

# DESIGN METHODS



Second Year - Second Semester  
2022 - 2023

## Architectural Design Traditional methods and the need of new methods

*Asst. Prof. Dr. Faris Ali Mustafa*

# Architectural Design...Traditional Methods

⌘ Design: making a difference in man-made things.

**Making production drawing**

**Planning the life history of product**

⌘ Its helpful to compare:

- ❖ **Craft Evolution** (an activity involving skill in making things by hand).
- ❖ **Design by Drawing.**
- ❖ **New Methods.**

<https://www.interaction-design.org/literature/article/design-thinking-get-a-quick-overview-of-the-history>

# Craft Evolution:

- ⌘ Craftsman with simple **tools** produces a beautiful and complicated objects that have the **organic look** of plants and animals.
- ⌘ Using accurate and reliable **information** – **transmission system** is more efficient than Design by Drawing.
  - *Materials.*
  - *Tools.*
  - *Manufacturing.*

# Craft Evolution:

## ⌘ Oxford farm wagon:



The Oxford-shire wagon, was made by Pullin, a wheelwright of Charlton-on-Otmoor, Oxford-shire. It was built in 1889

# Craft Evolution:

## ⌘ The workings of craft evolution:

1. Craftsmen can not **draw** their works.
2. Craftsmen can not **give reason** for decisions.
3. The **product** is modified by **trial–error**.
4. Produce **discordant/conflicting** features.
5. The **cumulative information** generated by craft evolution is the **product** itself.
6. The **product shape** and the **reasons** for the shape (two important data in design today) are not recorded to be **investigated**.

# Design By Drawing: (making Scale)

## ⌘ The separating of thinking from making:

1. Split up the production work **into pieces** made by **different people**.
2. Planning of things **too big** for a single craftsman.
3. Increasing the **rate of production** with size.
4. Making **alternative**, freedom to changing parts.
5. Only **Approved** designs by chief are passed to production.
6. Making **Models, Prototype** that can be seen and tested, and **calculations** to perform important parts.

# Design By Drawing:

⌘ Sequence of Events in **Engineering Design** (Asimow 1962, Introduction to design) & **Architectural Design** (RIBA 1965):

## ENGINEERING

### 1. Feasibility

Finding a set of feasible concepts

### 2. Preliminary design

selection and development of best concept

### 3. Detailed design

An engineering description of the concept

## ARCHITECTURE

### 1. Inception/start

### 2. Feasibility

### 3. Outline Proposals

### 4. Scheme Design

### 5. Detailed Design

- **Asimow: Morris Asimow, an American Professor of Engineering system at the University of California, "Introduction to Design", 1962.**
- **RIBA: Royal Institute of British Architects.**

# Design By Drawing:

## ENGINEERING

### 4. Planning

Evaluating and altering

the concept to meet  
requirement of production,

distribution, consumption and  
product retirement

## ARCHITECTURE

### 6. Production Information

### 7. Bill of Quantities

### 8. Tender Action

### 9. Project Planning

### 10. Operation on Site

### 11. Completion

### 12. Feedback



# The Need for New Methods:

- ⌘ *Design by Drawing* is too simple for the increasing Complexity of the man-made world.
- ⌘ We can Identify the **Strengths** and **weaknesses** of **Traditional Methods** by answering four questions:
  1. **How** do Traditional Designers copy with Complexity?
  2. **In what** ways Modern Design Problems are more Complicated than Traditional Ones?
  3. **What** are the Personal Obstacles to solving modern Design Problems?
  4. **What** are the new kinds of Complexity beyond the scope of the Traditional Design Process?

# The Need for New Methods...

## ○ QUESTION 1:

### *How Do Traditional Designers copy with Complexity?*

- *In* scale drawing, the designer is free to alter the shape of the product as a whole, instead to be tied as craftsman.
- **There are three points, writers (Geoffrey Broadbent 1929-) agree, and these are very relevant to our question:**
  - 1-** There are long periods that seem to do nothing, but take in the information, and this is known as "*incubation*".
  - 2-** The solution to a difficult problem often comes with a sudden "*leap of insight*", the effect of this transformation is to turn a complicated problem into a simple one.
  - 3-** The enemies of originality are mental rigidity & wishful thinking.

Geoffrey Broadbent is an English architect, academic and professor emeritus, and a prolific author in architectural theory, especially semiotics. He is professor emeritus at the School of Architecture at the University of Portsmouth, England

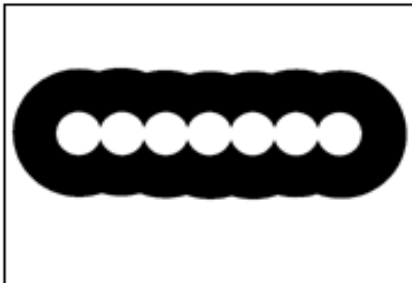
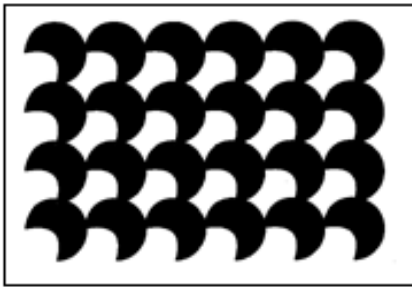
[Design in Architecture: Architecture and the Human Sciences \(1973\)](#) and [Emerging Concepts in Urban Space Design \(1990\)](#).  
[Design Methods in Architecture, 1969.](#)

# The Need for New Methods:

## SIMPLICITY AND COMPLEXITY

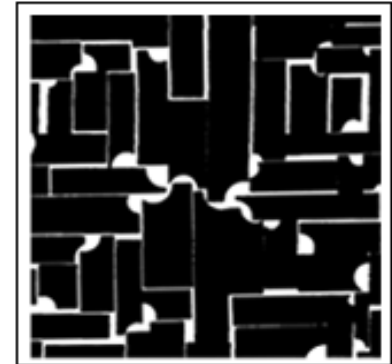
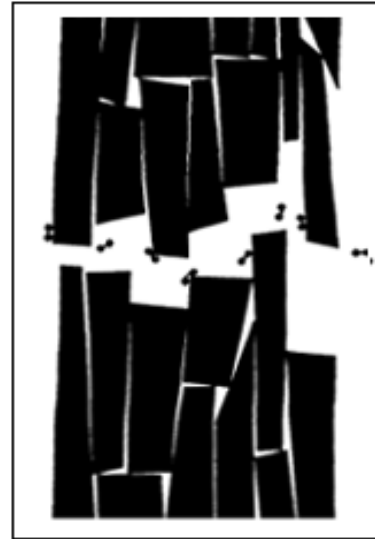
### SIMPLICITY:

Characterized by only one aspect, not combined or compound, clear and elementary, eases the perception



### COMPLEXITY:

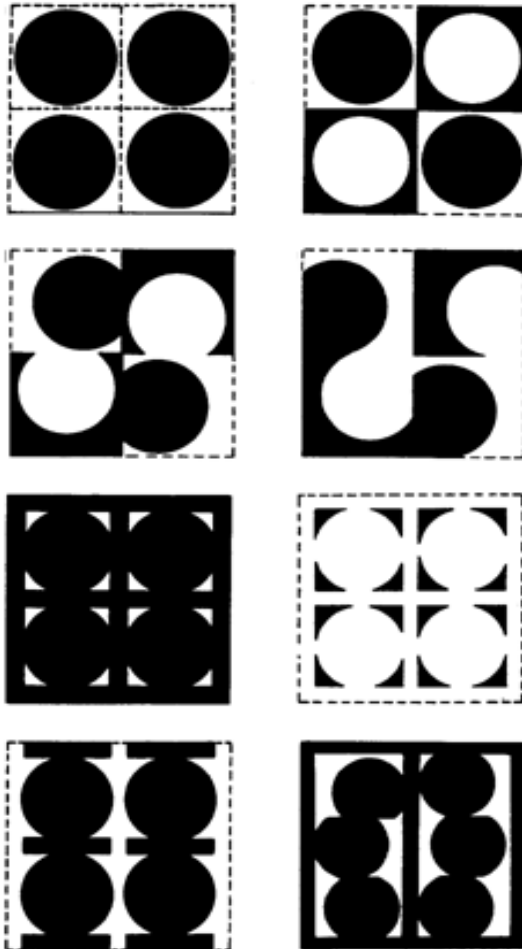
Characterized by interconnected or interwoven parts or aspects, it arouses interest and exploration.



# The Need for New Methods:

## SIMPLICITY AND COMPLEXITY

- Simplicity is demonstrated by our fascination with simple forms: circle, sphere, cube, etc.
- The eye is invited to accept it more than to explore it.



- Sometimes complexity is understood as a deviation from the norm: the introduction of asymmetries within symmetrical patterns, the introduction of anomalies within regular patterns, or simply the distortion of a familiar figure.

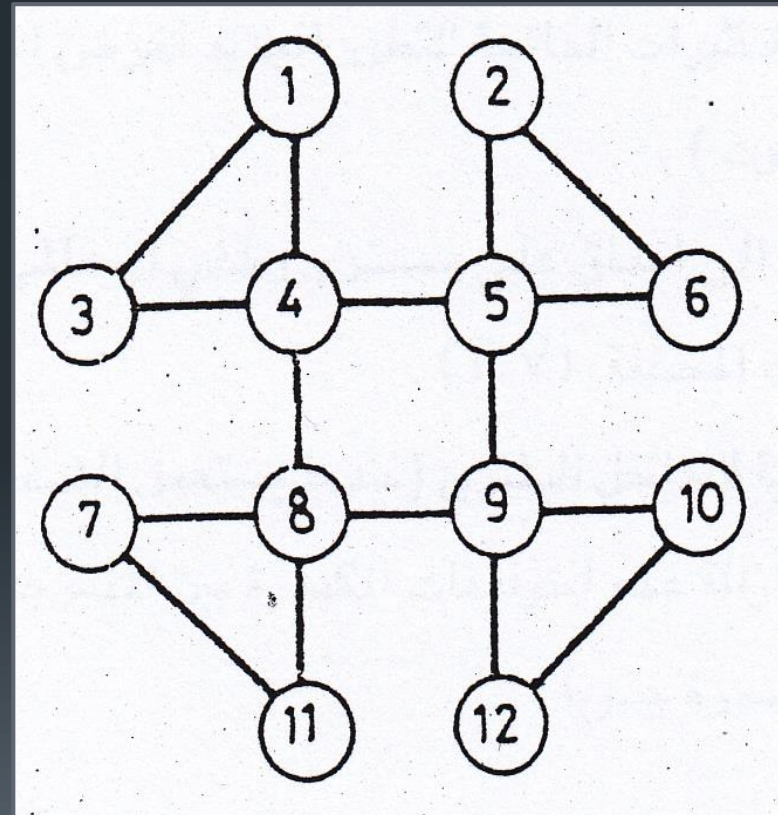
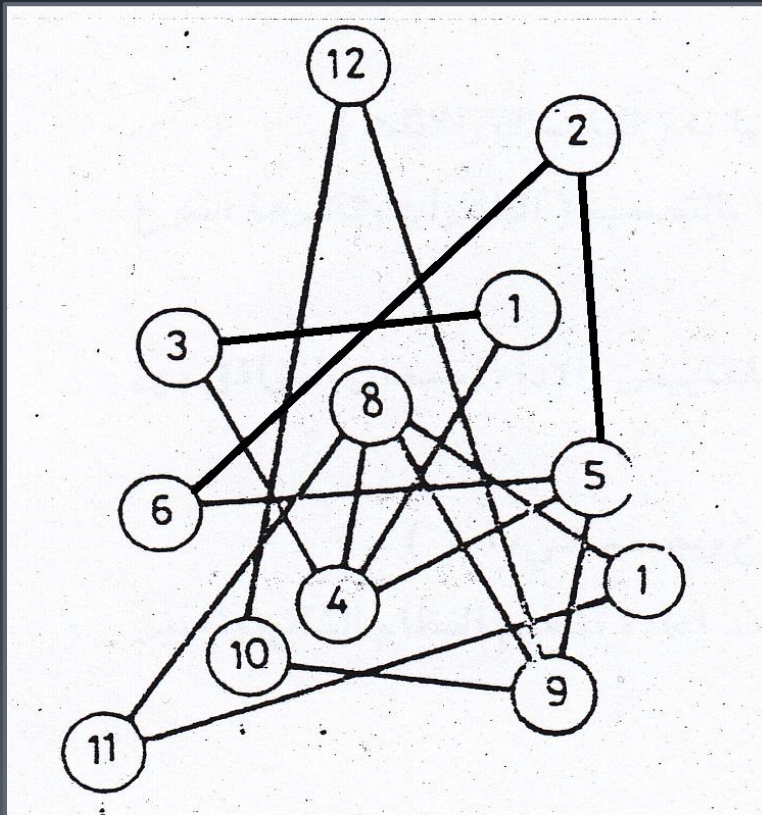


complex but not complicated,  
exciting but not stressful.

# The Need for New Methods:

- QUESTION 1:

*How Do Traditional Designers copy with Complexity?*



# The Need for New Methods:

- QUESTION 1: *How Do Traditional Designers copy with Complexity?*

- *The* human ability to reduce a complex question to simple ones are:

- 1- Expression of person's *awareness*.

- 2- The Idea of what is *good* or *evil*, *beautiful* or *ugly*, *enjoyable* or *tedious*.

- **The traditional way of dealing with complexity is to work simultaneously on one concept of all.**

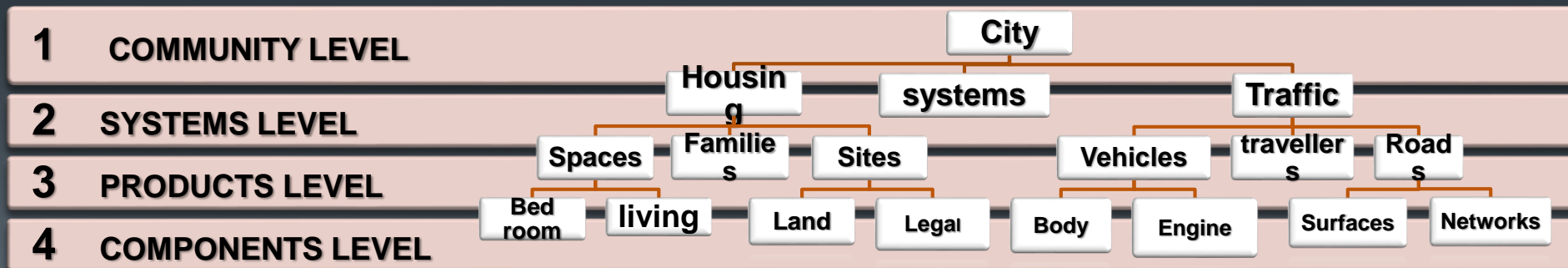
- In traditional design methods, the complexity of design is dealt with using a *tentative/temporary solution*, exploring both the suitable situation and the relationships between components of design.

# The Need for New Methods:

## ○ QUESTION 2:

### In what ways Modern Design Problems are more complicated than Traditional Ones?

- *Problems* created by the use of **man-made** things (traffics, parking problem, health education services).
- Man fails to design for circumstances, not God's work.
- Expanding the design process to include system planning (the relationship between the product) as well as the product itself (adds layers to the hierarchy of things).



# The Need for New Methods:

## ○ QUESTION 2:

### **In what ways Modern Design Problems are more complicated than Traditional Ones?**

- **What do people want to do when a new technological possibility becomes available?**
- **Some of these complexities are external to the product and some are within it (internal):**

#### **❖ External Complexities:**

- 1. Technology transfer (Plastics lower the cost).**
- 2. Predicting the side effects of a new product development.**
- 3. Agree on the national standard to ensure compatibility between products.**



# The Need for New Methods:

## ○ QUESTION 2:

In what ways Modern Design Problems are more complicated than Traditional Ones?

### ✓ **Internal Complexities:**

- 1.** The new design achieves economies of scale (high investment), the design must be correct the first time without errors.
  - 2.** The difficulty of applying information from outside sources to an existing design situation.
  - 3.** The difficulty of discovering rational decision sequences when the flow of new needs (new materials and technology) disturb the pattern of relationships between decision variables.
- *The new complexities of design are not the kind that are dealt with on a drawing board or in the mind of a single designer.*

# The Need for New Methods:

- QUESTION 3:

*What are the Personal Obstacles to Solving Modern Design Problems?*

“ A camel is a horse designed by a committee”



# **The Need for New Methods:**

- **QUESTION 3: What are the Personal Obstacles to Solving Modern Design Problems**
- **“A camel is a horse designed by a committee”, it is doubtful that this view fits the facts.**
- **Committees are inactive or influential in design?**
  - 1. The chairman and members are unskilled at collaborative decision making.**
  - 2. The chairman and members have been selected for the relevance of their knowledge, and their ability to collaborate.**
- **At the end of the process, there is an inherent resistance to the kinds of radical changes at the system level that seems necessary to solve a major design problem.**

# The Need for New Methods:

## ○ QUESTION 4:

### What new types of Complexity are beyond the scope of the Traditional Design Process?

- The reasons for the difficulty of the combinations of possible sub-component at higher level are:
  - 1. Without something equivalent to drawing, the designer does not have a medium through which he can connect mental images with a temporary solution that will enable him to shorten his search.** Without something equivalent to drawing, the designer has no way of communicating mental images with a preliminary solution that limits his search.
  - 2. Without some equivalent system of good knowledge, there is no way to make details of turning a very complex problem into a simple one.**

# The Need for New Methods:

## ○ QUESTION 4:

**What are the new types of Complexity beyond the scope of Traditional Design Process?**

- 3. Many of the people who carrying in their experience the pieces of information upon which the designing of a new system depends, having interests in rejecting anything departs from the status quo (the current situation).**
- 4. Choosing simplified offerings involves exercising the value judgments and technical data needed to forecast detailed feasibility at all four levels in the hierarchy of communities, systems, products, and components.**

# The Need for New Methods:

## ○ QUESTION 4:

**What are the new types of Complexity beyond the scope of Traditional Design Process?**

- The search space in which we have to look for feasible new systems, composed of radically new products and components, is too big for rational search, we need a '**multi-professional**' designer informed by experience of change at all levels, we need **new methods** that provide **sufficient perceptual span** at each of these levels.