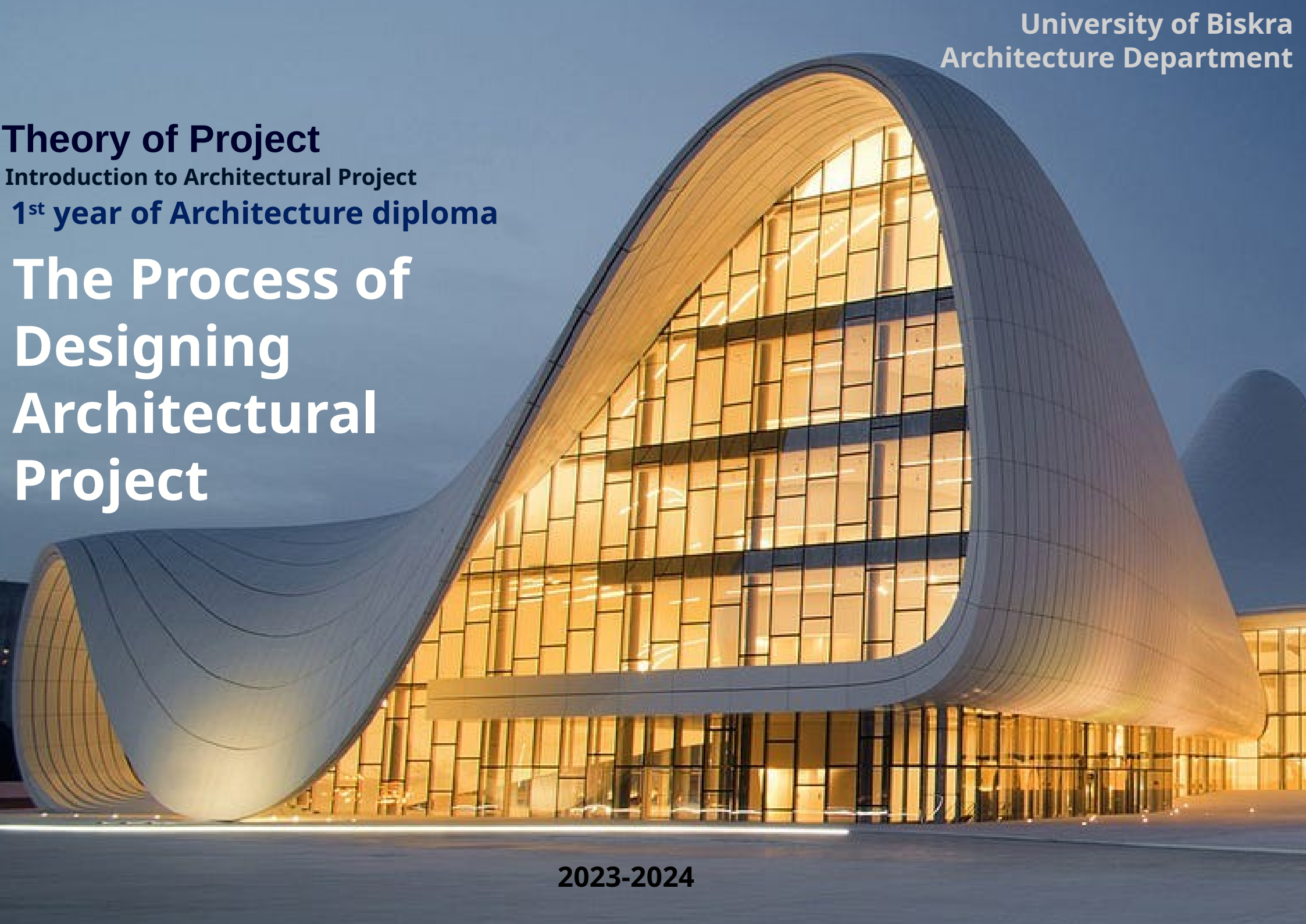
University of Biskra
Architecture Department

Theory of Project

Introduction to Architectural Project

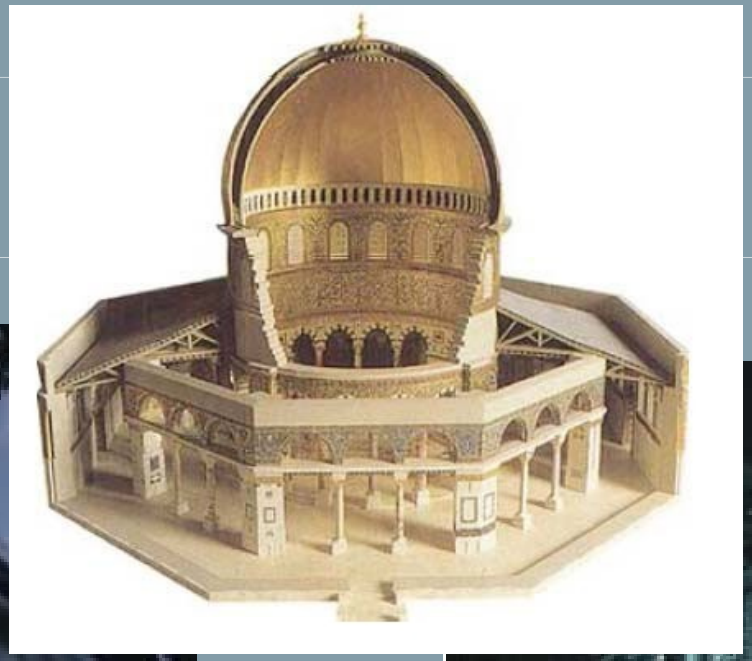
1st year of Architecture diploma

The Process of Designing Architectural Project



2023-2024

The Process of Designing Architectural Project



Process

Project idea

- Choices
- Intentions
- Decisions

But what's the idea behind the Architecture project?

How is a building or work of architecture created?

- ¬ىBeliefs
- Commitments
- Opinions

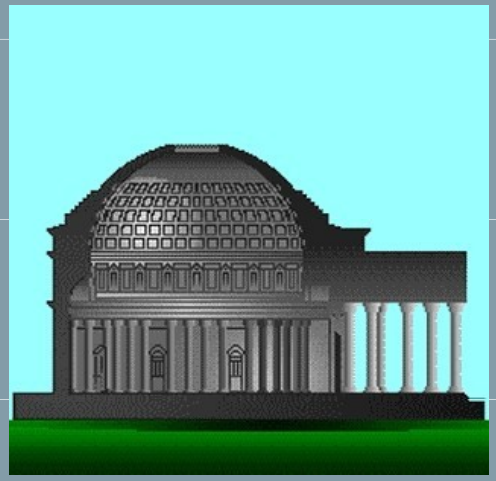
Influences

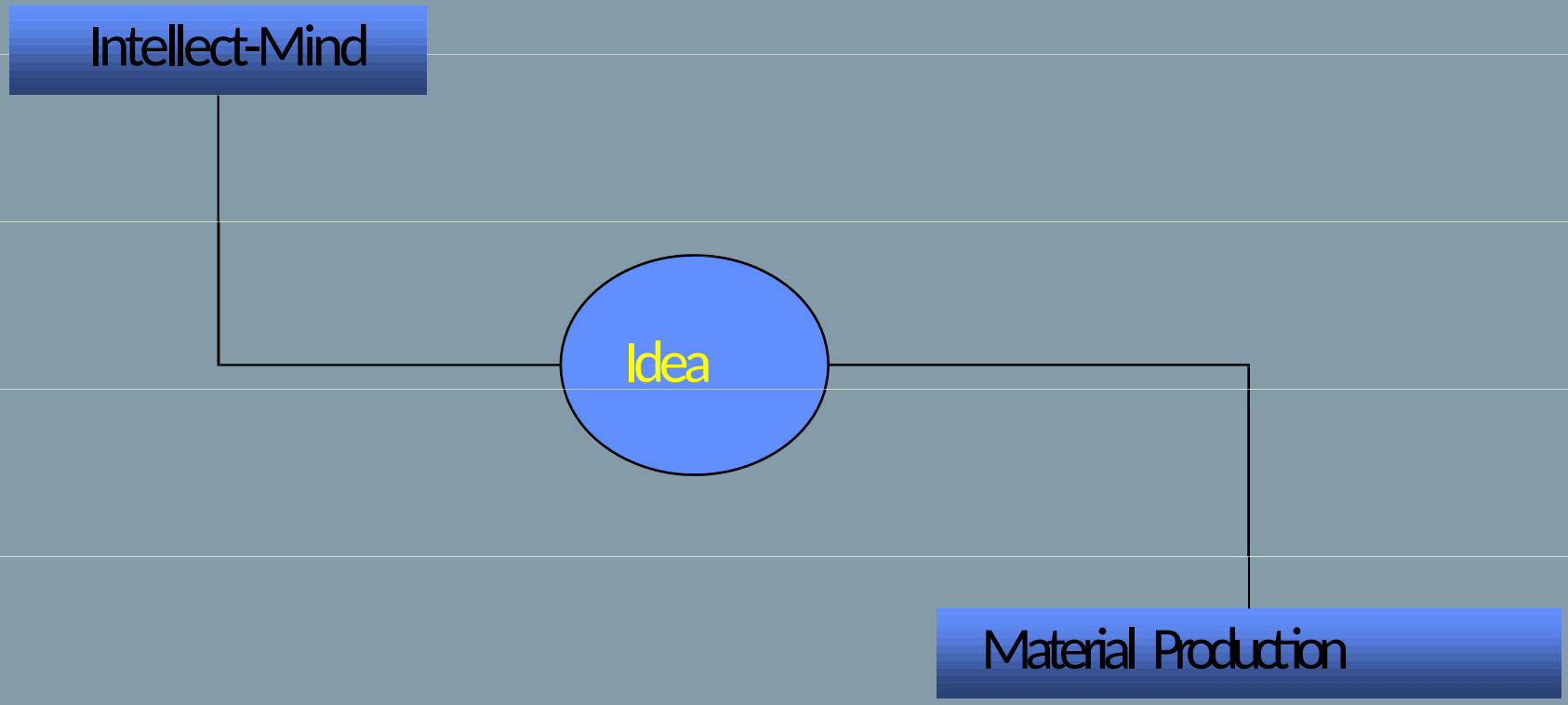
-Cultural

-Religious

-Sentimental

¬ʌPersonal




Intellect-Mind
Idea
Material Production

Creation modes

Imitation

Imagination

Robert Venturi and the extension of the British museum (London). A post-modern historiscist expression based on History references (Close to Imitation process)

Heydar Aliyev Center. Baku (Azerbaijan). 2012 / Zaha Hadid Architects

Imagination-based processes of design work on using/ inventing/ combining abstract geometric figures to produce Architectural forms with less reference to existing/historical references.

Chapelle Notre Dame du Haut. Ronchamps (France). 1955. Le Corbusier.

The Global nature of the Idea

The idea is to take into account the object or creation in its totality and in its completion in a global and imprecise way:

Architectural Party



Ouside and inside of the Evry Cathedral- Evry (France) Designed by Mario Botta. 1995.

While every part of the architectural project presents respective autonomous expressions, the whole **Architectual Parti** of the project **connects** every side of the project to a **Global** expression of an original **idea**.

Opening the idea

The idea does not resolve all the contradictions encountered in developing the project

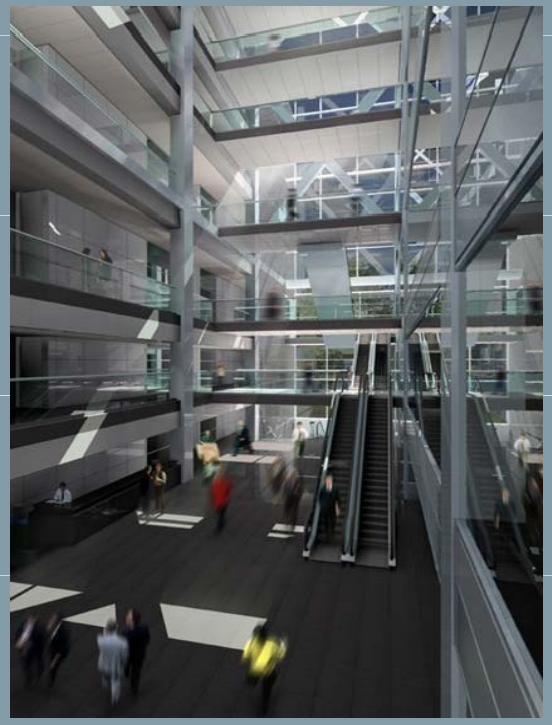
It presents a compromise to resolve contradictions

The open nature of the idea: a variety of possibilities

An Architectural approach draws directions but sets limits to total freedom

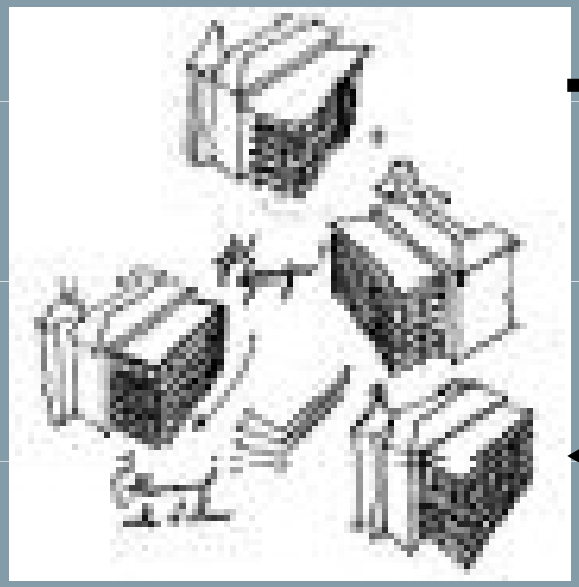
Idea & Reality

To express the idea, the architect uses words/ Images



To turn the idea into reality, the architect makes a number of adjustments

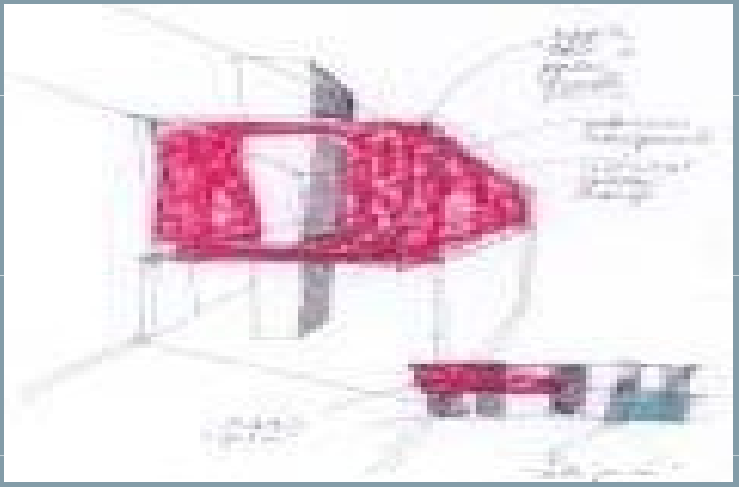
Va & Vient Idea & production



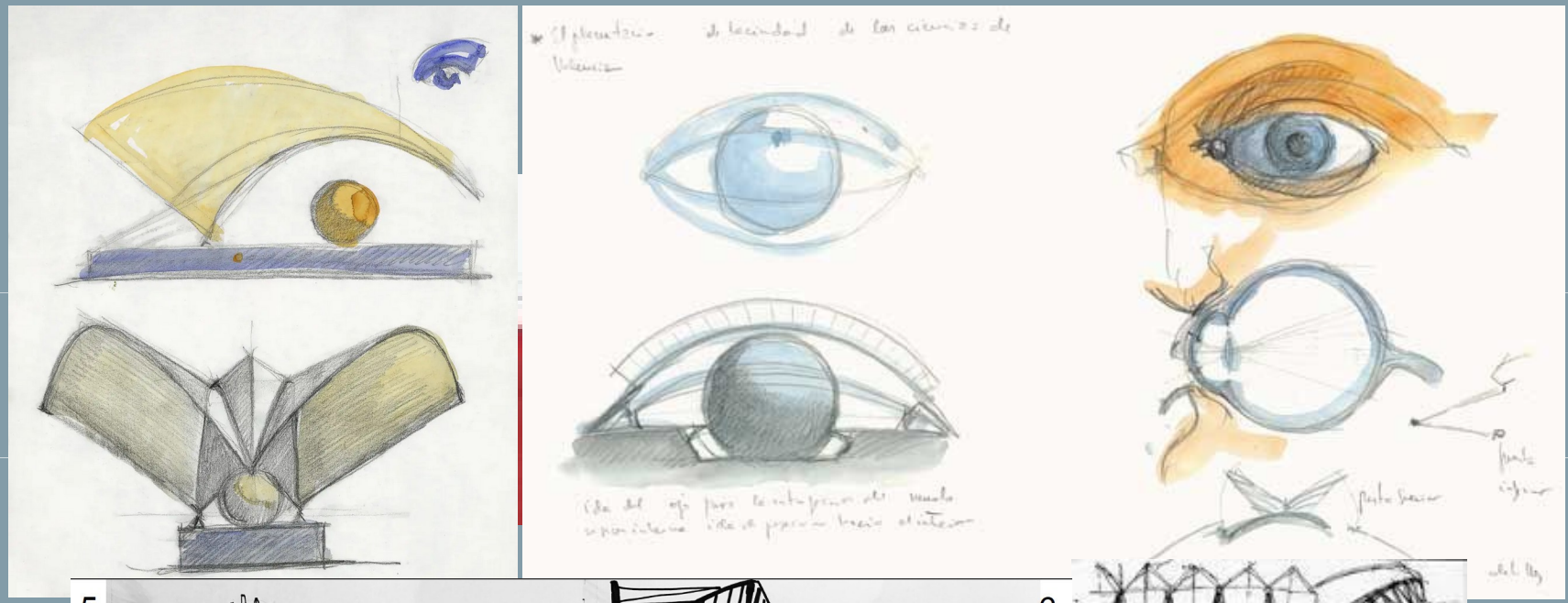
The architecture project

The prefiguration of architectural reality is commonly referred to as the ***Project.***

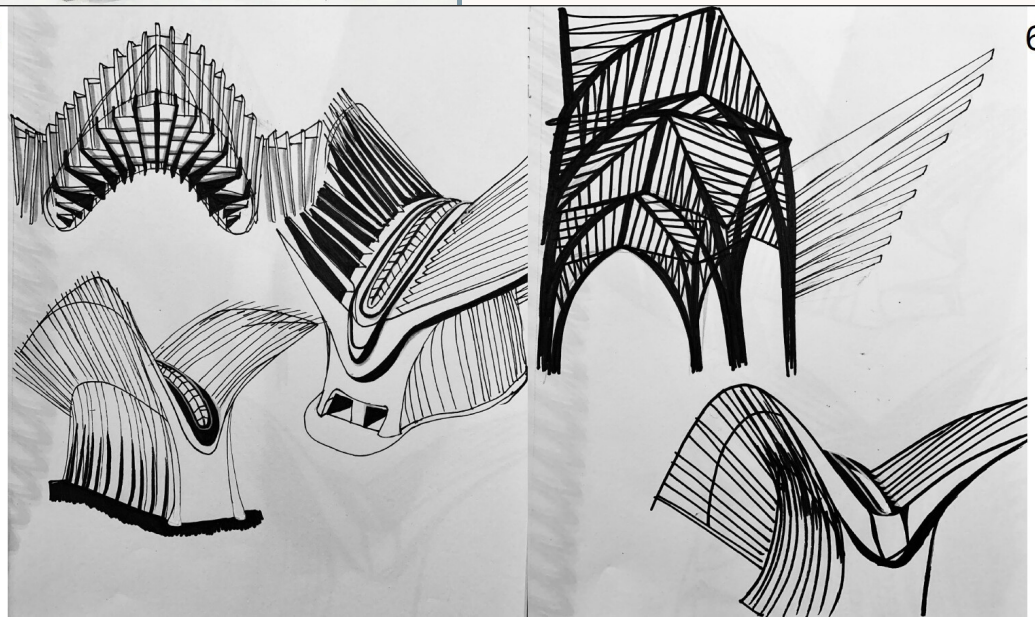
Development work that precedes the construction of a building Set of drawings produced by the architect



The project is at the intersection of the intellectual approach to design and the practical activity of design in its complex context.



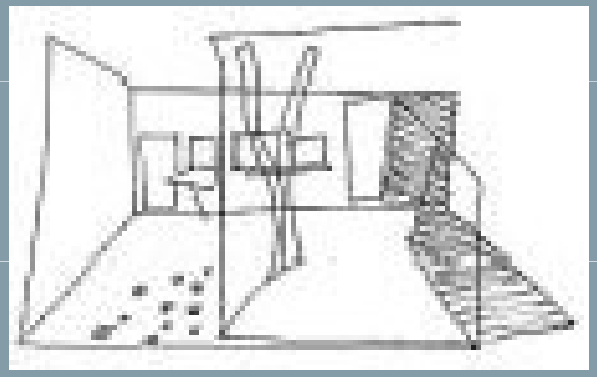
5

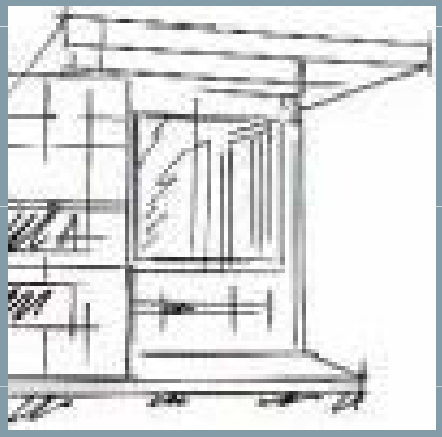


6

The project is also part of an overall personal production that makes **sense**.
The project is an individual pursuit of artistic objectives that are not always explicit.

The Architect also integrates mental representations of **hypotheses** use and feasibility

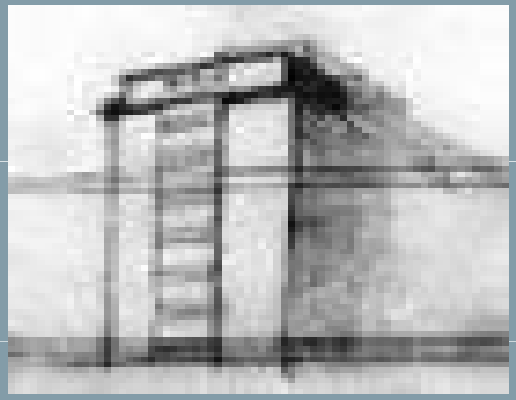


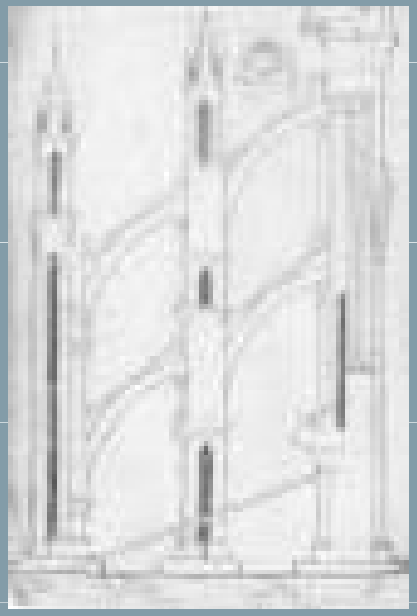


Methodology

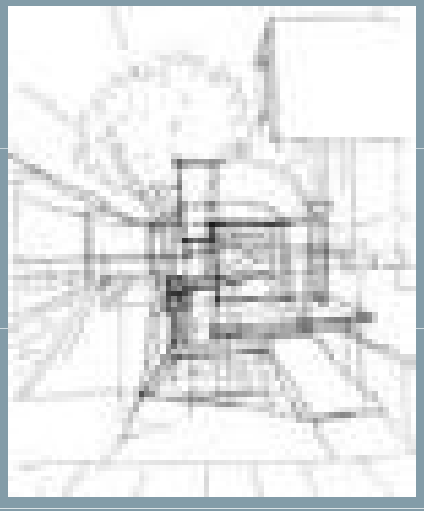
Understanding architectural design in terms of process is first and foremost a methodological requirement, which proposes a diachronic **breakdown of the project**.

It has developed particularly in Anglo-Saxon countries.





Schematically, the methodological approach thinks the project as a problem to be solved



It is therefore divided into several stages:

1. **Programming**, which is the problem clarification phase.

2. **Elaboration**, which is the research phase leading to the solution of the problem

3. **Completion,** which is the construction phase

Architectural Systems

Architecture

- Space
- Structure
- Enclosure

- Organisation models
- Relations
- Hierarchy
- Quality of form
- Colour & texture
- Scale & proportions
- Surfaces & openings

Experience

- Movement in space
- Movement in the time

- Approach and inputs
- Circuit configuration and access
- Sequences of spaces
- Lighting, sight, touch, sound, smell

Directed by

- Technology
  - Structure & enclosure
  - Protection of Environment
  - Comfort
  - Health & safety
  - Well-being
  - Durability

Container

- Program

- User needs, requests & aspirations
- Socio-cultural factors
- The factors economic
- Legal constraints
- History, tradition and precedent

Compatibility

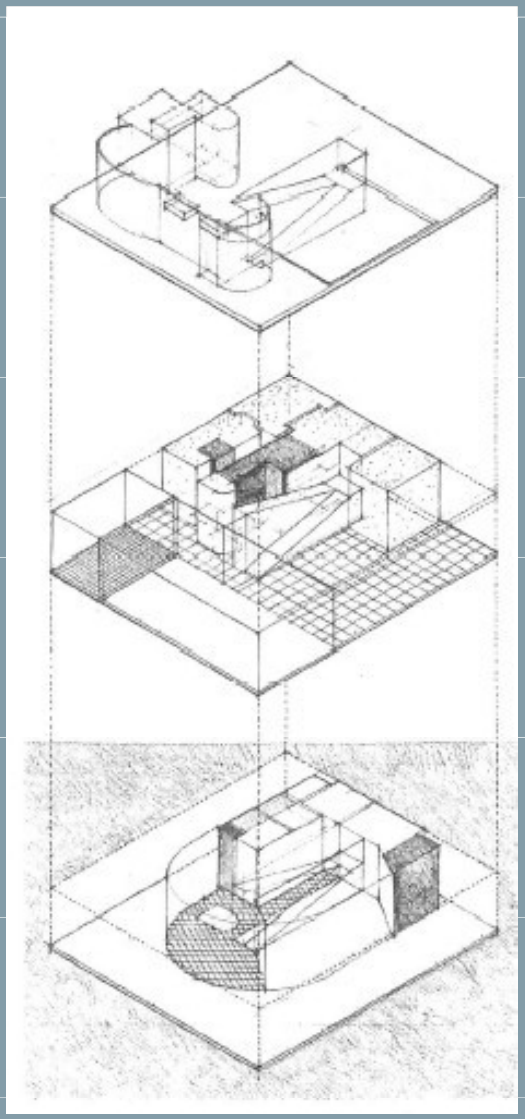
- Context
  - Site & Environment
  - Climate, sunshine, winds, temperatures, rainfall
  - Geography, Soil, Topography, Vegetation, Water
  - Cultural characteristics

An overview of Architecture systems

- Architecture is about forming, sculpting
  - space, structure and enclosure
- It is experienced through movement in space and time
- Is achieved through the use of technology
- Contains a program, a function.
- Which is compatible with its context
- and compatible with orders

Orders

- Physics: Solids and voids
- Perceptual: Ambience, lighting, texture, colour, etc.
- Conceptual: Images, symbols, signs, etc.



- Space System:
- Three-dimensional integration of program elements, functional spaces and relationships

Function definition

- *Every architectural object has its basic utility function expressed in its colloquial name, such as a cottage, a house, a residential building, a sky-scraper, a temple, a factory, a shipyard, a theatre, a stadium, a rail-way station, etc.*
- *At the same time, every object additionally performs a number of public functions whose meaning goes beyond its strictly utilitarian role. The ability to satisfy all of these needs, I call the functions of architecture.* (A. Wallis, 1985).

In relation to the built environment, the term ‘function’ refers to the purpose of a building or structure. It can also relate to the proper operation, process or performance of something and how it works, such as plant, tools, lift, building services. https://www.designingbuildings.co.uk

Functional aspects

- In most cases, function is the first element to consider as a requirement from the client. A program is affected to that function.
- The function of a building affects its nature :
- This first consideration enters than into an interaction/adaptation process with structure, / shape, people's uses, cultural considerations, etc.

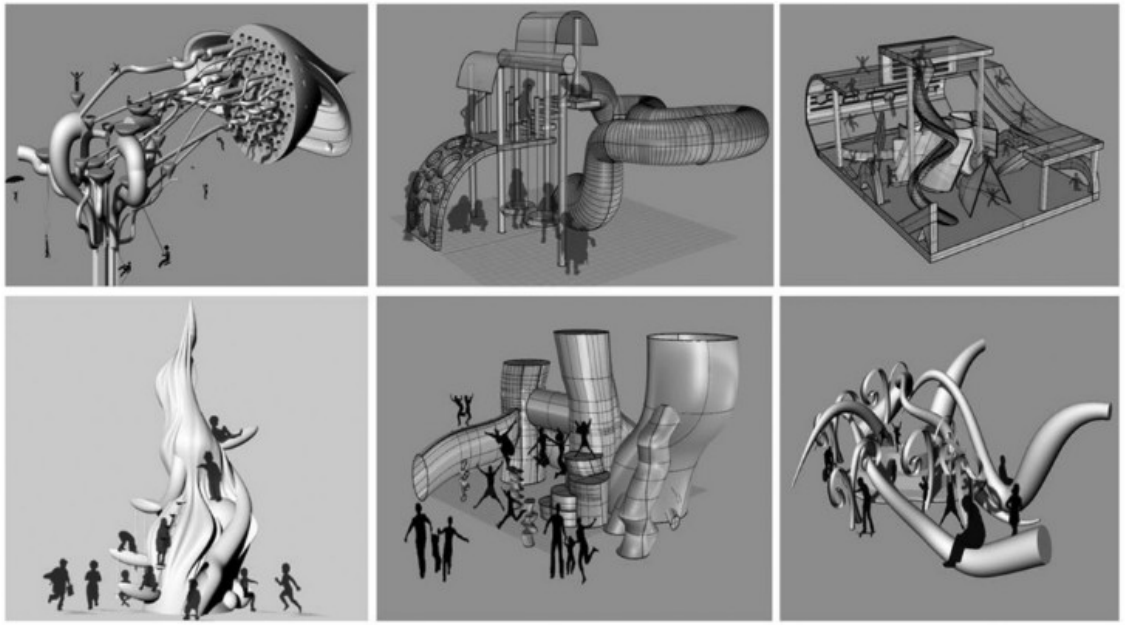
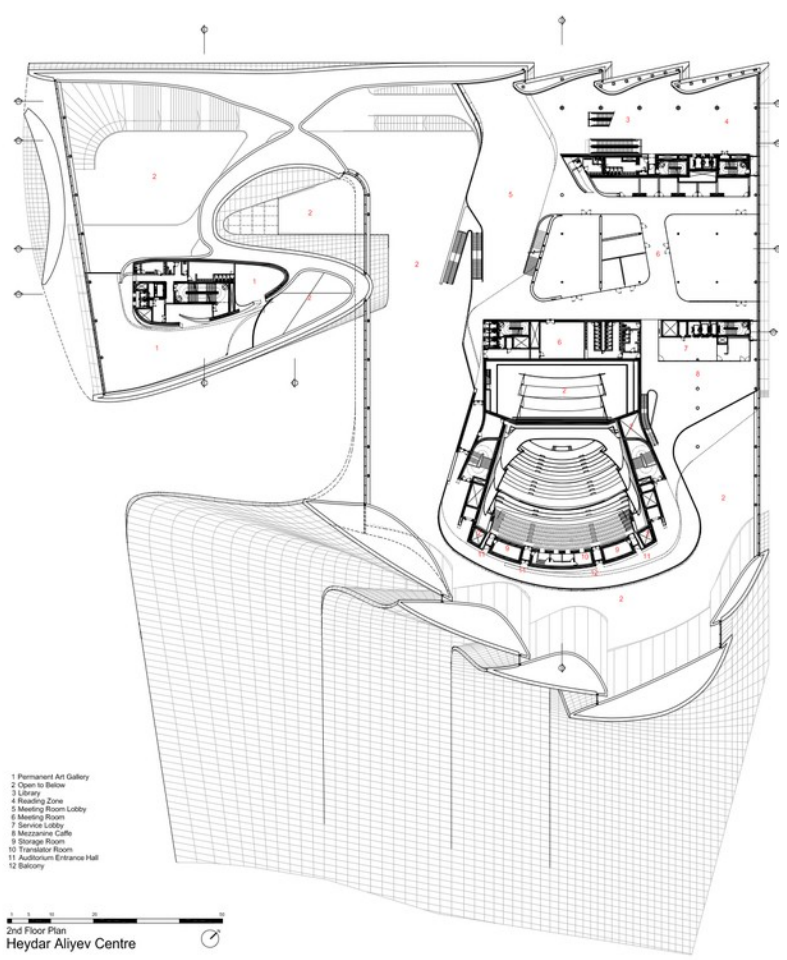


Figure 3. Representation of human figures in atypical architectural design (Lee, 2018).

Function-form aspects - cultural

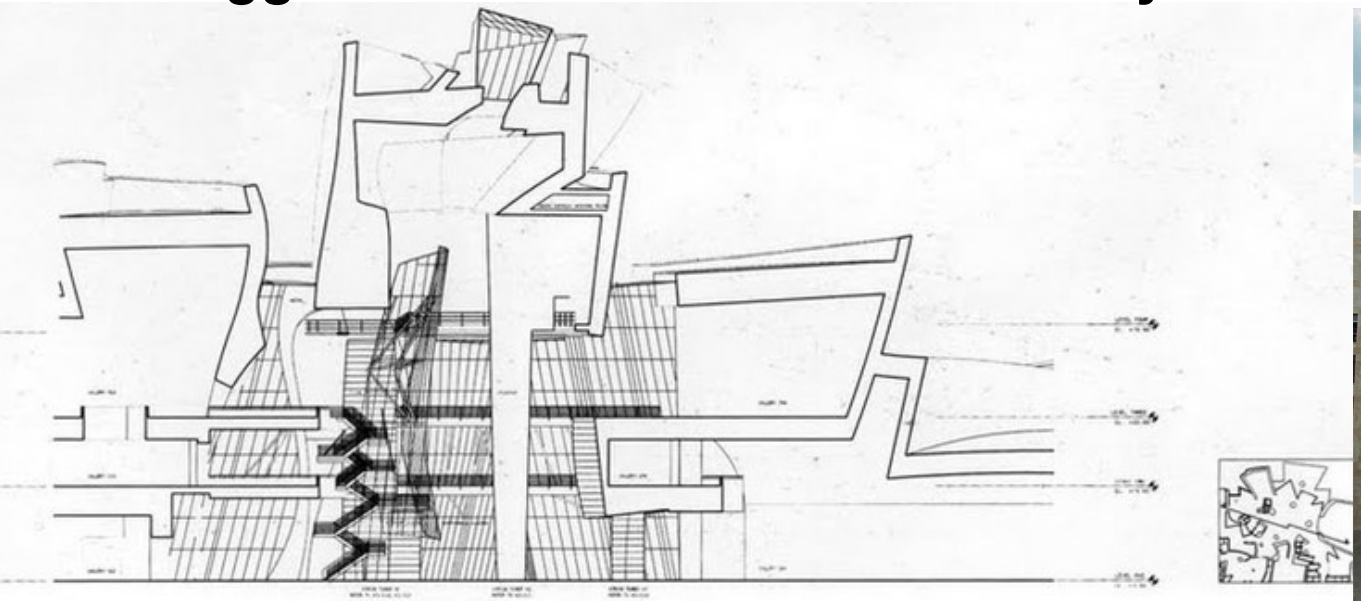
- Cultural functions require in a cultural/artistical developped expressions (Galeries, museums, libraries). They allow generally more freedom of shape with -may be- a sense of extravagance.

Qatar Museum – Jean Nouvel



Heydar Aliyev Center / Zaha Hadid Architects

The Guggenheim Museum Bilbao / Gehry Partners



Function-form aspects - symbolic

others functions require symbolic expressions related to philosophical, religious or even political messages : (religious buildings, Universities, etc).

Columbia University- USA.

Function-form aspects - utilitartian

- In complex and utilitarian building types, function is the most important element to consider: Hospitals, Factories, libraries

Fagus factory. Walter Gropius

Laghouat Hospital. Hocine Zerarga.

3.1.Outpatient:

The Outpatient Unit, also known as Ambulatory Care Unit, refers to health care provided in hospital-based outpatient or stand-alone clinics, physician offices, ambulatory surgical centers, and many other specialized settings where patients receive care but do not remain overnight.

Standards from Egyptian code:

- Two separated entrances are required.
- Near to radiology department.
- Isolated from noises.
- Examination room minimum area is 8 square meters.
- Treatment room minimum area is 12 square meters.
- Minimum corridor width is 1.5m.

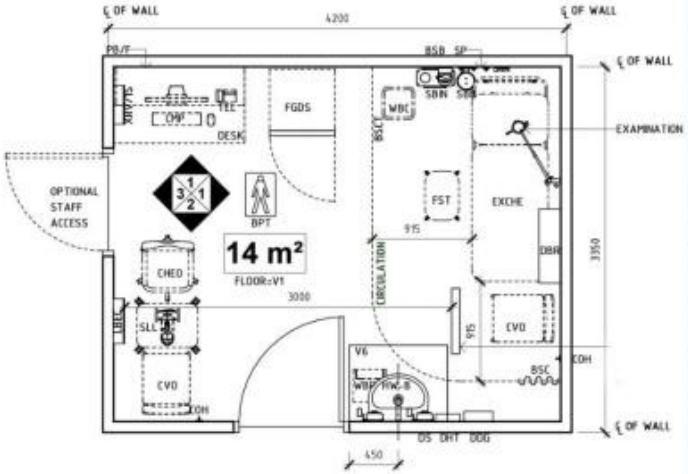


Fig 3: Clinic plan

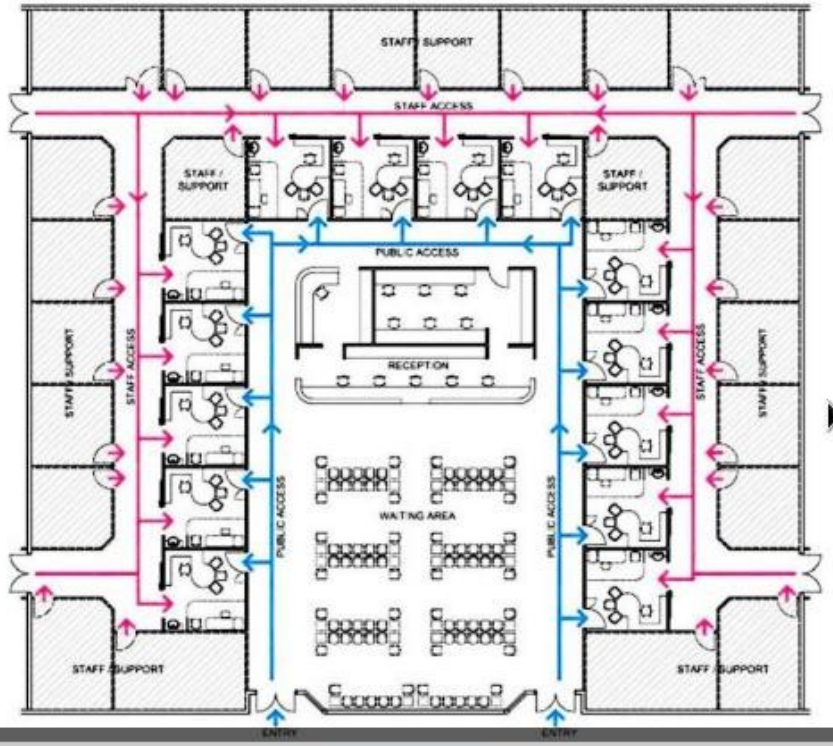


Fig 4: Outpatient plan

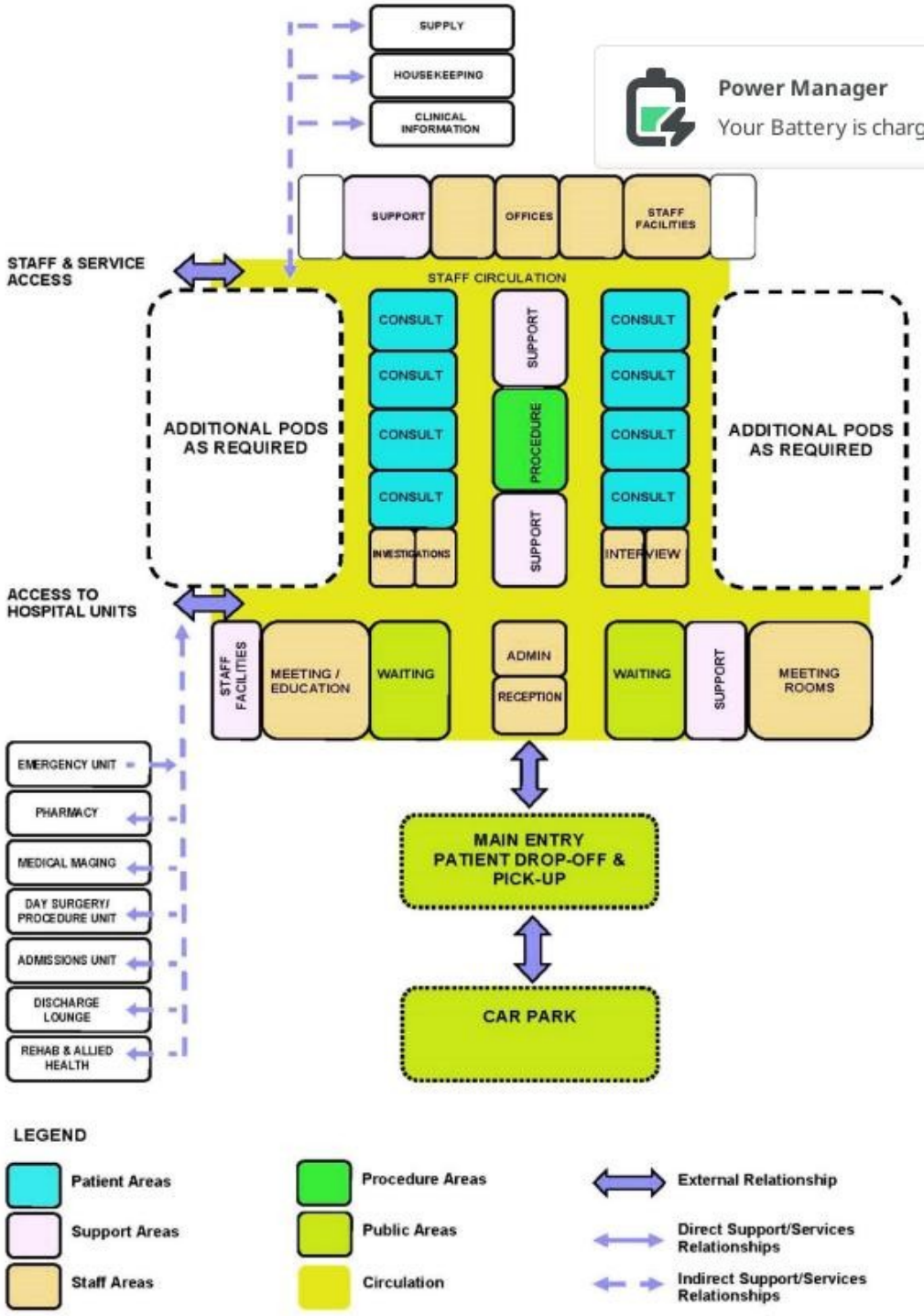


Fig 5: Outpatient zoning

The Operating Unit provides a safe and controlled environment for the operative care of patients undergoing diagnostic/ surgical procedures under anesthesia and peri-operative care including post procedure recovery.

Standards from Egyptian code:

- The design should stop spreading of infection.
- Consist of 3 parts , restricted area , half restricted area and non restricted area.
- Corridor's width is 2.1m.
- Original operation theatre minimum area is 30 m^2. with 5 meters width.
- Orthopedic operation room minimum area is 50 m^2. With 6 meters width.
- Anesthesia room minimum area is 15 square meters.
- 8 square meters for beds in recovery room.
- To stop spreading of infection we change the rooms pressure.
- Day-surgery unit is like operation unit, but it should be near to outpatient unit.

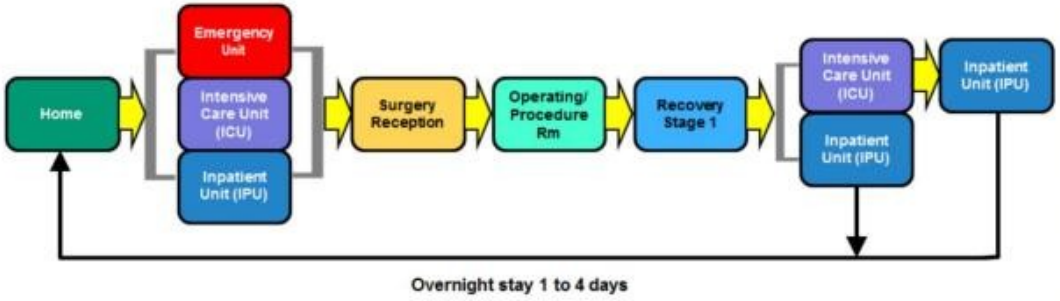
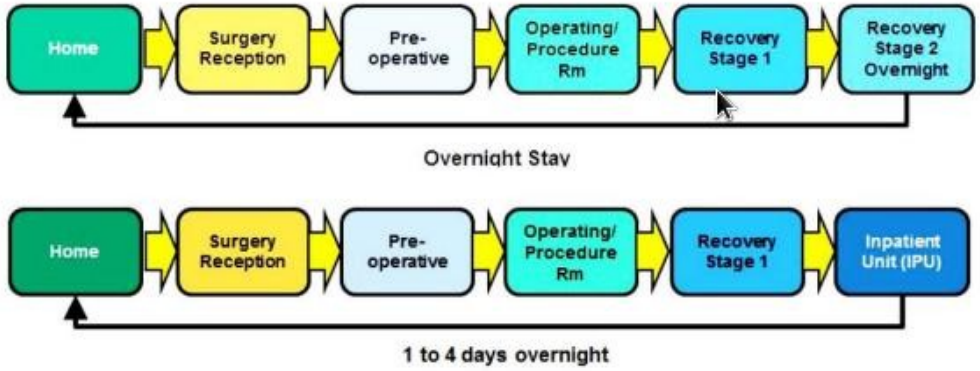
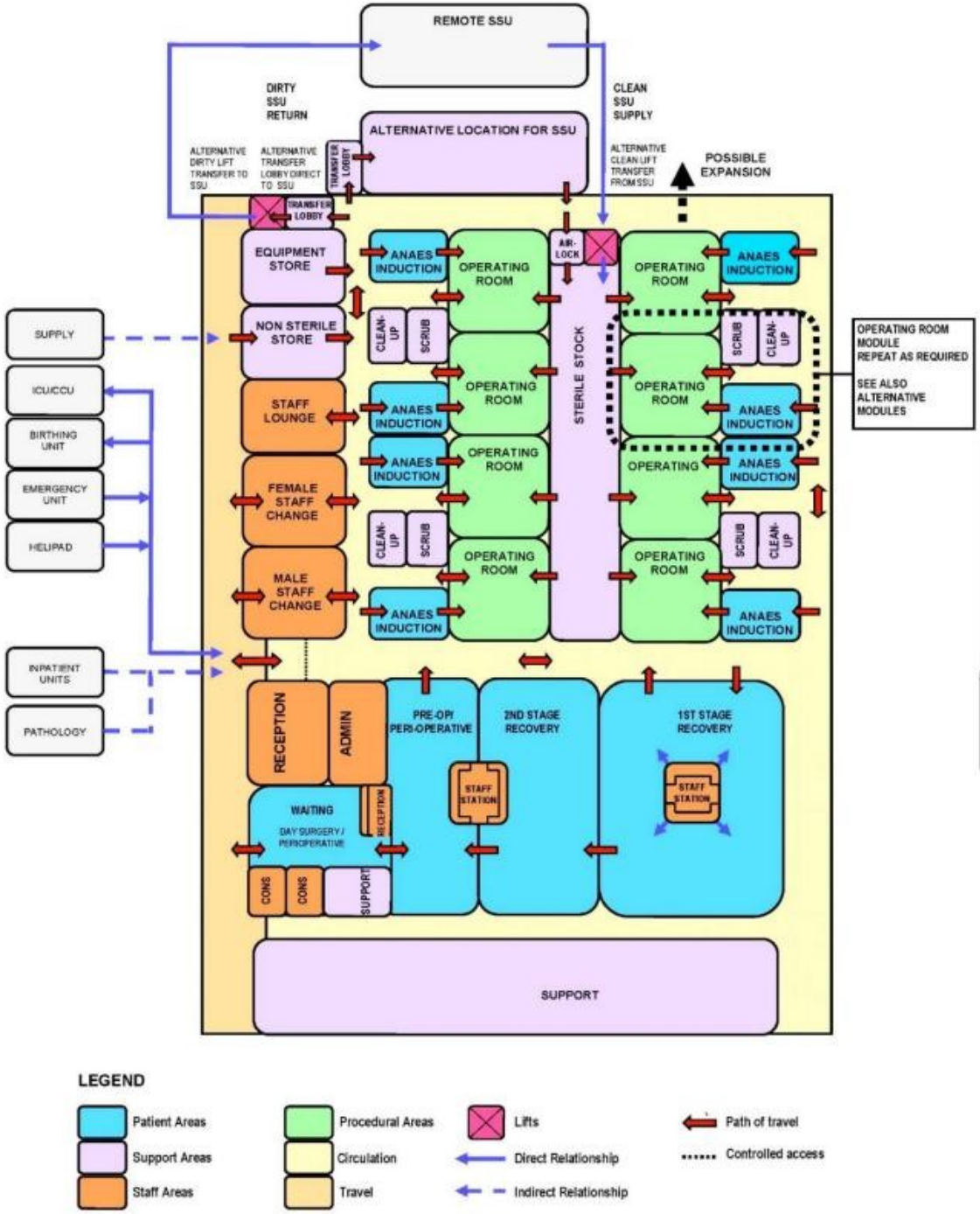


Figure 1 Inpatient Surgery Model patient flow chart





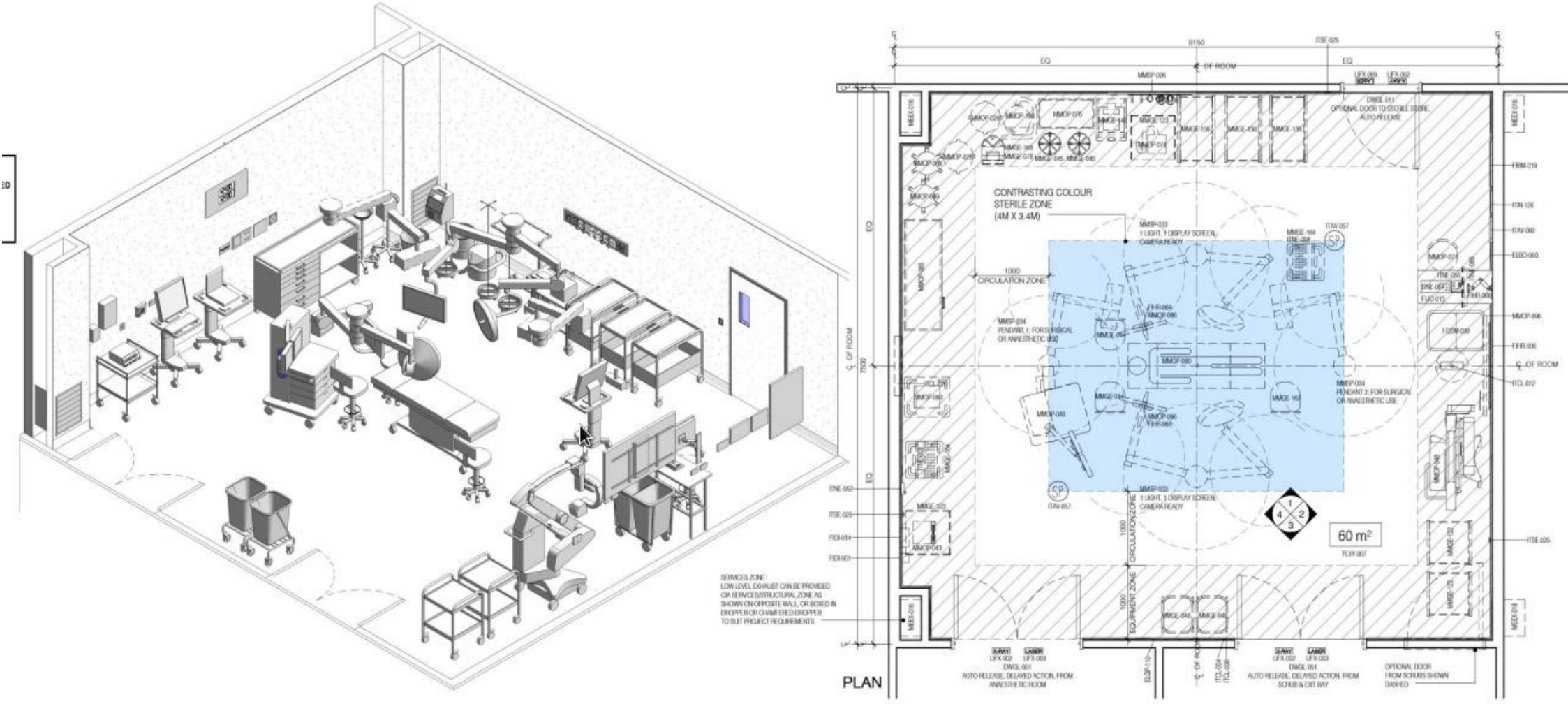
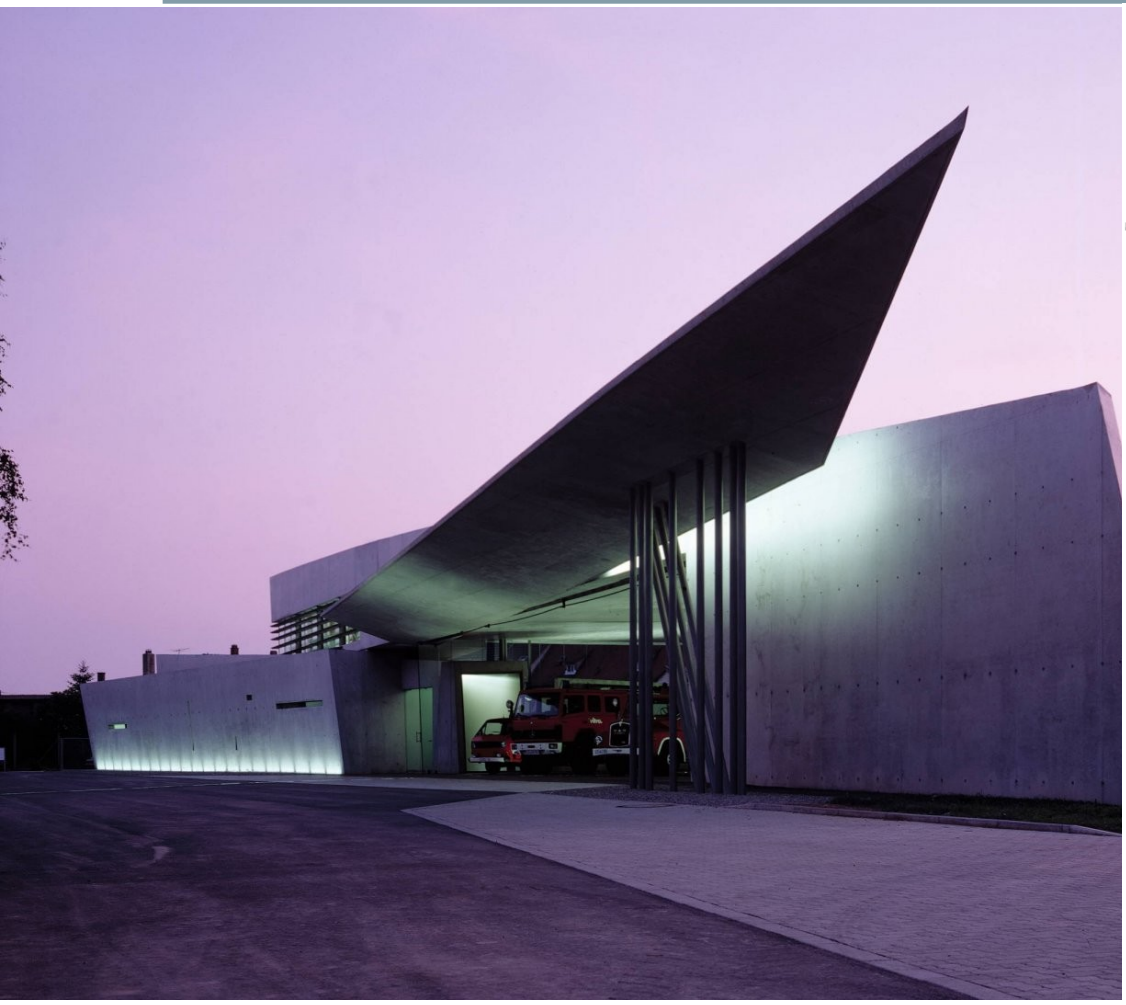
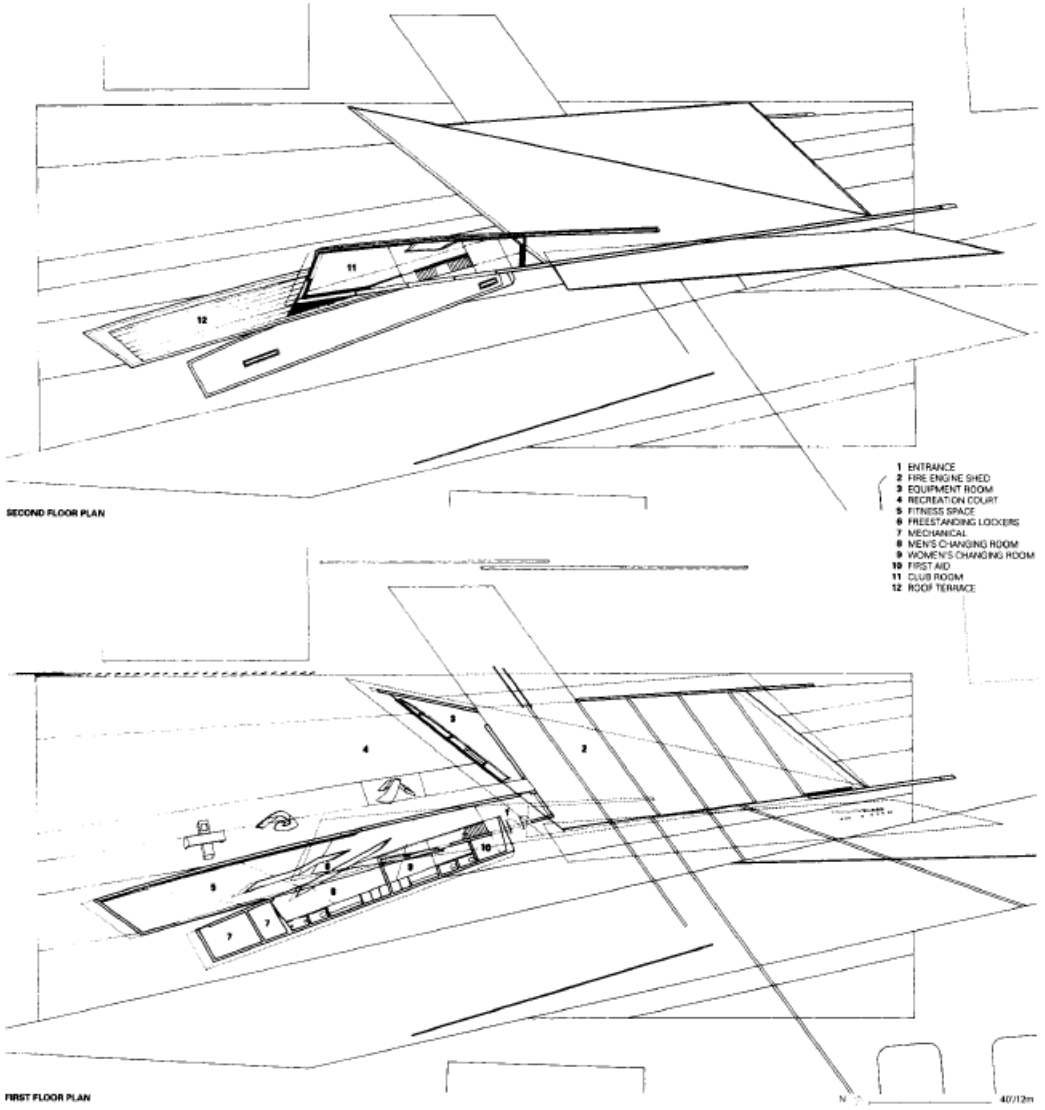


Fig 8: operation theatre

Function-form aspects - Exceptions



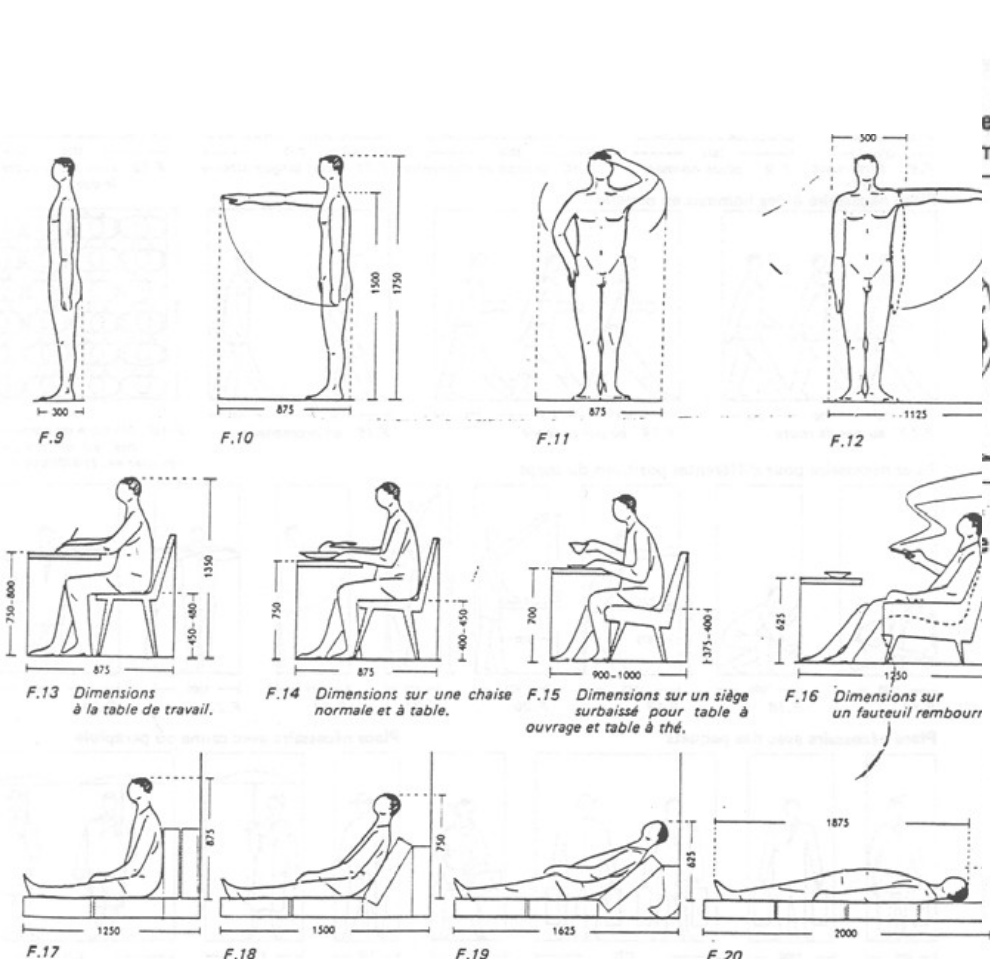


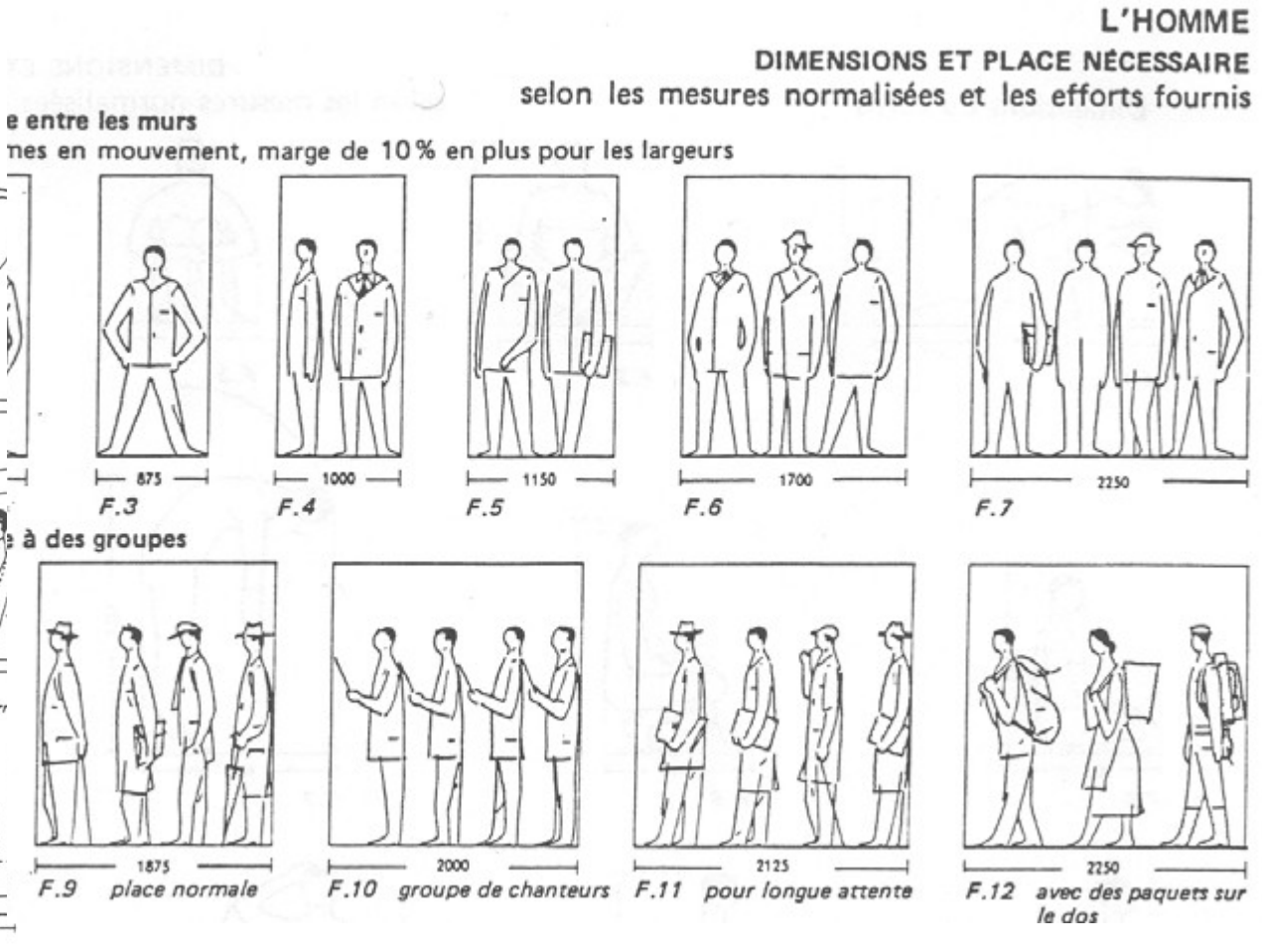
Fire station in Vitra – Germany. Zaha Hadid (1993)

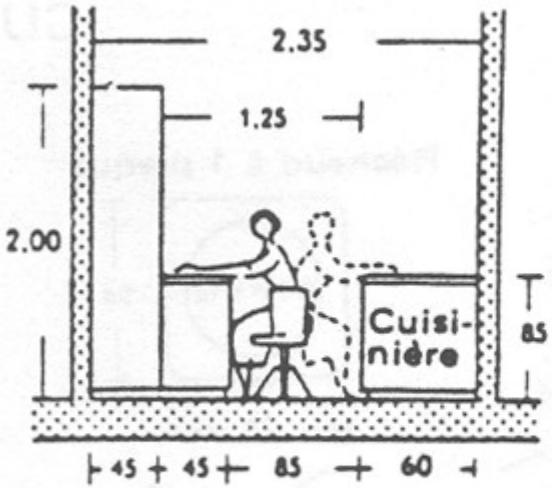
The First project designed by British-Iraki Architect Zaha Hadid was a fire station in Vitra (Germany). After years of use, the project was became to be used only for artistical exhibitions and events since it turned out that the project was difficult to use as a fire station due to its uncommon sharp form. Exceptional!

Function and ergonomics

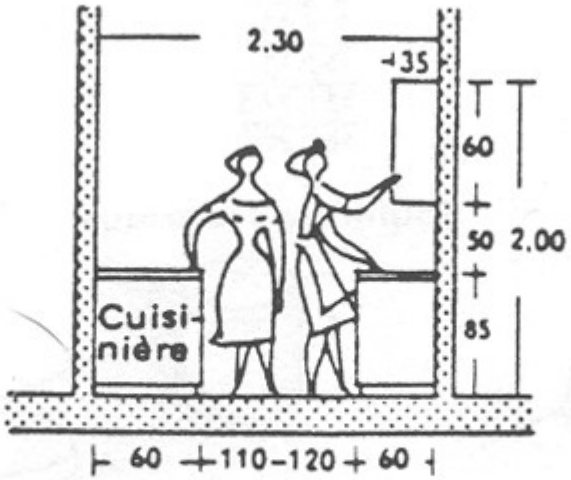
- Ergonomics relate to designing environments and systems with respect of safety, health, and well-being in architectural space.



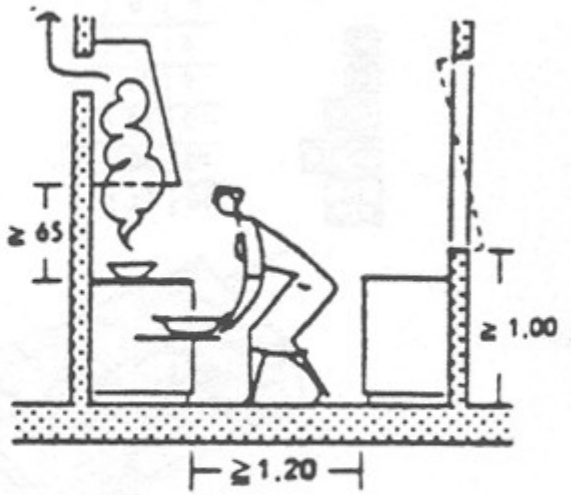




F.1 *Coupe de la cuisine d'une grande maison, dans laquelle deux femmes peuvent travailler en même temps.*

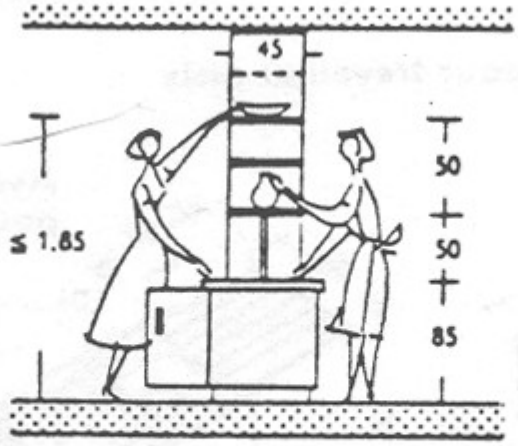


F.2 *Coupe de la cuisine d'une petite maison où la ménagère et la femme de ménage trouvent leur place.*

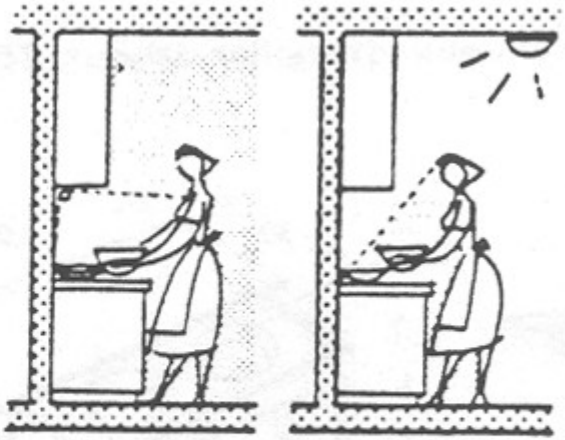


F.3 *Les cuisinières basses exigent beaucoup de place pour les mouvements. Disposer une hotte au-dessus de la cuisiniere.*

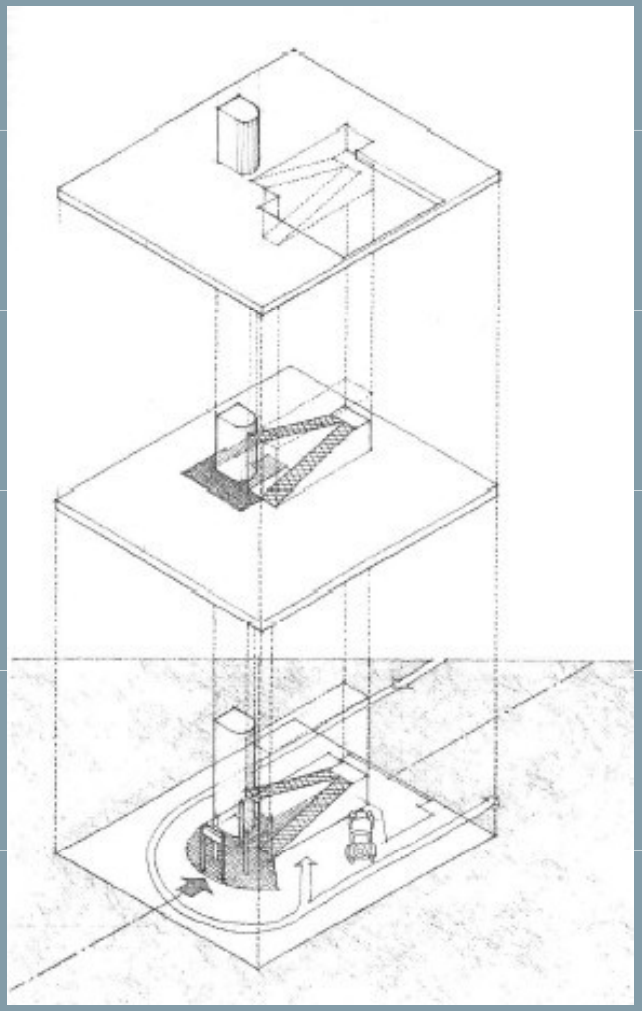
F.5 *Prévoir dans la cuisine une place où la ménagère puisse travailler assise. De préférence avec tablette de travail tirable, tiroirs et planche à découper.*



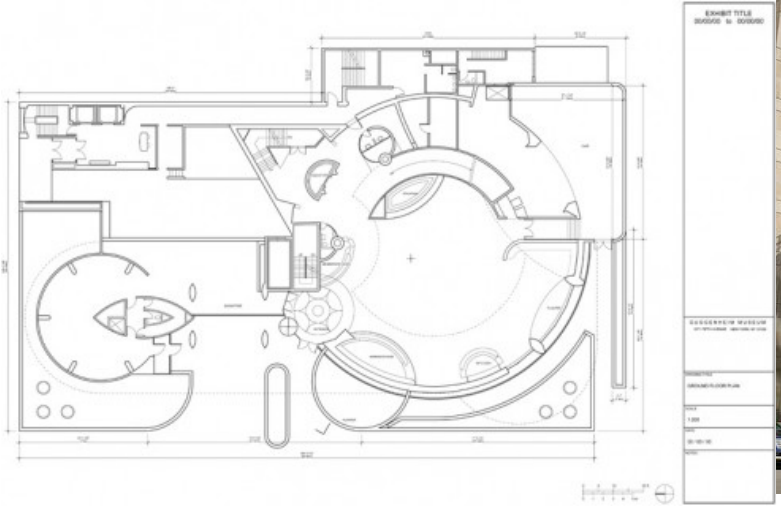
F.6 *Dressoir entre cuisine, laverie ou office et coin salle à manger ou salle à manger, supportant la vaisselle et accessible des deux côtés.*



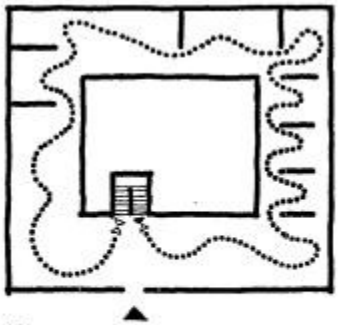
F.7 *Bon et mauvais éclairage de cuisine.*



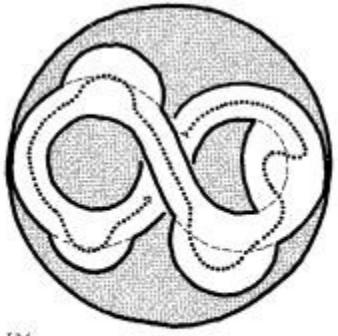
- Circulation system
- The staircases and rompe penetrate the volume to link the levels and allow the user to discover the different floors of the building.



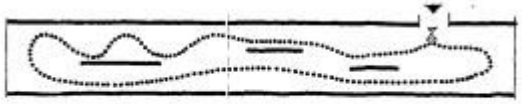
Paths and spatial sequences patterns in museums



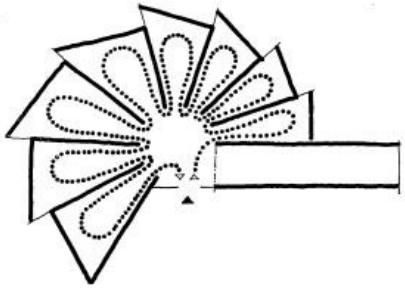
123
Ruban de présentation (*Präsentations-Band* = espace en forme de bande droite, sinueuse ou brisée) en ligne brisée, autour d'un hall central ; accès par un escalier central qui relie entre eux les divers niveaux.



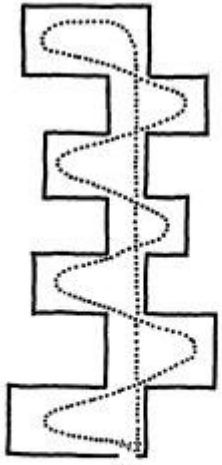
124
Bande d'espace, entrelacée, le plus souvent sous forme de rampe, visant à compenser les contraintes de la présentation par l'expérience vécue que constitue le parcours. Plan schématique.



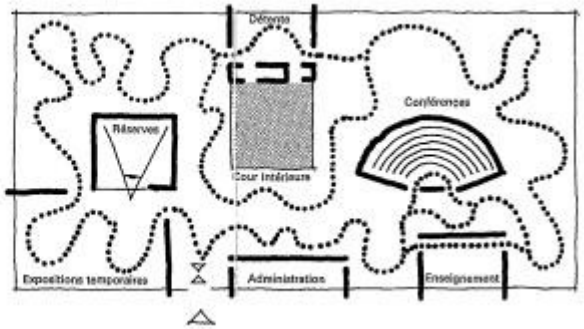
122
Circuit rectiligne.



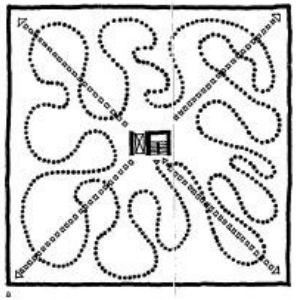
125



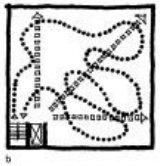
125
Disposition en dents de peigne avec accès par une extrémité. Voie d'accès axiale le long de laquelle s'offrent des surfaces d'exposition plus ou moins grandes. Plan schématique.



133
Secteurs spéciaux intégrés dans un petit musée. Étant donné qu'une vue d'ensemble est possible, il n'y a pas lieu d'établir une séparation stricte entre les fonctions. Plan schématique.

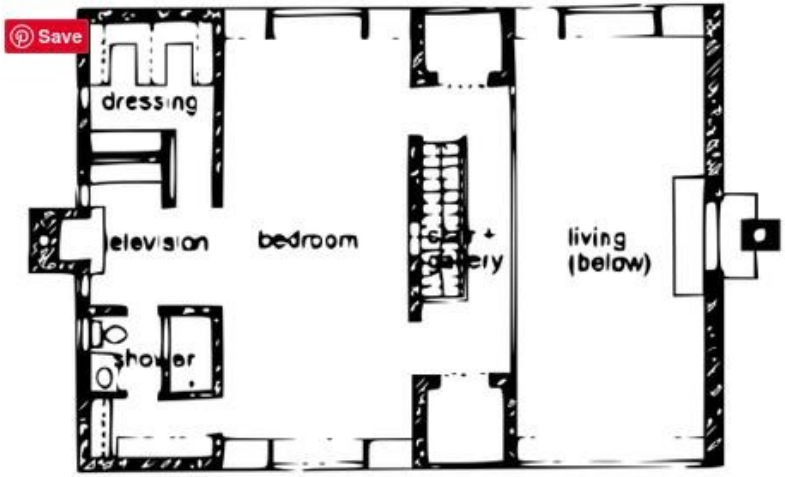


130a, b
Disposition en bloc. Plan schématique. Il convient de distinguer : *a*) le grand bloc, qui offre le maximum de variantes si le point d'accès est central et où la flexibilité n'est pas limitée grâce au large espace disponible ; *b*) le petit bloc, où le point d'accès est placé sur le côté pour ne pas réduire la disponibilité de l'espace limité.

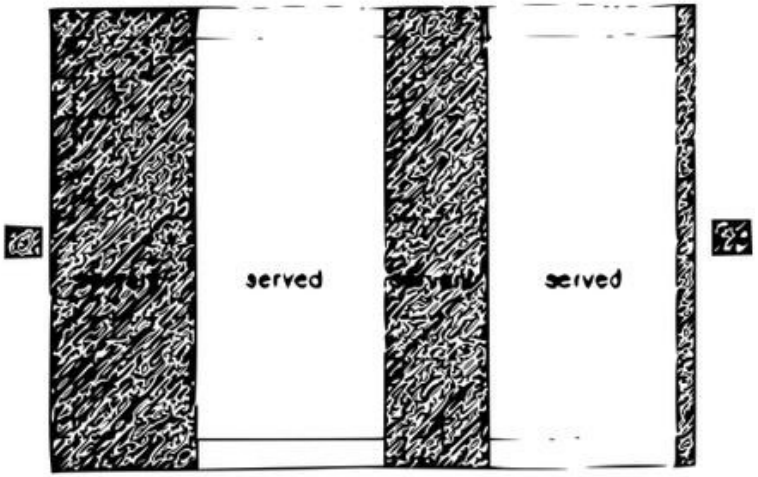


Spatial sequences and circulation in museums

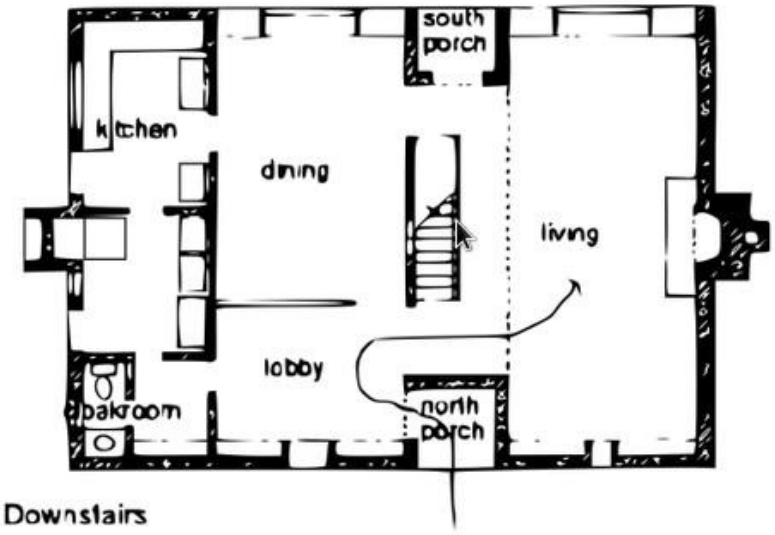
Circulation system-Serving & Servant spaces



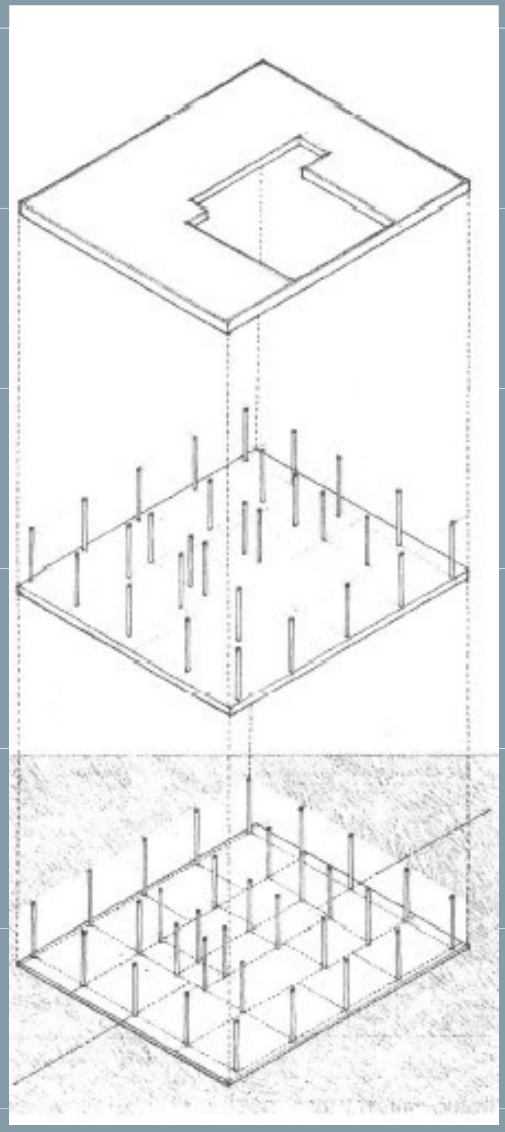
4 Upstairs.



6 Simplified plan - parallel walls



5 Downstairs

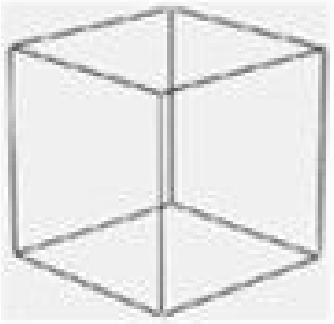


¬ٱStructural system

Grid of posts and beams supporting floors

ON THE MATERIALIZATION

OF A CUBE



POST AND BEAM STRUCTURES

LOAD-BEARING WALLS

SKELETON

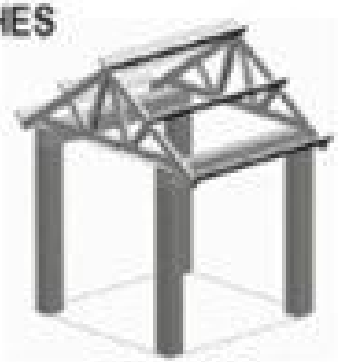
TENSILE STRUCTURES

MEMBRANES AND TENTS

ARCHES

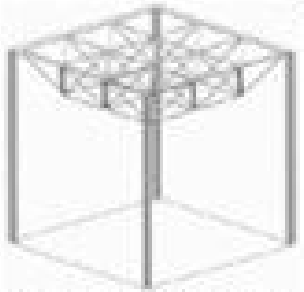
VAULTS

DOMES



TRUSSES

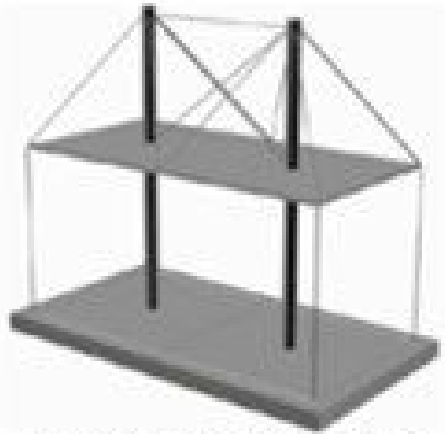
PORTAL FRAMES



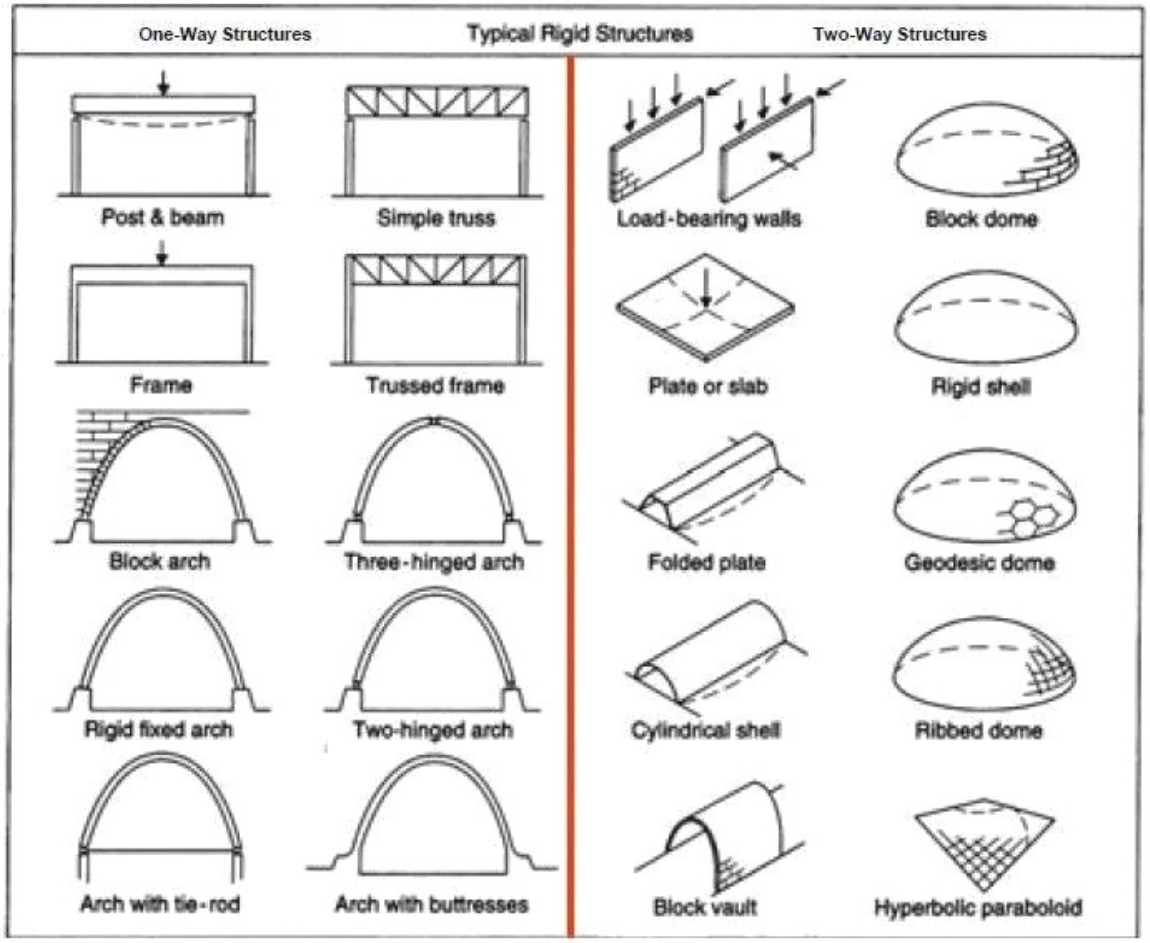
SPACE FRAME

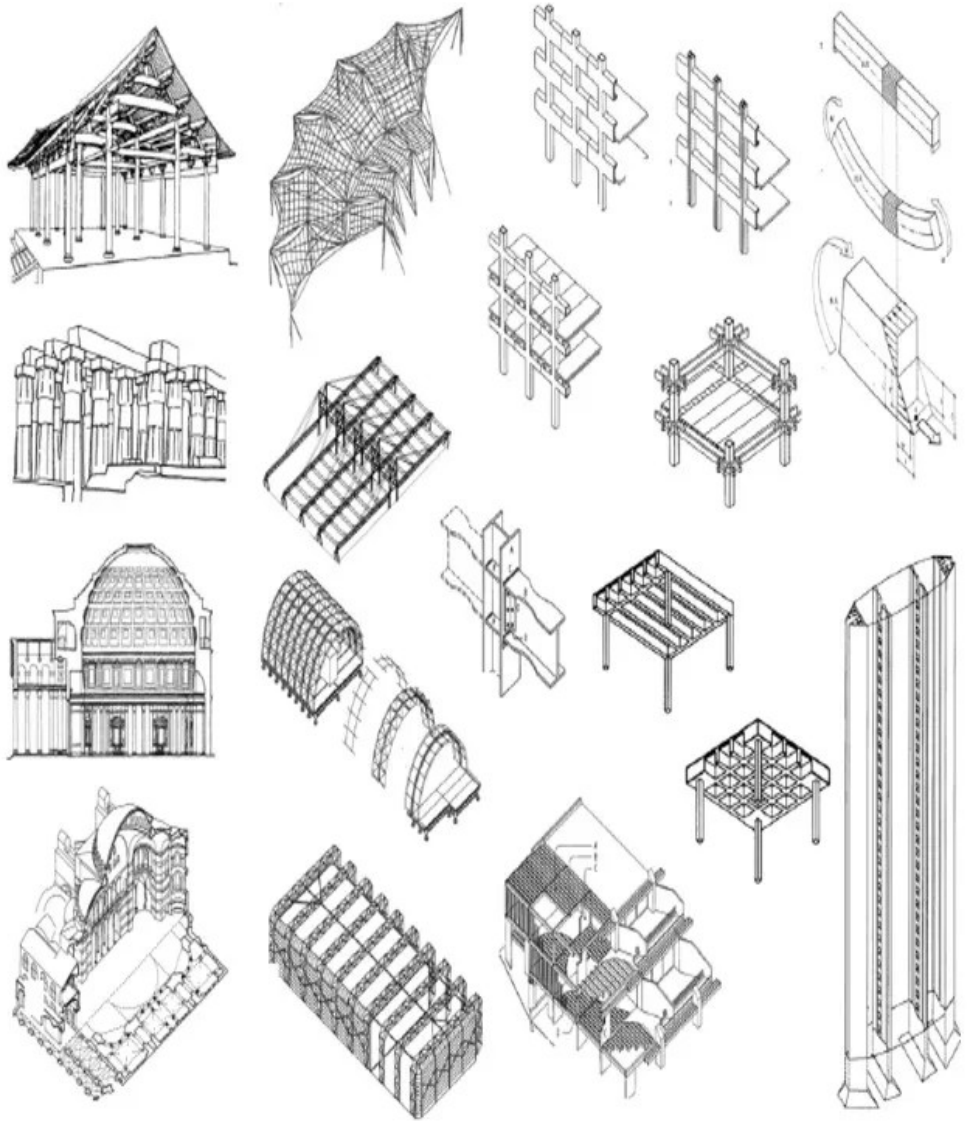
FOLDED ROOF

SHELLS

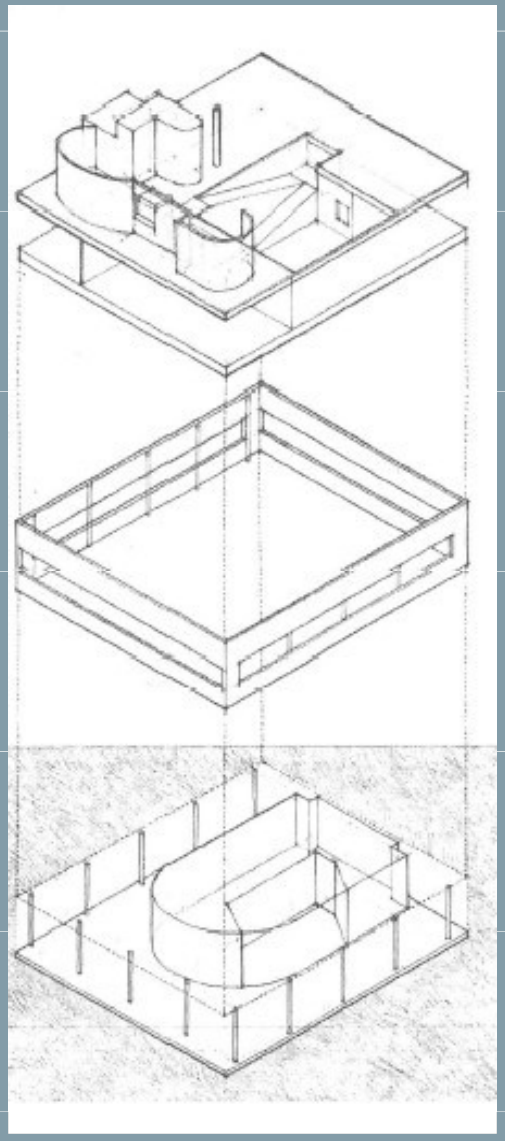


MASTED STRUCTURES

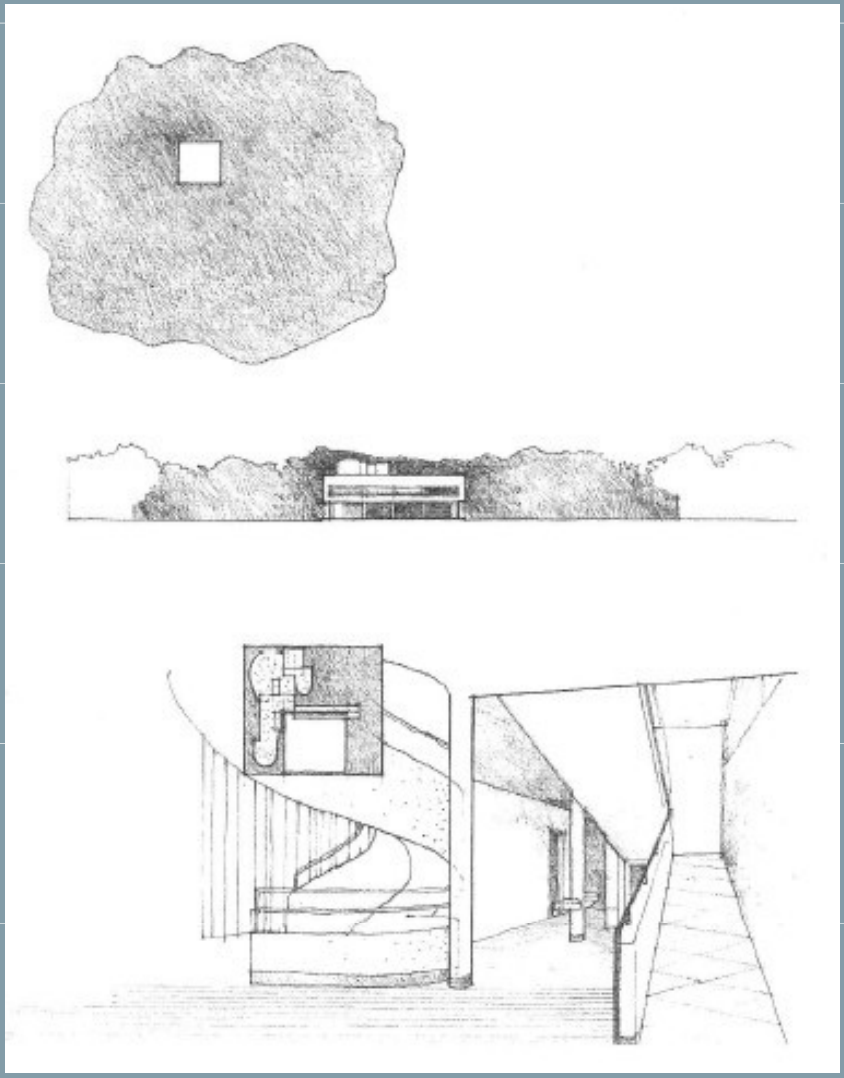




Structures in Architecture G G Schierle

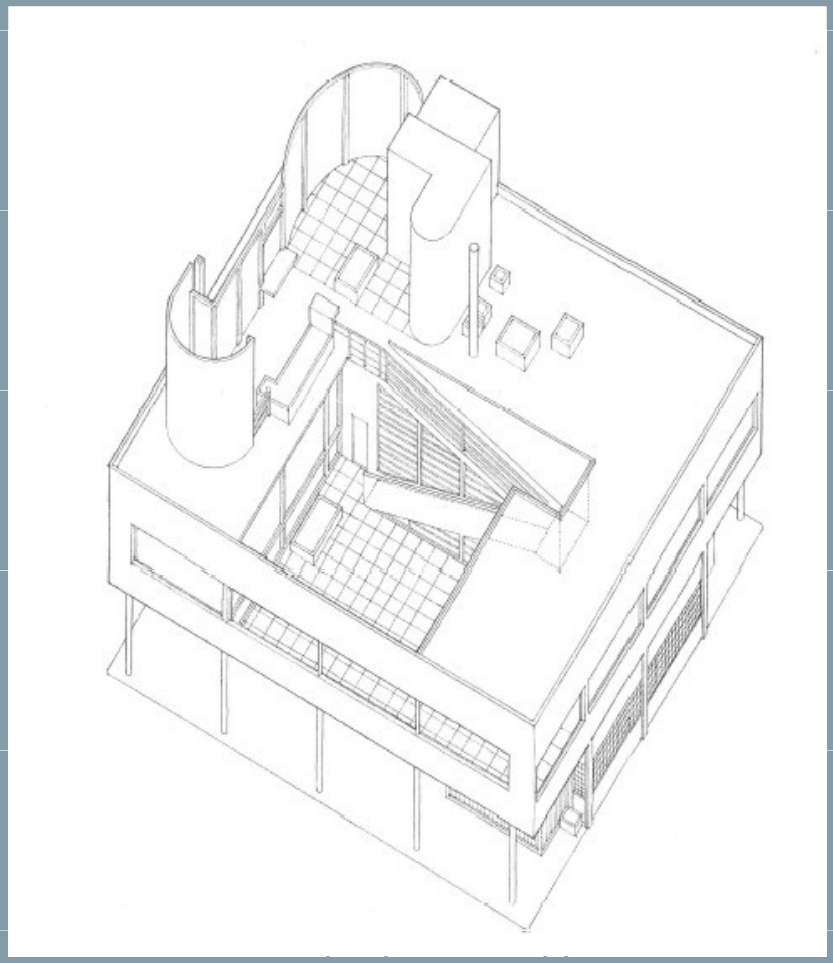


- Enclosure system
- Vertical flat walls that define a regular parallelepiped containing the programme and spaces



- Context
- A simple exterior shape that determines the organisation of complex interior spaces
- Raising the first floor provides a better view and protects the building from ground humidity

Villa Savoye Le Corbusier 1921-1933



- The result:
  - A square geometric configuration that integrates a complex organization at its heart, on a family housing scale. Unity of the building with its surroundings