

Environmental, Social & Economic Issues:

Defensible Space Concept:

- Defensible space is a concept first proposed by the architect Oscar Newman and developed further by Alice Coleman. It is the idea that crime and delinquency can be controlled and mitigated through environmental design. The idea is important because it relates an individual's environment to his or her expectation of crime in the community.
- There are four factors that make a defensible space:
 1. Territoriality, or the idea that one's home is sacred
 2. Natural surveillance, or the link between an area's physical characteristics and the residents' ability to see what is happening
 3. Image, or the capacity of the physical design to impart a sense of security
 4. Milieu(environment), or other features that may affect security, such as proximity to a police substation or busy commercial area

Personal Space Concept:

- concept by Edward T. Hall; four basic distances can be understood through human behavior (closest to farthest)
 1. Intimate distance – physical contact to approx 6"-18"
 2. Personal distance – from about 1.5' – 2.5'; given a choice people will maintain this distance
 3. Social distance – ranges from 4' – 12'; distance at which most impersonal business & interaction takes place between strangers or in more formal situation
 4. Public distance – farthest distance, ranges from about 12' outward; greatest formality achieved at this distance; safe distance for escape in case of danger
- Behavior setting – particular place with definable boundaries and objects w/in in which a standing pattern of behavior occurs at a particular time
- Density – number of people per unit area
- Proxemics – describes the study of spatial requirements of humans and the effects of population density on behavior, communication, & social interaction
- Territoriality – behavioral system where person, animal or group lays claim to an area and defends it against others
- Sociofugal – conditions that tend to discourage interaction or social contact
- Sociopetal – conditions that bring people together & encourage social interaction

Sustainable Design Concepts:

Vegetated Roofs:

- Reduces the amount of stormwater runoff on a site
- Reduces the impervious surface area on a site
- Will have a longer lifespan than a conventional membrane roofing system & lower overall maintenance costs b/c roof membrane is protected from ultraviolet radiation
- Can minimize heat island affects

Environmental Assessment Statement

- **environmental impact assessment (EIA)** is an assessment of the possible impact—positive or negative—that a proposed project may have on the environment, together consisting of the natural, social and economic aspects originated in the [National Environmental Policy Act](#) (NEPA), enacted in 1970
- **environmental impact statement (EIS)** under [United States environmental law](#), is a document required by the [National Environmental Policy Act](#) for [federal government agency](#) actions "significantly affecting the quality of the human environment."^[1] A tool for decision making, an EIS describes the positive and negative [environmental effects](#) of proposed agency action - and cites alternative actions

EIS typically has four sections:

1. An Introduction including a statement of the **Purpose and Need** of the **Proposed Action**.

2. A description of the **Affected Environment**.
3. A **Range of Alternatives** to the proposed action. Alternatives are considered the "heart" of the EIS.
4. An **analysis** of the environmental impacts of each of the possible alternatives

Assessments: Official valuation of property for the purpose of taxes

Methods of assessments:

1. Income Approach: is one of three major groups of methodologies, called valuation *approaches*, used by appraisers
 - particularly common in commercial [real estate appraisal](#) and in business appraisal
2. Market Approach: defines market value as "the estimated amount for which a property should exchange on the date of valuation between a willing buyer and a willing seller in an arm's-length transaction after proper marketing wherein the parties had each acted knowledgeably, prudently, and without compulsion
 - market value is "the true underlying value" according to theoretical standards
3. Cost Approach: theory is that the value of a property can be estimated by summing the land value and the depreciated value of any improvements
 - cost approach is considered reliable when used on newer structures, but the method tends to become less reliable for older properties. The cost approach is often the only reliable approach when dealing with special use properties (e.g. -- public assembly, marinas).

Albedo:

- Fraction of radiant energy received on a surface that is reflected
- Ranges from 0.0 to 1.0
- 0.0 = flat black surface that absorbs all energy & reflects none
- 1.0 = mirror reflecting all energy

Conductivity:

- Time rate of flow of heat through a material
- Highly conductive let heat pass through them quickly
- Low conductivity retard the passage of heat

Climate & Orientation:

- in northern hemisphere best overall orientation for building is to have principal façade facing south or slightly east or west of south
- overhangs good for use on south façade
- east & west façade best to use vertical sun baffles rather than overhangs b'c of lower angle of sun during morning and afternoon
- shield buildings from winter winds

Road & Parking Design:

- Entrance locations:
 - Most desirable to be located on a collector street rather than arterial street
 - Sufficiently separated from an intersection
 - Reasonable angle for connection
- Parking Configurations:
 - 90 degree
 - most difficult for a driver to maneuver within
 - only configuration that allows for a two-way travel lane
 - most efficient; 11 cars per 100 lineal feet of curb
 - 60 degree
 - Relatively economical

- Allow easy access to and from parking spaces
 - 9 cars per 100 lineal feet of curb
 - 45 degree
 - Relatively economical
 - Allow easy access to and from parking spaces
 - 8 cars per 100 lineal feet of curb
 - 30 degree
 - Least efficient, uneconomical
 - 5 cars per 100 lineal feet of curb
- Slope percentage for different uses:
 - parking is 5%max,
 - street is 10%

- Parking Space Sizes

Accessible space is minimum 96" wide (8 ft) with access alley 60" (5 ft) wide for cars or 96" (8 ft) wide for vans adjacent to the space

Road Types:

- Local streets – lowest capacity & provide direct access to building sites
- Collector streets – connect local streets and arterial streets; higher capacity than local streets but usually not intended for through traffic
- Arterial streets – intended as major continuous circulation routes that carry large amounts of traffic on 2 or 3 lanes; usually connect expressways; on street parking typically not allowed
- Expressways – limited access roads designed to move large volumes of traffic between, through & around population centers; ramp systems; pedestrians not allowed

Planning Concepts

Historical Influences:

- Medieval City
 - Started at crossroads of 2 main streets
 - Irregular in layout
 - Organized around church and market
 - Informal rings of streets
 - Walled for defense
- Star Shaped City
 - w/ invention of gunpowder high wall was no longer adequate defense
 - regularly spaced bastions around the wall for defense from all sides
 - streets radiate from the center

Planning Concepts:

Medieval city planning
 Garden City Planning – reaction to industrial revolution
 Cite Industrielle
 City Beautiful
 New Urbanism

Planning Influences:

- Industrial Revolution

- Prompted a reform movement that lead to many ideas about planning
- Influenced urban design in Europe & US
- Garnier's Cite Industrielle
 - Developed in response to the Industrial Revolution
 - First to use the idea of zoning
- L'Enfant's plan of Washington, DC
 - Baroque planning approach was never widely adopted
 - Widely praised and publicized as a major planning effort
- Ordinance of 1785
 - started the rectangular survey system
 - reinforced the idea of grid planning that began with the plan for Philadelphia
- 1893 Columbian Exposition
 - revived interest in city planning
 - showed desirable results could be achieved through organized efforts
 - prompted many cities to plan civic centers & parkways

Town Planning:

- Savannah, GA
 - Based on grid system
 - Wards of 40 houses are bounded by major streets with each section having a public square
- Washington, DC –
 - Example of Baroque planning approach; L'Enfant
- Philadelphia
 - Based on grid system
- Paris
 - beginning in 1852, the [Baron Haussmann](#)'s urbanization program involved leveling entire quarters to make way for wide avenues lined with neo-classical stone buildings of *bourgeoisie* standing
- Radburn, NJ
 - 1928 plan developed by Clarence Stein & Henry Wright
 - First plan to take on planning for pedestrians and automobiles
 - Use of underpasses to allow pedestrian traffic to pass under automobile traffic
 - Intended to prevent accidents and separate traffic types
 - Only one underpass constructed
- Reston, VA
 - Influenced by Radburn, NJ plan
 - Features a series of underpasses that promote travel on foot throughout the community
- Charleston, SC
 - 1931 - First city in the US to establish a "historic district" in 1931 as a response to attrition of aging building stock through theft, demolition & neglect
- Williamsburg, VA
 - Late 1920's - 1930's – part of city was acquired & restored, preserved, reconstructed by what is now the Colonial Williamsburg Foundation led by Rev. W.A.R. Goodwin & financed by John D. Rockefeller
- New Orleans
 - 1937 - Designated the Vieux Carre a historic district in 1937 adopting mechanisms from Charleston

City Beautiful movement (1890's-1900):

- Progressive reform movement in North American architecture and urban planning that flourished in the 1890s and 1900s with the intent of using beautification and monumental grandeur in cities to counteract the perceived moral decay of poverty-stricken urban environments.

- The movement, which was originally most closely associated with Chicago, Detroit, and Washington, D.C., did not seek beauty for its own sake, but rather as a social control device for creating moral and civic virtue among urban populations.
- Advocates of the movement believed that such beautification could thus provide a harmonious social order that would improve the lives of the inner-city poor.

Beaux-Arts city planning (1880's – 1920):

- with its Baroque insistence on vistas punctuated by symmetry, eye-catching monuments, axial avenues, uniform cornice heights, a harmonious "ensemble" and a somewhat theatrical nobility and accessible charm, embraced ideals that the ensuing Modernist movement decried or just dismissed
- The first US university to institute a Beaux-Arts curriculum was MIT in 1893, when the French architect, Constant-Désiré Despradelles was brought to MIT to teach. Subsequently the Beaux-Arts curriculum was begun at Columbia University, The University of Pennsylvania, and elsewhere
- The best known architectural firm specializing in Beaux-Arts style was McKim, Mead, and White
- Two of the best American examples of the Beaux-Arts tradition stand within a few blocks of each other: Grand Central Terminal and the New York Public Library.

New Urbanism (1990's):

- American urban design movement that arose in the early 1980s
- goal is to reform all aspects of real estate development and urban planning, from urban retrofits to suburban infill.
- New urbanist neighborhoods are designed to contain a diverse range of housing and jobs, and to be walkable.
- New Urbanism is also known as traditional neighborhood design, neotraditional neighborhood design, and transit-oriented development.
- A more idealistic variant of New Urbanism, founded in 1999 by Michael E. Arth, is known as New Pedestrianism.
- In 1991, the Local Government Commission, a private nonprofit group in Sacramento, California, invited architects Peter Calthorpe, Michael Corbett, Andres Duany, Elizabeth Moule, Elizabeth Plater-Zyberk, Stefanos Polyzoides, and Daniel Solomon to develop a set of community principles for land use planning. Named the Ahwahnee Principles (after Yosemite National Park's Ahwahnee Hotel), the commission presented the principles to about one hundred government officials in the fall of 1991, at its first Yosemite Conference for Local Elected Officials.
- New urbanists support regional planning for open space, appropriate architecture and planning, and the balanced development of jobs and housing. They believe their strategies are the best way to reduce traffic congestion, increase the supply of affordable housing, and rein in urban sprawl. The Charter of the New Urbanism also covers issues such as historic preservation, safe streets, green building, and the renovation of brownfield land

Christopher Wren (1632 –1723)

- **London fire of 1666 – plan for rebuilding London utilized the Renaissance Planning approach; never built**

- He designed many new buildings that were built, the greatest of which was [Saint Paul's Cathedral](#) .
- one of the best known and highest acclaimed English [architects](#) in history,^[1] responsible for rebuilding [55 churches](#) in the [City of London](#) after the [Great Fire](#) in 1666, including his masterpiece [St Paul's Cathedral](#), completed in 1710
- [St Paul's](#) has always been the touchstone of Wren's reputation. His association with it spans his whole architectural career, including the thirty-six years between the start of the new building and the declaration by parliament of its completion in 1711
- now known as the greatest architect of the **English baroque style**

L'Enfant (1754 – 1825)

- asked (1789) by Washington to submit plans for the capital city at Washington. His plans were presented in 1791, but he antagonized Congress and was opposed by Thomas Jefferson
- L'Enfant's plans were exhumed from the archives, and in 1901 the design of the capital was developed along the lines that he had laid down

Haussmann (1809 – 1891)

- **plan for Paris utilized the renaissance planning approach**
- Advocated straight arterial boulevards connecting principal historic buildings, monuments & squares
- From 1853-1869 parts of large part of paris was demolished to implement plan
- Purpose of plan was to minimize riots, facilitate defense of the city, clear out slums, improve transportation, beautify city

Olmstead (1822 – 1903)

- was an [American](#) journalist, landscape designer and father of American [landscape architecture](#). Frederick was famous for designing many well-known urban parks, including [Central Park](#) and [Prospect Park](#) in [New York City](#)

Daniel Burnham (1846 –1912)

- American architect and urban planner whose impact on the American city was substantial. He was instrumental in the development of the skyscraper and was noted for his highly successful management of the World's Columbian Exposition of 1893 and his ideas about [urban planning](#).
- He was the Director of Works for the [World's Columbian Exposition](#) in [Chicago](#) and designed several famous buildings, including the [Flatiron Building](#) in New York City and [Union Station](#) in Washington D.C
- American architect and city planner b. Henderson, N.Y. He was trained in architects' offices in Chicago. In that city he established (1873) a partnership with John W. [Root](#) and soon gained many of the most important architectural commissions of the day. Their Chicago works include the Monadnock Building; the 20-story Masonic Temple Building (1892), the first important skeleton skyscraper; the Reliance Building; and the "Rookery" offices. Among their other works were the Flatiron Building and the Wanamaker store in New York City, Union Station in Washington, D.C., and buildings in Cleveland, Buffalo, and San Francisco.
- Burnham and Root also designed the general plan for Chicago's [World's Columbian Exposition](#) (1893) and through it exerted an enormous influence upon contemporaneous civic design. In 1901, Burnham served with C. F. [McKim](#) , F. L. Olmsted, Jr., and Augustus [Saint-Gaudens](#) on the Senate Park Commission in planning for the future beautification of Washington, D.C. With E. H. Bennett he created a civic improvement plan of great importance for Chicago (1907), much of which has since been put into execution. He also prepared plans for Baltimore, Duluth, and San Francisco, and was commissioned by the U.S. government to design plans for Manila and other cities in the Philippines.

Ebenezer Howard (1850 – 1928)

- **Garden City Concept reform movement as a reaction to the Industrial Revolution**
- Attempted to combine best of city and country living in his town-country idea
- Proposed 6000 acre tract of land be owned by residents; centered on civic buildings in a park; surrounding this area would be housing & shops with industrial areas in the outer most ring

- Urban part of town would support 30,000 people on 1000 acres of land; remaining 5000 acres would be reserved for a greenbelt and agricultural use and house 2000 people
- known for his publication [Garden Cities of To-morrow \(1898\)](#), the description of a [utopian](#) city in which man lives harmoniously together with the rest of nature. The publication led to the founding of the [Garden city movement](#), that realized several Garden Cities in Great Britain at the beginning of the Twentieth Century
- called for the creation of new [suburban](#) towns of limited size, planned in advance, and surrounded by a permanent belt of agricultural land. These [Garden cities](#) were used as a role model for many suburbs. Howard believed that such Garden Cities were the perfect blend of city and nature. The towns would be largely independent, and managed and financed by the citizens who had an economic interest in them
- ideas attracted enough attention and financial backing to begin [Letchworth Garden City](#), a suburban [garden city](#) north of [London](#). A second garden city, [Welwyn Garden City](#), was started after [World War I](#)

Tony Garnier (1869-1948)

- French architect
- began in 1901 to formulate an elaborate solution, published as **Une cité industrielle (1918)**
- city was to be built in France and include zones for residential, public, industrial and agricultural use linked by separate vehicular and pedestrian circulation paths
- **one of the first to emphasize the concept of zoning**

Kevin Lynch - Image of the City (1918 – 1984)

- Lynch's most famous work, The Image of the City published in 1960, is the result of a five-year study on how users perceive and organize spatial information as they navigate through cities. Using three disparate cities as examples (Boston, Jersey City, and Los Angeles), Lynch reported that users understood their surroundings in consistent and predictable ways, forming [mental maps](#) with five elements:
- **Paths** - the streets, sidewalks, trails, and other channels in which people travel
- **Edges** - perceived boundaries such as walls, buildings, and shorelines; linear elements other than paths that form a boundary; may be solid or penetrable
- **Districts** – areas that people perceive as having common identifying character and that they can enter
- **Nodes** - focal points, intersections or loci; strategic centers of interest that people can enter
- **Landmarks** - readily identifiable objects which serve as reference points; similar to nodes but cannot be entered
- **Imageability** – quality of the physical environment that creates a strong image in the mind of an observer

Development Patterns:

- Expanding grid – simplest pattern
- Star pattern – revolves around urban core, development follows radiating spokes of main highways or mass transit
- Field pattern – no central focus or overall organization scheme, example – Los Angeles
- Satellite Pattern – central urban core with other major cores surrounding it; central core linked to others with major highways; often outer cores are connected with beltways; example – Houston
- Megalopolis – two or more major urban centers near each other grow together as space between them is developed

Superblock

- outgrowth of new town concept
- example Radburn, NJ
- large piece of land planned to limit the intrusion of the automobile
- surrounded by a continuous street with cul-de-sacs for vehicular access
- idea used by Le Corbusier in planning of Chandigar, India and by Costa & Niemeyer in planning of Brasilia

Zoning Ordinances – regulate land usage, function, size & certain exterior aspects

- Segregate uses
- Control density
- Parking & loading requirements
- Heights, sizes & setbacks
- Site layout & coverage
- Signage & landscaping
- Water retention & detention

Note – if zoning ordinance and building code give different maximum heights or areas, the lower of the two takes precedence

Incentive Zoning:

- way to encourage private developers to provide amenities for public use in exchange for the opportunity to build larger or taller structure on the site
- must include a *base floor area* (standard for comparison) and a *bonus ratio* (the floor area ratio (FAR) that is provided if the public space is part of the design
- value of additional leasable floor area must exceed the cost of providing the public amenity o be a true incentive

Easements - easement in law, the right to use the land of another for a specified purpose, as distinguished from the right to possess that land

Deed Restrictions - restrictions on the deed that place limitations on the use of the property. Restrictive covenants are an example of deed restrictions Deed restrictions are usually initiated by the developers - those who determined what the land would be used for, divided the land into plots, and built homes, office buildings, or retail buildings on it. Deed restrictions come with the property and usually can't be changed or removed by subsequent owners.

Covenants – dictate type and appearance of exterior materials for aesthetic reasons, ex. Allowable color schemes

Project Development Issues

Tax Increment Financing:

- Method cities use to issue bonds to pay for improvements (new sewers, streets) within a specified district intended to stimulate development w/in the district
- During time of redevelopment taxes are based on the assessed value of the property prior to the redevelopment
- After the development, the increase in taxes due to the development (tax increment) is used to repay the bonds

General Obligation Bonds:

- Typically used to fund a specific project such as a library or fire station
- Not used to encourage private development
- All taxpayers in the jurisdiction issuing the general obligation bonds must pay off the bonds through a property tax so a voter majority is required

Developer Impact Fees:

- Generally used to fund infrastructure improvements made necessary by new developments
- Common method of raising money but can have a negative effect b/c developers look for areas with the lowest impact fees

Business Improvement Districts:

- Used to fund public space improvements (streetscapes) to enhance an area's appeal and indirectly increase property values
- Taxes assessed to property owners in the district who would benefit from the improvements
- Not intended to encourage private development

Ad Valorem Tax:

- Tax based on the value of the property being taxed

Debt Service:

- Cost to pay off the construction loan for a project
- Considered an ongoing cost over many years, not part of the original project costs

Contractor's Overhead & Profit typically = 15% to 40% of the construction costs

Development Loan Types:

- Blanket loan – used for the purchase of land that the developer intends to subdivide and resell; generally includes a clause that releases each subdivided plot from the loan as it is purchased and a portion of the debt is repaid
- Bridge loan – short-term loan used to close quickly on a property or to finance a project that must begin immediately while waiting on another lender to approve a long term loan
- Hard money loan – similar to a bridge loan; based on the value of the property against which the loan is made; amount of loan depends on the quick-sale value of the property or the loan-to-value ratio
- Mezzanine loan – often used by developers; large loan with variable interest rate that increases substantially near the time repayment is due; stock in developers company is used as collateral; loan requires gamble that property will produce enough revenue to repay the loan when the interest rates escalate
- Conventional mortgage – fixed or adjustable interest rate; secured by the property purchased; when debt is repaid borrower has clear title to the property

Location Factors for Construction:

- Sub-urban areas – lowest costs typically; well connected to urban areas
- Urban areas – highest costs, higher labor rates
- Rural areas – access and transportation affect costs
- Labor unions – increase labor costs greatly over “open shop”

Eminent domain:

- in common law legal systems is the inherent power of the state to seize a citizen's private property, expropriate property, or rights in property, without the owner's consent. The property is taken either for government use or by delegation to third parties who will devote it to "public use" or in some cases, economic development.
- The most common uses of property taken by eminent domain are public utilities, highways, and railroads. Some states require that the government body offer to purchase the property before resorting to the use of eminent domain

Deed Restrictions:

- restrictions on the deed that place limitations on the use of the property
- Restrictive covenants are an example of deed restrictions.
- Usually initiated by the developers - those who determined what the land would be used for, divided the land into plots, and built homes, office buildings, or retail buildings on it.
- Come with the property and usually can't be changed or removed by subsequent owners.
- Deed restrictions such as restrictive covenants are often put in place to maintain a desired look in a neighborhood. To that end, deed restrictions may prevent owners from building more than a pre-established

number of homes on one lot. Deed restrictions can also specify what materials or style a building may or may not be constructed of, and how close to the street it can be. Deed restrictions can even specify the minimum size that a house on the lot may be! Deed restrictions govern more than just the construction of buildings on a property.

Restrictive covenants:

- in a residential neighborhood dictate what types of materials fences may be made out of, or establish limits regarding pets, such as how many pets can be kept in a home or the conditions they must be kept in.
- Covenants often protect the aesthetic appearance of the neighborhood by providing a list of acceptable paint colors for the exterior of the house, regulating tree-cutting and other landscaping issues, or prohibiting the use of the lot for storage of campers, trailers, or cars that don't run.
- Covenants might also establish road maintenance or amenities fees

Amortization:

- process of decreasing or accounting for an amount over a period of time.
- Amortization (business), the allocation of a lump sum amount to different time periods, particularly for loans and other forms of finance, including related interest or other finance charges.
- Amortization schedule, a table detailing each periodic payment on a loan (typically a mortgage), as generated by an amortization calculator.
- Negative amortization, an amortization schedule where the loan amount actually increases through not paying the full interest
- Amortization is also used in the context of zoning regulations and describes the time in which a property owner has to relocate when the property's use constitutes a preexisting Nonconforming use under zoning regulations.

Egress Requirements:

- Exit Access Travel Distance- distance a building occupant must travel from the most remote point in the occupied portion of the exit access to the entrance of the nearest exit
- Common Path of Egress Travel – portion of an exit access that occupants are required to traverse before two separate and distinct paths of egress travel to two exits are available
- Exit Separation Distance- minimum distance by which two exits must be separated when two exits are required
- Exits cannot pass through:
 - Kitchens
 - Storerooms
 - Closets
 - Other spaces used for similar purposes
 - Through rooms that can be locked to prevent egress
- Spaces with more than 50 occupants must have 2 exits; doors swing in the direction of travel

ADA Accessibility Guidelines (ADAAG):

- State that all newly designed or newly constructed areas must meet accessibility requirements
- Includes all employee work areas and all temporary construction that is open to the public
- Following areas are not required to be accessible:
 - Temporary facilities associated with the process of construction (trailers, scaffolding)
 - Raised areas used primarily for security or life safety (security or life guard towers)
 - Non-occupiable service areas accessed infrequently for maintenance or monitoring (catwalks, penthouses, pump rooms)
 - Single occupant structures accessed from above or below grade (tollbooths)
 - Raised structures for officiating sporting events
 - Water slides

- Non-public animal containment areas
 - Raised boxing & wrestling rings
- Minimum clear door opening width = 32" so typically use a 36" door
- 1:12 maximum ramp slope