DESIGN METHODS

Second Year - Second Semester
2022 - 2023

Architectural Design

1. Design Process
2. Form, Function, Materialization
3. Idea

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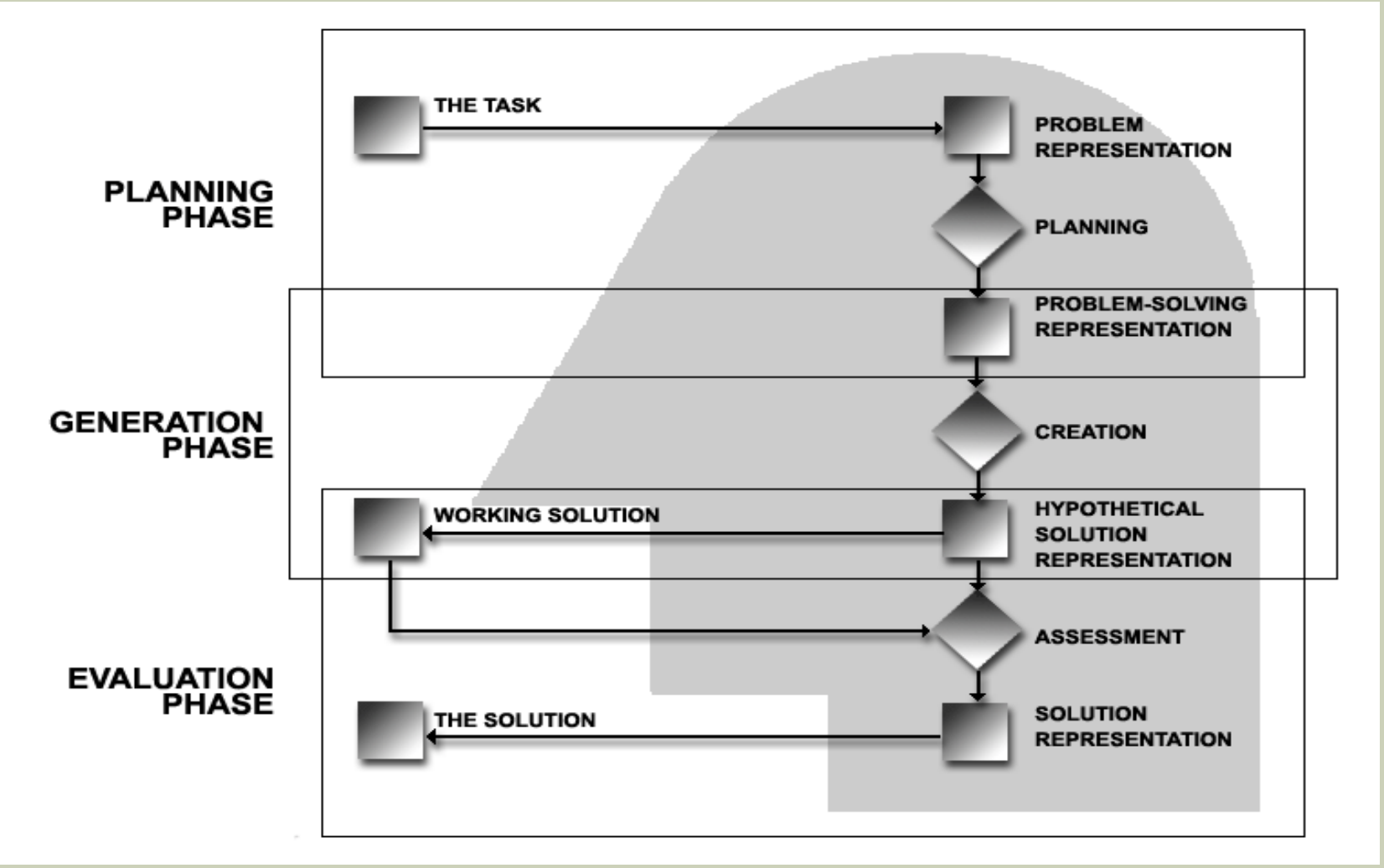
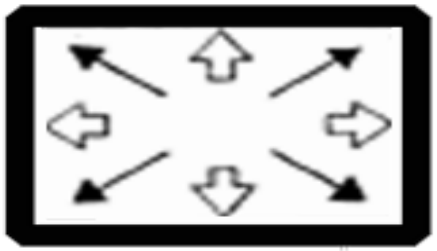
1- DESCRIPTIVE REPRESENTATION OF A *DESIGN PROCESS*



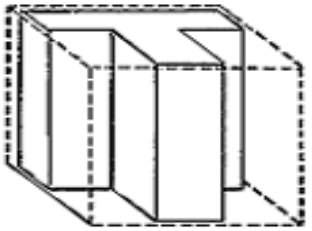
1.ABOUT THE PLANNING PHASE IN DESIGN PROCESS
1.1. GATHERING DATA: DESIGN CONSTRAINTS

- After the study of the design task, the designer will prepare a list of ***constraints*** and a list of ***requirements***
- Constraints are the limitations imposed to the design task. For example:

- For the design of a 2D formal composition the main constraint will be the size of the canvas (the width and the length).
- For the design of a 3D formal composition the constraints will be represented as the maximum size of the volume that will contain the composition (the width, the length and the height)

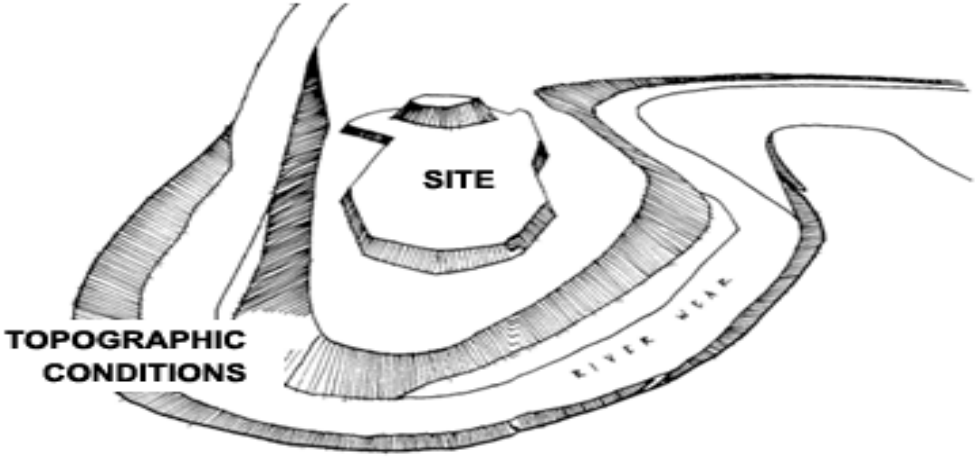


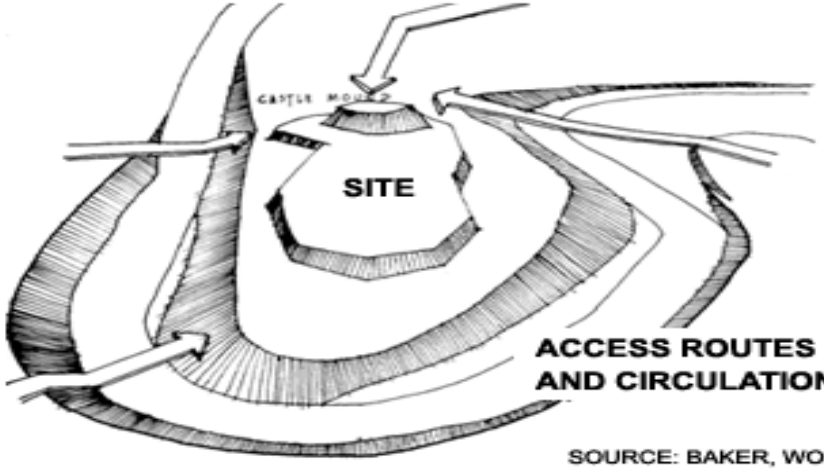
2-D CANVAS



3-D CANVAS

- In the same way, for an architectural project one must consider constraints like the dimensions of the lot, its topographic conditions, the local weather, the maximum number of stories to build and many other building regulations.





SOURCE: BAKER, WONG, KEPES

2. Form, function, and materialization
What we have learned about these?

➢Form:

Seeking Geometrical Order and Expression of Formal Qualities.

**** Organizing Principles:***

(Symmetry, Repetition, Similarity, Gradient, Hierarchy, Datum, Axis, Structure).

**** Aesthetic Goals :***

(Simplicity, Uniformity, Regularity, Symmetrical balance, Complexity, Anomaly, Contrast, Asymmetrical balance).

2. Form, function, and materialization
What we have learned about these?

- **Function:**

  Seeking Adequate Performance and Expression of Spaces.

- **Materialization:**

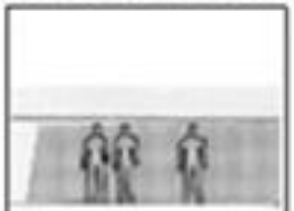
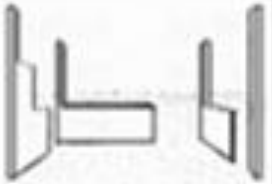
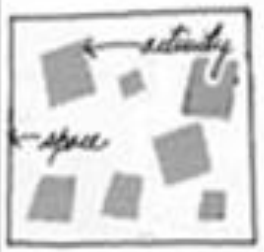
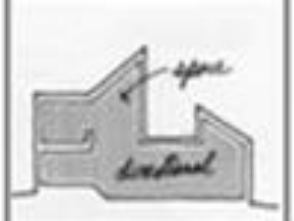
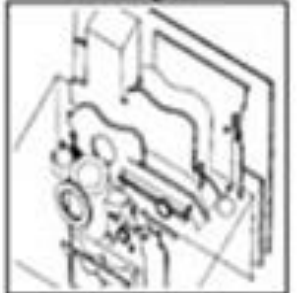
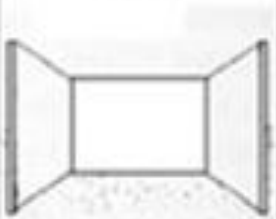
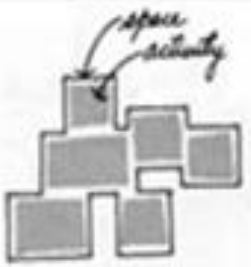
  Seeking Adequate Performance and Expression of Material Elements

FUNCTION: SEEKING ADEQUATE PERFORMANCE AND EXPRESSION OF SPACES

CRITERIA FOR EVALUATION	SPATIAL ORDER		BASED ON:	
SPATIAL FIT	Space Size & Space Shape		Physical Space Requirements	- # of users - human physical dimensions - furniture + equipment - internal circulation - vehicles
			Psychological Requirements	EXPRESSION OF THE FORM
SPATIAL SEQUENCE	Spatial Arrangement		Functional Ordering Criteria	Activities possess many qualities which can be used in ordering them into their relationships
			Circulation Requirements	aaproach, entrance, paths, path/activities relationships
			Psychological Requirements	EXPRESSION OF THE FORM

SOURCE: WHITE

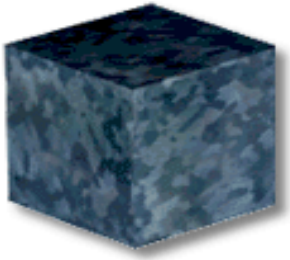
○ SPATIAL QUALITIES AND EXPRESSION OF SPACES

Size related to human scale	Degree of Definition / Enclosure	Relationship with other spaces / Configuration	Shape	Density	Depth
					
INTIMATE	IMPLICIT	OPEN	DYNAMIC	DENSE	SHALLOW
					
NORMAL	EXPLICIT	CLOSE	STATIC	EMPTY	DEEP
					
MONUMENTAL					

MATERIALIZATION: SEEKING ADEQUATE PERFORMANCE AND EXPRESSION OF MATERIAL ELEMENTS

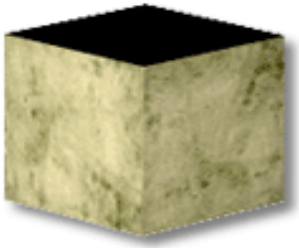
Architect must be fully aware of the nature of the relationship between technical and aesthetic issues:

STEEL This is a high strength material (the strongest). Steel is used for the tallest buildings and the longest spans: skeleton frames, portal frames, horizontal or curved trusses, space frames and tensile structures.



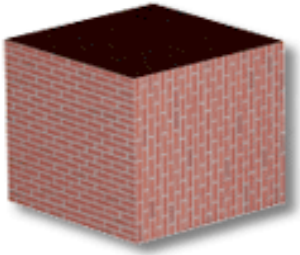
Openness, celebration of technology, cold, temporal, lightness

REINFORCED CONCRETE Reinforced concrete is used for load-bearing walls (blocks), skeleton frames (beams and columns), arches, vaults, domes, folded roofs, and shells.



Freedom, stability, permanency, solidity

MASONRY (BRICK) Masonry is used for small and medium spans in the form of load-bearing walls (vertical elements) and for arches, vaults and domes (horizontal elements).



Warm, heaviness, permanency, craftmanship

TIMBER (WOOD) Timber has been used as horizontal elements (floors or roofs) of post and beam structures when vertical elements are made out of masonry or timber framing. As sloping roofs by using systems of rafters as well as systems of truss and purlins of different shapes. As skeleton frames, and for large spans as portal frames, domes, vaults, folded roofs, and shell forms.

Natural, organic, warm

DESIGN IS THE BALANCING ACT: WISHING VERSUS NEEDING

DESIGN OBJECTIVES

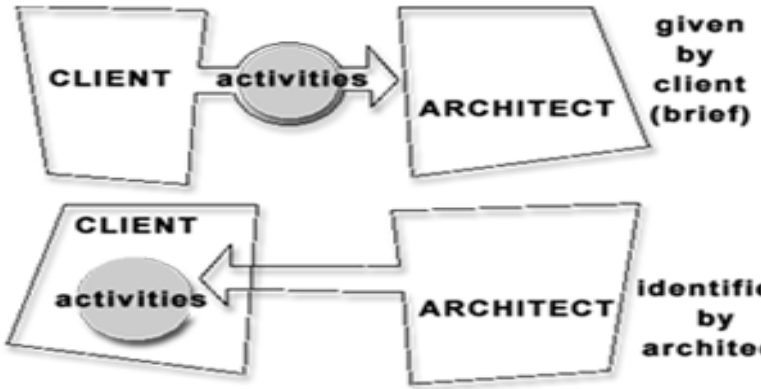
MUST BE ACHIEVED

FORMAL EXPRESSION
QUALITY OF SPACES
EXPRESSION OF MATERIALS

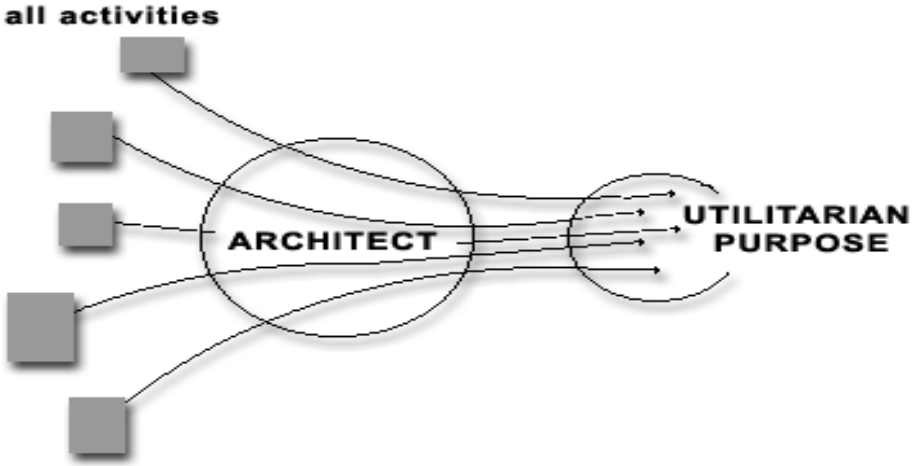
BUT THE DISCIPLINE IMPOSED BY REQUIREMENTS AND CONSTRAINTS MUST BE RESPECTED

FUNCTIONAL REQUIREMENTS
SITE CONSTRAINTS:
SIZE AND SHAPE OF THE SITE

DESIGN IS THE BALANCING ACT: WISHING VERSUS NEEDING



ACTIVITIES ARE USUALLY TOLD TO THE ARCHITECT BY THE CLIENT OR IDENTIFIED THROUGH STUDY BY THE ARCHITECT



THE ARCHITECT SHOULD HAVE A COMPREHENSIVE UNDERSTANDING OF THE CLIENT ACTIVITIES BEFORE BEGINNING TO DESIGN

ACTIVITIES ARE TRANSLATED INTO A LIST OF PHYSICAL REQUIREMENTS, THAT MAY INCLUDE:

- NUMBER OF USERS INVOLVED
- HUMAN PHYSICAL DIMENSIONS
- FURNITURE + EQUIPMENT
- CIRCULATION WITHIN THE SPACE
- VEHICLES TO PERFORM THE ACTIVITIES

→ PHYSICAL REQUIREMENTS ARE THE BASE FOR ESTABLISHING GOALS OF UTILITARIAN NATURE

SOURCE: WHITE

3. IDEAS

IDEAS

UNIFY PARTS INTO A TOTALITY

BRING ORGANIZATION

GEOMETRICAL ORGANIZATION
SPATIAL ORGANIZATION
FUNCTIONAL ORGANIZATION
DIMENSIONAL ORGANIZATION
ORGANIZATION OF MATERIAL SYSTEMS
ORGANIZATION OF SYMBOLS AND MEANING SYSTEMS

ARE BORN FROM ASSOCIATIONS AND THE USE OF METAPHORS

2. Ideas

INFERRING A PRIME DESIGN IDEA: USING METAPHORS WITH A HUMANISTIC APPROACH

A more humanistic approach to the use of metaphors may focus, but not exclusively, on any of the following:

1. ***Altering the way people do things:***
   Improving the understanding of human activities

2. ***Using nature for new advantages:***
   Climate and nature are source of inspiration (water, wind, breeze, light)

3. ***Humanizing building with growing things:*** Plants

4. ***Providing an exciting perceptual experience within interior spaces:***
   Application of hierarchy for differentiating enclosed spaces: different size, different shape, and different points of interest.

   Playing with different levels of enclosure: private to public, close to open, transitional changes.

   Circulation can be accentuated: corridors, ramps, staircases can be subjects of special formal treatment.

   Playing with light: changes in natural light during the day, special illumination in the evening.

   Providing interesting views: bring the nature in, expose interesting elements that do not belong inside.