Lecture 2, 3 & 4 – Roots of Urban Planning
Pre Urban Neolithic Towns

Scale of Works at Khirokitia, (8,000 BC), indicate early examples of collaboration in the construction of villages.

First known examples of paved streets show up at Khirokitia.

Shared walls require agreement on maintenance and ownership.
Access to houses is across roofs – further cooperation needed between people to allow others to cross.
Additional Plan and perspective views of Catal Hayak

Note shared walls.
“The Sumerians were people who lived in Mesopotamia (Ancient Iraq) from the mid 6th millennium BC to the early 2nd millennium BC.

Among their architectural accomplishments are the invention of urban planning, the courtyard house, and ziggurat step pyramids and palace building. No architectural profession existed in Sumer; however, scribes drafted and managed construction for the government, nobility, or royalty. Sumerian Architecture is the foundation of later Hebrew, Phoenician, Anatolian, Hittite, Hurrian, Ugaritic, Babylonian, Assyrian, Persian, Islamic, and to a certain extent Greco-Roman and therefore Western Architectures.”

From the Wikipedia website.

The White Temple
Model of Sumerian ziggurat and surrounding fortifications – 2 dominant elements in the Sumerian city.
Characteristics of Sumerian Cities

Temple a dominant element in cities – people lived to serve gods.

- Stands on a ziggurat – meant to recall mountains, high place where gods visit the high priest

Strong fortifications – walled cities, crooked street patterns
- Internal walls to retreat to

In Later Mesopotamian eras 2900 to 2300 BC.
the palace became a dominant feature as the power of the kings grew

Tombs became important with the increased power of Kings and secular elements and were lavishly furnished and decorated

Assyrians 1000 to 600 BC

emphasized trade and war. Cities were heavily fortified and had citadels as a dominating feature

The other dominant feature was the palace.

609 BC. – Babylonians conquer Assyria, Tower of Babel is from this time period
Map and areal view of a city ruin, (Nippur) in Mesopotamia. Note the ziggurat location in each.
Ziggurat

Artist’s Conception of Mesopotamian City residential area

Ruin of the ziggurat shown in the map and photo in the previous slide
Sewers and Waterworks

4000 - 2500 BCE Eshnunna/Babylonia - Mesopotamian Empire (Iraq)
Had stormwater drain systems in the streets; drains were constructed of sun-baked bricks or cut stone. Some homes were connected. [The need for proper disposal of human wastes was not fully understood -- but there was a recognition of some of the benefits (less odor, etc.) of taking these wastes away from homes.]

In Babylon, in some of the larger homes, people squatted over an opening in the floor of a small interior room. The wastes fell through the opening into a perforated cesspool located under the house. Those cesspools were often made of baked perforated clay rings -- ranging in size from 18" to 36" in diameter -- stacked atop each other. Smaller homes often had smaller cesspools (18" diameter); larger homes ... more people ... had larger diameter cesspools. The annular space (1') outside of the cesspools' walls were often filled with pieces of broken pottery to better the percolation rates. Origin of the earliest known pipe: Babylonia was documented by many as one of the first places to mold clay into pipe (via potter's wheel). Tees and angle joints were produced and then baked to make drainage pipe ... all as early as 4000 BCE.
(From Plumber.com)
Sewers and Water Works

Houses had cesspools
Palaces had plumbed privies

Streets had storm drainage

Dogs, cats and pigs scavenged edible garbage

Ashes indicate other garbage was burned
Sumerians invented the wheel. Theirs was solid. The invention of the spoked wheel came later.
Principles in Planning in Mesopotamia

- Build near water
- Find a knoll or high place that is defensible and doesn’t use arable land
- Build temples, (and later castles), at highest promontory
- Build walls, lots of walls
- Irrigation and how was water supplied to cities’ housing?
- Sewage and garbage?
- Planning existed for the Public and governmental spaces
- Specific criteria applied to temple layouts and orientation
Egypt

Religion a main driver of city development

Death – Tombs were an integral and major aspect of Egyptian life

No Walls – cities were protected by the topography – deserts surrounded Egypt.

River Oriented – The Nile was the main source of transport and agriculture – the heart and soul of the empire
Al Armana – a newly created city, built from scratch during the reign of Akhnaten.

Example of a City planned and created.

Abandoned after 20 years.
Plan and rendering of a portion of Al Armana
Khafre pyramid at Giza
Greece

Miletus – 600 BC

Planned by Hippodamus
3 parts by 3 parts

Grid Pattern
flexibility and ease of grid plan

Plan adapted and used extensively by Alexander 325 B.C. to develop new cities

Organized around the agora, the theater, temples

Plan of Miletus by Hippodamus
Hippodamus, the son of Euryphon, a native of Miletus, the same who invented the art of planning cities, and who also laid out the Piraeus—a strange man, whose fondness for distinction led him into a general eccentricity of life, which made some think him affected (for he would wear flowing hair and expensive ornaments; but these were worn on a cheap but warm garment both in winter and summer); he, besides aspiring to be an adept in the knowledge of nature, was the first person not a statesman who made inquiries about the best form of government.

The city of Hippodamus was composed of 10,000 citizens divided into three parts—one of artisans, one of husbandmen, and a third of armed defenders of the state. He also divided the land into three parts, one sacred, one public, the third private: the first was set apart to maintain the customary worship of the Gods, the second was to support the warriors, the third was the property of the husbandmen. He also divided laws into three classes, and no more, for he maintained that there are three subjects of lawsuits—insult, injury, and homicide.

Above is a quote of Aristotle about Hippodamus
Alexander’s Empire 320 BC

Extent of Greek Settlements in the Mediterranean

Annexation of India by Alexander
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India

Mohenjo-daro in ancient times was most likely one of the administrative centers of the ancient Indus Valley Civilization. It was the most developed and advanced city in South Asia, and perhaps the world, during its peak. The planning and engineering showed the importance of the city to the people of the Indus valley.

The Indus Valley Civilization (c. 3300–1700 BC, flowered 2600–1900 BC), was an ancient riverine civilization that flourished in the Indus river valley in ancient India (now Pakistan and the present north-west India). Another name for this civilization is the "Harappan Civilization."
Mohenjo-daro, 25 km southwest of Larkana, was centre of the Indus Valley Civilization 2600 BC-1900 BC

Mohenjo-daro is a remarkable construction, considering its antiquity. It has a planned layout based on a grid of streets, which were laid out in perfect patterns. At its height the city probably had around 35,000 residents. The buildings of the city were particularly advanced, with structures constructed of same-sized sun dried bricks of baked mud and burned wood.

The public buildings of these cities also suggest a high degree of social organization. The so-called Great Granary at Mohenjo-daro as interpreted by Sir Mortimer Wheeler in 1950 is designed with bays to receive carts delivering crops from the countryside, and there are ducts for air to circulate beneath the stored grain to dry it. However, Jonathan Mark Kenoyer has noted that no record of grain exists at the "granary." Thus Kenoyer suggests that a more appropriate title would be "Great Hall."[8]
A. Mohenjodaro: brick wall of house. See p.26

B. Mohenjodaro: Great Granary: upper part of podium. See p.26
china
Roots of Planning
Crisis…response…crisis…

- One theorist, (Paul Knox), argues that the profession of planning emerged out of a series of crises and people’s responses to them.
  - health crises (epidemics)
  - social crises (riots, strikes)
  - other crises (fire, flood, etc.)

- I’ve added these below:
  - War
  - Environmental catastrophes
  - Civic Pride

City Plans are a response to these factors. Some examples:
- Khorsabad – entirely new city developed by Sargon II for unknown reasons. – civic pride
- Amarna, Egypt – response to power of clergy in Egypt by Akhnaten - politics
- Eridu – abandoned in 2025 BC due to environmental disaster
- Mayan civilization – environmental change and/or warfare
- Paris – Haussman’s Boulevards – revolt, health
- Plan for Amsterdam – Civic Pride, health
- Garden City Movement – Health
- Automotive Suburbs – civic pride, health
- Smart city /Green Architecture & Planning – health, environment
Types of Cities

- Organic
  - Growth by addition and accretion, not planned
- Geometric
  - Planned, based on Geometric rules, grids
- Combination
Rome

Adopted Greek principles of organizing - Grid

Important Elements are:  
- Coliseum  
- Warfare defenses  
- circus  
- aqueducts  
- Arches  
- Markets  
- Temples  
- Palaces  
- Sewers

Countryside Villas  
seeds of suburban development

High rise residential in Rome – many buildings 5 to 7 stories

Services - water supply, sewers, roads
Example of Roman city
Roman cities borrowed heavily from the Greeks in Planning – they were organized around Public spaces and Temples:

- The Forum
- The Circus
- The Baths
- The Temples
At the height of its power, Rome reached a population of nearly one million people -- the largest city of an empire that stretched from Scotland in the west to the Persian Gulf in the east. A city of that size required enormous planning, and Roman engineers obliged by taking into consideration a number of features that ensured the safety, productivity and well-being of its citizens. They provided systems to dispose of sewage. They built aqueducts to bring water to the city. They built roads to facilitate transportation and communication. They designed and arranged financing for baths, sports arenas and theaters. And they placed, at the heart of the city, a forum where Romans of every class and distinction could gather to socialize, worship and conduct business.

Although ancient Rome finally collapsed, the principles of municipal planning that made the city so splendid and powerful lived on. As other cities grew, they also had to address the myriad problems that arose whenever a large number of people crowded into a relatively small amount of space.

From Wikipedia
The ancient Romans used a consolidated scheme for city planning, developed for military defense and civil convenience. The basic plan is a central forum with city services, surrounded by a compact rectilinear grid of streets and wrapped in a wall for defense. To reduce travel times, two diagonal streets cross the square grid corner-to-corner, passing through the central square. A river usually flowed through the city, to provide water, transport, and sewage disposal. Many European towns, such as Turin, still preserve the remains of these schemes. The Romans had a very logical way of designing their cities. They laid out the streets at right angles, in the form of a square grid. All the roads were equal in width and length, except for two. These two roads formed the center of the grid and intersected in the middle. One went East/West, the other North/South. They were slightly wider than the others. All roads were made of carefully fitted stones and smaller hard packed stones. Bridges were also constructed where needed. Each square marked by four roads was called an insula, the Roman equivalent of modern city blocks. Each insula was 80 yards (73 m) square, with the land within each insula divided. As the city developed, each insula would eventually be filled with buildings of various shapes and sizes and would be crisscrossed with back roads and alleys. Most insulae were given to the first settlers of a budding new Roman city, but each person had to pay to construct their own house.

The city was surrounded by a wall to protect the city from invaders and other enemies, and to mark the city limits. Areas outside of the city limits were left open as farmland. At the end of each main road, there would be a large gateway with watchtowers. A portcullis covered the opening when the city was under siege, and additional watchtowers were constructed around the rest of the city’s wall. A water aqueduct was built outside of the city's walls.
Miletian City Plan
Americas

- Mayas
- Anastazi
- Aztecs
- Toltecs
- Incas
- Grid layouts – Temples – warfare – Plazas – water works -
Islam

- Mosques
- Souqs
- Walls
- Trade Routes
- Shariah Law
Exterior walls of the Great Mosque of al-Mutawakkil at Samarra
Although the exterior walls of al-Mutawakkil’s mosque have been heavily restored, they give a good idea of the size and scale of Abbasid imperial construction. The upper part of the brick wall was decorated with a frieze of recessed squares.
Like the other buildings in the palace precinct, the Hasht Bihisht pavilion was richly decorated. A few tile panels with birds and animals survive in the spandrels on the exterior, and originally there must have been other, more elaborate scenes like the sets of seven-color tiles now removed to museums. Composed of multiple tiles, the large panels show male and female figures in

Khwaju Bridge in Isfahan, 1650
Downstream from the Si-o-Se Pol is the imposing Khwaju Bridge, which is set on a stone platform divided by sluices which allow the water to stream through the bridge. On the west, or upstream, side, the platform is divided into spear-shaped contreforts which break the river's flow. The two-storied bridge is wide enough for laden caravans to cross on the road in the center, while pedestrians can stroll through the arcades on the sides.
Forms of Cities

- Village
- Town
- Compact Urban
- Diffuse Urban
- Nucleus and Satellites
- Metropolis
- Megalopolis
Post Rome Europe

- Feudalism
- Decline of large cities
- Castles and Keeps
- Supremacy of the Church
- The Gothic Cathedrals
- Holy Roman Empire
Castles

The medieval walled city of Carcassonne in France is built upon high ground to provide maximum protection from attackers.
A. Cistercian Abbey, Fontenay (mid-twelfth century). See p.444

B. Château de Vincennes (1365–73): keep. See p.452

C. Hôtel de Jacques Cœur, Bourges (1442–53): the courtyard. See p.482

D. Avignon: aerial view from south, showing Palais des Papes (1316–66). See p.482
TYPICAL ENGLISH & FRENCH GOTHIC PLANS

SALISBURY CATHEDRAL

AMEN'S CATHEDRAL

CATHOLIC CHURCH PLAN

MONUMENTS ETC.
1. RICHARD BISHOPE
2. SISTER ABBESS
3. SISTER MARIA
4. SISTER ELIZABETH
5. SISTER JANE
6. SISTER MARY
7. SISTER ELLEN
8. SISTER HANNAH
9. SISTER ELIZABETH
10. SISTER MARY
11. SISTER JANE
12. SISTER EMMA
13. SISTER MARY
14. SISTER ELIZABETH
15. SISTER HANNAH
16. SISTER ELLEN
17. SISTER MARY
18. SISTER JANE
19. SISTER EMMA
20. SISTER ELIZABETH

CHAPTER HOUSE

CLOISTERS

GOTHIC
A. S. Chapelle, Paris (1242–7): exterior from NE. See p.444

B. S. Wolfram, Abbeville (1488): west front. See p.444

C. Mont Saint-Michel from the south. (Church: Romanesque nave 1122–35; Gothic choir 1446–). See p.444
NOTRE DAME: PARIS

A. ANGLE & CHOIR  8. S. TRANSEPT

B. EXTERIOR FROM S.E.

C. BUTTRESSES & PINNACLES CHEVET

D. NAVE BAYS (EXT)

E. HALF TRANSVERSE SECTION

F. NAVE BAYS (INT)

G. PLAN

Lire Cathedral: west front (c. 1140–c. 1230). See p. 430
A. Oratory of Gallarus, Dingle County Kerry (probably eighth century). See p.403

B. Dunmore Castle, N. Ireland (c. 1180). See p.403

C. Restormel Castle, Cornwall (twelfth century and later). See p.403

D. Castle Risingham, Enone: the keep (c. 1140). See p.403


F. Carisbrooke Castle, Isle of Wight (c. 1340–80): aerial view. See p.403
Durham Cathedral: nave (1180-83) looking E. See p. 402
Renaissance Europe

- Walls go away
- Growth of merchant class
- Reduction of church influence
  - Growth of Business and finance
  - Banks
  - Exponential growth
  - Technological Growth – navies, guns, navigation tools
Towns and cities have been planned with aesthetics in mind. Here in Bath, England, 18th-century private sector development was designed to appear attractive.
Industrial Revolution

- US Civil War – Example of impact of technology outstripping man’s understanding of it
- Machines
- Urban Growth Rural flight
- City Beautiful
THE THREE MAGNETS.

TOWN
- Poverty
- High Rent
- Bad Water
- Bad Air
- Lack of Social Opportunity
- Overcrowded
- Crowded
- High Taxes
- Excessive Noise
- Pollution
- Malaria
- Typhus
- Pestilence
- Foul Air
- Slums

COUNTRY
- Wealth
- Low Rent
- Good Water
- Good Air
- Social Opportunity
- Scenery
- Open Space
- Voluntary Labor
- Excess of Social Opportunity
- Few Taxes
- Clean
- Healthy
- Peaceful
- Liberty
- Freedom
- Co-operation

TOWN-COUNTRY
- Success
- Failure
- Personal Initiative
- State
- Enterprise
- Socialism
- Capital
- Capitalism
- Utopia
- Dystopia
- Harmony
- Discord
- Progress
- Decay

GARDEN-CITY
- Agricultural Land 5000 Acres
- Population 30000
- City Lodges
- A. M. Church
- Catholic Church
- Chinese Temple
- Chinese
- Japanese
- Methodist Church
- Baptist Church
- Presbyterian Church
- Methodist Episcopal Church
- Episcopal Church
Partial Realization of Garden City ideas through railroad suburbs 1890 - 1940

Diagram

Illustrating correct principle of a city's growth - open country ever near at hand, and rapid communication between off-shoots.
Early 20th Century

William Morris and the Arts & Crafts Movement

1880’s - 1900

Chicago Exposition – 1893

McKim Mead & White

CIAM and Bauhaus

International Congress of Modern Architecture

Automobile and the explosion of suburbs in US – 1950’s
Post WW2

- Exodus to the suburbs
- Freeways
- Slum Clearance & Public Housing
- Urban Renewal
Current Planning

- Internet Revolution
- Smart Growth
- Transit Oriented growth
- Pedestrian Pockets
- Community Involvement