زبان تخصصی معماری

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Unit one

Architecture

People have been planning and building for a long time. But was it architecture? Until fairly recently, it was common to distinguish between architecture and 'mere buildings', but this is becoming more difficult. Certainly the origins of architecture predate the first architect, who is traditionally taken to have been the designer of a stepped pyramid in Egypt. Even if one includes the specialist builders of certain chiefs' houses and ritual buildings, most of what was built was not designed by professionals but was rather an expression of the same architectural impulse that prompts high-style design. Thus, in dealing with the origins of architecture or an understanding of what architecture is, we must be concerned with the folk or popular tradition–the buildings called 'primitive' or 'vernacular' that have always comprised the bulk of the built environment and that are essential for any valid generalizations, and certainly critical for a discussion of origins.

All such environments, as well as all human artifacts, are designed, in the sense that they embody human decisions and choices and specific ways of doing things. A person clearing a forest, putting up a roadside stand, or laying out a camp is as much a designer as an architect–such activities change the face of the earth and create built environments.

All environments result from choices made from among all possible alternatives. The specific choices tend to be lawful, reflecting the culture of the people concerned. In fact, one way of looking at culture is in terms of the most common choices made. It is the lawfulness of decisions that makes places–and buildings–recognizably different from one another; lawfulness also leads to specific ways of dressing, behaving, eating, and so on. It affects the way people interact, the way they structure space and time. These consistent choices result in style–whether of built environments or of life.

Thus, culture concerns a group of people who have a set of values and beliefs and a world view that embody an ideal. These rules also led to systematic and consistent choices. With our earlier statement that architecture is a result primarily of sociocultural factors, and with our definition of design to include most purposeful changes to the physical environment, architecture can be thought of as any construction that deliberately changes the physical environment according to some ordering schema. The difference between buildings and settlements is one of scale. As Aldo Van Eyck once said, "A building is a small city; a city is a large building.

To answer the question of why people build environments, we need to understand how the human mind works. Schemata represent one product of what seems a basic process of the human mind, to give the world meaning, to humanize it by imposing order on it—a cognitive order often achieved through classifying and naming, or *differentiating*. The world is chaotic and disorderly; the human mind classifies, differentiates, and orders. We could say that the order is thought before it is built. Settlements, buildings, and landscapes are part of this activity, which, as we have already seen, goes back a long way. When Neanderthals buried their dead with flowers they were trying to impose an order reconciling life and death. The cave paintings of Europe mark complex ordering systems and define caves as sacred spaces, different from other spaces such as dwelling caves that were not painted. Symbolic notational systems, in this case of lunar observations, are found remarkably early and clearly represent attempts to impose an order on time and natural phenomena.

People think environments before they build them. Thought orders space, time, activity, status, roles, and behavior. But giving physical expression to ideas is valuable. Encoding ideas makes them useful mnemonics; ideas help behavior by reminding people of how to act, how to behave, and what is expected of them. It is important to stress that all built environments—buildings, settlements, and landscapes—are one way of ordering the world by making ordering systems visible. The essential step, therefore, is the ordering or organizing of the environment.

Civil Engineering

Civil engineering is a professional engineering discipline that deals with the design, construction, and maintenance of the physical and naturally built environment, including works like bridges, roads, canals, dams, and buildings. Civil engineering is the oldest engineering discipline after military engineering. It is traditionally broken into several sub-disciplines including structural engineering, earthquake engineering, geotechnical engineering, water resources engineering, hydraulic engineering, environmental engineering, surveying, transportation engineering**,** and municipal engineering.

1- Structural engineering

Structural engineering is concerned with the structural design and structural analysis of buildings, bridges, towers, tunnels, off shore structures like oil and gas fields in the sea, and other structures. This involves identifying the loads which act upon a structure and the forces and stresses which arise within that structure due to those loads, and then designing the structure to successfully support and resist those loads. The loads can be self weight of the structures, other dead load, live loads, wind load, earthquake load, load from temperature change etc (et cetera). The structural engineer must design structures to be safe for their users and to successfully fulfill the function they are designed for (to be *serviceable*). Design considerations will include strength, stiffness, and stability of the structure when subjected to loads which may be static, such as furniture or self weight, or dynamic, such as wind, seismic, crowd or vehicle loads, or transitory, such as temporary construction loads or impact. Other considerations include cost, safety, and aesthetics.

2- Earthquake engineering

The main objectives of earthquake engineering are:

• Understand interaction of structures with the shaky ground.

• Foresee the consequences of possible earthquakes.

• Design, construct and maintain structures to withstand hazardous earthquakes

3- Geotechnical engineering

Geotechnical engineering is an area of civil engineering concerned with the rock and soil that civil engineering systems are supported by. Knowledge from the fields of geology, material science and testing, mechanics, and hydraulics are applied by geotechnical engineers to safely and economically design foundations, retaining walls, and similar structures. Soil mechanics, which describes the behavior of soil, is complicated because soils exhibit nonlinear strength, and

stiffness.

4- Water resources engineering

Water resources engineering is concerned with the collection and management of water (as a natural resource). This area of civil engineering relates to the prediction and management of both the quality and the quantity of water in both underground (aquifers) and above ground (lakes, rivers, and streams) resources.

5- Hydraulic engineering

Hydraulic engineering is concerned with the flow and conveyance of fluids, principally water. This area of civil engineering is related to the design of pipelines, water supply network, drainage facilities (including bridges, dams, channels, culverts, levees, storm sewers), and canals. Hydraulic engineers design these facilities using the concepts of fluid pressure, fluid statics, fluid dynamics, and hydraulics, among others.

6- Environmental engineering

Among the topics covered by environmental engineering are pollutant transport, water purification, waste water treatment, air pollution, and hazardous waste management. Environmental engineers can be involved with pollution reduction, and green engineering. Environmental engineering also deals with the gathering of information on the environmental consequences of proposed actions and the assessment of effects of proposed actions for the purpose of assisting society and policy makers in the decision making process.

7- Surveying

Surveying is the process by which a surveyor measures certain dimensions that generally occur on the surface of the Earth. Surveying equipment, such as theodolites, are used for accurate measurement of angular deviation, horizontal, vertical and slope distances. Surveyors may also lay out the routes of railways, tramway tracks, highways, roads, pipelines and streets as well as position other infrastructures, such as harbors, before construction.

8- Transportation engineering

Transportation engineering is concerned with moving people and goods efficiently, and safely. This involves specifying, designing, constructing, and maintaining transportation infrastructure which includes streets, canals, highways, rail systems, airports, and ports. It includes areas such as transportation design, transportation planning, traffic engineering, some aspects of urban

engineering, pavement engineering, Intelligent Transportation System (ITS), and infrastructure management.

Essential Words:

1. Civil engineering
2. Design
3. Construction
4. Maintenance
5. Bridge
6. Road
7. Canal
8. Dam
9. Building
10. Structural engineering
11. Earthquake engineering
12. Geotechnical engineering
13. Water resources engineering
14. Hydraulic engineering
15. Environmental engineering
16. Surveying
17. Transportation engineering
18. Municipal engineering
19. Analysis
20. Tower
21. Tunnel
22. Off shore structure
23. Load
24. Force
25. Stress
26. Support
27. Resist
28. Dead load
29. Live load
30. Wind load
31. Earthquake load
32. Temperature
33. Safe
34. Serviceable
35. Strength
36. Stiffness
37. Stability
38. Subject
39. Static
40. Furniture
41. Dynamic
42. Seismic
43. Impact
44. Safety
45. Aesthetics
46. Objective
47. Interaction
48. Shaky
49. Withstand
50. Building codes
51. Geology
52. Material
53. Mechanics
54. Hydraulics
55. Economically
56. Foundation
57. Retaining wall
58. Soil mechanics
59. Nonlinear
60. Management
61. Prediction
62. Quality
63. Quantity
64. Underground
65. Aquifer
66. Flow
67. Conveyance
68. Fluid
69. Pipeline
70. Water supply network
71. Drainage
72. Facilities

Planing
Until
Fairly
Recently
Common
Distinguish
Mere buildings
Certainly
Origins
Predate
First
Traditionally
Stepped
dyramid
Egypt
Even
Incudes
Specialist
Qeneralizations

Certainly
Critical
Discussion
Allsuch
Human
Ortifacts
Sense
Embady
Decision
Choices
Ways
Person
Elearing
Forest
Putting
Stand
That make
Places
Recogzinably
Different

Chief's
Ritual
Rather
Expressin
Impluse
Prompts
thus
Dealing
Concerned
Folk
Called
Primitive
Vernacular
Comprised
Bulk
Environment
Essential
Valid
Laying

Octivites
Change
Earth
Create
Result
Made
Among
Possible
Olternative
Specific
Lawful
Reflecting
Culture
Concerned
Road side
Choices
Thut
Cultur
Concerns

Exercise

I. Put "T" for true and "F" for false statements.

….. 1- Civil engineering is the oldest engineering discipline after mechanical engineering.

….. 2- The aquifers are the underground resources.

….. 3- Hydraulic engineering is concerned with the rock and soil that civil engineering systems are supported by.

….. 4- Water resources engineering is concerned with water purification, waste water treatment, air pollution, and hazardous waste management.

….. 5- Municipal engineering is concerned with specifying, designing, constructing, and maintaining streets, sidewalks, public parks and bicycle paths.

II. Choose a, b, c or d which best completes each item.

1- Structural engineering is concerned with the structural design and structural analysis of .....

b. water supply networks, and sewers

c. buildings, bridges, towers, tunnels, and off shore structures.

d. canals, highways, rail systems, airports, and ports.

2- The loads which act upon a structure can be .....

a. self weight of the structures

b. dead load, live loads, wind load, and earthquake load

c. load from temperature change

d. a, b and c

3- The should understand interaction of structures with the shaky ground.

a. structural engineers

b. earthquake engineers

c. geotechnical engineers

d. environmental engineers

4- Soil mechanics, which describes the behavior of soil, is complicated because.....

a. soils exhibit linear strength and stiffness

b. soils show nonlinear strength and stiffness

c. soils do not have nonlinear strength and stiffness

d. a and c

5- is the process by which a surveyor measures certain dimensions that generally occur on the surface of the Earth.

a. Dilatancy

b. Theodolites

c. Surveying

d. Equipment

III. Fill in the blanks with the appropriate form of the words given.

1- Maintain

a. The country's railways need better .....

b. Earthquake engineers design, construct and ..... structures to withstand hazardous earthquakes

2- Construct

a. The ..... of several apartment buildings will ease the housing shortage.

b. This company plans to ..... a new hotel in the heart of the town.

c. Everybody should work ..... to produce a better environment.

3- Safe

a. Geology, mechanics, and hydraulics are applied by geotechnical engineers

to ..... and economically design foundations

b. Other considerations include cost, ..., and aesthetics.

c. The structural engineer must design structures to be ..... for their users

IV. Select the proper answer to the following items.

1- For certain structures, the …… of earthquake damage may be very serious.

a) consequences b) construction c) stability d) strong

2- Some buildings are designed to …… very strong earthquakes.

a) produce b) withstand c) resist d) b & c

V. Read the following words and definitions and write the corresponding words in the space provided.

Aquifer Surveyor Foundation Equipment

Treatment Tower Fluid

1 tall structure

2 base, substructure

3 Underground water resources

4 liquid or gas

5 a process by which something is cleaned

6 someone whose job is to measure and record the details of an area of land

7 the tools, machines etc that you need to do a particular job or activity

VI. Choose the word that is most nearly synonym in meaning to the word in capital letters.

1- RESIST	Objective
2- FORESEE	Track
3- PATH	Predict
4- GOAL	Withstand

VII. Fill in the blanks with the following words.

Upon temperature analysis arise self off shore resist

Structural engineering is concerned with the structural design and structural ……. Of buildings, bridges, towers, tunnels, ……. structures like oil and gas fields in the sea, and other structures. This involves identifying the loads which act ……. a structure and the forces and stresses which ……. within that structure due to those loads, and then designing the structure to successfully support and ……. those loads. The loads can be ……. weight of the structures, other dead load, live loads, wind load, earthquake load, load from ……. change etc (et cetera) .