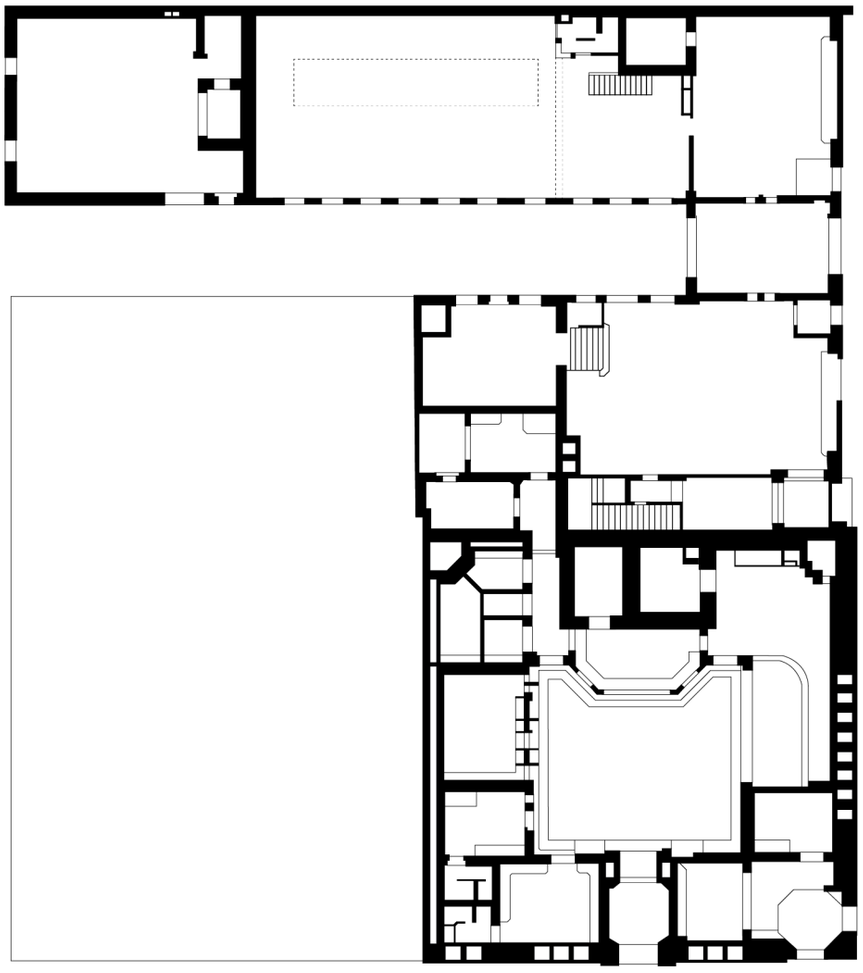


image 3.9.2
ground floor plan
scale 1:500

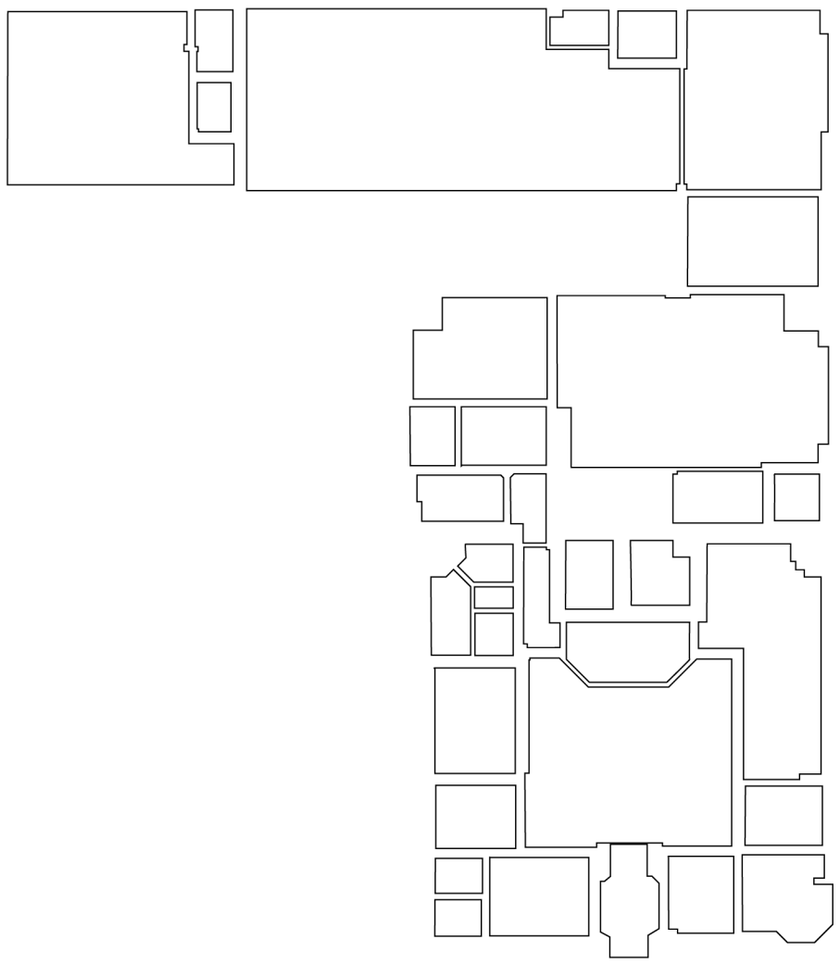


image 3.9.3
room contours
scale 1:500

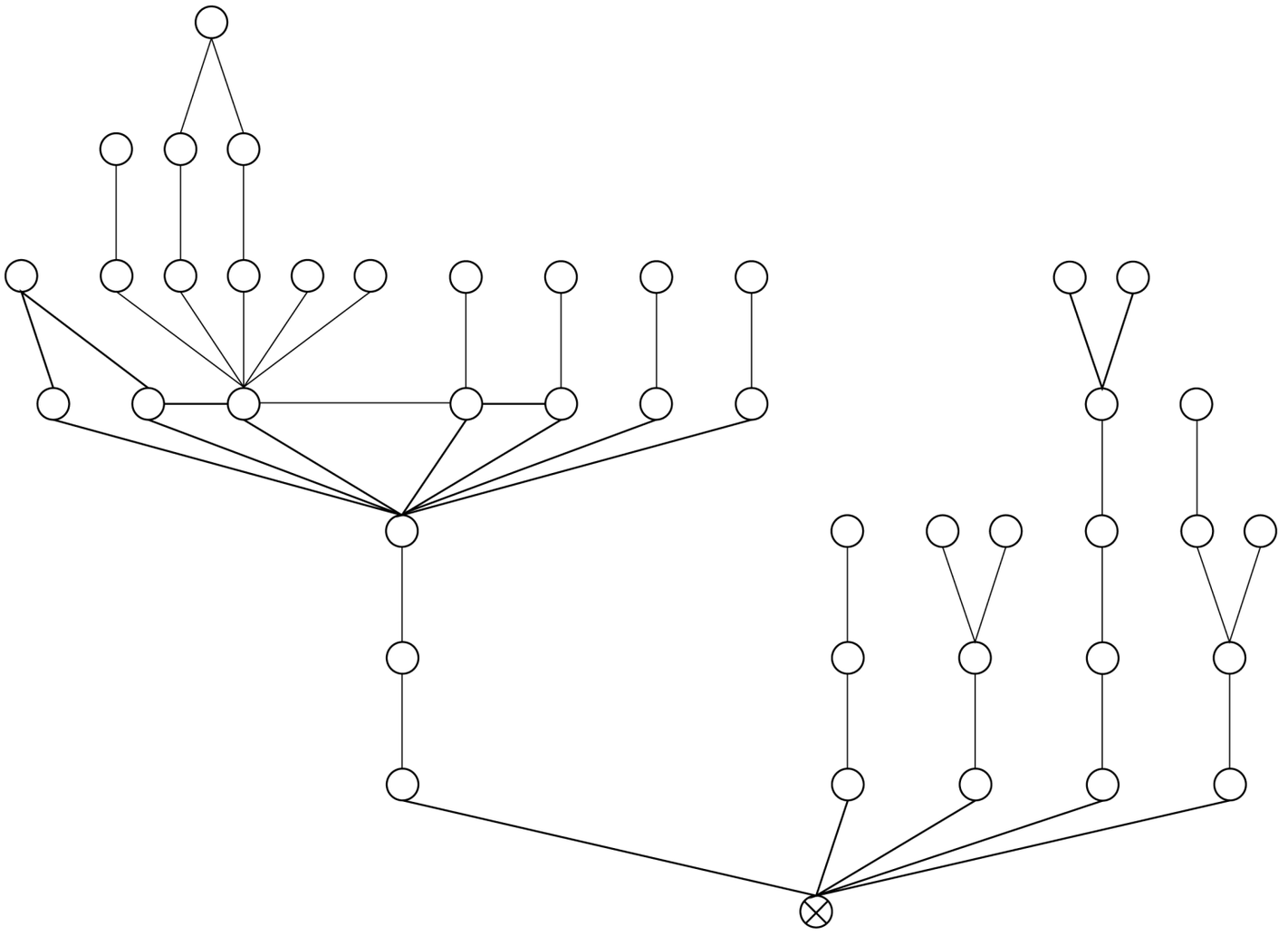


image 3.9.4
space syntax diagram

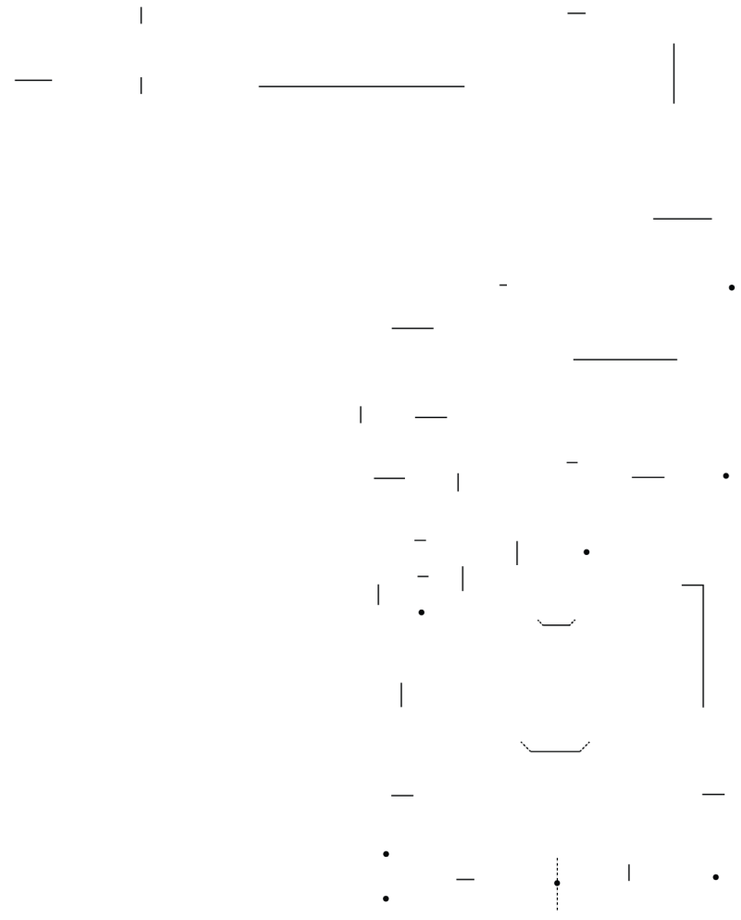


image 3.9.5
grass fire diagram
scale 1:500

1800 1810 1820 1830 1840 1850 1860 1870

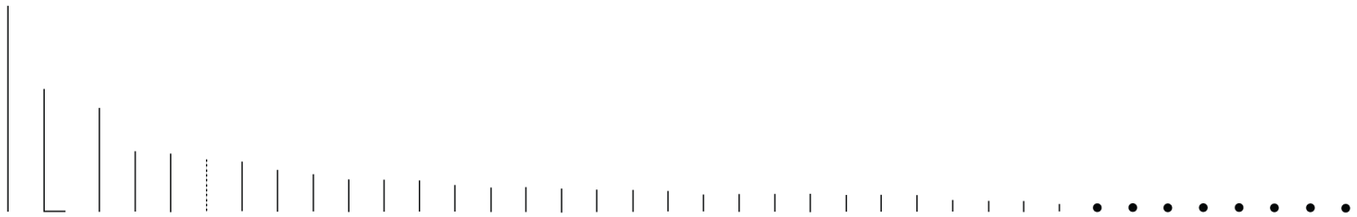


image 3.9.6
exploded grass fire diagram
scale 1:500

BAUHAUS DESSAU | WALTER GROPIUS

image 3.10.1
Photograph of Bauhaus Dessau
source: *https://www.bauhaus-dessau.de/en/history/unesco-world-cultural-heritage.html*

BAUHAUS DESSAU | WALTER GROPIUS

Bauhaus was founded by Walter Gropius as a new kind of art school that had its focus on a holistic approach to the creative disciplines. The goal was to create a Gesamtkunstwerk or total work of art, meaning that buildings and every individual element it them were designed as one whole. Bauhaus did not make a distinction between form and function.

Bauhaus Dessau has an asymmetric plan, with dedicated areas for teaching, studying, office and student housing. To separate these functions, three different wings are created, which are connected with bridges.

It is a very innovative building in that time, because it makes use of free floor plans, curtain walls, flat roofs that could be walked upon. This building could be considered modernistic.

1800 1810 1820 1830 1840 1850 1860 1870

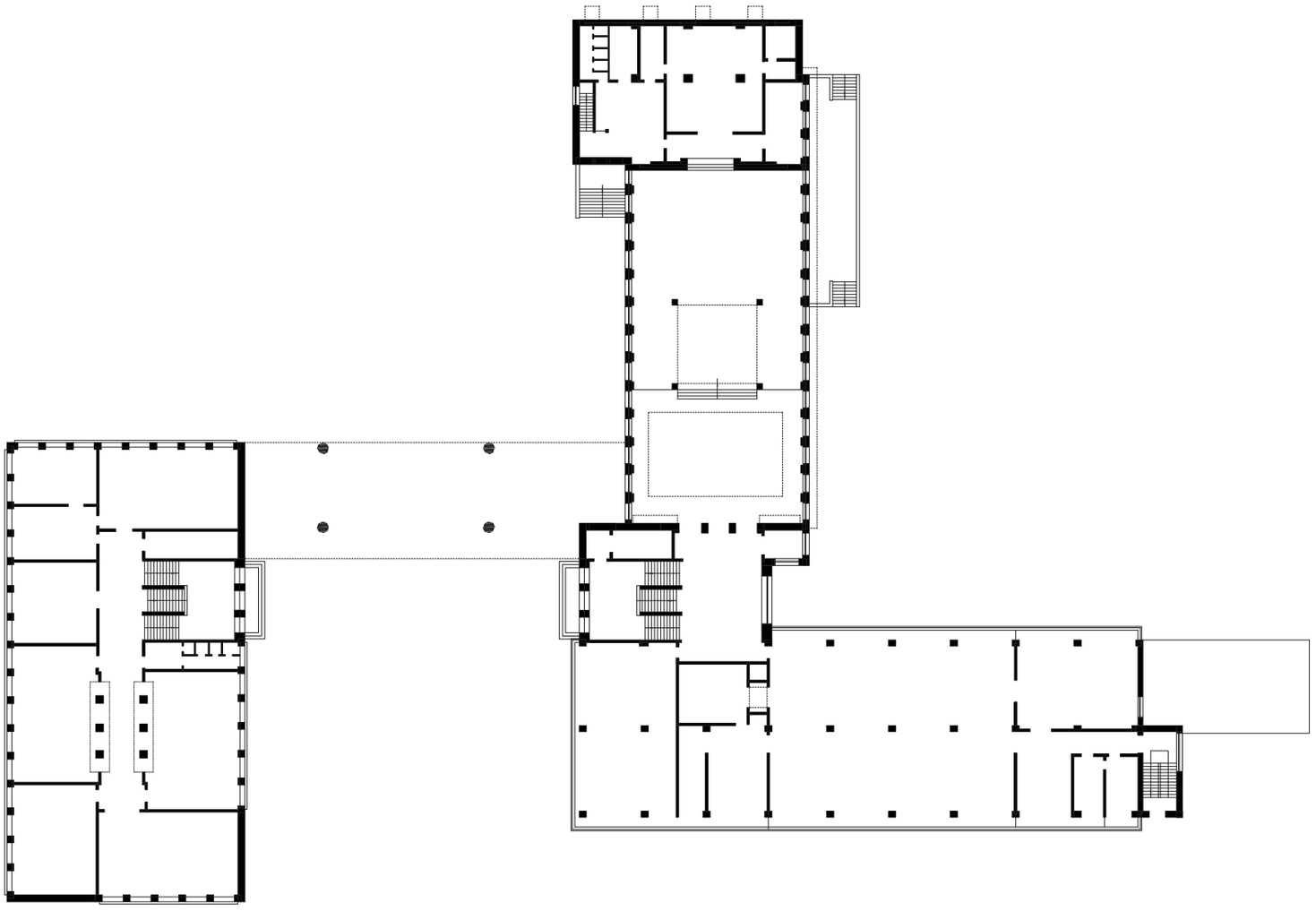


image 3.10.2
ground floor plan
scale 1:500

image 3.10.3
room contours
scale 1:500

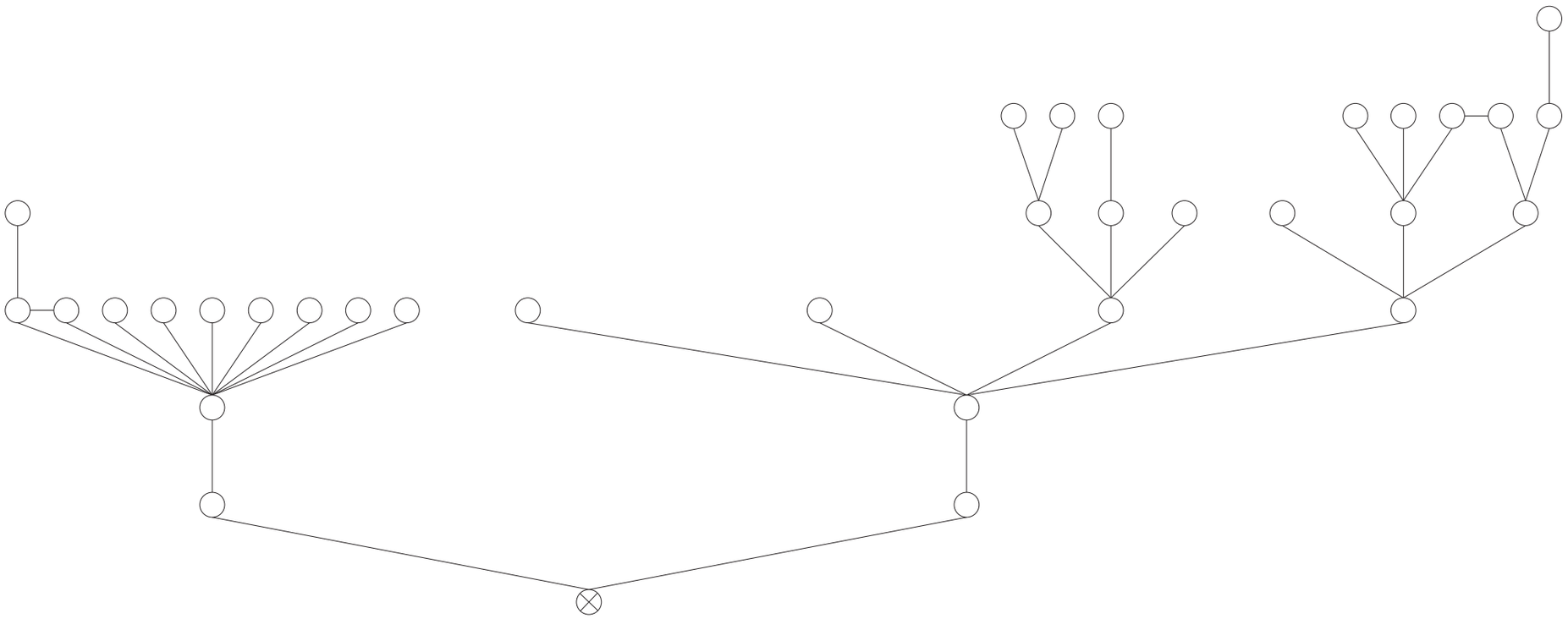


image 3.10.4
space syntax diagram

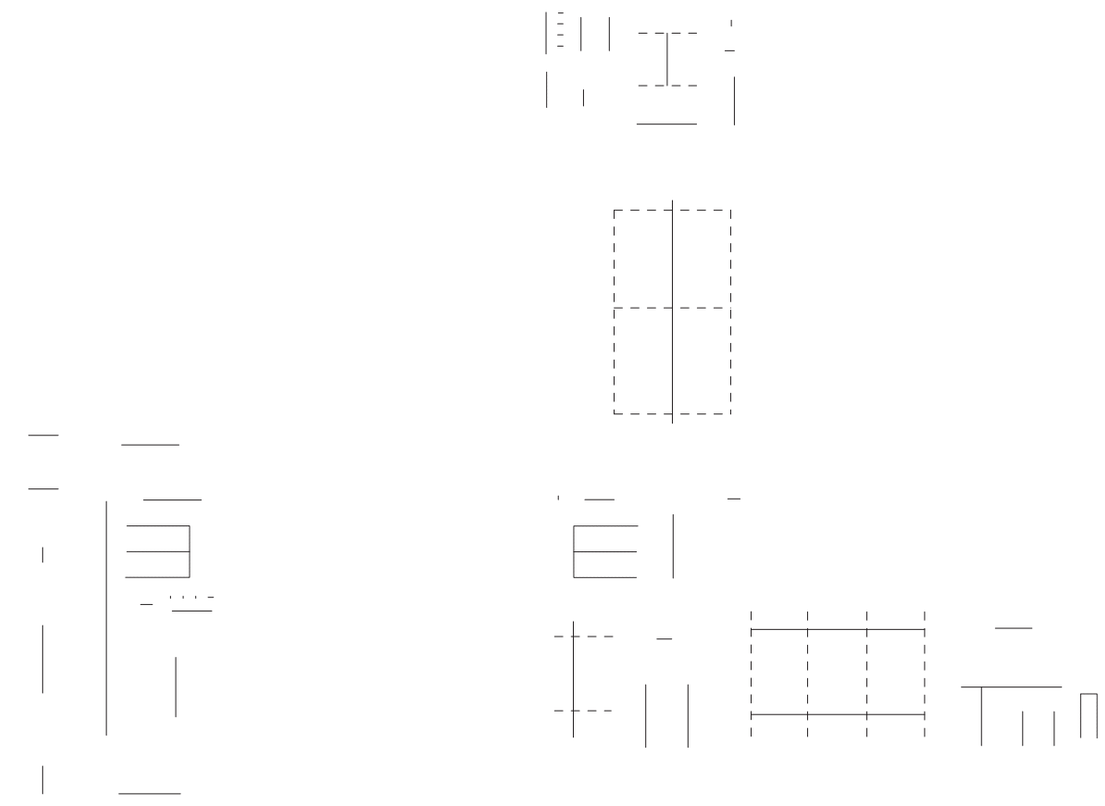


image 3.10.5
grass fire diagram
scale 1:500

1800 1810 1820 1830 1840 1850 1860 1870

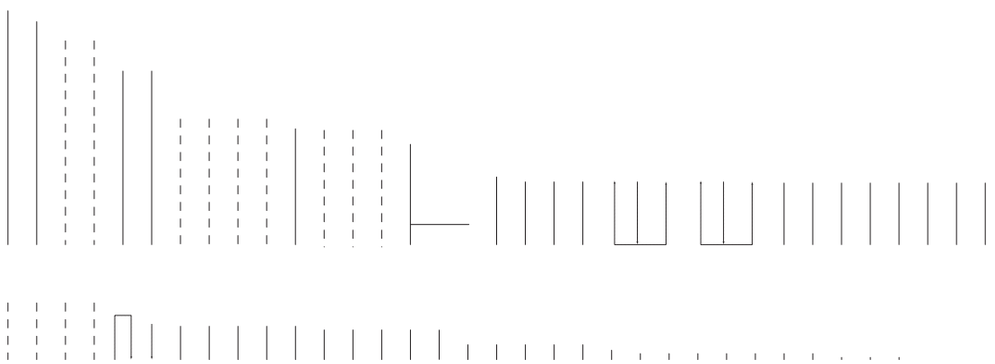


image 3.10.6
exploded grass fire diagram
scale 1:500


1800
1810
1820
1830
1840
1850
1860
1870

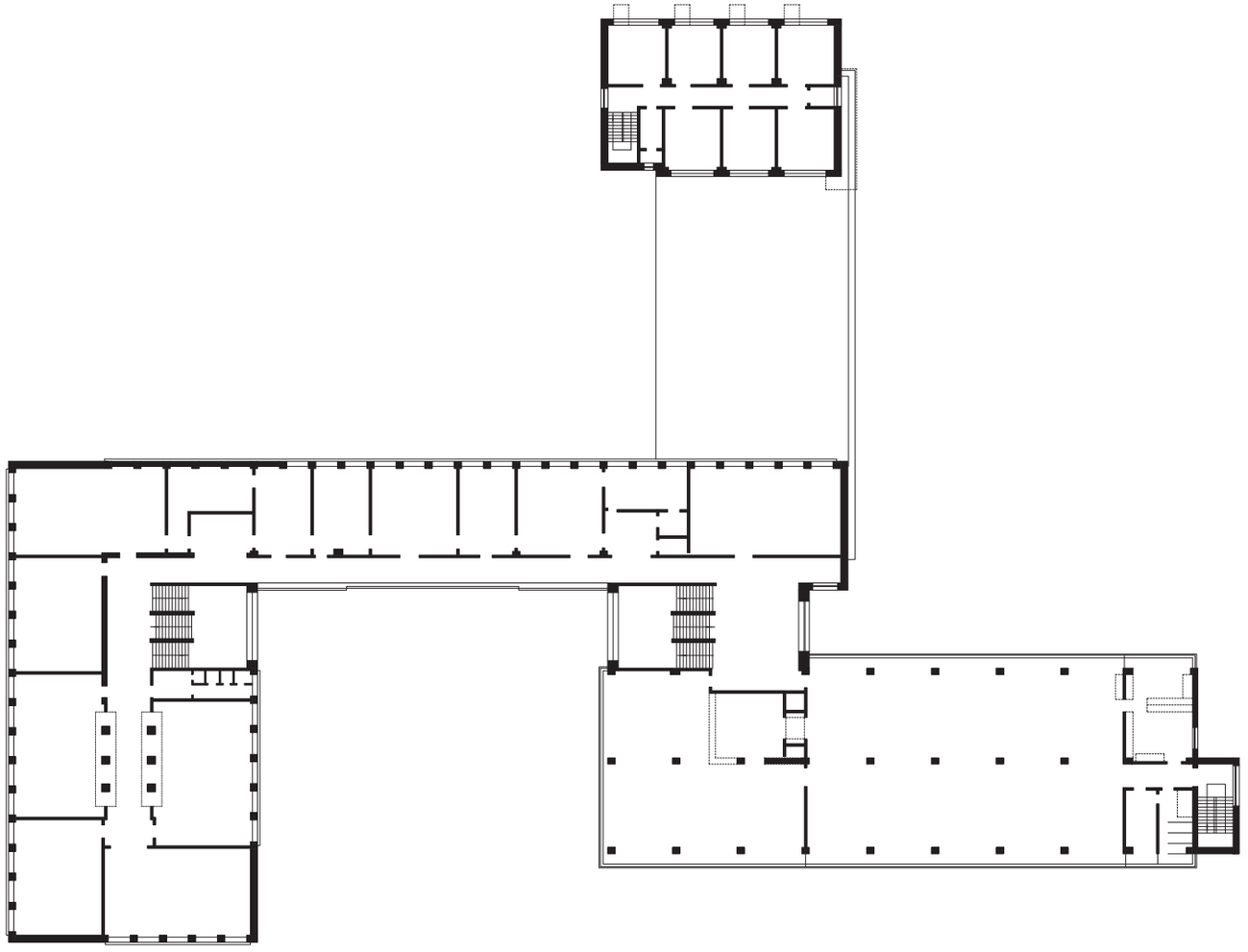


image 3.10.7
first floor plan
scale 1:500

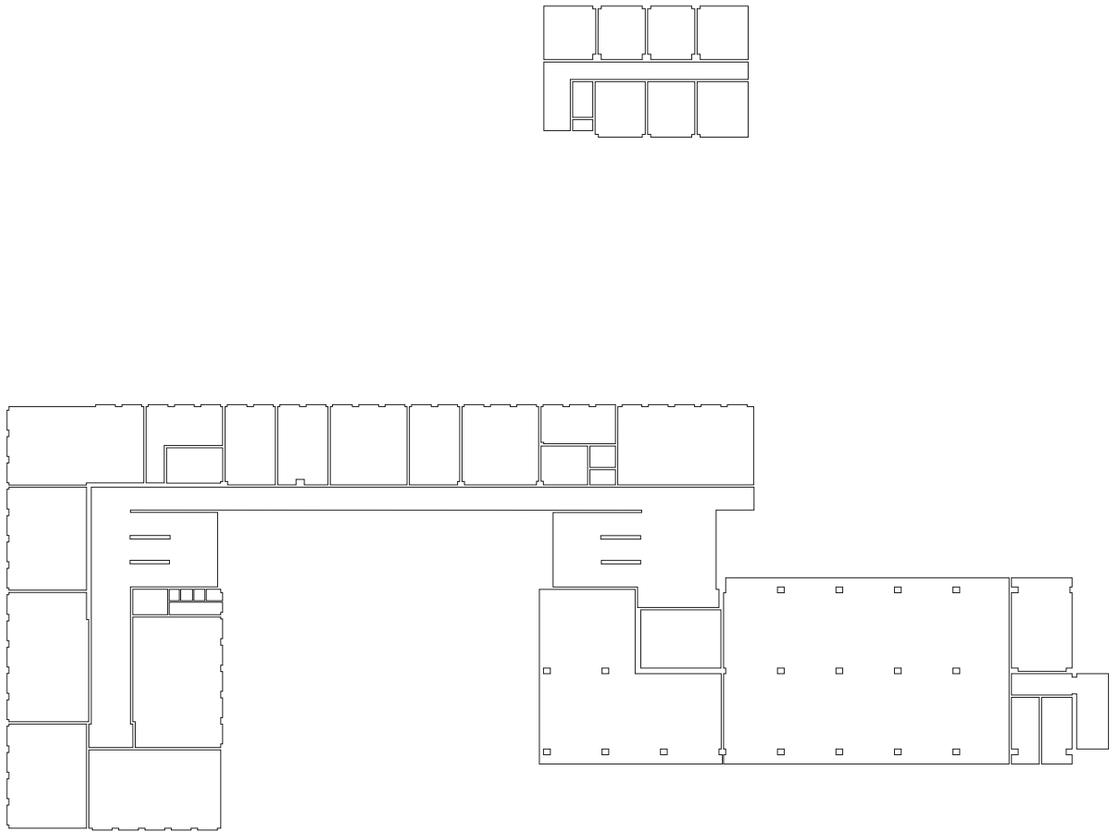


image 3.10.8
room contours
scale 1:500

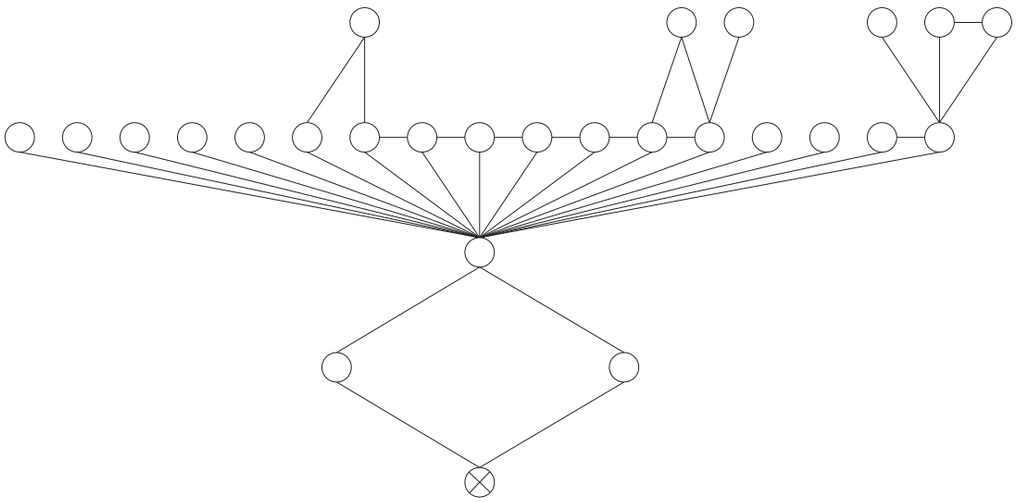


image 3.10.9
space syntax diagram

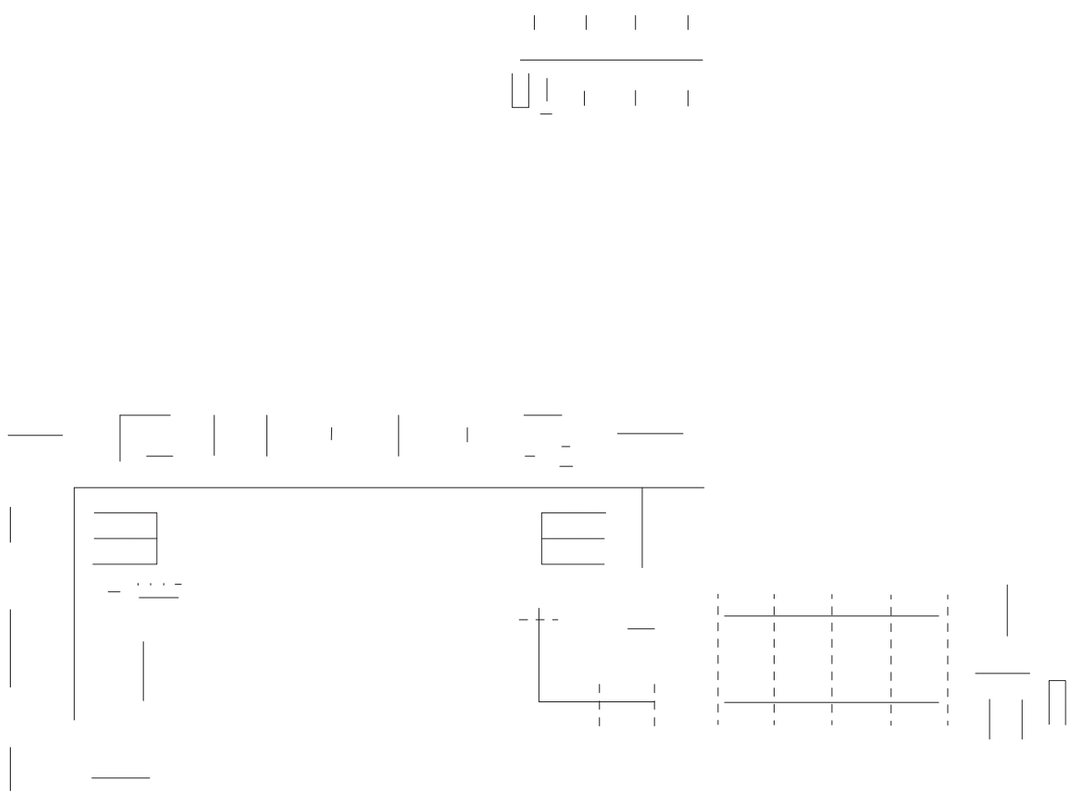


image 3.10.10
grass fire diagram
scale 1:500

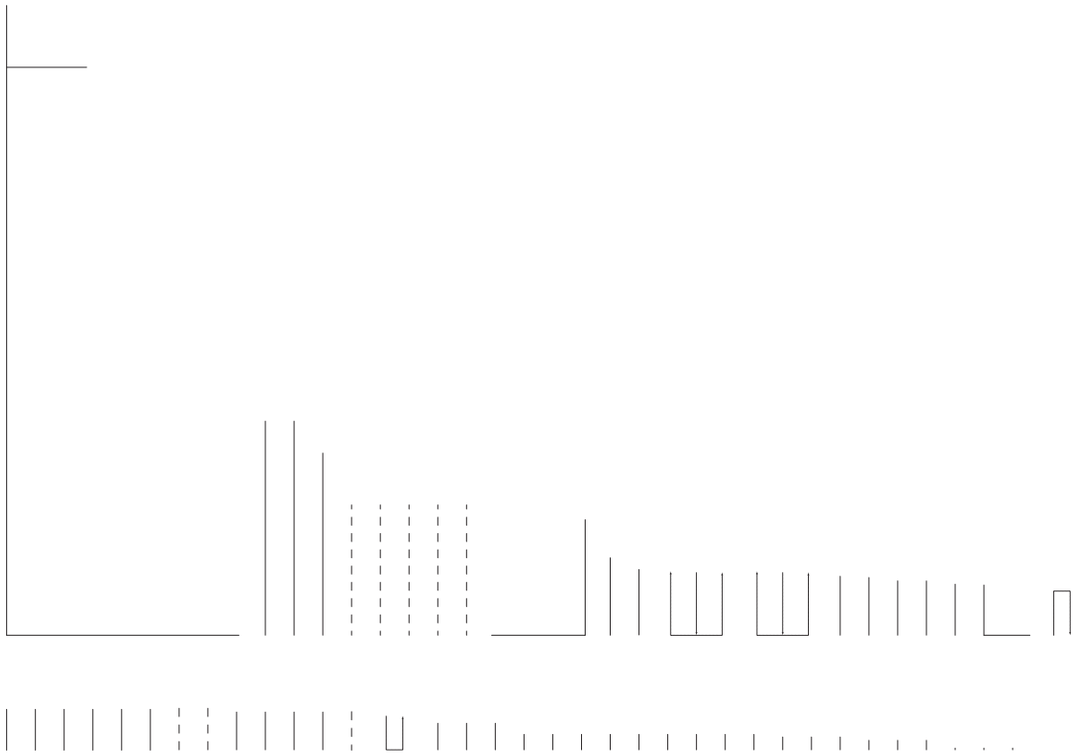


image 3.10.11
exploded grass fire diagram
scale 1:500

VILLA STEIN | LE CORBUSIER

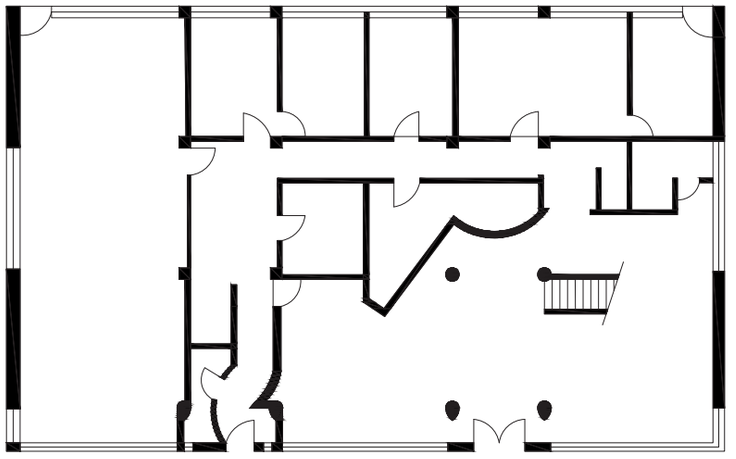
image 3.11.1
Photograph of Villa Stein
source: *https://artchist.wordpress.com/2016/11/03/villa-stein-in-garches-by-le-corbusier/villa-stein-in-garches-by-le-corbusier-7-2/*

VILLA STEIN | LE CORBUSIER

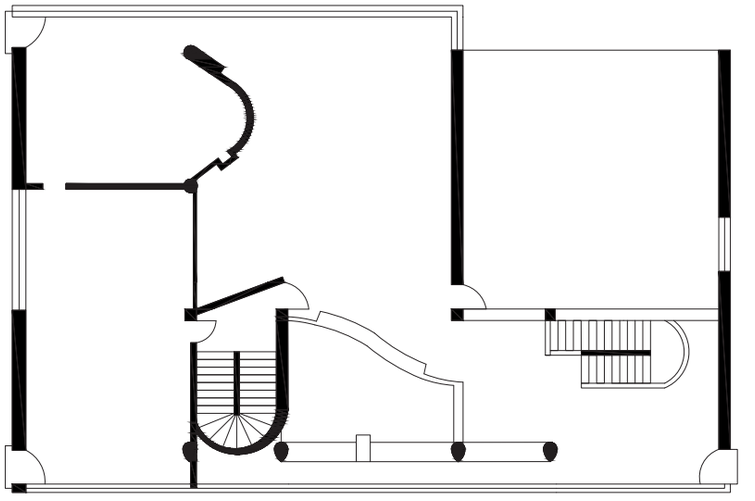
Villa Stein is a residential building designed by Le Corbusier. Built in 1926 and completed in 1928. The Villa is just on the outside of Paris, in Garches, France. The Villa was designed for Michael Stein and his wife Sara. Later on the Villa was newly inhabited by Gabrielle Monzie. The concept of Villa Stein originates from the architect's four compositions. Villa Stein is part of the second type which shows: "an understanding of the organisms inside the rigid packaging, absolutely pure". The difficult problem, perhaps to the delight of the mind, is the cost to spiritual energy tied in the middle of the restrictions imposed".

The building has a cubicle feel, which is contrasted by the oval shapes. The oval shapes were inspired by the chimneys of transatlantic luxury ships. The villa has 3 levels, of which the third level is the roof terrace. The structure is clearly displayed in the plan. A column grid with which provides freedom in organizing the space. This freedom is visible in all the levels of the building. Interesting however is that the vertical displacement is remained constant. The staircase starting in the hallway on the ground floor is situated on the same spot on each floor.

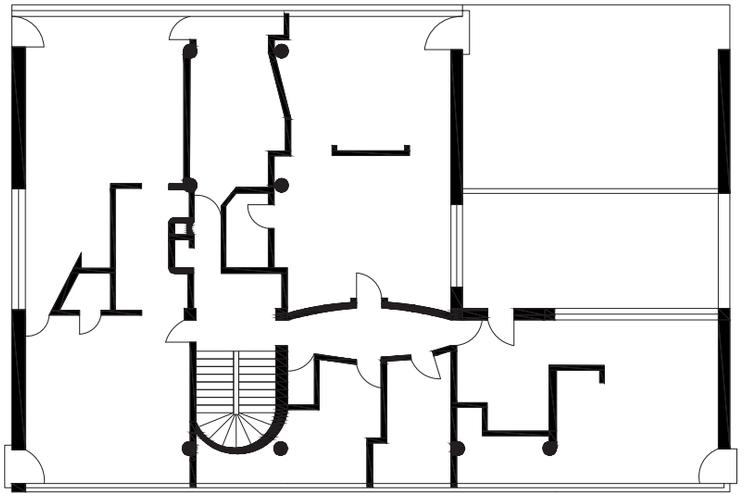
The Villa has openings in the floors which are left out in the contour plan. This abstraction already gives the building a different insight of the plan, supporting the free plan of Le Corbusier. The space syntax of especially the ground floor displays the interconnection of the main hall with the second front entrance which is also connected to all the rooms. The hall is present, and therefore received a dot, however it is within the same space as the entrance, therefore all the rooms connected to the hall are also connected to space which connects to the other entrance. The grass fire displays the versatile ways of the horizontal displacement in the building. There are many ways present to go upwards.



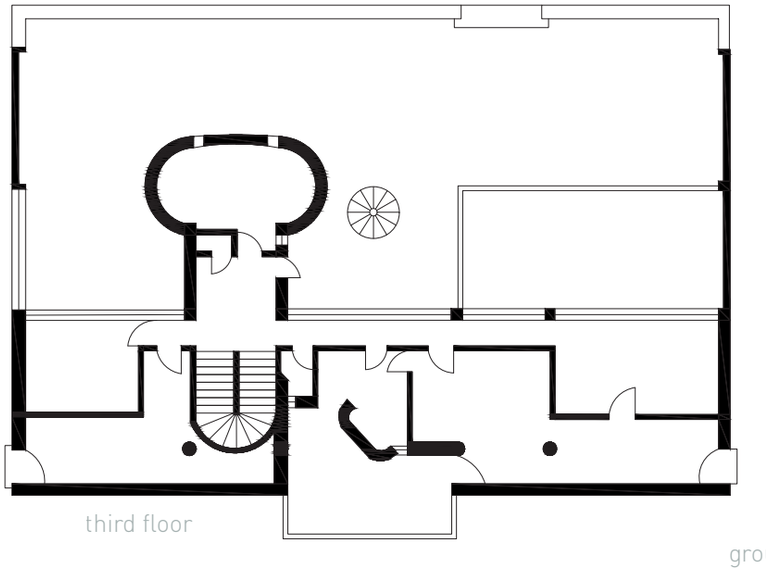
ground floor



first floor

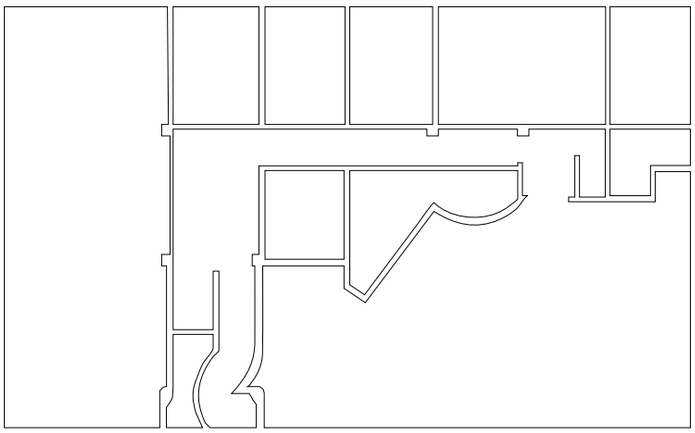


second floor

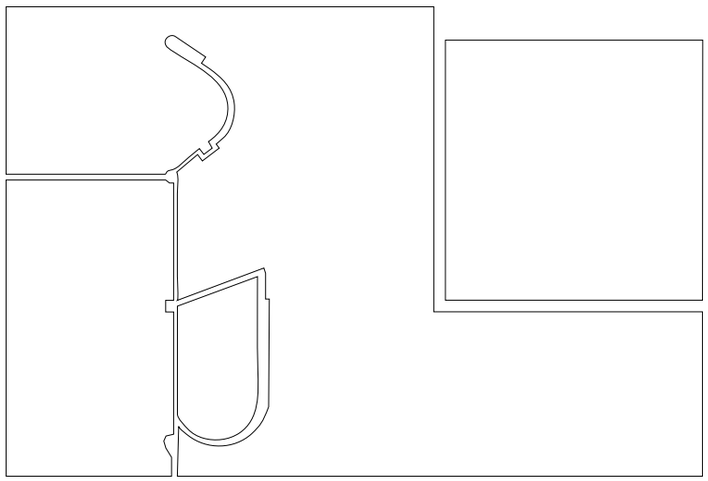


third floor

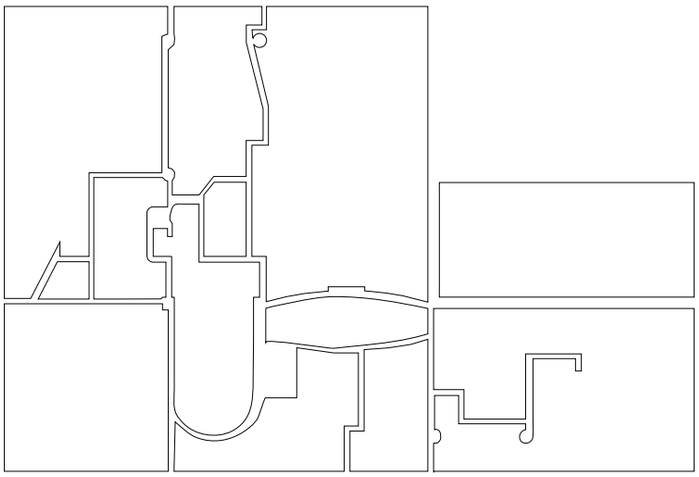
image 3.11.2
ground floor plan
scale 1:200



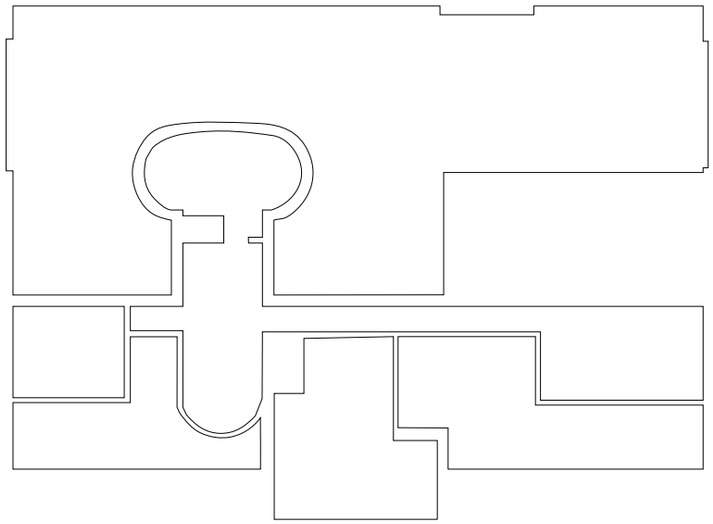
ground floor



first floor

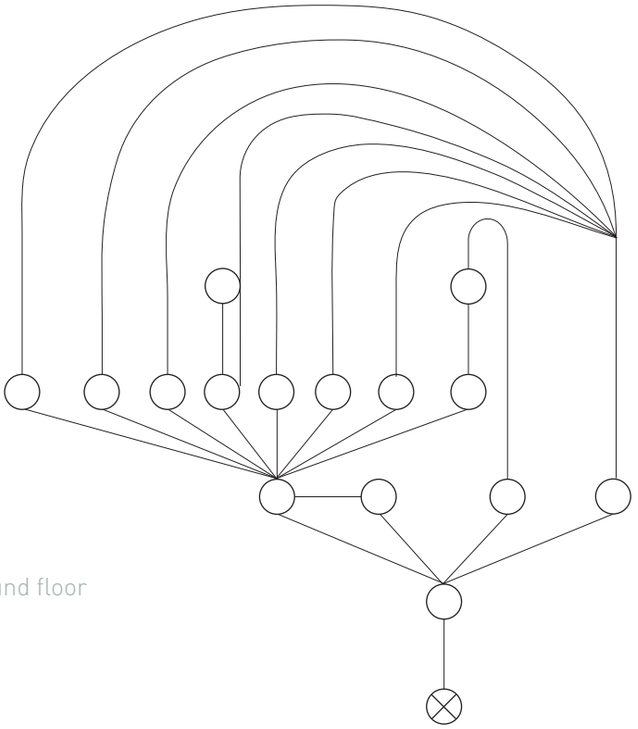


second floor

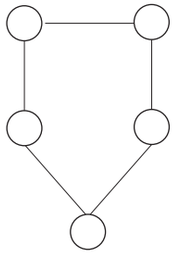


third floor

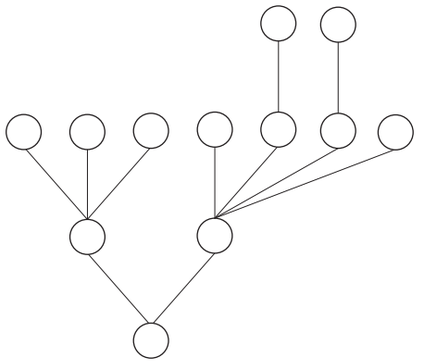
image 3.11.3
room contours
scale 1:200



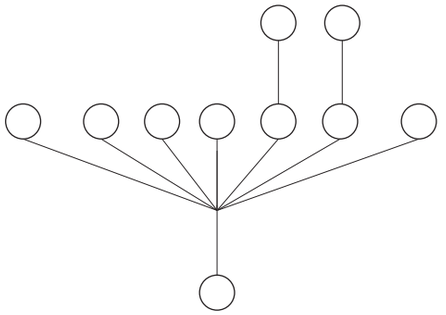
ground floor



first floor

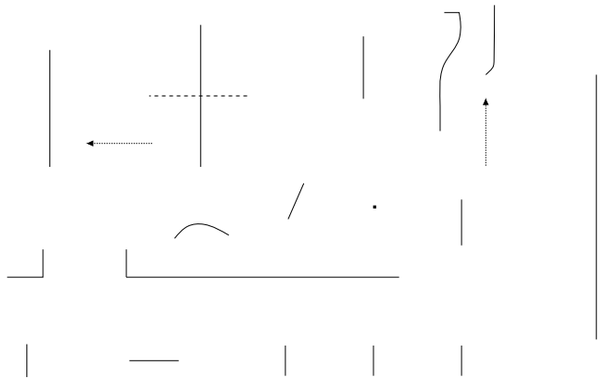


second floor

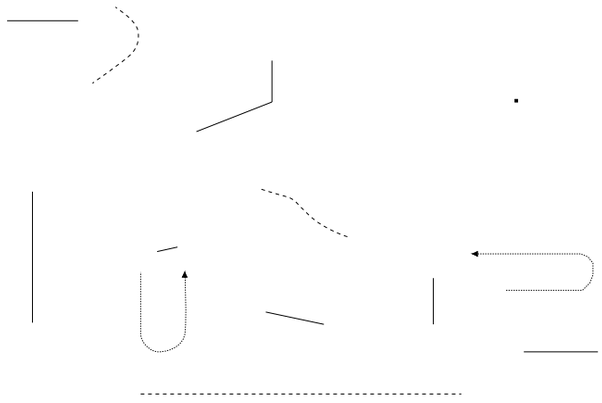


third floor

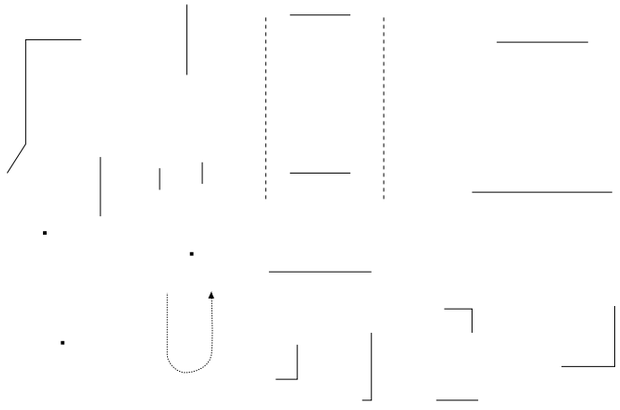
image 3.11.4
space syntax diagram



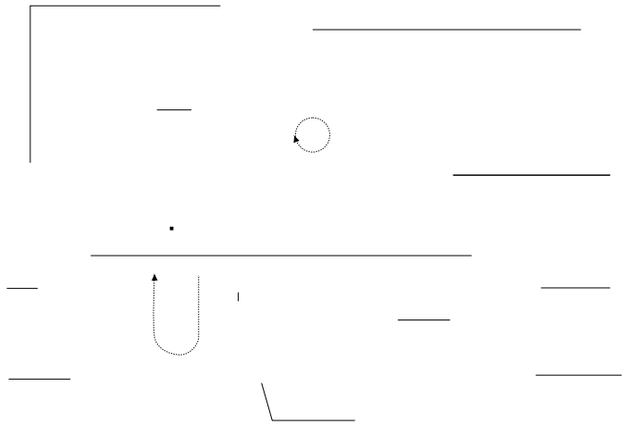
ground floor



first floor



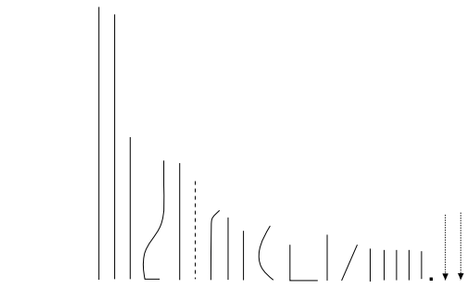
second floor



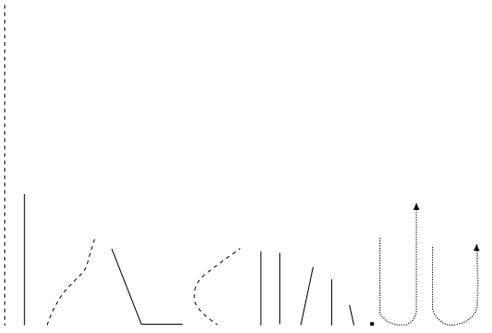
third floor

image 3.11.5
grass fire diagram
scale 1:200

1800 1810 1820 1830 1840 1850 1860 1870

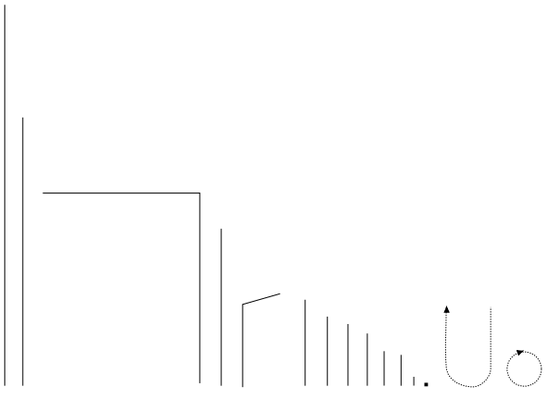


ground floor



first floor

second floor



third floor

image 3.11.6
exploded grass fire diagram
scale 1:200

BARCELONA PAVILION | MIES VAN DER ROHE

image 3.12.1
Photograph of the Barcelona Pavilion
source: https://www.dezeen.com/2017/03/10/virtual-reality-tour-ludwig-mies-van-der-rohe-barcelona-pavilion-cl3ver-spain/

BARCELONA PAVILION | MIES VAN DER ROHE

The Barcelona Pavilion, designed by Ludwig Mies van der Rohe and Lilly Reich, was originally designed as the German Pavilion for the Barcelona International Exhibition (Barcelona Pavilion, sd). The building is a characteristic work of the Modern Movement, which arose around the early 20th century. Glass, steel and different kinds of marble give the pavilion the expression it asked for in the 1929. In 1930 the pavilion was dissembled, but through time the pavilion stayed a icon and reference point to the 20th century architecture. Therefore in 1980's the Barcelona Pavilion was reconstructed by Ignasi de Solà-Morales, Cristian Cirici and Fernando Ramos (Barcelona Pavilion, sd).

For an architect like Mies van der Rohe, the problem in the beginning of the 20th century was to be modern. He wanted to design free from the constraints of history and culture, this was translated by affirming the free movement of the subject. And also the rejection of everything 'historical', rejection of massiveness and materiality.

Adrian Forty explains it as 'bringing consciousness to the modern spirit, the opportunity to seize life, unrestricted by mass and matter'. (Forty, 2000) Space was for Mies van der Rohe the pure essence of modern architecture.

As Martin Pawley described:

The roof rested on walls, or more properly wall planes, placed asymmetrically but always in parallels or perpendiculars, so that they appeared to slide past each other in a space through which the viewer could walk more or less endlessly, without ever being stopped within a cubical area. This open plan, with its intimation of an infinite freedom of movement. (Pawley)

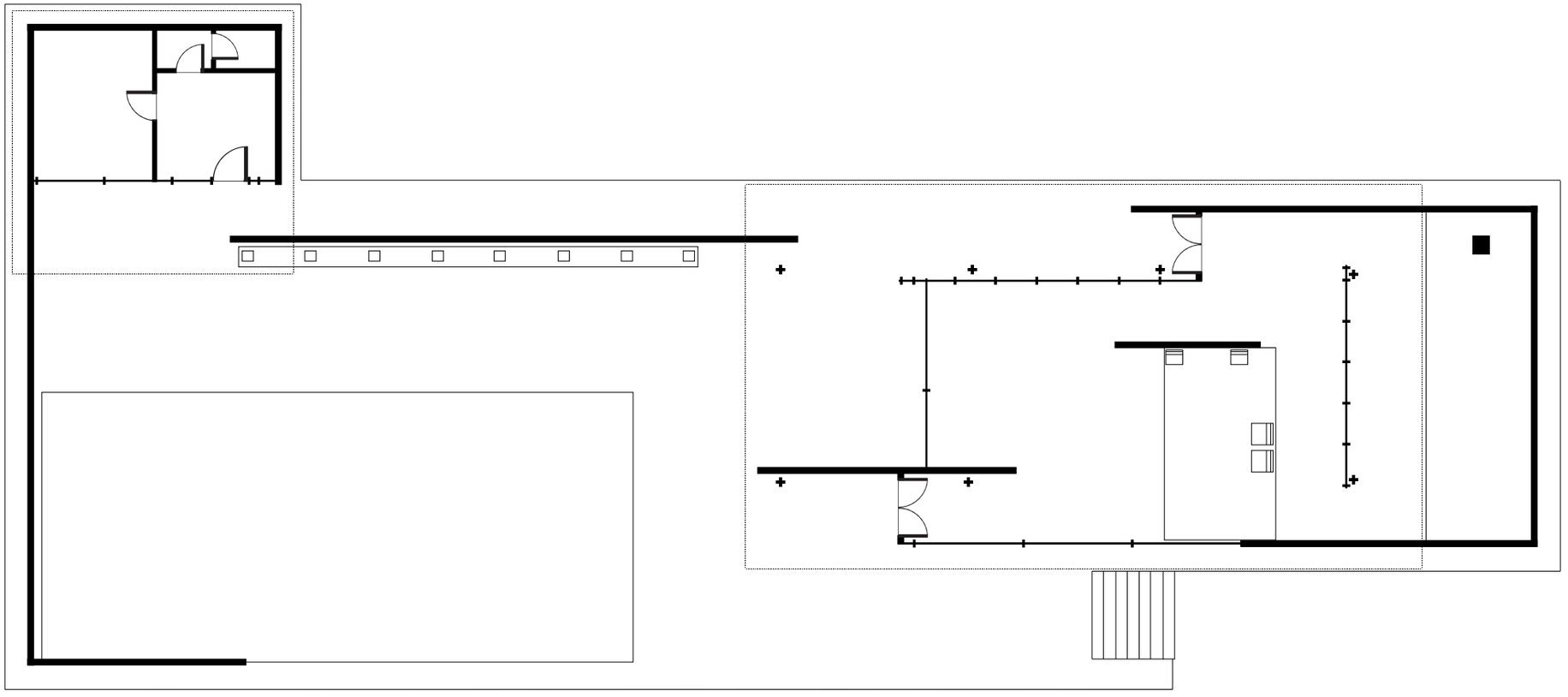


image 3.12.2
ground floor plan
scale 1:200

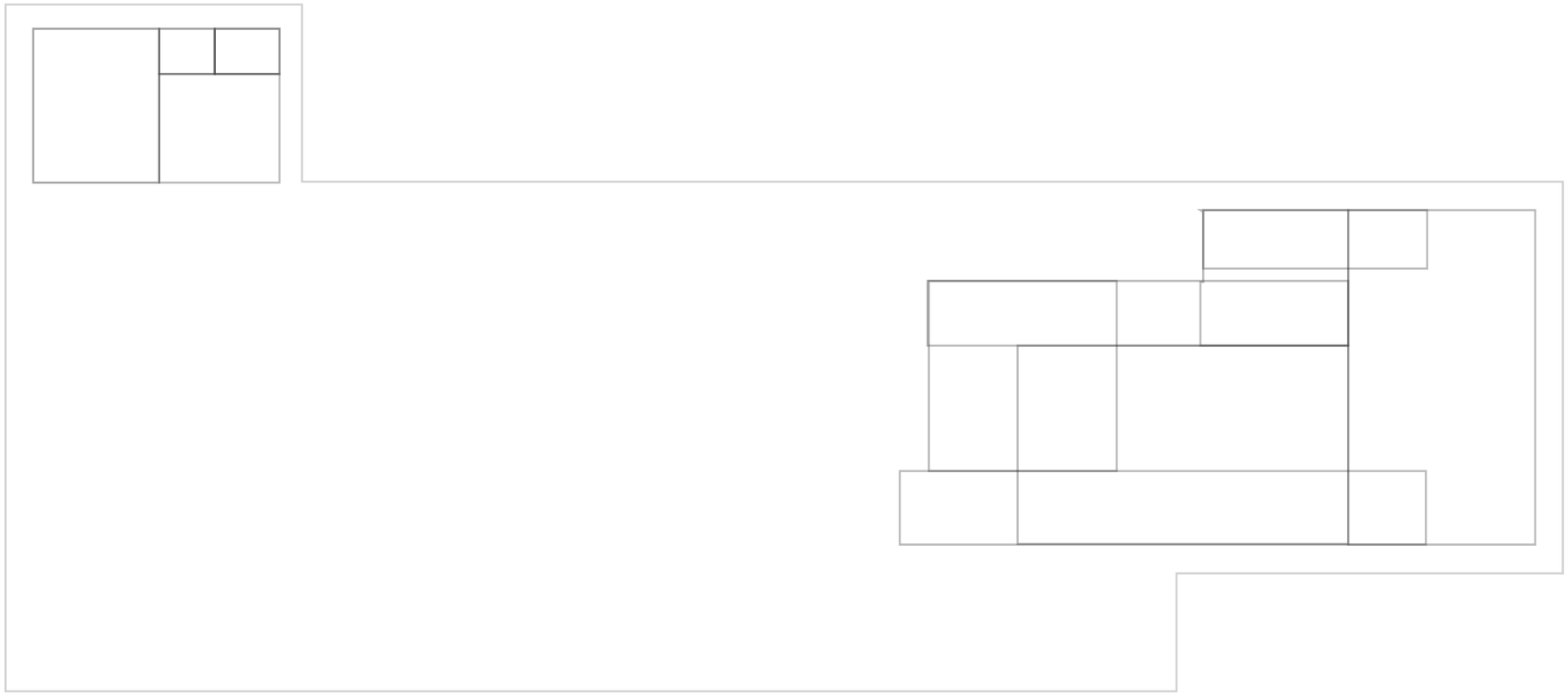


image 3.12.3
room contours
scale 1:200

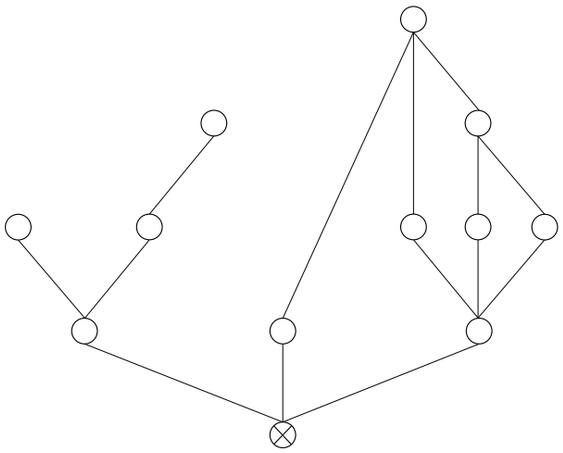


image 3.12.4
space syntax diagram

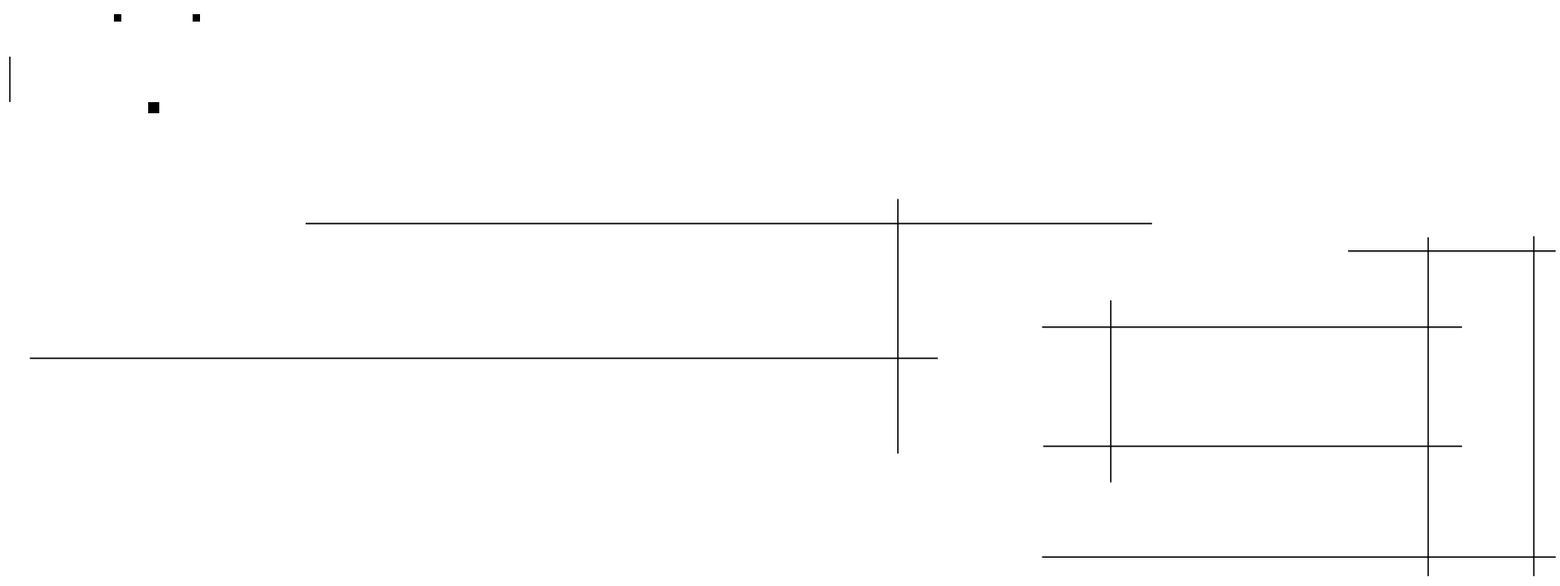


image 3.12.5
grass fire diagram
scale 1:200

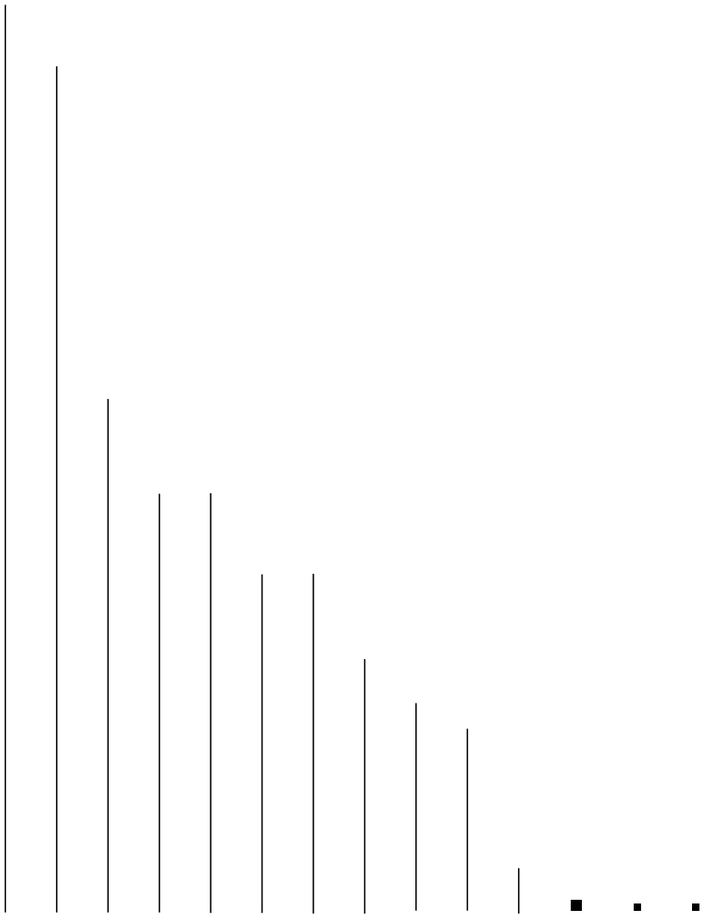


image 3.12.6
exploded grass fire diagram
scale 1:200

VILLA SAVOYE | LE CORBUSIER

image 3.13.1
Photograph of Villa Savoye
source: *https://www.dezeen.com/2016/07/31/villa-savoye-le-corbusier-poissy-france-modernist-style-unesco-world-heritage/*

VILLA SAVOYE | LE CORBUSIER

Villa Savoye by Le Corbusier is one of the most significant contributions to modern architecture in the 20th century, completed in 1929. The villa is situated in Poissy, a small commune outside of Paris. This building is a modern take on a French country house that celebrates and reacts to the new machine age.

Villa Savoye's detachment from its physical context lends its design to be contextually integrated into the mechanistic/industrial context of the early 20th century, conceptually defining the house as a mechanized entity.

This building is thoroughly tailored to Corbusier's Five Points: Pilotis, Flat Roof Terrace, Free Plan, Vertical Windows and Free Façade. The pilotis that support the decks, the ribbon windows that run alongside the hull, the ramps providing a moment of egress from deck to deck; all of these aspects served as the foundation of the Five Points of Architecture and are found in the overall composition of Villa Savoye.

Villa Savoye is a house designed based on the architectural promenade. Its experience is in the movement through the spaces. It is not until one becomes familiar with the subtle peculiarities that the movement and proportionality of the spaces evokes a sense of monumentality within the Parisian suburb. (Arch Daily)

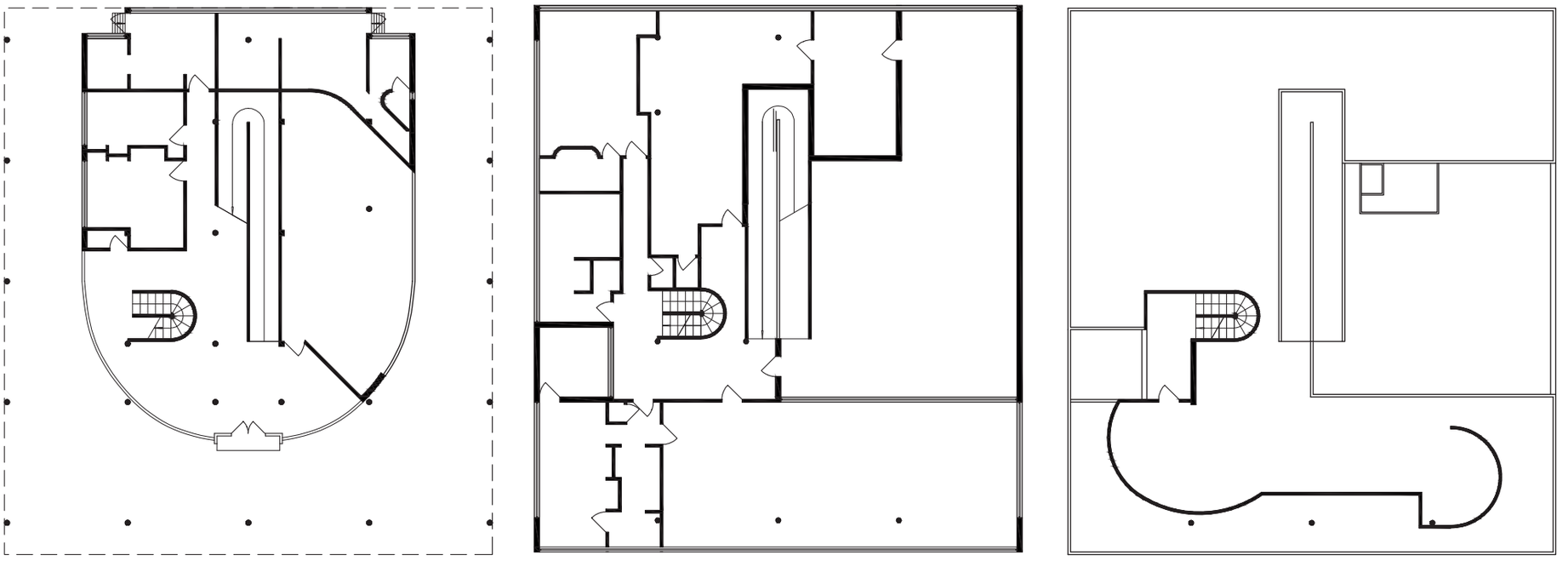


image 3.13.2
floor plans
scale 1:200

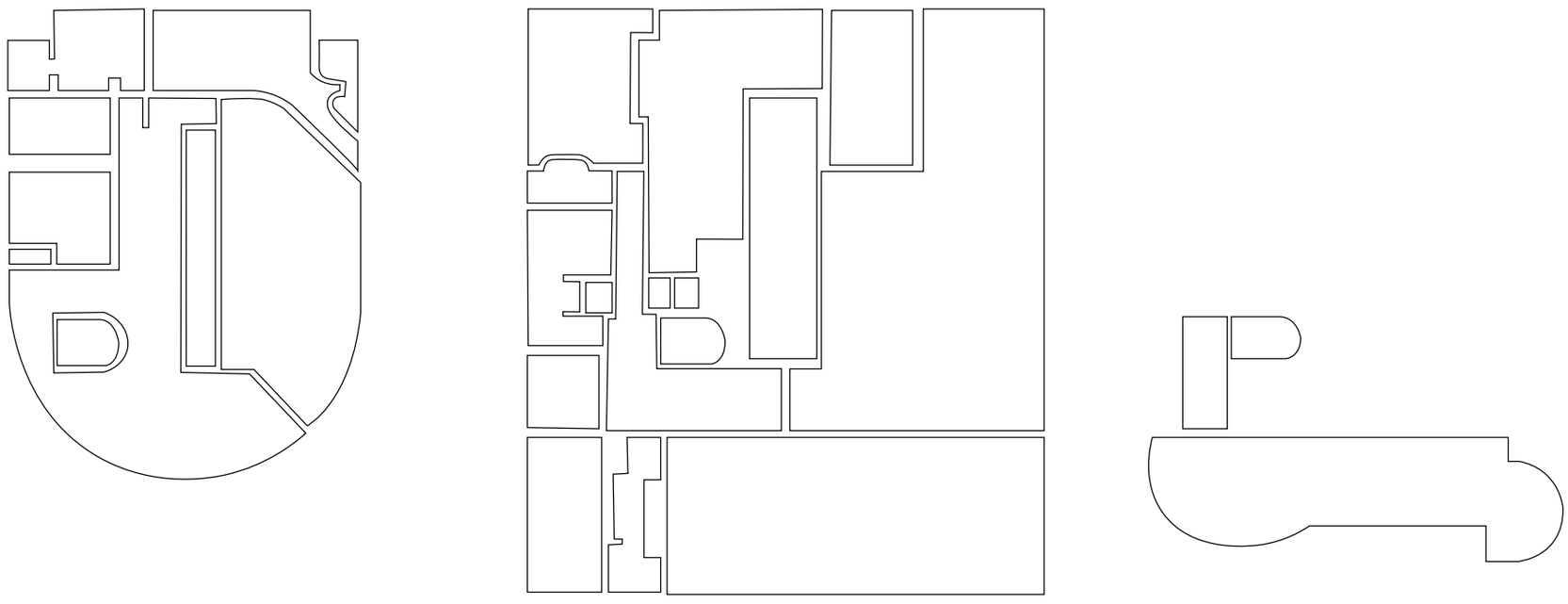


image 3.13.3
room contours
scale 1:200

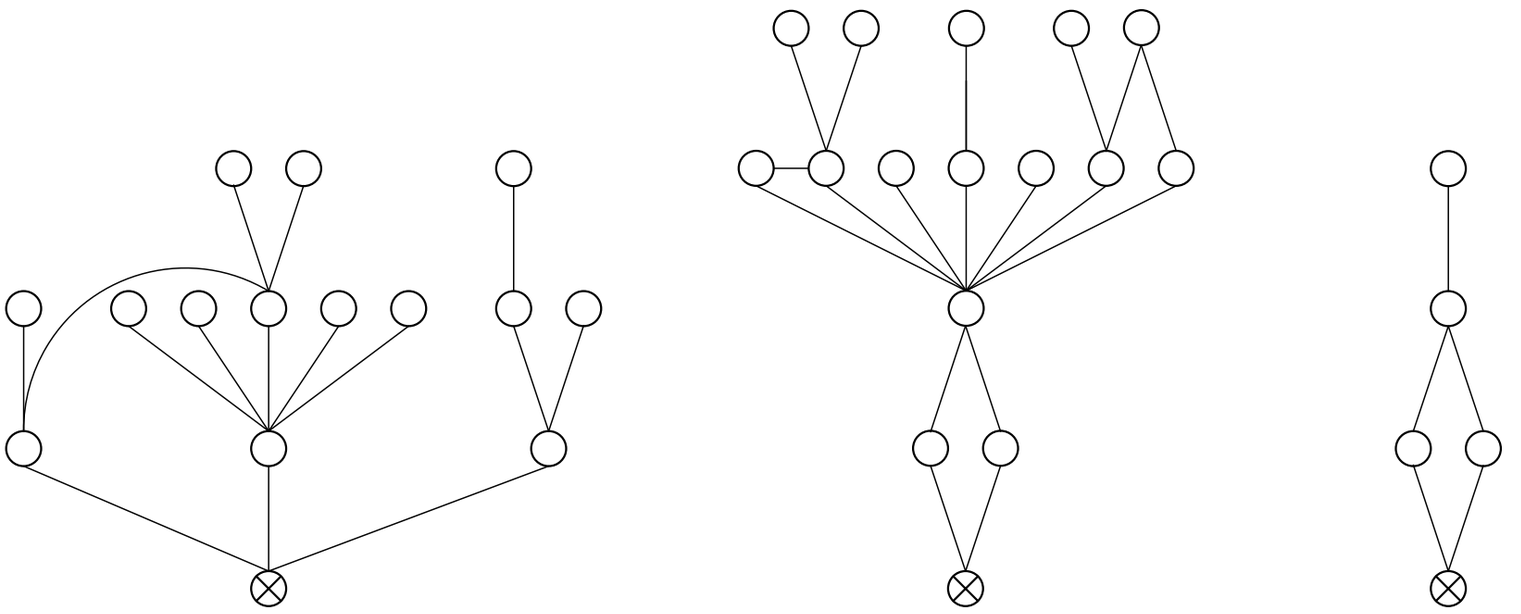


image 3.13.4
space syntax diagram

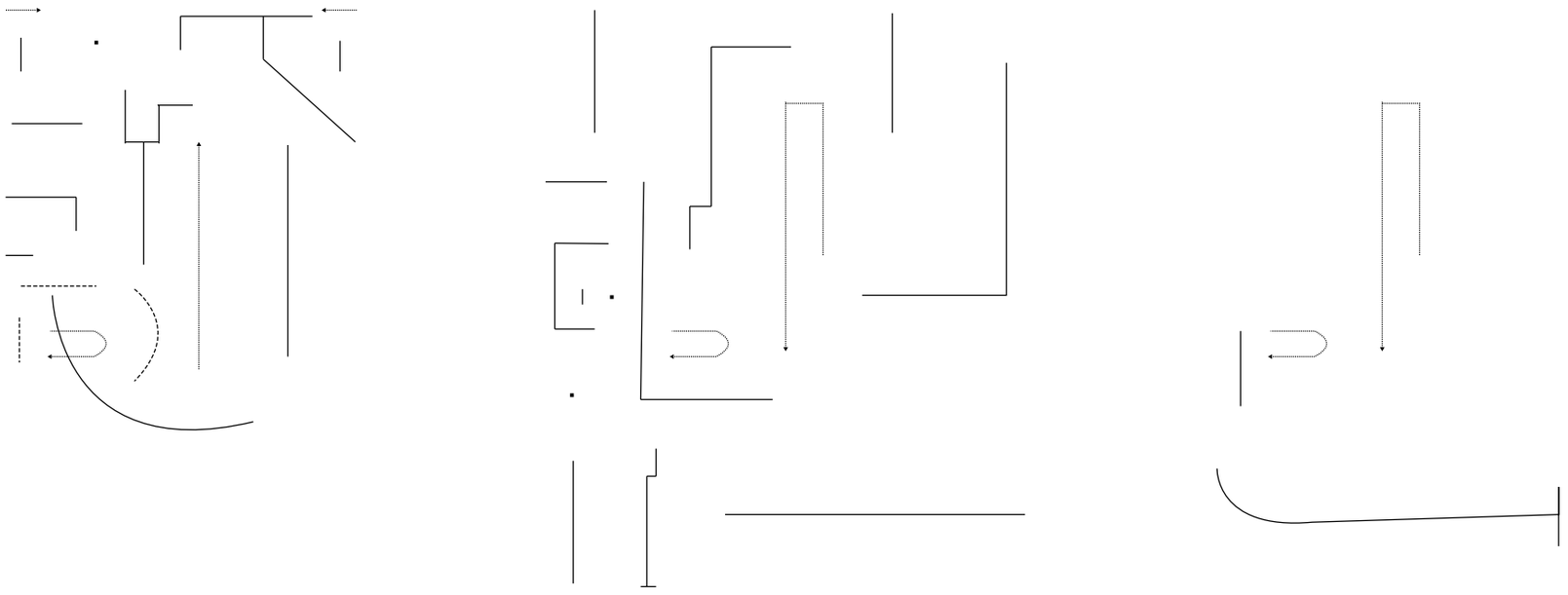


image 3.13.5
grass fire diagram
scale 1:200

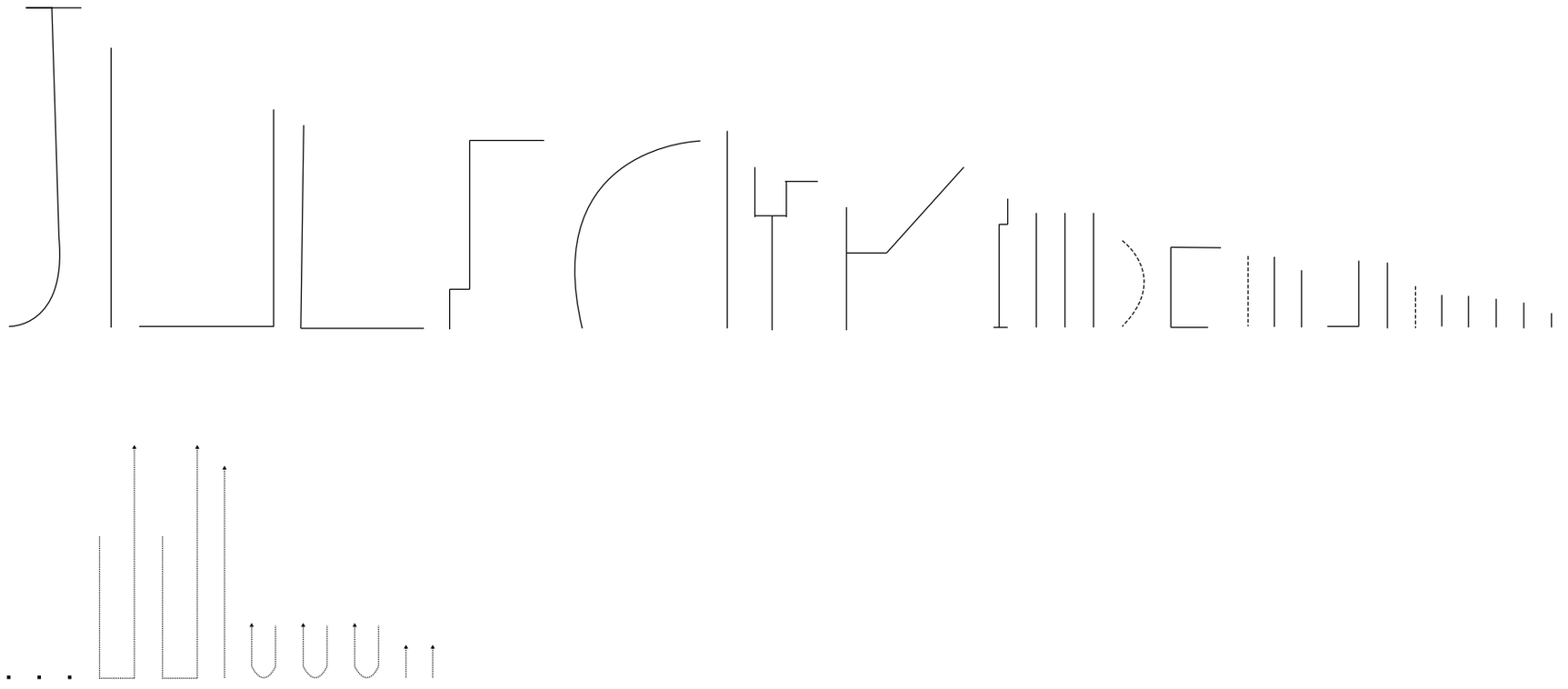


image 3.13.6
exploded grass fire diagram
scale 1:200

DAVID AND GLADYS WRIGHT HOUSE | FRANK LLOYD WRIGHT

image 3.14.1
Photograph of David and Gladys Wright House
source: *https://archpaper.com/2018/09/frank-lloyd-wright-david-gladys-wright-house-sale/*

DAVID AND GLADYS WRIGHT HOUSE | FRANK LLOYD WRIGHT

The house was designed by Frank Lloyd Wright for his son David and David's wife, Gladys. Situated on what was originally a 10-acre citrus grove and completed in 1952, the house contains the only free-standing spiral ever designed. The house structure is made completely out of concrete and because of the spiral and material, the house is able to cool down because in this way it captures the wind. (Jarson, 2012).

The functions inside the house are organized in such a way that the rooms are placed besides each other. The wind can flow from the living room into the hallway towards the master bedroom at the end of the building. All bedrooms have access to a balcony looking over the grass fields surrounding the house (Wright, sd). Both David and his wife Gladys lived their until their deaths, they left the house to their granddaughters who sold it. The house was given to a non-profit organization and finally donated to the School of Architecture at Taliesin (formally known as the Frank Lloyd Wright School of Architecture.

There was hope to use the house as a living lab for architecture students, but on this moment it is on the market again for 12,9 million dollars (Jarson, 2012).

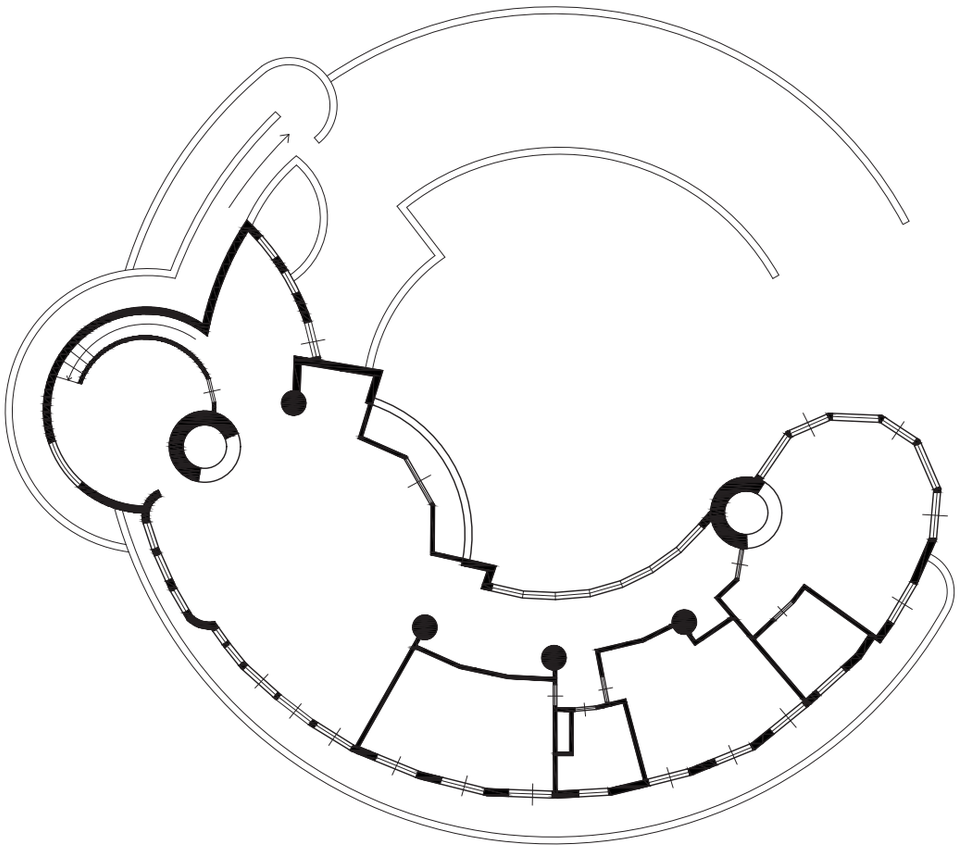


image 3.14.2
ground floor plan
scale 1:200

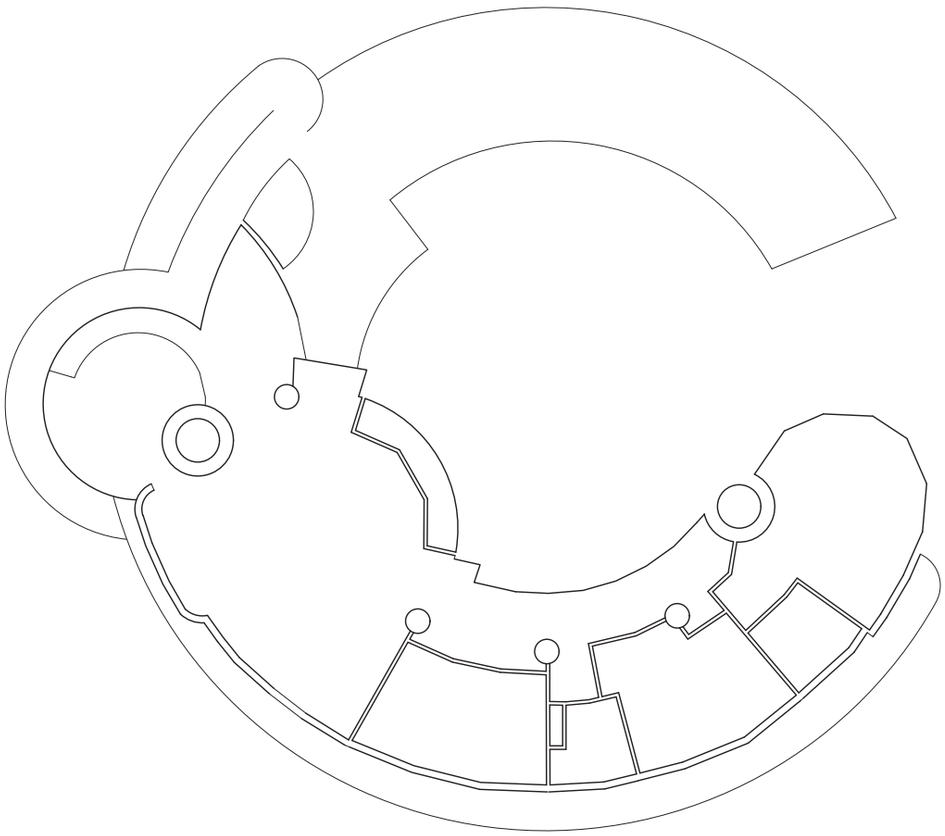


image 3.14.3
room contours
scale 1:200

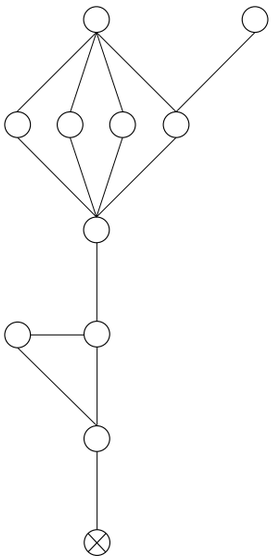


image 3.14.4
space syntax diagram

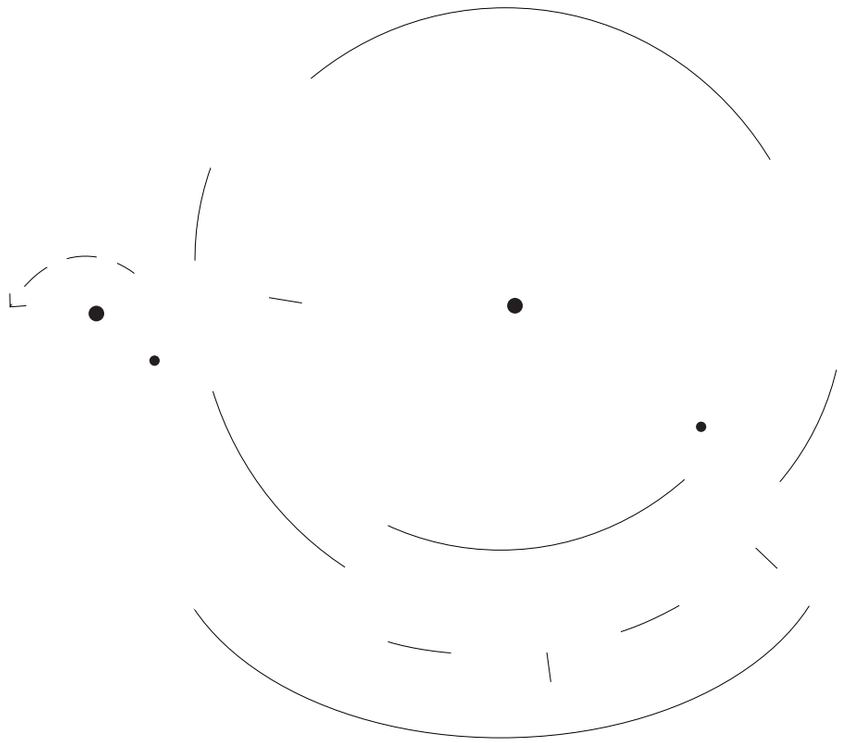


image 3.14.5
grass fire diagram
scale 1:200

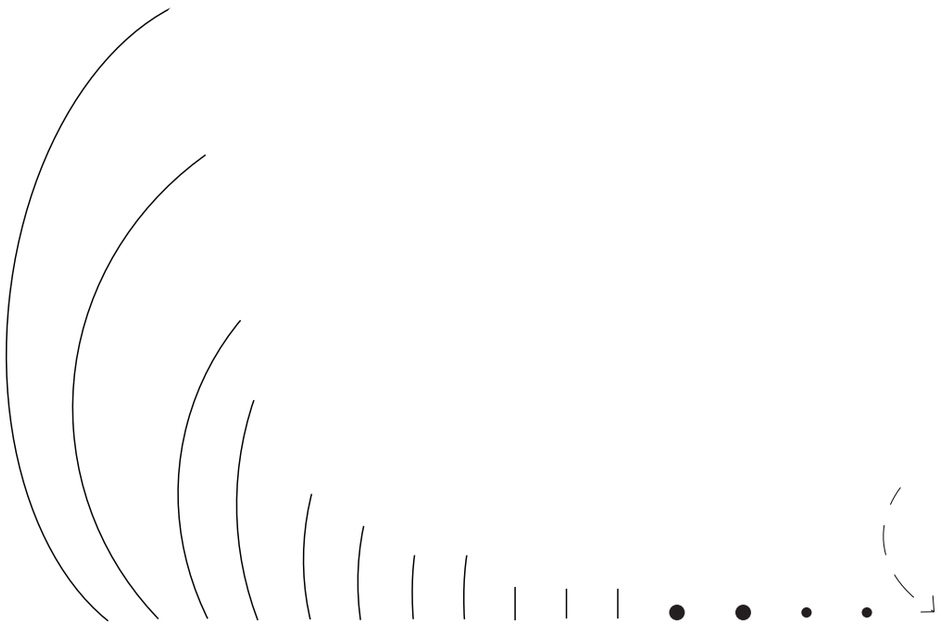


image 3.14.6
exploded grass fire diagram
scale 1:200

4. COMPARISONS | 14 CASE STUDIES

Comparing the results from the different analysis methods is handled using calculations, graphs, diagrams and overviews. These variety of comparison methods are illustrated in this chapter. In order to create a better understanding of the different methods, a short explanation is to be read below.

One of the graphs tellst about the percentages of the shapes in a building. The number of shapes is equal to 100%. The rest of the numbers show what percentage of the rooms in the building is for example a square, a circle or a rectangle. By using the relative numbers rather than the absolute findings, we will get results not dependent on the size of the buildings, but more about the age it was built, about the function and about the general shapes. The average on the right give the average amount of shapes per building in the span from +- 1800 to 1950. Graphs about these findings are shown below. They also contain some extra information. The row "year built" is implemented for only for making the graph

Besides the results of the normal rubrics about the space syntax another tables has been made that shows ratios between different aspects of the space syntax diagram. This is also done to disconnect from size. The normal space syntax gives already lots of information. This table has been made to investigate it more thoroughly. This table might be a bit more difficult to understand so here follows a quick explanation:

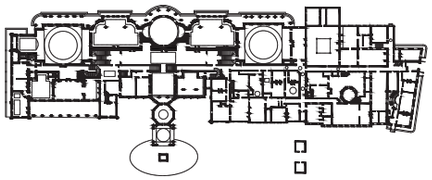
Every / can be read as "per". Lines can be read as "passage or door", dots can be read as "rooms". Layers can be read as "level of hierarchy" (something like that), and so on. Lines/dots therefore means doors per room. By doing this, the you can see that some buildings do not differ that much while the space syntax diagram itself looks completely different (or the other way around). For example, Royal Pavilion has way more interconnections than pell wall hall (19/3). However, the amount of interconnections/line is almost double the amount of Pell Wall Hall (0,13/0,23).

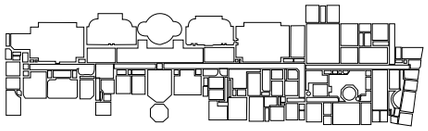
A graph about the grass fire diagrams is also added. It gives a relative overview of the percentage of line types in the plans. Amount of lines is defined as all the lines minus the arrow, since those do not represent a space. However a row arrows/lines is added which indicate the amount of stair per space. You can see for example that Villa Savoye has 3 times more stairs per space than Villa Stein

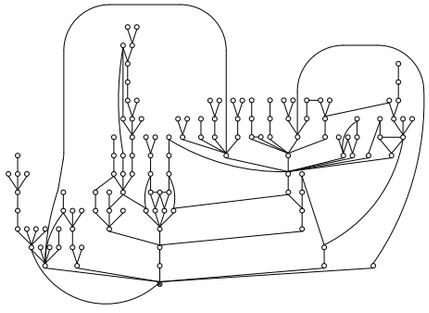
The curves that are placed on the bottom row of the space syntax rubrics are derived from the exploded grass fire diagrams. The diagrams, wherein all lines of the grass fire diagram are ordered in length from long to short, are abstracted as the curve that follows the slope of the diagram. This curve tells about the difference in the shapes of the rooms. The steeper the curve, the bigger the differentiation in room dimensions. The flatter the curve, the more regularity in room shape.

A steep descent at the start of the curve indicates the presence of a long hallway in the building. Most residential buildings such as the Albert Hall Mansion, Casa Battlo and Villa Stein all have this sharp descent in the beginning. Generally speaking, the further on the time line, the more difference in slope becomes apparent in the curves. This means that the difference in room shape becomes bigger over the years. This might have to do with the fact that more and more buildings were designed with a free plan rather than a fixed plan. For example the Bauakademie, which has a very ordered and fixed plan has a very flat slope and the Villa Stein's curve is very steep since it has a free plan and the room do not have to follow the structure as strictly as in the Bauakademie.

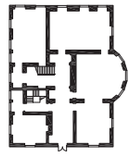
Royal Pavillion

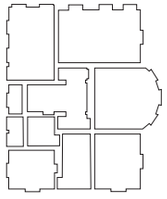


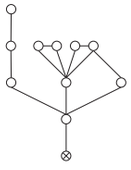




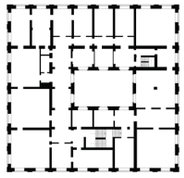
Pell Wall Hall

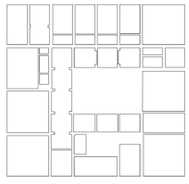


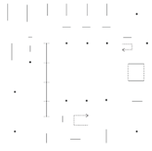


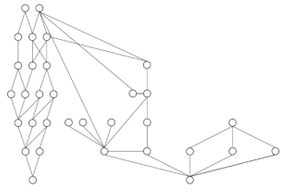


The Bauakademie

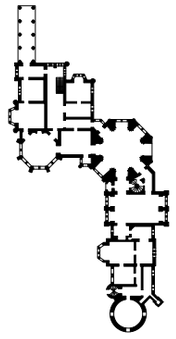


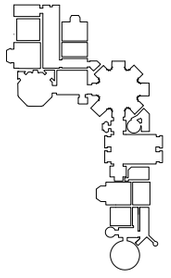


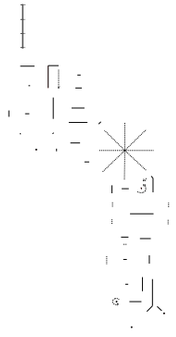


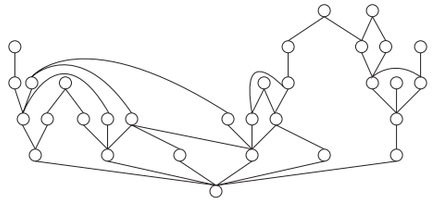


Sloss Babelsberg









Albert Hall Mansion

Casa Batllo

Boston Library

Palais Stoclet

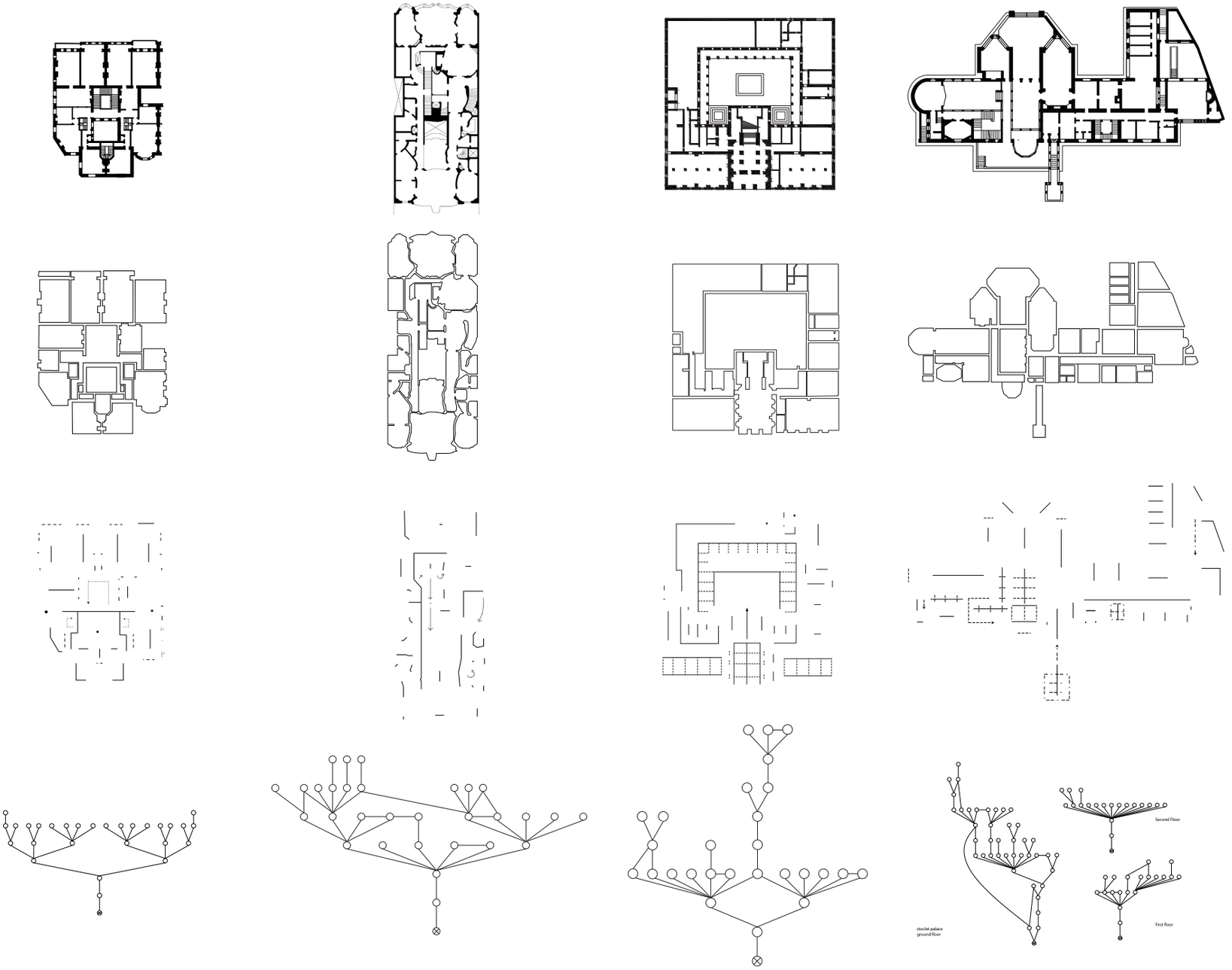
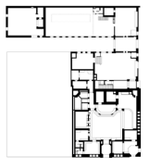
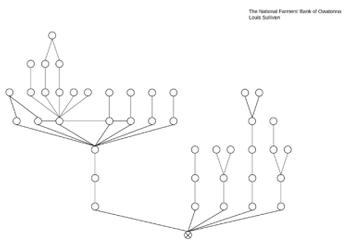


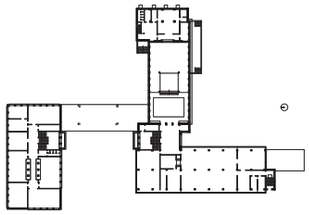
image 4.1
analysis overview

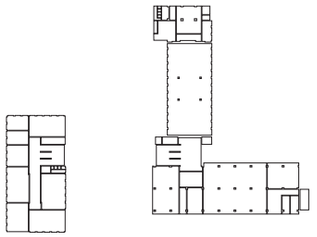
Farmer's Bank

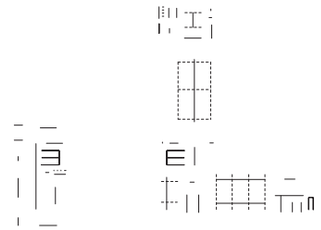


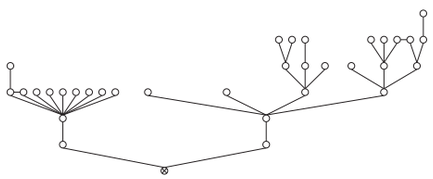


Bauhaus

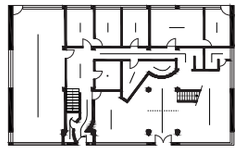


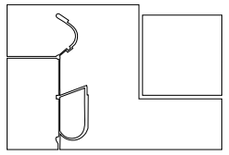


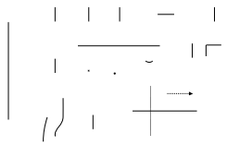


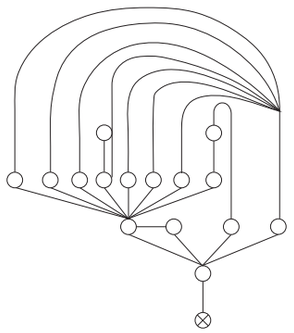


Villa Stein

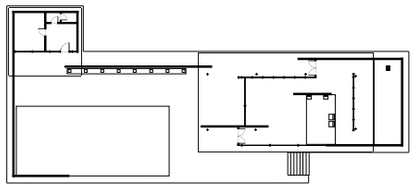


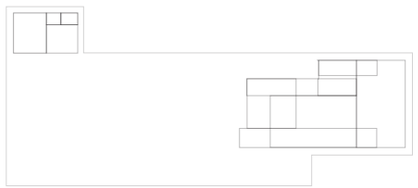


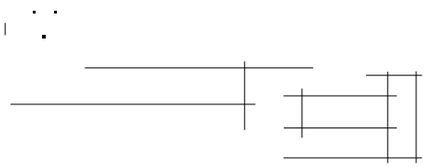


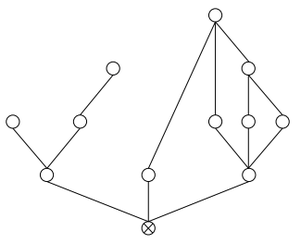


Barcelona Pavillion



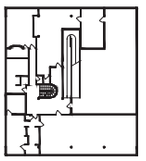


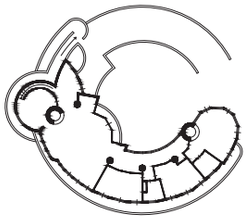


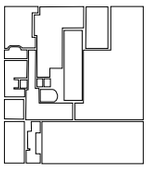


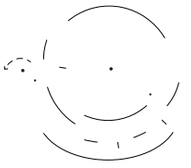
Villa Savoye

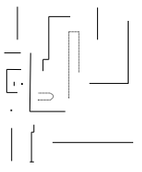
David & Gladys
Wright house

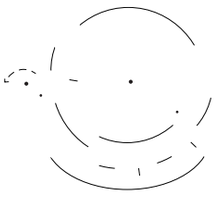


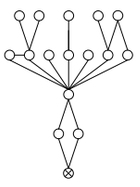












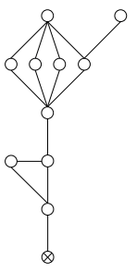


image 4.1
analysis overview

The Royal Pavilion

The royal pavilion was a country house for the Prince of Wales used for ceremonies and recreation and events. The building has a massive layout which was rebuilt in three stages. The enlargement process is completely visible in the floor plan. The thickness of the walls illustrates the load-bearing system of the building. However, the thickness changes evidently throughout the structure of the pavilion. The first phase of the building have thicker walls and these rooms are in greater size comparing to the rest of the building. As we go further through time, the structure of the building changes: the walls are thinner, rooms are smaller and more connected to one another. The entrance of the building is located in the center of the building which creates a central axis. At the end of this axis, the huge rooms which were used as event rooms are located. By both sides of the axis, 2 main staircases are located. This part of the building clearly follows a symmetrical pattern. On the contrary, the extended parts are in total contrast with the compositional style of the older layer. As we get further away from the larger rooms, the rooms become smaller and more orthogonal. It can be said that they were designed merely based on their function. These service rooms are also hidden for the guests and they are interconnected to each other. As mentioned, the shape of the service rooms is mostly square or rectangular. On the contrary, the main large rooms have curves and domes.

Pell Wall Hall

Pell Wall Hall is a neo-classical country house. In comparison to the previous building (The Royal Pavilion), Pell wall hall is a rather small building. The walls are load bearing and the thickness of each wall varies visibly throughout the building. The Entrance is located in the central axis and is directed towards the staircase. There is no symmetry in the floor plan. However, the central axis plays an important role in creating a clear division in the plans. Also, the building has symmetry on the outside (facades). The routing of this building is quite similar to the early stages of the Royal Pavilion. You enter in a first hall which leads to the main hall that connects to the rest of the room. The lack of corridor is typical for a country house at this time. The layout of the building is last composed.

It seems the architect already thought about the outline of the building and then added the rooms inside. The same goes for the very last stage of Royal pavilion (the newest parts). This could be referring to the fact that the building was designed more regarding its function. The shape of the rooms is mainly square and simple except the entrance which emphasizes its importance with a curved shape. This is also the case for the event rooms of the Royal Pavilion. The size of the rooms is based on their function. Contrasting to the Royal Pavilion, with its huge difference in the dimension of its rooms, the rooms in Pell Wall Hall are less diverse in their size.

The Bauakademie

The Bauakademie was an architecture school located in Berlin, built around 1832-1836. The walls, as well as the previous buildings, are load bearing. The walls get thinner as they go to higher floors. In addition to the walls, there are also columns placed in a clear grid that gives order to the plan. The entrance is located in the middle of the façade. The staircase and the atrium are the central points of the building. The atrium splits the routing into different paths. This is similar to the other two buildings. The ordered plan seems to be symmetrical but with close observation, it becomes clear that a set of rooms break this symmetry. Same as the Pell Wall Hall, the outline of the plan was made first and then the inside division was added. However, the order used to create the division in each building is totally different. In the Bauakademie, the rooms follow the clear grid lines and therefore they create a more rational layout. All in all, the plan is orthogonal.

Slot Babelsberg

The Slot Babelsberg is a Castle built as a summer residence of Prince Wilhelm I and his wife. The castle is located in the large Babelsberg Park near Berlin. The width of walls suggests that they are the load-bearing system. There are separated spaces in the building that are designed symmetrically. However, the building, in general, is asymmetrical. The design of the plan is in a way that a switch from the homeotopic concept can be seen.

There are some round spaces in the plan which represent the tower of the castle. There are six entrances to the building which none of them are illustrated as the main one. With a closer inspection, it can be seen that there are 2 doors which are set in an angle to each other that could be recognized as the main entrances. The castle does not have a main axis hence the plan is spread in different directions. In addition to the lack of axis, lack of hallway is visible too. Therefore with the absence of the corridors, the rooms are directly connected to each other. The shapes of the room vary from a more rational rectangular form to spaces with curved walls. The round spaces seem to be for receiving guests and the more orthogonal forms are mainly for services. This pattern of making a differentiation between the representation and functional spaces can also be seen in The Royal Pavilion (between event rooms and service spaces) as well.

Albert Hall

Albert hall mansion was a residential building built in 1877 by the architect Richard Norman Shaw who helped to open the door to social acceptance of the new practice of flat-dwelling in London. The walls are load-bearing and the same as the Pell Wall Hall, the thickness of the walls vary visibly. The entrance is in the middle of the building that leads to a hall and gives access to the main staircase which is the center of the plan. Albert Hall is an asymmetrical building but at a glance, it seems to be symmetrical, the same way in Bauakademie. There is a terrace on the inside, which is a transfer space between inside and outside. Comparing this building with the first two, we can see a resemblance in the shape of the rooms. The architect made use of some non-orthogonal shapes in the rooms which are more important such as guest rooms, but the overall layout is a rectangular scheme, designed in a more functional way. Therefore, there is a clear division between one side of the plan to the other, just the same as the Royal Pavilion and the Pell Wall Hall. The division between the shape and size of the important rooms are clearly illustrated in the plan. The theme of symmetry comes back in this building. The outline of the building is defined by the shapes of the rooms and inside divisions, in contrast to the Pell Wall Hall and the Bauakademie.

Casa Batllo

Casa Batlló is a building in the center of Barcelona. It was designed by Antoni Gaudí at 1877. This house is famous for its organic shape. The architect refused to use any straight lines. This act is completely visible in the plan. The structure of the building is load bearing wall and the outside walls are much thicker than the inside. The house is centralized around a staircase which is the entrance to the building as well. The staircase is overlooking a void which is also in the center of the plan. Aside from the main staircase, the usage of smaller stairs throughout the plan can be noticed. This means that there are several levels on the floor. The existence of a central longitude axis can be observed which leads the eyes into seeing the plan as a symmetrical design. However, the curves of the walls differ from one side to another. Thus abolishing the overall symmetry. As to focus on the rooms, it can be said that the layouts could be expressed as equals in contrary to the shape of them. Some of the rooms are designed in very small dimensions and the lack of windows in them suggest that they receive daylight via some small voids in the walls.

Boston library

The Boston Public Library is a municipal public library system in Boston, Massachusetts, United States, founded in 1848. The library was built in a neo-classical style with thick load-bearing walls. With the first glance, a Symmetry can be seen in the outlines of the plan, but the inside division of spaces makes the plan asymmetrical. The entrance is located in the central axis of the building which opens up to a hall and then to the staircase which is located close to the center. Aside from the central axis, a strong structural grid can be detected in the plan.

The Same pattern of centralized circulation exists as in the previous buildings. In the middle of the plan, a massive space is occupied with a courtyard. So far, there are a lot of similarities between the Boston library and the Bauakademie: with their central courtyards, the central staircases, the proportions, and the grid. However, the library has a bigger proportion and is more hierarchical than the Bauakademie.

Palais Stoclet

The Stoclet Palace is a mansion in Brussels, Belgium, built by architect Josef Hoffmann between 1905 and 1911 in the Viennese Secession style. The structural walls inside the building are almost as thick as the outside walls, However, they diminish in size on the next floors. There is no symmetry evident in the plan and the routing does not suggest a precise hierarchy. The building has different entrances which are a close scheme to The Royal Pavilion. In contrary, the entrance of the Royal Pavilion is located on the central axis of the plan but in the Palais Stoclet, the entrance is located by far end of a set of small stairs which elevates the entrance from the ground and although it is located in the middle of the south façade, it does not count as a central element. The act of placing the entrance in this specific position is rather odd since there is a quite reasonable and more traditional place suitable for the entrance on the North façade. As to enter the building, a division could be seen between the left side of the plan and the right side. On the left side, there are numbers of large rooms which supposedly are spaces for receiving guests. These rooms are more composition of shapes, some with curved walls and some with Polygon forms. On the contrary, as you go to the right, the scheme of the plans changes visibly and it becomes more functional with straight, regular lines. This is, again, similar to the Royal Pavilion. First, there are a set of representative rooms for guests and events and with some distance to them, there are functional rooms for servants and services. One major point to mention here is that the service rooms in The Royal Pavilion were built in later stages. In contrast to Palais Stoclet, which the whole building was designed in one phase.

The Farmer's Bank

The National Farmers' Bank of Owatonna, Minnesota, United States, is a historic bank building designed by Louis Sullivan, built in 1908. The building has one major hall and is covered with thick walls that work as a load-bearing element. The entrance of the building is located in the central axis of the plan which opens up to a small hall, leading to the main large hall with the hight of three stories.

Here, the bank offices are located in the open space and divided from each other with partition walls. There is this division between the spaces of the building visible as we mentioned in the previous building; This pattern of division between representative parts and functional parts. In the Farmer's Bank, the smaller areas are more functional and are located on the upper floor. One interesting contrast in this building is about its symmetry. The exterior is designed in a precise symmetrical pattern, however, no traces of this symmetry could be found in the inside plan.

Bauhaus

Bauhaus was a German art school built from 1925 to 1932. Bauhaus combined crafts and the fine arts and was famous for the approach to design that it publicized and taught. The organization of the plan is very rational and orthogonal. The columns are the load bearing elements and they play a major role in creating a grid for the plan. There is no main axis to plan in contrast with the previous buildings, but instead, there are 3 main directions. The lack of a large entrance hall is visible in the plan. However, two small halls could be seen which are connected to the staircases. The overall appearance of the plan seems like it is being fragmented. It is interesting to point out that if one puts these spread pieces together in one place, it might have some similarities with the Boston Public Library. In addition, the building has an asymmetrical plan. Finally, in compliment to the free plan of Bauhaus, there is the free Façade which is created by using the curtain walls.

Villa Stein

Villa Stein, designed by Le Corbusier, was built in 1927 at Garches, France. The Villa is a residential building with columns as the structural system. There are four ways to enter the building which one of them uses the staircase to enter on the first floor which is considered the main entrance. As entering the building we face a set of switches in the direction. It seems the routing in the plan is dictated very strictly. There are some repetitive elements in the plan that create a grid.

The same thing happens in Casa Battlo only with layers that are in a different direction. In addition, Casa Battlo was limited as the result of its enclosement by neighboring buildings.

However, the villa Stein is fairly isolated from the other residents. The format of the plan is almost orthogonal and straight unless it comes to some abnormal curves in the walls. This confirms the fact that the walls are not load-bearing anymore and that there is flexibility in the floor plan, This is a hint on Le Corbusier's emphasize in the free plan rule.

Barcelona Pavilion

The Barcelona Pavilion was designed by Ludwig Mies van der Rohe as the German Pavilion for the 1929 International Exposition in Barcelona. The first thing about this building is its free plan which comparing to other buildings such as Villa Stein, goes a step further. The floor plan is completely open thus it makes it possible to move freely in the building. The load-bearing elements of the building are columns. The division of the space is not clear based on the nature of the free plan, therefore the roof plays a major role in defining the spaces. There are two entrances to the building and there are no separated rooms. One major difference between this pavilion and the other building is the usage of curtain walls with different types of glasses. The building does not have symmetry and the design is clearly orthogonal.

Villa Savoye

Villa Savoye was designed by Le Corbusier in Paris in 1931. It is a residential building which Le Corbusier applied his 5 rules on it. With the first glance at the floor plan, the existence of the columns can be seen. The architect located the columns in a way to be visible, emphasizing the idea of a free plan. Therefore, the columns in this building are the load-bearing system. The entrance of the Villa is on the ground floor which leads us to the central ramp that connects us to the first floor. There is also a staircase by the right-hand side which connects the floors.

One special aspect of the Villa Savoye is that, based on the floor plan, you cannot really see what is inside and what is outside. As we enter the first floor, a courtyard can be seen which is seamlessly located by the ramp. To gain a better understanding of the circulation, one need to visit the building and experience it to understand what is happening inside.

The building is in complete symmetry from outside but the plan is asymmetrical. It needs to be said that there is a clear mathematical approach to placing the elements in the plan of the Villa. For example, the placement of the ramp in the middle of the plan. It can be said that the symmetry is demonstrating itself in a new radical way. Comparing this building to Barcelona pavilion it could be seen that the pavilion is more asymmetrical than the Villa. Moreover, the shape of the rooms on the first floor are all rectangular and designed in an orthogonal way. However, half of the ground floor's plan is made in a curve. This goes even further on the roof plan, with a combination of curved walls.

The David and Gladys Wright house

The David and Gladys Wright House is a Frank Lloyd Wright residence built in 1952 in the USA. As it is noticed, the walls are not load bearing as we head forward through time. The structure of the house become lighter and the walls are thinner. As a result, the plans are freer. In contrast with the late buildings such as The Barcelona Pavilion or the Villa Stein, the plan of this building is not orthogonal anymore. It was designed in a round shape! There is a ramp connecting the outside to the first floor in which the residential area is located. One thing that is visible in the plan is the existence of a strict hierarchy which is dictated to the plan in a form of continues spaces. The ramp enters into the living room which flows into the corridor that is connected to three rooms and two bathrooms. The organization of the building can be divided into two 'sides' the same as The Palais Stoclet: one side is more open and the other is closed.

Analysis matter	Royal Pavillion	Pell Wall Hall	The Bauakademie	Sloss Babelsberg	Albert Hall Mansion	Casa Batllo
Function	Palace	Residential	Public building	Castle	Residential	Residential
Context	Free context	Free context	City	Free context	City	City
Style	Regency	Neo Classical	Beaux arts	Beaux arts	Italianate	Art Nouveau
Homotopic/ Heterotopic	Homotopic	Homotopic	Homotopic	Heterotopic	Homotopic	Heterotopic
Free plan	No	No	No	No	No	No
circulative	No	No	No	No	No	Yes
Symmetry	Yes	Yes	Yes	No	Yes	No

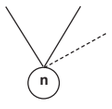
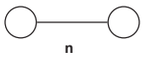
Boston Library	Palais Stoclet	Farmer’s Bank	Bauhaus	Villa Stein	Barcelona Pavillion	Villa Savoye	David & Gladys Wright house
Public building	Palace	Public building	Public building	Residential	Pavillion	Residential	Residential
City	City	City	City	Residential area	City	Free context	Free context
Renaissance Revival	Art Nouveau	Art Nouveau	International style	International style	Modern	Modern	Modern
Homotopic	Heterotopic	Heterotopic	Heterotopic	Heterotopic	Heterotopic	Heterotopic	Heterotopic
No	No	No	Yes/No	Yes	Yes	Yes	No
No	No	No	Yes	Yes	Yes	Yes	No
Yes	No	No	No	No	No	No	No

image 4.2
general comparison

Analysis matter	**Mean**	Royal Pavillion	Pell Wall Hall	The Bauakademie	Sloss Babelsberg	Albert Hall Mansion	Casa Batllo
———	24	69	10	25	28	15	18
- - - - - -	8.9	3	2	6	18	15	0
▪	4.5	23	0	6	5	3	0
- - - - ▶	4.1	16	2	3	4	3	6
⌐	4.2	12	1	0	3	4	11
⌒	1.1	1	0	0	0	0	0

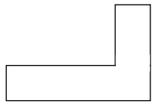
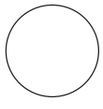
Boston Library	Palais Stoclet	Farmer’s Bank	Bauhaus	Villa Stein	Barcelona Pavillion	Villa Savoye	David & Gladys Wright house
47	21	29	40	9	11	11	3
42	22	0	8	5	0	3	0
2	3	8	0	3	3	3	4
1	4	3	4	2	0	8	1
6	5	3	3	2	0	9	0
0	0	0	0	2	0	1	11

image 4.3
grass fire overview

Analysis matter	Mean	Royal Pavillion	Pell Wall Hall	The Bauakademie	Sloss Babelsberg	Albert Hall Mansion	Casa Batllo
Layers	6.4	15	5	8	6	5	7
	31.4	128	10	29	30	24	31
	2.6	6	1	2	6	1	1
	9.7	46	1	12	12	4	9
	15.6	82	9	6	11	18	8
	5.9	19	3	2	8	0	5
	40.4	149	13	47	42	26	37

Boston Library	Palais Stoclet	Farmer's Bank	Bauhaus	Villa Stein	Barcelona Pavillion	Villa Savoye	David & Gladys Wright house
8	6	8	5	4	5	5	6
27	21	43	26	15	11	36	10
1	1	5	2	4	3	3	1
3	3	17	9	3	6	8	4
6	18	9	16	3	2	28	2
23	7	3	8	10	0	2	1
32	45	46	37	25	14	38	14

image 4.4
space syntax overview

Analysis matter	**Mean**	Royal Pavillion	Pell Wall Hall	The Bauakademie	Sloss Babelsberg	Albert Hall Mansion	Casa Batllo
No. Rooms	32.9	137	10	31	31	23	30
	3.9	19	0	7	1	3	0
	17.3	82	6	21	14	7	3
	0.6	16	0	2	13	13	4
	6.5	4	0	0	3	0	0
	4.5	14	4	4	0	4	23

Boston Library	Palais Stoclet	Farmer’s Bank	Bauhaus	Villa Stein	Barcelona Pavillion	Villa Savoye	David & Gladys Wright house
26	38	35	42	12	5	29	11
1	0	7	12	1	1	2	0
18	21	26	25	6	2	10	1
6	17	4	5	1	0	6	0
0	0	0	0	0	0	0	1
1	0	0	0	4	2	10	9

image 4.5
contours overview

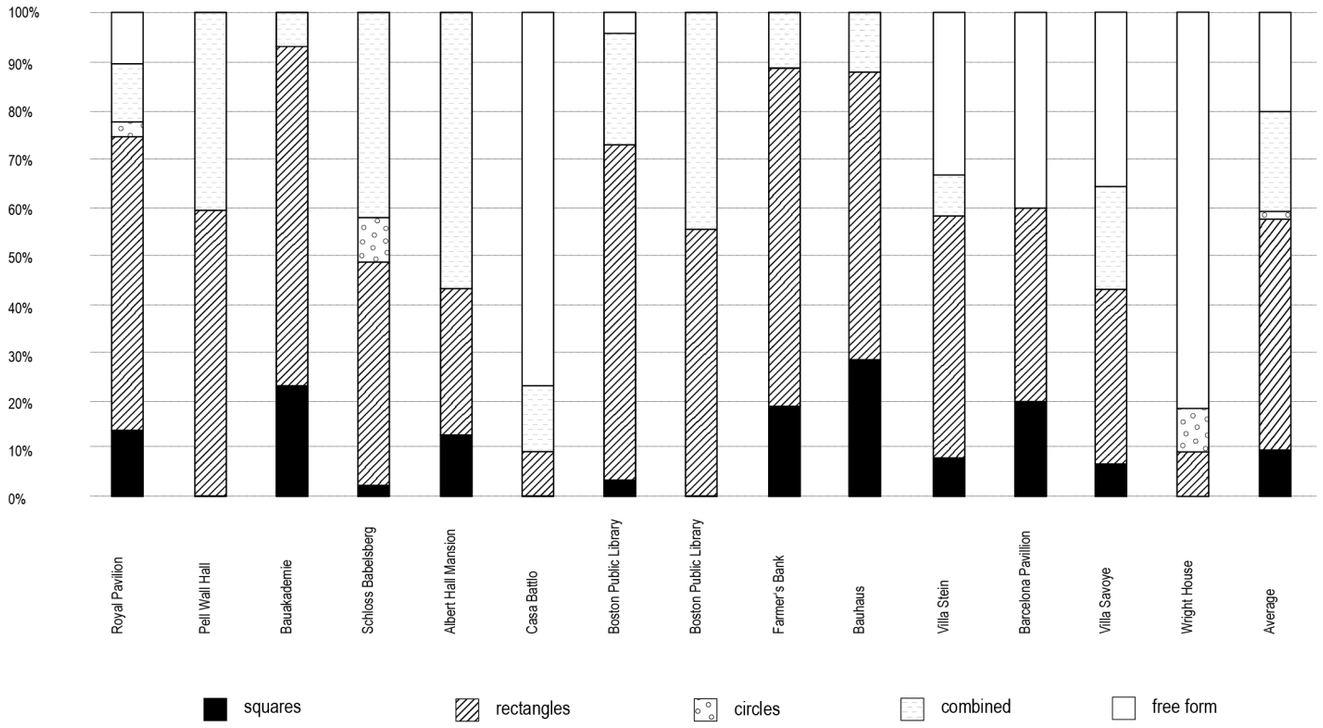


image 4.6
contour ratios diagram

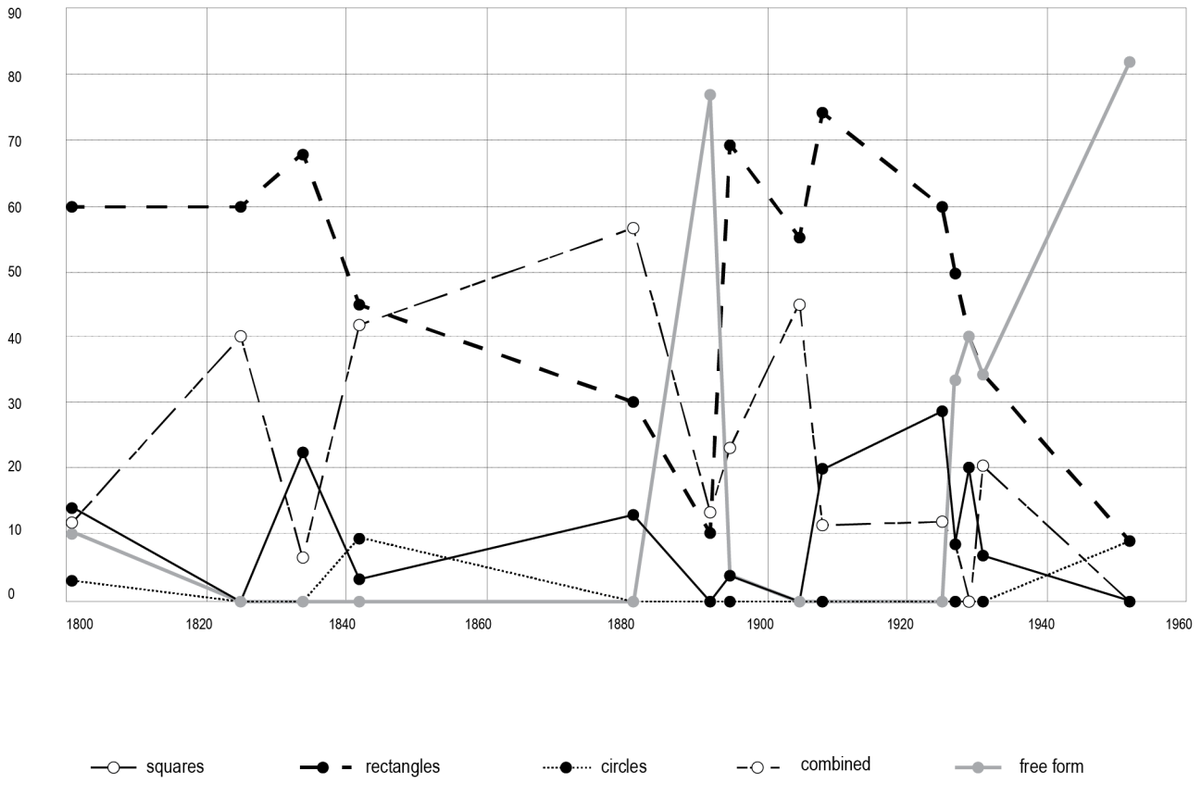


image 4.7
contour ratios graph

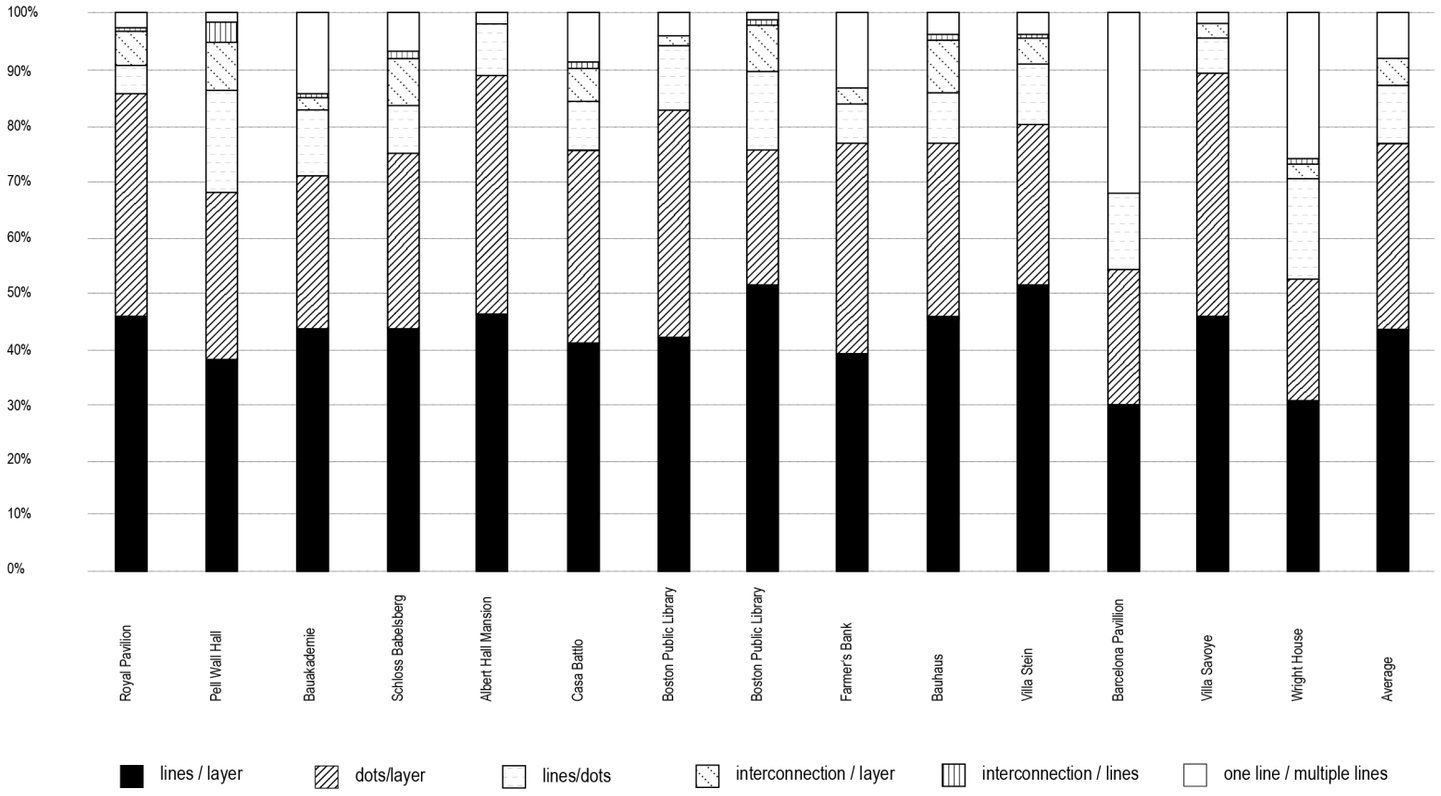


image 4.9
space syntax diagram

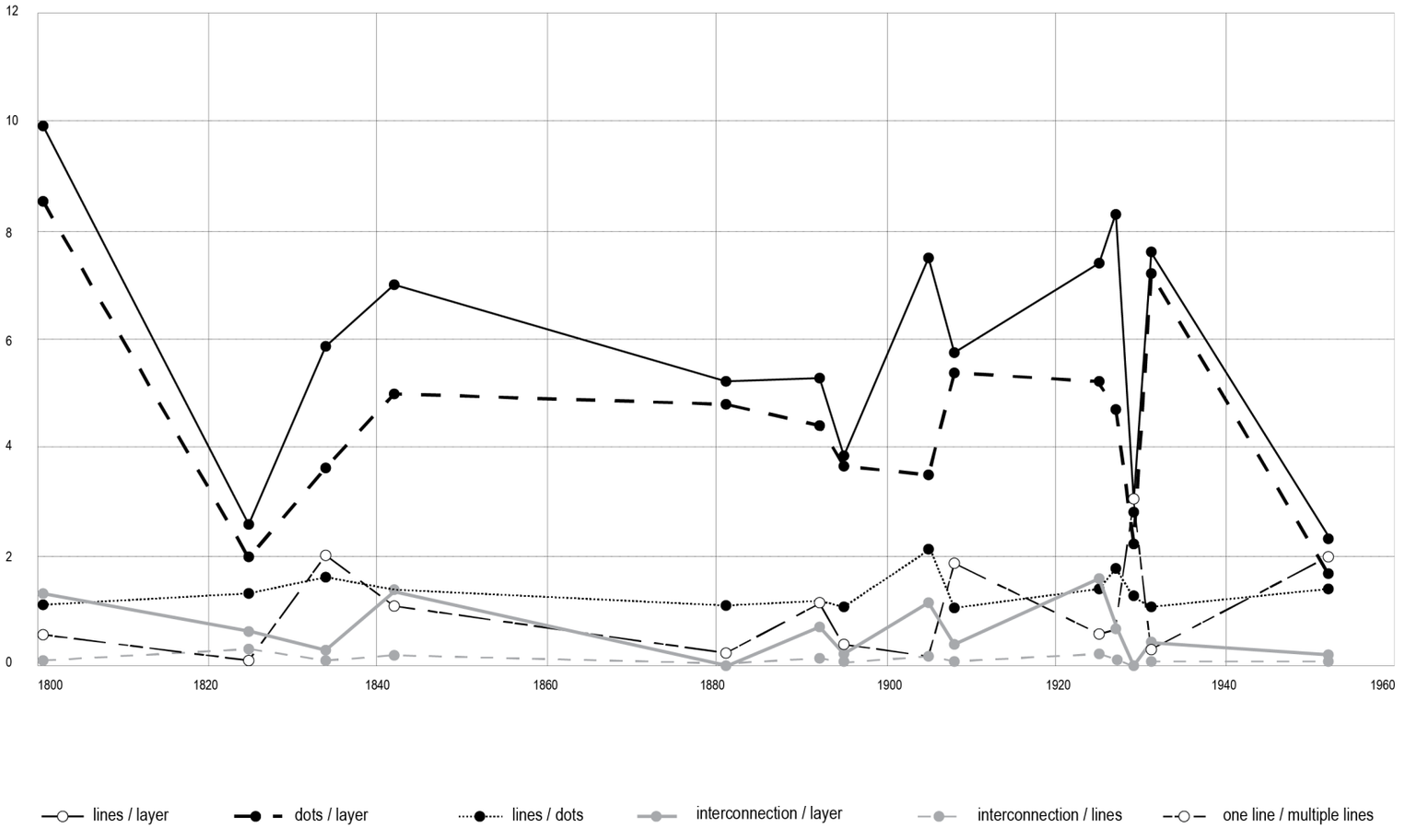


image 4.10
space syntax graph

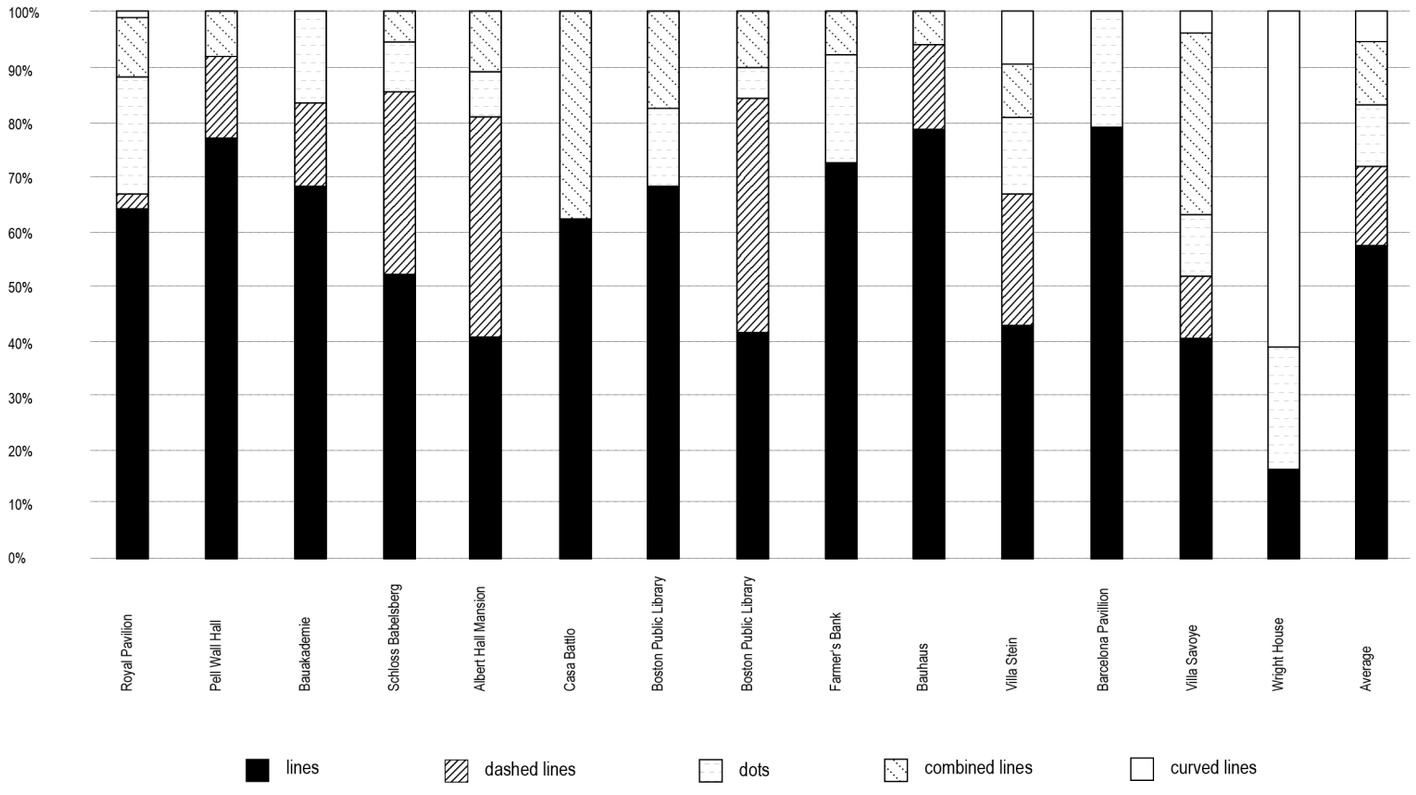


image 4.11
grass fire diagram

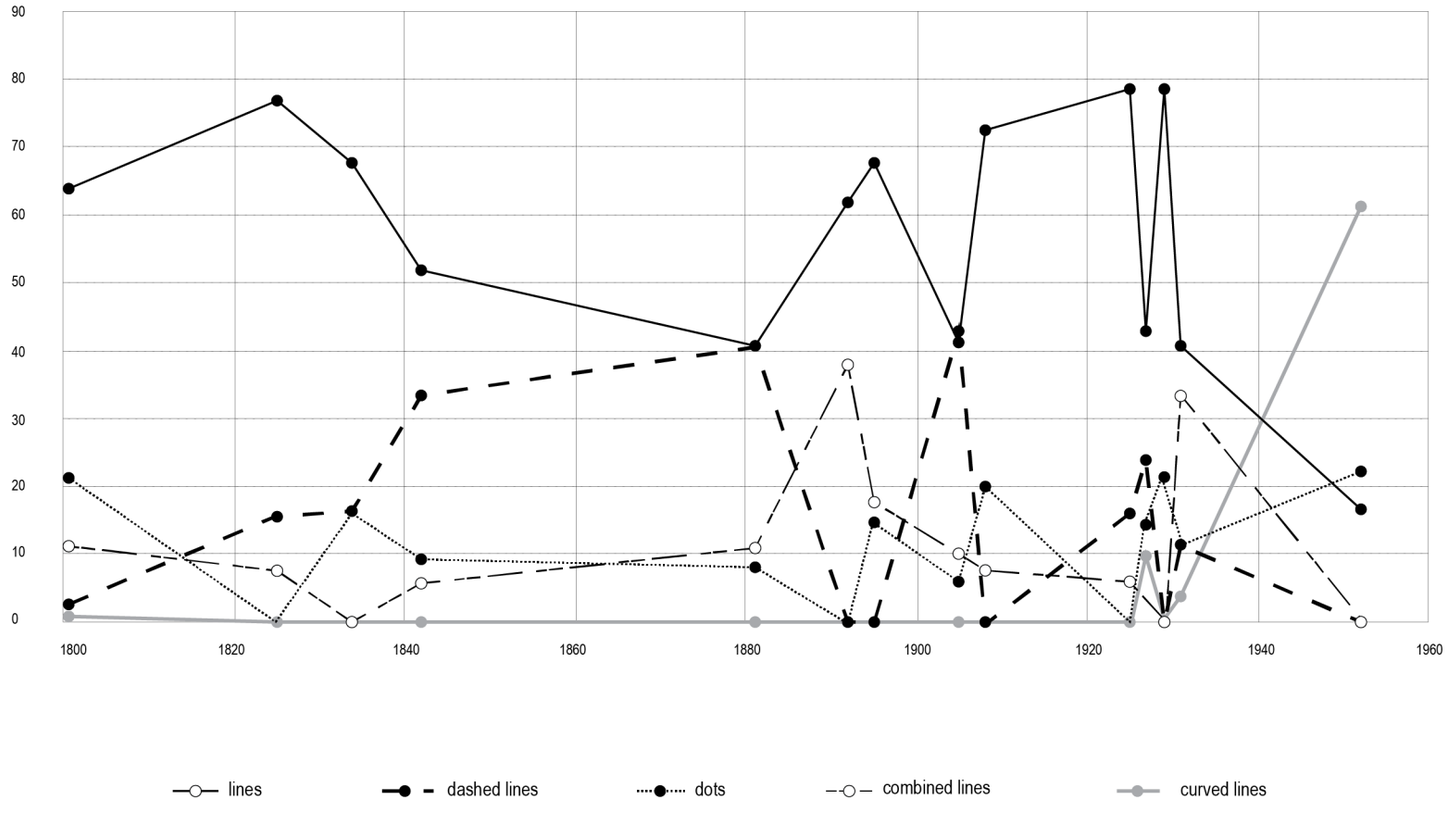
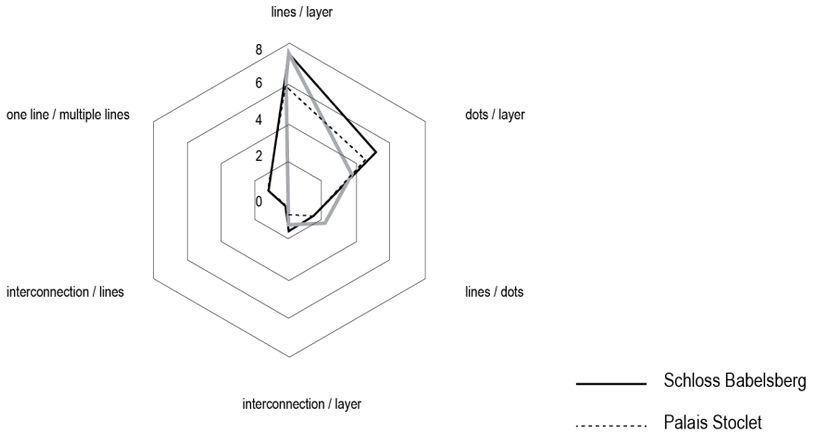
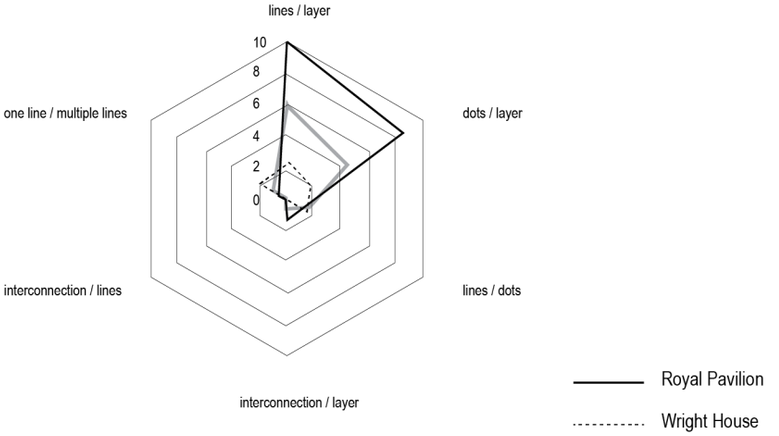


image 4.12
grass fire graph





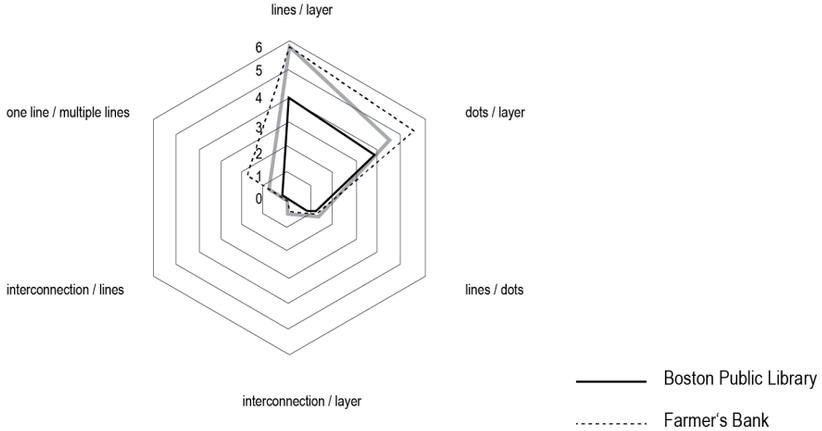


image 4.13
grass fire hexagon diagram

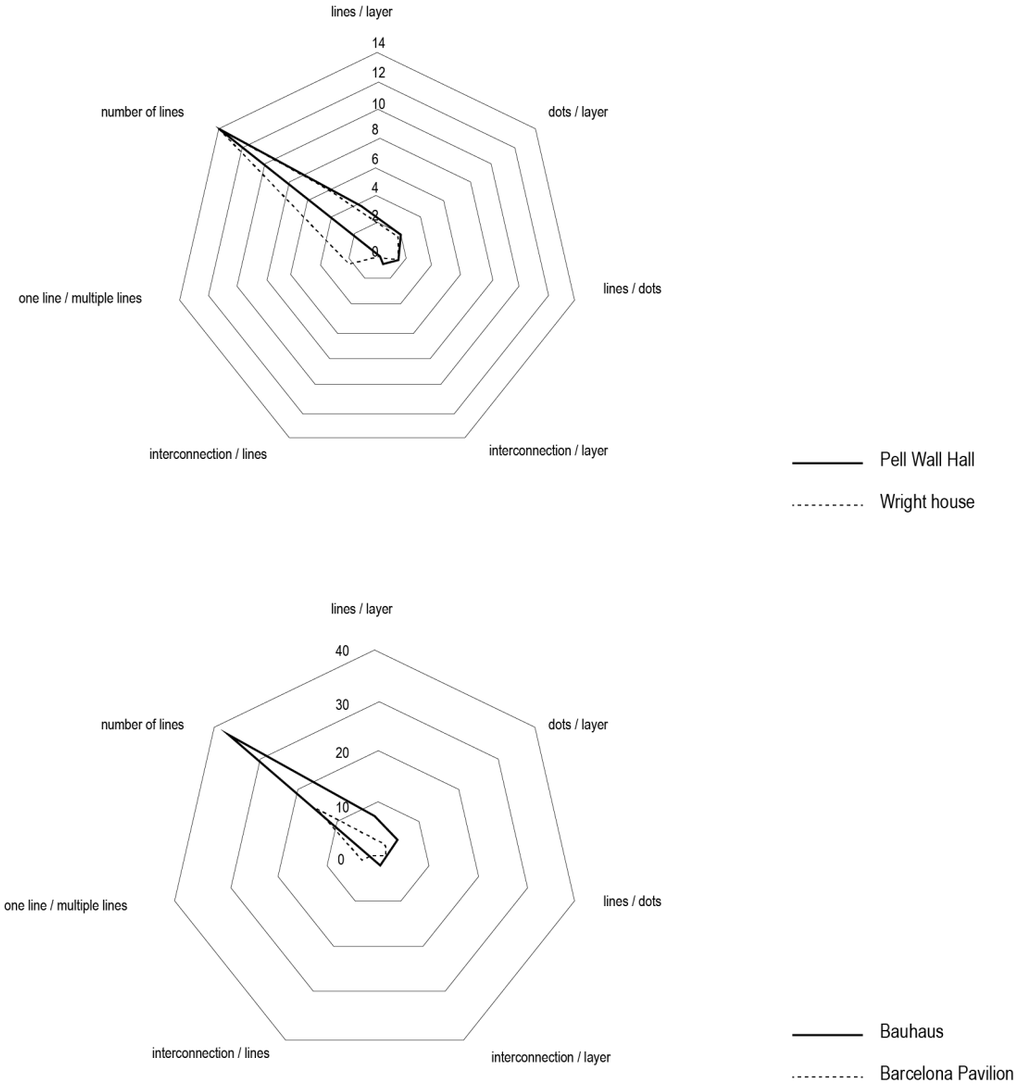


image 4.14
grass fire heptagon diagram

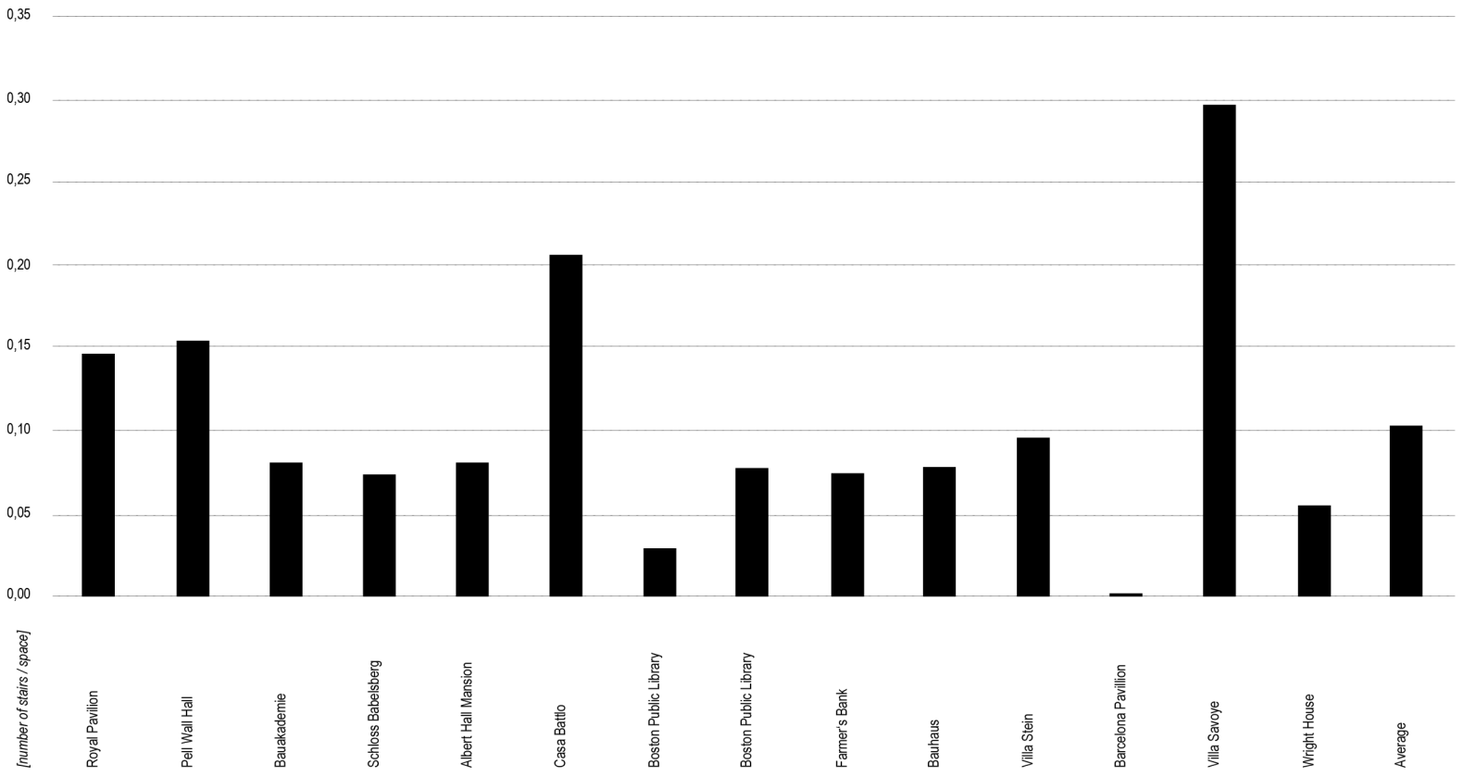


image 4.15
stairs per room diagram

5. CONCLUSIONS | 14 CASE STUDIES

This seminar aims to find trends in the mode of thinking and 'epistemes' and how they changed with regards to architectural language. The findings were assessed and produced in a graphical format, and parallel case studies were compared to validify the findings themselves.

Outline walls / Contours

The contour diagram 4.5 for the contour of the rooms and graphs 4.6 and 4.7 with ratios explain a few things and by this also highlight some remarkable changes over time. The first thing that can be concluded from the rubrics 4.5 including shapes and forms is that the number of shapes designed in a building is notable for getting lower over the years. Outstanding is the Royal Pavilion with 137 different shapes, this is not common in the rest of the case studies, but what one can see is that after the 1820s the number of shapes stays around 25 till 30. Only at the beginning of the 20th century, starting with Villa Stein in 1927, one can see a drop in the number of shapes, going from 12 to even 5. There is a clear trend that in this period, architects started to use fewer shapes to form their buildings.

Looking at the ratio graphs, graph 4.6, that show these different shapes and the percentages of the different shapes, you can see that there is a period from the 1840s till around 1900 where the use of combined shapes is a trend. This trend switches at the beginning of the 20th century towards the use of free form spaces, Casa Batllo is a nice exception that even strengthens this observation. The overall use of rectangles and squares seems to stay the same since this is indeed the most common shape inside buildings. But it is at its lowest at the end of this time period. Circles are only used sporadically through time.

Looking a bit closer to the specific projects there are some things that catch the eye. While comparing the floorplans of the Bauhaus with the Boston library and the Boston library with the Bauakademie, some similarities can be observed. However, by looking at the outlines of these building's plan, one could see major differences between the plans rather than similarities. This often has to do with the circulation of the building on the inside. While the Bauhaus contains a linear routing in the shape of a long hallway, you see that the Boston library is more focused on the staircase in the middle and from the contours you can see that the circulation here becomes more unclear when considering the inner garden and the interior, since this boundary becomes vague. But what is common on the other hand in the Bauakademie, Boston Public Library and Casa Batllo is that this circulation encloses a space in the middle that defines this circulation inside the building.

Looking at the Royal Pavillion's outline, the corridor which divides the building in the middle becomes more noticeable, this holds the same for the Stoclet Palais and the Bauhaus. But looking at more recent buildings from Mies van der Rohe, Le Corbusier and Frank Lloyd Wright one can't really recognize the corridor or the main direction. This might be the result of the freedom of movement that was a trend in that period because architects wanted to work with an open and free plan. This open floorplan is emphasized by the line that shows increase in interest of the free forms, shown in graph 4.7, that shows the possibilities of using columns and separate walls instead of the traditional thicker elements. It even could be said that the definition of a corridor becomes vague.

In a more general way of looking through time it could be seen that the wall defines the shape of the building, but later on, the walls define the space. Because the walls used to be really thick and create different shapes in the connecting rooms. But looking at the latest villa's the walls are thinner and might become less important.

Space Syntax

With the space syntax method, the same mathematical and visual way is used to compare the different results. The space syntax diagram 4.4, in this case, shows that the number of layers, in general, stays the same. This means that the different layers of connections and spaces do not change a lot through time, with the exception of the Royal Pavilion. This might be remarkable, because when looking at the number of spaces one sees that these become less and less during the years, one might also expect that the number of layers becomes lower. But this isn't the case, probably because the theme and opinions about circulation change over time.

The complexity shown in the space syntax diagrams also has to do with circulation, since this becomes more important during the years, in such a way that the architects try to make it less complex and more open and direct. This is emphasized by the fact that the number of lines becomes less in this period, shown in graph 4.10. This often means that the architect worked with an open floorplan or that rooms are only accessible through one entrance instead of several.

One other thing that can be seen in graph 4.10. is that the number of connections between the dots decreases in the timeline and on the other hand, the number of connected different dots to one dot in the down layer is increasing. This could be the result of using corridors and the growing importance of it through time.

So, one might say that the space syntaxes go from fairly complex to less complex. The Royal Pavilion, to begin with, has the most twisted syntax diagram, the Barcelona Pavilion the least. However, there are some exceptions in the timeline. Some similarities could be seen in Pell Wall Hall's diagram and the David and Gladys Wright house. This is illustrated by heptagon diagram 4.14, where the ratios of the two buildings are compared to each other. The lines almost overlap on most topics. While when looking at the buildings they look so different. Both buildings don't have that many layers and a simple linear syntax. Both with some more individual spaces, but at the end still connected to the rest. Also, the connection between the top layers, going from one dot to multiple dots, is a notable similarity.

Another considerable comparison is the Barcelona Pavilion, which has much more connections, while the Bauhaus, for example, has more 'dead-ends'. Illustrated by heptagon diagram 4.14, where you see some contrasting elements. This is probably due to the fact that Mies van der Rohe was a precursor in designing with open floorplans, he makes use of circulation where the visitor doesn't need to walk the same way twice. While in the Bauhaus corridors are still an important element to connect the different rooms to each other. This might also be because the buildings were made around the same time period.

Grassfire transformation

The grassfire experiment was devised according to the type of rooms in each plan. As the buildings moved away from the 1800s, the spaces became increasingly abstracted. Eventually, around the moment when Villa Savoye was considered, several new rules had to be devised to explain the complicated nature of the building.

The spatial organization within the buildings became vaguer when architectural values were set upon the effective minimalizing of its parts. This pattern still exists in the buildings of the 20th century. The building design is constantly changing and hence this experiment paves the way for more interventions to be introduced to make the experiment more conclusive. Through time, the grass fire result started from straight lines at the older buildings and changed into lines with curves or overlaps and lines with corners. These overlaps, taking for example the Barcelona Pavillion, create 'zones' inside the building. Zones being spaces that could be seen as separate spaces in a larger space, although not separated by a physical element, as a wall. The grass fire experiment reflects the abundance of straight lines, in the beginning, slowly turning to lines with curves and overlapping lines at the end of the timeline.

Grassfire exploded

In the grassfire experiment, lines and dashes were used to represent the contours of the rooms, clearly shown in grass fire diagram 4.3. Since each element such as a line, a dashed line and a dot represent certain elements, necessary information could be extracted to allow two buildings, which may seem completely different, to have a general footing. This, in turn, would aid in finding the age of the building.

Upon seeing the grass fire diagram 4.3 of different representative elements, more than 40% of the lines are regular lines, in all case studies (except Wright House owing to its curvilinear shape). This shows the abundance of rectangular rooms and corridors. It also shows that conventional room definitions reduced around the early 1900s. The Wright house is the only example that falls as an exception to this case with more than 60% of lines being curved.

ANALYSIS CONCLUSION

Curved lines make an average of 5 percent of the lines. They are present in the Royal Pavilion and then they reappear in the Villa Savoye and Stein. The presence of these lines in a building of much larger proportions and much older than the latter three shows similarities in plans that would not be visible had just the technical drawings been compared. The Wright House has the second highest number dots, which represents equilateral spaces. If offers an interesting comparison with the Royal Pavillion, which is illustrated by hexagon graph 4.13. The dotted spaces of the Wright house are at an average of about 12%, with 25% of all elements being dots in the Royal Pavilion, the Barcelona Pavilion and the Farmers Bank, the latter being shown in hexagon graph 4.13. This draws similarities between buildings that are almost on the opposite end of the entire case study spectrum. The Albert Hall Mansion and the Palais Stoclet have the highest number of dashed lines. The presence of the dashed line is very fluctuating and disappears at the Wright House again. It draws parallels to buildings with the presence of columns, as that has led to an increasing number of zones. Casa Batllo and Villa Savoye have the highest number of combined lines, with about 30 percent of line types from these plans being combined lines. This points to the presence of a wide range of 'zones' or abstracted spaces with no clear definition.

Graph 4.11 illustrates that all buildings are mostly a combination of three or more different line types. This results in the floorplan as a combination of different room types. Where for example Albert Hall Mansion shows a lot of different shapes and forms in its floorplan, the same accounts for Villa Stein. But taking Casa Batllo, although a remarkable floorplan, it only shows two different line types, as does the Barcelona Pavillion. This illustrates that there is more to the floorplans then first meets the eye. Doing this grass fire experiment shows the different layers behind the floorplan and the notable exceptions of the case studies.

Graph 4.12 shows that there is an increase interest in the more free form shapes and lines. Looking at the curved lines and combined lines increasing just before the 20th century. This is the time period where architects started to let go of the static square and rectangular formed spaces and started to experiment with shifted rooms and spaces.

GENERAL CONCLUSION

The goal of the seminar was to find out whether thinking about the configuration of floorplans, is determined by sets of constraints, by systems of thought: whether such a thing as an architectural épistémè could be found.

Several experiments were used to find the Architectural language within each plan and see its transformation over the years. The essence of 'Episteme of the Plans' can be summed into one main question: 'Do the building plans change over time?

Yes. The buildings do change over time. Various factors are in play in this aspect. From the simple experiments like the contour spaces, there were remarkable findings of the nature of the plans. From the case studies, it was noticeable that early buildings, castles and palaces have a twofold division in their room types. The big representative spaces, semi-private in nature, make use of columns, irregular shapes, that curve at the ends and protrude outwards. Of course, there are exceptions to symmetrical dispositions, such as the Casa Batllo. Symmetrical forms and rational clustering of rooms around a corridor is a trend found in many case studies when viewed chronologically. Curvilinear forms became more dominant as time progressed, with a majority of the grass fire lines in the Wright House being curved. There were other findings as well. From the grassfire experiment, it became clear, that rectangular rooms with long corridors were still most common. However, in later abstracted buildings, the plans became more open instead of being clustered into rooms, with four walls around them. Free formed plans also lead to the creation of 'zones' from the grass fire experiment: spaces with no fixed definition and a multi-purpose function. Older building plans are quite difficult to imagine in perspective. While newer buildings have a quality that lets one imagine them it in three dimensions. Ornamental quality of the new-form buildings parallels that of the sections from older buildings.

Functionality paved the way for abstraction. From the Space syntax it was clear, that along the years, there were fewer corridors, fewer clusters of rooms stacked away neatly next to a long thin corridor. It was also interesting to note, that the free-formed space, also served as circulation. Circulation spaces aren't corridors anymore. Lastly, buildings are either heterotopic or homotopic, and each case study falls in either category.

DISCUSSION

While the results of the project were remarkable and very interesting, a few things might need to be considered to put the values of the outcomes into perspective. While there is chosen to use a specific time period, where a lot of developments arose and there were a lot of changes in a relative short period of time, there were some outstanding exceptions in general to the project. Take for example Casa Batllo, which has few similarities and is a statement in differentiation in relation to the other case studies. Where you might recognize a specific trend, as we stated, this project was a development on its own. In some cases, you might also recognize this in the Royal Pavilion, since the scale is not comparable with most other case studies. And although this might be the case, these general exceptions also puts one on another path and might even highlight the findings even more. To see this large contrast, stimulates to gain different thoughts and discover other things.

A difficult element in the experiments was the exceptions that were worked with during the grass fire experiment. Whether a room with columns in the middle should actually be considered one room, or a room containing zones or just different spaces. Or whether a staircase is a space in itself. A lot of discussions have led to an agreeable result, but there were no official guidelines to work with. Which calls on your own insight and initiatives, and there for certain chosen had to be made.

Another consideration for this project, is that all the case studies chosen, are spread over Europe and America. Not taking into consideration the trends and developments of the specific country. Although this might also be a good thing, since the developments in different countries have led to developments in architecture all over the world. But then one might say that more countries should be considered, this in relation to the next discussion point; Fourteen different case studies were considered during this project. And these have resulted in a positive conclusion in finding such a thing as an architectural épistémè in the floor plans. What would happen if the project would contain even more case studies? Would more findings be discovered? It could be plausible that what was found was only the beginning of something more.

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