

Drawings, Diagrams, sketches

Diagrams are **essential representations for thinking, problem solving, and communication** in the design disciplines, in particular those concerned with **making physical form: mechanical and civil engineering, graphic design, and architecture and physical planning.**

In architecture:

- ❑ drawings are the **primary form of representation**
- ❑ they **carry a design from conception to construction**
- ❑ Except for physical models (which can be considered a kind of three-dimensional drawing) **all external design representations** in architecture are **drawings.**

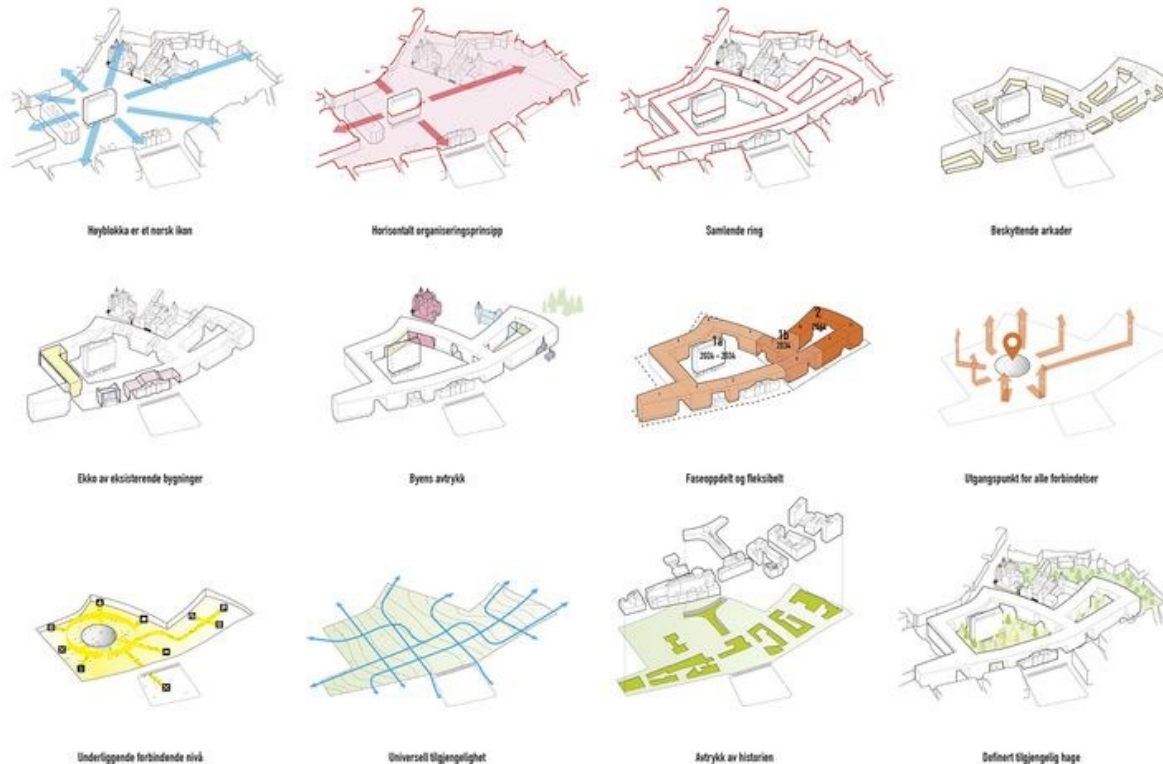
In the **early phases** of designing, **architects** draw **diagrams** and **sketches** to **develop, explore,** and **communicate ideas and solutions.**

Drawings, Diagrams, sketches

Architectural design is ultimately about the **configurations, connections, shape, and orientations of physical forms**.

Even the most **abstract design diagrams** are **early efforts** to **explore** and **resolve spatial layout concerns**.

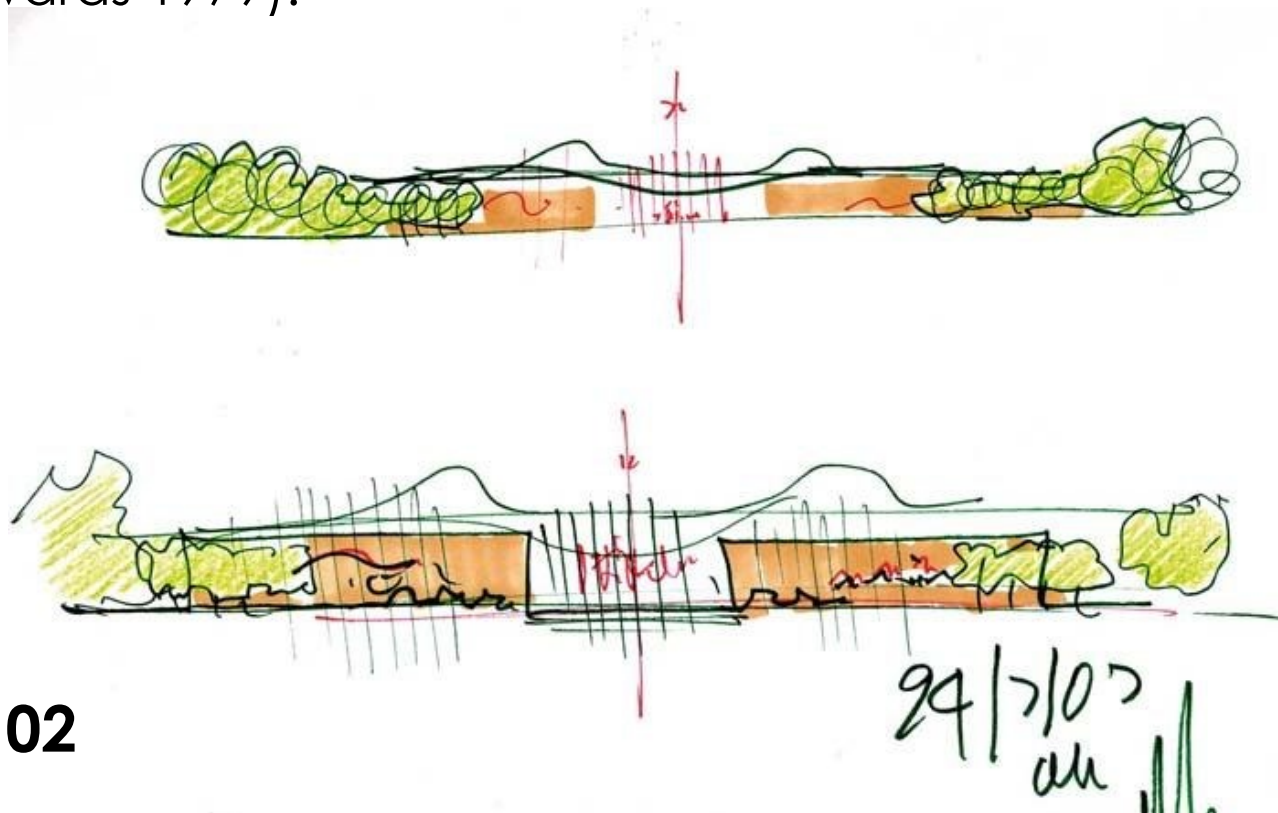
Architectural diagrams **represent not only physical elements**, but also **forces and flows** (e.g., forces of **sun** and **wind** and flows of **people** and **materials**).



Drawings, Diagrams, sketches

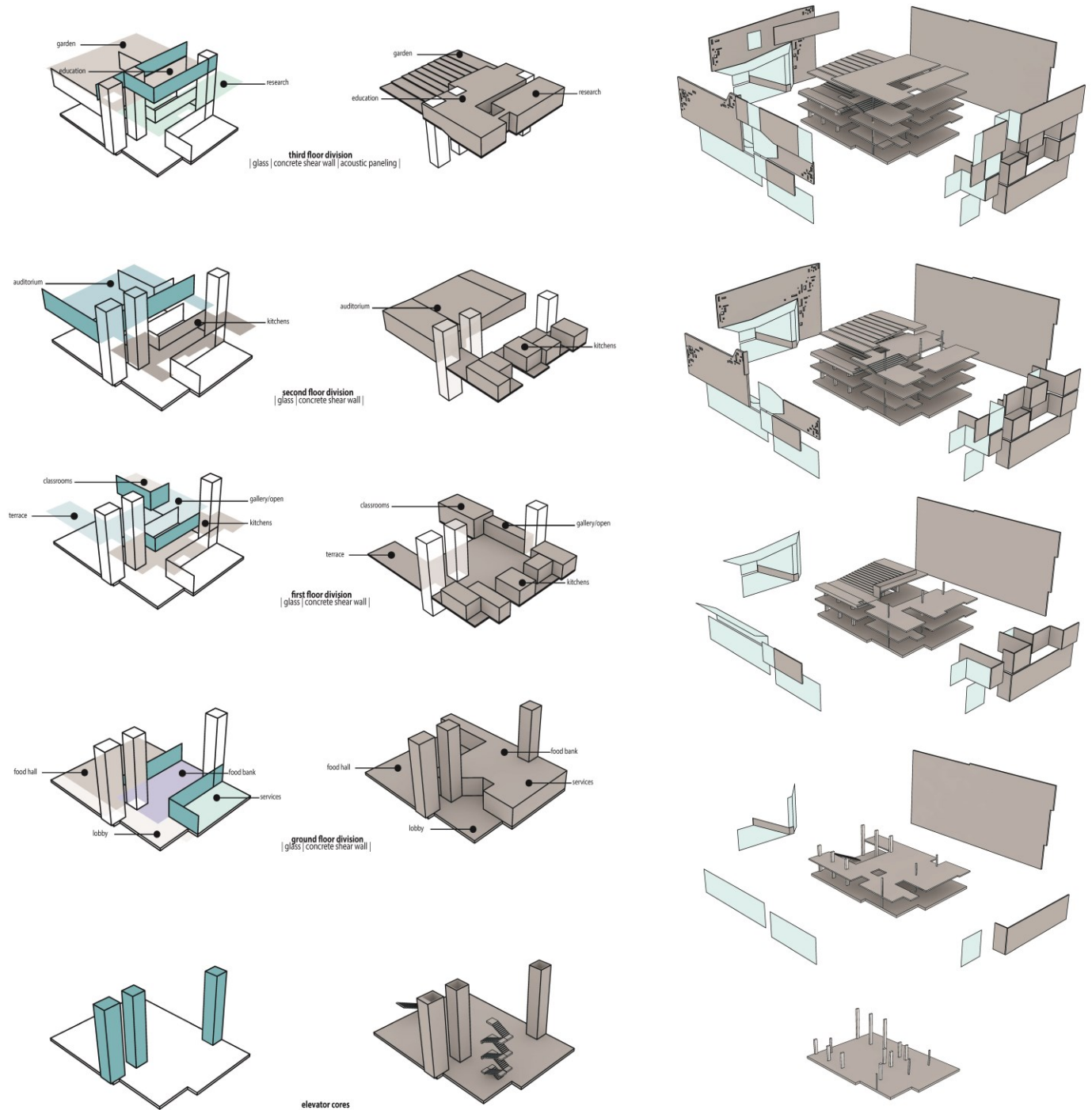
Thus **arrows, lines, and other symbolic representations of forces and flows** appear in architectural diagrams **conveying spatial characteristics** such as **magnitude and direction**.

Design drawing, an **iterative and interactive act**, involves **recording ideas, recognizing functions, and finding new forms** and **adapting** them into the **design**. Thus drawing **is not** only a vehicle for **communication with others**; it helps **designers see and understand** the forms they work with (Edwards 1979).



A diagram is **made of symbols** and is **about concepts**.

It is **abstract** and **propositional**: its **elements** and **spatial relations** can be **expressed** as a **set of statements**.



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It **explores, explains, demonstrates, or clarifies relationships among parts** of a **whole** or it **illustrates how something works** (a **sequence of events, movement, or a process**).

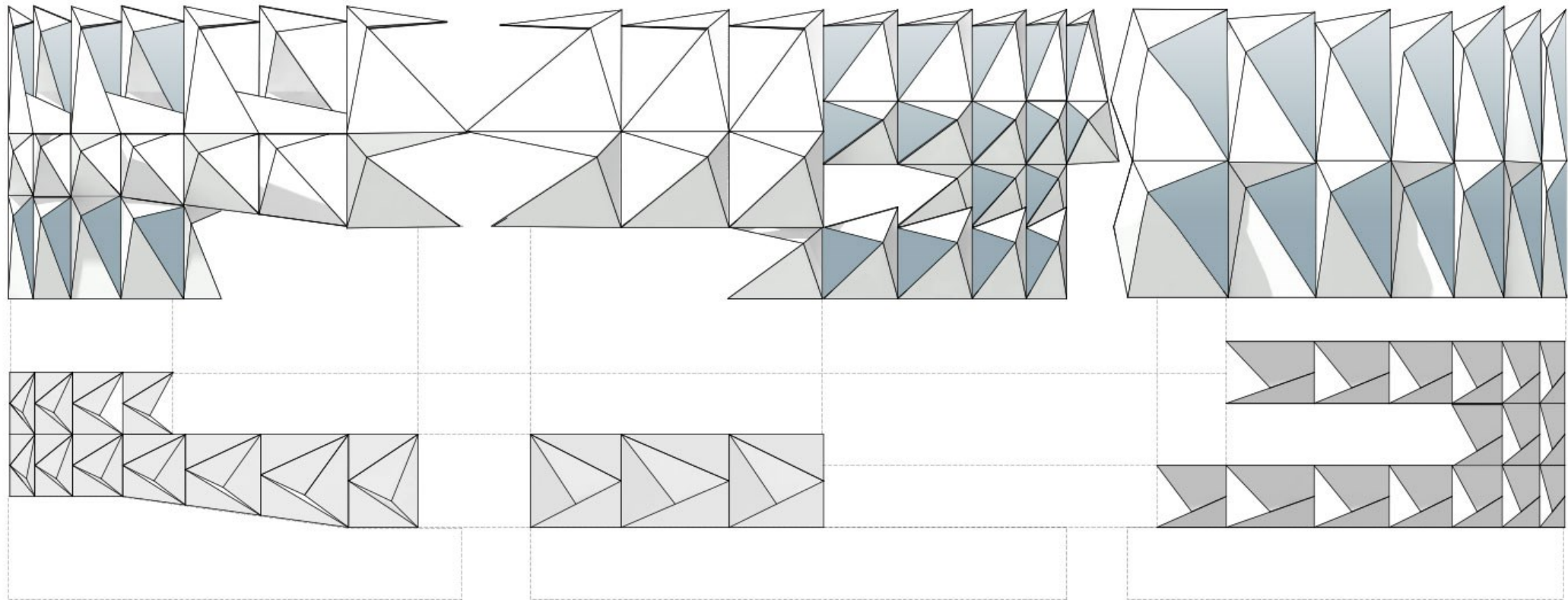
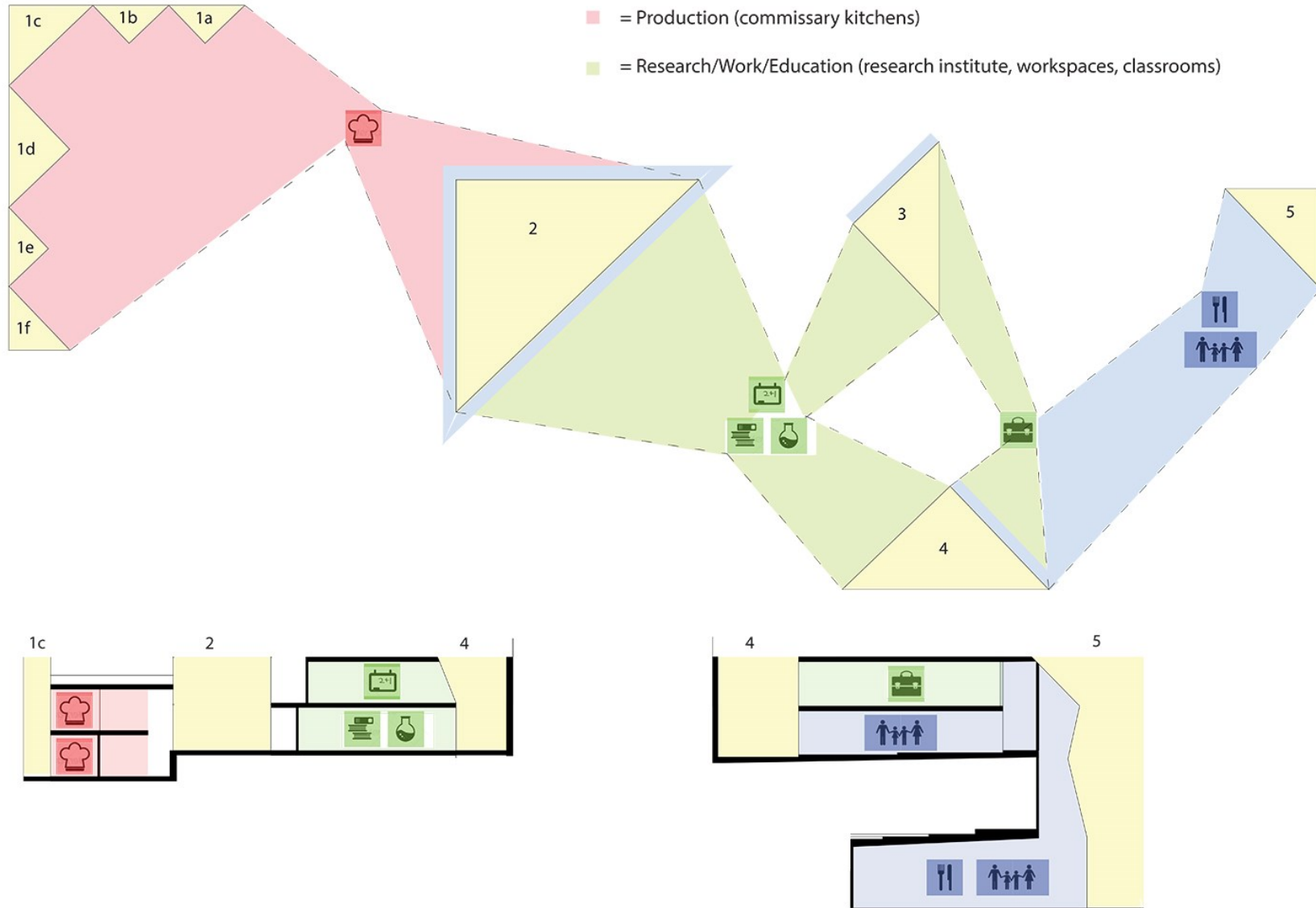


Diagram: Courtyards + Program Visual /Social Connections

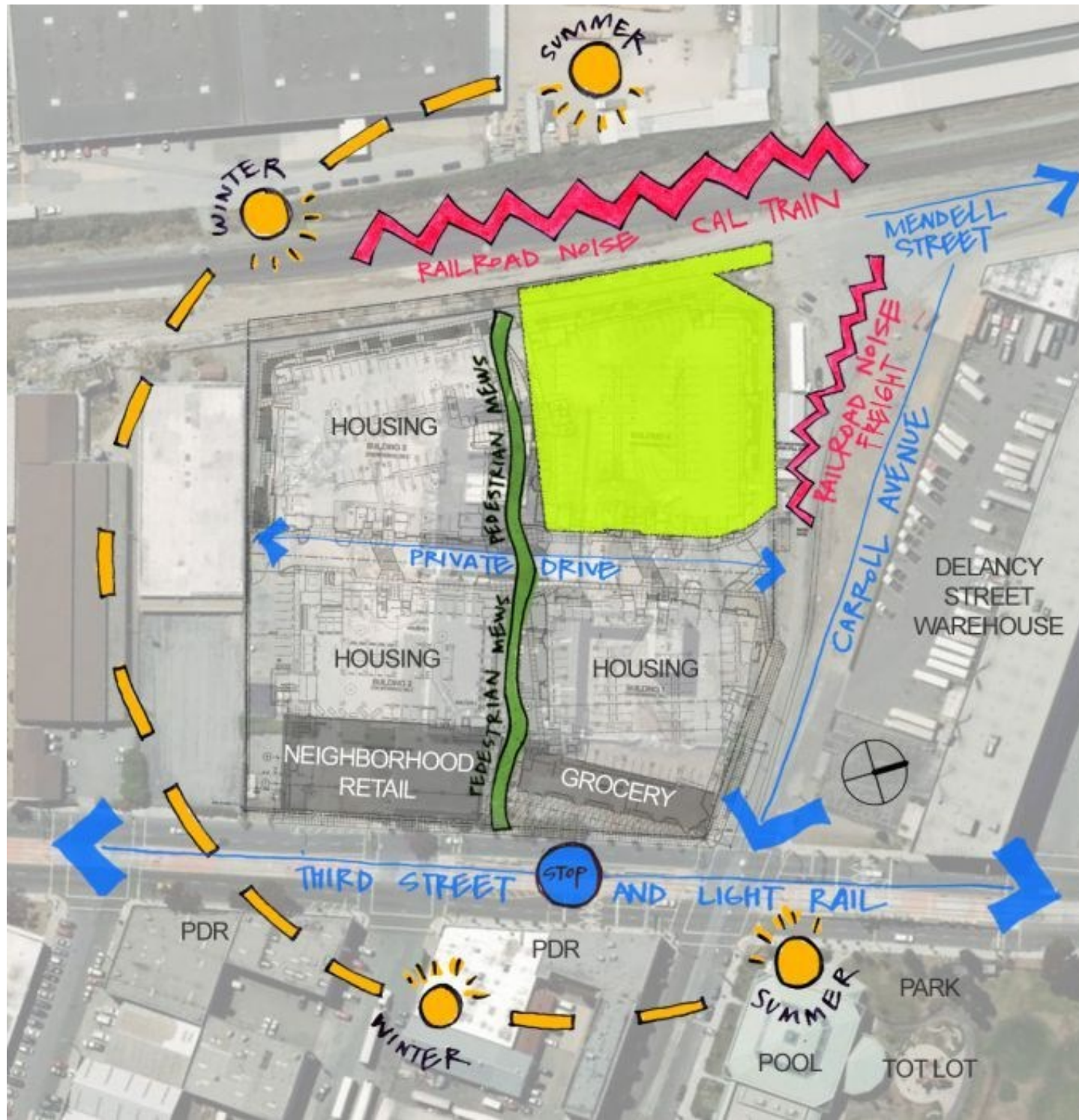
Program

- = Consumption (food hall, gallery, auditorium, public open space and circulation)
- = Production (commissary kitchens)
- = Research/Work/Education (research institute, workspaces, classrooms)

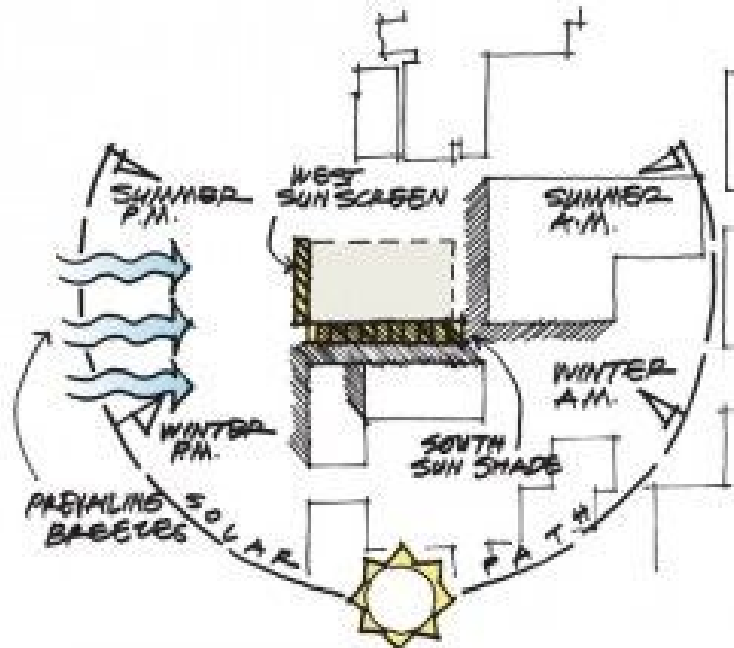


Its **symbols** may represent **objects** (e.g., a space or a piece of furniture) or **concepts** (e.g., service area, a **buffer zone**, **accessibility** or **noise**). For example, an **arrow** indicates the **magnitude** and **direction** of a **force**; a **line** indicates the **ground without** specifying material or exact location.

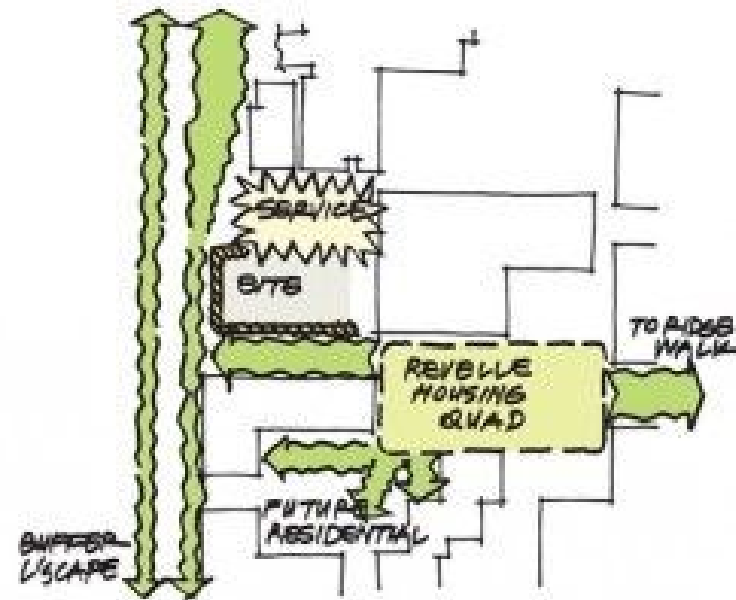
How to present your Analysis



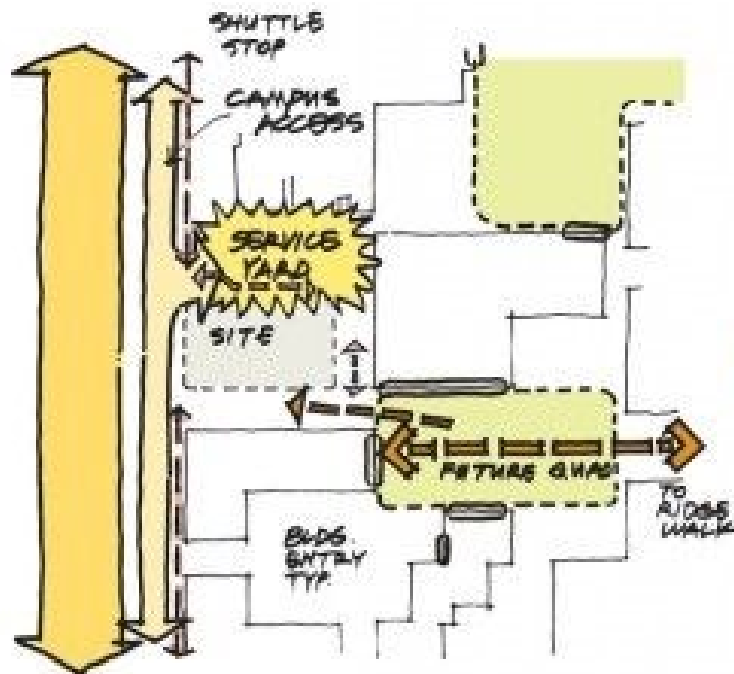
How to present your Analysis



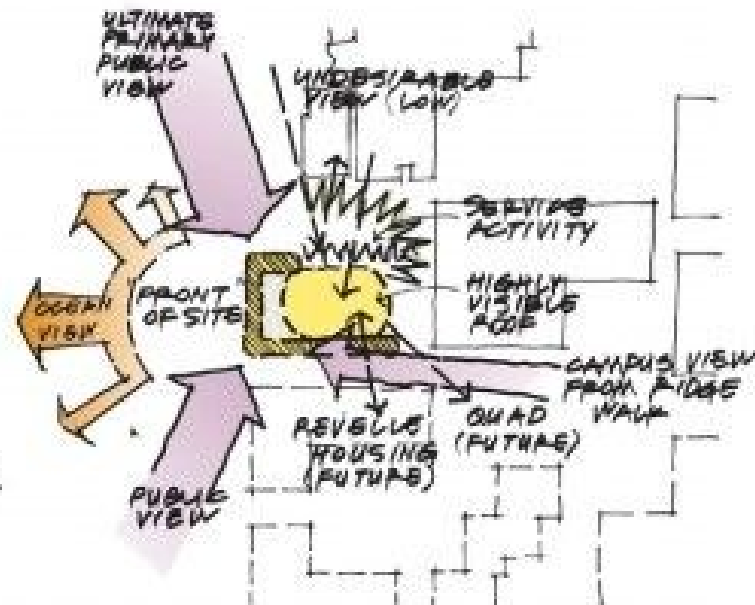
AMBIENT CONDITIONS



OPEN SPACE

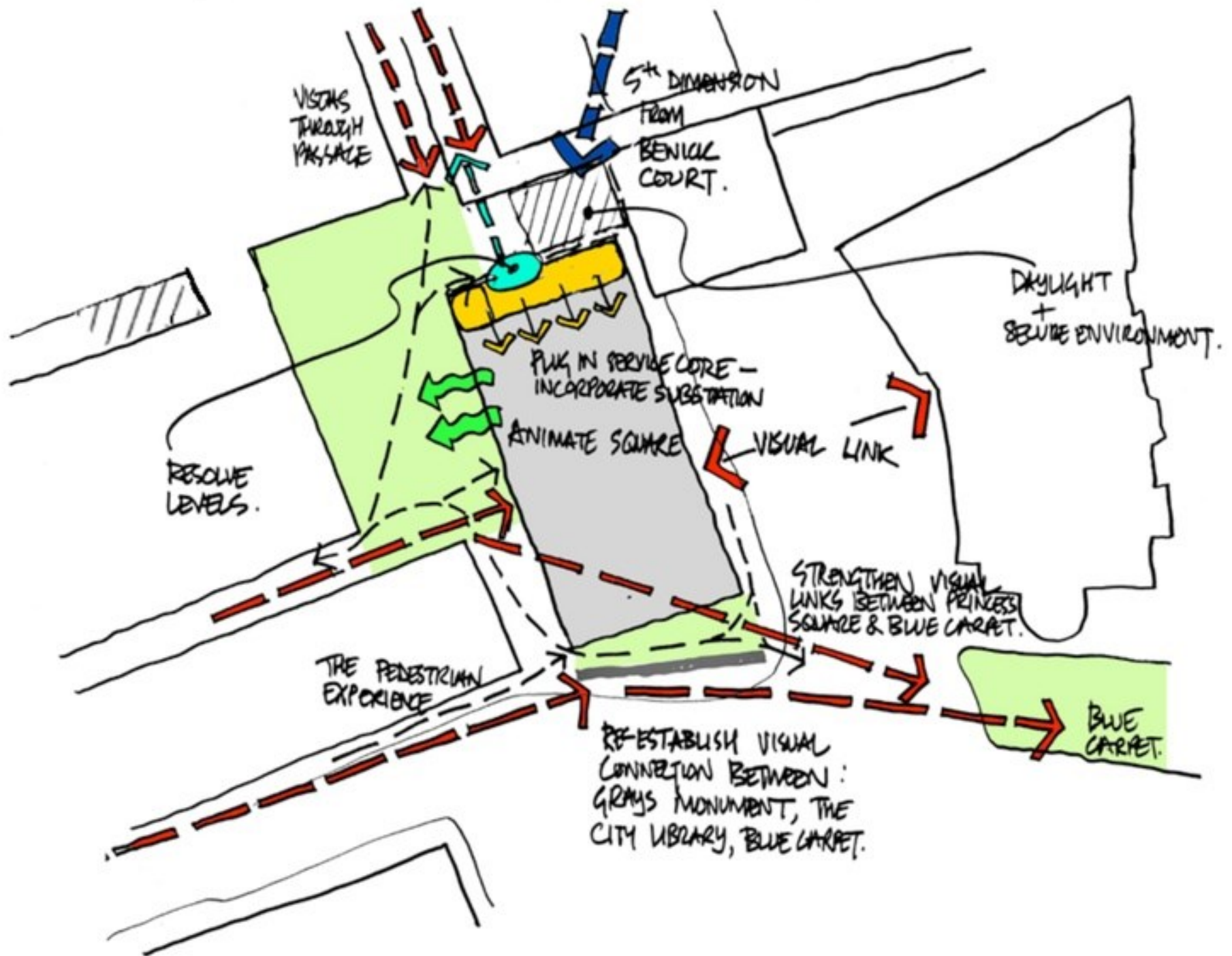


PEDESTRIAN & VEHICULAR CIRCULATION

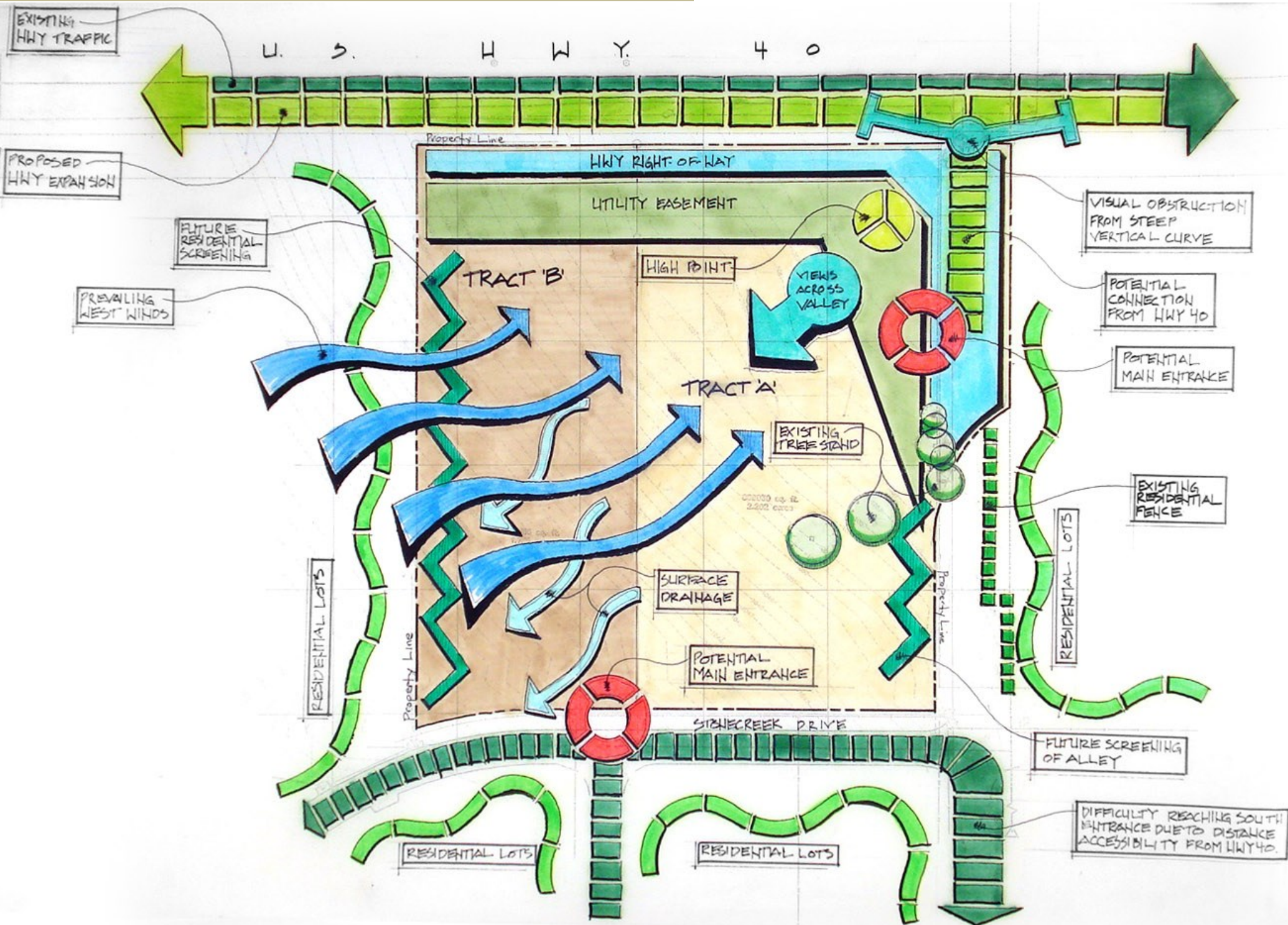


VIEWS

How to present your Analysis

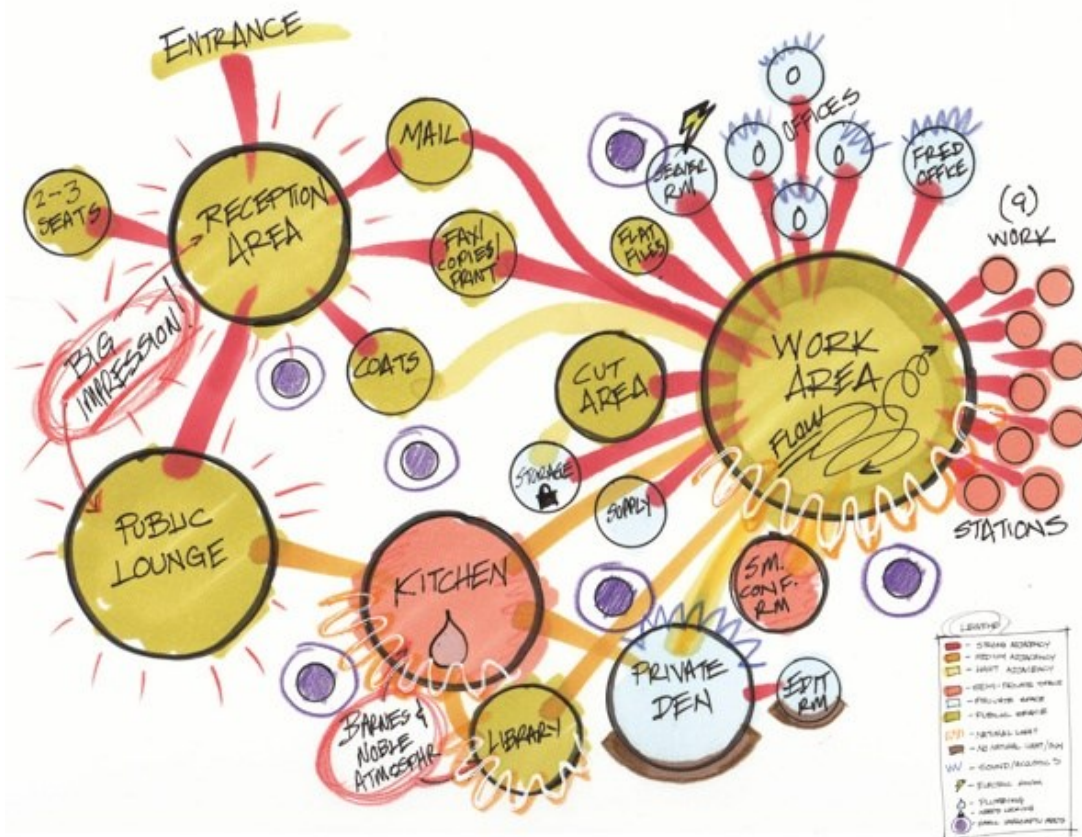


How to present your Analysis



Drawings, Diagrams, sketches

- ❑ A diagram **omits detailed scale or realistic pictorial representations**
- ❑ it indicates **spatial relationships** only **approximately** using **indefinite shapes**.
- ❑ For example, a diagram may represent functional spaces in a floor plan as crude '**bubbles**', showing only **sizes, adjacencies, containment, and connections**.



Drawings, Diagrams, sketches

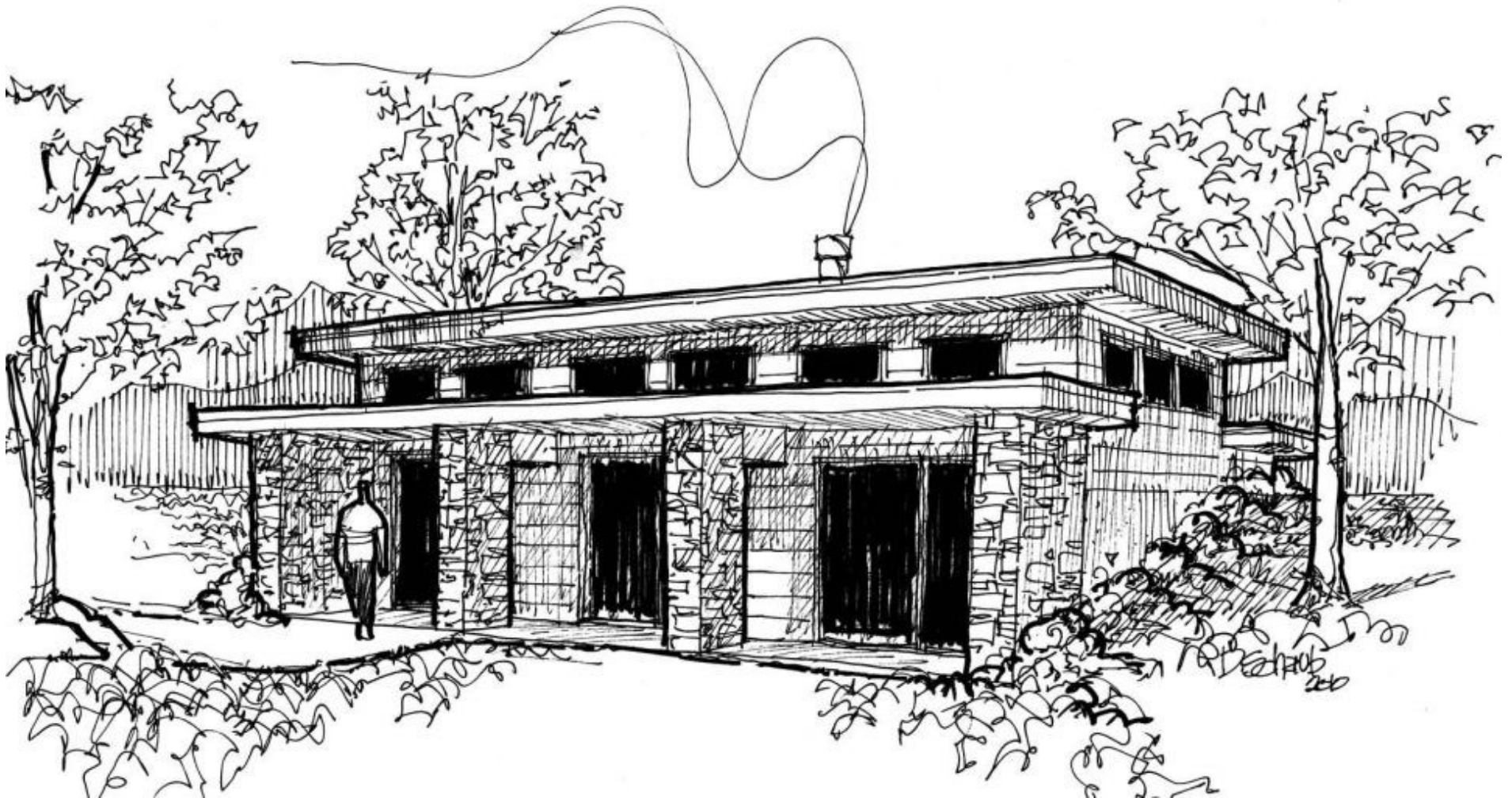
A **sketch**, in contrast, is about **spatial form**.

It is **executed** with a **finer resolution** that indicates **attributes of shape**.



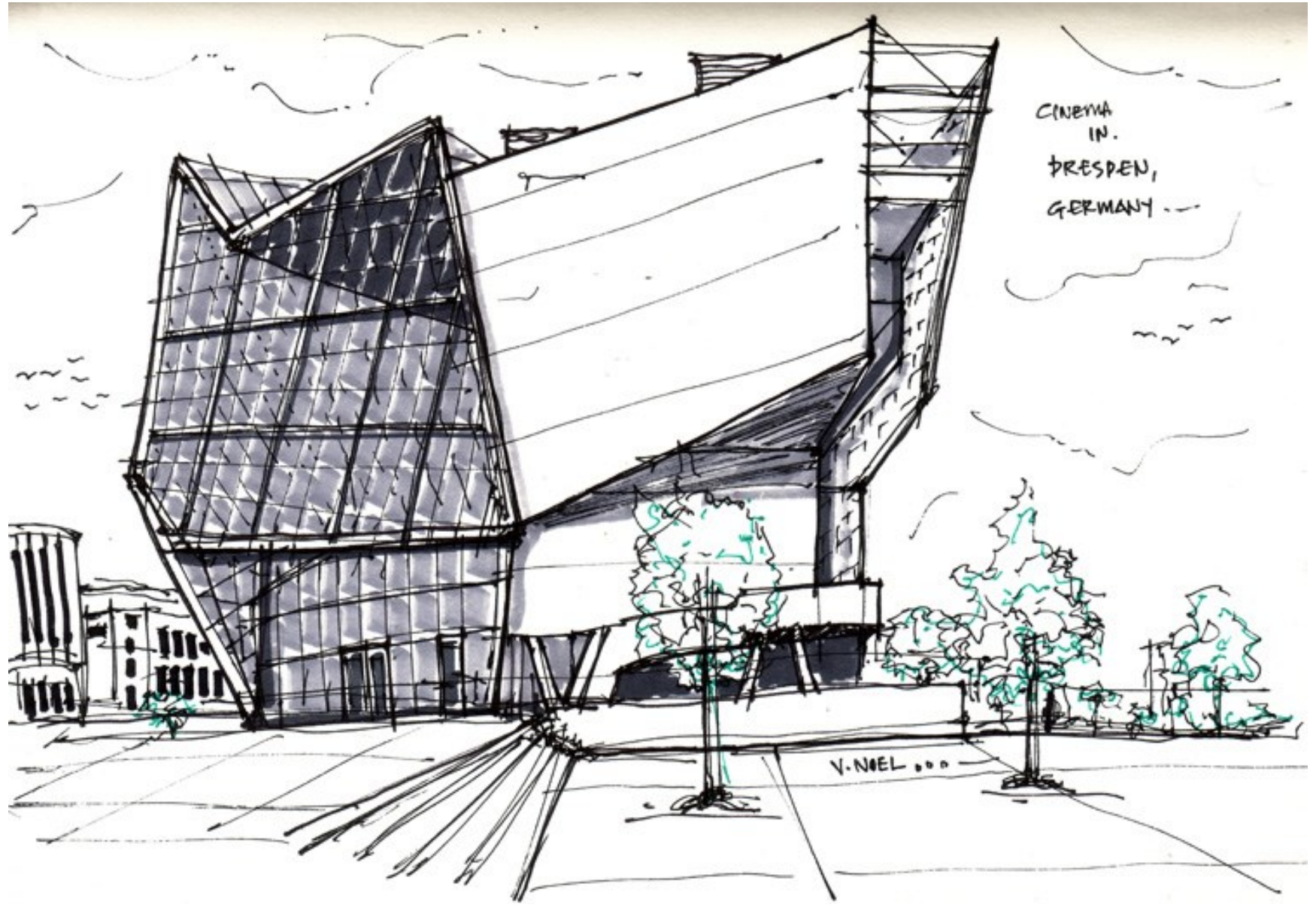
Drawings, Diagrams, sketches

A sketch often **comprises repetitive overtraced lines** made to explore **precise shape**, rather than the **intentionally abstract shapes of a diagram**, and it uses **graphic modifiers** such as **tone and hatching** to **convey additional information**.



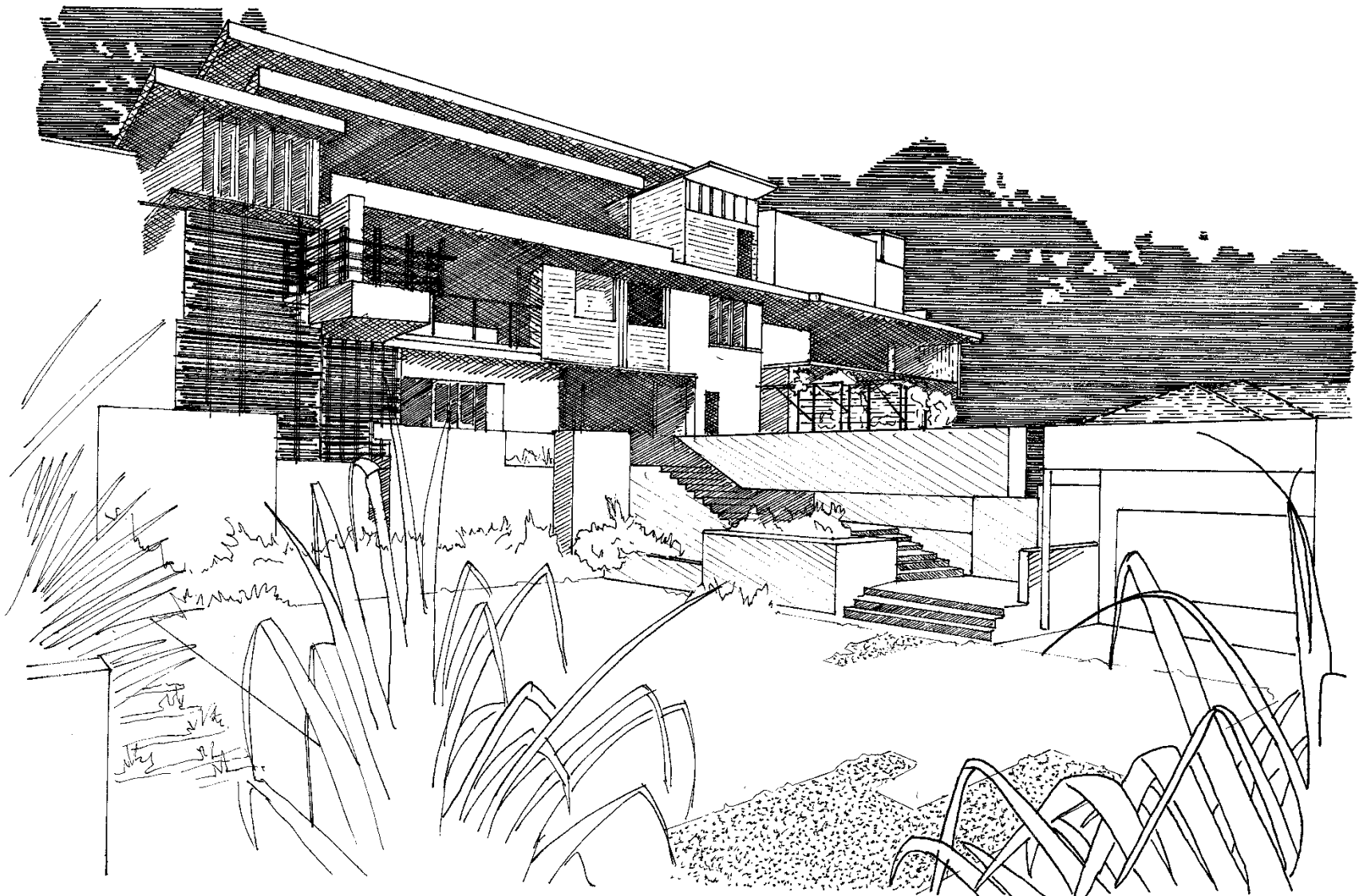
Drawings, Diagrams, sketches

For example, a plan or elevation sketch may **explore the proportions of a building.**



Drawings, Diagrams, sketches

A **perspective sketch** provides **three dimensional information** about a **scene**, specifying the **shape of physical elements** and **visual appearance** from some **location**.



Although a sketch falls short of precisely determining positions, dimensions, and shapes, it often provides more detailed information than a diagram.

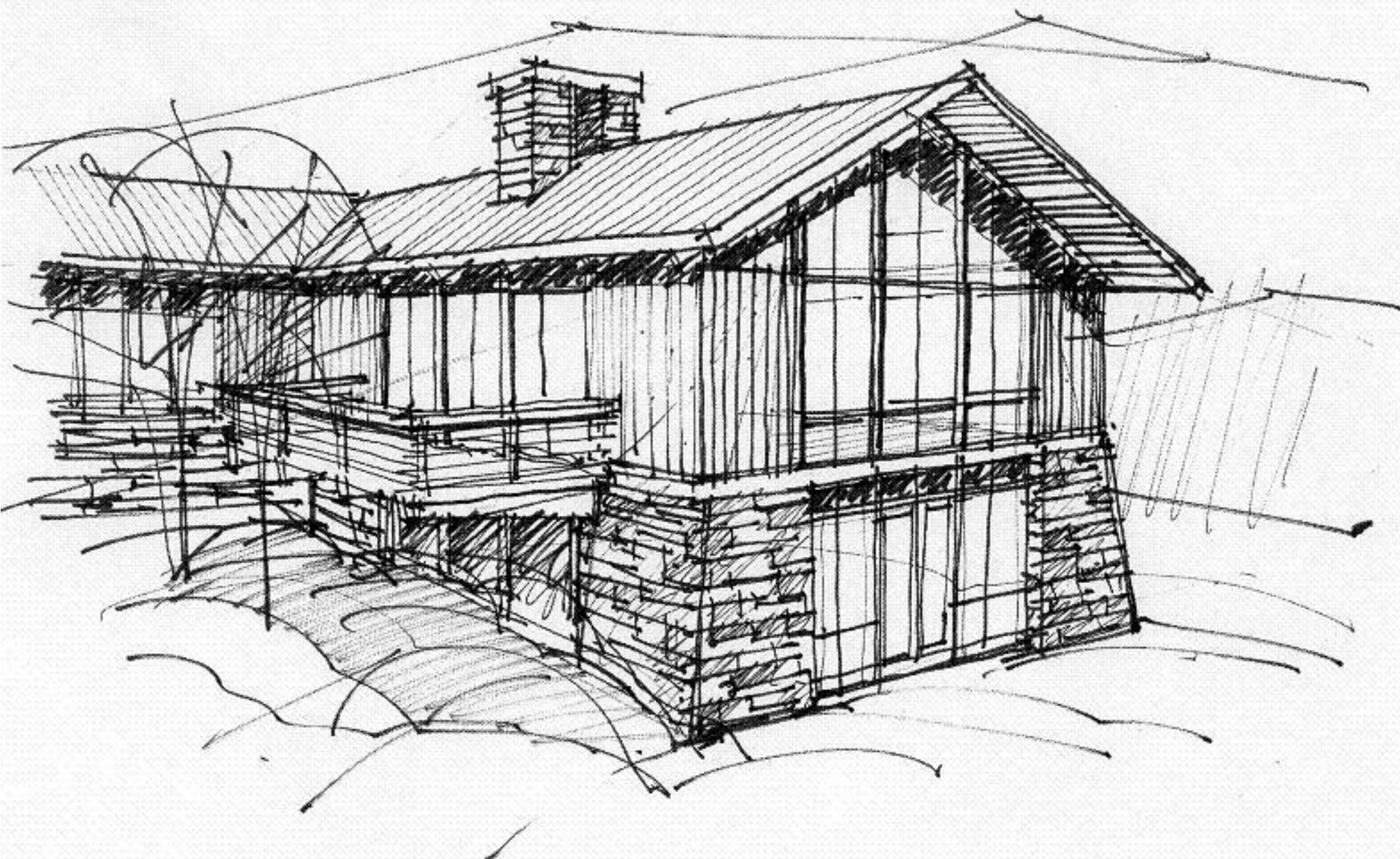
Video 04



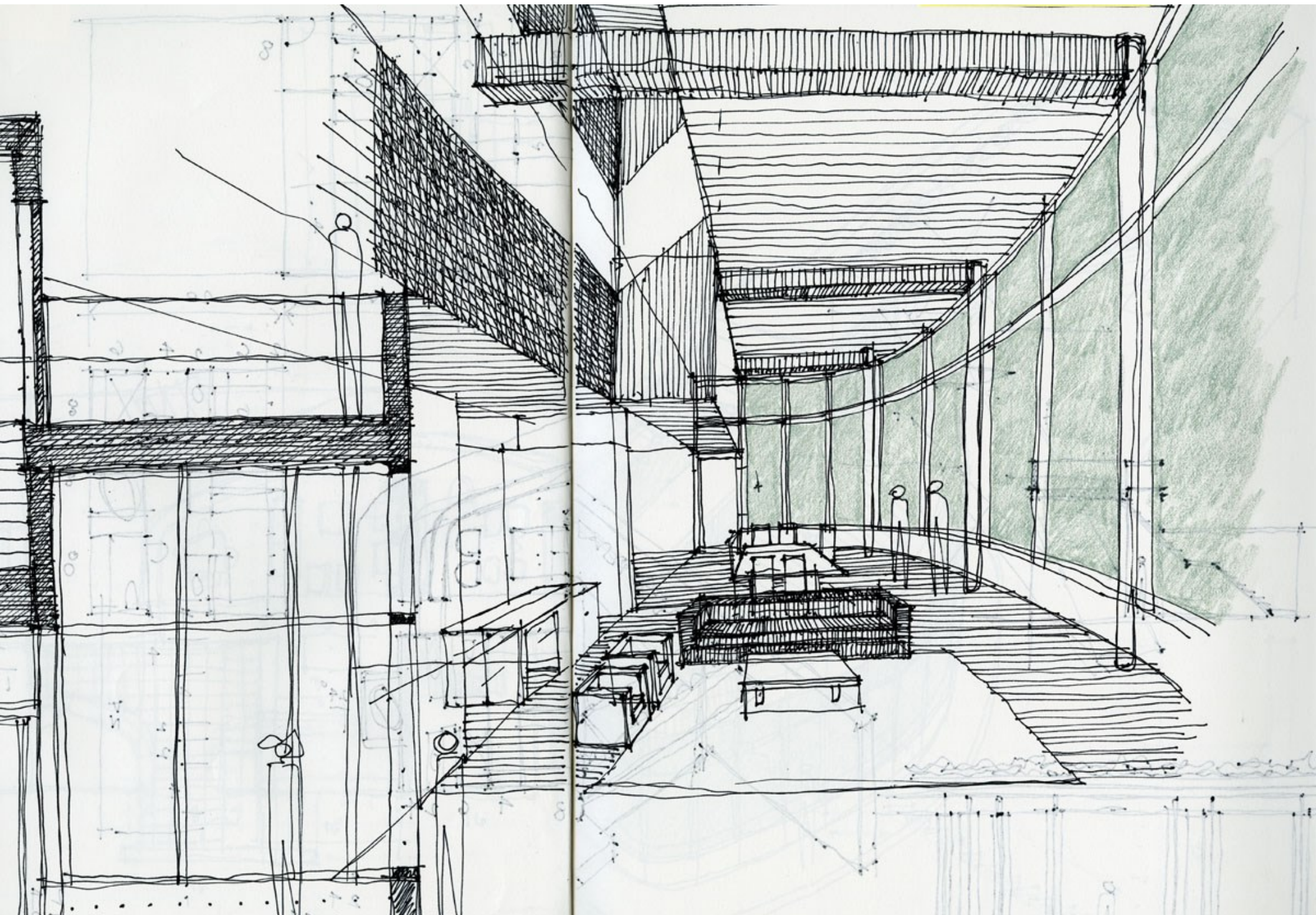
Drawings, Diagrams, sketches

Architects make many other kinds of drawing: **softline** (freehand) and **hardline** (drafted) **schematic drawings**, **working drawings**, as well as different projections (**plans**, **sections**, **elevations**, **elevation oblique**, **axonometric**).

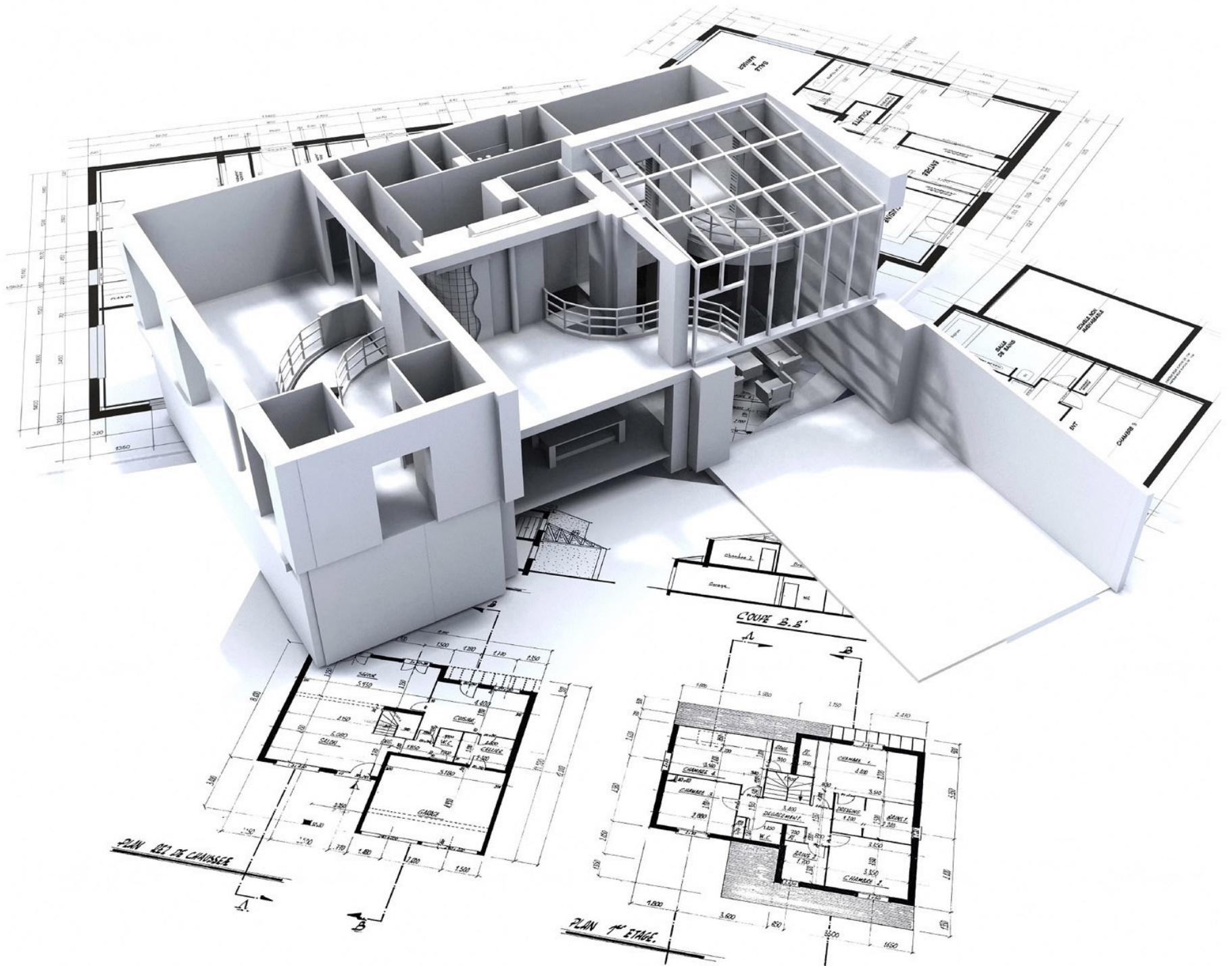


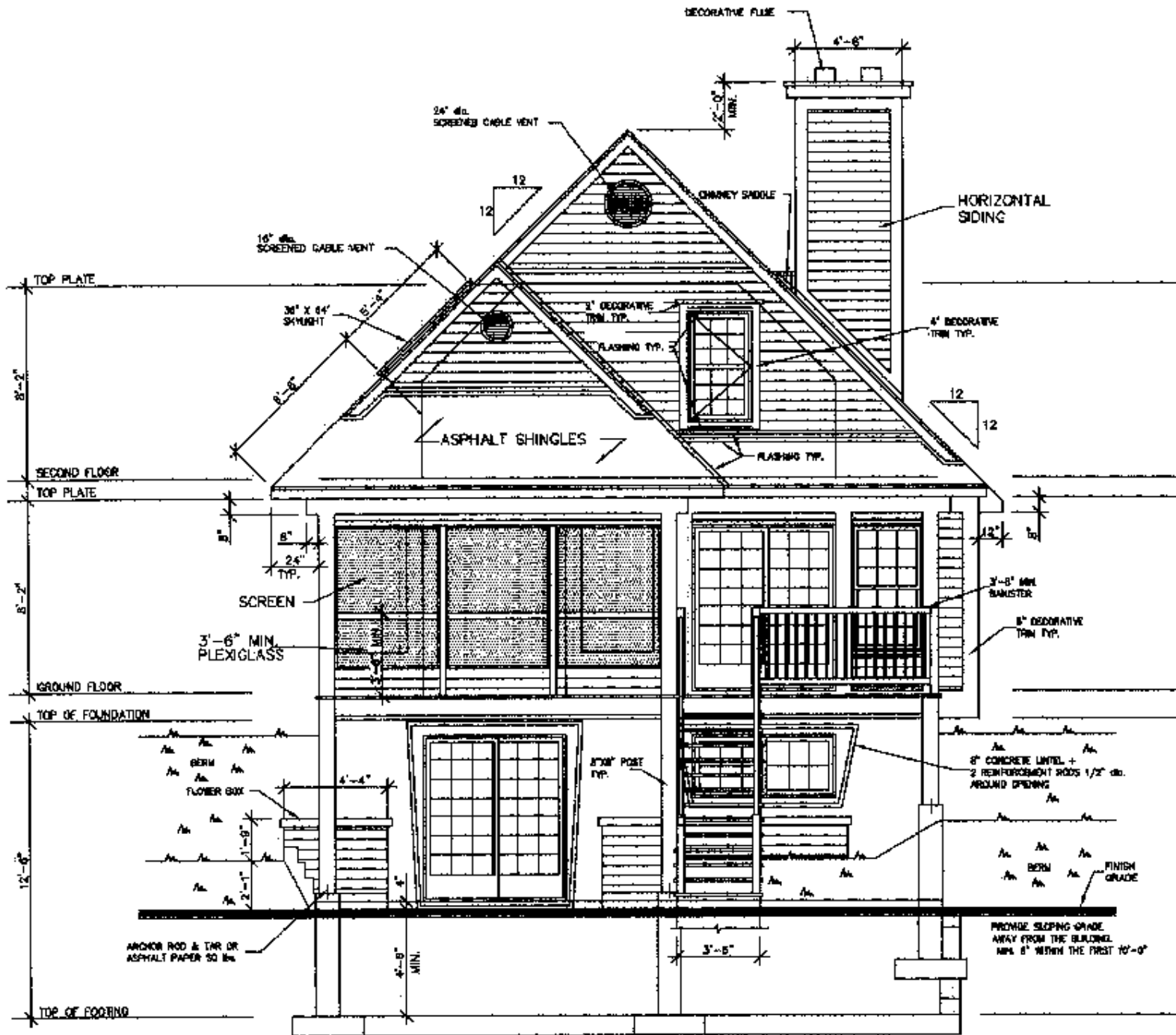


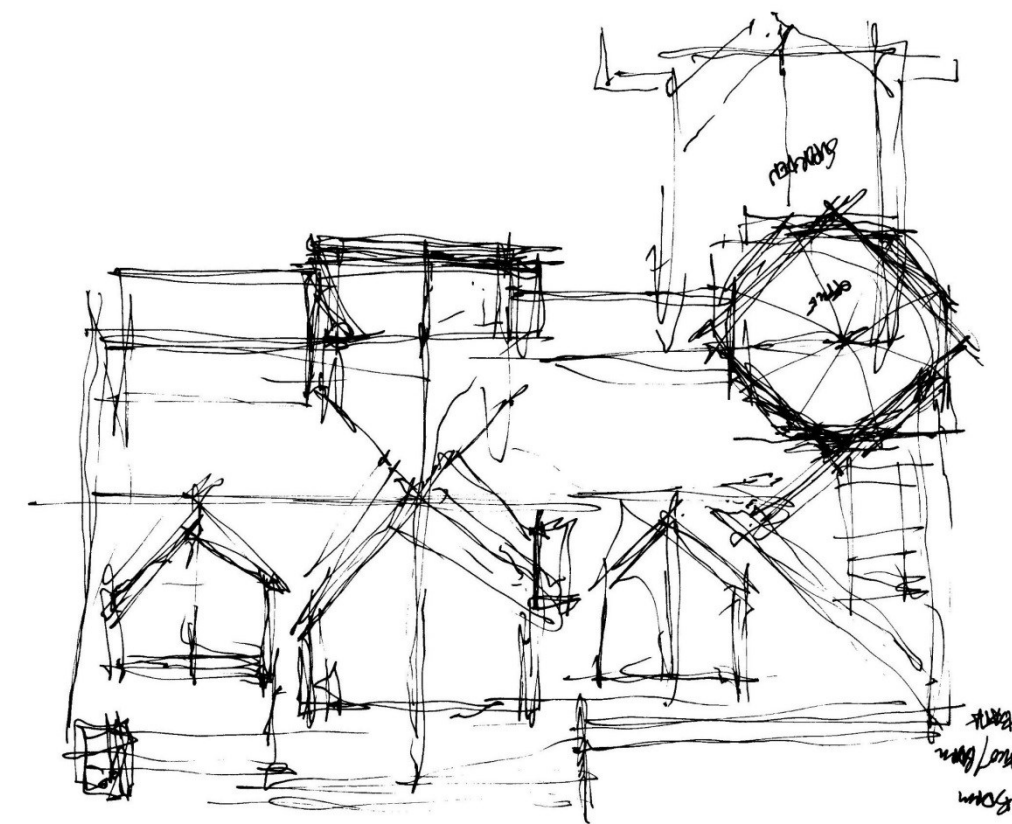
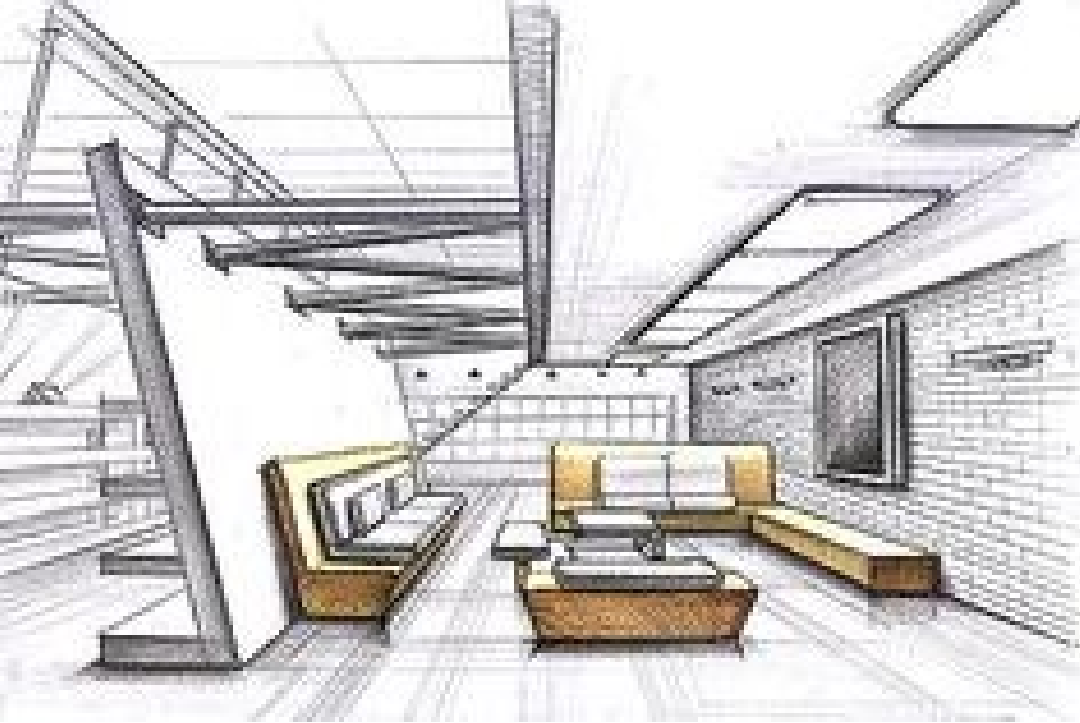


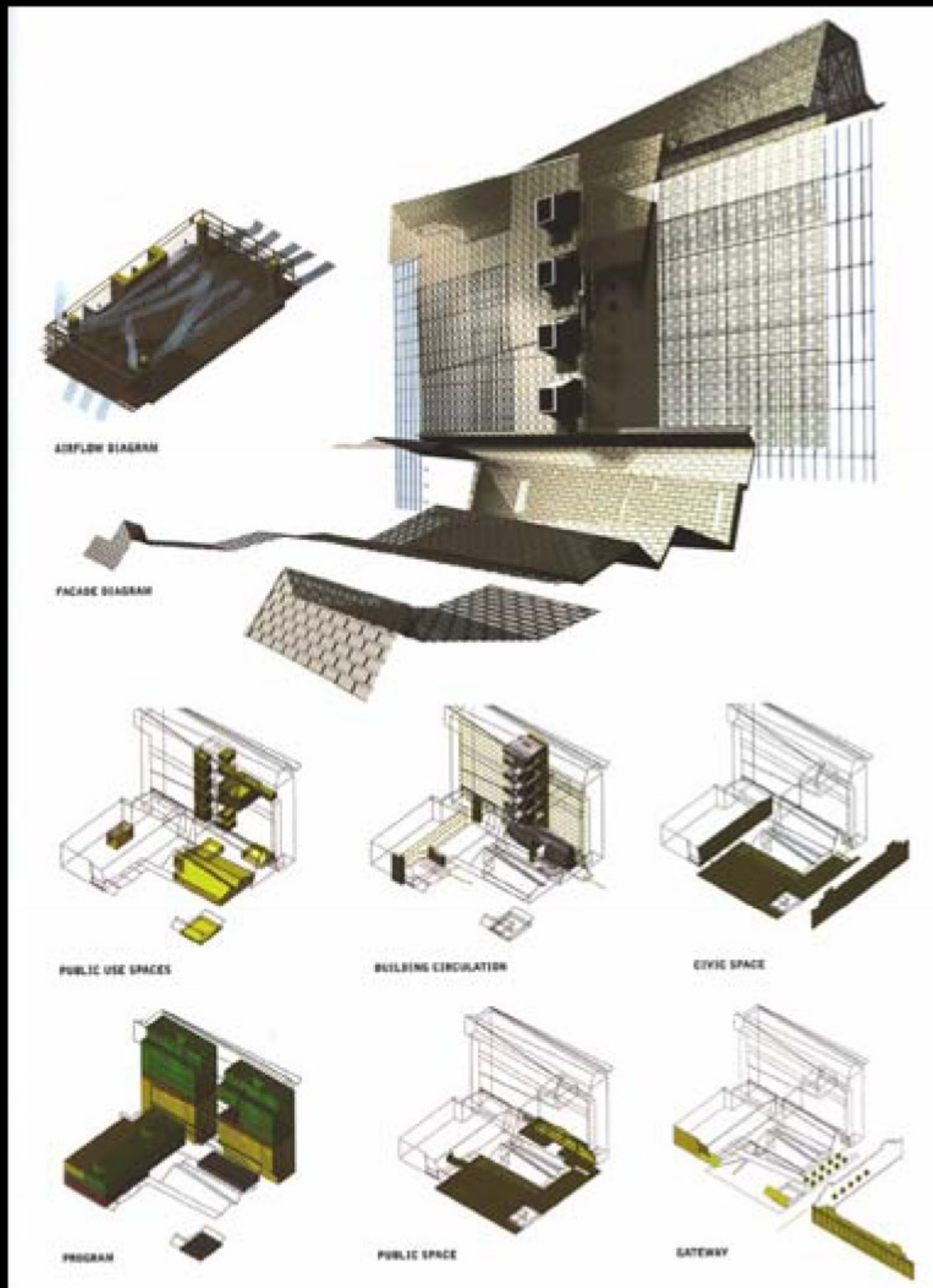






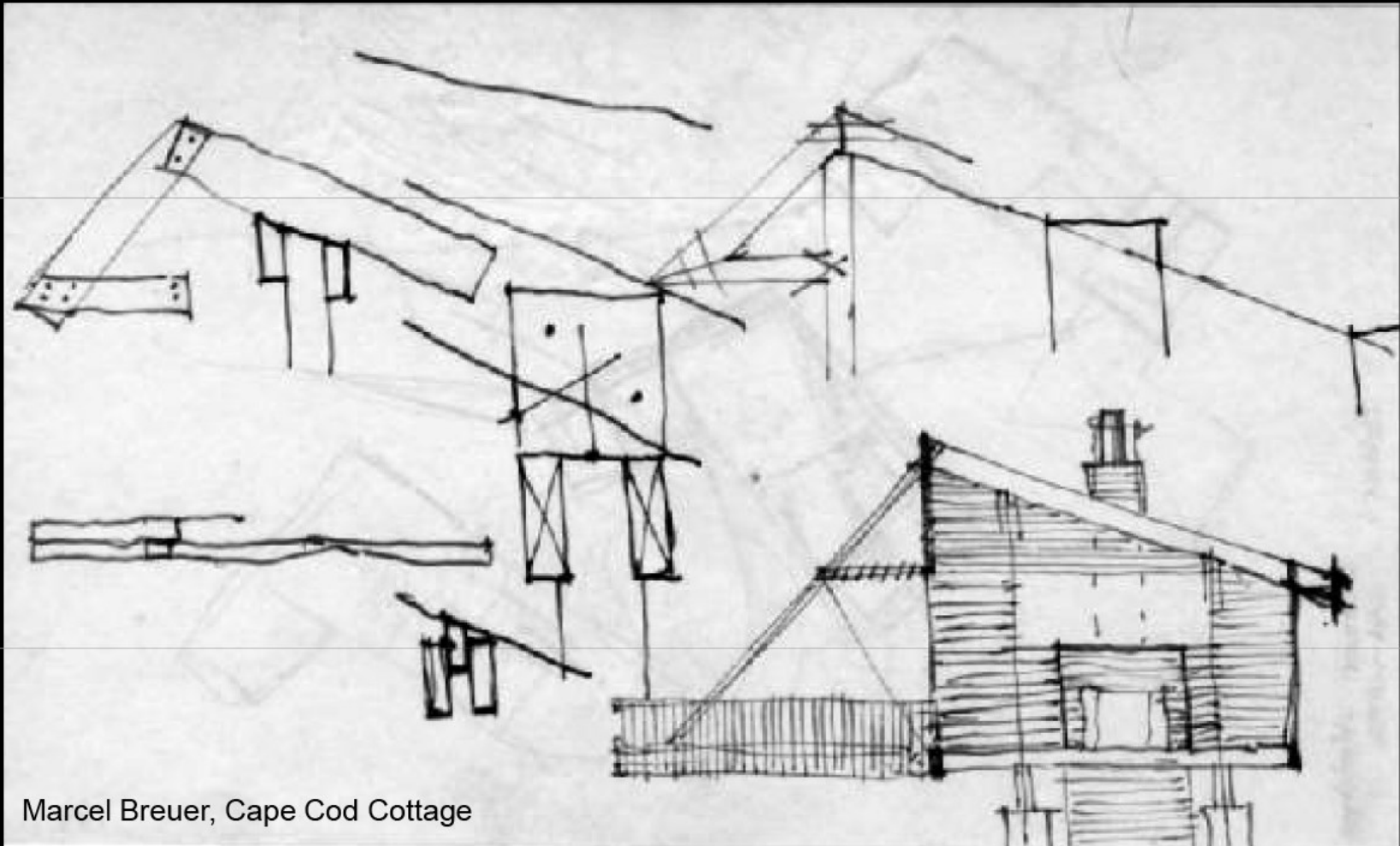






DRAWING / DIAGRAMMING

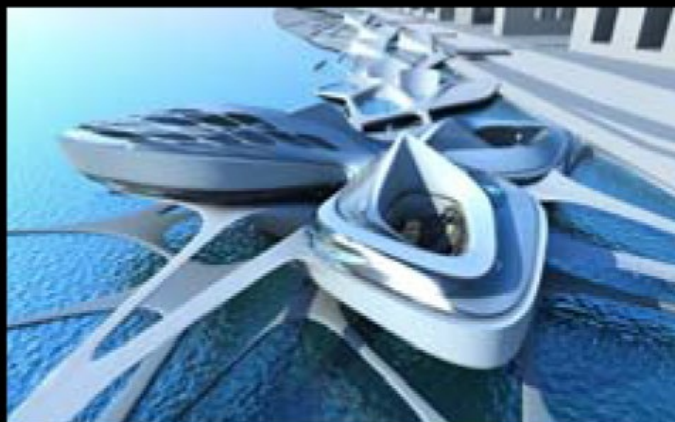
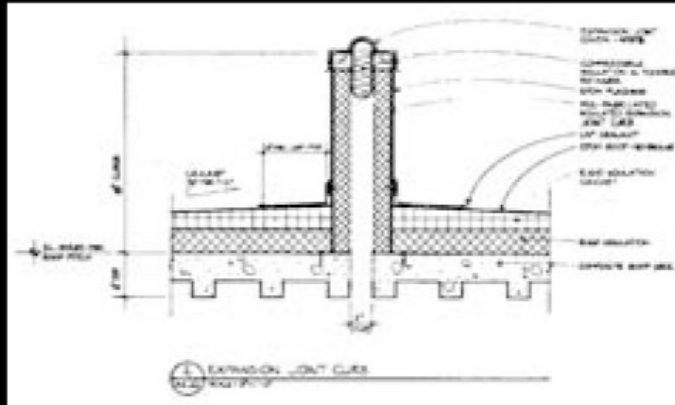
Intro to graphic communication (why we draw)



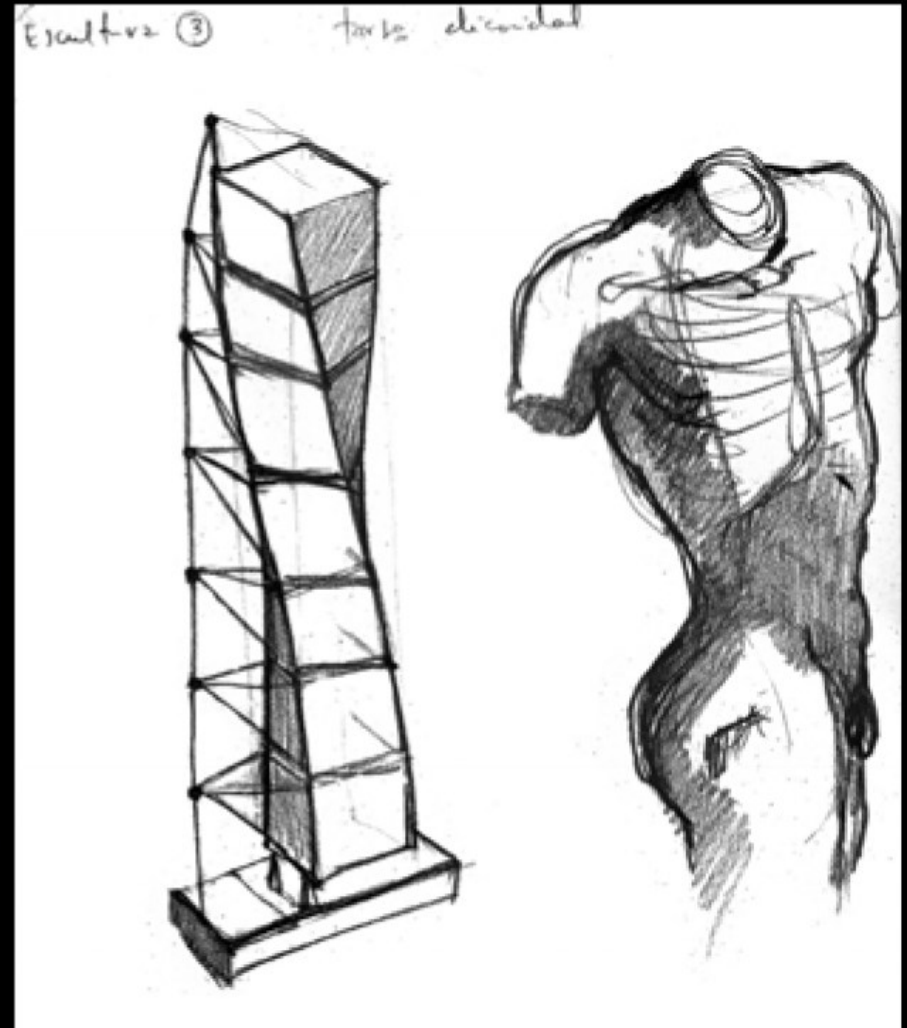
Marcel Breuer, Cape Cod Cottage

Architects communicate visually, using drawings and graphics

“Drawing is the language of architects....architects do not build – they draw” Anonymous

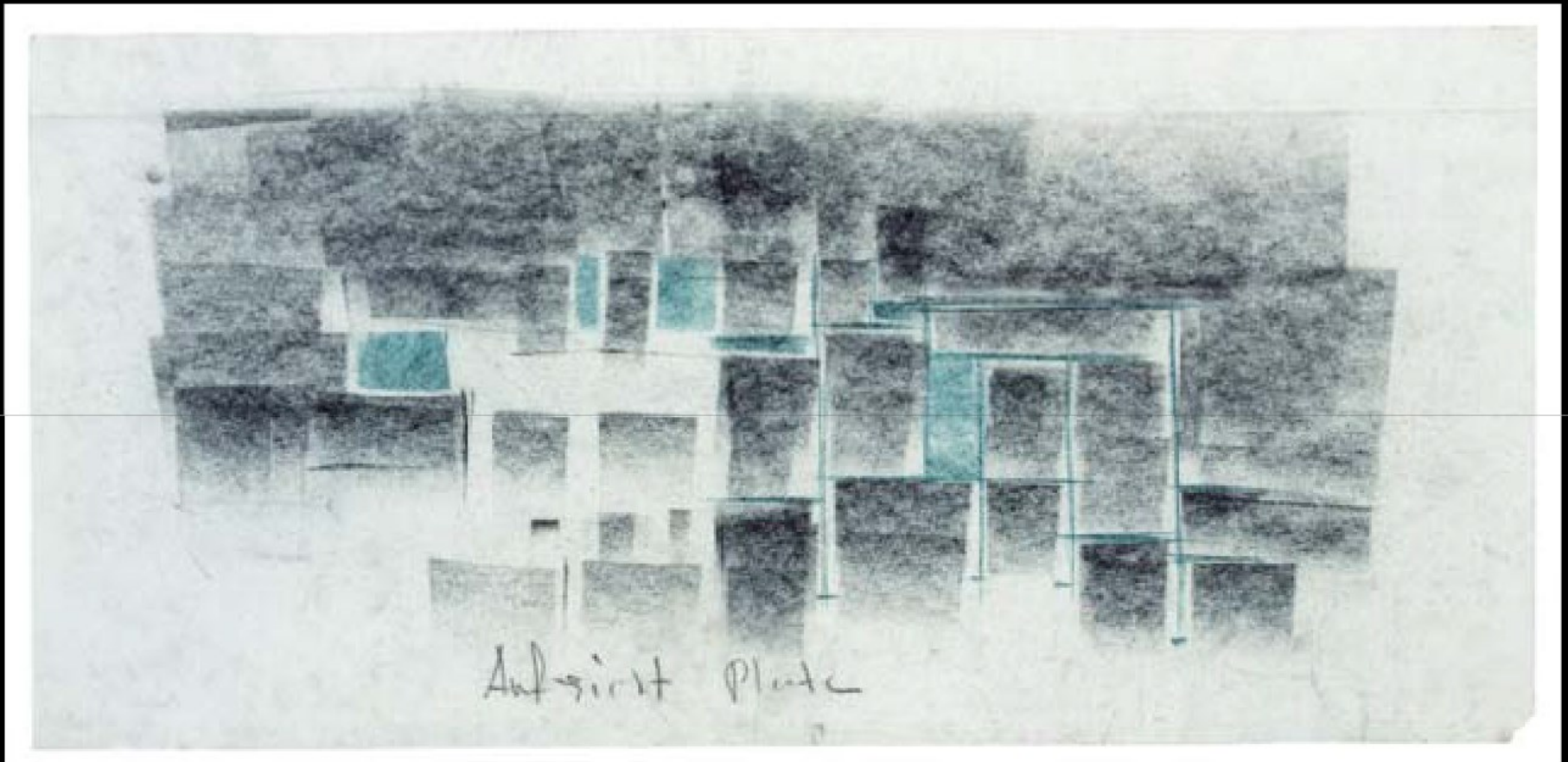


- Part of the thinking process of design
- Communication to client and users
- Specific instructions for constructing the building



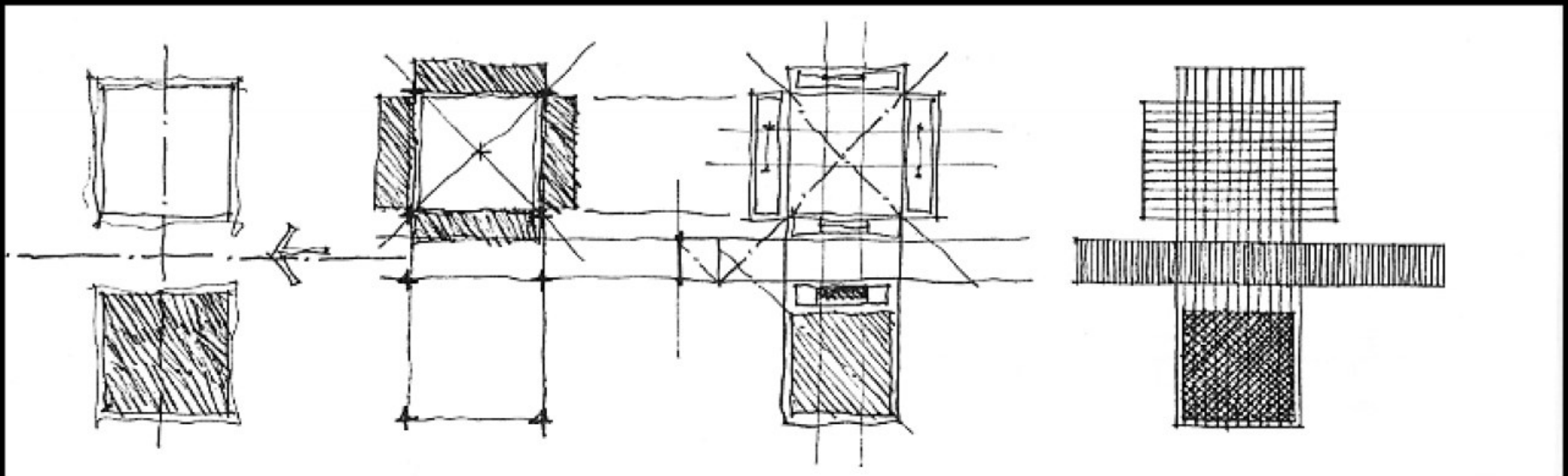
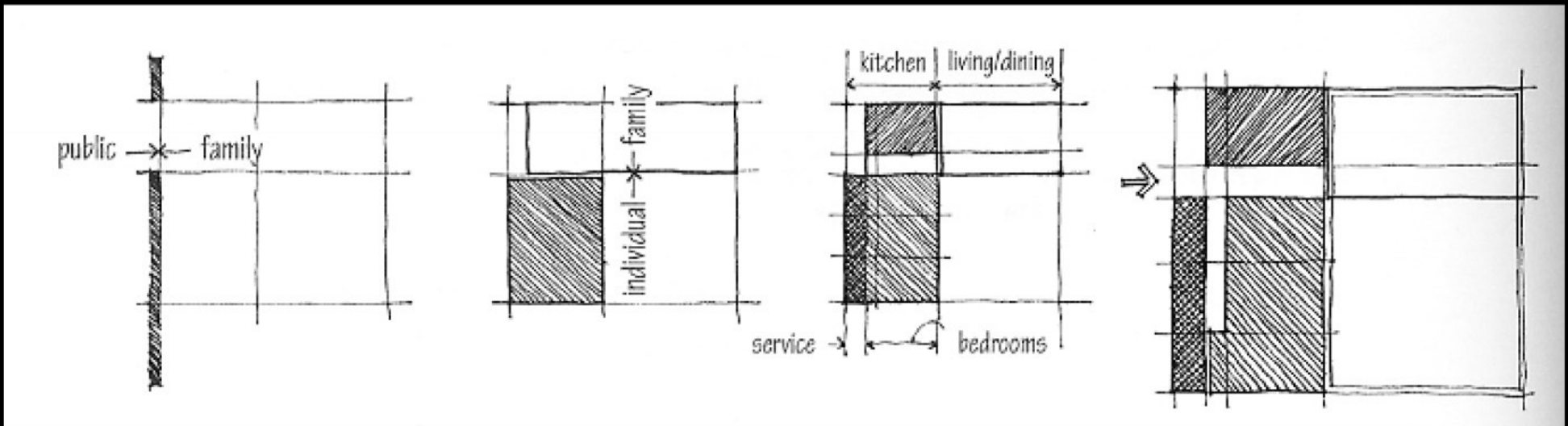
THE SKETCH IS COMMUNICATION

- between 'me' and 'I'
- between me and you
- between student and teacher
- between architect and client



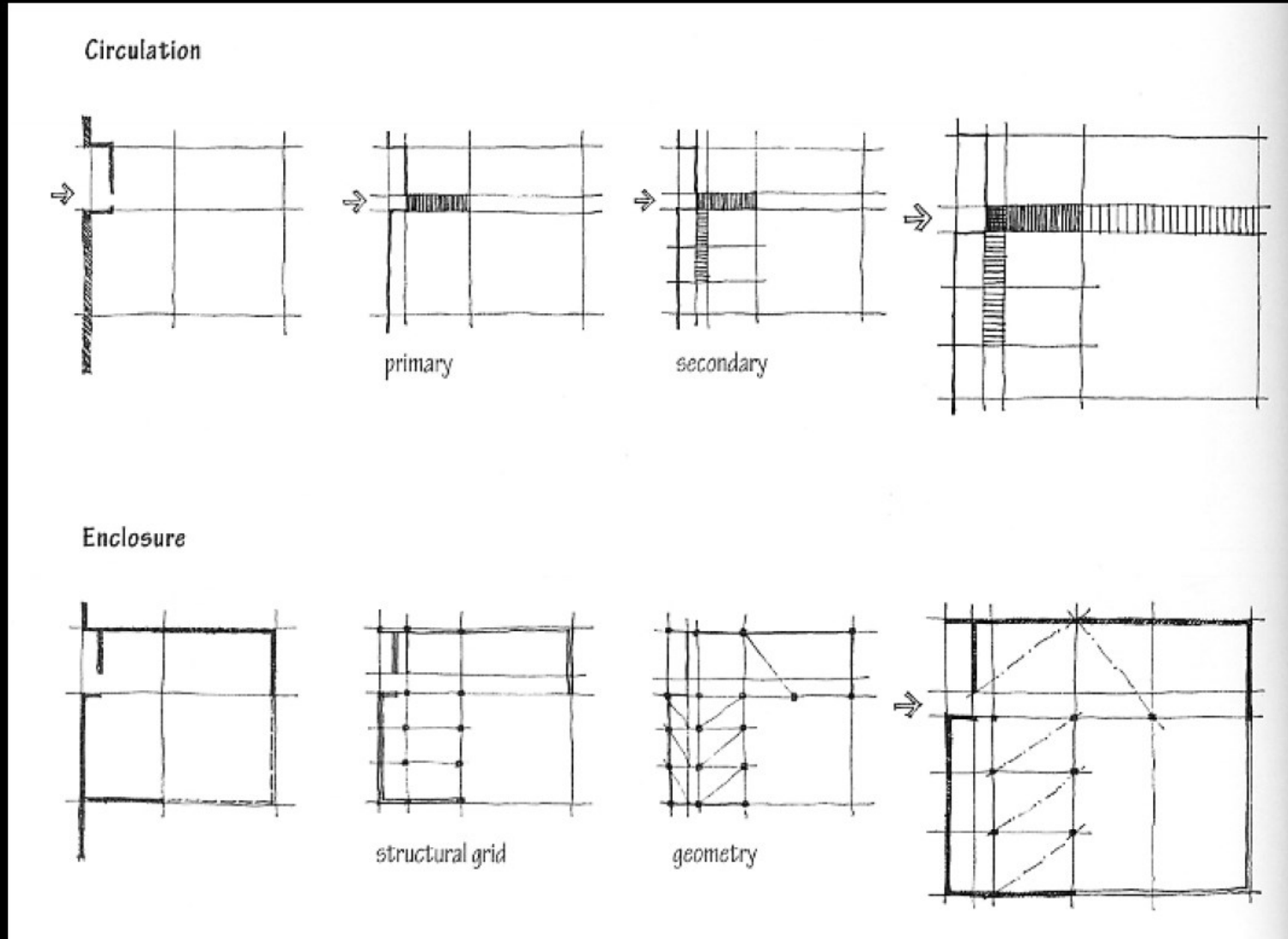
- Graphic diagrams are visual abstractions that show concepts and/or objects.
- They are used in the initial stages of the design and exploration process.

Diagrams can vary from loose, freehand sketches.....



Diagramming is part of the design process.

Different concepts and ideas can be quickly investigated and communicated.

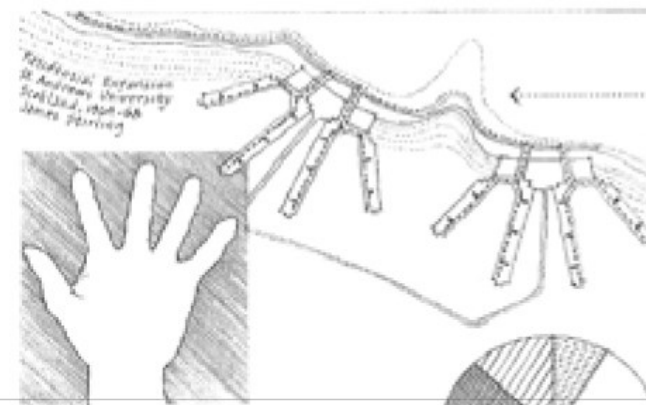


There are many types of diagrams.

Many other professions (music, math, business, etc) use diagrams to explain and clarify their visual thinking.

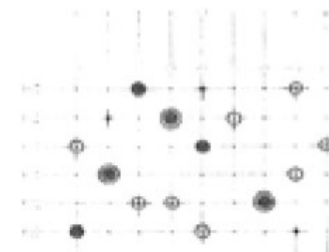
Diagrams focus on general information. They encourage the designer to explore alternatives.

TYPES OF DIAGRAMS



Designers use a number of diagram types throughout the design process to initiate, clarify, and assess an idea.

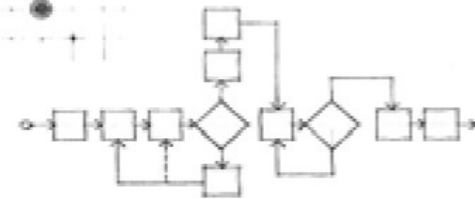
- Graphic metaphors depict visual analogies in the idea-generating phase of the design process, suggesting solutions without preconceiving a final form.



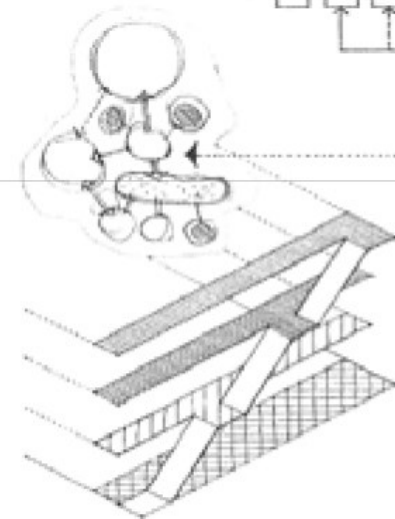
- Area diagrams communicate information about the size, degree, or magnitude of elements. Common types of area diagrams include bar graphs, pie charts, and intensity maps.



- Matrix diagrams utilize a coordinate system to quantify or correlate adjacencies and degrees of importance between elements, especially in the program-analysis phase of a project.



- Network diagrams describe the successive steps in a process, procedure, or operating system. Specific types of network diagrams often associated with the critical path method are flow charts and tree diagrams in which the selection of each branch requires that a logical decision be made.

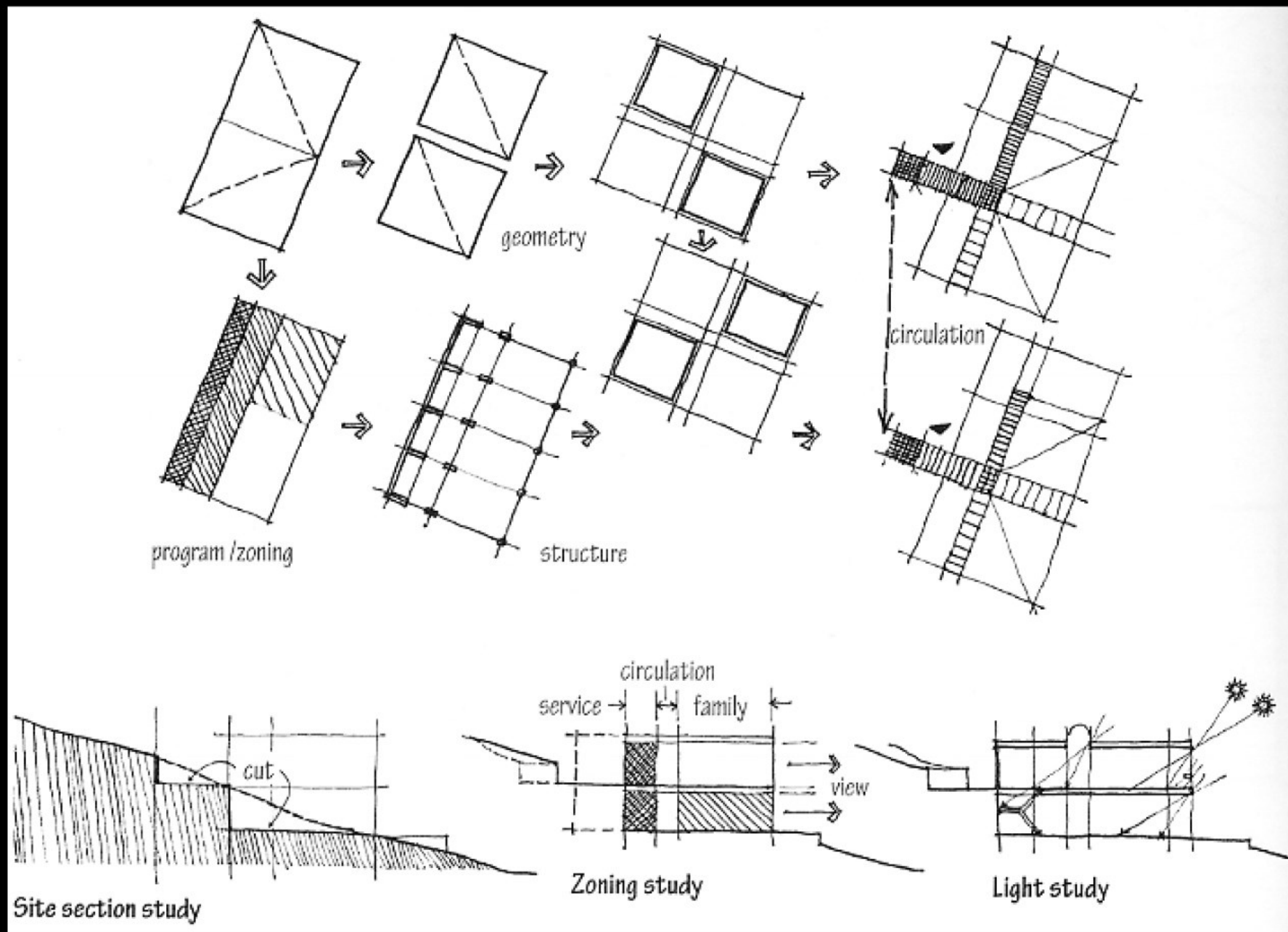


- Bubble diagrams illustrate the relative sizes and desired proximity of functional zones and activities, which prompt to possible geometric patterns of a design solution.

- Circulation diagrams are flow diagrams that describe nodes and patterns of movement of people, vehicles, and services.

- Schematics are diagrams that illustrate the layout and coordination of electrical and mechanical components in systems.





Two-dimensional diagrams can communicate not only organizational ideas, but also implications of form (what the building will look like).

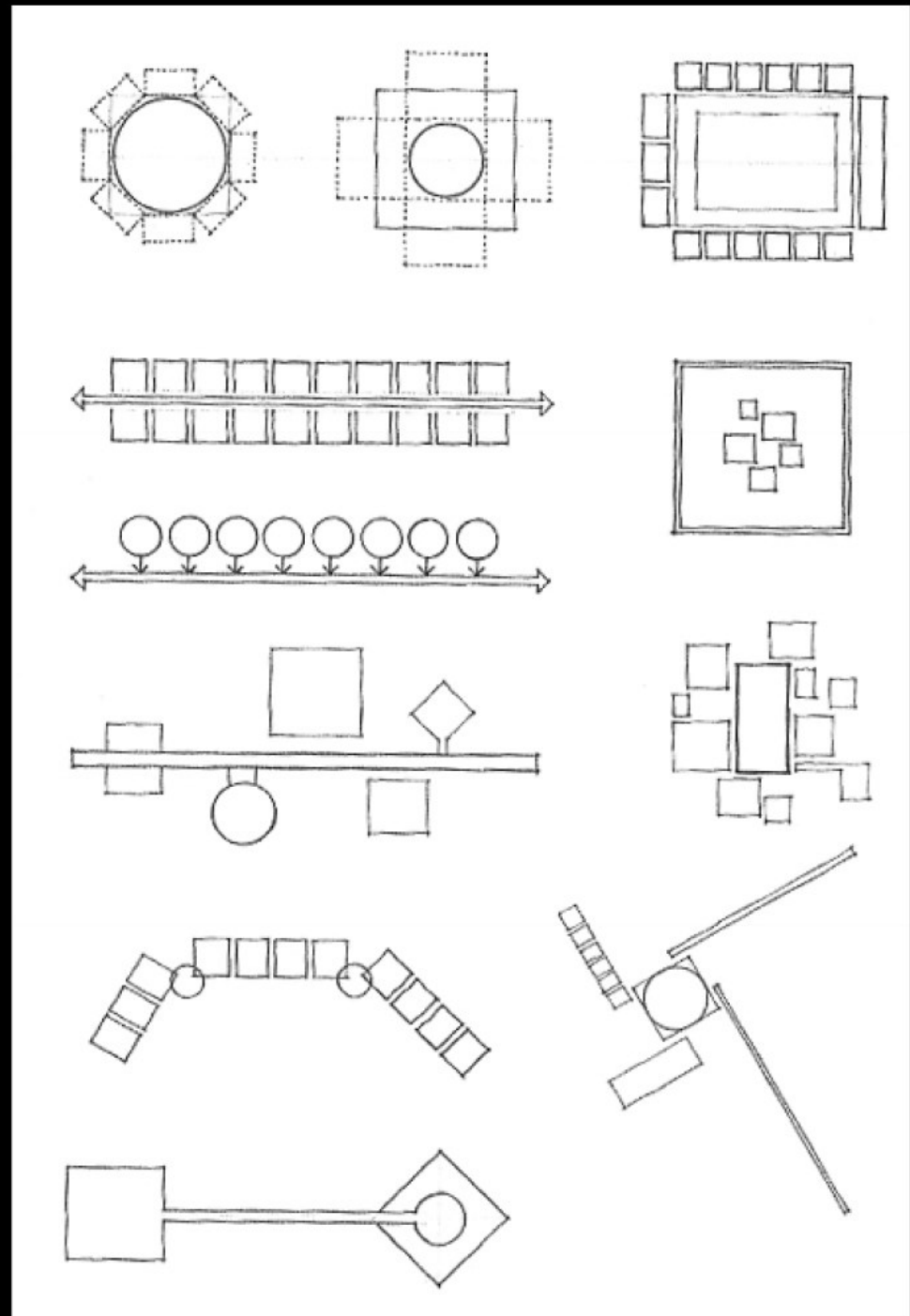
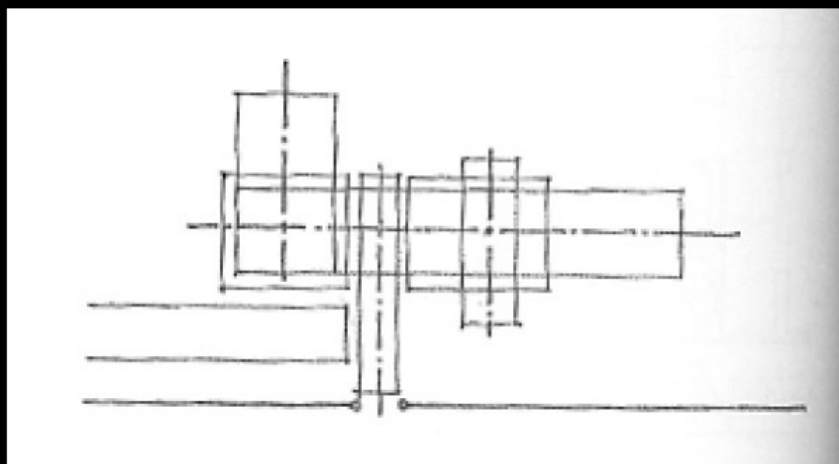
Some aspects of a building that can be diagrammed are:

- 1. Program functions**
- 2. Levels of privacy**
- 3. Circulation**
- 4. Site conditions and context**
- 5. Spatial hierarchy and relationships**
- 6. Geometric properties**
- 7. Lighting conditions**
- 8. Structure and enclosure**

A **Parti diagram** shows a concept in its simplest form.

It focuses on the key structural and relational features of an idea.

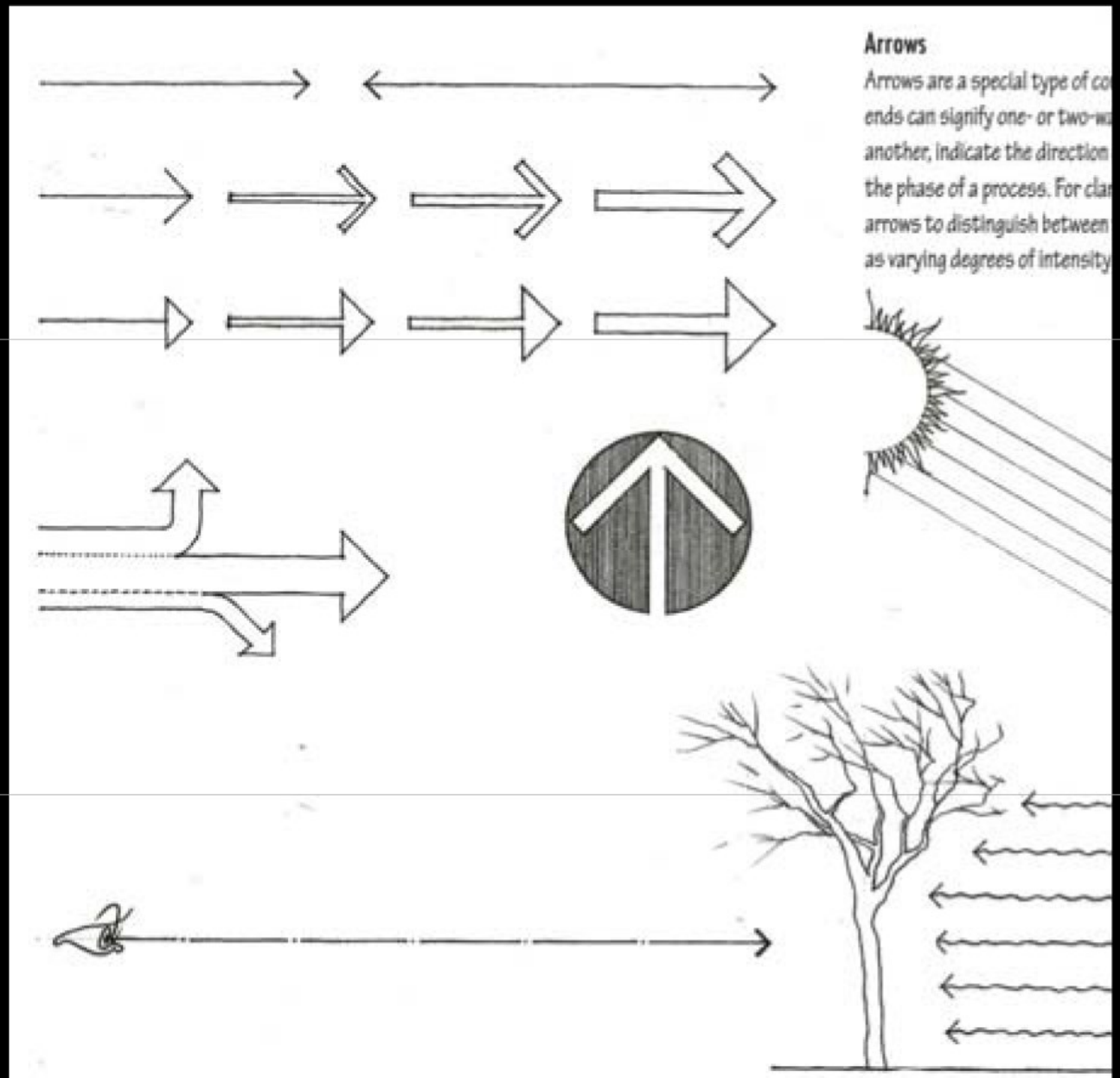
The term **PARTI** refers to the concept or primary organizing idea of a design

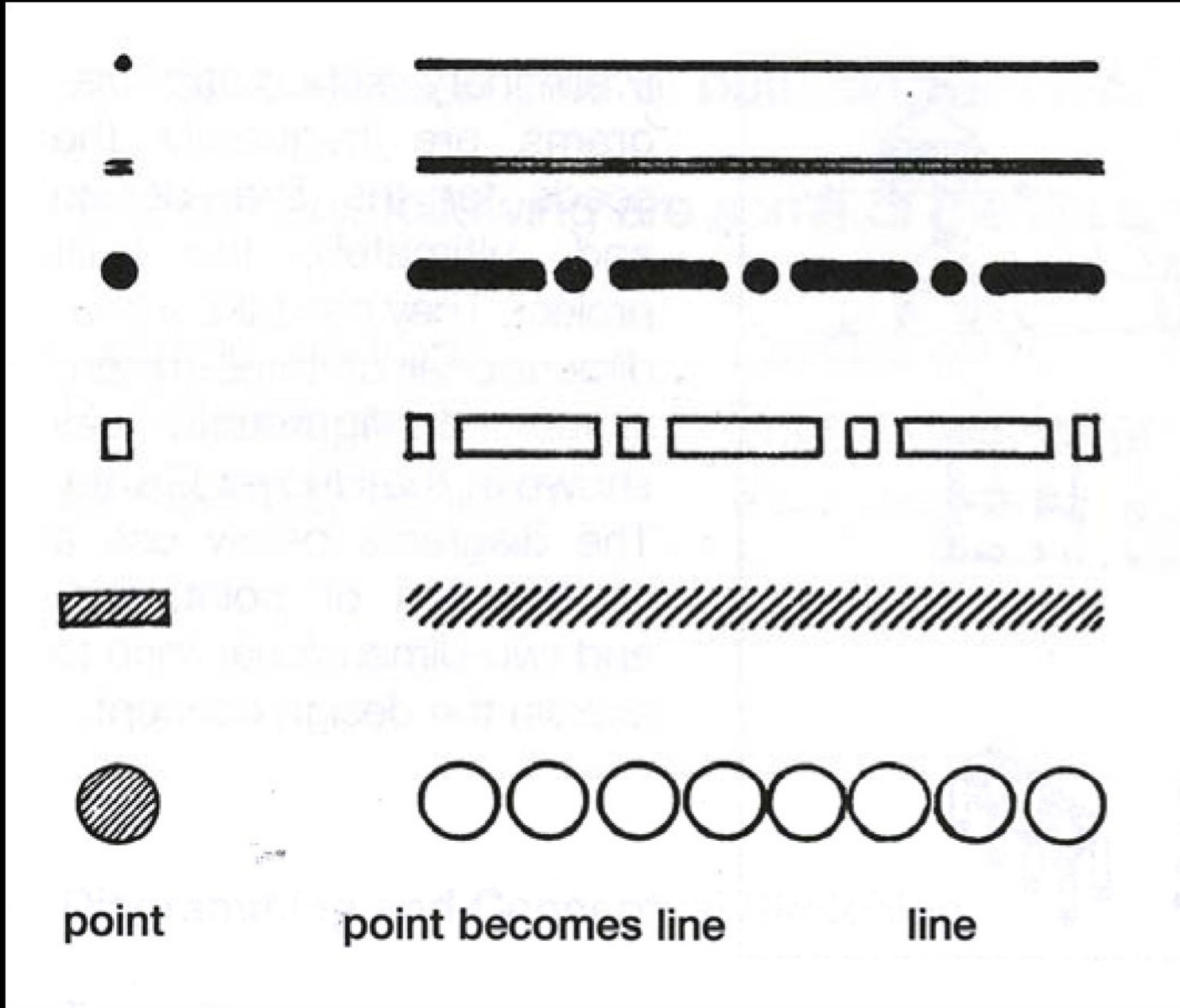


Lines and Arrows are important diagramming tools.

Lines can be drawn to show symmetry, relationships, boundaries, etc. Different linetypes may indicate various concepts.

Arrows show movement in one or more directions. Different size arrows may indicate their importance.



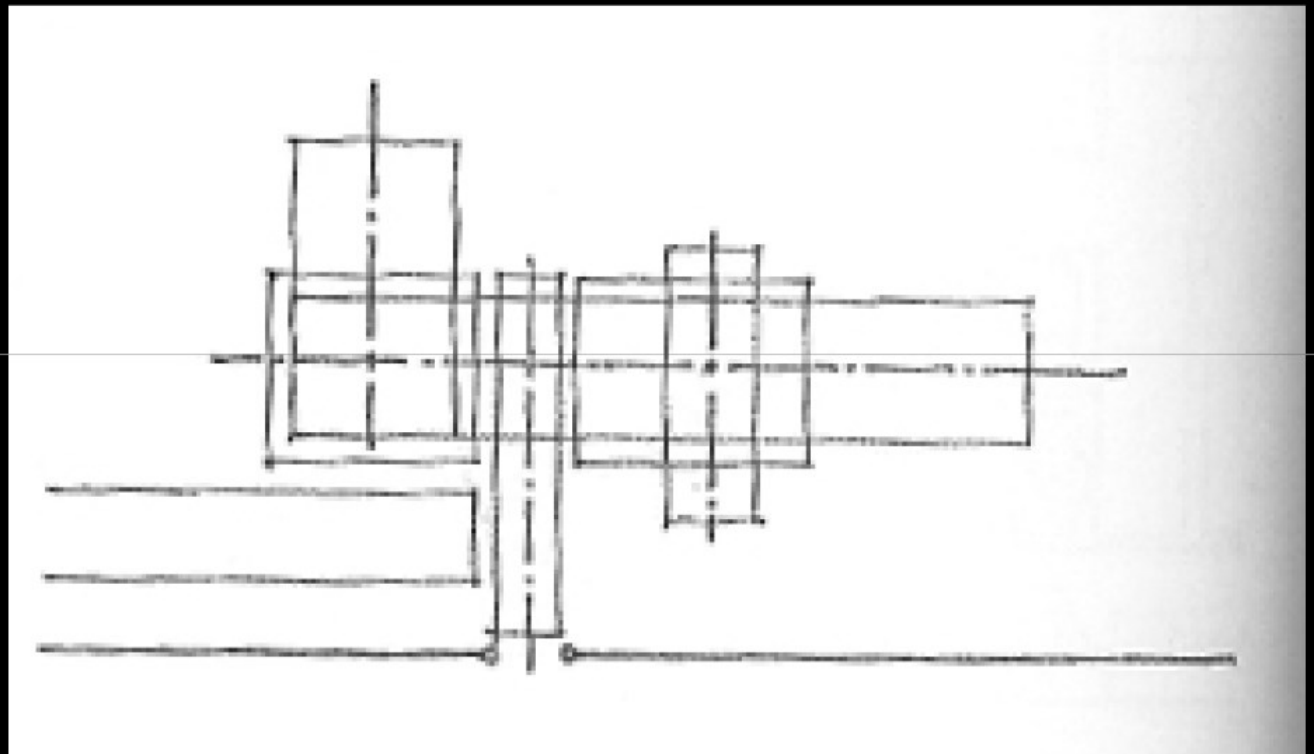


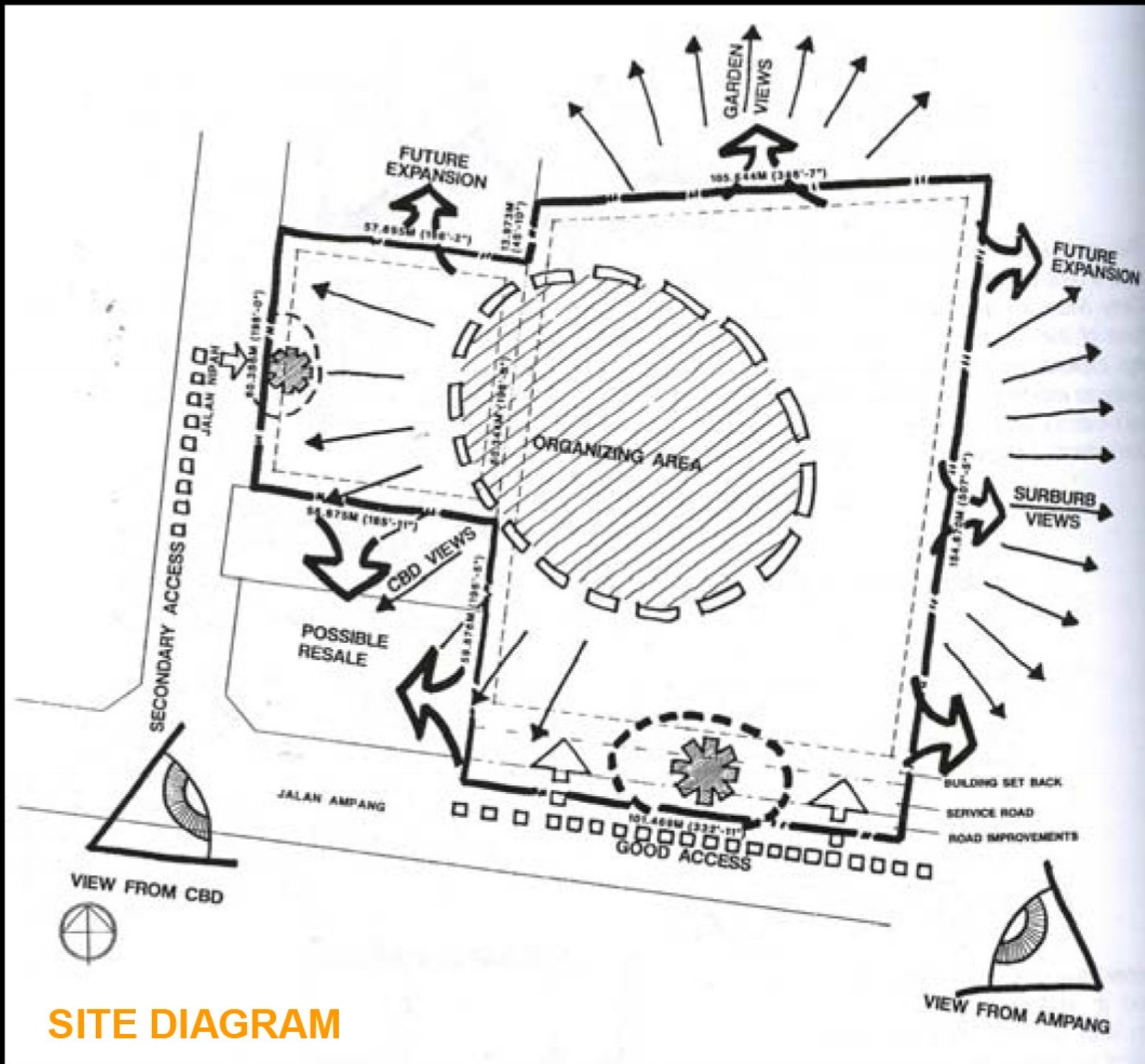
DIAGRAMMING GRAPHICS

“The Hallmark of a diagram is its ability to simplify a complex notion into

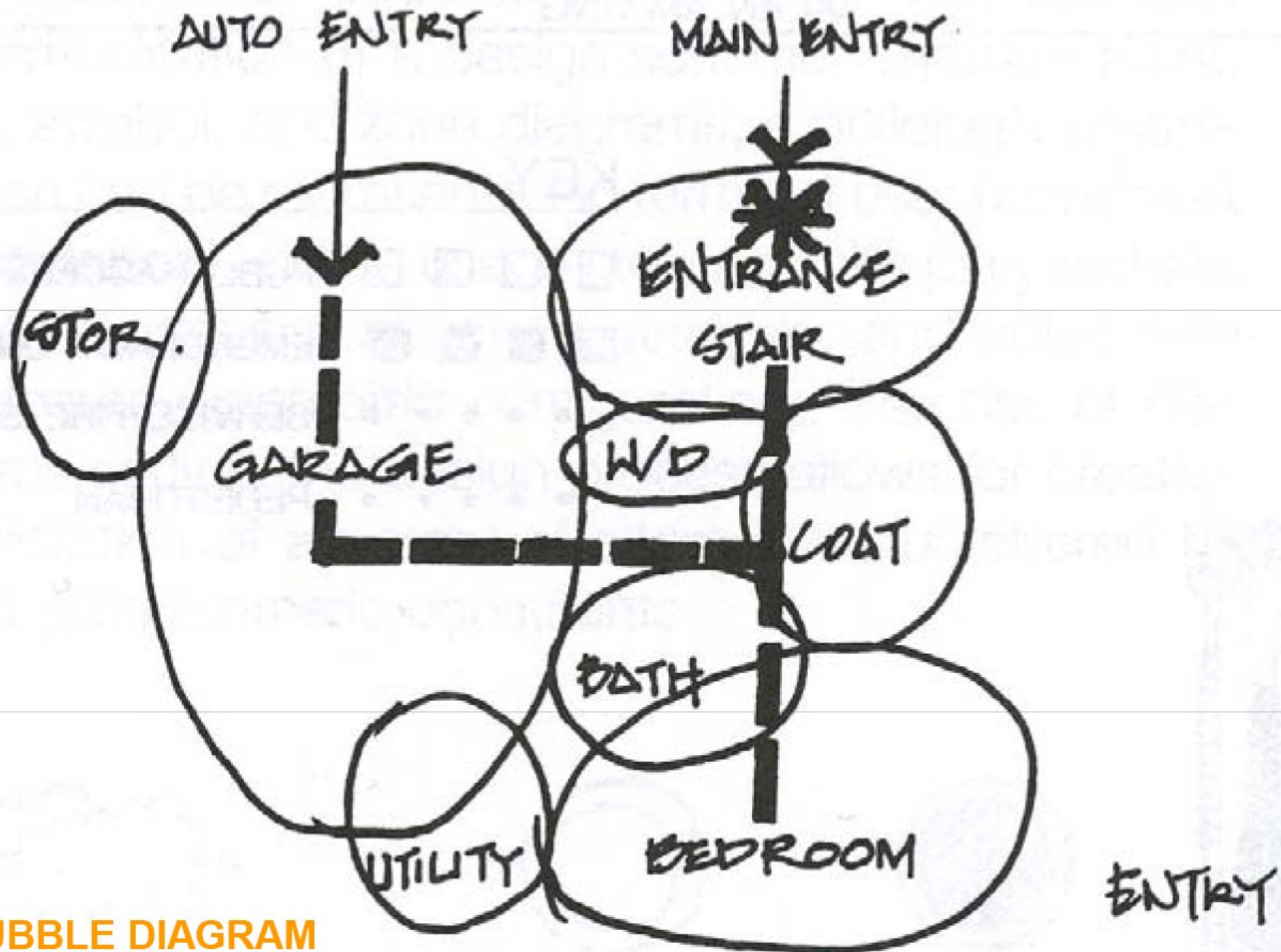
essential elements and relationships

by a process of elimination and reduction.”

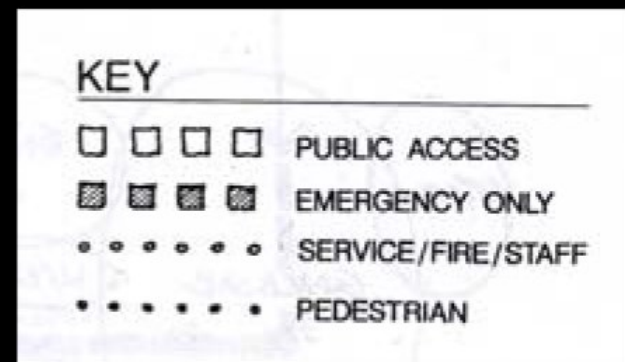
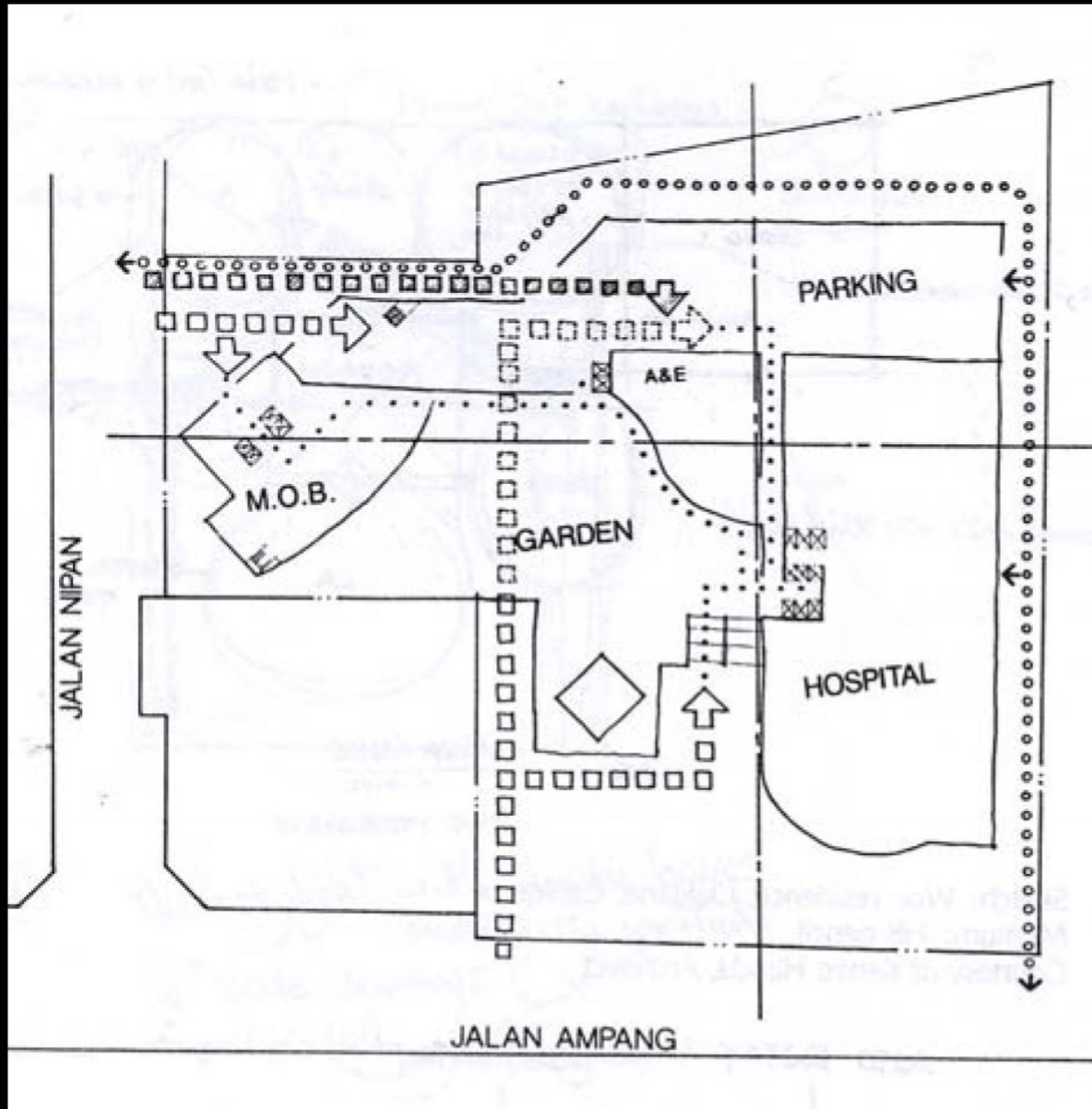




SITE DIAGRAM

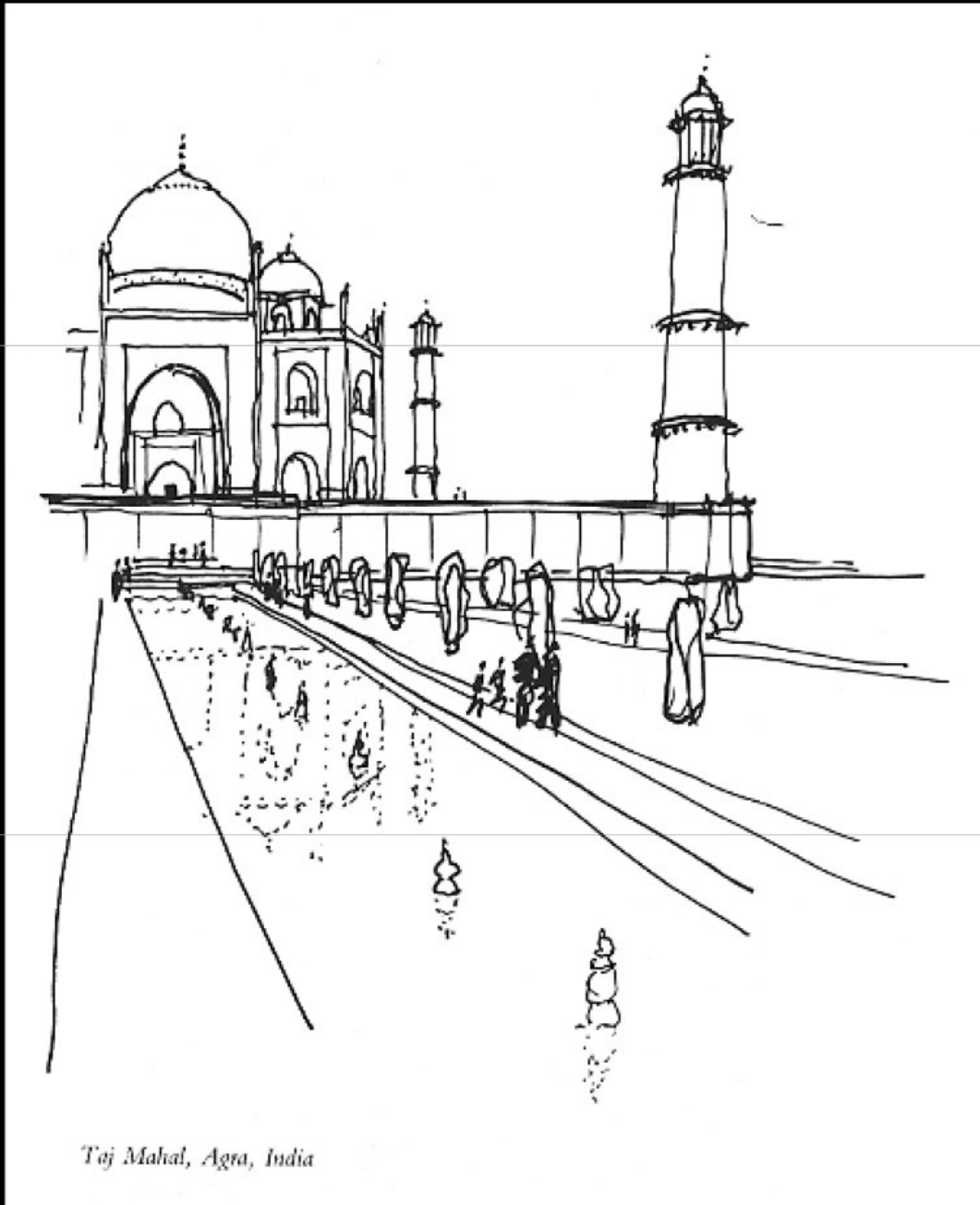


BUBBLE DIAGRAM



CIRCULATION DIAGRAM

CHARLES MOORE and DONLYN LYNDON



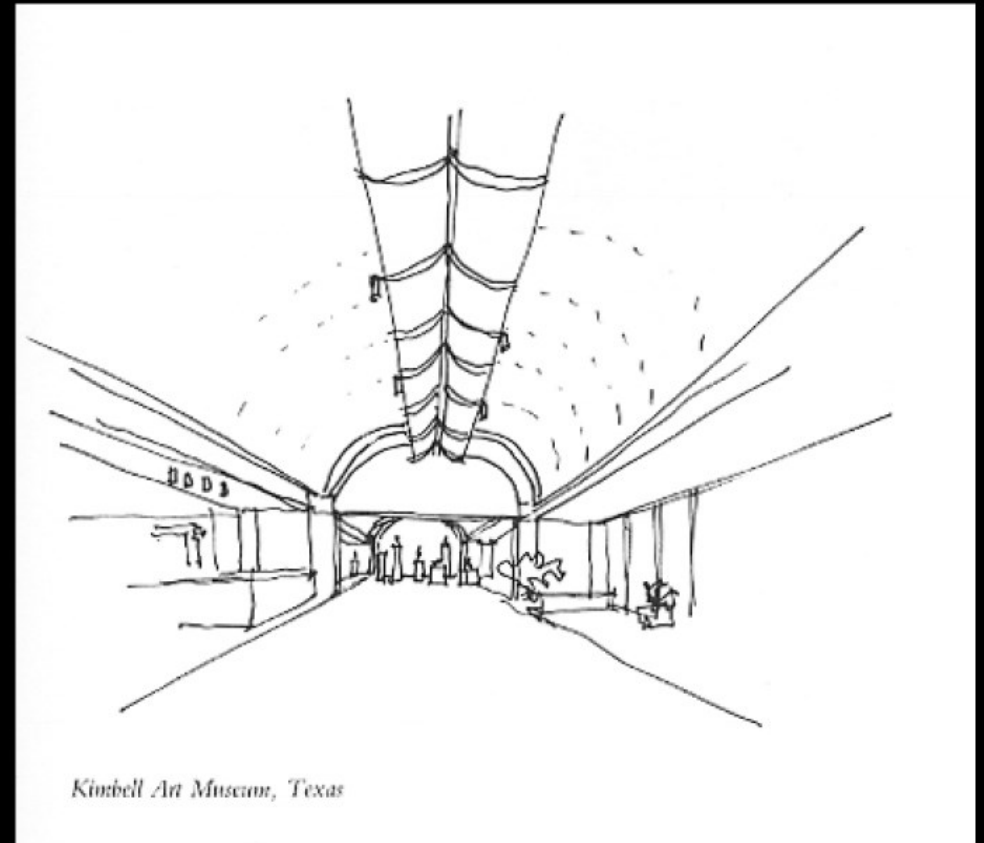
ARCHITECTURAL
SKETCHES CAN BE A BIT
MESSY....

**BUT ARE ALWAYS
ACCURATE!**

CHARLES MOORE and DONLYN LYNDON



Spanish Steps, Rome, Italy

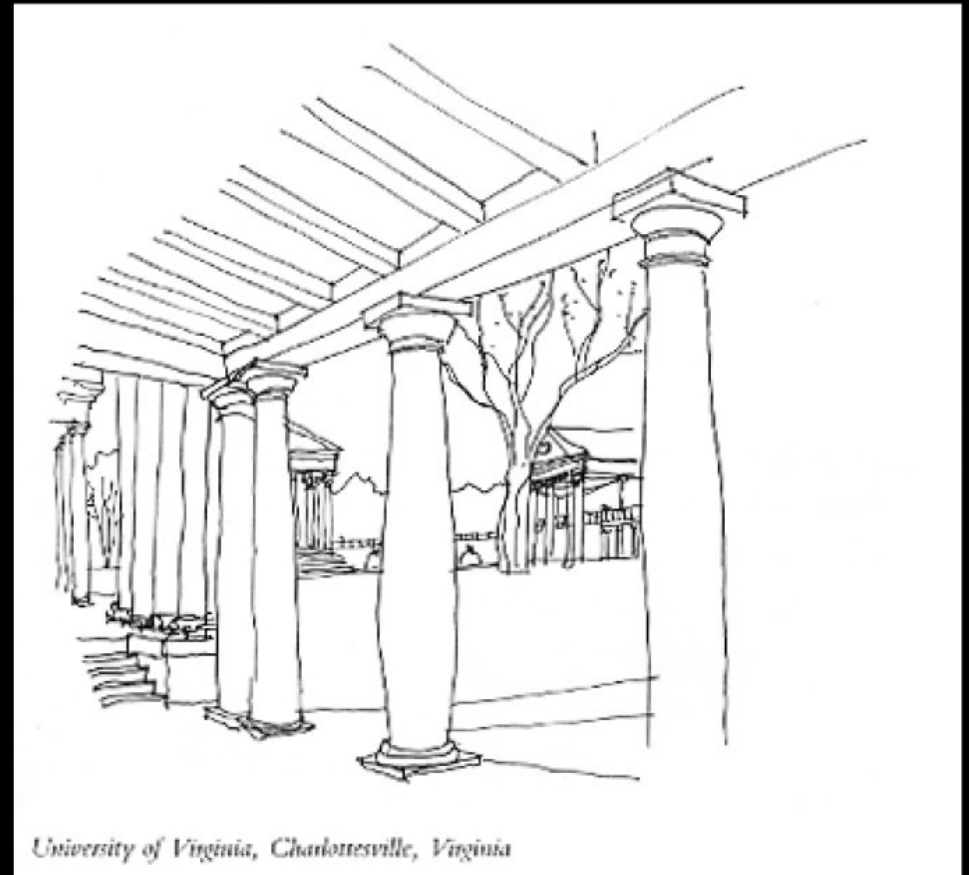
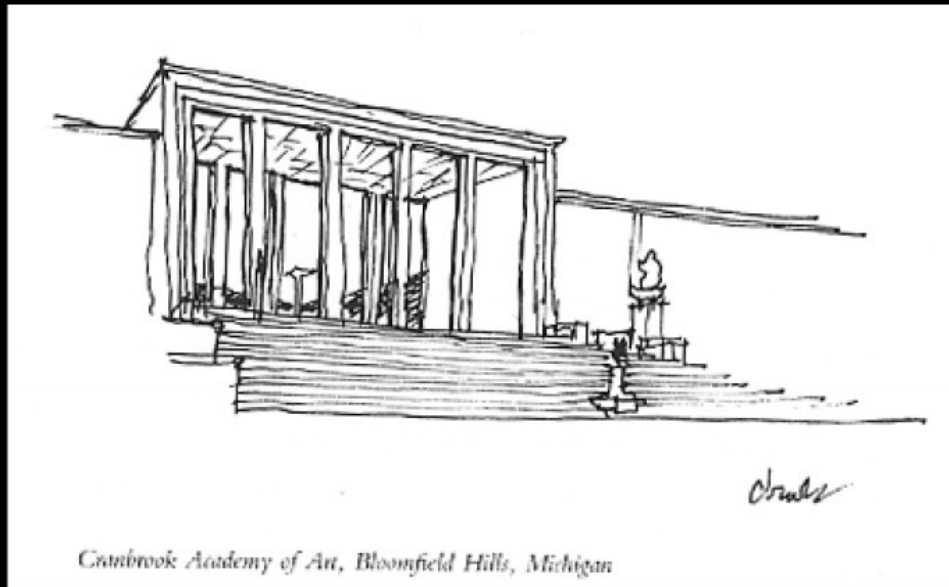


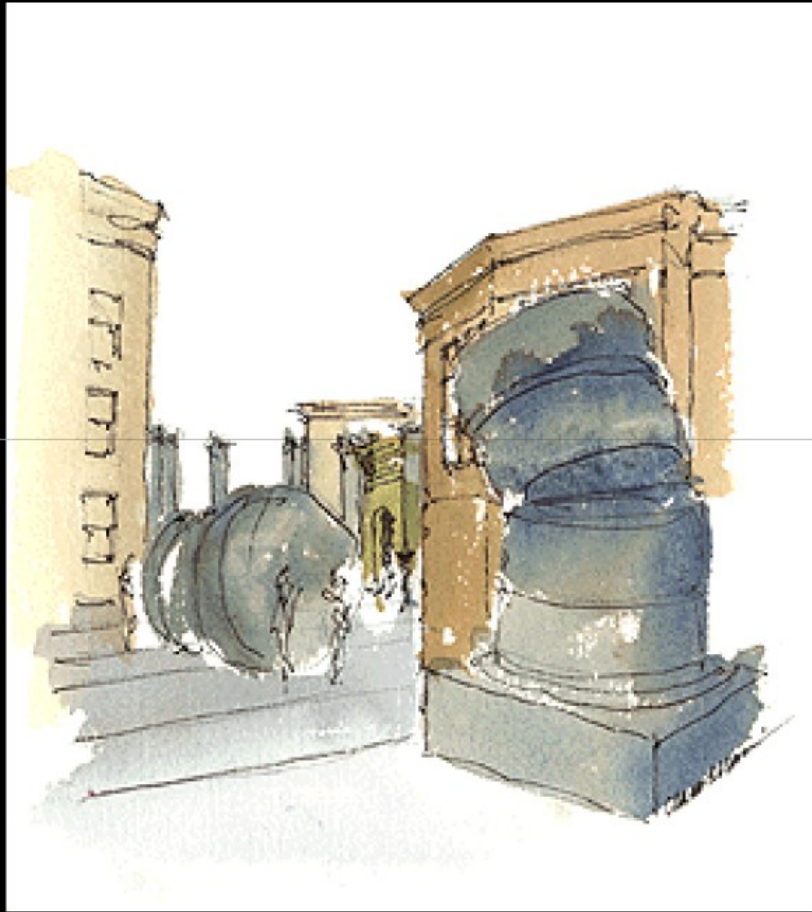
Kimbell Art Museum, Texas

CHARLES MOORE and DONLYN LYNDON

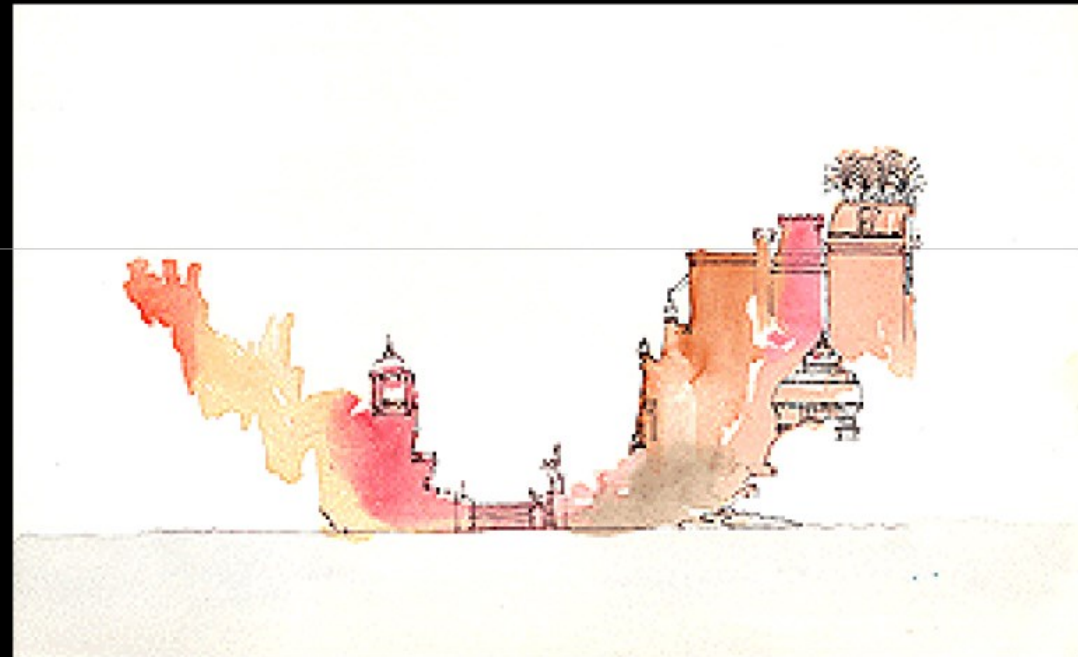


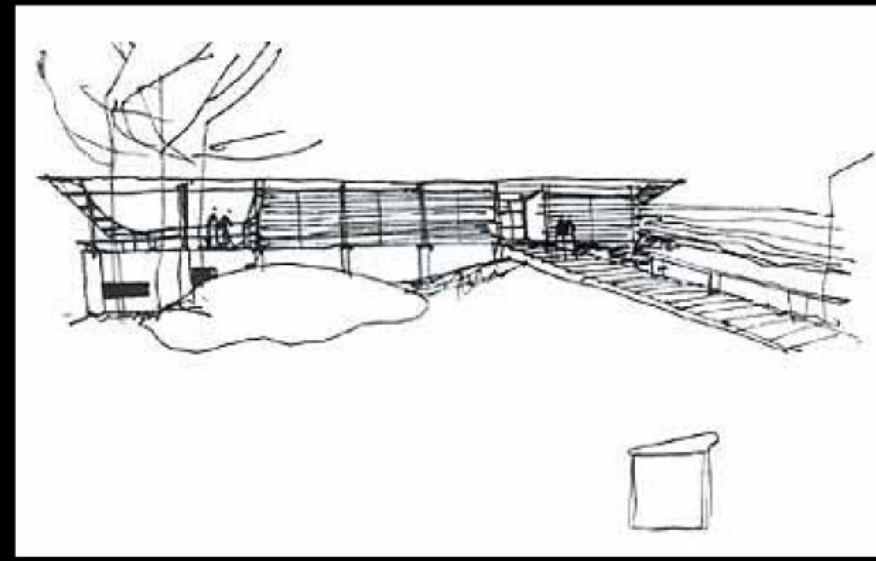
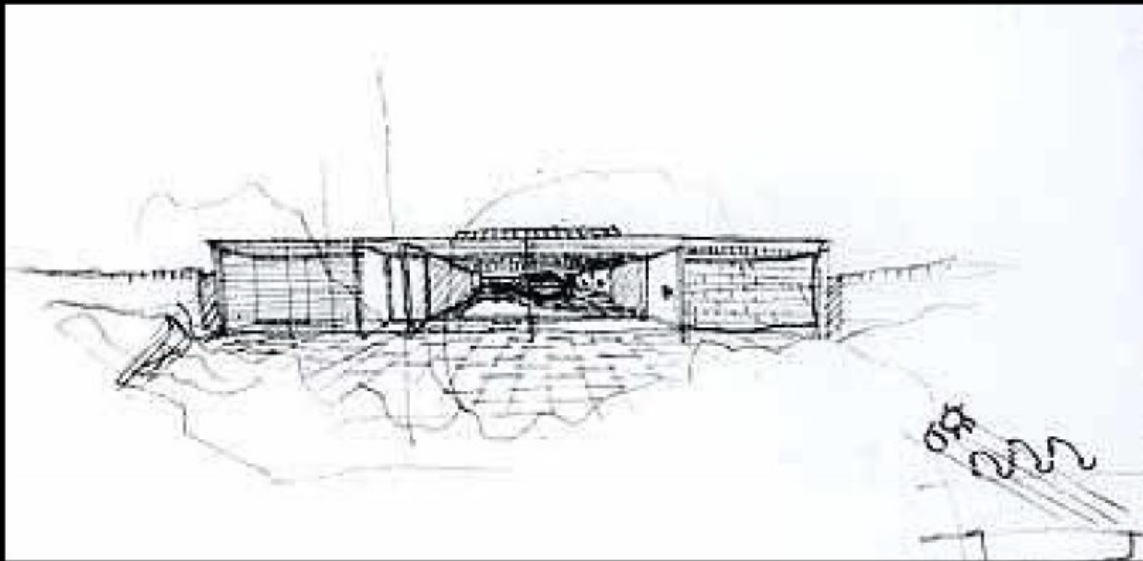
CHARLES MOORE and DONLYN LYNDON



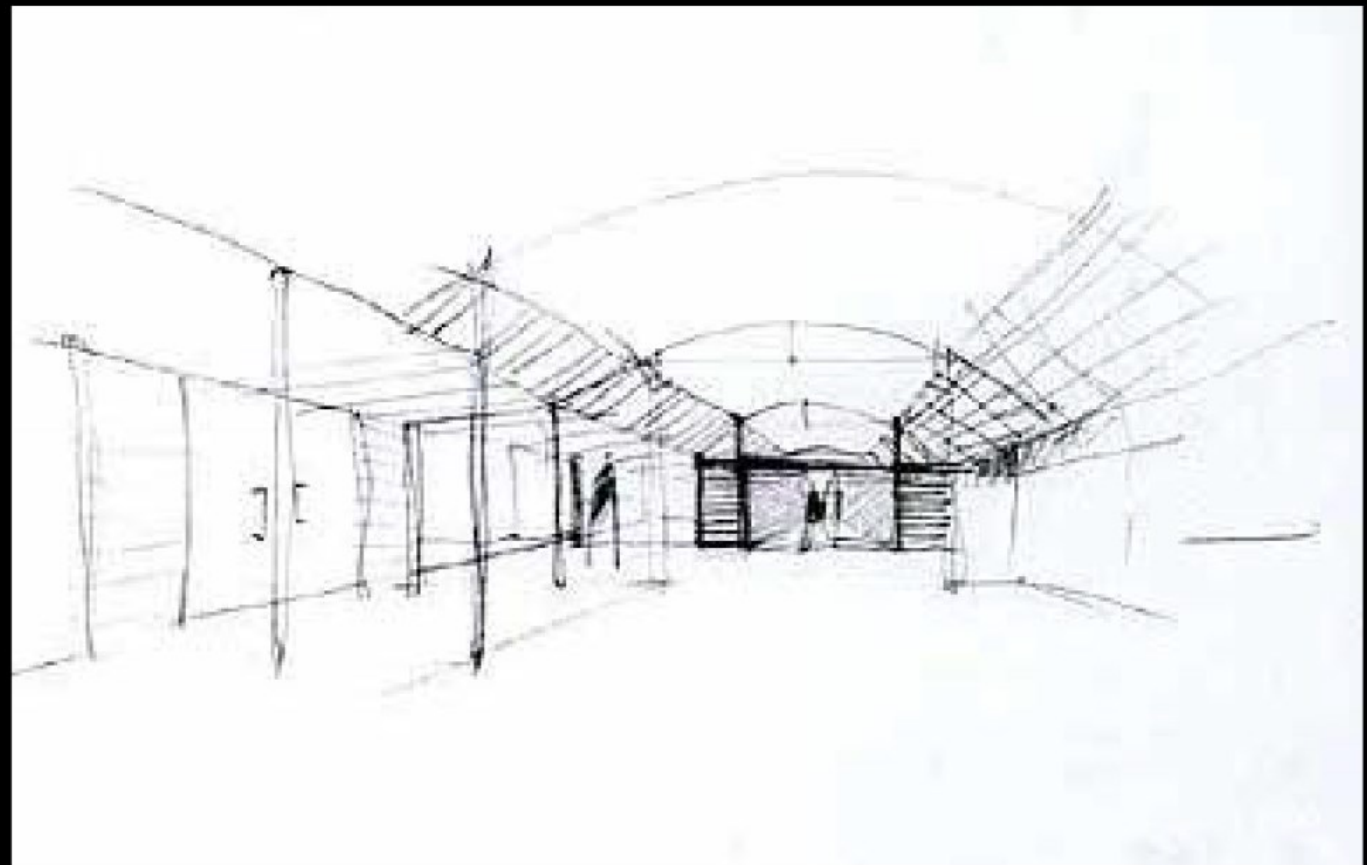


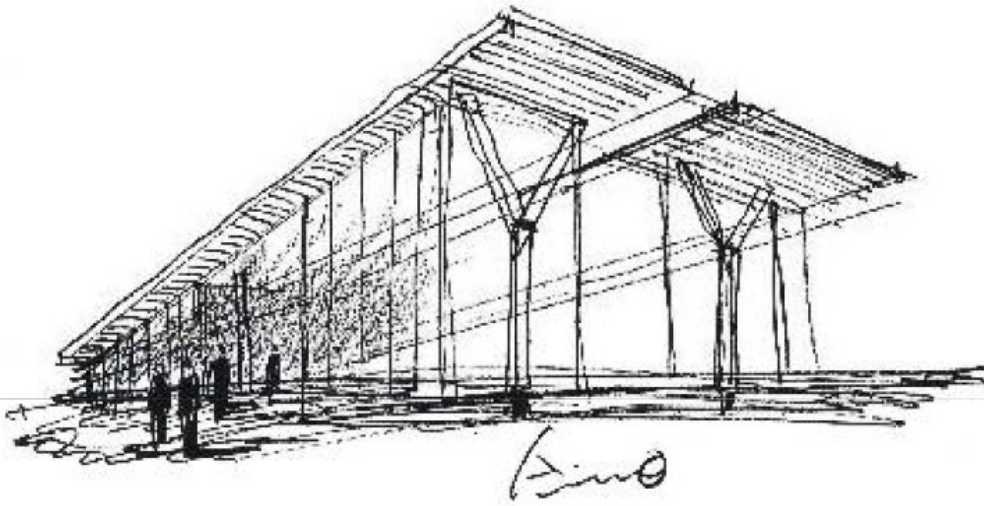
CHARLES MOORE



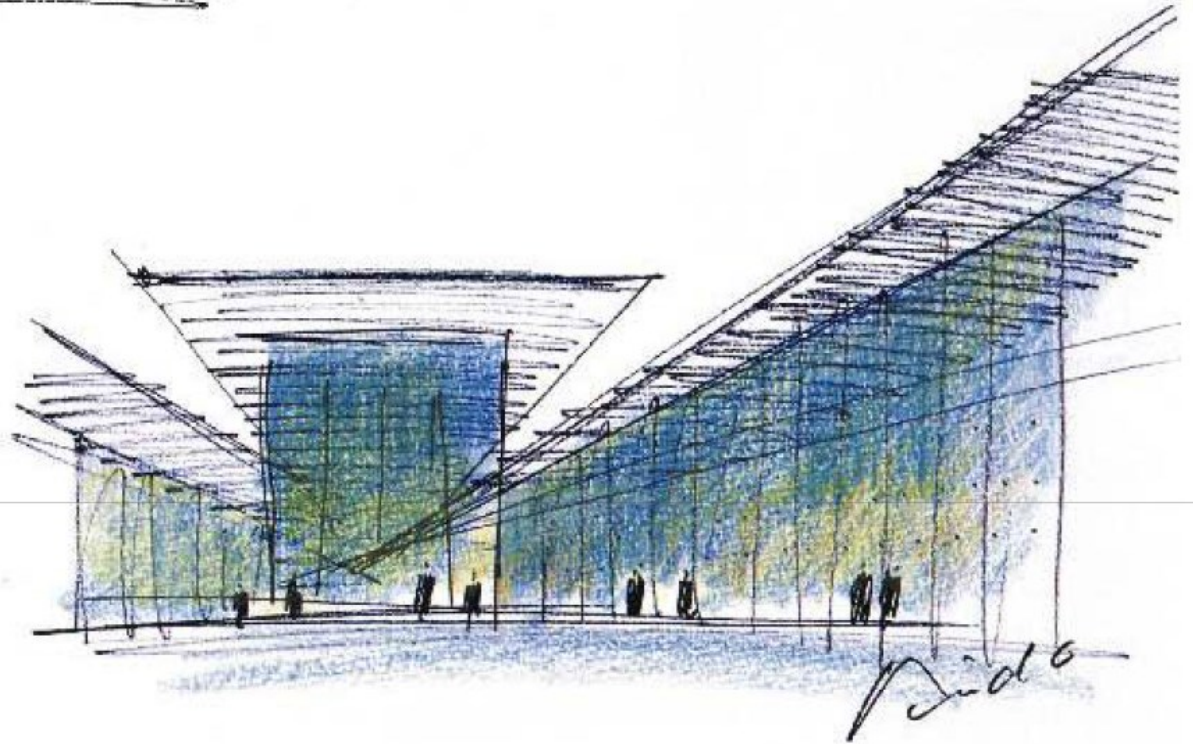


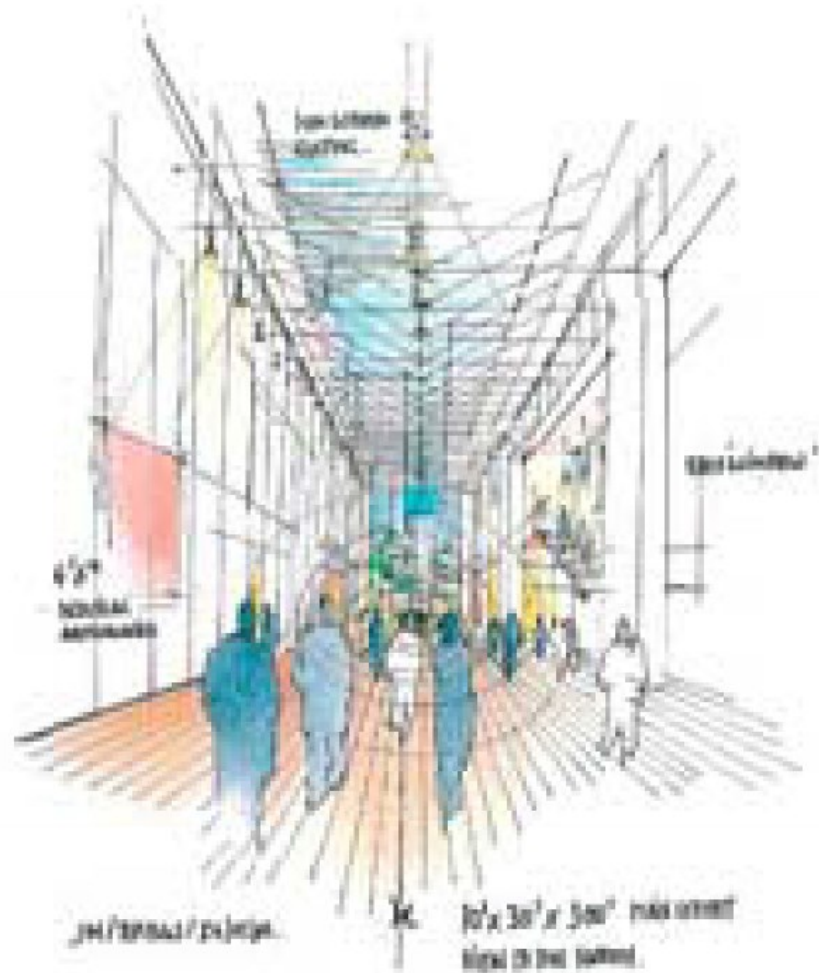
GLENN MURCUTT



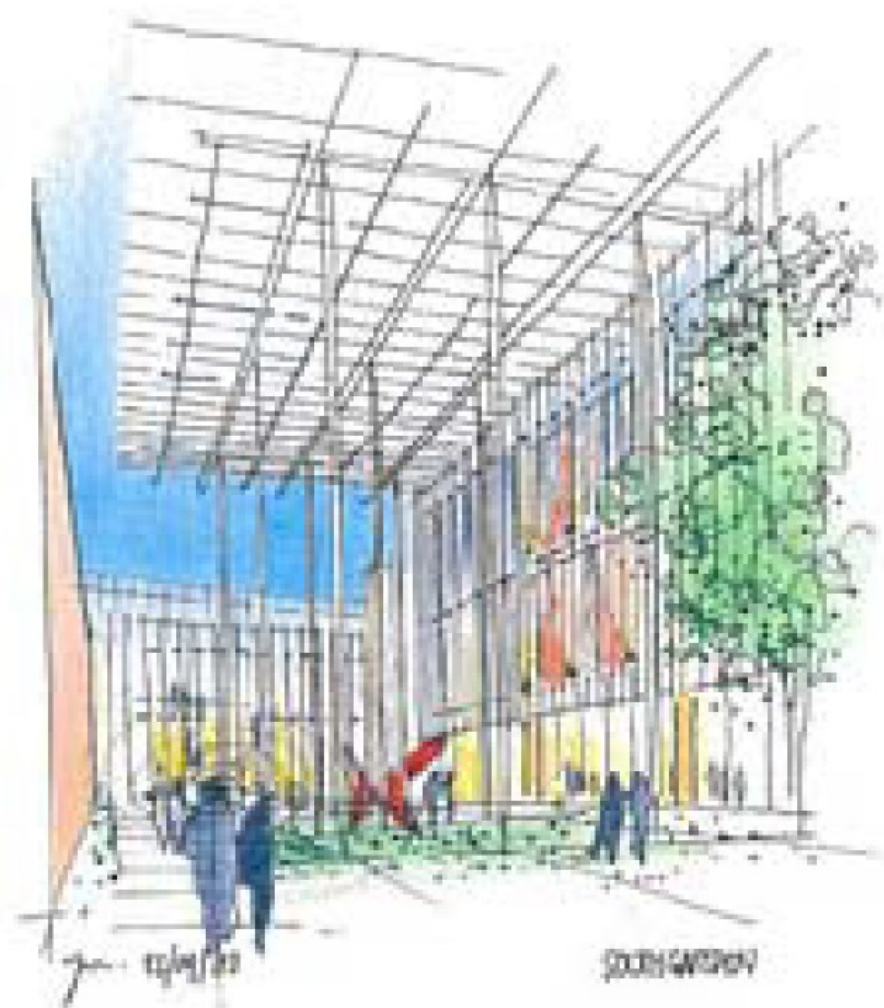


TADAO ANDO





RENZO PIANO



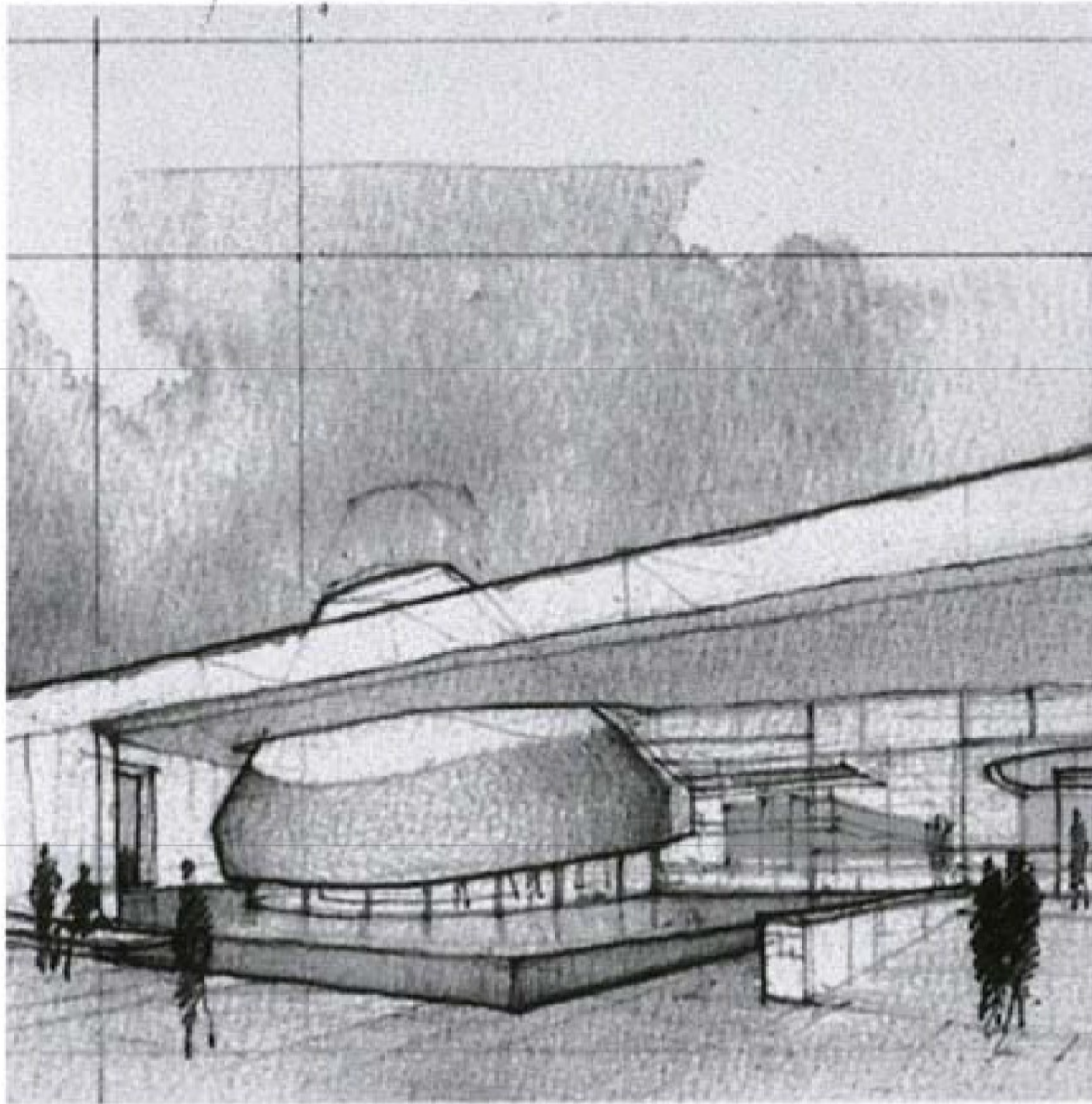


ANTOINE PREDOCK



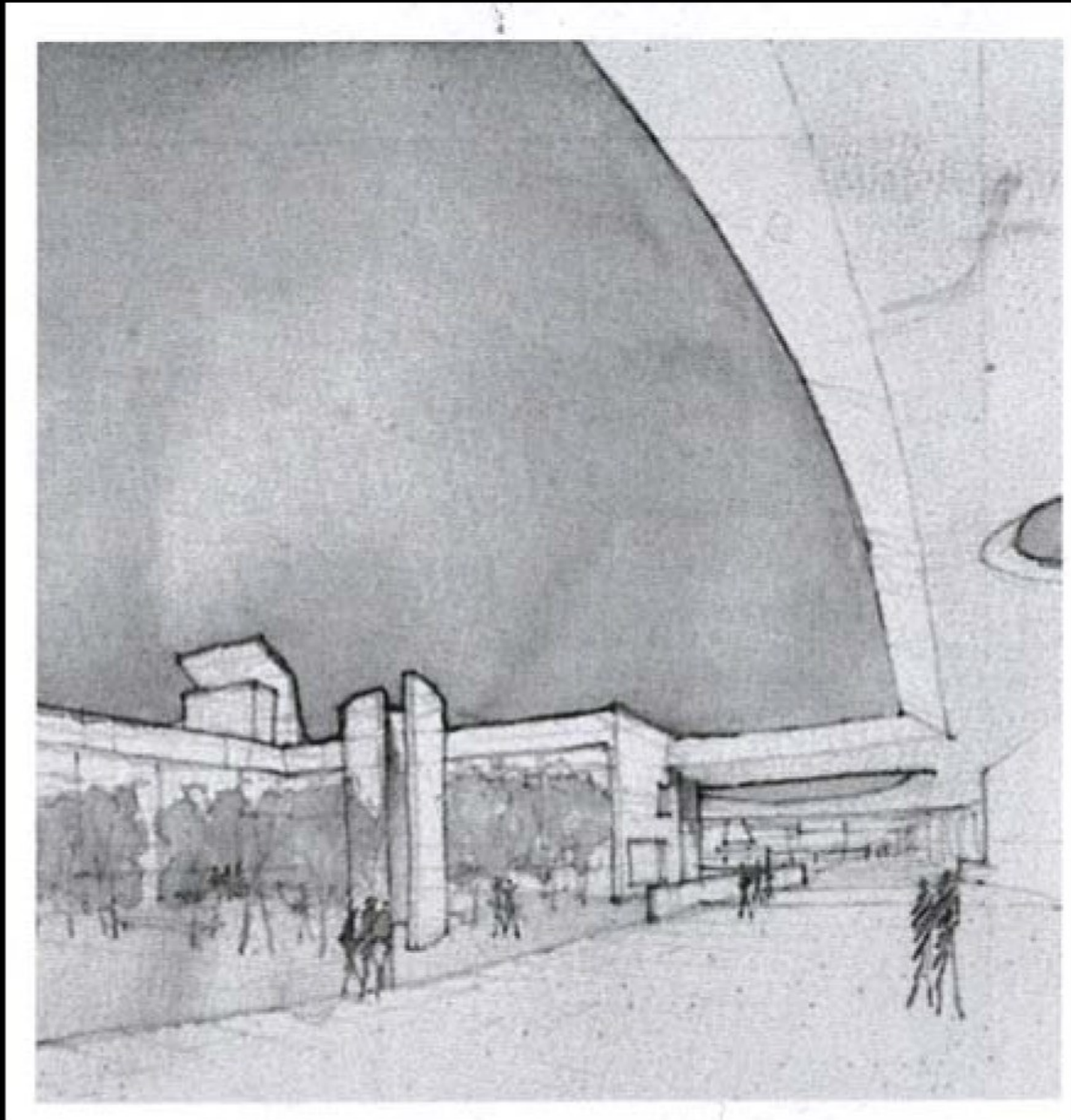


STEVEN HOLL

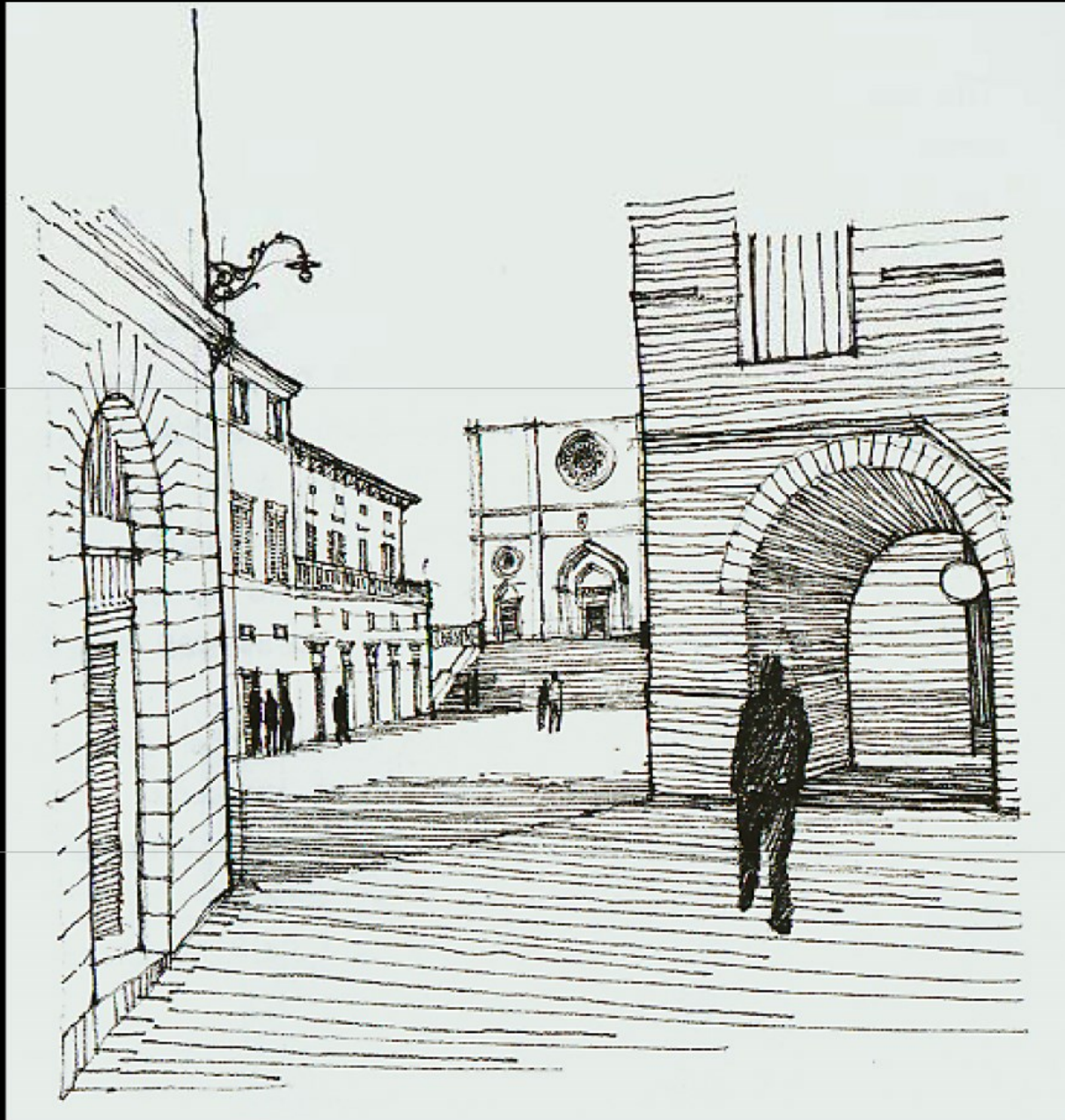


SKETCHES

ARCHITECTURE 2250 **DRAWING / DIAGRAMMING**

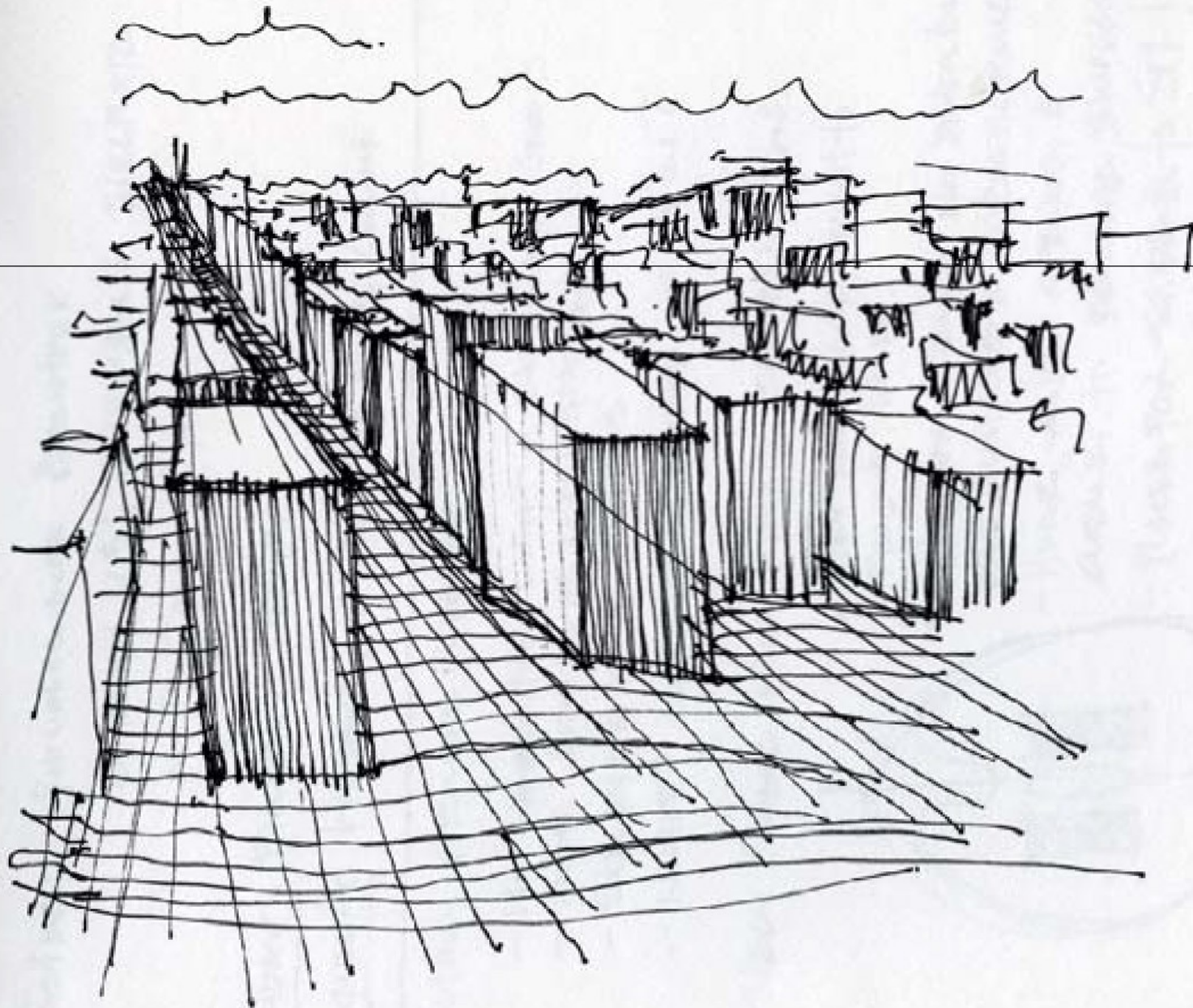


SKETCHES

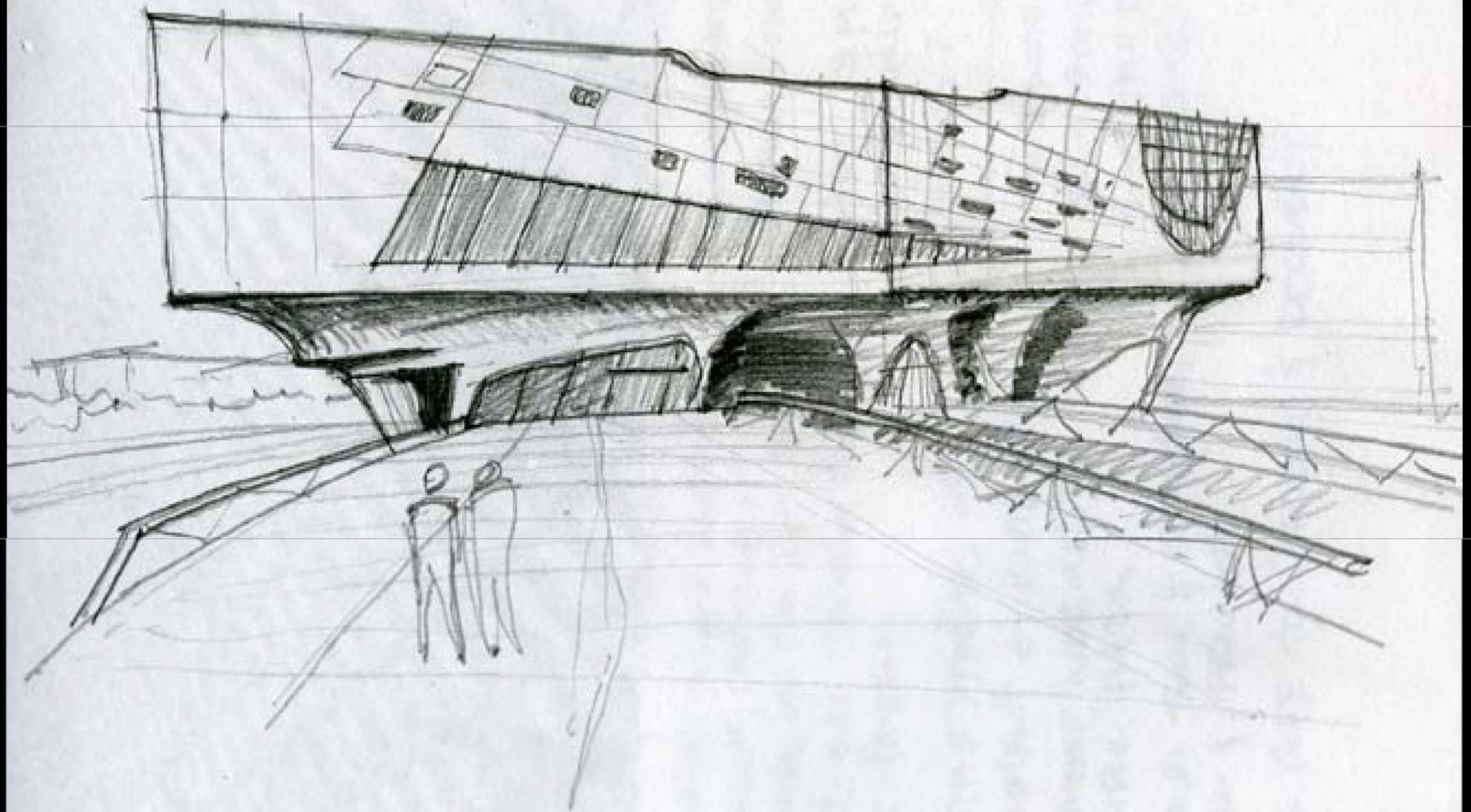


SKETCHES

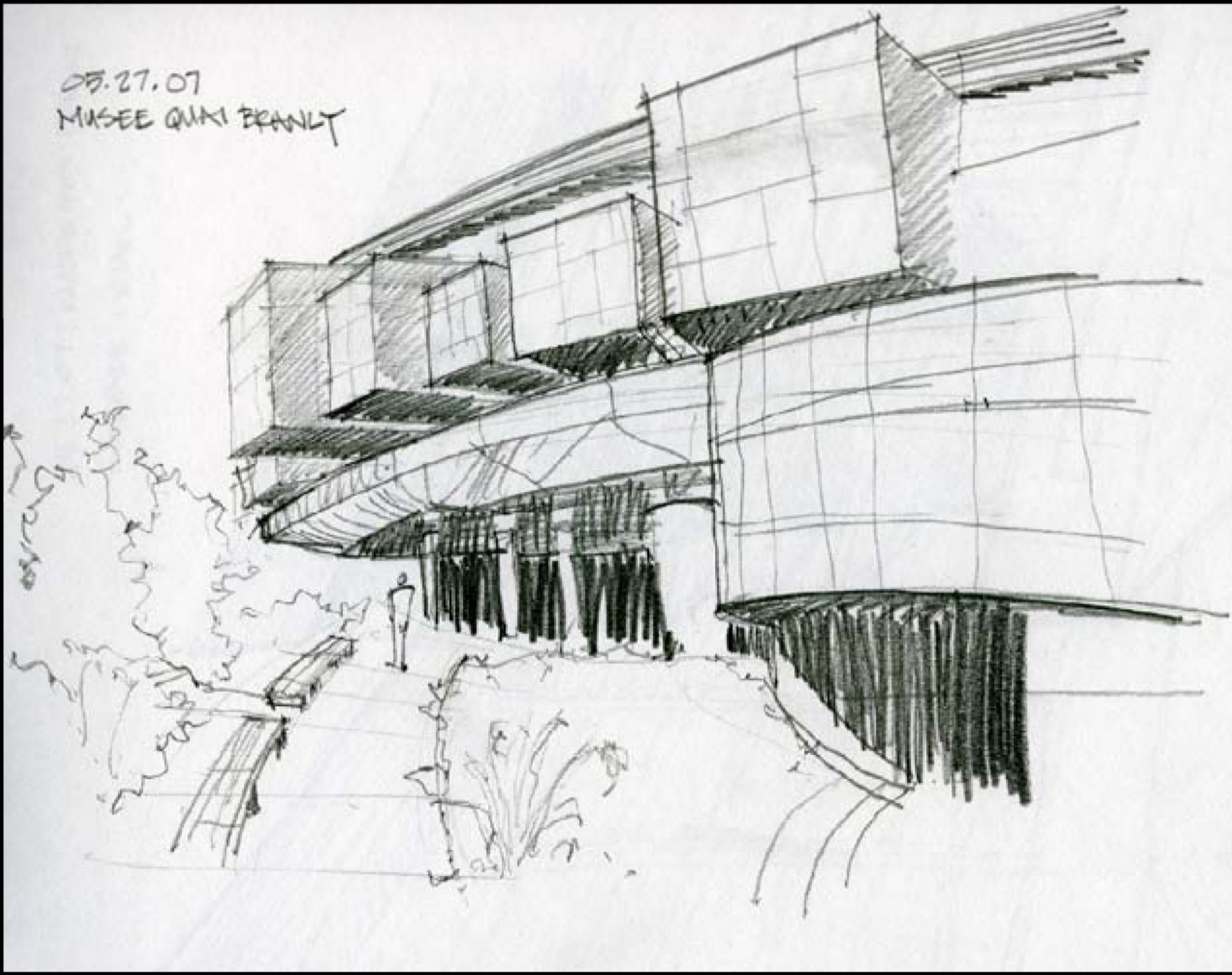
05.31.07: MONUMENT TO MURDERED JEWS OF EUROPE.



00.02.01; PHABNO SCIENCE CENTER

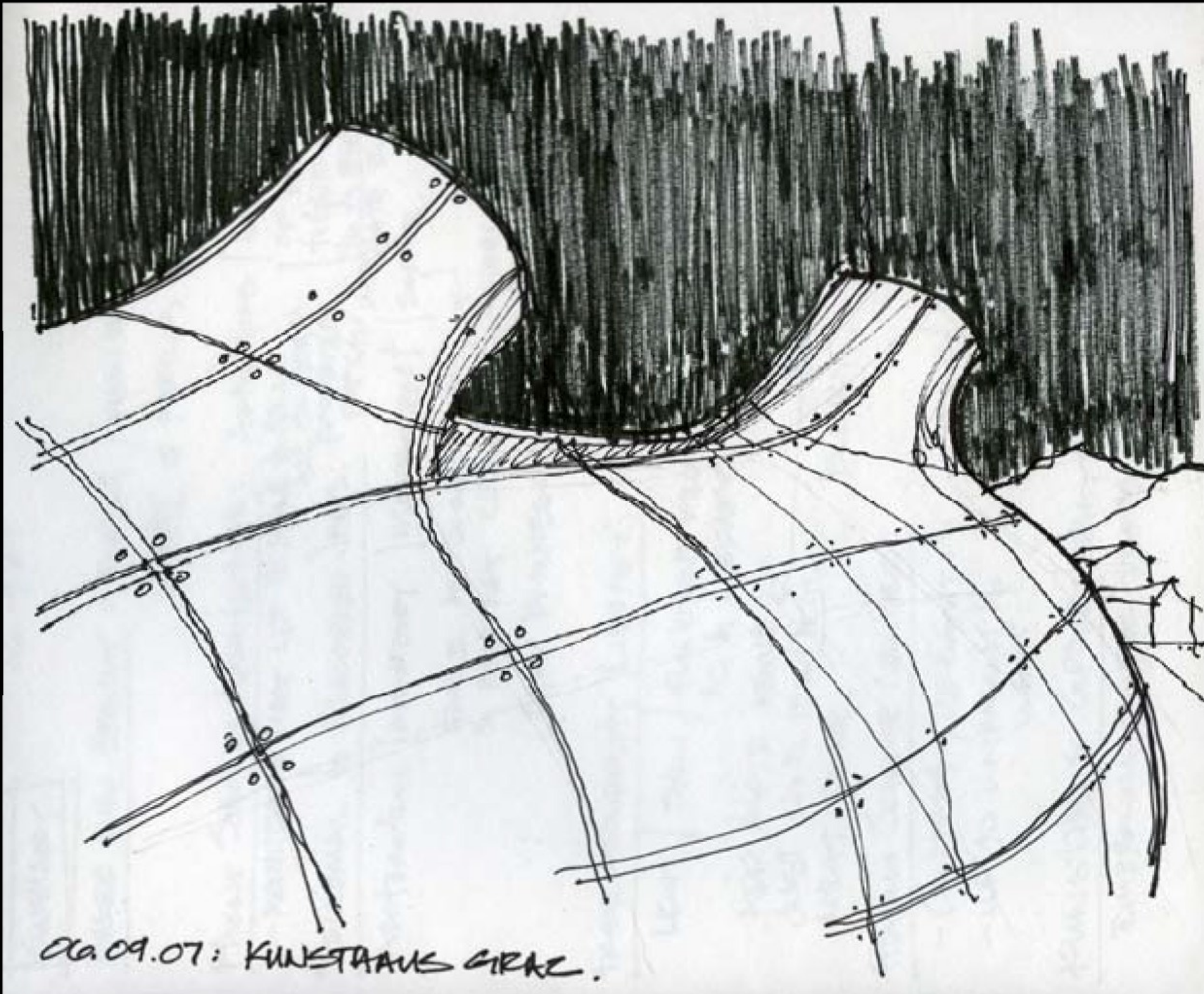


05.27.07
MUSEE QUAI BRANLY

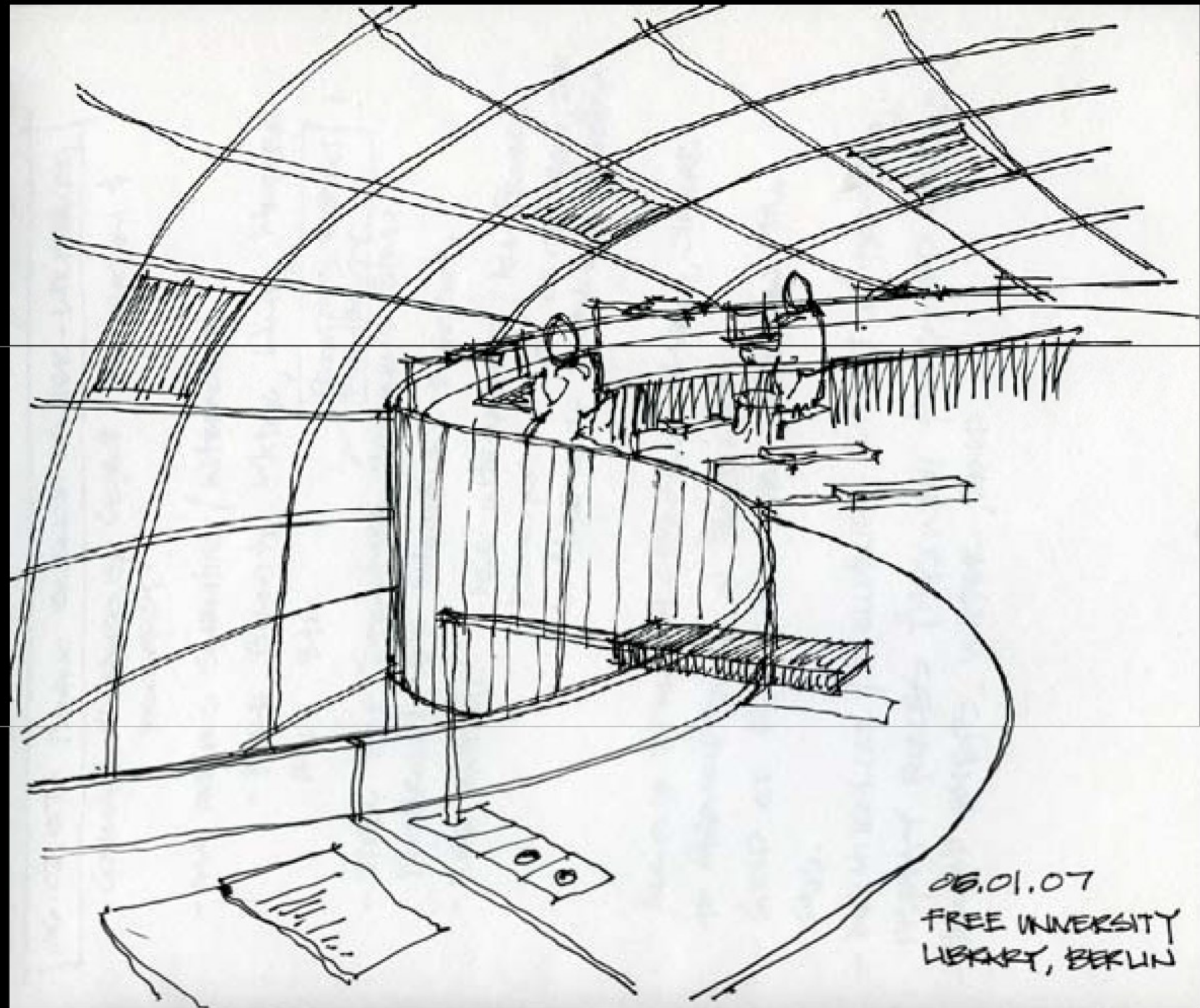


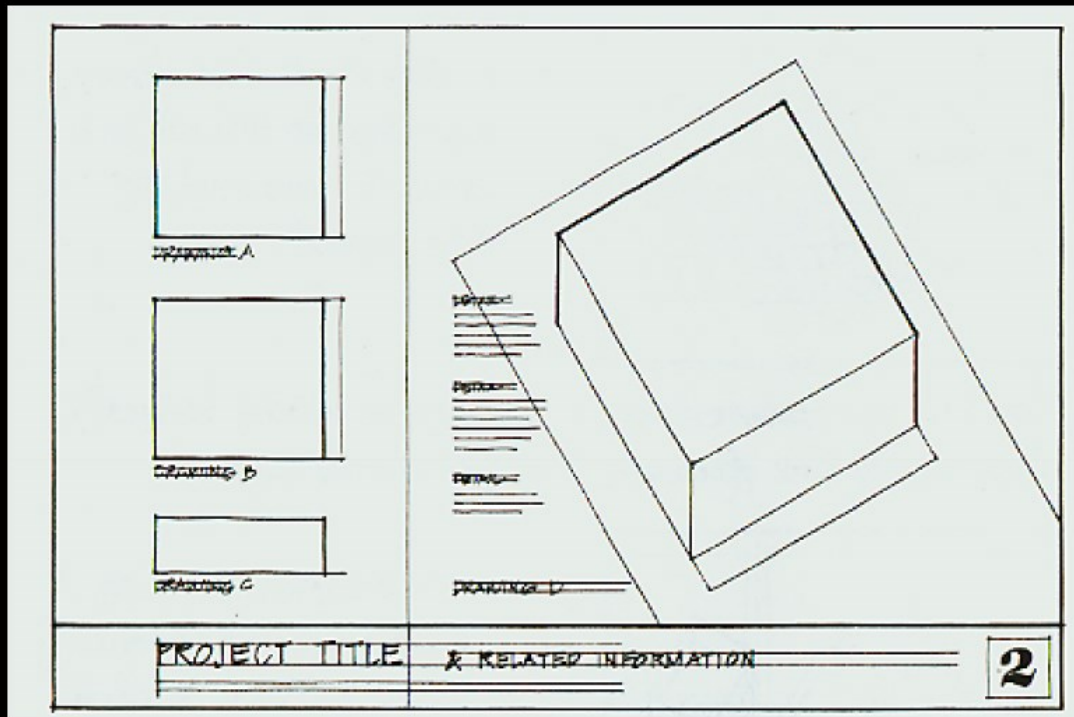
NAMSEE QUAI BEANLY
05.29.07



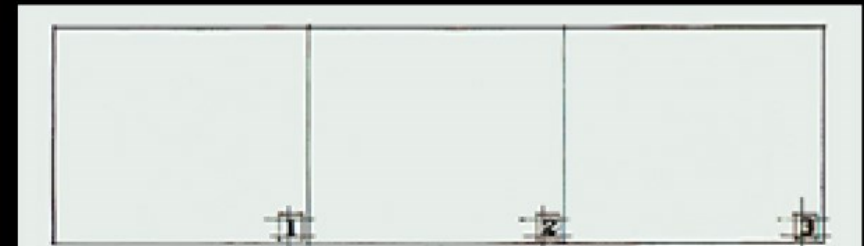


06.09.07: KUNSTHAUS GRAZ.





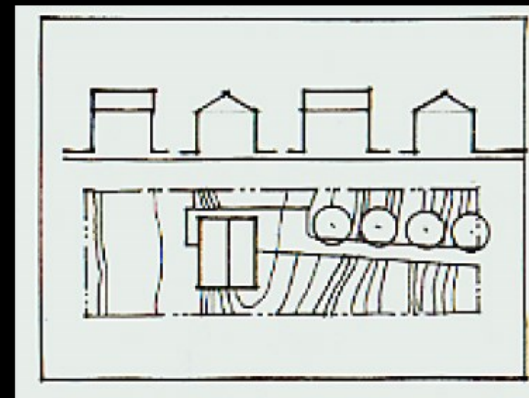
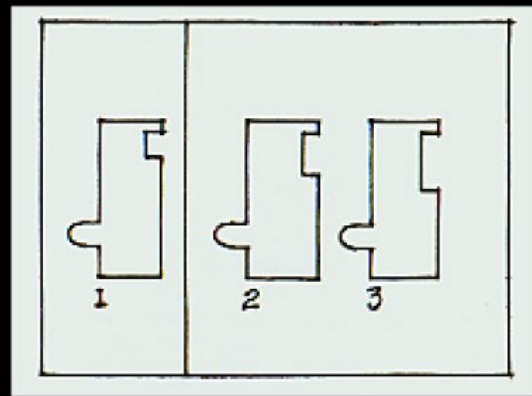
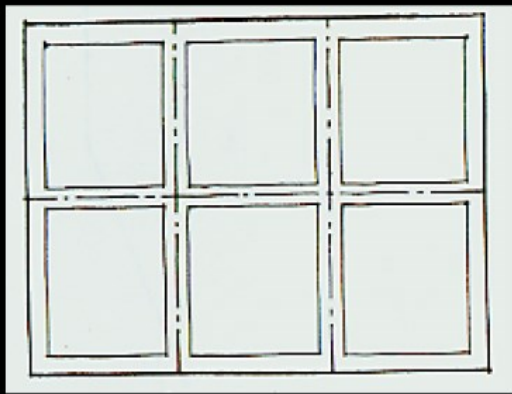
COMPOSITION / PRESENTATION



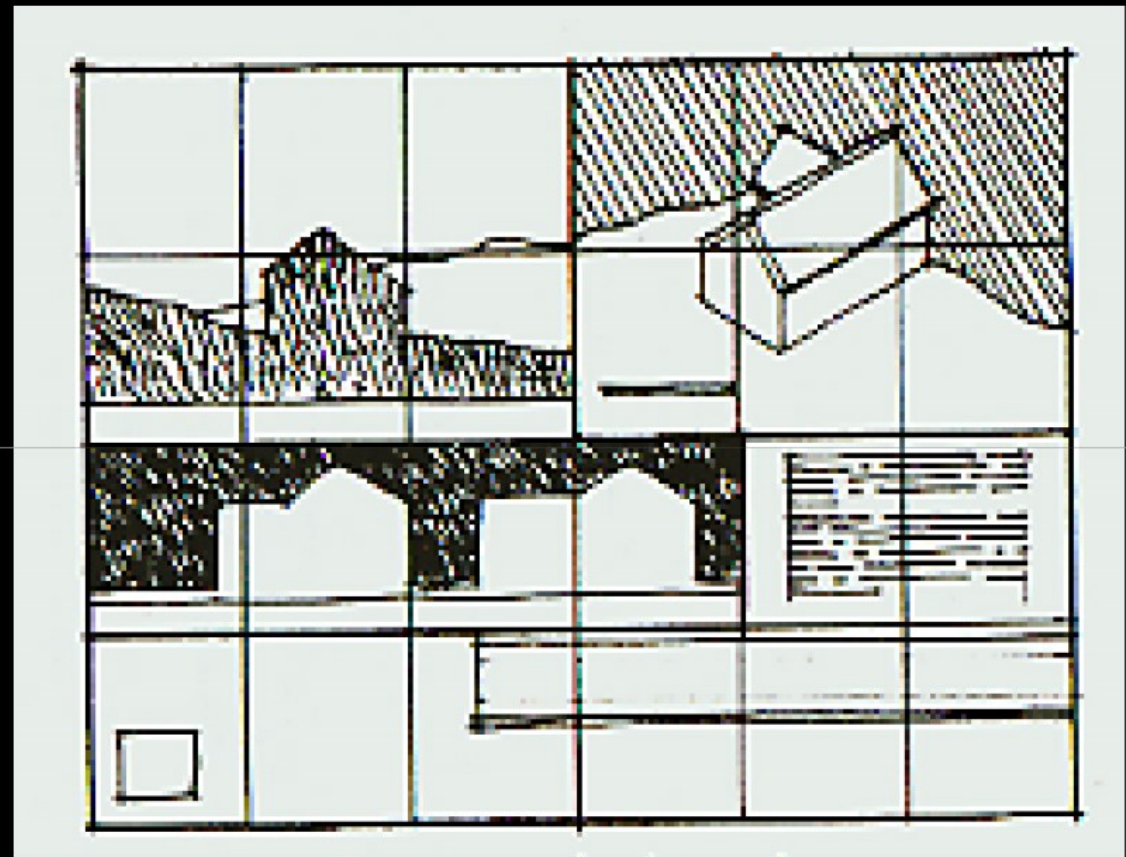
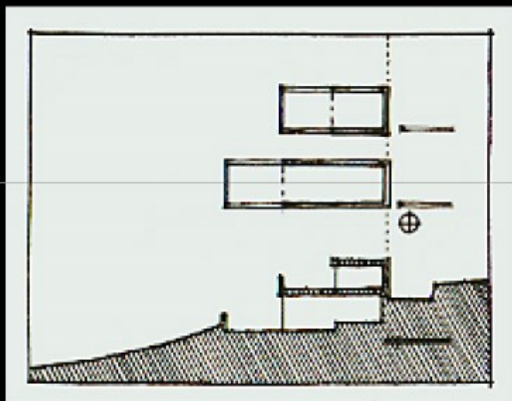
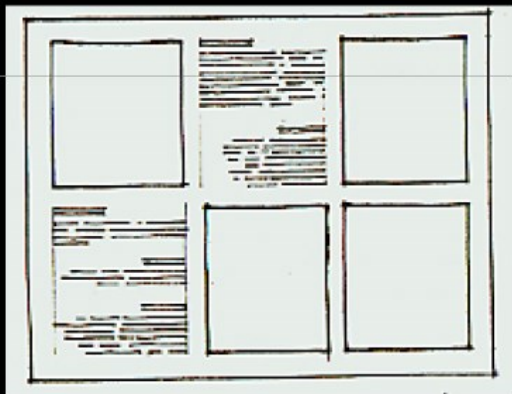
When a presentation consists of more than one panel or board, each panel or board may be identified by a number. This information should be in the same relative position on each board.

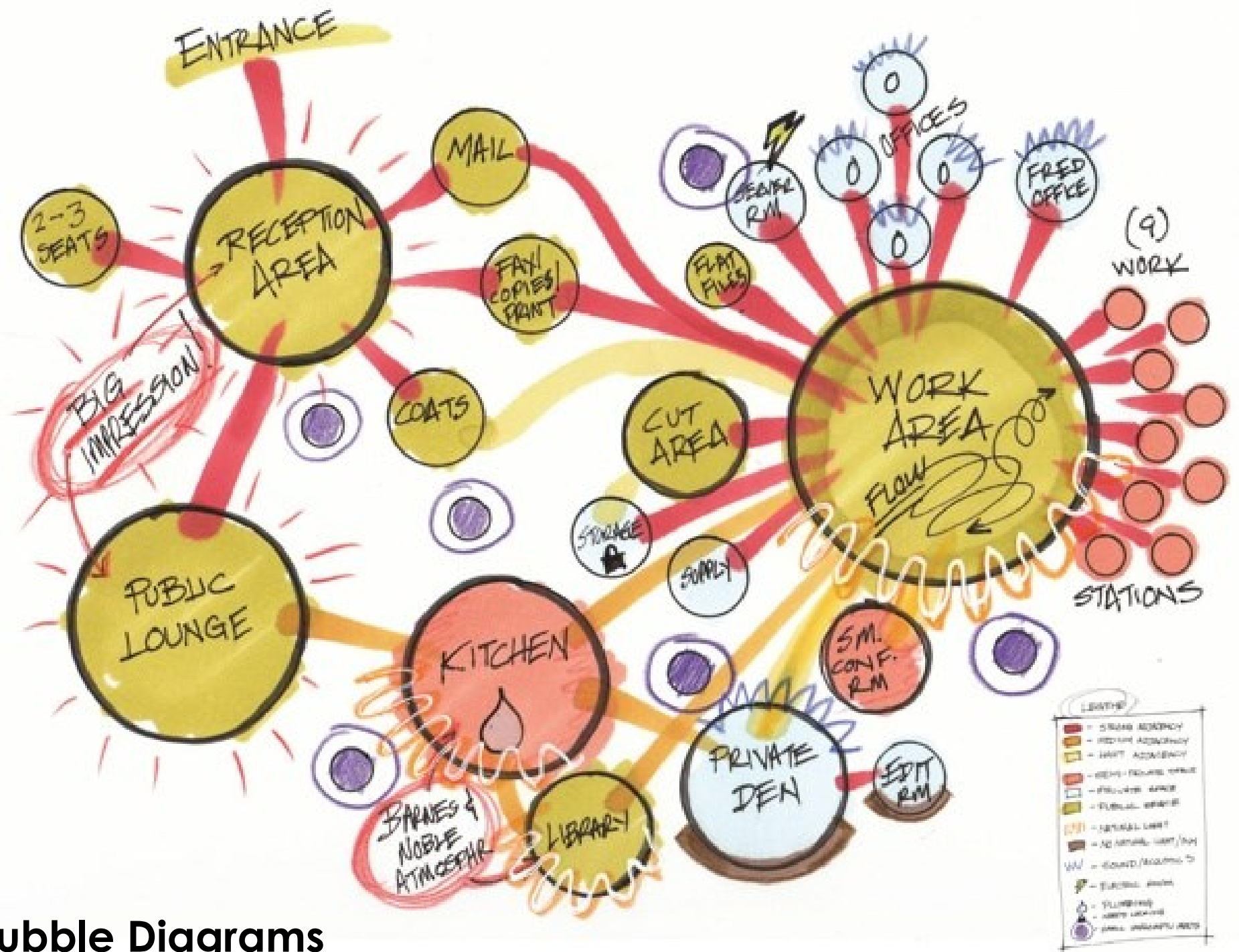


If you wish the panels to be displayed in a specific manner, you may use a more graphic means to identify the relative position of each panel in the display.



COMPOSITION / PRESENTATION





Bubble Diagrams

Bubble Diagrams

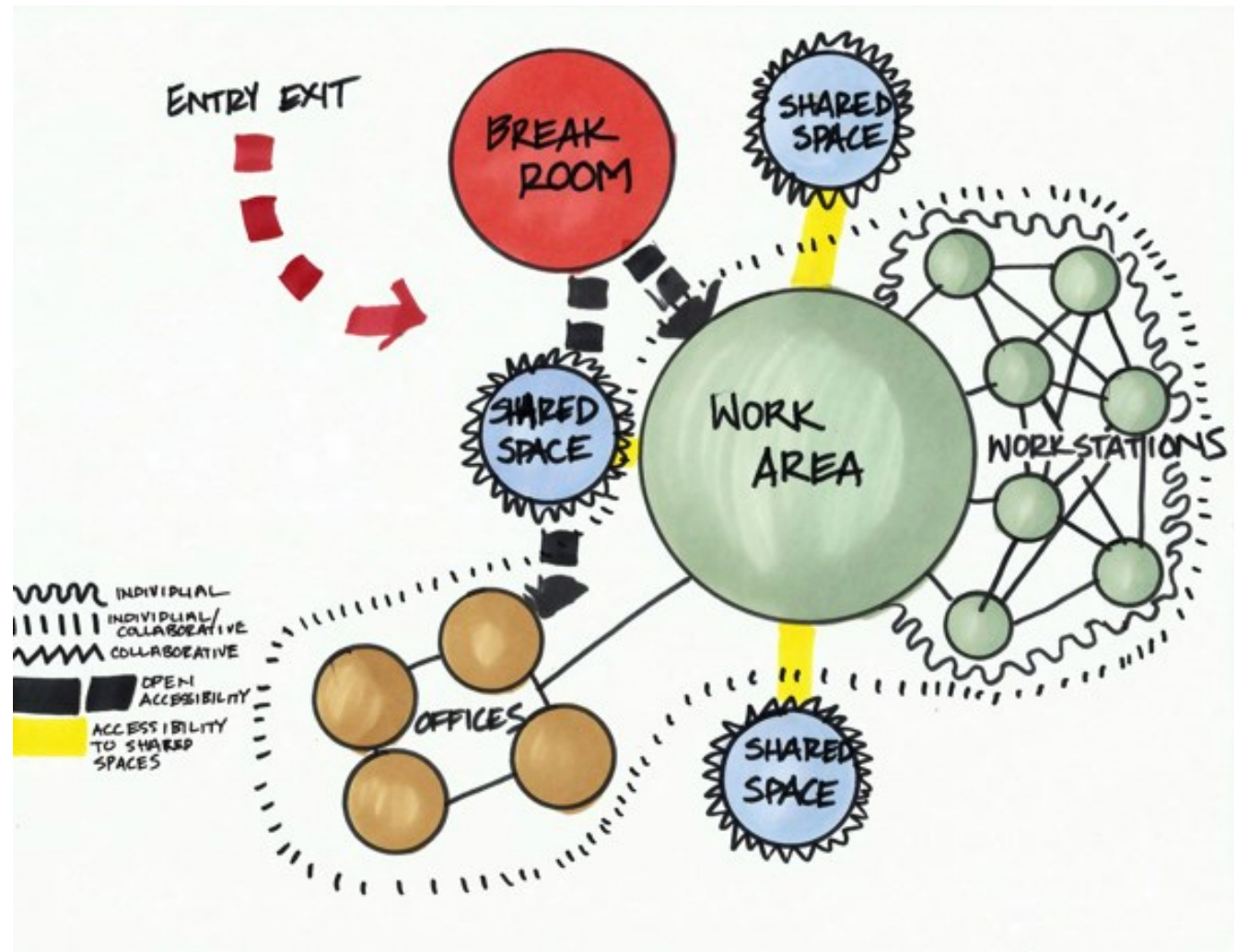
Why have them?

Good designers find it hard to **"think without a pencil"** and **"must interact with the drawing"**.

- ❑ They **play an important role** in design practice.
- ❑ Diagrams are drawn **to explore ideas and solutions** in the **early, conceptual phases of design**.
- ❑ They are used to **help designers think** about **design parameters**
- ❑ They are a **fast way to record ideas**.

- ❑ A diagram **omits detailed scale or realistic pictorial representations**
- ❑ it indicates **spatial relationships**, using **indefinite shapes**.
- ❑ For example, a diagram may represent functional spaces in a floor plan as crude '**bubbles**', showing only

- ❑ **sizes**
- ❑ **adjacencies**
- ❑ **containment**
- ❑ **connections**



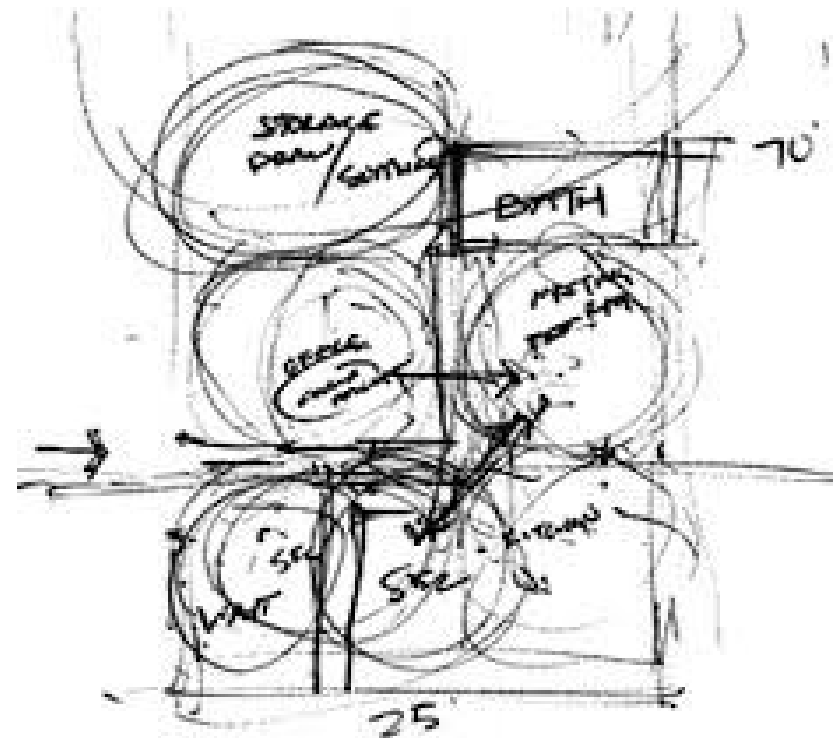
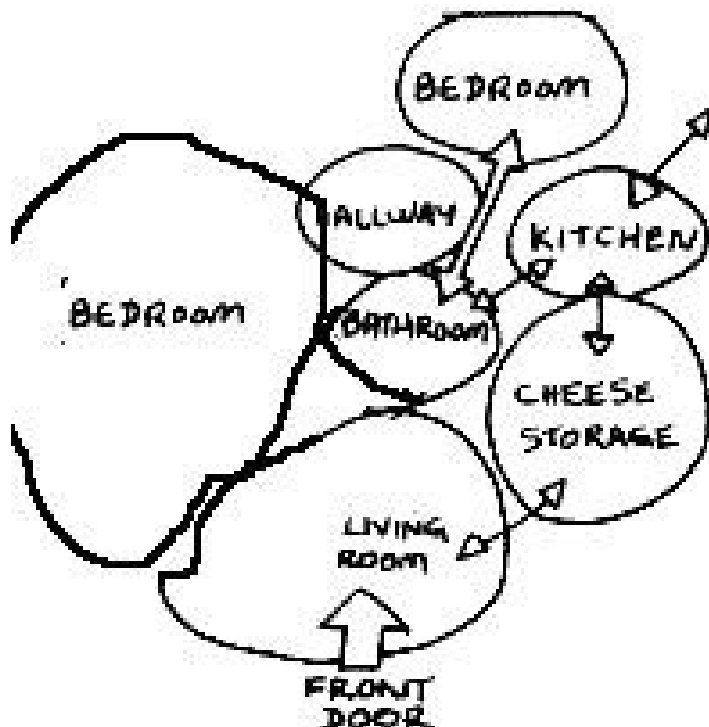
Terms

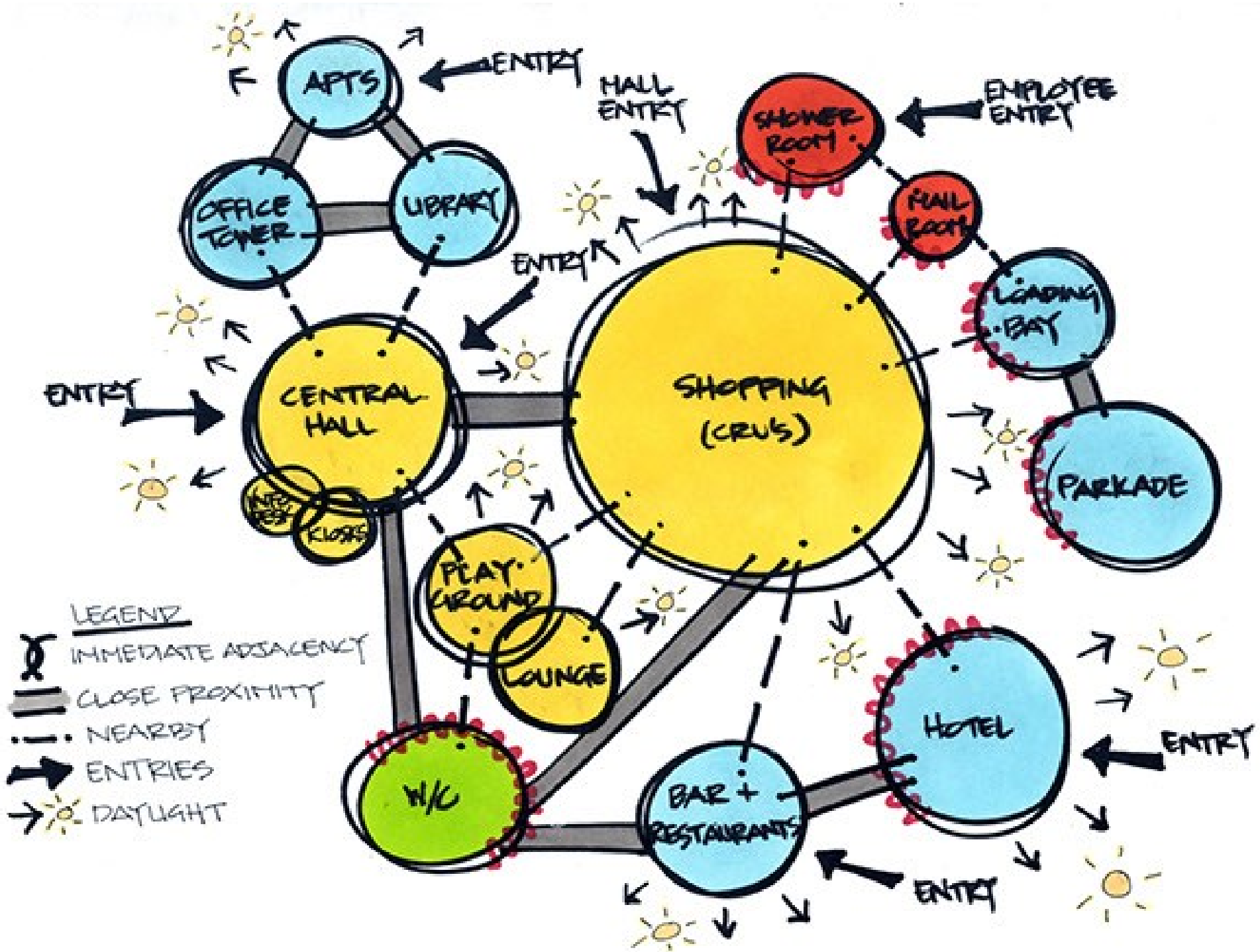
Bubble diagram

– Graphic means of **organizing spaces within a design**






Bubble

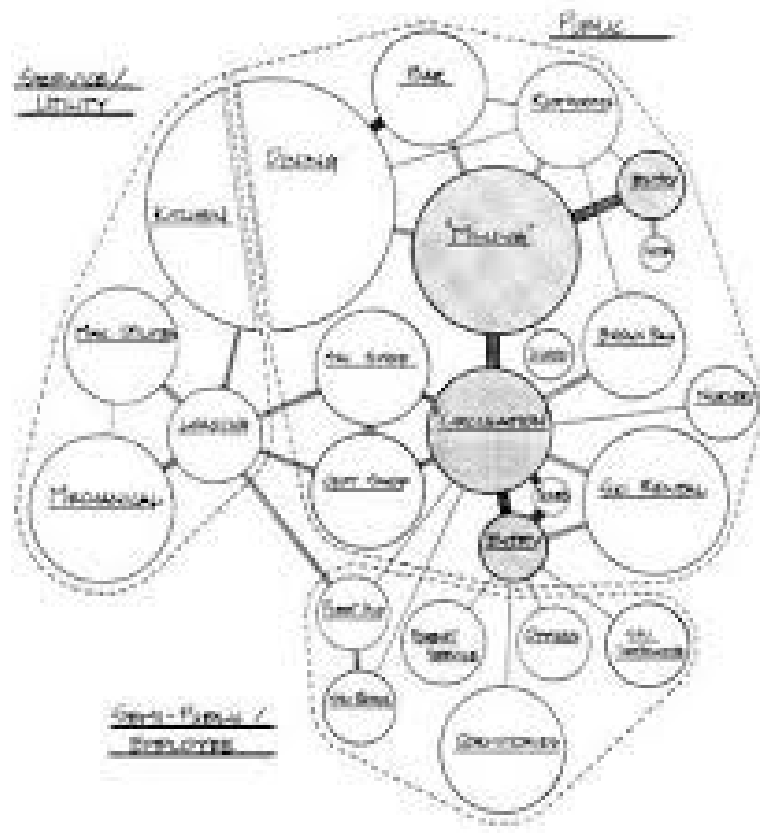
– Round or elliptical shape **representing one space** within a design that is drawn showing **its location and proportional size**



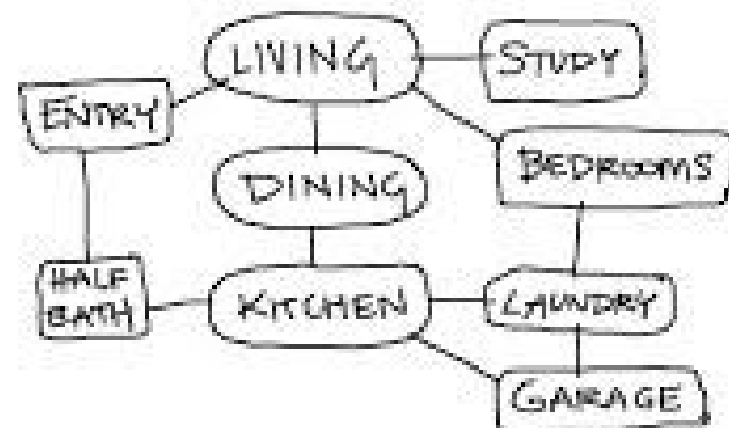


LEGEND

-  IMMEDIATE ADJACENCY
-  CLOSE PROXIMITY
-  NEARBY
-  ENTRIES
-  DAYLIGHT



"BUBBLE DIAGRAMS"



Steps in using bubble diagrams

1. List functions to be performed (ex: museum)

storage, operations, administration, educational, gift shop, exhibits, prep areas, café, staff area, children's area, public restrooms

2. Rank functions according to size allocation (approximate square footage)

exhibits

storage

operations, administration

educational

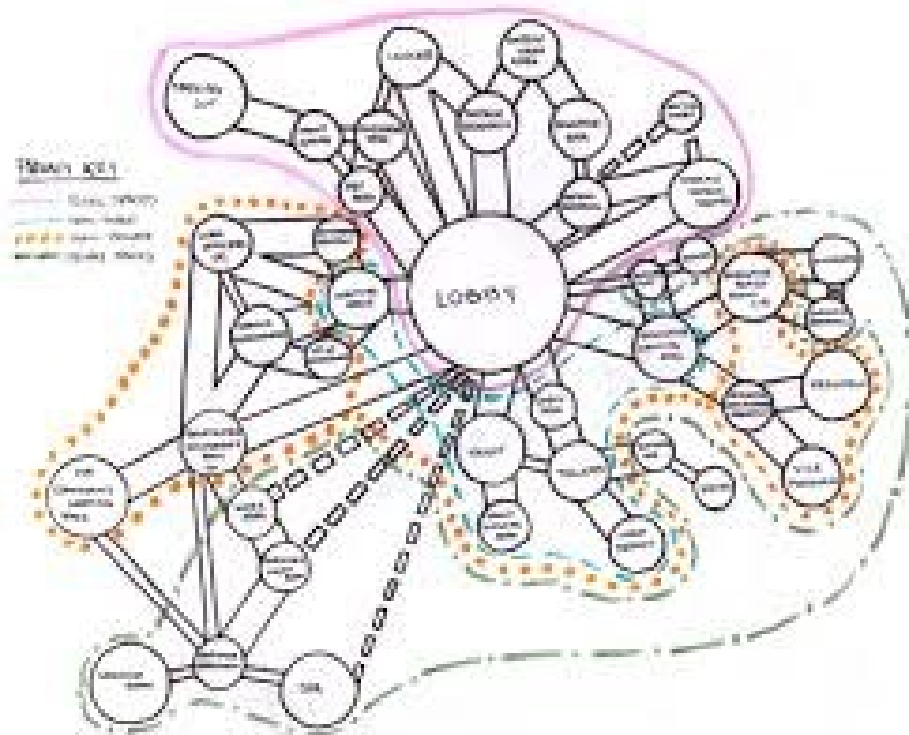
children's areas

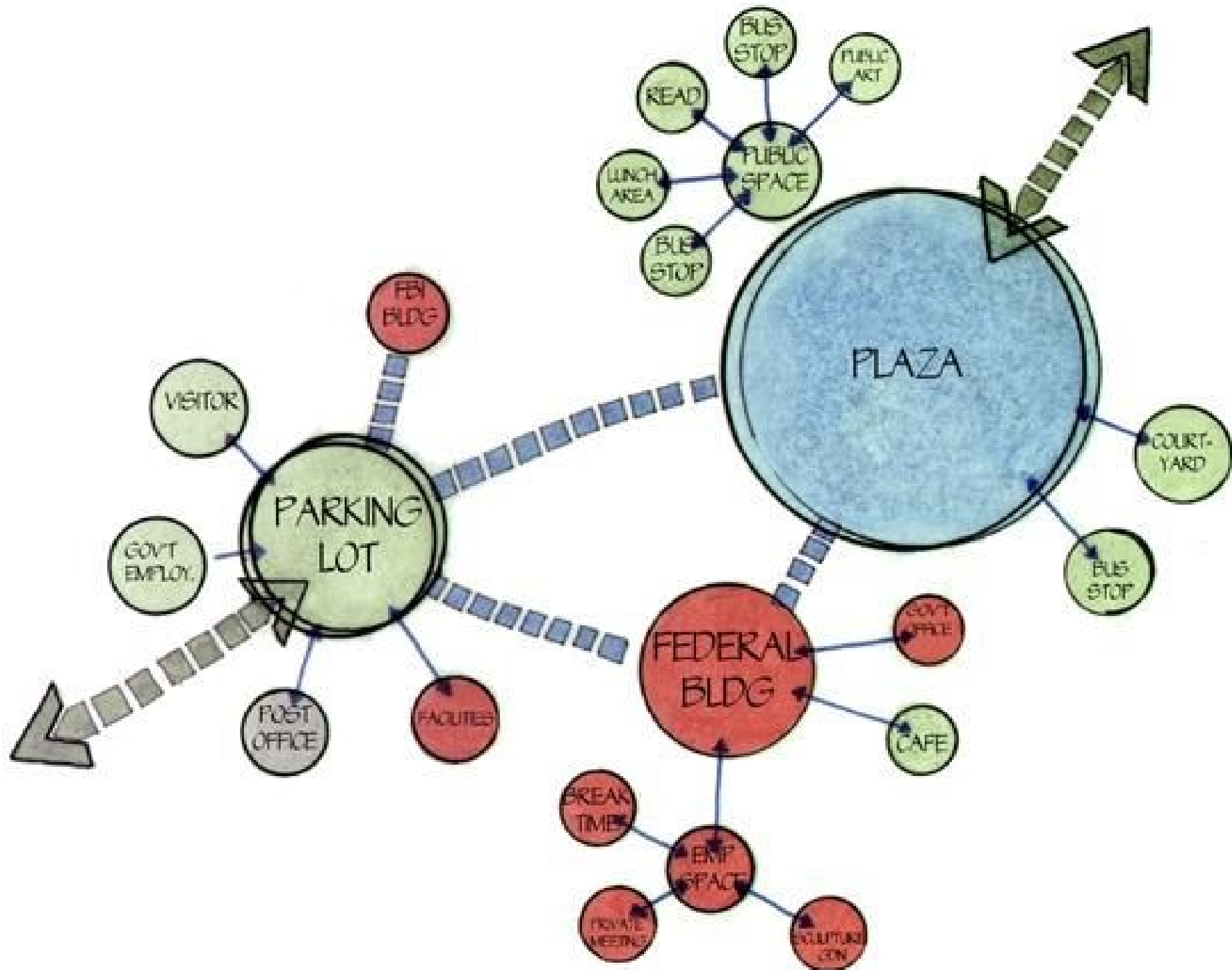
public restrooms, prep area, staff area

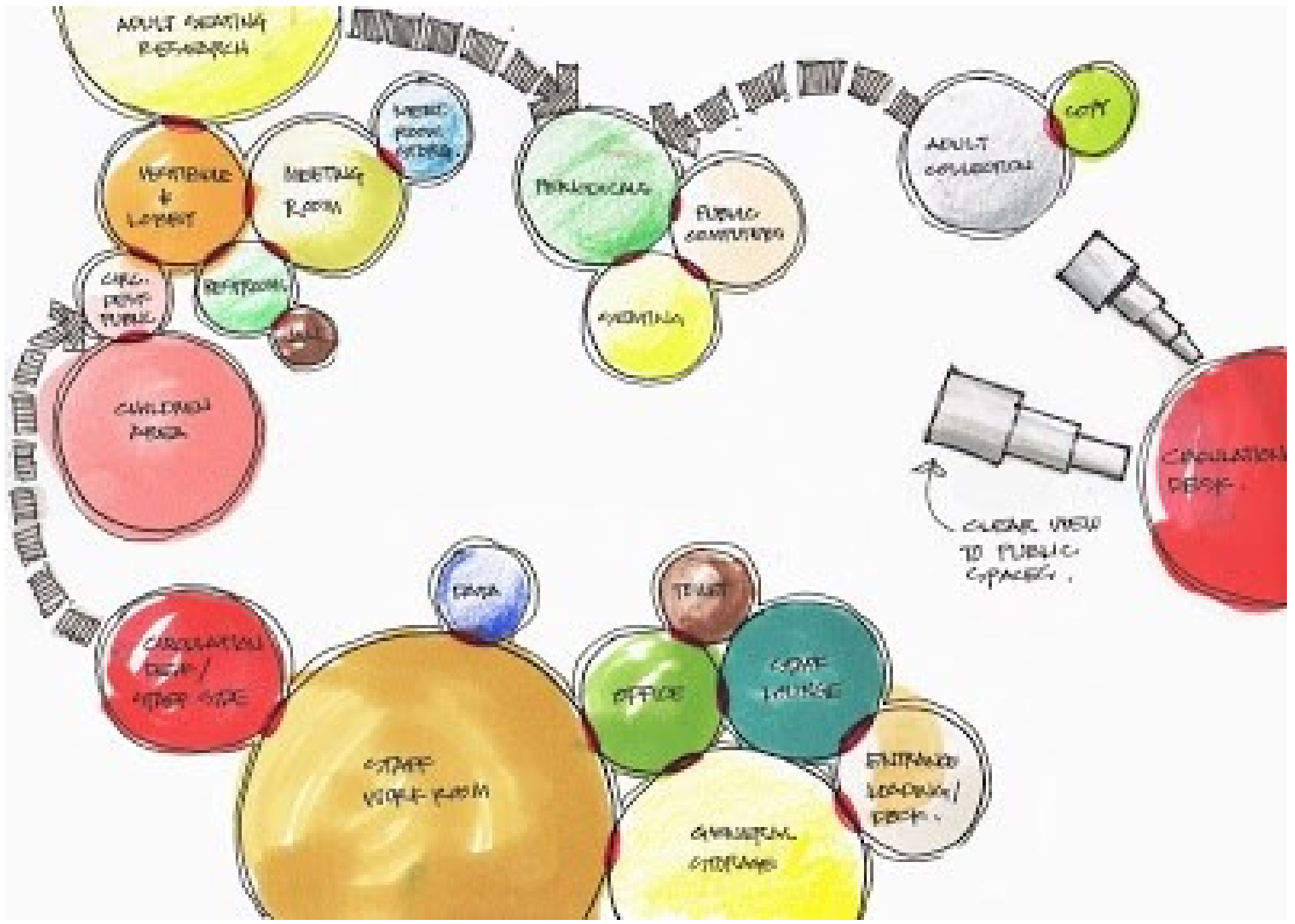
café, gift shop

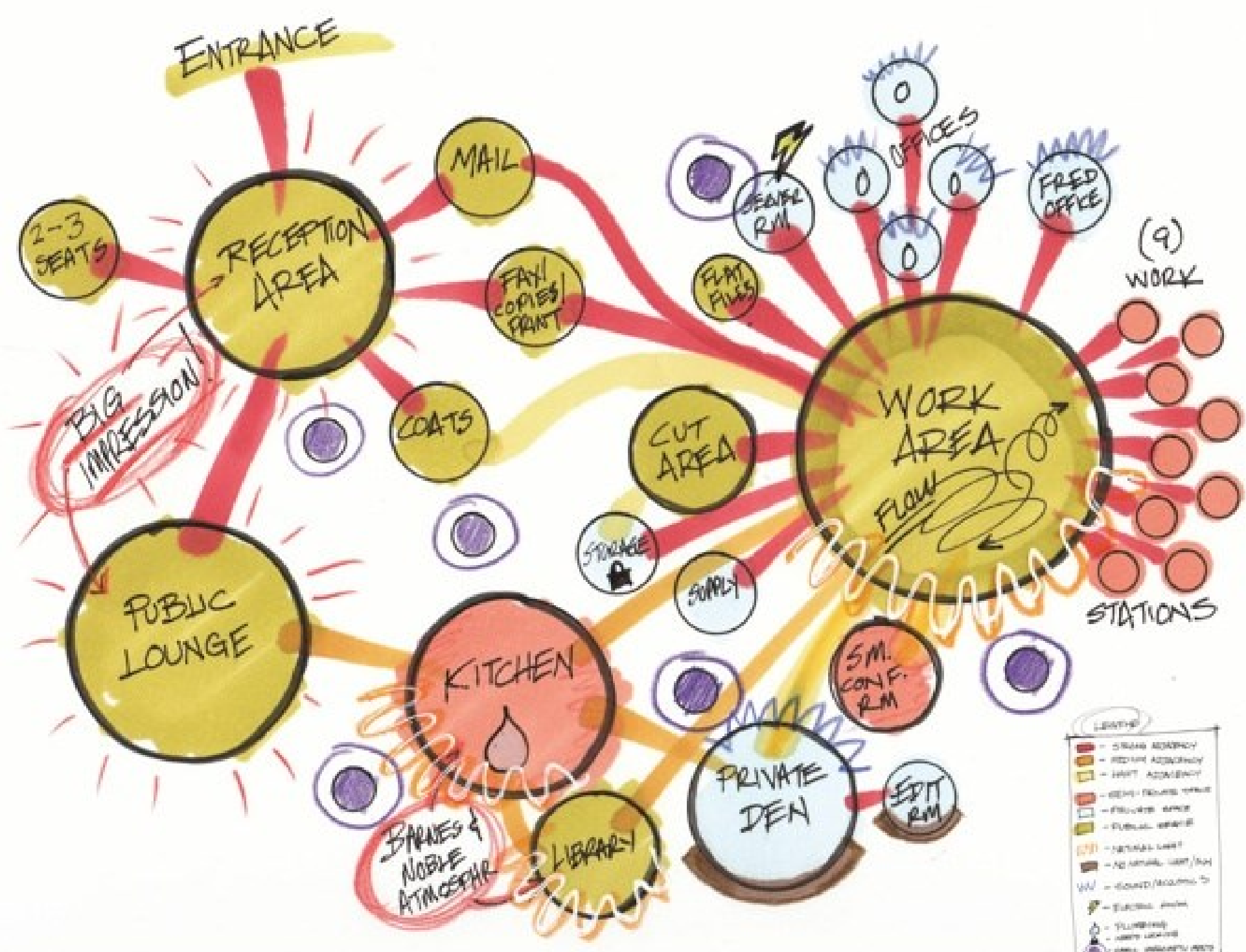
3. Taking circulation between spaces into consideration, draw bubbles (drawn to proportional relationship)

SPACE ASSOCIATIONS

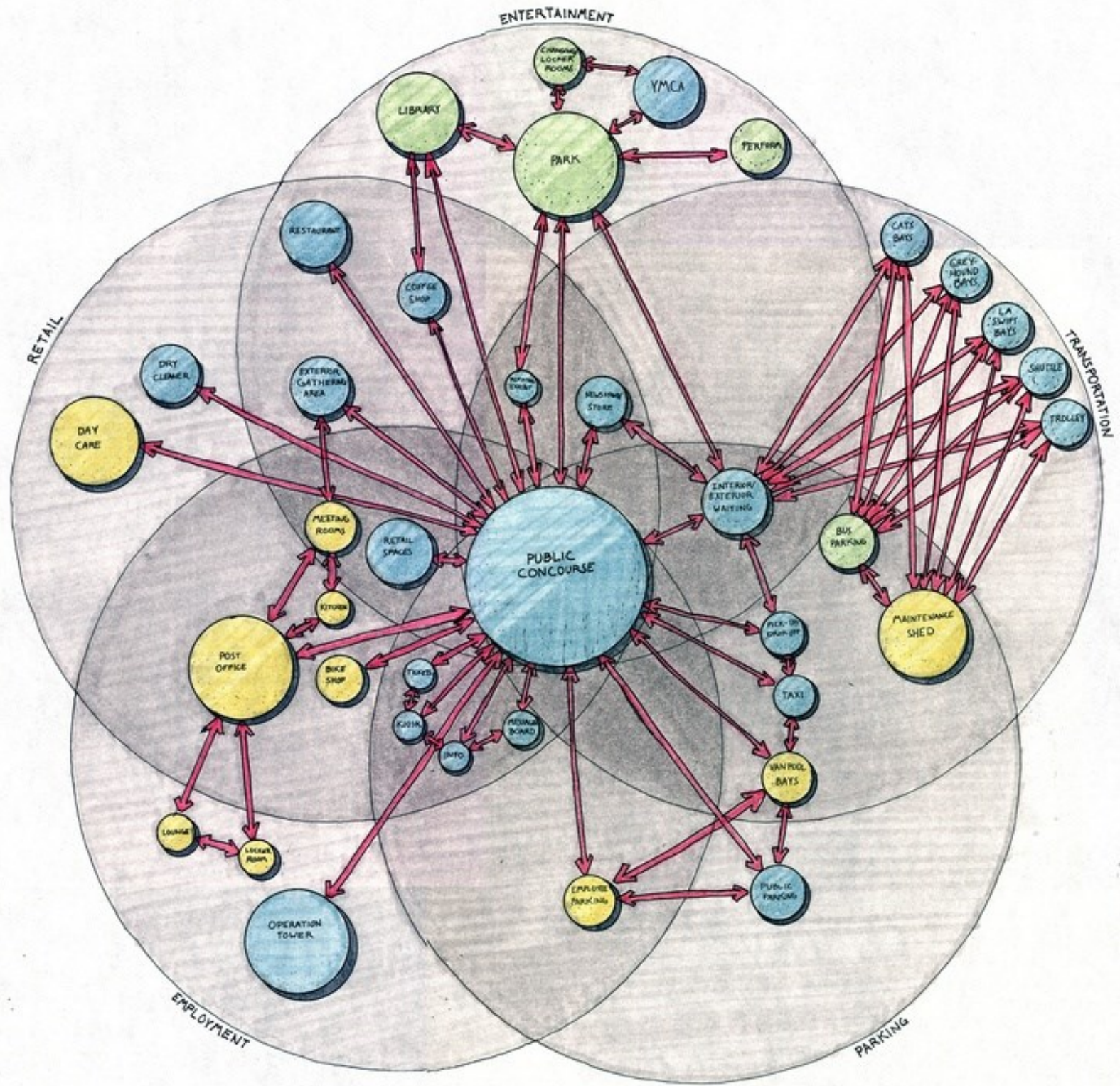




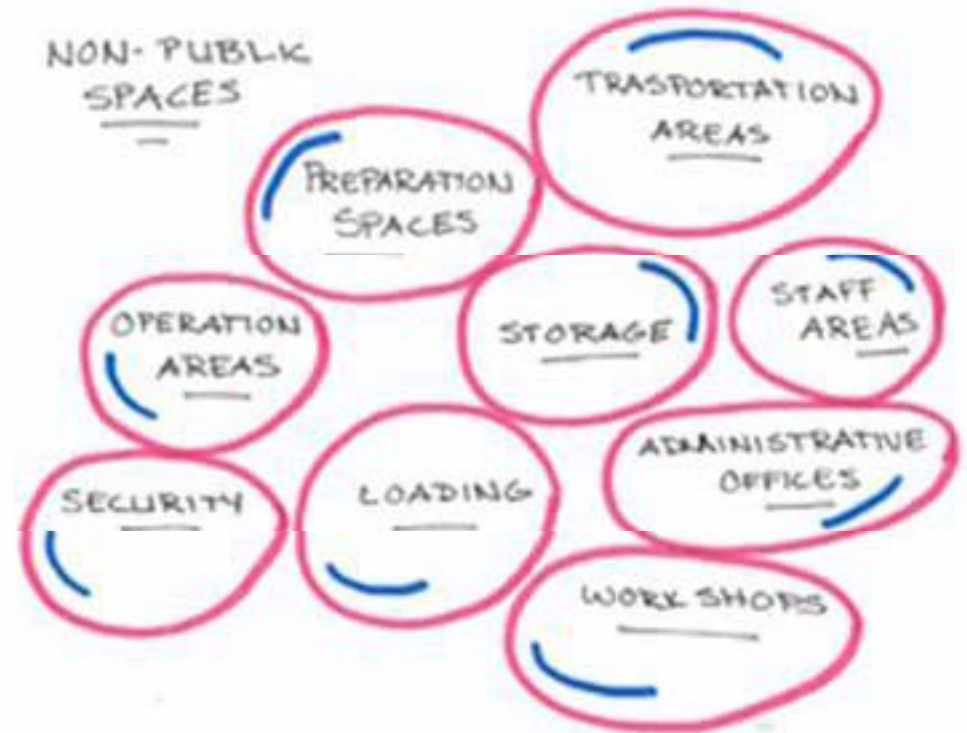




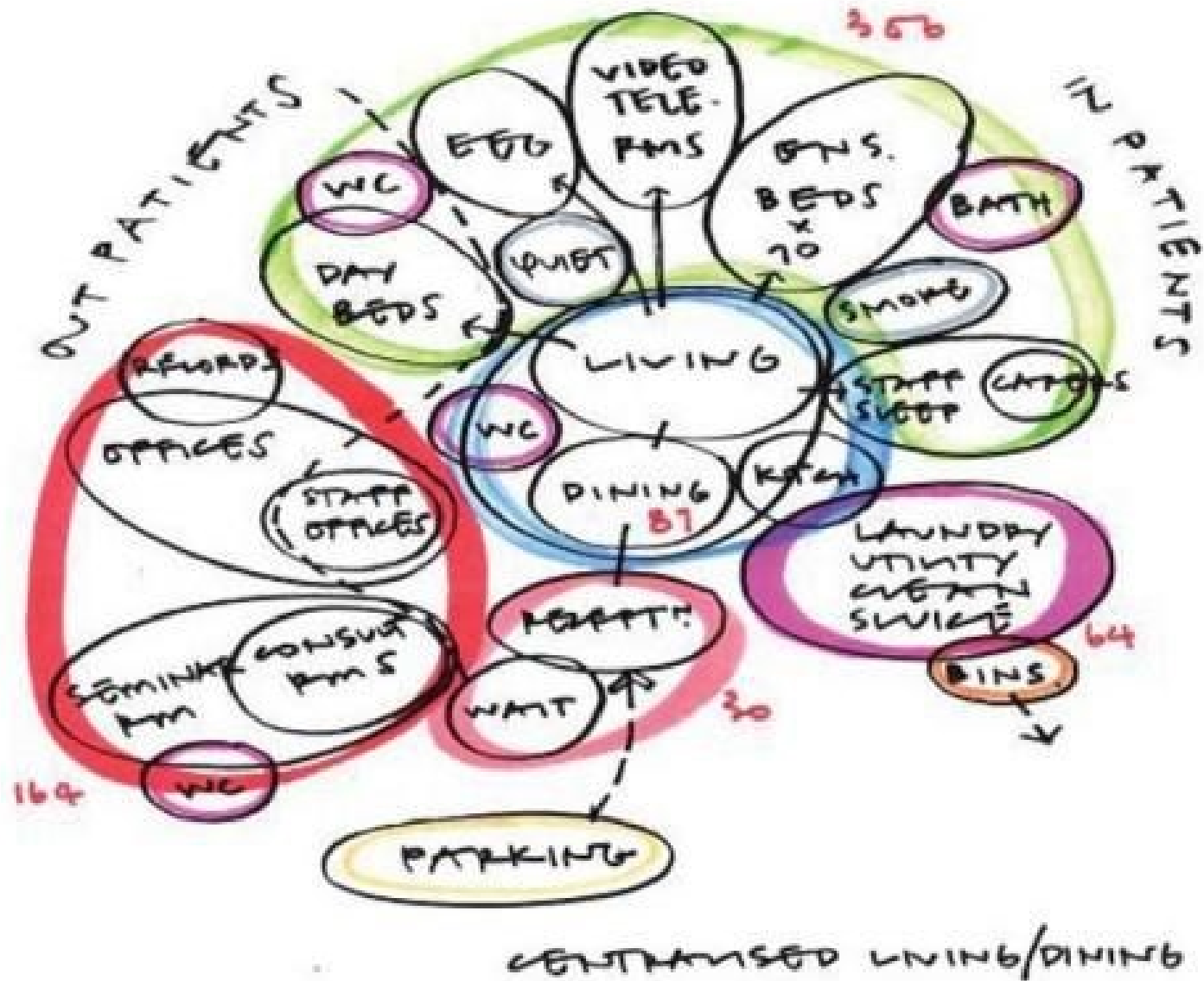
- LEGEND**
- GRASS ACCENT
 - REDWOOD ACCENT
 - BERT ACCENT
 - BROWN FLOOR TILES
 - PRIVATE SPACE
 - PUBLIC SPACE
 - GREEN WALL
 - 10' x 10' WALL / 10'
 - 10' x 10' WALL / 10'
 - ELECTRIC SWIT
 - TUBING
 - LIGHT FIXTURE
 - WALL MOUNTED ART

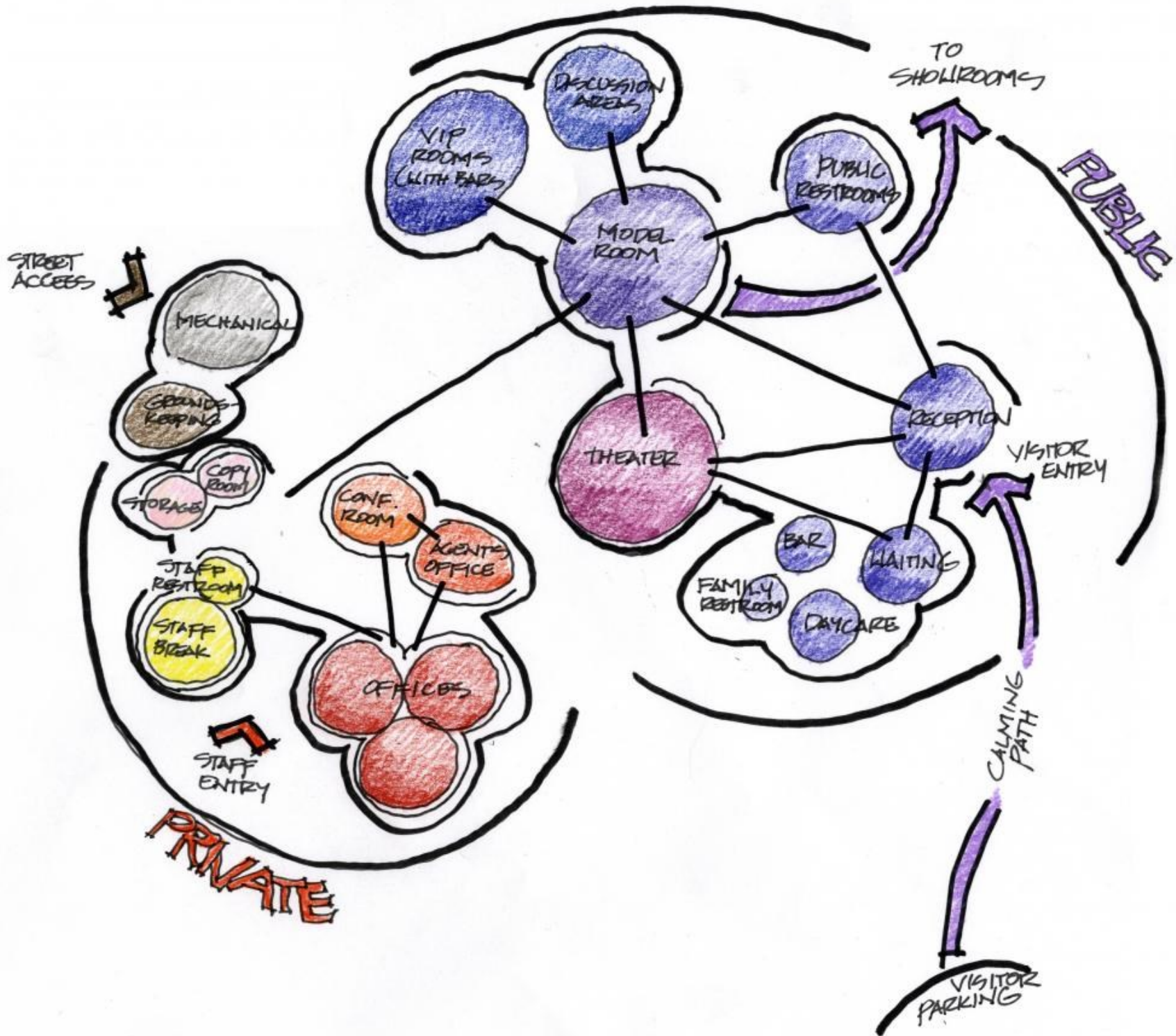


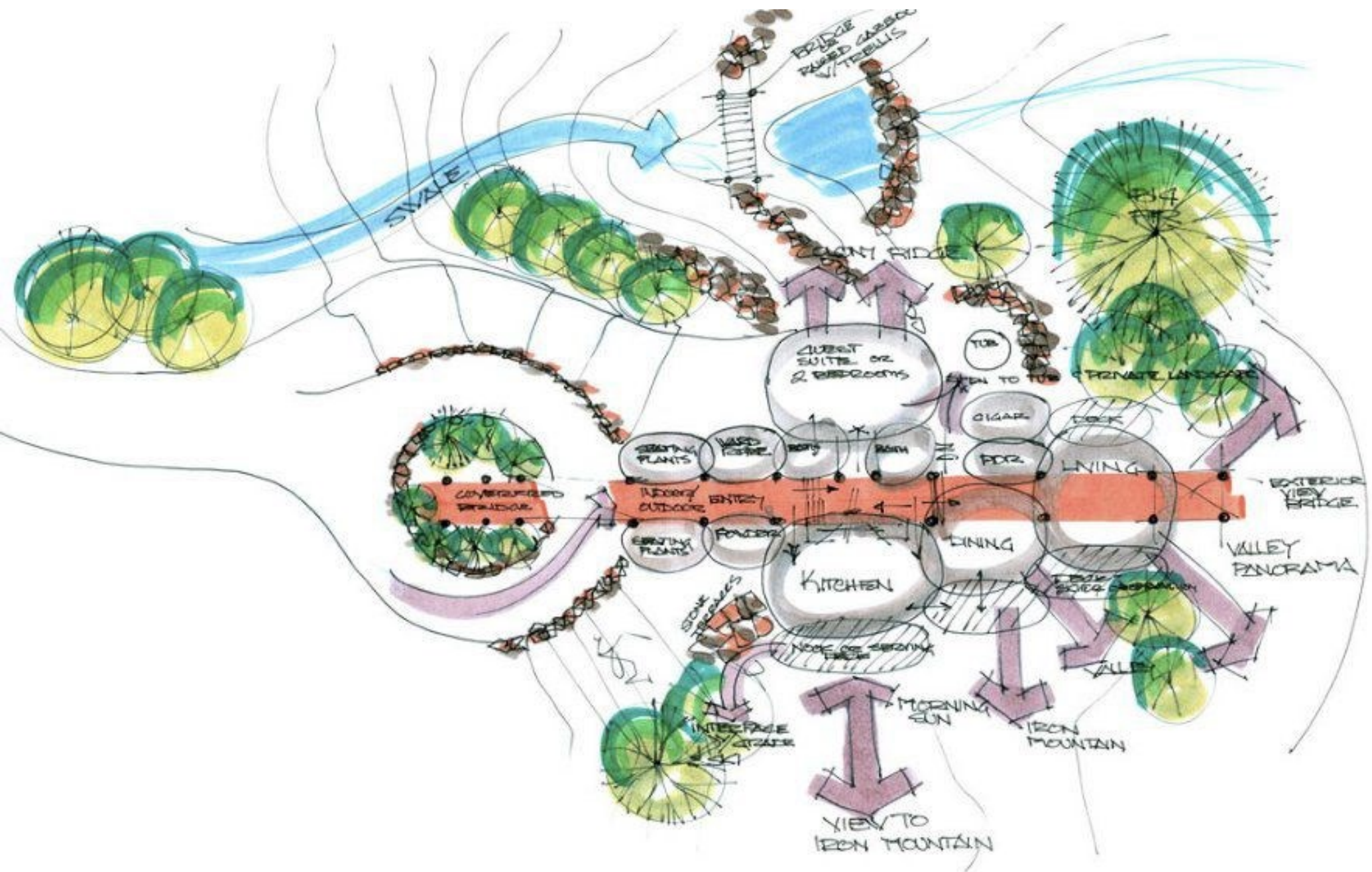
4. Evaluate placement of bubbles using design parameters



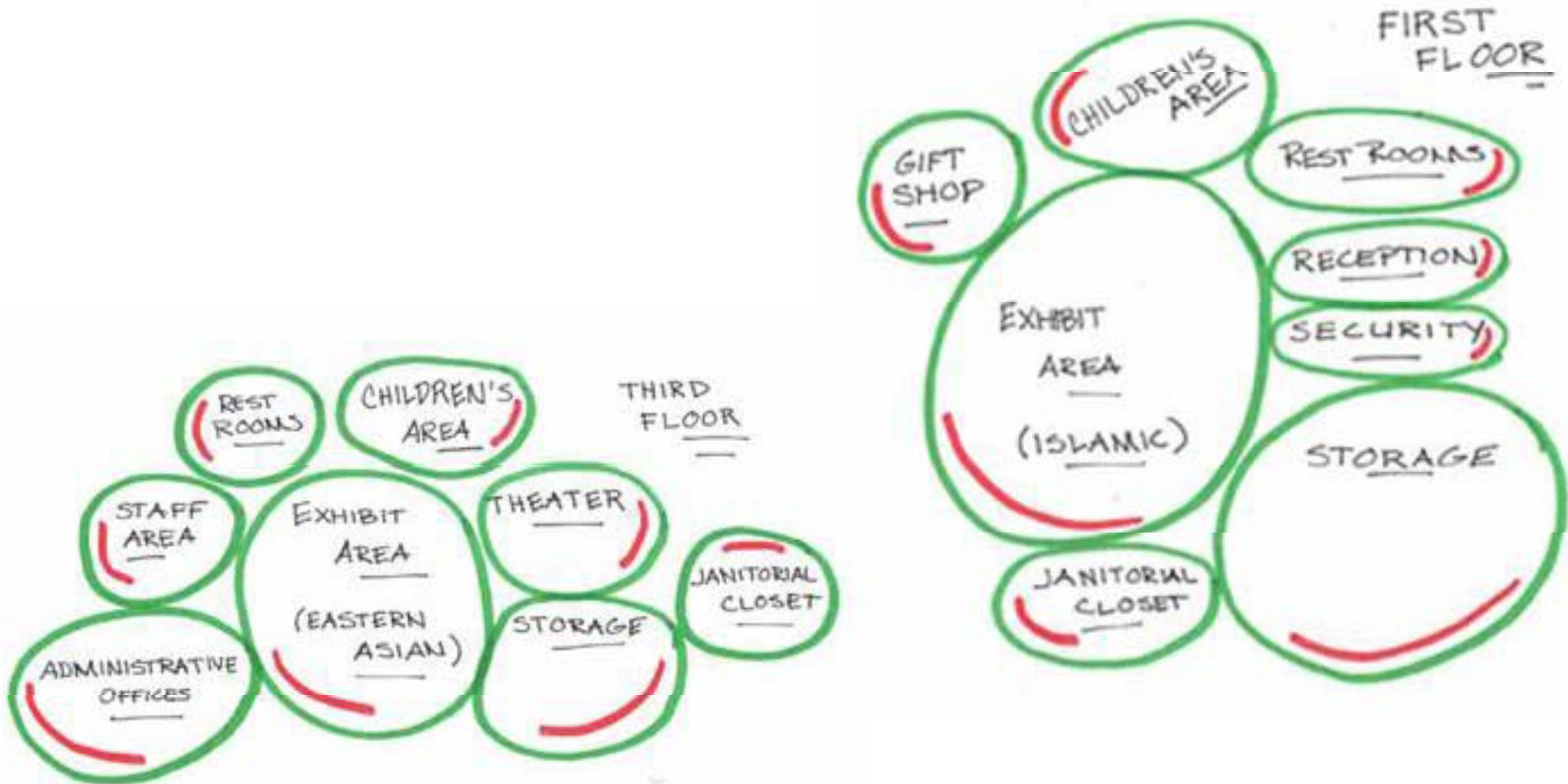
Evaluation must include circulation and spatial positions



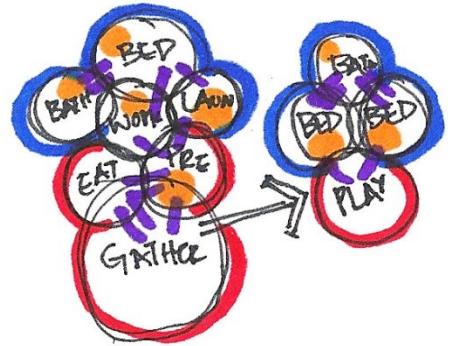
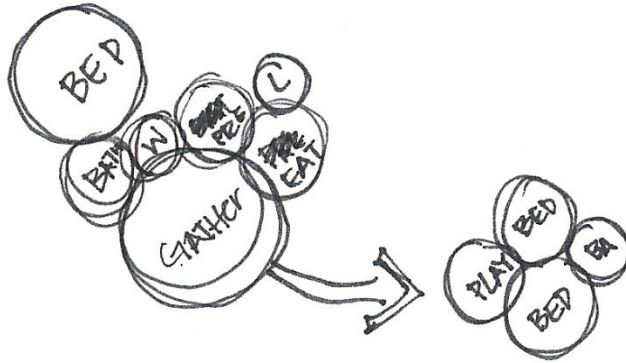
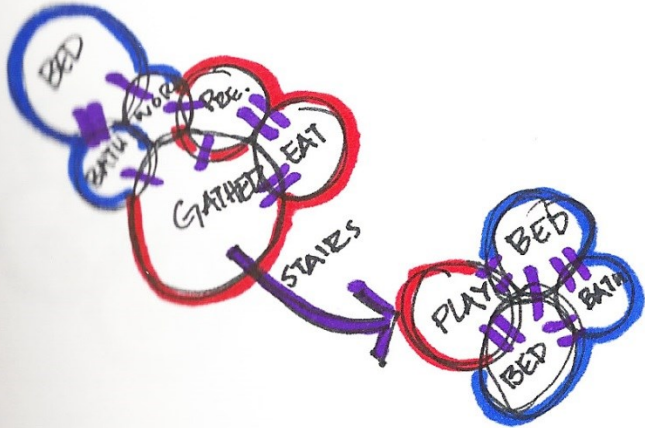
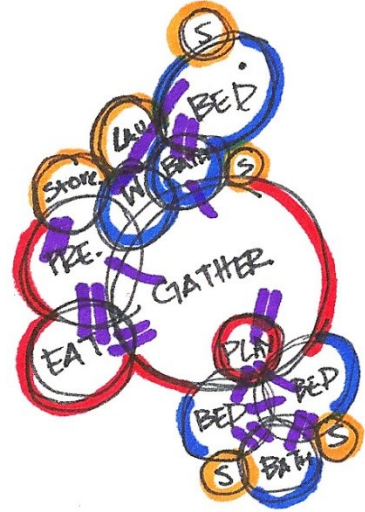
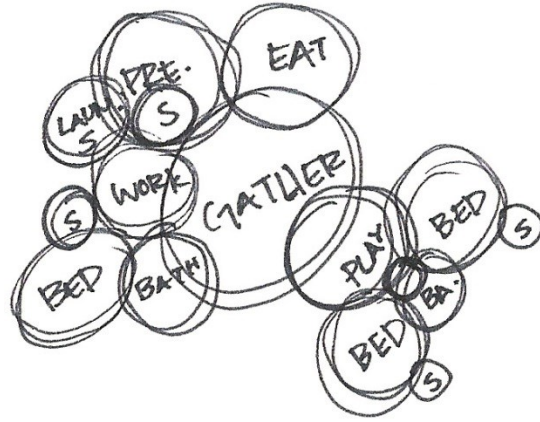
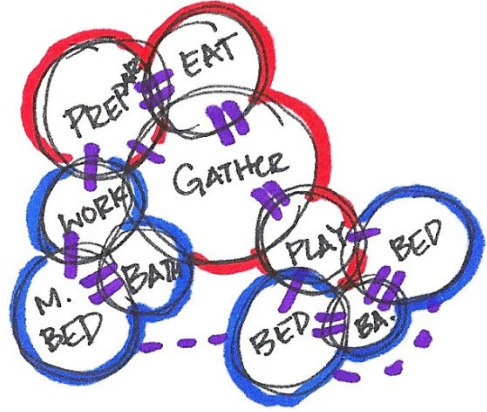




5. Using overlays, rearrange bubbles until best layout is achieved that satisfies design parameters

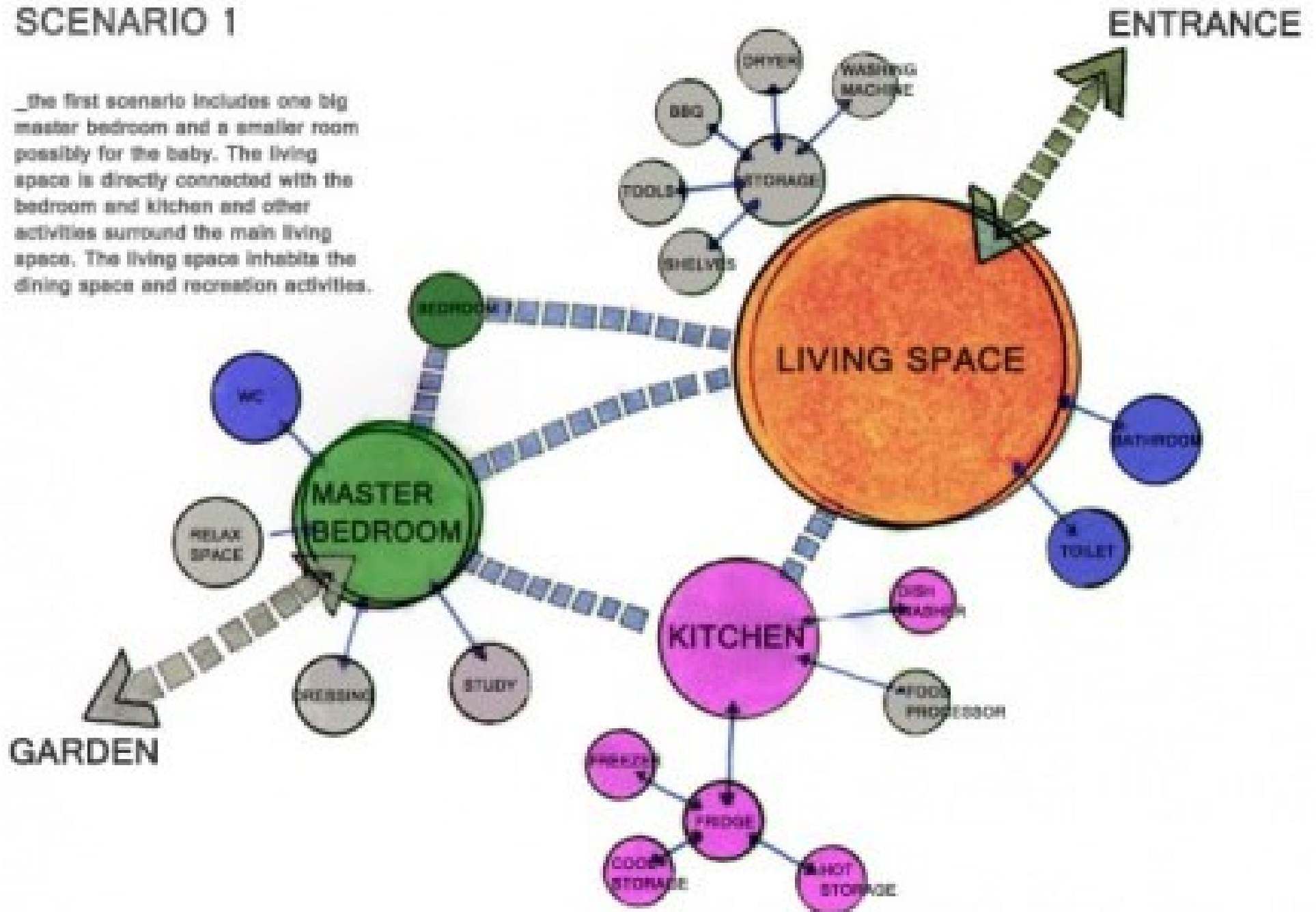


connections
 storage
 public
 private



SCENARIO 1

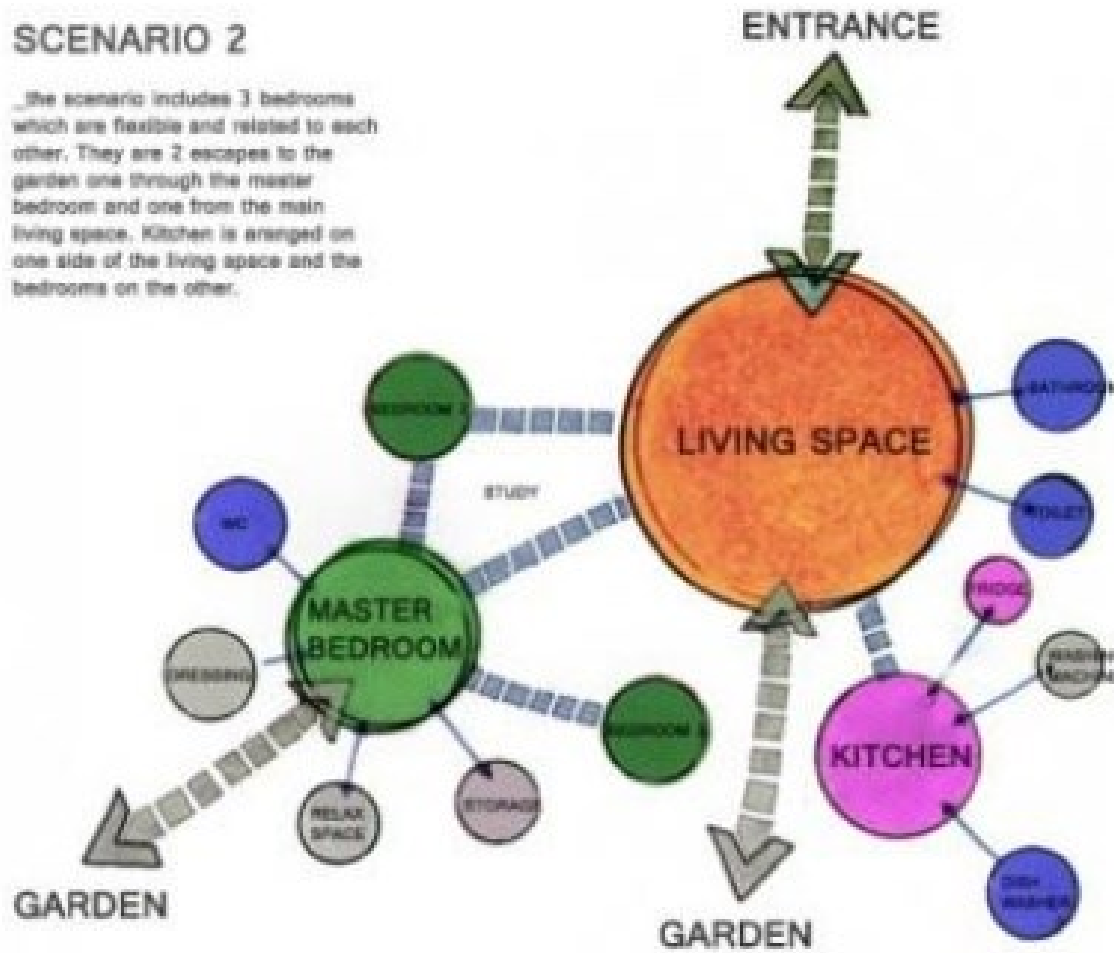
_the first scenario includes one big master bedroom and a smaller room possibly for the baby. The living space is directly connected with the bedroom and kitchen and other activities around the main living space. The living space inhabits the dining space and recreation activities.

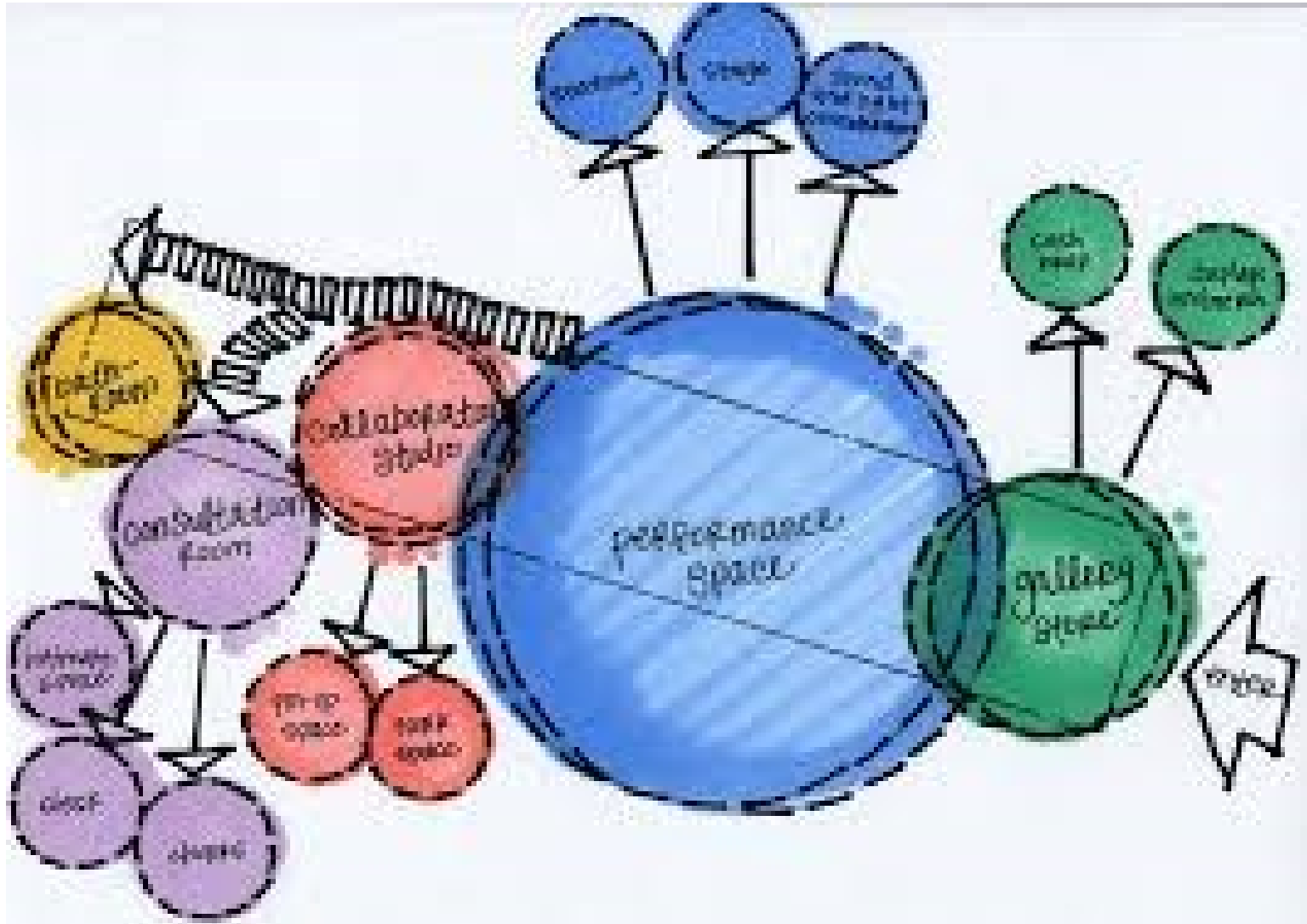


BUBBLE DIAGRAM

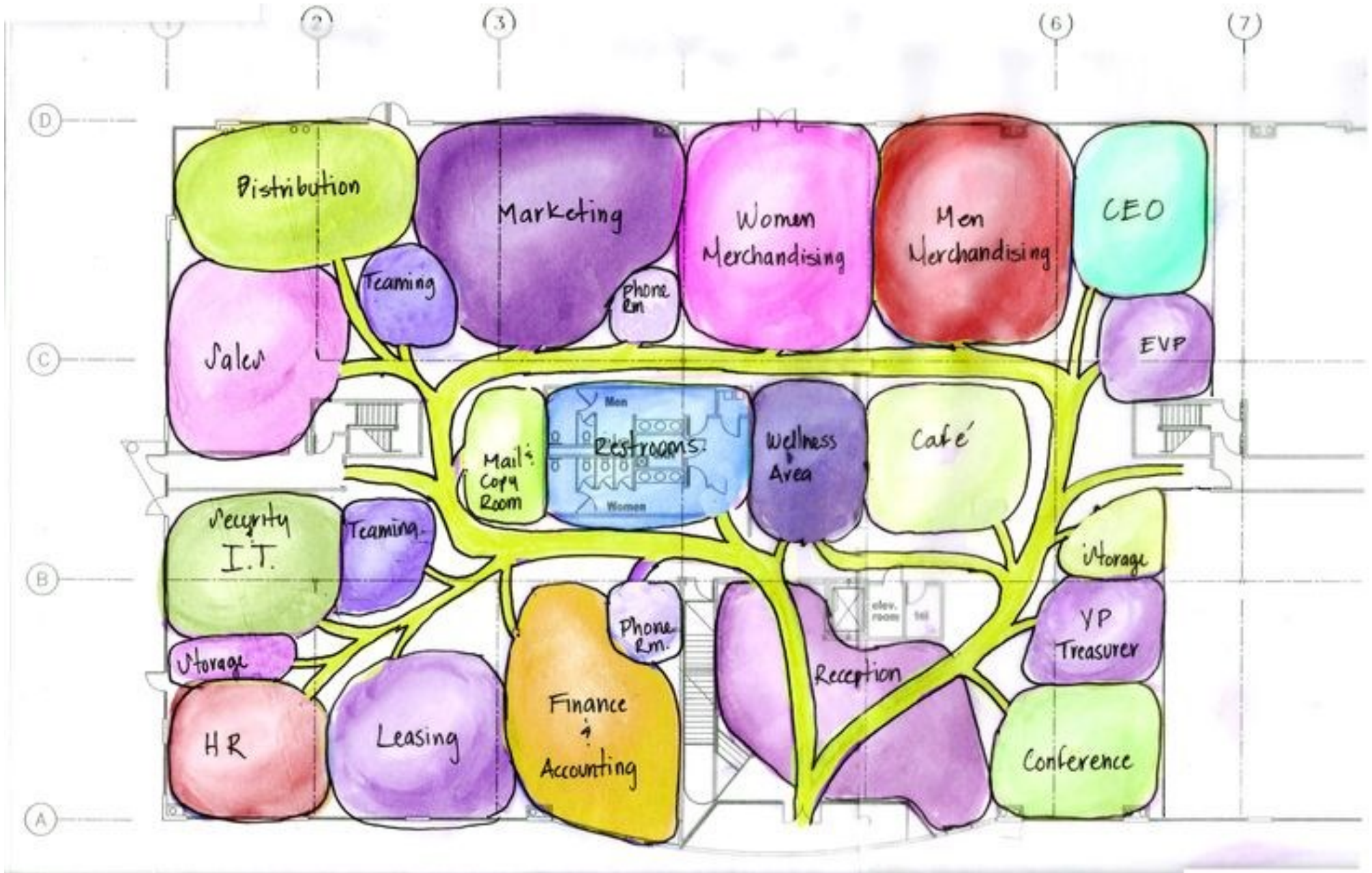
SCENARIO 2

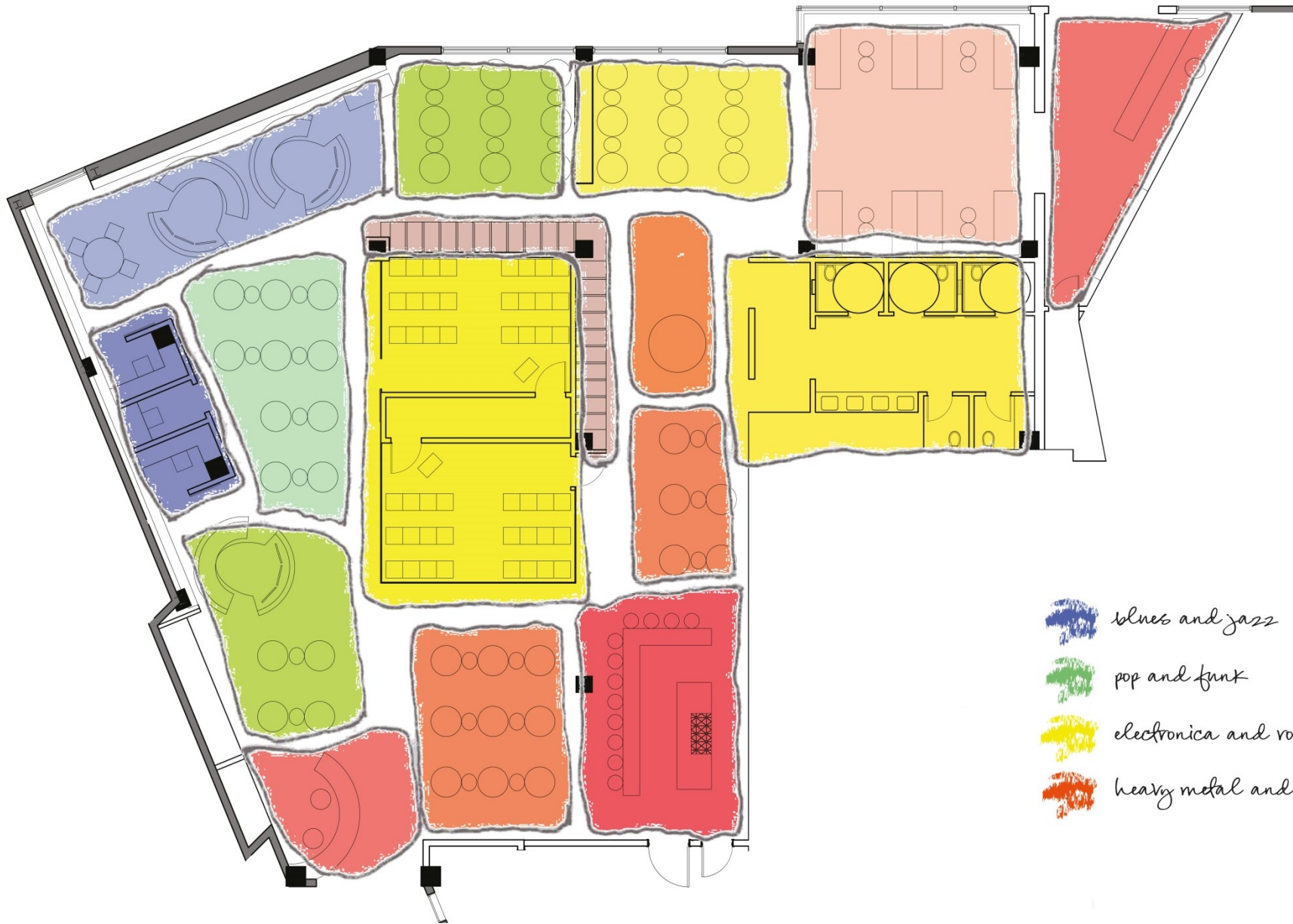
...the scenario includes 3 bedrooms which are flexible and related to each other. They are 2 escapes to the garden one through the master bedroom and one from the main living space. Kitchen is arranged on one side of the living space and the bedrooms on the other.







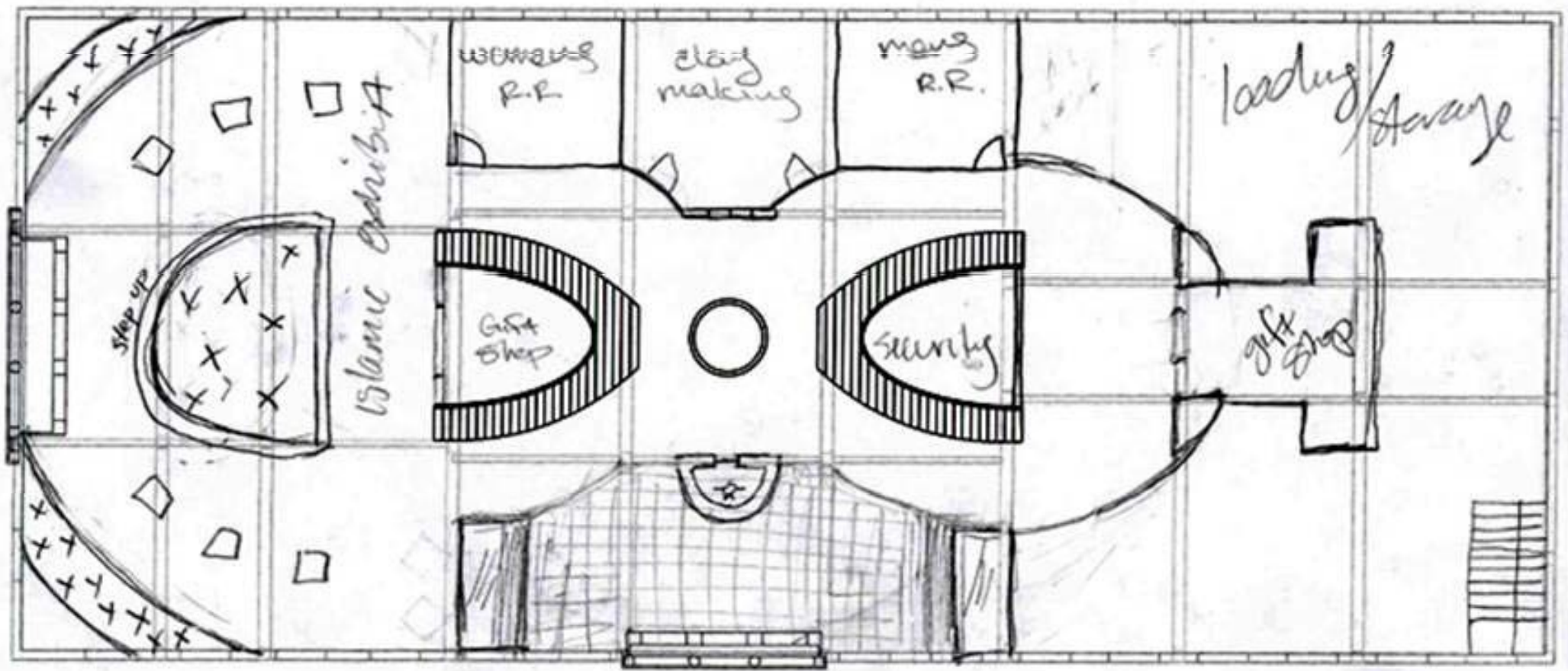


6. From final bubble diagram create a preliminary design

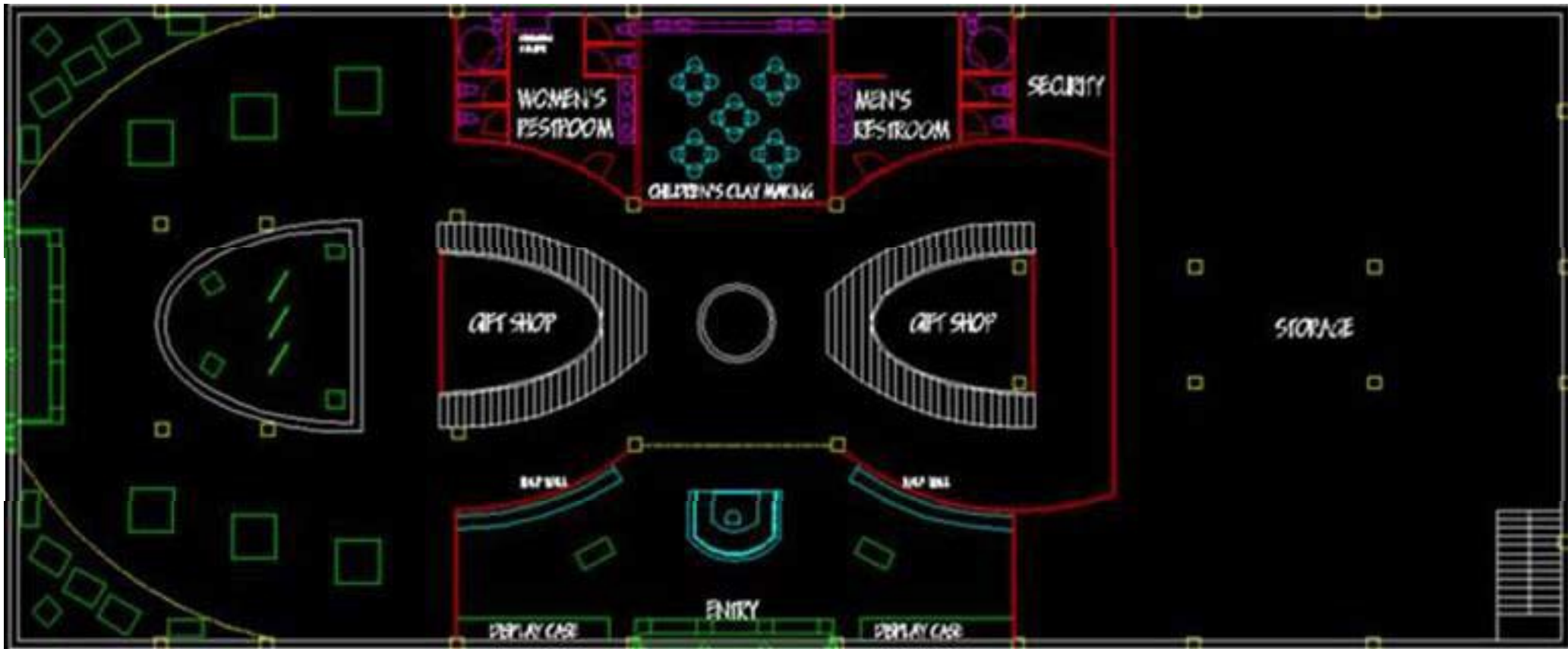


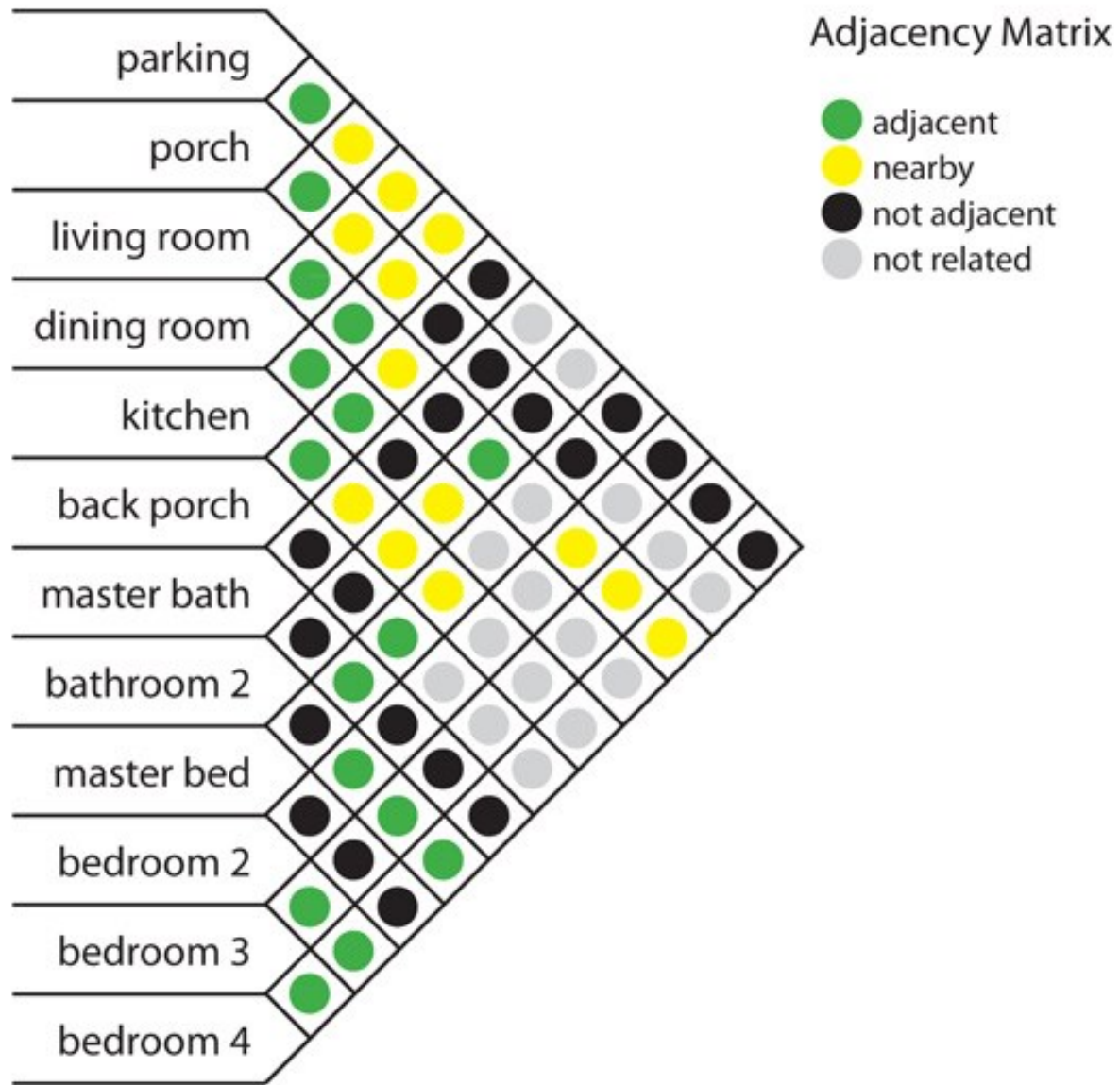


-  blues and jazz
-  pop and funk
-  electronica and rock n' roll
-  heavy metal and grunge

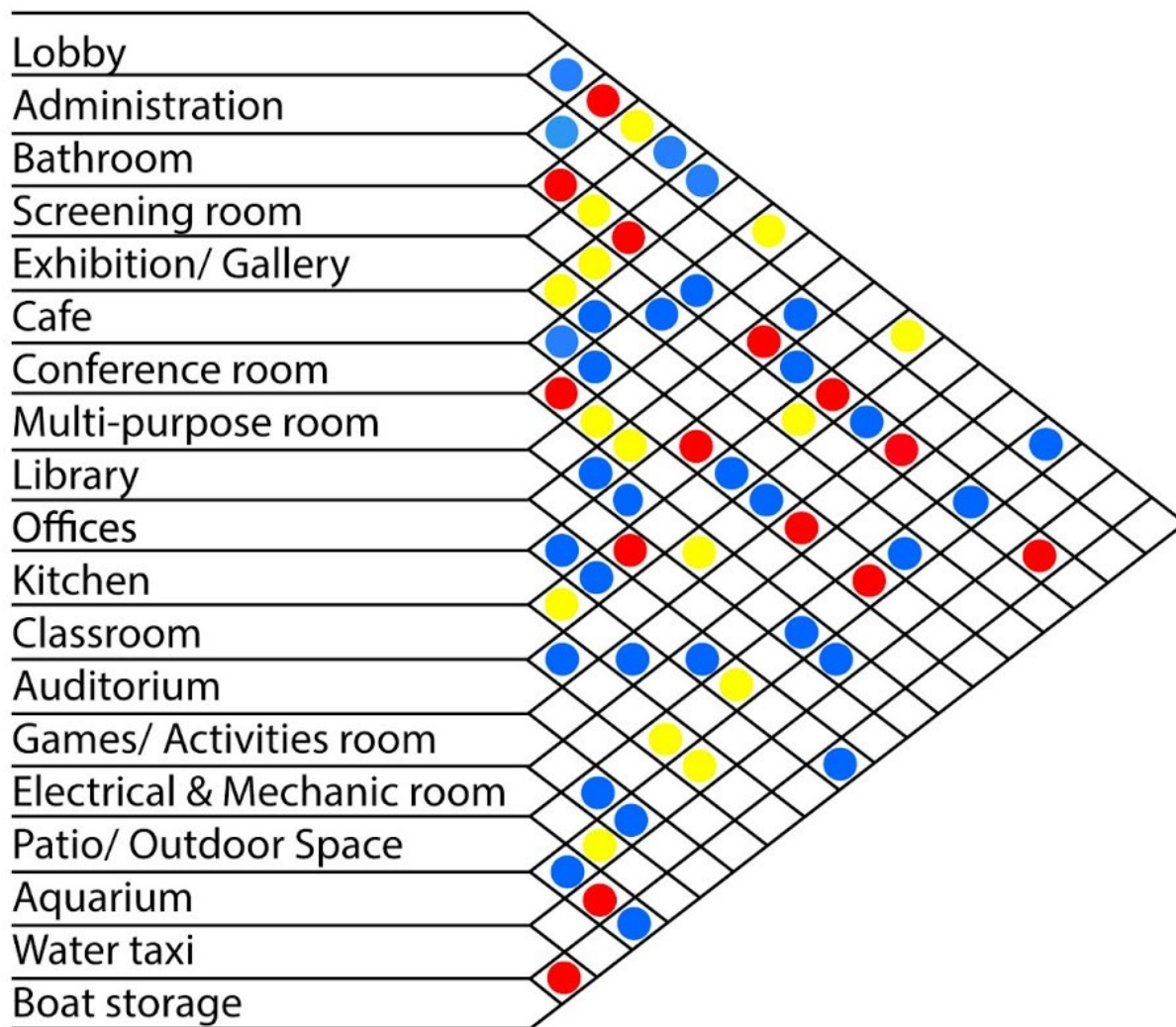


Further develop preliminary floor plan





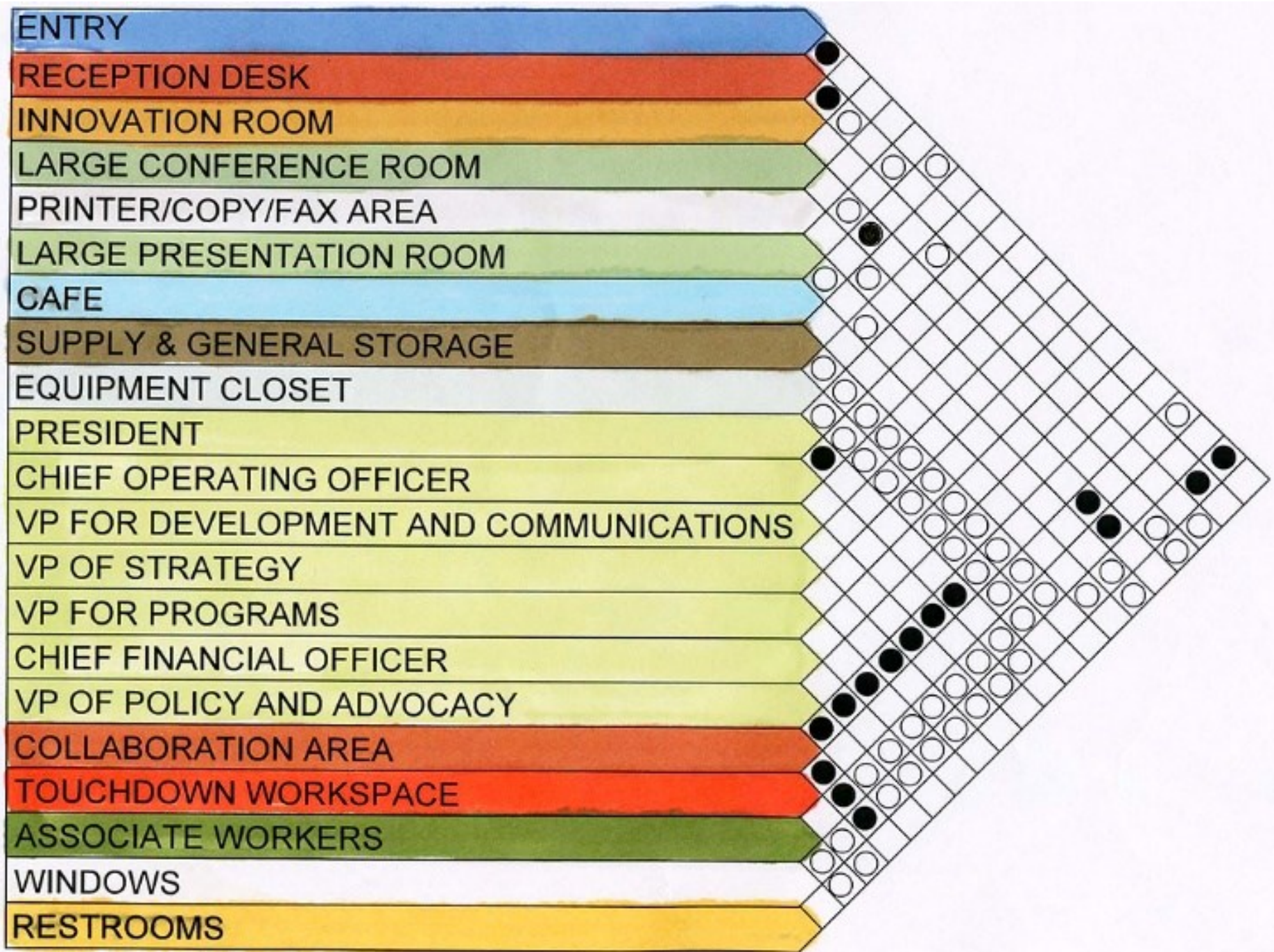
Adjacency Matrix



Adjacency Matrix

- Must
- Should
- Would be nice

Adjacency Matrix



ADJACENCY MATRIX / BUBBLE DIAGRAM

BRENDAN SIGVARDSSON COONEY
DESIGN V

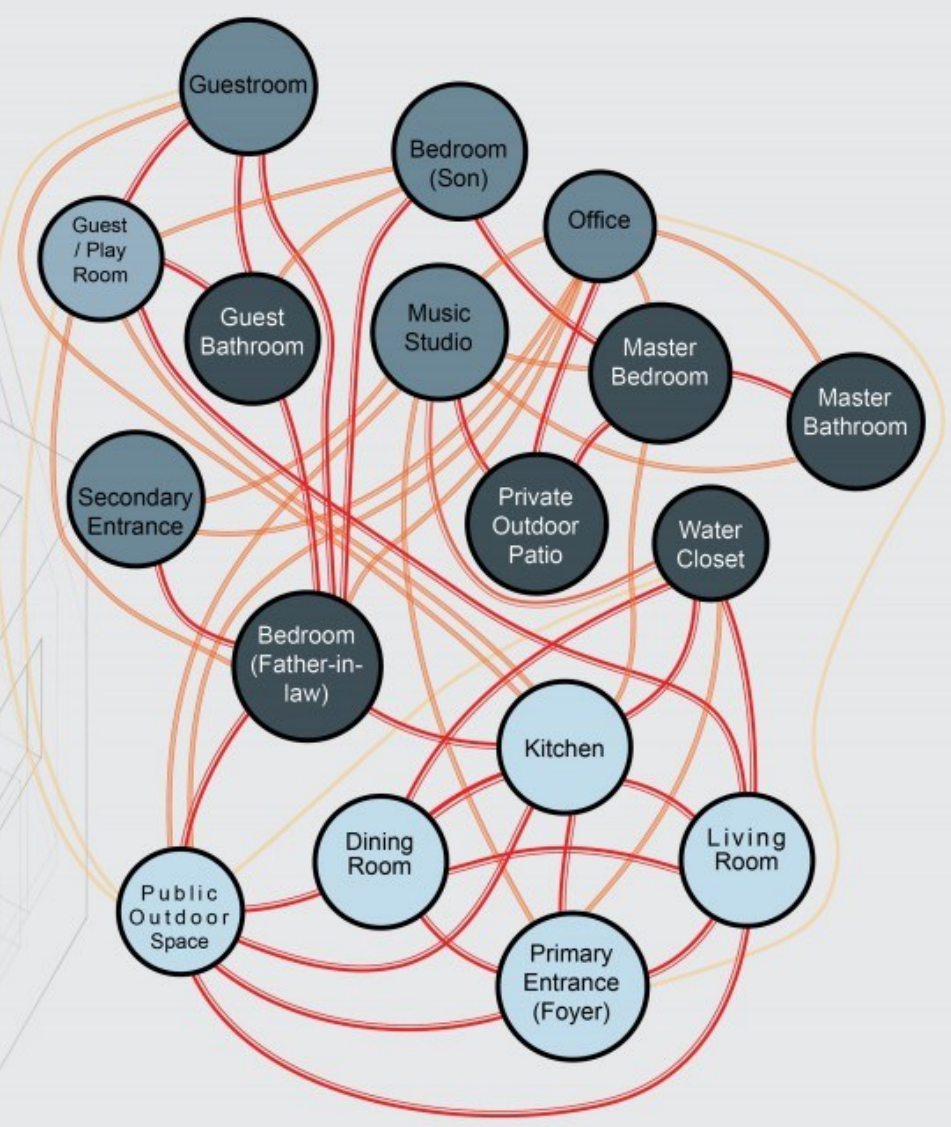
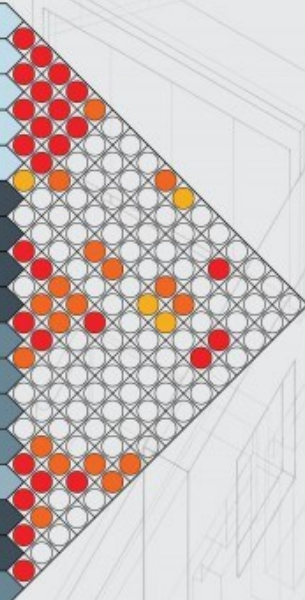
LEVEL OF ADJACENCY

- Primary
- Secondary
- Tertiary

SPACE PRIVACY LEVEL

- Public
- Semi - Public
- Semi - Private
- Private

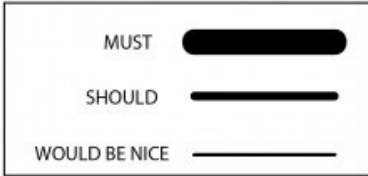
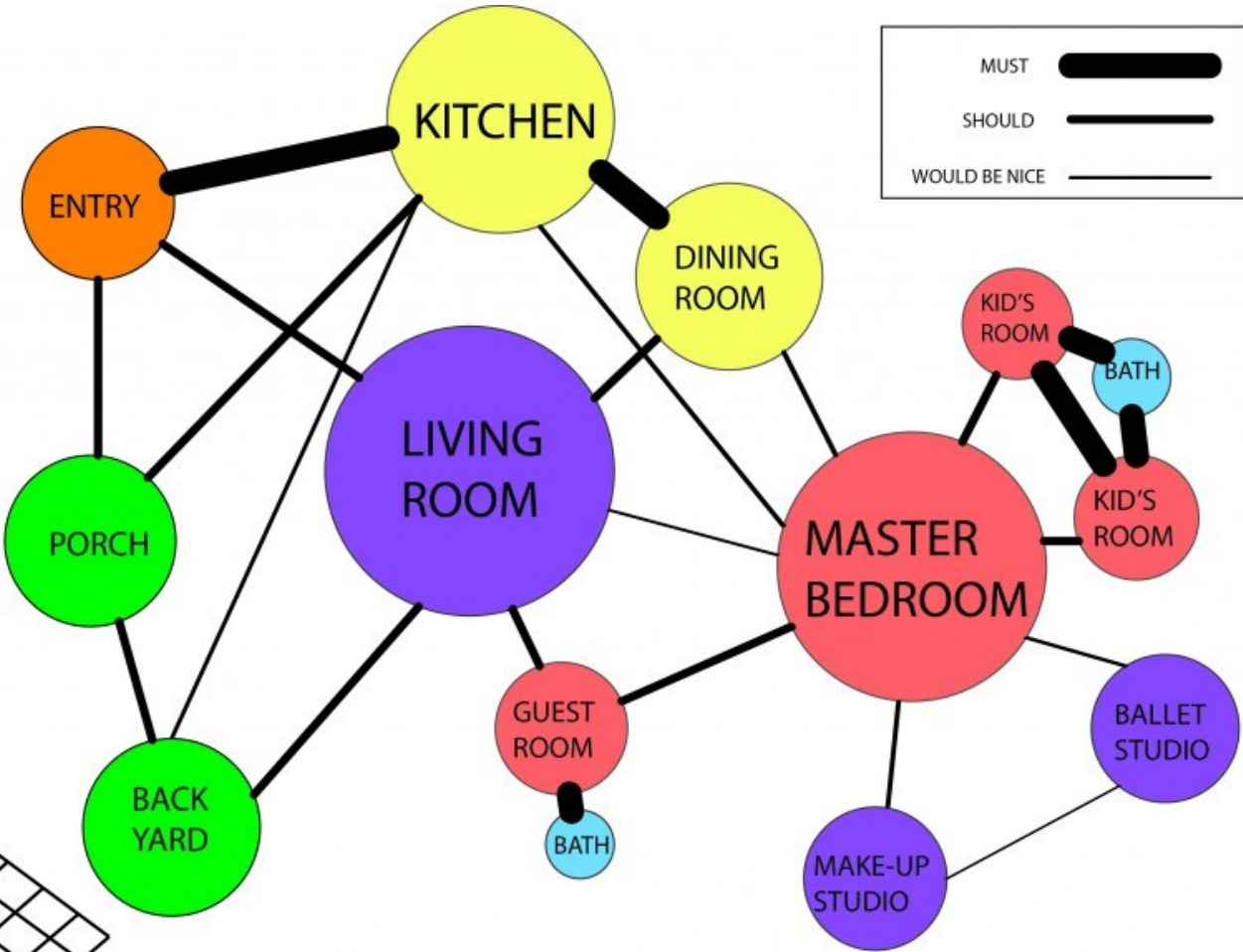
1. PRIMARY ENTRANCE (FOYER)
2. LIVING ROOM
3. DINING ROOM
4. KITCHEN
5. PUBLIC OUTDOOR SPACE
6. WATER CLOSET
7. MASTER BEDROOM
8. MASTER BATHROOM
9. PRIVATE OUTDOOR PATIO
10. MUSIC STUDIO
11. OFFICE
12. BEDROOM (SON)
13. GUESTROOM
14. GUESTROOM / PLAYROOM
15. GUEST BATHROOM
16. BEDROOM (FATHER-IN-LAW)
17. SECONDARY ENTRANCE



Ajacency Matrix



ENTRY																								
PORCH	○	○	○																					
KITCHEN	●	○	○																					
DINING ROOM			○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
LIVING ROOM			○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
BACKYARD			○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
MASTER BEDROOM																								
KID'S ROOM																								
KID'S ROOM	●	●	○																					
BATHROOM(KID'S)	●	●	○																					
GUEST ROOM			○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
BATHROOM(GUEST)																								
BALLET STUDIO																								
MAKE-UP STUDIO	☆																							



Bubble Diagram

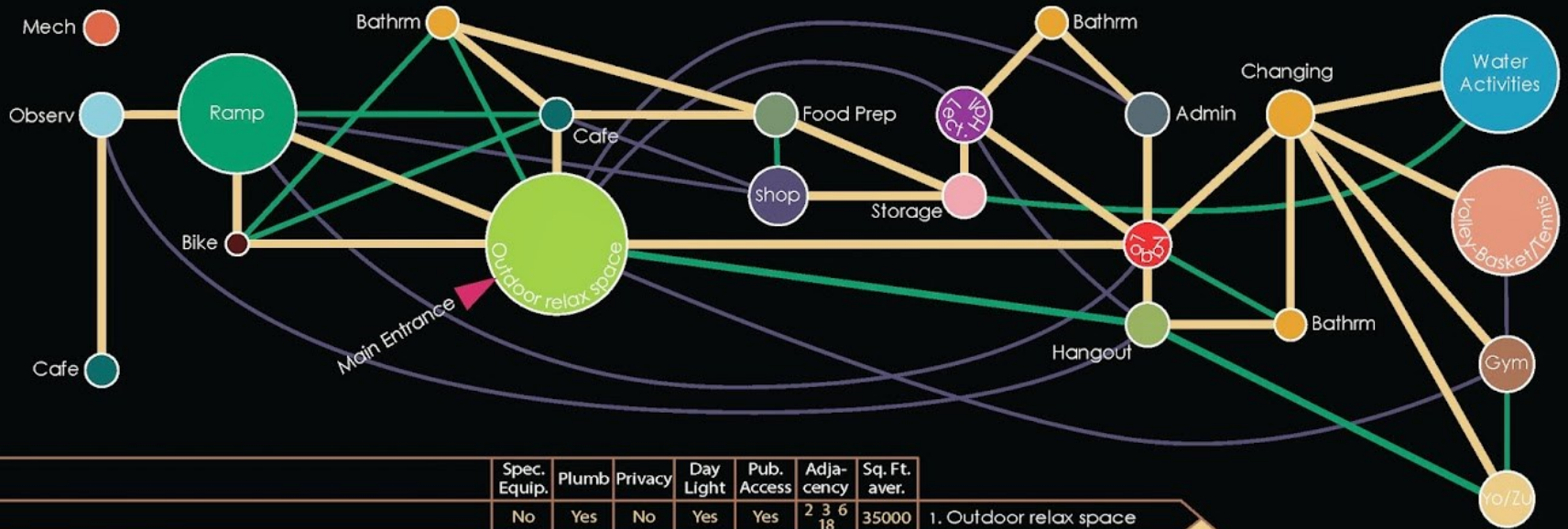
Client: Mani Susan
 Architect: Yuhui Ouyang

List of Spaces

Adjacency Matrix

Criteria Matrix

Bubble Diagram



Notes	Spec. Equip.	Plumb	Privacy	Day Light	Pub. Access	Adjacency	Sq. Ft. aver.	
Benches; greenery.	No	Yes	No	Yes	Yes	2 3 6 18	35000	1. Outdoor relax space
Locking and securing equipment; pumping station.	Yes	No	No	Yes	Yes	1 18	150	2. Bike Parking / Rent
AuBonPain or like on the ground floor. Refreshments (juices) on the observation deck.	Yes	Yes	No	Yes	Yes	1 4 7 19	450	3. Cafeteria
May be connected to the storage area or have its own storage.	Yes	Yes	Yes	No	No	3 7 12	1000	4. Food Preparation
Gifts, maps, simple grocery, bike accessories. Sport equipment rent.	Yes	No	No	Yes/No	Yes	12	2500	5. Shop
Spacious welcoming.	No	No	No	Yes	Yes	1 8 10 13 16	1300	6. Lobby
Outdoor, for public access; indoor for gym and pool; in the changing rooms.	No	Yes	Yes	No	varies	3 4 8 10 13 16 18 19	varies	7. Bathrooms
Male, female, family.	No	Yes	Yes	No	No	6 7 9 14 15 17	1300	8. Changing Rooms
Pool for relaxation (not competition), jacuzzi, sauna.	Yes	Yes	No	Yes	No	8	20000	9. Water Activities
Easily accesible for public; must be visible.	No	Yes	Yes	Yes/No	No	6 7	1000	10. Administrative Offices
Not on the ground floor.	Yes	Yes	Yes	No	No		500	11. Mechanical Room
Not on the ground floor. Serves admin., lecture, pool, may be food prep and shop.	No	No	Yes	No	No	4 5 13	1000	12. Storage
For public speaking; must be arranged with admin.	No	No	No	No	No	6 7 12	2000	13. Lecture Hall
Must face water. Could be open to observation deck, but with blinds.	No	No	No	Yes	No	8	2000	14. Yoga/Zumba
Should be facing park.	Yes	No	No	Yes/No	No	8	2000	15. Gym (dudes, gals, kids)
Open to public, free WiFi, sofas, desks, plants.	Yes	Yes	No	Yes	Yes	3 7	1000	16. Hangout Place
On the roof; glass enclosure. Tennis is closest to the water/observ. deck; Basketball farthest.	Yes	Yes	No	Yes	Yes	8	15000	17. Volley-Basketball Tennis
1/12 with 5' long landings at every 30' or less. ?Could incorporate egress under?	No	No	No	Yes	Yes	1 2 7 19	20200	18. Ramp/Egress
Facing water; extending over 20' wide back yard.	No	Yes	No	Yes	Yes	3 18	1000	19. Observation Deck

Must

Should

Would be nice

Max. sq. ft. (area * FAR)
72300 * 2 = 144600

REFERENCES

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