JAMES A. GRAASKAMP COLLECTION OF TEACHING MATERIALS
II. CLASSES AT THE UNIVERSITY OF WISCONSIN--MADISON
A. Business 520: Urban Land Economics (Principles)
2. Assorted Lecture Notes and Lecture Outlines (1969 onward)

Index

Feb. 19,

PHYSICAL AND ECONOMIC PATTERNS OF URBAN STRUCTURE

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I. Introduction:

1. Topic for lecture:

   "Physical and Economic Patterns of Urban Structure."

2. Objectives of Lecture:

   (a) Two preceding lectures have:

   (1) Described diagram

   (2) Analyzed its moving demand - force the economy.

   (b) A summary of theories of urban structure that have formed on an evolutionary basis over the years. The product of changing urban economic function, social customs, attitudes, and technology. Overall view of Diagram Product → Structure.

   (c) Improvement of understanding of growth tendencies and forms of the urban unit in this country; with some indication of underlying causes.

3. Conceptions have universal application subject to variance because of cultural and technological differences in various countries.

4. Shortcomings of theories are numerous. However, cannot be treated fully in this lecture.

5. Familiarity of some students with a few of the concepts via other courses and assigned readings in real estate version.

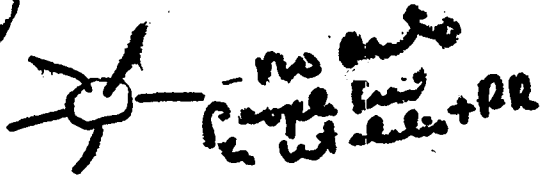
II. Physical Growth Patterns

(Topic summary) (Patterns formed by urban structures (buildings), street and rail systems, topography and urban open spaces).

1. Growth by Lateral Expansion.

a Decentralization →

b Axial Growth →



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(a) Highway surfacing + winter driving.

(b) Depression

(c) Gas rationing

(c) Isolated settlement (1945-~~1962~~ PRESENT).

1. Further suburbanization but on a highly dispersed basis.

2. Result of further development of automobile, highway system, and real income.

(d) Interstitial Growth

1. A modern version of accretion, fan-like growth pattern.

2. Filling-in of areas between interstices of MAIN axials by urban settlement; engulfment of close-in isolated settlements

3. Gradual rise in density within interstices.

(e) Factors Disturbing Physical Patterns (idealized).

1. Topography.

2. Rail yards and cemeteries.

3. Institutional land use blocks. (Hill Farms)

2. **Growth by Internal Expansion**

a. ~~Filling in~~ ABSORPTION by use-development of vacant internal land areas and lots.

b. Reclamation of swamp areas, valleys, HILLSIDES AND lake shores, for urban use.

c. Land use succession by intensification of use:

(1) Structural alteration or conversion.

(2) Structural replacement.

(3) Vertical extension.

3. Growth by Polynucleation

a. General explanation:

(1) A metro area description of urban physical extension.

(2) A special macro version of lateral expansion involving many/MAJOR urban units or concentrations in a metro area.

(SKETCH) * (3) ~~Also~~ Involves the growth of certain satellites (macro version of isolated settlements) to large size. A simultaneous lateral (and internal) expansion and extension of all urban units within the area at varying rates.

b. Internal land use plan and form of physical extension of each/LARGE urban unit in the metro area essentially the same. Some units are highly specialized in economic and social terms.

* c. Polynucleation can be conceived of as evolving "naturally" once the core city has reached a certain/CRITICAL PHYSICAL size and economic and social complexity. ← (SPIN-OFF) GENERATION OF SATELLITE

d. Expansion laterally of each of the urban units in the total metro pattern results in progressive coalescence which proceeds at most rapid rate near the dense center, declining as the periphery is approached. Sprawl effect provides connections.

e. Coalescence and continuing metro area growth (technological impetus) stimulates the development

of more small ISOLATED nucleations AND urban satellites farther out. ~~A large-scale version of isolated settlement creation~~

11:25

× f. Planning theories of polynucleated metro area envision:

(1) Size control of each nucleus.

(2) Prevention of sprawl.

(3) Stimulation of a more economic spatial structure.

(4) Preservation of nucleus-dividing greenbelts for:

a. Recreation and forest preserves.

b. Truck farming.

c. Expressway and transit systems.

d. Extensive urban uses (reservoirs, golf courses, cemeteries etc.)

e. Esthetics - visual break in the urban pattern.

V. ECONOMIC GROWTH PATTERNS OF CITIES

(The Urban Land Use Structure)

1. A description of the arrangement of land uses within the physical urban area (urbanized area) and the manner in which these uses grow and change within the structural

* pattern. Geographic expression of economic competition for situs patterns, the basis of use productivity.

2. Three versions of economic structure: to a degree evolutionary in their conceptual interpretations:

- Concentric Zone theory
- Sector theory
- Multiple Nucleii theory

3. Concentric Zone Theory: BURGESS 1920

(a) Description:

(1) Idealized concept of a complete set of concentric circles.

(2) Breaks in perfect circles expected as a result of topography (Madison, Milwaukee, Chicago, New York.)

(3) Arrangement of uses by zone - several versions, current version (RUR text)

Zone 1 - Central Business District

Zone 2 - Wholesaling and Light Mfg.

Zone 3 - Low income housing merging into zones 2 and 4.

Zone 4 - Heavy Manufacturing

Zone 5 - "Bright light" area of neighborhood shopping center and Higher Income dwelling units.

Zone 6 - Commuters zone.

(4) Rings have independent/LATERAL growth power causing an/INVADING expansion effect within/OUTWARD adjoining/ACCOMPANYING/AREAS; use-transition problems RESULT

(5) Theory also reflected in evolutionary stages of (characteristics common to all/USES/~~land uses~~/TOTALITY). Hence there are concentric zones according to:

(a) Age of structure (as in RINGS OF a tree).

(b) Condition of structure. (Rel. to age and transition)

(c) Value for smaller SF residential structures. (OR PER UNIT OF ALL RESIDENCE USES; INVERSE FOR COMMERCIAL USES)?

(d) Income and social status of residential occupants.

(b) Shortcomings of theory:

(1) Extremes of topographical, technological and institutional interference make theory almost meaningless in some cases.

(2) Assumption of a common center.

(3) Disregard of effects of radials (street and transit) on land use pattern.

(4) Represents version of a large and relatively mature city in terms of range and location of uses.

(5) Commuters zone assumes an unincorporated area, no provision for decentralized industry and commerce.

4. Sector Theory: Hoyt, 1937

(a) Description:

1. Residential segments of city defined on a value AND SOCIAL STATUS basis and delineated by radials of street and transit systems, and topography, (lakes, contours, etc.)

2. Periphery of resulting pie-shaped sectors an irregular one.

3. High rent sector the pole of residential and small commercial attraction. Constant movement of this sector outward toward high land, open country, scenic river and lake shores.

4. Value transitions can take place within sectors.

   (a) High rent sector can begin outward movement at the base of a low rent sector and vice versa.

   (b) High rent sector can fan out at its periphery point.

5. Madison example (Square to Yahara River), (Square to Mendota).

6. Sector theory, though residential, is adaptable to other uses. Industrial sectors determined by rail pattern,* RIVER + * lake frontage, periphery fanning. Commercial strings. ON AXIALS + BELTS (* AXIAL EFFECT RATHER THAN SECTOR)

X (b) Shortcomings of Theory:

1. Concentrates explanation on only one land use. However this is dominant use in terms of area.

2. Commercial uses may be fitted into theory insofar as CBD and string street development is concerned but does not provide for neighborhood nucleations and shopping centers.
3. Periphery nucleations (industrial, residential, or commercial) not always a part of sector extensions.
4. High rent areas not always the main pole of attraction. Middle rent and low rent sectors have locational, ecological, and structural standards of their own independent of the high rent area. Also high rent areas tend to axial growth along [illegible] + rivers
5. Single center concept.
6. Can not be adapted to the metro city.
7. Has some concentric effects.

5. Multiple Nuclei Theory: Ullman, 1940

(a) Description:

(1) Each major land use or use combination (CBD) is pictured as an irregularly shaped nucleation representing the point or points of

maximum concentration of the use.

One use, of course. frequently merges gradually into the next.

(2) A single use may have many different points of nucleation within the a urban structure.

(3) The theory is flexible in that it will account for:

(a) City use patterns at different stages of city area growth.

(b) At metropolitan stage it will accurately picture the coalescing of central city with ~~satellite~~ communities.

(c) Influences of topography and institutions on urban land use pattern.

(4) A single center is not a basic assumption

(5) Covers all uses in its description.

X (b) Shortcomings of Theory:

(1) Theory does not propound the relationships of nucleations or causal sequence of development.

(2) No place in theory for linear forms as "nucleations." Hence weak on transit and radial effects.

(3)

6. General Shortcomings of All Theories:

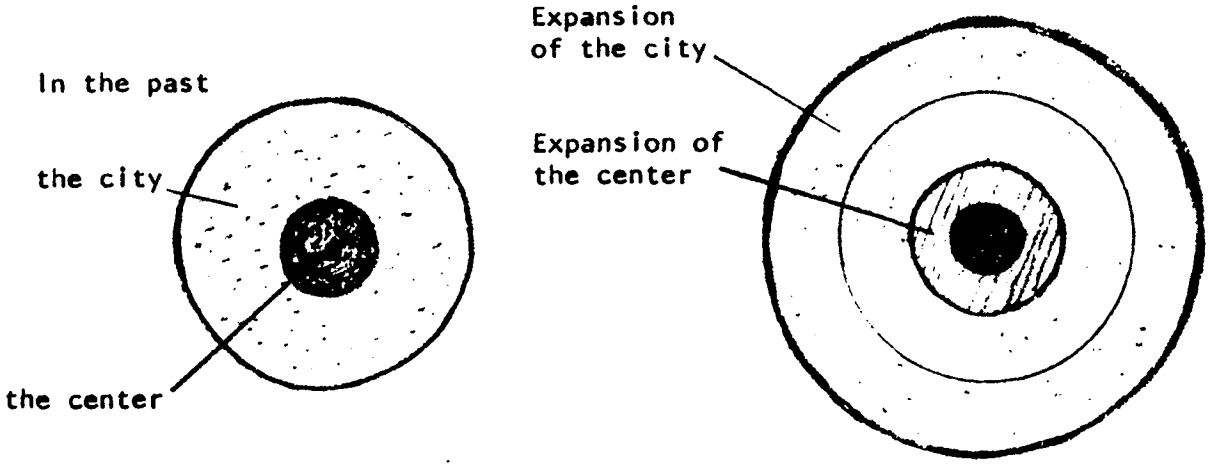
(a) Inadequate statement of transitional conditions between uses.

(b) Concentration of use classification of an area on only one of the following factors:

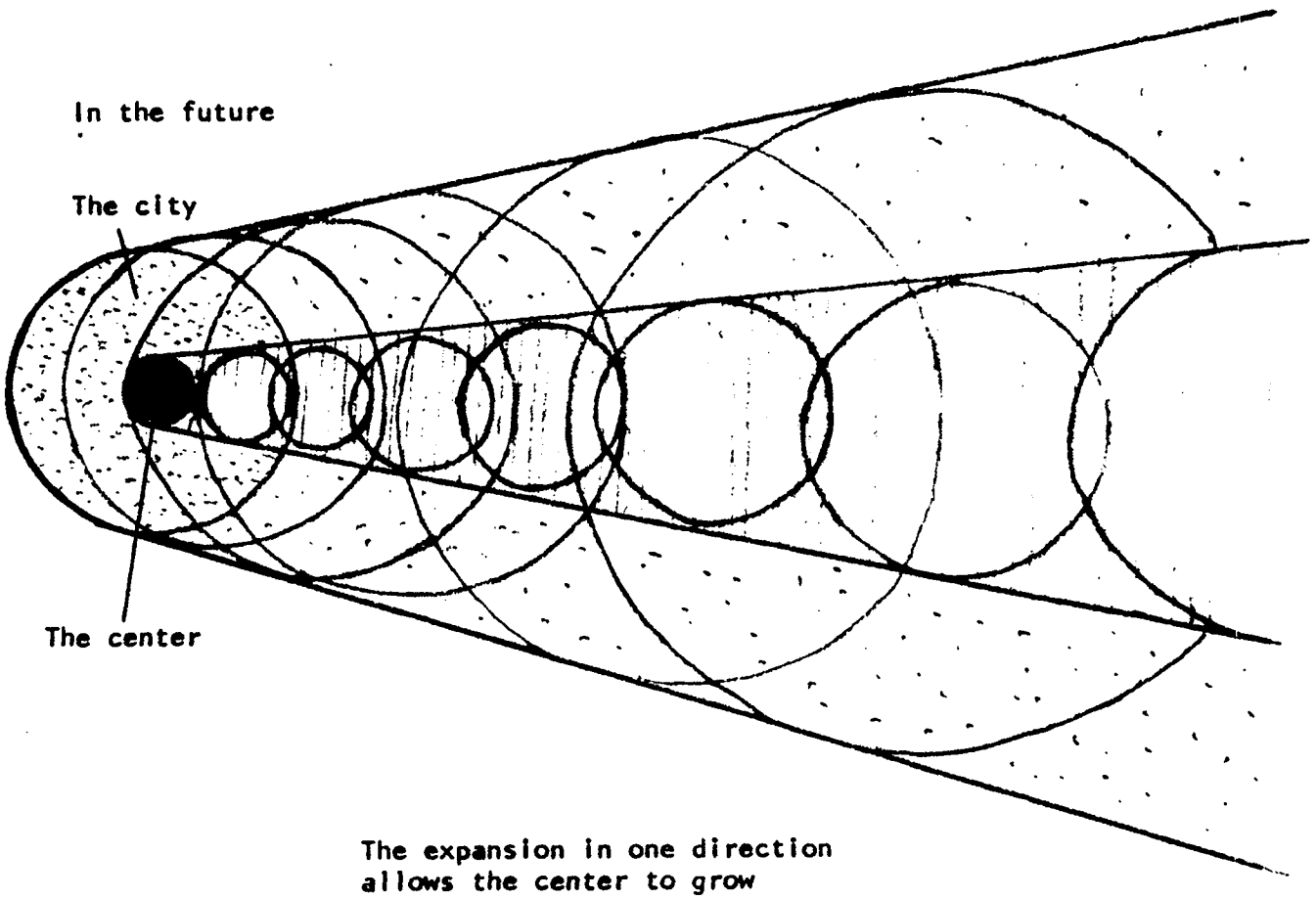
1. First floor use.
2. Intended use. (IF VACANT)
3. Dominant use.

(c) No provision is made in the theories for public uses particularly schools, streets, park areas, churches, and hospitals.

(d) Final explanation of structure must pertain of all theories when refined and adjusted.

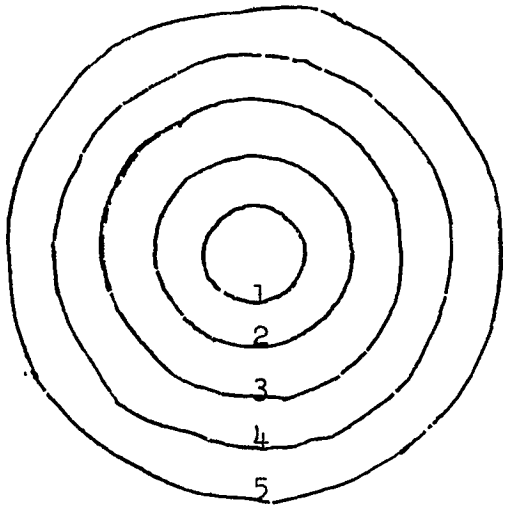


The concentric expansion strangles the center and its functions



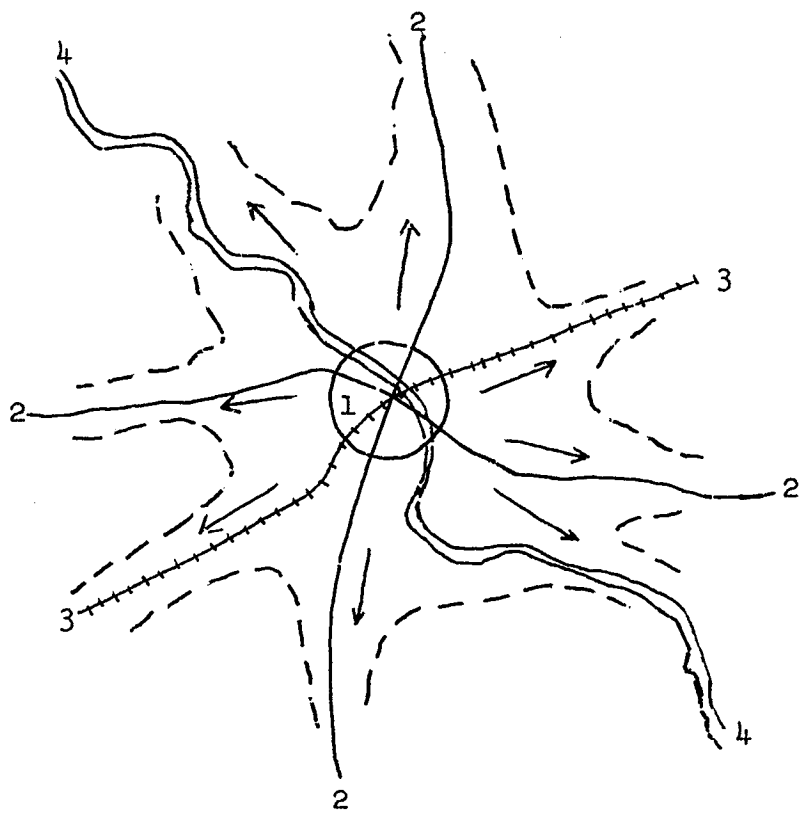
The expansion in one direction allows the center to grow without difficulty

Concentric Zone Theory



1. central business district
2. zone of transition
3. zone of low-income homes
4. zone of middle-to high-income homes
5. commuters' zone

Axial Theory

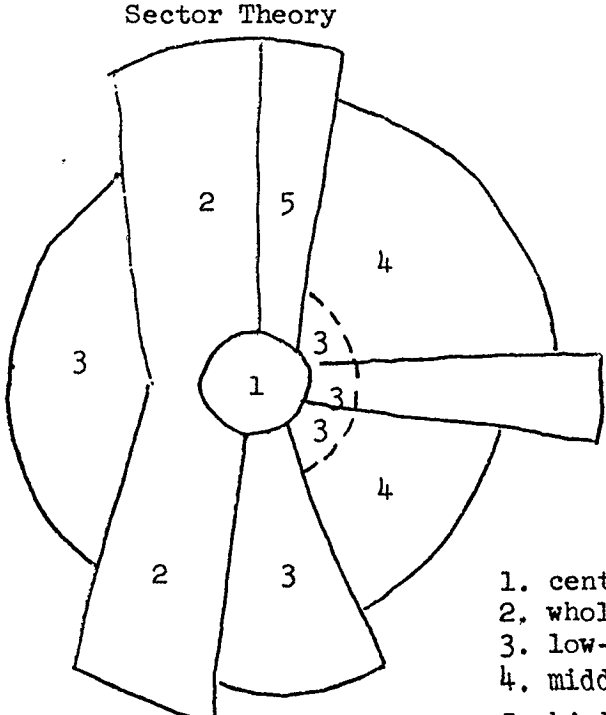


1. central business district
2. highways
3. railroad
4. navigable river

direction of fastest growth ——→

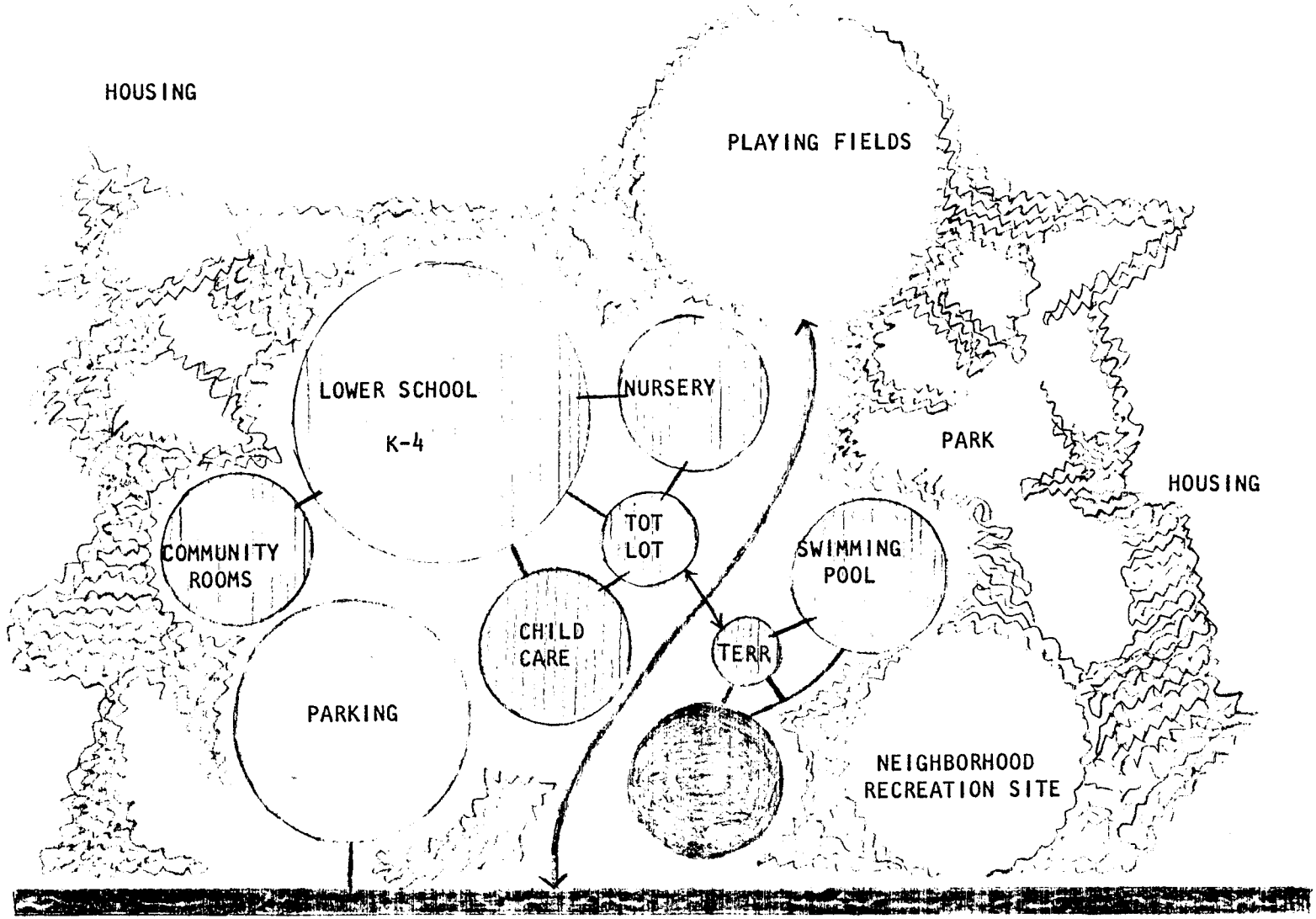
periphery of urban area - - - - - - - -

Sector Theory

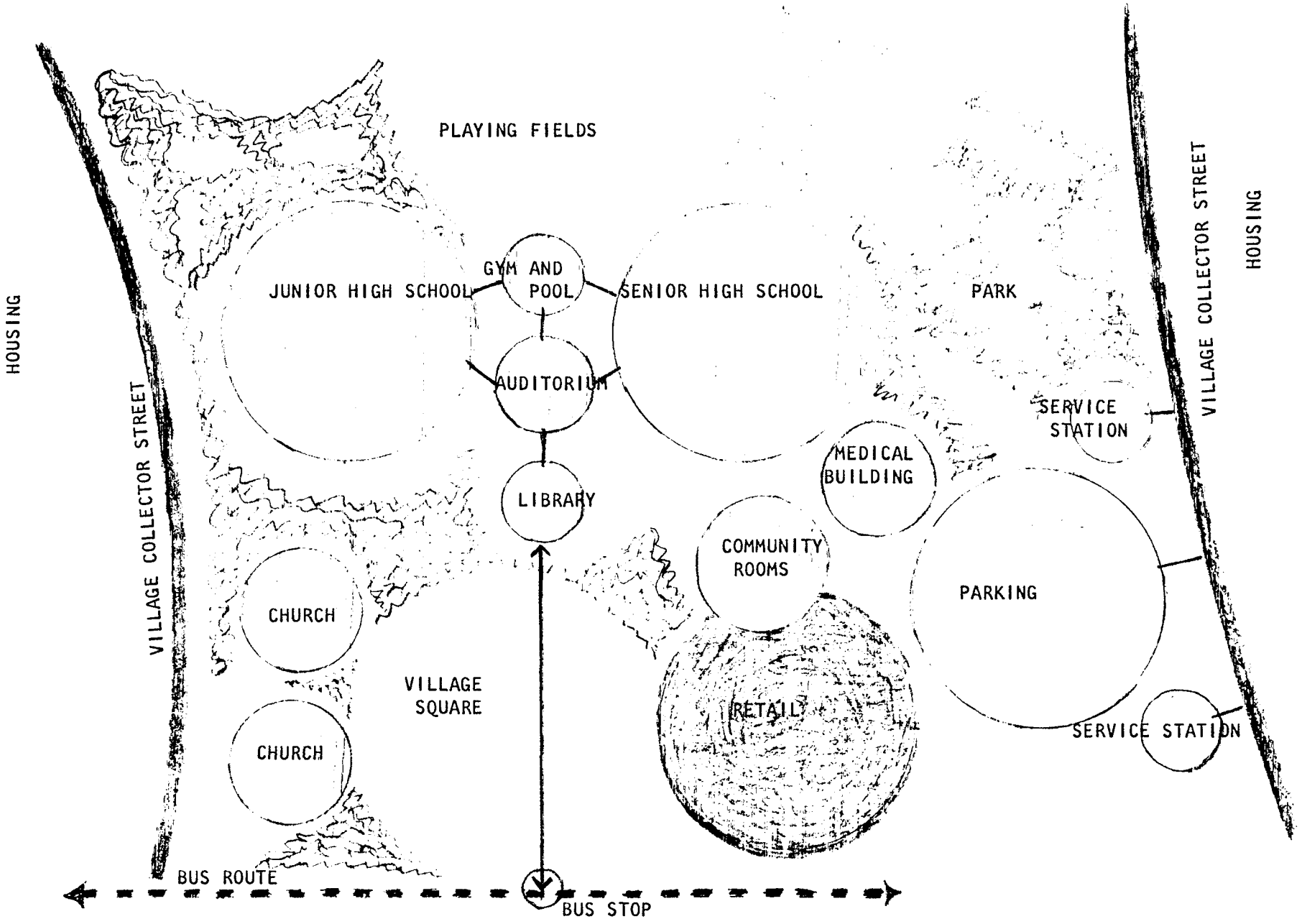


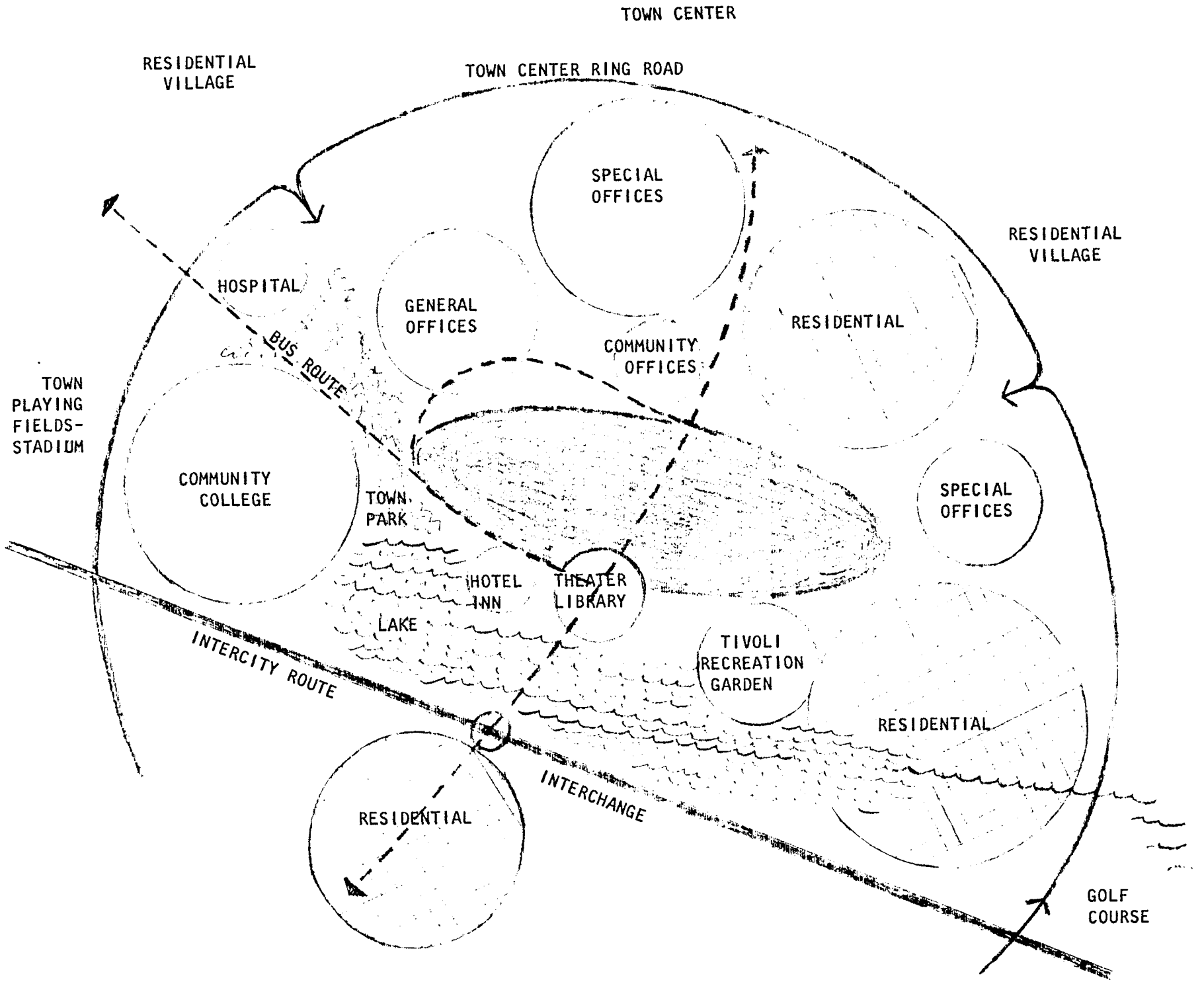
1. central business district
2. wholesale light manufacturing
3. low-income residential
4. middle-income residential
5. high-income residential

NEIGHBORHOOD CENTERS



VILLAGE CENTERS




TOWN CENTER
RESIDENTIAL VILLAGE
TOWN CENTER RING ROAD
SPECIAL OFFICES
RESIDENTIAL VILLAGE
HOSPITAL
GENERAL OFFICES
RESIDENTIAL
BUS ROUTE
COMMUNITY OFFICES
TOWN PLAYING FIELDS-STADIUM
COMMUNITY COLLEGE
TOWN PARK
SPECIAL OFFICES
HOTEL INN
THEATER LIBRARY
LAKE
INTERCITY ROUTE
TIVOLI RECREATION GARDEN
RESIDENTIAL
INTERCHANGE
RESIDENTIAL
GOLF COURSE

URBAN LAND ECONOMICS - #4

I. The topic for today is "physical and economic patterns of urban structure." We have two objectives in mind:

A. To identify and summarize various theories of urban structure that have appeared over the years and perhaps suggesting their shortcomings.

B. To improve your understanding of growth pattern for various urban units in Wisconsin and the effect on growth of customs, attitudes, and technology.

C. Indeed, these various theories of urban growth structure presumably have universal application subject to adjustment for cultural or technological differences in various countries.

II. Physical growth patterns as indicated by street layouts, rail systems, urban structures, and urban open spaces must treat the following situations:

A. Growth by lateral expansion, internal expansion, or polynucleation.

B. Economic growth patterns that we will review today create land use mosaics which can be identified as:
1. Concentric zone theory.
2. Sector theory.
3. Multiple neclei theory.

III. First let us develop the physical growth patterns of cities. In a manner of speaking we are interested in the shape of the settlement as it might appear from an airplane. Indeed the wise real estate man will spend much time viewing his market from the air as he will gain a far more comprehensive understanding of the scale and relationship of one area to another than he can obtain just by driving a street or looking at maps.

A. The natural form of growth is by accretion. Solomon Juneau builds a cabin, and then along comes a saloon keeper and an undertaker on either side, and pretty soon a city "has just growed" like Topsy. If there is a plan it is not coherent. That is why the streets on the east side of the river in downtown Milwaukee don't line up with the streets on the West bank. Layers of growth around the center of the city need not be uniform.

B. Axial expansion, also known as a star pattern, and best imagined as spokes on a wheel, is generally stimulated by the technology of transportation.

C. The early phase of this expansion produced tight little clusters of settlement along highways and railroads, each cluster separated by a distance representing more than a convenient carriage or horseback ride

This tendency was increased by the introduction of electric inter-urban lines and commuting by rail. (Phila. mainline) The development of Chicago from 1880 to 1920 with all its sattelite communities is a good example. The suburbs of New York City clustering about communter stations is a current example.

(Caesars Roads and ruins of Rome)

D. Axial develppment be came more complex when the automobile of the '20's made it possible to depart from the simple ~~xxxxxx~~ linear lines of the railroad. The axial pattern took on more of the design of a snow flake.

E. However, our communities were held together because the auto was held in check from 1920 to 1945 by the state of highway building technology, by the depression, and by gas rationing during WW II.

F. Following WWII the community turned to the automobile and began to come apart like a nova, and exploding star. Following the axial lines of highway transportation, we created hundreds of small isolated settlements. The push for the green pastures of the suburbs led to fragmentation of the growth pattern - to what we call urban sprawl. The auto, the super highway, the fragmentation were results of improving real income and a romantic system of values of the middle class.

~~GG~~ We can also find a kind of lateral expansion which th land economist calls, so as to impress everybody, interstitial growth. An interstice is an empty place and in this case the empty areas between axials of urban settlement . It is a kind of modern version of accretion.

H. These idealized physical patterns are marred by a number of dominating factors:
   1. Topography - hills, mountains, rivers, etc.
   2. Rail yards and tracks such as the Chinese Wall, in Philadelphia, where an elevated yard cut off downtown from some of the more desirable areas of the city.
   3. Cemeteries can blunt growth patterns, as is true here in Madison between ~~xegion~~ Regent and Odana Roads
   4. Institutional land use blocks such as the University here in Madison - an Particular the university farms area could have real impact on the idealized patterns.

THE 1964 HOUSING FORECAST
Urban Land Economics - Section 5

I. Each year economist Miles Colean makes a prediction as to the production of housing units for the coming year. 1963 marked the third straight year of a gain in housing unit production.

A. Private non-farm housing starts reached 1,545,000 in 1963, a rise of 21% from the recession year of 1960 and an increase of 6% from the year before. The increase has been almost entirely due to apartment construction.

B. Since the average cost of the single family house has edged past $14,500 without land, quality is a major demand feature and has meant a record year in dollar outlay terms of about $19.6 billion.

C. At the same time public housing starts, that is housing built and owned by local authorities who are subsidized by the Federal Government, has been in a decline for several years.

D. Most persons were expecting a decline because the number of persons in the 25-44 age group that traditionally represent the major group of home buyers has been shrinking relative to total population and absolutely. Moreover many expected efforts to promote racial integration would hurt sales. Instead, easy credit from conventional sources meant low down payments and low monthly payments so that more people in the lower half of the income ladder could afford a home.

new 4% 1955-60
shrank 10%
60-65 despite
no increase in
tot pop.

E. Not counted in these totals is production of 220,000 mobile trailor homes, which are also growing bigger and more luxurious.

II. Apartment rental housing is therefore of primary concern in judging what will happen in the 1964 housing market. We have all heard of growing apartment vacancy rates in many cities of the country. Still it is expected apartment construction will increase again in 1964 before tapering off in 1965. Why is this?

A. Higher density housing has become more attractive to designers who know we cannot afford to continue to waste land at the rate that we have in our suburbs.

B. Higher density housing is necessary to repopulate vast urban renewal wastelands in the center of our cities.

C. Higher density housing is ideal for the two age groups of our population which are growing, those under age 30 and over 1?, and those over 55 years of age.

D. Within these age groups there are markets within markets. By design of the building and by location a developer can predetermine his market for retirees, for bachelor girls, for young marrieds, for families with older chidren, or for people who are tired of suburban housekeeping and lawn keeping.

E. The present market provides unique opportunity to analyze pure demand because it is not limited by a shortage of money or land and is not exaggerated by the deferred housing demands which distorted the market until 1955. Housing is once again in step with the cycle of consumer durable spending.

Section 5

The six year old apartment boom is topping out. Starts were 40% ahead of a year earlier or 410,000 units. Rental property thus accounted for 30% of housing starts, compared to 12% five years ago.

National vacancy statistics are in the neighborhood of 7.5%, but this includes obsolete units and newer buildings as measured by the census. National statistics are distorted by the heavy concentration of rental construction in just a few cities.

36% of private rental housing in buildings for five or more families is built in New York and Los Angeles, 52% is accounted for by adding in Chicago, San Francisco, and Washington, D.C. The sixteen largest cities built almost 75% of our rental housing. (Bockl moves to the small town)

If you look at particular markets statistics tell more . In Denver, apartment building went on a binge and accounted for 50% of area starts in 1961. The realty board showed statistics that indicated the vacancies rose from 4% to 8% in a year but a savings and loan made its own survey and found vancancy as high as 18% in the suburbs, with vacancy declining in direct proportion to the increase in population density toward the core of the city.

On the other hand in Washington, D.C. apartments represented 67% of housing starts in the metropolitan area in 1961, but vacancies remain at 1.5%. The boom continues unabated. Only Burlington, Vermont, Providence, Rhode Island and San Juan, Puerto Rico have lower vacancy rates.

Real estate is immobile, heterogeneous, and permanent. It is local, its demands are as much financial and psychological as quantitative. Thus national statistics may indicate a mood or suggest where local markets may be found, but basic market indicators must be local to the community, the eighborhood, and a specific site.

IV. Various measures of housing demand show little immediate prospect of rapid growth. Demand is sustained by more favorable financing, particularly for apartments, but we will discuss this aspect later in the semester. Instead let us examine other quantitative measures of housing demand.

A. Rate of new family formation is just starting to rise after reaching a decade low in 1958. This measure is controversial because it has different effects for different areas and income classes. In any event the next explosion of children from these new marriages is not expected to change housing demands until the late 1960's.

B. The shrinking numbers of people in the group generally buying houses has already been noted.

C. The number two source of demand for one family homesd is the trading up process. However, this is hampered by two factors:
1. Rising cost of feeding, clothing , and educating large families are reducing the share of income available for housing.
2. Stable prices and more rapid obsolescence has meant that home owners can no longer expect to sell for more than they ~~made~~ paid.

D. Rising foreclosure in certain areas which were big markets for single family homes, say Miami, Wichita, and Los Angeles have held back total housing starts.

Median income in 1961 for non-farm families was $5,924, 25% better than in 1955. This leaves a large percentage of our population at a marginal point as far as effective ~~making~~ market demand goes. Some additional real income gains for this group will stimulate housing demand more than any other single population factor.

E. The U.S. census has just begun collecting data on housing sales. After 20 months trends are just starting to appear. Volume building in the South has kept building permits ahead of the previous year, housing starts slightly ahead, and housing sales little more than even. As a result houses unsold are growing to about 263,000 unsold new houses in August, 1963.

Construction cost indexes increased from 302 to 310 in 1963. (Boeckh index where 1926-29 equals 100)

Mortgage delinquency over 30 days are rising slowly and represented 3.17% of 3 million loans . Rental vacancies are about 7.8%; home owner vacancies have jumped to 1.6%. FHA-VA have a declining share of the market, 13,3%, 4.6%, entirely in the $12,000 - $14,000 price range.

Better national housing statistics are on the way, but to date the housing industry is woefully inept in collecting statistics on housing demand.

 Section 5 ?

V. One bright spot on the housing horizon is the second homes market, the vacation house. Spending for recreation has tripled since 1946, increased 25% since 1961 to more than $24,000,000,000 in 1964. The more consumers spend on recreation the more they are likely to consider a home where recreation is the focal point.

A. One reason for increasdd demand of from 75,000 to 100,000 a year is the new interstate highway system. These highways speed urban populations into rural vacation areas.

B. A second reason is that families are focused on children, and market surveys indicate home buyers start thinking about a vacation home right after what they expect to be their last child is born.

C. For many families income increases have made it possible to think about vacation homes. What begin as vacation homes sometimes become permanent homes.

D. For example, a developer near Louisville created a summer cottage development on Crystal Lake, about 40 minutes from the city. Completion of interstate 71 will reduce travel time to 18 minutes, and now half his sales are for permanent houses.

E. The limiting factor is financing. Lenders are uncertain as to appraisal and loan ratio standards for seasonal use buildings. Many buyers rent their vacation homes for part of the season to pay the cost.

F. For those who would like a retirement home in Hawaii or the Virgin Islands a new gimick has been created. Resort hotels build bungalows for sale. Hotels then lease the bungalows during ten months of the year and give the owner free maintenance and a 25% cut of the rentals. In ten years the lease expires the owner can presumably retire for 12 months out of the year.

LECTURE OUTLINE

THE NEXT 25 YEARS OF CITY BUILDING

1. POPULATION PRESSURE -- SPACE USERS

2. URBAN TECHNOLOGY BOTTLENECK -- SPACE FORMS

3. THE MONEY CONSTRAINT -- SPACE QUALITY

4. THE URBAN POLITICAL ISSUE -- SPACE CONTROL THRU COMMUNITY ACTION

5. THE SPACE INDUSTRY -- OPPORTUNITY FOR THE PRO-URBANITE

Urban Land 520
Outline - Economics of Urban Pollution

I. Urban expansion and population concentration has brought about accelerated deterioration of our finite resources of water, air, land, climate, and the human capacity to tolerate irritants such as noise, smell, and dissociation with the natural landscape.

A. Related constraints of economics and technical capacity for environmental conservation

B. Population pressure leads to the "take-off principle" because up to a certain level of population and industrial economic scale, air, water, and earth can absorb much waste without great damage. At some point real trouble results because differences of degree become differences in time.

C. Questions of environment are openended questions of quality rather than quanity:

1. Affluence and education bring greater sensitivity and a change in attitute - ugliness is in the eye of the beholder.

2. Philosophy questions the degree to which material well-being measures biological balance and evolution.

3. Given progressively higher costs for ascending degrees of purity and consumption preferences, how clean do people want air and water to be?

D. Most significant for economics is the fact that a free market price mechanism does not work well to internalize costs of qualitative matters for society as a whole.

II. The economics of environmental control are quite different for society as a group than for the firm as an individual entity operating in a market economy.

A. Assuming for the moment society could put a dollar value on benefits of environmental conservation programs, the net product of services, goods, and well being would be increased by incurring cost to a point where marginal cost equalled marginal benefit.

B. No such benefit-cost relationship may govern the decision of the individual firm. With some exceptions environmental control costs provide no direct benefit to the individual firm, and if these costs cannot be shifted to the consumer in the price tag, the firm must relocate, go broke, or begin the following projects:

1. An increase in cost requires an increase in price if the firm was at its equilibrium.

2. An increase in price means a decline in units purchased.

3. As units sold decreases, average cost per unit increase requires a second increase in price.

4. Thus it can be shown that a conservation cost must increase total cost and price by a multiple of the original expenditure--affecting the entire revenue flow of the firm.

C. Contrary to superficial analysis, the firm must make decisions serving a variety of claims on its abilities, including:

1. The price and quantity requirements of the consumer.
2. The return of capital required by the lender.
3. The profit required by the investor.
4. Employment stability and growth required by the community.
5. Tax revenues required by the society.
6. Equitable distribution of cost to effect efficient allocation of resources.

III. There can be an economic motivation for industrial utilization of environmental conservation practices which increase sales or lower costs of production.

A. Regeneration of natural resources (i.e. trees, fish).

B. Use of marginal supplies of scarce resources (i.e. taconite ore).

C. Prevention of loss of resources due to natural causes to lower cost of production (i.e. fire prevention).

D. Evnironment undisturbed lowers costs (i.e. subdividing).

E. Good esthetics--good economics to increase sales or lower costs (i.e. architectural landmark).

IV. When the economic system does not of itself allocate social cost of any particular production factor to the producer and then to the user of that service or good, economists seek legislative and economic devices to internalize the social costs.

A. Internalize social costs by shifting cost back to industrial source and consumer through price structure.

B. Create <u>legal penalties</u> for failure to follow specified conservation practices.

C. Create special incentives in the form of <u>subsidy</u>, tax relief, or privilege.

D. Create intangible standards of social approval for desired patterns.

V Water pollution is first a problem of sewage processing and control of effuent and to a lesser degree a problem of industrial and community solid waste disposal.

A. Water medium, gravity flow sewage sytems contaminate great volumes of water although processing is at best 90% efficient with surface waters of our rivers and lakes reducing the balance of our processed sewage through natural organic processes. There is not sufficient surface water in the country to handle even 10% of the sewage from our 1985 population.

1. Water flow systems must be converted to split waste stack systems to keep toilet bowls separate from dirty water from sinks which could be reprocessed and reused.

2. There are vacuum systems used in Mexico, Sweden, and some resort areas which eliminate need for water flow and make use of plastic pipes, etc.

3. Oxidizing of sewage at the point of origin can subsitute air and thermal pollution for water pollution. Experimental systems include reduction sewage by bacteria which generate electricity in the process.

B. Solid waste disposal can discolor or contaminate underground water fows. Wisconsin statutes have effectively controled this possibility at the expense of placing sanitary fill sites on our high ground in selected geological areas. Incineration triples handling costs and creates air and thermal pollution risks to reduce waste bulk by 80%.

C. Industrial wastes dumped into lakes and rivers are generally inert relative to bacterial contamination but absorbed and destroy BOD capacity and water characteristics for ecological balance or the capacity to handle urban sewage contamination.

D. The sulphite liquor problem of the paper industry in Wisconsin illustrates the scale and dilemmas of solving an industrial waste problem.

1. Since the late 1930's the paper industry has voluntarily self financed and implemented research to reduce dumping problems of 2 1/4 million tons of sulphite liquor each year into Wisconsin waters.

2. Chemical technology is attempting to find high volume uses for a rich industrial waste.

3. High volume low value uses such as road binders do not justify extensive transportation to markets.

4. High value by-products are available in such volume as to glut the market or use small volumes of liquor.

5. Uses for less than 50% of the liquor have been found while new methods are being researched to change paper making methods themselves.

VI. All city systems depend on generating energy from fossil fuels, primarily coal to generate electricity, natural gas and oil to provide domestic heat, and gasoline to power transportation.

A. More than 50% of all air pollution is caused by the single family home and the single family automobile.

B. Half of the balance is caused by coal powered turbines which provide more than half our thermo electric capacity and half our market for coal.

1. Our urban concentrations are in the east where we have the least hydro electric power and our supply of low sulphur content coal is limited and located in the west.

C. Tall industrial smokestacks emitting soot and smoke are dramatic targets but ash can be controlled while the invisible gases of carbon monoxide and sulphur dioxide cannot.

D. The gasoline engine is a primary pollution source. The electric automobile strikes at the heart of the technical and economic disslocations employed by the requirements of true environmental conservation.

transportation

E. Public/as well as the electric automobile represent questions of fundamental consumer preferences which reverse the entire pattern of city building as we have it today. Additional electric power from non-fossil fuels such as atomic power or solar power contain inherent problems of neuclear and thermal pollution.

F. Oak Creek Power Plant illustration.

G. The electric car and the state of the art.

VII. Is privacy a resource? The question of congestion, noise, view, and the need for periodic retreats to make touch with the natural world.

A. Residential design to enhance privacy as well as public contact and group action.

B. Sound and visual privacy.

C. Open space and a natural environment as a counter point and reference point for man made environment of the cities.

Urban Pollution Economics

I. Urban expansion and population concentration has brought about accelerated deterioration of our finite resources of water, air, land, climate, and the human capacity to tolerate irritants such as noise, smell, and dissociation with the natural landscape.

A. Environmental conservation or restoration is both a question of land economics and technical ability and the two are interrelated.

B. In one hour we can only suggest the source and scale of several of these problems and the economics of the decision making process of the urban investor in regard to environment conservation.

1. Some problems of resource waste and esthetics have solutions which are self motivating by the economic result
2. However, our most significant and immediate problem generally involved dilemmas which require significantly higher capital and operating costs for the supplier, higher prices for the consumer, and often a significant change in values and social patterns of behavior.

C. The pressure of pollution has been accelerated by the population bomb and what may be a solution for a population of 100 million is no longer adequate for population two or three times as large.

1. Remember the low estimate for population in the United States by 1985 - 15 years from today is 285 million people.
2. Realtive to the firm we will look at economic motivation, and then at the issues of sewage, good water supplies, and air pollution. Finally we will treat urban land economics relative to open space within the urban setting.

II. The economics of environmental control are quite different for society as a group than for the firm as an individual entity operating in a market economy.

A. Assuming for the moment society could put a dollar value on benefits of invironmental conservation programs, the net product of services, goods, and well being would be increased by incurring cost to a point where marginal cost equalled marginal benefit.

B. No such benefit-cost relationship may govern the decision of the individual firm. With some exceptions environmental control costs provide no direct benefit to the individual firm, and if these costs cannot be shifted to the consumer in the price tag, the firm must relocate, go broker, or begin the following projects:

1. An increase in cost requires an increase in price if the firm was at its equilibrium.
2. An increase in price means a decline in units purchased.
3. As units sold decreases, average cost per unit increase requires a second increase in price.
4. Thus it can be shown that a conservation cost must increase total cost and price by a multiple of the original expenditure--affecting the entire revenue flow of the firm.

C. Contrary to superficial analysis, the firm must make decisions serving a variety of claims on its abilities, including:

1. THE PRICE AND QUANTITY REQUIREMENTS OF THE CONSUMER.
2. THE RETURN OF CAPITAL REQUIRED BY THE LENDER.
3. THE PROFIT REQUIRED BY THE INVESTOR.
4. EMPLOYMENT STABILITY AND GROWTH REQUIRED BY THE COMMUNITY.
5. TAX REVENUES REQUIRED BY THE SOCIETY.
6. EQUITABLE DISTRIBUTION OF COST TO EFFECT EFFICIENT ALLOCATION OF RESOURCES.

III. There can be an economic motivation for industrial utilization of environmental conservation practices which increase sales or lower costs of production.

A. REGENERATION OF NATURAL RESOURCES (I.E. TREES, FISH).

B. USE OF MARGINAL SUPPLIES OF SCARCE RESOURCES (I.E. TACONITE ORE).

C. PREVENTION OF LOSS OF RESOURCES DUE TO NATURAL CAUSES TO LOWER COST OF PRODUCTION (I.E. FIRE PREVENTION). Good esthetics can also be good economics. The attractive industrial plant near the expressway establishes a favorable name identification with many potential customers. However, the lagoon in the picture serves as an emergency water supply for the sprinkler fire system. -- A third stage sedementation pond and a fountain to aerate the water to prevent algae from clogging the fire pump.

D. ENVIRONMENT UNDISTURBED LOWERS COSTS (I.E. SUBDIVIDING). The creation of urban building sites is a manufacturing process. Samller lots in a clustered plan allow the property developer to leave many acres in their natural state, thereby creating attractive open space. At the same time the amount of sewer, street and curb, and other improvement costs are reduced. The need to grade down the ridges or cut the trees, both at great expense, is eliminated.

E. GOOD ESTHETICS--GOOD ECONOMICS TO INCREASE SALES OR LOWER COSTS (E.E. ARCHITECTURAL LANDMARK).

IV. When the economic system does not of itself allocate social cost of any particular production factor to the producer and then to the user of that service or good, economists seek legislative and economic devices to internalize the social costs.

A. INTERNALIZE SOCIAL COSTS BY SHIFTING COST BACK TO INDUSTRIAL SOURCE AND CONSUMER THROUGH PRICE STRUCTURE. For example-- the social cost of industrial injuries was internalized by workmans compensation insurance. The premium became part of the cost of production for all suppliers amd included in the price to the consumer. Premiums were adjusted to reflect individual company losses to provide economic incentive for safety programs and safer equipment.

B. CREATE LEGAL PENALTIES FOR FAILURE TO FOLLOW SPECIFIED CONSERVATION PRACTICES.

C. CREATE SPECIAL INCENTIVES IN THE FORM OF SUBSIDY, TAX RELIEF, OR PRIVILEGE.

D. CREATE INTANGIBLE STANDARDS OF SOCIAL APPROVAL FOR DESIRED PATTERNS

E. The problem of internalizing costs is more complicated than the insurance question because environment is more an open ended question of quality than quantity. There are a few indications of today of significant shortages of resources such as timber, medical care, or fuel and lumber. Instead the questions are likely to concern the degree of cleanliness of water and air, the trade-off of pesticides for lower food costs versus blight on the natural ecology, or the effects of urban living upon the human body and spirit.

Quality as opposed to supply has been ignored for 2 centuries of urban development. One reason hs been discribed by Luther Gulick as "the takeoff principle" that is many problems of environment spring into existance full grown as a function of population and economic scale.

1. Up to a certain level of concentration disposal of wastes, disfigurement of the landscape, and congestion are local irritations. Air, water, and earth can absorb much without great damage. However, at some point real trouble ensues because differences of degree become differences of time.

2. Another reason is that affluence and education are bringing a change in attitude. Though there have been some absolute declines in quality of environment, much of the newly discovered ugliness is in the eye of the beholder.

3. Quality conservation problems are openended questions, limited by technology and consumption preferences. Given the progressively higher costs of ascending degrees of purity how clean do we want our air and water to be?

4. Some solutions must be philosophical. To what extent does increasing material wellbeing represented by gross national product measure wellbeing. Mans biological stability with not perceptible change since Cro-magnon does not let us recognize if our adaptations to our man-made environment will ultimately be desirable.

5. But most significant for an economics class is the fact that the free market mechanism does work very well relative to qualitative matters of aggregate economics and so it is difficult to internalize social costs to the advantage of society at the same time that you destroy the economic base of a town, or a cheese factory, or an individual business enterprise.

V. Water pollution is primarily a problem of sewage control and to a lesser degree industrial control.

A. Present engineering methods for water flow sewage at best eliminate 90% contamination while our surface waters reduce the balance through organic processes.

B. Water flow sewage versus split systems, vacuum systems, and oxidizing units.

C. Industrial wastes are often inert reactive to contamination but destroy the BOD capacity of surface waters which is the capacity to reduce sewage through biological oxidizing decomposition. (Paper production problems)

VI. Air pollution

A. Primary cause of air pollution is the invisible carbon monoxides and sulphur dioxides created by the family automobile, the truck and the bus. The second major source is major heating plants with industrial smokestacks taking a poor third and most of the public indignation because of their height and their concentrated production of ash. (Fossil fuels for energy are basic building blocks of urban densities) (Oak Creek illustration)

B. The automobile may require complete redesign as conveneince and prestige yield to environmental survival

URBAN LAND 520

Outline-Economics of Urban Pollution

I. The old axiom that Real Estate value is a function of location will one day be replaced with the multi-dimensional concept that Real Estate value is a function of environment. The common denominator fo these two statements is an essential contradiction at the base of urban economics.

A. People make value by their degree of concentration in a given area but once the concentration reaches a certain point the benefits of urban living are more than off set by the cost to the environment.

B. Population pressure leads to the "take-off principle" of environmental cost benefits because up to a certain level of population and industrial economic scale, air, water, and earth can absorb much waste without great damage. At some point real trouble results because differences of degree become differences in fact.

C. Urban expansion and population concentration has brought about accelerated deterioration of our finite resources of water, air, land, climate, and the human capacity to tolerate irritants such as noise, smell, and dissociation with the natural landscape.

1. "Tolerate" can be a medical question as in the case of Quibble Town, New Jersey reported in Life Magazine this week where a temperature inversion concentrated foul air in such quantities that athletes became physically ill.

2. "Tolerate" is also an open-ended value question.

a. Affluence and education bring greater sensitivity and a change in attitude - ugliness is in the eye of the beholder.

b. Philosophy questions the degree to which material well-being measures biological balnce and evolution.

c. Given progressively higher costs for ascending degrees of purity and consumption preferences, how clean do people want air and water to be?

D. Pure hearts do not make pure water and clean air first it requires technology and money and a social mechanism which will divert the necessary captiol to the necessary hardware. That's the order of the present discussion-technology, money, and social mechanism to improve urban pollution control.

II. The kit of environmental tools for the city builder is suprisingly bare considering the long history of cities. Big cities became possible with the invention of cast iron pipe so lets begin with the question of sewage and expand to solid waste disposal of all type.

A. The affluent society is becoming the effluent society due to the related problem of water quality and sewage processing.

B. Water meduim, gravity flow sewage systems contaminate great volumes of water although processing is at best 90% efficient with sufrace waters of our rivers and lakes reducing the balance of our processed sewage through natural organic processes. There is not sufficient sufrace water in the country to handle even 10% of the sewage from our 1985 population.

1. 42 billion gallons of water a day of 200 gallons per man,woman and child are necessary to flush municipal industrial wastes through municipal sewers. Since we are running out of pure water we must learn to recycle sewage water suitable for drinking. At present however 40% of the nations sewage is dumped raw or given the century old primary treatment.

2. 60% of municipal sewage receives secondary treatment, Accelerated decomposition by the aid of bacteria which at best may remove 85% of organic matter. New techniquew can improve this by forcing oxygen gas through the sewage but the remaining water is still too contaminated for people or animal life.

3. Sanitary engineers advocate sophisticated advance treatment which can not only remove organic pollutants but can remove detergents, water base paints, household cleansers, and other effluvia of modern urban living not to mention sixteen million garbage disposals.

5. Denver Colorado is already making plans to build a sewage treatment plant which would produce 10 million gallons of drinking water a day. As a cheaper alternative than the Southern California has chosen. Twenty years ago it could rely on water from near by Santa Ana Mountains; then it imported water from the Colorado river-150 miles away now it requires water from sources in northern California 450 miles away, three times the cost at thirty cents per thousand gallons.

6. Lake Tahoe has the most sophisticated pperating waste facility in the country-built in 1966. The cost is thirty two cents per thousand gallons and uses an elaborate process of towers where is filtered by ammonia gas, a mixed media filter of aggregates, and final polishing through 22 tons of granulated activated carbon as in cigarette filters before discharge into a 165 recreational lake.

7. In Palm Dale, Florida Comprehensive Designers, Inc. follows secondary treatment with a carbpn filter and atomic radiation. It removes all bacteria and most solid waste and chemicals and the effluent is then used for irrigation to recycle phosphates and nitrogens.

8. All these advances leave a big problem, the massive volumes of residue in primary and secondary residue. One group of researchers have found a way to convert treated sludge into a mollasses like protien packed animal feed supliment.

9. Several systems are designed to eliminate the need for moving sewage by means of water flowing down hill. One firm has a system for homogenizing sewage at the building site and then pumping it through narrow pipes to the processing point.

9. There are vacumn systems used in Mexico, Sweden, and a few lake shore developments in the United States which use air pressure to propel sewage through plastic pipes. These systems may use a split waste stack system to keep toilet bowl water separate from the dirty water of sinks and floor drains which could be reprocessed and reused.

10. Vacumn systems can be combined with oxidizing of sewage at the point of origin can substitute air and thermal pollution for water pollution. Experimental systems include reduction of sewage by bacteria which generate electricity in the process.

C. Water quality is directly related to solid waste disposal problemsin a varieyt of ways.

1. Gargave collection and disposal is a mushrooming problem. 70-80% of the total cost of disposal is collection cost. HUD is testing a system of large apartment projects which would make garbage pails obsolete. Housewives can drop their garbage in to vacumn chutes which will move the garbage as much as a half mile to separaters and storage silos. Each type of solid waste could then be recycled, hauled to a dump or incinerated.

2. "Dumps" or sanitary land fills can discolor or contaminate underground water flows. Wisconsin statutes have sharply controlled this possibility by forching sanitary fill sites to our high ground with selected geological configurations. The teamsters union makes trucking costs such that valuable land near the cities must be consumed in large amounts.

3. Incineration triples handling cost and creates air and thermal pollution but sterilizes and reduces waste bulk by 60% so that it could be used to fill in swamps. However swamps are required to maintain water table and so we're full circle back to water quality.

D. Industrial wastes dumped into lakes and rivers are generally inert relative to bacterial contamination but absorbed and destroy BOD capacity to handle urban sewage contamination.

D. The sulphite liquor problem of the paper industry in Wisconsin illustrates the scale and dilemmas of solving an industrial waste problem.

1. Since the late 1930's the paper industry has voluntarily self financed and implemented research to reduce dumping problems of 2 1/4 million tons of sulphite liquor each year into Wisconsin waters.

2. Chemical technology is attempting to find high volume uses for a rich industrial waste.

3. High volume low vlaue uses such as road binders do not jsutify extensive transportation to markets.

4. High value by-products are available in such volume as to glut the market or use small volumes of liquor.

5. Uses for less than 50% of the liquor have been found while new methods are being researched to change paper making mehtods themselves.

III. If water pollution began when caste iron pipe made possible urban society, air pollution began when fire converted the herd into group society.

A. The most elemental environmental program has a stunning impact on Rela Estate. Chicago has launched a campaign to reduce air pollution by outlawing apartment house incinerators and cheap soft coal. Old buildings which were solvent must may thirty dollars a ton for coal and pay private garbage haulers with the result that cash flow is negative while rents are frozen. Abandonments begin to rise and supply of low-rent housing decline!

B

B. All city systems depend on generating energy from fossil fuels, primarily coal to generate electricity, natural gas and oil to poovide domestic heat, and gesoline to power transportation.

1. More than 50% of all ~~ØØ~~ air pollution is caused by the single family home and the single family automobile.

2. Perhaps by the year 2000 the single family home will have a fuel cell which exidozes sludge from the family water eecycling machine to produce electricity for light and a heat pump.

C. 25% of urban air pollution is caused by coal powered tubines which provide more than half our thermal electric capacity and half our market for coal.

1. Pollution controls can be applied to control soot and smoke and provide minimum standards for quality of coal to be burned. There are plans to liquify coal at the mine shaft to create a natural gas and others contend urban pollution could be reduced by building power plants at the mines.

2. However, it is the invisible gases of fossil fuel energy such as carbon monoxide and sulphur dioxide that are the real threats. Oak Creek power plant is one of the most modern in the world with little fly ash but 16 tons of sulphur dioxide gas per hour. To wash the exausts would turn Lake Michigan into a sulpheric acid basin.

3. Conversion to natural gas of present coal burning turbines is limited by limitations to the supply of natural gas.

4. The space age has renewed interest of the gas industry in large scale fuel cell plants running on gasified coal and special booster fuel cells in areas of rapidly growing electric demand to a eliminate the necessity of additional transmissional lines.

5. Transmission lines and sub-stations represent a major user of land as well as an urban eyesore. Transmission towers and ~~hundred~~ 150' wide easements and sub-stations use air as an insulation between transmission lines. It not only wastes land but wastes electricity.

It is now possible to insulate very high voltage transmission lines and sub-stations with a form of sulphur hexaflourine gas which is inert and nontoxic and has the peculiar ability to decompose and recombine into its own pure gas form so that its life is limitless despite arcing of the electric lines it contains. This innovation will make it possible to bury transmission lines as well as reduce the bulk of sub-stations to cover only 1/10 the normal amount of land. Although it doubles the cost of electric equipment, it pays for itself in the reduction in the cost of land.

D. Atomic power creates its own environmental problems as well as a political problem of public acceptance. The alternative of electricity rationing brings us into conflict with transportation as an environmental issue.

IV. The major source of urban pollution is the gasoline engine, specifically the individual passenger automobile.

A. First there is the issue of how to design an efficient automobile in terms of exhust, space, and utilization as most cars are idle 95% of the time so that parking occupies more paved areas than traffic. A parking space is needed at both ends of a trip.

B. Public transportation as well as the electric automobile require a certain density and compactness to urban land use which is lragely the reverse of the entire pattern of city building as we know it today. Public transportation will require many nuclei of high density housing and employment. The next high rise boom may be the development of shopping center parking lots. Private mobility systems are the basic assumption of all current land use patterns and the trade areas assumed by all retailing enterprise.

1. Location ~~requires~~ theory implies mobility or inertia of the consumer.

2. Environmental theory as a basis for urban economics requires public systems of mobility and a consumer whose values will trade apathetic convenience for reasonable inconvenience as a trade-off for better environment.

V. Before discussing the economics of environment it might be noted that privacy could be an urban resource. Privacy may be a correlary of the territorial imperative. (The Hidden Dimension) The question of noise, view, and sensory regeneration by retreats to the natural environment must be recognized as a space resource or attribute.

A. Residential design for higher urban densities which will nevertheless enhance a hierachy of individual privacy, family seclusion, neighborhood idenification, and public orientation.

B. The natural environment of open space is a necessary counterpoint to the man made enclosures and spatial environment of structures.

VI. Most significant for urban economics is the fact that a free market price mechanism does not work well to internalize costs of environmental matters for a city as a whole. The economics of environmental control are quite different for a society investing as a group than for the investor on an individual site operating in a market economy and within the limits of cash flor solvency.

A. Assuming for the moment society could put a dollar value on benefits of environmental conservation programs, the net product of services, goods, and well being would be increased by incurring cost to a point where marginal cost equalled marginal benefit.

B. No such benefit-cost relationship may govern the decision of the individual firm. With some exceptions environmental control costs provide no direct benefit to the individual firm, and if these costs cannot be shifted to the consumer in the price tag, the firm must relocate, go broke, or begin the following projects:

1. An increase in cost requires an increase in price if the firm was at its equilibrium.

2. An increase in price means a decline in units purchased.

3. As units sold decreases, average cost per unit increase requires a second increase in price.

4. Thus it can be shown that a conservation cost must increase total cost and price by a multiple of the original expenditure--affecting the entire revenue flow of the firm.

C. Contrary to superficial analysis, the firm must make decisions serving a variety of claims on its abilities, including:

1. The price and quantity requirements of the consumer.
2. The return of capital required by the lender.
3. The profit required by the investor.
4. Employment stability and growth required by the community.
5. Tax revenues required by the society.
6. Equitable distribution of cost to effect efficient allocation of resources.

III. There can be an economic motivation for industrial utilization of environmental conservation practices which increase sales or lower costs of production.

A. Regeneration of natural resources (i.e. trees, fish).

B. Use of marginal supplies of scarce resources (i.e. taconite ore).

C. Prevention of loss of resources due to natural causes to lower cost of production (i.e. fire prevention).

D. Evnironment undisturbed lowers costs (i.e. subdividing).

E. Good esthetics--good economics to increase sales or lower costs (i.e. architectural landmark).

IV. When the economic system does not of itself allocate social cost of any particular production factor to the producer and then to the user of that service or good, economists seek legislative and economic devices to internalize the social costs.

A. Internalize social costs by shifting cost back to industrial source and consumer through price structure.

B. Create <u>legal penalties</u> for failure to follow specified conservation practices.

C. Create special incentives in the form of <u>subsidy</u>, tax relief, or privilege.

D. Create intangible standards of social approval for desired patterns.

Lecture 2

PHYSICAL PATTERN OF URBAN STRUCTURE

I. Cities of the past posess a physical calrity in the form given land, layout and architecture, because urbanity emerged in direct responsd to relatively simply limited pressures. There was little population growth, slow technigogical change, and cultural continuity which combined to establish a land planning and building method that became a community standard, adjusted and refined through gradual trial and error.

A. A specific purpose produced a desirable order - objectives generate criteria - which produce a physical plan. A social need had only to be identified to find its way into form; form was modified by experience.

Slide 1

B. There was an interaction between the inhabitants, their social purpose, and the manner of building which gave each city an identity.

C. Deductive logic prevailed inthose times. The unselfconscience culture followed firmly set traditions followed by all builders of form. Building of both cities and homes was surrounded with ritual, myths, taboos, and tradition which resist willful change. Form builders made changes only under strong compulsion where there were powerful and obvious irritations in the existing forms which demanded correction. Unfortunetely rigidity is also true of the modern age, although a selfconscious culture has express rules such as zoning, building codes, and consumer who expect a house to look like a house.

D. An expression of purpose, order, deductive logic and plan - an example of direct translation of a social force into form can be seen in the following city plans:

1. A defensive town such as Naarden. The encircling bastions are a direct expression of the need to fortify the town against the fire of newly invented cannons. The points permit fire fields to protect the walls. The depth of fortifications coupled with the range of defensive guns placed the community at the core of the defenses out of range of then available weapons. The river provided an inner water supply as well as fire protection against the aerial bombs of that era.

Slide 2

2. The Roman camp form, as seen at Aosta, developed from the need for Roman troops to garrison captured territory. This form, a cross with each quadrant subdivided by another cross, made the internal administration and supervision of the town extremely simple and minimized the risk of revolt.

Slide 3

3. Pikillacta, the Inca store town, grew up as the node of a widely scattered agricultural society. It was Inca policy to provide security for the surrounding villagers. This form of town is given its articulation by the need for efficient storage, supervision, and distribution of supplies.

Slide 4

4. The nested form of Peking's northern half, the Tartar City surrounding the Imperial City which in turn surrounds the Forbidden City, is principally determined by the sanctity of the emperor and the pressures of custom and ritual demanding various degrees of association with his person.

Slide 5

5. The canal structure of Amsterdam and Venice were originally intended to organize the commercial functions in the city while overcoming the building problems of a swampy site and we all have heard that the wide buolevards of Paris were intended to be fire lanes for an emporer who planned to control mob violence with a small detachment of artillery at the core.

6. These governing principles are convenient oversimplifications and we havent time to develop the inner order or the restrainsts imposed by building technology.

7. Nevertheless a slow process of development and an overall objective generated a clear plan within a static culture.

8. Included in your reading assignments is a mimeo handout elaborating on the many forces to be served in a simple village. The reading describes how the theory of sets in mathematics can be used to establish a hieracchy of purposes, a definition of order, and simplification of the planning problem.

II. Cities of today do not operate within any other conditions that shape cities of a hundred years ago except that form may be clarified or lost to the degree that we can identify the forces or pressures of our culture.

A. First,population in our urban centers has been expanding at an accelerating rate for the last 160 years.

B. Technological change in city building arts is explosive - transportation, communication, structure, and sanitation alter radically every ten years.

C. Finally cultural continuity is disintegrating because of size, social stratification, diversity, and the switch which Rieseman described as the change from an outer directed to an inner directed and other directed society.

D. In short the pressures of a modern industrial city are so vast, so varied, and contain so many conflicts of priority that there is no clear form to our urban environment, and our cities become an amorphoris, creeping cancer on the landscape.

E. The focus of each city is growing feeble. The Capital Square no longer is the hub of Madison; the harbor and the three rivers in Milwaukee are no longer the focus of industrial expansion, and so on. Instead of prescribing a form of order to serve a purpose we are tending to simply describe inductively what has taken place at the community "groed like Topsy".

F. Urban construction in the remainder of this century must equal all construction of all urban areas since the beginning of recorded history. Taking this push as a premise for now lets review the physical pattern and growth pattern of modern cities as it might appear from the air. Then it may be possible to suggest how a new form might be imposed to reflect purpose and order in city development in the future.

III. Various experts describe the pattern of the modern city by inductive description of the way they have grown - quite a different thing from determining purposes, the best order of things, and then building to plan.

A. The natural form of growth has been a process of accretion. Many people making individual decisions, largely to their best interests rather than to social purpose. Traditionally urban land economics described the process which these individual parties go through, intuitively or by formal intent, in making their location and building decisions.

B. The accretion process is simply this: Solomon Juneau builds a cabin to buy furs; along comes a saloon keeper to provide an outlet for surplus fur revenue; soon there is need of furniture and an undertaker. A city grows without a coherent plan. The Madison street pattern or the failure to match the streets in downtown Milwaukee on the east or west side of the river.

C. Cities of the commercial age depended on transportation. Axial expansion, also known as a star pattern, and best imagined as spokes on a wheel, is generally stimulated by the technology of transportation. For that matter Caesar's roads still dominate a form of Rome and many other lesser towns in Europe.

D. The early phase of this expansion produced tight little clusters of settlement along highways and railroads, each cluster separated by a distance representing more than a convenient carriage or horseback rider.

1. This tendency was increased by the introduction of electric interurban lines and rail commuting. This made it possible for moneyed classes to have country living and downtown financial office centers. Remember the term Philadelphia Mainline Society. Consider the development of Chicago from 1880 to 1920 with its satellite communities of distinct social stratification. The suburbs of New York City clustering about commuter stations is a current example.

2. The identity of social prestige with country living and commuting was one basis for the suburbs made possible by the automobile.

E. Axial development became more complex when the automobile of the '20's made it possible to depart from the simple linear lines of the railroad. The axial pattern took on more of the design of a snow flake.

F. However, our communities were held together because the auto was held in check from 1920 to 1945 by the state of highway building technology, by the depresssion, and by gas rationing during WW II.

G. Following WWII the community turned to the automobile and began to come apart like a nova, and exploding star. Following the axial lines of highway transportation, we created hundreds of small isolated settlements. The push for the green pastures of the suburbs led to fragmentation were results of improving real income and a romantic system of values of the middle class.

H. We can also find a kind of lateral expansion which the land economist calls, so as to impress everybody, interstitial growth. An interstice - an empty gap. Ideal physical patterns are distorted by topography (hills-rivers), rail yards (the Chinese wall), cemeteries, institutional land(Univ

REAL ESTATE 520

REVIEW OF APPRAISAL LECTURE

I. Central position of appraisal to urban land economics

A. The practice of real estate is concerned with the problem of how to buy low and sell high or for the user to pay no more than the value of the property. Both situations presume a knowledge of what the appropriate value should be. Appraisal is the process of estimating value.

B. Value is an illusive concept and every appraisal report gives an explicit definition of value in relation to the purpose of the report.

C. Value generally means price under some given set of conditions. For example:

1. V_c could stand for price as the probable cost of reproducing a specific property. It would be useful for insurance purposes where the policy will pay to replace but might not be useful for buying and selling a standing property.

2. V_s could stand for the subjective value of a property which plays an important role in the decisions of investors. It represents what the property is worth to the owner or what some individual would be willing to pay for a location, a special garden, a fireplace. In part there is a value in use factor here and in part there an emotional factor.

3. V_e could stand for value with an ethical component--what is called fair value for just price, a concept with roots in the middle ages and dominant in court actions subject to "just compensation" for land being taken by condemnation.

4. V_m can stand for market value or fair market value which is a variation on ethical value and is the dominant concept of value for the appraiser today. The usual definition of market value proscribed by the American Institute of Real Estate Appraisers is either:

"The highest price estimated in terms of money which a property will bring if exposed for sale in the open market allowing a reasonable time to find a knowledgable purchaser who understands all of the uses for which it is capable when the seller is under no pressure to sell."

"The price at which a willing seller would sell and a willing buyer would buy, neither being under abnormal pressure."

5. Theoretically an AIREA appraiser can identify sales which meet all those criteria. The Institute might go so far as to maintain that a clear definition of value and purpose then gives the appraiser the ability to state value as a single dollar amount.

A. Basic appraisal process as traditionally taught is shown on the screen. (give examples for each step).

B. However, appraisal is in a state of ferment. Although the three approaches to value are often required in government appraisal forms and in various court actions, there is much doubt that each of these approaches are equally valid or relevant.

1. The income approach is criticized because it does not directly recognize the impact of leverage and income tax policy on purchase price.

2. The cost approach requires determination of exact dollar amounts of physical, economic, and functional depreciation which leads to serious inaccuracies on all but the newest and most modern buildings.

3. The format of the traditional report is also under criticism.

C. Professor Ratcliff, and others to a lesser degree, believe that the appraisal report should make explicit certain factors which influence value and relate the value approach to the purpose.

1. First, since an appraisal begins with a specific property, it is reasoned that the format of the report should move from the particular to the general, that is from the site to the economic influences on value only as necessary to the purpose and argument of the report.

2. Highest and best use of the property virtually identifies the logical buyer group, generally an extremely small number of persons within any one community for any one property. Definition of a buyer should enable the appraiser to identify that kind of buyers' rationale for value. It follows that if the purpose of the appraisal is to predict the price at which it would sell, than the appraiser should think like the perspective buyer--that is, use the same approach to value as the buyer.

3. Such a logic also suggests that if the buyer is not sophisticated neither should be the approach to value. If buyers use the gross rent multiplier to buy a four-family unit, so should the appraiser in trying to anticipate what buyers will do.

4. Generally buyers know the market and market comparison analysis is the preferred approach. However mortgage lenders generally appraise capitalized income while insurance companies prefer the cost approach. Where sales are unknown, cost of reporduction may be required or benefits simulated.

III. A career in real estate appraisal offers challenge, confusion, and participation in almost any type and size of business problem. Consider some of the current, local appraisal problems:

A. Madison School Board recently sold old Central High School to the Vocational District. What is the market value of an obsolete school building which is the siamese twin of its only possible buyer?
B. Turville Point of 50 acres & the medical site @ $2.50 per foot.
C. What is the before and after value of a public golf course which sells nine of its eighteen holes to the school district for a junior high school.

half a million dollars--or $2.50 a square foot to the neighboring Medical Society. Certainly the doctors could afford good real estate advise; on the other hand they wanted to expand on their present site. Then again the soon-to-be-completed causeway is rapidly increasing property values on the south shore of Lake Pontchartrain; the sellers made more than a quarter million dollar profit after holding the property only two years.

Now the problem is is this sale a basis for valuation of the much larger piece just down the road. After all 50 acres times 44,000 square feet times $2.50 a square foot is a lot more money than the $600,000 offered by the city.

Appraisers must find information and an economic rationale with which they can justify as to the value .

3. If the valuation of whole properties is difficult, the valuation of partial property is even more difficult. For example what is the value of two feet of excess land on your lot if you are going to sell it to the man next door so the house plan which his wife desires will fit on their lot in conformance with the code?

What is the value of the right of access from the street to your lot at any point? For example if you own a corner lot 200 feet square on which you have your home but which someday might be a filling station location, how much would you want to receive if the city condemned your right of access 175 feet back from the corner on each side without affecting your present driveway etc.

In partial condemnation cases the law states that you should receive the difference between the market value before the taking and after the taking. This requires the appraiser to imagine the property as it will be after the public improvements are constructed and after the market has a chance to see how things will look. It is conceivable that the propetty will be worth more after the taking than before. For example an interior lot which will become a corner lot with the addition of a road. (Winona Way and Olin Avenue--owner gave land to city for intersection and created two goo filling station sites where only one mediocre one existed before)

IV. Appraisal and urban land economics

A. Technical work as an appraiser can soon lead to much broader activity as a consultant. Moreover one appraiser pointed out that his reseatch for other clients at their expense soon gave him enough general information on the market to find good investments for himself. The ability to estimate value is a critical element of real estate investment add property development.

B. Land use is a process of determining highest and best use in terms of economic and social considerations. The land planner represents the social interest of the community but it is the appraiser who generally provides the basis for rational economic determinations. Therefore he is at a pivotal point of the city building process.

C. Appraisal careers offer excitement as well as good pay and there is a tremendous shortage of personnel with college training in this field. Starting salaries are in the range of $7,500-$8,000 for undergraduates and as high as $10,000 for our M.S. graduates. As a field appraiser you can any degree of travel which you wish and you may quickly establish a professional rating and reputation which would allow you to establish yourself as an independent fee appraiser. These fee appraisers receive $100 to $250 a day and are generally booked several months ahead of time. They may be working on a different project every week and are involved in considerable work in court, in property development, and often in mortgage banking.

D. Moreover appraisal gives entree to a great variety of executive positions including real estate lending with insurance companies, management of mortgage banking firms, management of savings and loan associations, operation of all real estate matters for major corporations and so on.

E. Not only is there a great shortage of people but something is being done about it at the college level. The various professional appraisal societies offer good scholarships, student rates for membership and publications, and summer internships with the best in the field. We would be happy to talk further with you individually about career opportunities in appraisal.

Real Estate 520

Outline of Lecture on the Appraisal Art

I. Appraisal is basic to decision making in real estate.

A. To buy low and sell high requires a definition of the central tendency of value or price.
B. Value is an illusive concept and every appraisal begins with an explicit definition of value to be estimated in relation to the purpose for which an appraisal is desired.
C. Value generally means estimated price under a given set of conditions. For example:

Vc - Value as cost to reproduce
(For insurance cash value purposes)
Vs - Subjective value to user
(Value in use and in terms of emotional needs)
Ve - Ethical value - fair market value
(Just compensation for condemnation or for tax assessment)
Vm - Fair market value
(A various of ethical value determined according the definition)
Vp - Most probable selling price
(A statistical concept of price with stated ranges to be measured by statistical inference, logic, or intuition)

D. The formal definition of market value by the Institute reads: "The highest price estimated in terms of money which a property will bring if exposed for sale in the open market allowing a reasonable time to find a knowledgeable purchaser who understands all of the uses for which it is capable when the seller is under no pressure to sell."

II. The theoetical requirements of an appraisal report are established and enforced by at least four professional organizations.

A. The national organizations most influential in appraisal theory are:

1. The American Institute of Appraisers
(Professional designation - MAI)
2. Society of Real Estate Appraisers
(Professional designation - SRA, and SREA)
3. American Society of Appraisers
(Professional designation - ASA)
4. American Right-of-Way Appraisal Association

B. Each of these organizations stresses professional education, ethics, and continual review of appraisal reports by their members. An ethical appraisal must be in writing.

C. The written appraisal must contain at least the following steps:

1. Identification and description of the subject property, including rights to be appraised, and highest and best use of the property.
2. Identification of the purpose of the appraisal, and definition of the value to be estimated.
3. Identification of the effective date of the appraisal.

4. Collection, analysis and interpretation of all data pertinent to the appraisal problem at hand.
5. Application in acceptable technical form of each of the approaches to value estimation appropriate to the particular appraisal problem. In every instance, conscious recognition must be given to the fact that comparative analysis of verified market data is the essence of each approach.
6. Careful analysis of findings and correlation into a final value estimate, rounded appropriately, which reflects the most applicable analysis to the problem at hand, and the availability and reliability of market data.
7. Clear identification of special, contingent and limiting conditions affecting the appraiser's analysis and conclusions.
8. Certification by the appraiser to the facts indicated in the preceding discussion of the requirements of Demonstration Narrative Appraisal Reports.
9. Clear identification of the substantive contribution of others to the analysis and conclusions in the appraisal report.

D. Every appraisal or valuation problem is essentially a research problem. There are five major steps in the research:

1. Define the problem in terms of property, interest, purpose, date, and budget-fee.
2. Plan the appraisal approach.
3. Apply the appropriate methods of collecting data.
4. Apply the selected analytical techniques.
5. Prepare and write an analysis and opinion of value so that the reader can arrive at the same conclusion.

III. The traditional approach advanced by the professional societies is based on a presumption that the typical buyer will consider all alternatives available to him. Three courses of action are presumably available and provide the conceptual foundation for the traditional appraisal methods:

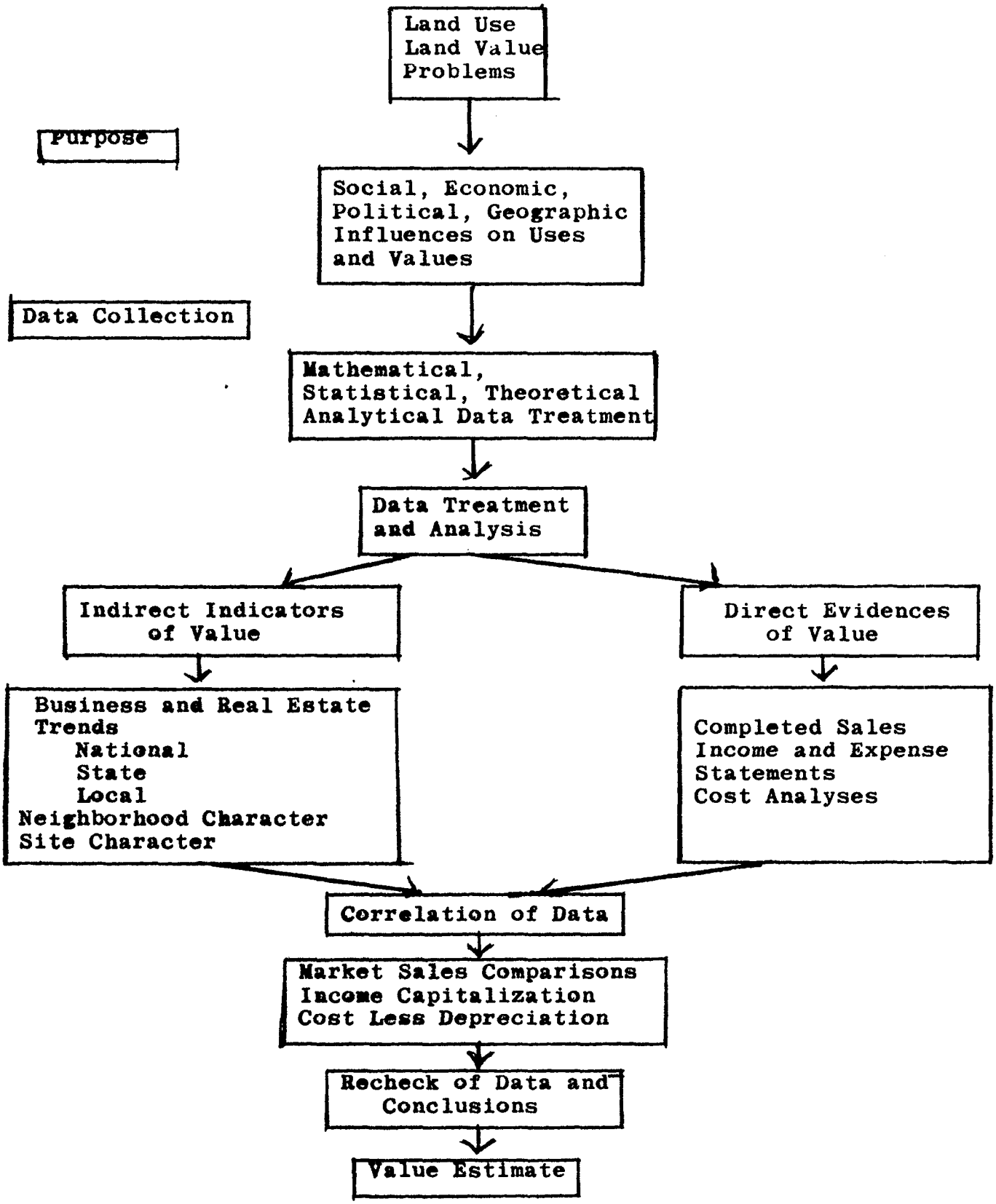
A. Acquisition of an existing substitute property with the same utility as the subject property.
B. Acquisition of an income of the same size with the same risk as that forecast for the subject property.
C. Production of a substitute property with the same utility as that of the subject property.
D. The total appraisal process is outlined on attached boxed chart. Based on the three alternatives above the three approaches to value are called the market approach, the income approach, and the cost approach.
E. Standard appraisal procedures have been institutionalized by court precendents, federal and state government required appraisal forms. and public education in conditioning on what an appraisal should do.

IV. Appraisal theory is being challenged from within and without.

A. Three approaches not appropriate in every case.
B. Cost approach flawed by fictitious and subjective assumptions
C. Income approach as presently practiced does not directly recognize impact of leverage, federal income tax law, and short-term ownership on purchase price.
D. Format of traditional report is under criticism.

V. Professor Ratcliff has most comprehensive revision of theory proposed; he sees two approaches to value:

A. Statistical inference of most probable selling price from analysis of other completed transactions involving similar properties.
B. Simulation of the investor calculus in order to anticipate what the typical buyer or the single most probable buyer would be willing to pay. Simulation assumes precise identification of the method by which the buyer determines the price he can pay for a property.
C. Each approach to value has become more feasible with application of computer techniques to real estate analysis.
D. The Bayside project is an example of statistical inference.
E. The computerized cash flow simulation model is an example of investor simulation.


Land Use
Land Value
Problems
Purpose
Social, Economic,
Political, Geographic
Influences on Uses
and Values
Data Collection
Mathematical,
Statistical, Theoretical
Analytical Data Treatment
Data Treatment
and Analysis
Indirect Indicators
of Value
Direct Evidences
of Value
Business and Real Estate
Trends
National
State
Local
Neighborhood Character
Site Character
Completed Sales
Income and Expense
Statements
Cost Analyses
Correlation of Data
Market Sales Comparisons
Income Capitalization
Cost Less Depreciation
Recheck of Data and
Conclusions
Value Estimate

MARKET DATA APPROACH: COMPARISON BY UNITS

	1 406 Webster	2 904 Webster	3 825 Menlo Oaks	4 402 Oaks Grove	5 837 Cowper St.	Subject Property
Date of sale	Jan., 19__	Feb., 19__	June, 19__	June, 19__	June, 19__	
Sale price	$129,500	$312,000	$410,000	$390,000	$290,000	
Number of units	7	24	22	14	14	13
Price per unit	$ 18,500	$ 13,000	$ 18,636	$ 27,857	$ 20,714	
Number square feet per unit	967	683	934	1,379	1,062	976
Ratio of unit size to subject	1.01	1.43	1.04	.71	.92	
Adjustment factors: Subject by comparison is:						
Time of sale	Slight increase	Slight increase	No change	No change	No change	
Reliability of sale	Excellent	Excellent	Good	Fair	Fair	
Location and neighborhood	Same	Same	Slightly poorer	Slightly better	Slightly better	
Site	Similar	Similar	Similar	Similar	Similar	
Size of units	+1%	+43%	+4%	-29%	-8%	
Exterior improvement	Slightly better	Slightly better	Same	Slightly poorer	Slightly poorer	
Interior improvement	Slightly poorer	Same	Same	Slightly poorer	Slightly poorer	
Quality, age, condition	Slightly poorer	Slightly better	Slightly poorer	Slightly poorer	Slightly poorer	
Composite*	Equal	+45%	Equal	-35%	-10%	
Indicated value of subject per unit	$18,500	$18,850 Say	$18,636 $18,650	$18,107 $18,100	$18,643 $18,650	

Adopted per unit value: $18,500 x 13 units - $240,500

*Developed by addition and subtraction

SUMMARY OF COST APPROACH TO VALUE

Reproduction cost of building, chattels, and other improvements		$198,000
Depreciation:		
Curable physical deterioration	$ 500	
Incurable physical deterioration	7,580	
Curable functional obsolescence	0	
Incurable functional obsolescence	960	
Economic obsolescence	0	
Estimated Total Depreciation		- 9,040
Reproduction cost less depreciation		188,960
Land value estimate		50,000
Total value indication by the cost approach		$238,960
Rounded		$239,000

BUILDING RESIDUAL CAPITALIZATION

Annual net income before recapture, from Reconstructed Operating Statement,		$ 18,870
Less interest on $50,000 land value at 6.5%		- 3,250
Annual net income imputable to interest on and recapture of the investment in the improvements:		$ 15,620

Interest and recapture rates on improvements:

Interest rate:	6.5%
Recapture rate (50 year remaining economic life):	2.0%
Capitalization rate:	8.5%

Improvement value: $15,620 capitalized 8.5% = $183,765		
Rounded to		$184,000
Add land value		50,000
Value indication by the income approach		$234,000
Rounded to		235,000

Lecture Outline
A Definition of Urban Land Economics

I. Urban land economics at present has no generally accepted definition of what is proper subject matter should be. Professor Graaskamp's preliminary definition is:

A. Urban land economics is concerned with the allocation of man-made differentiated spaces designed to contain activities required for an urban society, so as to optimize the realization of user purposes given limited resources.

B. The resource called land is really space, space to contain an activity, space artifically given form or definition and given a locus relative to a specific land area.

C. Economics in general is concerned with the process of allocating a resource which is scarce relative to a demand according to some standard of efficient use, be it the utility curve of the consumer of the marginal increment of profit for the producer.

D. The basic problem in defining urban land economics is found in the use of the words "optimize " and "user" because the first presumes some standard of efficiency and the standard of efficiency depends on our definition of the user and his purposes.

1. What is efficient for the firm may be inefficient for society.
2. What is acceptable efficiency for the present generation may reflect costs shifted to future generations.
3. Since the urban space we manufacture has a settling fact on the mind and chemistry of each generation, certain measure of efficiency remain unknown or undefined.

E. The subject matter is restricted to space problems characterized as urban and the standard of urbanity is arbitrary, such as persons per acre, degree of job specialization, or simply the geographic radius of a toll free telephone call.

II. The Ratcliff text suggests that the form that our cities have taken reflects simply a process of aggregation and accretion of many individuals investment decisions. He suggests that we can predict the form and ~~and~~ quantity of future land uses by anticipating the decision making processes of the individual user. In this view land economics is a micro theory of behavior by individual space user establishments.

A. In Professor Graaskamp's opinion this explanation of city building explains only a brief period in our history, explaining neither the past nor future trends in overall land use pattern.

B. The purposes to be served and therefore the standards of efficiency to be met in the allocation of space resources are essentially non-economic in character.

C. For individual site development within community land use patterns is a matter of business management and finance.

D. Community purposes are non-economic in terms of the decision making process as will be shown by example and therefore not the subject of urban land economics.

E. The subject matter for urban land economics in a School of Business is therefore the process of manufacturing, managing, financing, and ultimately pricing of a commodity called space.

F. In any decision making process a clear definition of purpose establishes the standards of efficiencey for "optimization" and these bench marks then suggest the plan for any enterprise.

III. Cities of the past possess a physical clarity in the form given land, layout and architecture, because urbanity emerged in direct response to relatively simple limited pressures. There was little population growth, slow technological change, and cultural continuity which combined to establish a land planning and building method that became a community standard, adjusted and refined through gradual trial and error.

A. A specific purpose produced a desirable order - objectives generate criteria - which produce a physical plan. A social need had only to be identified to find its way into form; form was modified by experience.

B. There was an interaction between the inhabitants, their social purpose, and the manner of building which gave each city an identity.

C. A plan could influence the pattern of construction for hundreds of years because builders practice traditional techniques which change only under strong pressure of powerful and obvious irritations of the existing forms.

D. The translation of a social decision into form within the discipline ofdeductive logic can be seen in such city plans as :

1. A defensive town such as Naarden.
2. The nested form of Peking reflecting the ritual of political hierachy.
3. TheRoman administrative and military camp format.
4. A farm village in the Camaroons.incorporating defense, corrals, and the social hierachy into the layout of a village.
5. The Japanese palace for the emperor reflecting the hierachy of social ceremonials.
6. The canal structure of Amsterdam and Venice to facilitate the exporting-importing and wholesaling commercial functions of the city.
7. The boulevards of Paris designed for riot control.

E. Such a clear statement of purpose emerging from a slow process of development was only possible in the historic city because:

1. There was a static building technology.
2. There was a static cultural pattern.
3. The population was relatively constant in size.

IV. Modern industrial society does not meet these conditions. It has a rapidly expanding population, an ever changing technology, and a shifting social structure.

A. Population in American urban center has been expanding at an accelerating rate for less than 150 years.

B. Transportation, communications, structural systems, architectural styles, and sanitation requirements have altered drastically every 20 years.

C. As a result cultural continuity has been disintegrating with size, age, social strata and deversity of skills and interests which characterize the population.

D. The activity of an industrial city are so vast, so varied, and of such conflicting priorities there has been no overall concensus on the form of our urban environment.

E. Therefore, for the first half of this century it may be accurate to say that land use patterns and city building were the product of individual investors competing for alternative sites with no other restraint than their willingness to pay a given price. For obvious reasons these decisions might follow a pattern appropriate to the concentric ring theory, the sector theory, or the multiple nucleus theory.

V. Cities which have grown like Topsy without manifesting some clear community purposes have not worked well and there is some danger they fail to produce shelter, safety, convenience, healthy environment, or satisfaction.

A. As a result community purposes are once again emerging as form giving forces within which and to which the private owner must adapt.

B. Today integrity of form and purpose requires the dictatorship of individual ownership or power of a powerful individual personality. In the United States there at least 75 cities under construction by individual, privately owned corporate city builders. Elk Grove to the south of us is such a community.

C. Columbia, now under construction between Baltimore and Washington, is such a city. It represents a clear example in our time of social and political pruposes prescribing the standard which the city plan will follow and the economics must serve. The Columbia scheme is concerned with the need for small scale participation in education, government, social neighborhoods, as well as efficient transportation and industrial development. For a town of 150,000 people, the units are defined as:

1. The town itself is divided into ten (mile-wide) villages.
2. Each village is divided into five neighborhoods.
3. Town, village and neighborhood each have their own centers.
4. Permanent open space is interposed between the town center and the villages - and between the villages themselves.
5. A bus-route - closed to automobiles - connects eight of the village centers with the town center.

D. The developer of Columbia, James Rouse, believes that we will have better cities when we can prove that they can be built to society requirements at a profit. In short, we can build the type of cities we can value if we can finance them and we can finance them if there will be a return on capital invested. His planners are controlled by cash flow and capital budget, and although he will have invested 80 million dollars before his cash flow turns positive, his unique financing organization will have brought in 5 million in capital for initial development.

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B. The resource called land is really space, space to contain an activity, space artifically given form or definition and given a locus relative to a specific land area.

C. Economics in general is concerned with the process of allocating a resource which is scarce relative to a demand according to some standard of efficient use, be it the utility curve of the consumer of the marginal increment of profit for the producer.

D. The basic problem in defining urban land economics is found in the use of the words "optimize" and "user" because the first presumes some standard of efficiency and the standard of efficiency depends on our definition of the user and his purposes.

1. What is efficient for the firm may be inefficient for society.
2. What is acceptable efficiency for the present generation may reflect costs shifted to future generations.
3. Since the urban space we manufacture has a settling fact on the mind and chemistry of each generation, certain measure of efficiency remain unknown or undefined.

E. The subject matter is restricted to space problems characterized as urban and the standard of urbanity is arbitrary, such as persons per acre, degree of job specialization, or simply the geographic radius of a toll free telephone call.

II. The Ratcliff text suggests that the form that our cities have taken reflects simply a process of aggregation and accretion of many individuals investment decisions. He suggests that we can predict the form and quantity of future land uses by anticipating the decision making processes of the individual user. In this view land economics is a micro theory of behavior by individual space user establishments.

A. In Professor Graaskamp's opinion this explanation of city building explains only a brief period in our history, explaining neither the past nor future trends in overall land use pattern.

B. The purposes to be served and therefore the standards of efficiency to be met in the allocation of space resources are essentially non-economic in character.

C. For individual site development within community land use patterns is a matter of business management and finance.

D. Community purposes are non-economic in terms of the decision making process as will be shown by example and therefore not the subject of urban land economics.

E. The subject matter for urban land economics in a School of Business is therefore the process of manufacturing, managing, financing, and ultimately pricing of a commodity called space.

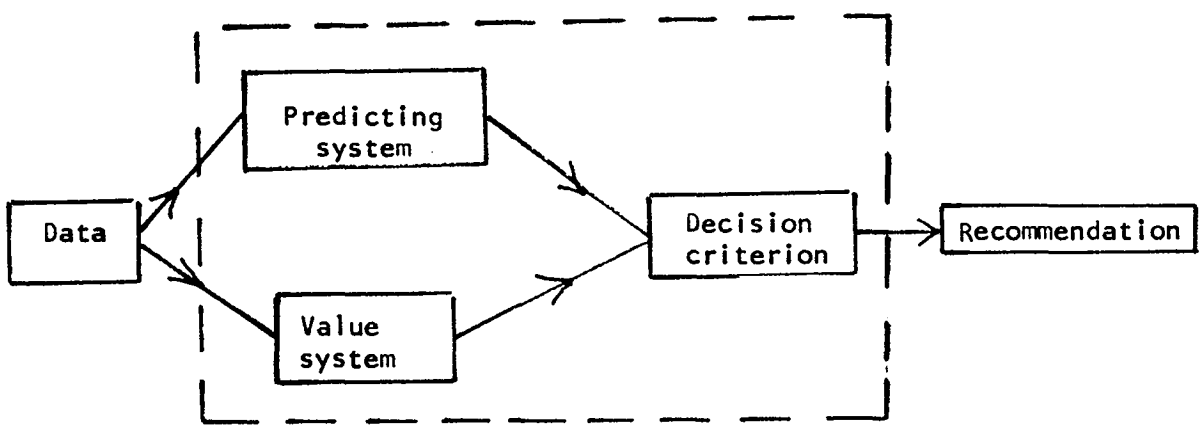
III. Man is biologically deficient because he seems to lack elaborate instinctive chemistry or behavior patterns with which to make successful decisions affecting his survival. Born virtually helpless, man must of necessity make education of the young a major occupation.

A. Simple group activities led to a pyramid of organization of decision making specialists and history has been the evolution of decision making systems - witch doctors, chiefs, kings, priests, presidents, and real estate counselors.

B. Cause and effect was recognized to be the pattern of life but causes were first identified as devils and later deductively explained with reason and logic.

C. To close the gap between Logic and the real world the scientific method was developed to move inductively from observations to statements. Statistical decision making is an intellectual mechanism based on the scientific method.

D. Today decision theorists organize decision systems something like the simple minded schematic drawing below:



E. The elements of this system are the building blocks of this course:

1. All manner of factual real estate data will be suggested to identify a list of alternative courses of action relative to land use decisions.
2. Hopefully you will be able to learn the cause and effect chain leading to alternative outcomes for each alternative courses of action. (A forward pass can have three results, two of which are bad).

3. Each alternative outcome has a different mix of desirable and undesirable aspects which imply there are value systems within society or for each investor relative to land use decisions.
4. Each alternative outcome can be assigned a probability (statistical or subjective) so all real estate plans must have a tolerance for the surprise potential.
5. Therefore, we will move down parallel subject matter - identifying social values which become specified in terms of planning objectives and investment values which become specified as financial objectives, both producing decision criteria with which to screen and to recommend real estate investment proposals.

F. A form cities take reflects the purposes of its inhabitants and the internal consistency and desirability depends on the degree of concensus as to the "city beautiful" that exists among its inhabitants.

VI. Ekistics is a new term by a Greek city planner named Doxiadis to describe the signs of city building, including within it the diciplines of sociology, political science, building technology, the arts and economics.

A. He advocates a city plan which can adapt to expansion, technology change, and shifts in the cultural pattern while maintaining historical continuity. In short, the city should be planned for a fourth dimension, time as well as height, width and length and available capital resources.

B. Modern planning is also taking a regional approach to establishing a concensus on standards for urban planning and construction. The best example is the Southeast Regional Planning Commission in Waukesha about which you will hear more as the semester progresses.

C. Planning functions involve much democratic action and political restructuring.

1. Therefore, I would argue that urban land economics as a macro theory of land and building allocations has disappeared within a broad science of ekistics.

2. We are left with a field concerned with individual establishments making choices as to the form and substance of their own real estate needs. Given a price economy and the need to compete for capital funds, the subject area can then stress analysis of the relationships between pricing, financing, management, and construction of urban space for urban establishments adapting to the form of the city which surrounds them. The form or plan of the city will be predetermined by social considerations so that individual decisions may be made in the context of the political concensus and social pattern of the city.

A DEFINITION OF URBAN LAND ECONOMICS

1. The subject area of urban land economics at present has no generally accepted definition of what urban land economics is or of what its subject matter should be. Today I propose to venture where my associates have feared to tread.

   A. I submit: Urban land economics is concerned with the allocation of man-made differentiated spaces designed to contain activities required for an urban society, so as to optimize the realization of user purposes given limited resources.

   B. Economics in general is concerned with the process of allocating a resource which is scarce relative to a demand according to some standard of efficient use, be it the utility curve of the consumer of the marginal increment of profit for the producer.

   C. The resource called land is really space, artifically given form or definition.

      1. The moment when man requires some feature in his environment which differentiated it from the natural environment, real estate began. The rock rolled in front of the cave created an artificial division and a resource called real estate. Today the first improvement of land is a survey mark, whether it be as tangible as a pylon on the flood banks of the Nile or as intangible as a condominium plat filed in the register of deeds.

      2. To the layman real estate is concerned with earth and man-made structures and improvements.

      3. The more sophisticated looks at real estate as intangible legal quantities - a bundle of rights and privileges in regard to possession and benefit of earth and improvements. But from what do the benefits of law ultimately stem?

      4. The ancient and traditional view of rights in land saw the domain of the landlord extend from the center of the world to the peripery of the universe. A square of land on the surface of the globe presumably gave domain over a vast inverted pyramid included within lines drawn from the center of the earth through the corners of the parcel in question and out to infinity.

      5. Consider the theoretical question: If all the earth and improvments within one such parcel were dug out to the center of the earth and exchanged for a similar amount of earth from another parcel in another place, has ownership been transferred?

      6. Moreover, if one parcel had sold for more than another though mineral values were identical, have we changed the value of the parcels by the transfer?

      7. Probably not. The essence of real property would seem to be space to contain an activity, and space in particular reference to a specific piece of land surface. Hence land is the locus for space required by a user - an establishment.

D. The economic good is space and it is a manufactured commodity. The space in question located in an area characterized as urban and the standard of urbanity is arbitrary. The standard might be persons per acre, degree of job specialization, or simply the geographic circumference of a toll-free telephone call.

E. As a manufactured commodity, space is constructed of land, materials, labor, and skills according to the same economic prescriptions as any capital good. The basic problem in defining urban economics, however, lies in the use of the words "optimize" and "user".

1. Recall our definition: Urban land economics is concerned with the allocation of man-made differentiated spaces designed to contain activities required for an urban society, so as to optimize the realization of user purposes given limited resources.

2. To optimize anything presumes a standard of efficiency and the standard of efficiency depends on our definition of the user and his purposes.

3. It may be most efficient for a firm to dump its wastes in a passing creek or river and if his only purpose is to minimize capital investment, operating cost or price squeeze this serves very well. But if there is a larger social purpose to conserve clear water resources, user purposes conflict and the standard of efficiency may chagge.

4. To manufacture urban space is to give form to our environment and we have already changed our environment more drastically than the change which killed the dinosaurs. In some parts of the country you must go inside to breathe fresh air, you are without natural surfaces, and surrounded with waters which are lethal in their content of disease bacteria.

F. The Ratcliff text suggests that the form that our cities have taken reflects simply a process of aggregation and accretion of many individuals investment decisions. He suggests that we can predict the form and quantity of future land uses by anticipating the decision making processes of the individual user. In this view land economics is a micro theory of behavior by individual space user establishments.

1. I am of the view that this explanation of city building explains only a brief period in our history, explaining neither the past nor future trends in overall land use pattern.

2. I submit that the purposes to be served and hence the standards of efficiency to be met in the allocation of resources so far as land use patters are concerned are non-economic.

3. On the other hand, I would argue that individual site development is a matter of finance, given the relationship of the site to community purposes.

4. If community purposes may be considered non-economic then these aspects of the decision making process are not the subject of anything called urban land economics.

5. The subject left for urban real estate in a school of business is therefore the process of manufacturing, managing, financing, and ultimately pricing of the commodity called space.

6. Therefore I would like to demonstrate for the remainder of the hour how community purpose gives form to the city and why investors in the future are limited in their choices primarily to those alternatives which are consistent with social purpose.

G. In any decision making process a clear definition of purpose establishes the standards of efficiency for "optimization" and these bench marks then suggest the plan for any enterprise.

II. Cities of the past possess a physical clarity in the form given land, layout and architecture, because urbanity emerged in direct response to relatively simple limited pressures. There was little population growth, slow technological change, and cultural continuity which combined to establish a land planning and building method that became a community standard, adjusted and refined through gradual trial and error.

A. A specific purpose produced a desirable order - objectives generate criteria - which produce a physical plan. A social need had only to be identified to find its way into form; form was modified by experience.

B. There was an interaction between the inhabitants, their social purpose, and the manner of building which gave each city an identity.

C. Deductive logic prevailed in those times. The unselfconscious culture followed firmly set traditions followed by all builders of form. Building of both cities and homes was surrounded with ritual, myths, taboos, and tradition which resisted willful change. Form builders made changes only under strong compulsion where there were powerful and obvious irritations in the existing forms which demanded correction. Unfortunately rigidity is also true of the modern age, although a selfconscious culture has expressed rules such as zoning, building codes, and consumers who expect a house to look like a house.

D. An expression of purpose, order of deductive logic and plan - an example of direct translation of a social force into form can be seen in the following city plans:

1. A defensive town such as Naarden. The encircling bastions are a direct expression of the need to fortify the town against the fire of newly invented cannons. The points permit fire fields to protect the walls. The depth of fortifications coupled with the range of defensive guns placed the community at the core of the defenses out of range of then available weapons. The river provided an inner water supply as well as fire protection against the aerial bombs of that era.

2. The nested form of Peking's northern half, the Tartar City, surrounding the Imperial City which in turn surrounds the Forbidden City, is principally determined by the sanctity of the emperor and the pressures of custom and ritual demanding various degrees of association with his person.

3. The Roman camp form as seen at Aosta, developed from the need for Roman troops to garrison captured territory. This form, a cross with each quadrant subdivided by another cross, made the internal administration and supervision of the town extremely simple and minimized the risk of revolt.

4. A farm village in the Camaroons reflects the need for defense, corrals for a cattle economy, and arrangement of huts to reflect the social structure. The measure of social prestige is the degree of privacy, and this seemingly random plan provides for increasing privacy as you move from the entry to the chief domain and women's quaeters.

5. The Japanese palace for the emperor is a direct expression of a social hierarchy. Each pavillion represents an increase in the significance of ceremonial functions and significance declining in size as you reach the private pavillion and private garden of the emperor himself.

6. The canal structure of Amsterdam and Venice were originally intended to organize the commercial function in the city while overcoming the building problems of a swampy site and we all have heard that the wide boulevards of Paris were intended to be fire lanes for an emperor who planned to control mob biolence with a small detachment of artillery at the core.

7. In short, urban areas and their buildings represented a physical expression of purpose or function, such as security, ceremony and statement of community versus private activities. There isn't time to develop the historic integrity of these forms relative to building technology or cultural pattern.

E. Such a clear statement of purpose emerging from a slow process of development was only possible in the historic city because:

1. There was a static building technology.

2. There was a static cultural pattern.

3. The population was relatively constant in size.

III. The industrial society does not meet these conditions. It has a rapidly expanding population, an ever changing technology, and a shifting social structure.

A. Population in our urban centers has been expanding at an accelerating rate for only a 150 years. In the United States alone we must build as much urban space in the next 30 years as we have build and accumulated since 1492.

Page 5 is missing

Time does not permit a further analysis of the organization of each neighborhood center, village center or town center. The impositon of control is possible because of ownership is in the hands of a $60,000,000 corporation which in turn is a combination of insurance company money and the genius of James Rouse.

D. The science of city building which includes the disciplines of sociology, political science, building technology, the arts as well as economics has been called the science of ekistics by a Greek city planner named Doxiadis.

1. As a planner advising cities all over the world he is advocating cities designed to accept expansion, technological change, and shifts in the cultural pattern as well as maintaining historical continuity. In short he argues a dynamic city should be planned for a fourth dimension - time - as well as height, width, and length.

E. His scheme would eliminate the succession of rings of expansion which gradually strangle the core of the city. Instead he would regulate the city growth to proceed basically one direction with successive incrments of various land uses so that a city would eventually develop along an elipical path. There are many good reasons for this proposal and it has been imposed on numbers of older cities in the world trying today to adapt to expanding urbanism with limited public resources.

F. In Waukesha, a Regional Planning Commission, Providing research information for a seven county area, has been established, largely supported by federal grant. Called the Southeastern Wisconsin Regional Planning Commission, it is already the foremost organization in the country. It is attempting to use rational decision making processes to identify and establish the objective of urban life, the standards for urban planning and construction, and programs for implementing public control of private users of land.

V. I suggest that the basic form giving decisions in regard to urban life are once again being made by society. In the not too distant future, land use patterns and resource allocations for the development of urban space will be made to advance social objectives. Moreover the values underlying the criteria of choice will be essentially noneconomic - reflecting social, political, medical, and esthetic purposes. These objectives, however, will be accomplished through a price-economy.

Therefore I would argue that urban land economics as a macro theory of land and building allocations has disappeared within a broad science of ekistics.

We are left with a field concerned with individual establishments making choices as to the form and substance of their own real estate needs. Given a price economy and the need to compete for capital funds, the subject area can then stress analysis of the relationships between pricing, financing, management, and construction of urban space for urban establishments adapting to the form of the city which surrounds them.

Similar topic as preceding pages - but numbers not consecutive —

VIII. Succession of uses in all of these descriptive theories depends on cycles of increasing and decreasing value, physical decline, regeneration, and eventual wholesale destruction and wholesale building at the expense of historical landmarks, unused wealth, and areas of blight.

A. There is a Greek city planner by the name of Doxiadis who is well known internationally for his thinking on modern city planning. He points out that the essential purpose of the city today should be to choose and order which will enable it to withstand and accept the unbeleivable population pressures and technological dynamism of the next 50 years.

B. He points out that concentric expansion of a city eventually strangles the center and its functions and that sectors lead to multiple centers and a loss in community identity. If a city is dynamic there is a fourth dimension, specifically time, so that the city should be designed to expand logically in time as well as height, width, and length.

C. He proposes that the city of the future be designed to expand in only one direction over time. The idea gram suggests a concept of Dynapolis. (page 56)

D. A number of actual cities are being built according to this plan, such as Khartoum in Egypt and Islamabad, the new capital of Pakistan.

1. Khartoum is the capital of Sudan and straddles tbe two Nile Rivers and is experiencing considerable growth despite limited public resources. Doxiadis determines that if the city were to continue growing in all sectors, most of the cities capiaal budget would be required for bridges. It was decided the city shoudl grow in only one direction between the two rivers. It was decided therefore to leave north Khartoum and Omdurman to be static and to wither and to avoid renewal over congested areas. The same amount of expenditures would then create more useable apace between the rivers to the south.

2. Islamabad is a demonstaration of two nuclei developing paralleI to one another within the limits of existing mountain valleys. The old city of Rawalpiendi already possessed a regional center and static land use pattern. A new capital would have exerted such pressure on the old form the city would have strangled without transforming it into a modern regional center let alone the capiaal of the nation. The capital is therefore a paralell force, a separate entity, inter-related to the services offered by the old city.

E. In the United States there are at least 75 cities under construction by private, large scale corporate city builders. Perhaps the most exciting one is Columbia, now under construction between Baltimore and Washington. We will talk more about this city during this semester but it is importaat here to demonstrate that socail objectives have determined the schematic form of this city which is now in process of translation by the planners and architects. This city represents the first clear example in our time of an explicit ekistical program determining the urban land economics which will follow.

F. While it is more dramatic to build an all new city, it is more realistic to plan for regions consisting of a number of existing cities. By coincidence the most advanced of such regional planning systems is located here in Wisconsin and is called the Southeastern Wisconsin Regional Planning Commission.

1. Much will be said about this later in the course, but for now it is important to understand that a central ekistical program is underway in Southeastern Wisconsin. The program attempts to use rational decision making processes to identify and establish the objectives of urban life, standards for urban planning and performance, and programs for implementing control of private development.

2. SEWPRC carries the implication that the emphasis of urban land economics will soon dramatically shift from of the Ratcliff text. Your text presumes that the investor may determine highest and best use within broad constraints of public zoning and planning. The process of accretion and succession of land users proceeds according to Ratcliff essentially on current economic forecasts of productivety as seen by the individual bidding for site use. Restrictions on these uses are negative, defensive for existing interests, and derivitive of static city concept.

3. It may be that in the not too distant future land use patterns will be predetermined by central planning according to stated objectives, standards, and organized factual information. Urban land economics then becomes concerned with appropriate development of particular site uses. Urban land economics would then fit into a hierarchy of economics decision making. Moreover an understanding of the process of the investor calculus would give the planner sophisticated ways of inducing the investor to serve the social purpose as well as the investment function.

G. Urban land economics therefore has a dual role in the urban crisis at hand. It would suggest to the investor his opportunities for profit within a highly fluid, dynamic, and satisifying field of endeavor. At the same time urban land economics offers the planner the next step in the application of big plans to little people. Urban land economics is a study of the process which links needs to satisfactions in the area of the physical urban environment.

Lecture #1
Some Definitions & Objectives

1. This semester represents a new departure in the conduct of Urban Land Economics 520. For some time we have been dissatisfied with aging text materials as well as the straight lecture method of teaching.

   A. Therefore, we are building our own text by means of an anthology of selected reading materials from a variety of sources. However, we will still use parts of the former text - Real Estate Analysis by Ratcliff and we urge you to consider purchasing the book.

S-1 3:30 MB.
S-2 8:50 T
S-3
S-4 7:00 TH M
S-5 grads
S

   B. We will experiment with two hour discussion sections so there will be more opportunity, even with a semi-lecture approach, for give-and-take discussion with the students. The University requires that such two hour labs be at other than prime time slots and hence the necessity for Monday evening and Tuesday sessions.
Mn 7-9 - 124 Comm

   C. To assure uniformity of coverage, the subject matter for any one week will be handled by the same individual in each quiz section. I think we have one of the best teaching teams in the University. But there can only be one chief.

      1. The man in command is Chuck Clettenberg (210) who will decide all issues regarding grades, excused absences, room assignments, etc. There is no appeal to Dr. Andrews or myself. (Mobil home case)

      2. Chuck's assistant in regard to grading is ~~Warner Stone~~ Fred Roberts (210). ~~Ex-Texan~~, ~~ex-Navy~~ ex-Tank battalion commander.

      3. Chuck's associate in teaching is Bob Richardson (210), an appraiser with the Highway Department and now on his own and a Ph. D. candidate as well.

      4. Dr. Andrews is one of the top urban land economists in the country and will cover the macro economics and planning aspects of urban land.

      5. Yours truly was elected spokesman as I had my own set of spokes. My bag is development and investment.

   D. We guarantee you will spend more time studying and at work on an investment case problem than 3 credits will merit. At the end of the semester we would very much appreciate your criticism of material and format and teaching styles.

   E. The Friday session will be used for special lectures, and we hope to have outlines of each lecture prepared beforehand so that you may listen more and write less. In addition we will use it as an examination period.

   F. The grading system, time schedule, and objectives of the course are all contained in the syllabus. Some readings will be on the reserve desk in the Business Library but will be in short supply relative to the size of this group so plan to read the material before the day of the exam.

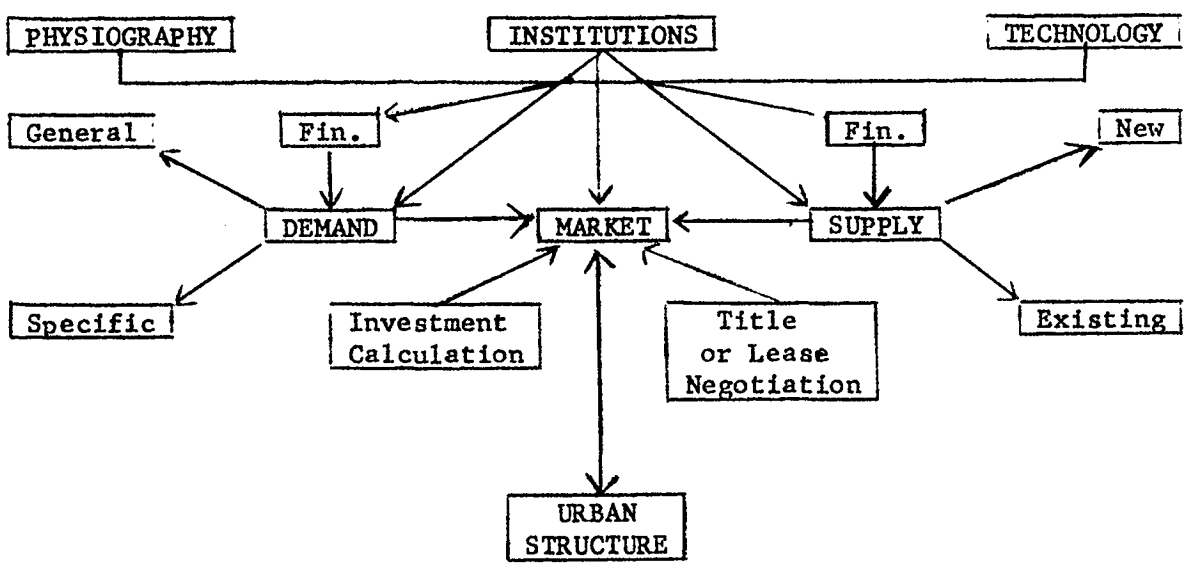
Material Change
None.

Commerce - Economics - Planning 520
Urban Land Economics

DIAGRAM

of

URBAN DEVELOPMENT FORCES



PUBLIC RECORD SYSTEMS

Basic reference sources:

1. Tract Index - organized by property descriptive (and location) (Index to Tract Index)
2. Grantor-Grantee Index - organized by seller and buyer (parties), or other party designation such as mortgagor-mortgagee.
3. Both systems cross-reference their entries to the other.
   (a) Tract index contains seller-buyer or other party designation
   (b) Grantor-Grantee Index contains property description

Organization of basic reference sources:

1. Tract Index Organization:
   (a) Lower right hand label indicating section by number, subdivision by name.
   (b) Column heads:

   Lot by number (if subdivided)

   Document number

   Instrument (Volume and page)

   Date of transaction

   Date of recording

   Grantor

   Grantee

   Description: 'Part of Lot 38;" and cross references, as with mortgage and satisfaction.

Organization of basic reference sources: (con't.)

2. Grantor-Grantee Index Organization:

(a) General Index -- Grantors:

1. Index (alphabetical) by surname, and firms and corporations

2. Column heads:

Document number

Instrument type

Time of reception

Grantors (surname and given names)

Grantees (surname and initials)

Description of real estate

Recording location (volume and page)

To whom delivered

(b) Grantee Index

1. Index (alphabetical) by surnames, firms and corporations

2. Column heads:

Document number

Grantees (surname and given name)

Grantors (surname and initials)

Recorded (location) volume and page

Instrument type

Basic instruments and location:

1. Basic references are guides to the instruments which represent the legal documentation of real estate transactions.

2. Deeds

(a) Photostats of documents located in separate deed volumes arranged by volume number and page.

(b) Deed types: warranty, (joint tenancy), quit claim, sheriff

(c) General information:

Parties (grantor, grantee)

Property description

Witnesses

Cash consideration (revenue stamps)

3. Mortgages

(a) Photostats of documents located in separate mortgage volumes arranged by volume number and page.

(b) Mortgage types: straight, amortized, purchase in only refinancing. Satisfactions of mortgages included in same volumes.

(c) General information:

Parties to mortgage

Face amount of mortgage, not outstanding amount.

Terms

Property description

4. Miscellaneous

(a) Photostats of several types of official documents relating to real estate transactions are bound in a series of volumes called "Miscellaneous."

4. Miscellaneous (con't.)

(b) Types of documents located in "Miscellaneous"

1. Land contracts (parties, amount, terms of payment, property description)
2. Terminations of Life and Joint Tenancies.
3. Easements
4. Releases (from tax and contractors liens)
5. Subdivision restrictions
6. Affidavits (relating to title)
7. Leases

ECONOMICS OF URBAN POLLUTION

I. Location, location, location is now environment ecology and effluent

   A. Population density and take-off principle

   B. Tolerate is both physical and mental

   C. Urban technology or environmental quality requires hardware, money, and a social mechanism for decisions and financing.

II. Technology of water and air quality is obsolete. Problem of water and air quality is interrelated.

   A. Water is used as vehicle for solid waste disposal but limited in capacity both in nature and in processed form.

      1. Primary treatment

      2. Secondary treatment

      3. Advanced treatment

      4. Sewer taps limit urban growth

      5. Recycling of sewage water in Denver

      6. Cost to transport fresh water or remove waste water

      7. Combining waste disposal with agricultural irrigation

      8. Recycling of sewage sludge as animal feed

      9. Grinding sewage and pumping solids

      10. Vacuum systems

      11. Oxidizing of sewage

   B. Water quality and solid waste

      1. Vacuum system to collect garbage

      2. Sanitary land fill and water table pollution

      3. Incineration, sterile fill, and recharged area

   C. Industrial waste such as sulphite liquor

      1. High volume, low quality by-products

      2. High value, low value by-products

III. Air pollution related to invention of fire and use of fossil fuels

   A. Economics of smoke control

B. Air pollution result of single family home and car

C. Electric capacity related to coal and natural gas

1. Purification of exhausts means contamination of water

2. Transmission problems mean inefficient land use

3. Inert gas and transmission line insulators

D. Atomic power, water pollution, and air pollution

IV. The gasoline engine and the private automobile

A. Paving for automobile destroys necessary green oxygen producers

B. Exhaust is major source of urban pollution

C. Public transportation or electric automobile requires urban density and compactness.

1. Modern location theory implies private mobility and inertia of convenience.

2. Environmental theory for urban economics requires public systems of mobility and consumer preference for active motion.

V. Privacy is a resource

A. The hierarchy of residential design layout for privacy

B. The counterpoint of natural environment

VI. Market economy does not work well to internalize cost of environment controls. Economics of controls differ for society as opposed to individual investor in the urban site.

A. Marginal benefit vs marginal cost for society

B. No benefit for cost incurred for investor

C. Competing claims for investment productivity

D. Some urban environment has benefit for developer

1. Good esthetics can be good merchandising

2. Environment undisturbed lowers cost

E. Legislative mechanisms to internalize cost

1. Uniform cost allocations shifted to consumer through price

2. Legal penalties

3. Incentive in the form of subsidies, tax relief or privilege

4. Education to create social approval or disapprovalfor individual actions.

F. Problem remains to define environmental quality required, rate of investment innovations, consumer education and political implementation.

To be discussed in final lecture on the next 20 years.

Lecture - Urban Land Economics - The Next 25 Years

I. Urban space problems may be grouped for discussion purposes into problem areas which are converging into a major crisis:

A. The decision process

1. Alternative courses of action
2. Values and objectives
3. Selection criteria

B. Unresolved mechanical problems leave alternatives undefined.

1. Population pressure - space users
2. Urban construction technology bottlenecks - space forms
3. The money constraint - space quantity and quality

C. Conversion of value to objectives through political action.

1. The urban political constraint - space control through community action.
2. Space control - a concensus on environment desired
3. Political participation and community scale

D. Luxury of democratic process versus efficiency of autocratic systems engineering.

II. Ambiguous alternative futures and technical constraints

A. Population pressure magnified physical urban problems and reduces opportunity to create intangible sense of community for value expression.

1. Population estimate - 250,000,000 by 1987 and 324,000,000 by 2015. 85% of increase in present metropolitan statistical areas.
2. A fall in the average number of children per family from 3 in 1957 to only 2 in 1965 reduced the forecanst in A-1 from 360,000,000 by the year 2000 and 500,000,000 by the year 2015!
3. Rising population - requires increasing economic base for jobs, increasing productivity as percentage of population at working age falls, further productivity increase to provide rising standard of living.

B. Technical constraints on urban engineering

1. Inadequate water resources to operate water flush sewage system and to absorb sewage contamination.

2. No acceptable engineering alternative to present sewage systems available for a mass market adaptation.

3. Solid waste disposal problem of industrial urban society requires restructuring of production and distribution system.

4. Air pollution is primarily attributable to fossil fuels in the family car and family home furnace, industrial techniques and electric power production.

5. Unless public accepts atomic fuel a fossil fuel shortage will complicate choice of energy system requiring a transportation alternative to the automobile which presently determines all urban planning.

6. Environment control will require some relocation of industry and and social dispersion with nuclei for public transportation terminals.

7. A codified residential building system and style wastes resources as well as land and capital.

8. Urban construction materials are finite. Resource conservation requires that we respect the resource rather than the user - Malthus still has something to say to an industrial society with rising standards of resource consumption per capita combined with increasing number of capitas.

C. Technological innovation is subject to the money constraint, both private and public.

1. Annual income of $5,200 a year required for minimum standards in good life suburbia in 1966 Department of Labor study for family of four. Half of Wisconsin households do not qualify for home ownership.

2. In Madison in 5 years useable land has increased 80% in value and construction costs more than 15%.

3. A national prefab of 920 sq. ft. sold new for $13,000 in 1960 including a $3,000 lot. Virtually the same house today by the same builder costs $16,500 with a lot costing at least $4,800.

4. Milwaukee-March 1967-$22,200 home lumber cost
   1967 - $2,920
   1968 - $3,469
   1969 - $4,712
   1971 - $3,895

5. Housing costs are outstripping purchasing power gains of the young family requiring new space. Consumer housing dollar: cost of money - 42¢
   cost of building - 33¢
   cost of land - 25¢

6. Public budgets are increasing. Madison net tax of 55 mills is increase of 7 mills over since 1969 of 48 mills an increase of over 14%.

   a. 40% of population in Madison is under the age of 9 and about 50% of our city budget goes for education. Average age in Madison is 10 years below the national average so Madison is a prototype for other communities in the 70's.

   b. Area serviced by city has tripled in 10 years so that lower density of population means public transportation cannot

operate at a profit, sewer is not immediately available, and public services are increasing in cost per capita.

b. Public budgets cannot build or service existing public plants so there is little public financing power to research and install innovations for air and water pollution, transportation, energy systems, inequities in education, or reconstruction of decaying areas.

III. Basic constraint is the value system of urban residents as the form and quality of future cities will reflect standards operating through the urban political structure.

A. Political division is between pro-urbanites and non-urbanites.

1. The pro-urbanites are those actively engaged in developing a community life, ironicallly the rich elite and the underprivileged minority.

2. The non-urbanite is the city dweller who is essentially disengaged and alienated from the process of creating a sense of community. This group is preoccupied by the insecurities of job, family, and home.

B. This working American in the $6,000 to $10,000 income group involves 20,000,000 American families and is the dominant political force in the center city.

1. Job, family, and nome are principle preoccupations.

2. Job security threatened by lay-off, strike, plant relocation, technical unemployment and government sponsored alternatives to unionism for upward mobility of the young or the unskilled.

3. New urban systems means obsolescence and excessive carrying cost via the Real Estate tax not to mention his need to relocate for job stability.

4. His sense of family is threatened by his ties to neighborhood,his peer group at work, and what the media tell him about the urban inner core and the generation gap.

C. Robert Wood further expressed this problem as follows:

"The future of city-building in modern America, turns less on the indignation of the disprivileged or the conscience of the exceptional than commonly supposed. The issue becomes increasingly how to dispose the working American to reorient his life from one of relative isolation and alienation and to find real aspirations in participation in a genuine community. How does he find new satisfaction in a modern metropolitan area akin to the old town atmosphere of mixed population - where butcher, blacksmith, baker, give life and character to the community."

IV. City building or urban reconstruction begins with the political science of converting value judgment to a concensus sufficient to provide long term decision criteria for public administrators and legislative direction.

A. On engineering questions it is a matter of education and public finance

1. The power of facts - SEWRPC
2. Public awareness - Earth Week or E-Day
3. Mechanisms to internalize cost - penalty, subsidy, value added tax on user

B. Reduction of insecurity generated resistance to change

1. Job security and guaranteed income
2. Insured homeowner equities to protect citizen savings from property value cycles
3. Reduction of barriers to vocational mobility and job accessability

C. Increase sense of community identification and participation

1. The subsidy of community heros, etc. via profession sports
2. Physical structuring of community to reduce scale of participation to affected groups - the Columbia plan and the Neighborhood Association
3. Heterogeneous schools and neighborhoods through land planning
4. More dependence on pedestrian and public transportation
5. Better financing for individual aspirations to have a small shop, family business, adult education to support the realization that individual fantasy can generate realizable goals and that to strive is to succeed

V. Careers in Real estate offer an opportunity to participate in the urban process, to have a tangible impact on urban enivronment with the realism imposed by cash solvency.

A. Real estate is the process of manufacturing of space of our environment - of building our own aquarium.

B. Progress is the degree to which we can control and establish equilibrium in our aquarium

C. The facts in this course will quickly be obsolete but functional systems will continue to evolve. The objective ot the course - to recurit you as a pro-urbanite.

STRUCTURE OF THE MORTGAGE MARKETS

520 Lecture Outline

PART #1: LECTURE OUTLINE

1. High cost of real estate requires heavy debt financing.

2. Debt financing requires a capital pool.

3. A capital pool requires savings.

4. Intermediary institutions convert savings to mortgages.

5. Intermediary institutions have five basic decision systems:

   A. A market system to compete for savings.

   B. A market system to compete for loans.

   C. A transaction preference system.

   D. A liquidity system.

   E. A safety system.

6. Historical development of these systems:

   A. The nature of a mortgage.

   B. Mortgage finance prior to the Great Depression.

   C. Reform of mortgage finance caused by the Great Depression.

   D. The present mortgage market structure related to lessons of history.

PART #2: CHARACTERISTICS OF MORTGAGES

1. Basic document a negotiable note.

2. Secondary document--a recorded lien on specific property.

3. High cost, durability, slow payout of real estate require long term debt.

4. Mortgage credit competes for capital from savings on basis of:

   A. Safety.

   B. Management costs.

   C. Liquidity.

   D. Yield.

PART #3: RATE OF MORTGAGE INTEREST & INVESTMENT RETURN

1. Contract rate is interest specified in contract.

2. Investor rate is contract rate minus servicing cost.

3. Prospective yield to investor is investor rate adjusted by discount or premium to set desired market yield.

4. Retrospective yield includes gains from prepayment penalties and discounts taken for loans not held to maturity.

PART #4: CHARACTERISTICS OF PRE-DEPRESSION MORTGAGES

1. Balloon payment at maturity.

2. Interest only each six months.

3. Low ratio--50% of appraisal market value.

4. Combined with high cost second mortgages.

5. Marketed directly to savers by mortgage banking companies.

PART #5: POST-DEPRESSION MORTGAGE REFORMS

1. For the saver:

   Insured savings accounts--FDIC and FSLIC
   New forms of Government security secured by mortgages
   Regulation of mortgage loan practices

2. For the borrower:

   Long term, high ratio loans
   Monthly payments including insurance, taxes, interest and principal
   Credit analysis on basis of income rather than assets
   Lower interest and financing charges

3. For the lender:

   New loan procedures
   Guaranty against loss on many types of loans
   Standardization of control and appraisal
   Secondary markets to provide geographic mobility or liquidity
   More liberal regulation--broader market participation
   Special programs for marginal borrowers

Lecture #11 Outline
Institutional Structure of Mortgage Lending

I. High cost of real estate requires heavy debt financing. Real estate capital represents 2/3 of the nation's wealth and almost 50% of this is mortgage.

A. A capital pool for loans requires assembly of small savings through intermediary financial institutions.

B. Dominant institutions have been insurance companies, banks, and savings & loan associations but in the last decade several new institutional intermediaries have been created.

C. Differences between instiutional intermediaries can be shown by comparison of five basic subsystems:

1. A marketing system to compete for savings.
2. A marketing to compete for loans
3. The transaction preference system of the policy makers
4. The liquidity system
5. The safety system

D. This lecture will relate historical development and reform affecting subsystems above.

II. Mortgage always associated with financial panic and brutality of capitalistic system.

A. Absence of federal real estate credit policy until after World War I. Cheap land was incentive for national development.

B. Mortgage business very local, provincial, and cyclical and subject to abuse by promoter.

C. Mortgage banking industry grew up after World War I to bring capital surpluses into contact with real estate development needs.

1. Prosperity made mortgages the blue chip investment for the middle class.
2. Savings pools were created by cooperative action (S & L's)

D. Flaws on mortgage instrument and lending procedures contributed to depression.

1. Short term 1-5 year notes, interest only
2. 50% loan ratios led to second and third mortgages to reduce down-payment.
3. Decline in prices made borrower unable to refinance or unwilling to pay.
4. Amount of loan depnded upon appraisal so competition took advantage of distorted appraisal.

E. Depression made it impossible to finance which accelerated foreclosures which meant intermediaries were iliquid.

1. Investors lost confidence in the mortgage form.
2. Savers lost confidence in intermediary

F. Collapse of orderly market gave liquid investors tremendous buying power.

III. 1930's were a remarkable period of successful federal reforms of the individual mortgage transaction and mortgage lending intermediary.

A. Immediate termporary relief through HOLC Home Owners Loan Corporation and Reconstruction Finance Corporation.

B. Protection of the saver through FDIC and FSLIC.

C. For the borrower - long term, monthly amortized loan including interest, principle, insurance and taxes at high ratios to eliminate need for large downpayments or second mortgages.

D. Protection for the lender by insuring the loan against default by the Federal Housing Administration.

E. Federal takeover of appraisal and credit analysis functions.

F. Regional mobility and liquidity through Federal National Mortgage Association (FNMA). Injection of federal funds into mortgage money supply through Fannie May.

G. Modification of lenders ability to compete for funds to favor savings & loans as a residential mortgage intermediary.

H. Depression taught federal government it could manipulate total supply of mortgage money available.

I. Control of money supply led to special credit for special housing problems.

1. Housing for veterans
2. Housing for college students
3. Housing for the elderly
4. Housing for low income groups
5. Housing for those displaced by urban renewal

J. While protecting special groups it learned it could manipulate housing quality or relate to other social issues or cause problems in:

1. Urban sprawl or land conservation
2. Social fragmentation or integration
3. Proliferation of the auto or public transportation
4. Inflation of labor costs or labor saving innovation

IV. Institutional innovation since 1960 brought about by tremendous demands for mortgage money and serious credit cycles.

A. For the saver looking for appropriate denomination, safety, and better yields.

1. Variety of thrift plan offered by banks and S & L's for deposits of alternative maturity dates.

2. Collateral trust bonds guaranteed by GMA.
3. Real estate mortgage trusts.
4. New bond series issued by Home Loan Bank, Freddie Mack, Fannie May and Ginnie May.

B. For the lender looking for a better spread between cost of savings and yield on mortgages with liquidity, safety, etc.

1. One bank holding companies with mortgage company.
2. Savings and loan sabings corporation.
3. Real estate investment truzs management company.
4. Home Loan Bank subsidy by federal government.
5. Private mortgage loan insurance.
6. Secondary mortgage market for both FHA and conventional loans.

C. The borrower enjoys more liberal terms due to:

95% loan ratio conventional loans.
2. Subsidized loan rates for low income families.
3. Subsidized loans for industrial development.
4. Piggyback loans to reduce points on multi-family projects via tandem plans through GMHA, and FMHA.

D. Capital requirements for real estate target of 26,000,000 new and rehabilitated housing by 1980 will require further reform of:

1. Consumer savings patterns
2. Reduction in non-durable financing
3. Modification of building cost
4. Further modification of credit delivery systems
5. Long term stabilization of the dollar.

NOTES ON ASSIGNED READINGS IN URBAN ECONOMICS BINDER

I. Housing and Mortgage Markets, Litterer and Lehman - The concern of their inquiry is whether a decline in the rate of increase in mortgage debt may not reduce building starts and thereby weaken prosperity, which in turn would weaken the ability of existing mortgage owers to meet their payments.

The article first relates housing demand to changes in the population composition of the ninth district of the Federal Reserve bank in Minneapolis for the 1955-58 period.

Population is related to households as the basic unit in housing needs and as equivalent to the number of dwelling units occupied. The authors then arrive at a high-low estimate of the annual increase in households and therefore a measure of necessary home building for a five year projection.

The article is then concerned with effective demand as indicated by rise in income per capita, family income, and the rise in liquid assets available to prospective home purchasers. Liquid assets present the first barrier to home ownership for many families have difficulty saving, although they may have non-liquid equities in other property.

The rise in the price of houses in the median price class must be related to the rise in median family income. In this case he showed a five year increase of $900 in family income but an increase of $3,450 in the median VA price and of $2,400 in the FHA price.

Effective demand is also influenced by shifts in consumer preferences and competition for consumer dollars. But these several sources of demand for housing do not account for the status of the existing stock of houses and its utilization. In the ninth district housing stock was generally older than true of the national supply so there was some demand from obsolesence and demolition.

Utilization was indicated by density of occupancy, which in this case showed a decrease, despite bigger families, indicating a trend in the population toward less crowded quarters. Moreover, units occupied were getting bigger in area. At the same time vacancy rates were declining indicating a smaller number of unoccupied units. A rise in the net vacancy rate of significant proportions presages saturation and a drop in building. In this particular case a very low vacancy rate with positive demand factors in the other areas mentioned suggested demand should remain high.

At that point the availability of mortgage credit will establish the limit on effective demand. The author's first note the rise in liberal mortgage credit encouraged by the FHA-VA program and the chief institutional mortgage investors, S&L's, commercial banks, and insurance companies.

The author's then touch on their basic question - as to whether the magnitude in absolute size and growth rate of residential mortgage debt would discourage further investment.

For one thing the rise in new mortgage loans was increasing more rapidly than housing starts should indicate as the average amount per mortgage increased. Mortgage funds were being used for non-housing purposes.

One reason the mortgage debt burden seems excessive is because critics confuse the total debt with actual cost, and the cost has been held to a lower rate of increase by extending the rate of amortization and low interest rates. The aggregate amount of debt reflects the increasing amount of debtors. The burden of housing cost was actually declining as the population spent a smaller proportion of real income for housing cost.

Therefore the author's maintain that the existing mortgage debt was secure because it still represented a conservative demand on available incomes and probably a conservative proportion of appraised property values due to inflation and better appraisal techniques. Moreover, lenders were willing to supply more funds for mortgage lending because the techniques introduced by FHA-VA had shown that lending could be safe and profitable

II. The role of credit in the real estate market, by Ernest M. Fisher is organized around (1) a description of the market, (2) a definition of the nature of credit, (3) observation of the role it plays in the market.

The real estate market deals in rights to real estate objects and these rights and objects are of infinite variety so that there is no uniform market. Discussion is limited to the single family residence.

Two advantages of home ownership is freedom from interference by a third party such as a landlord and protection against a rising market for rent. At the same time he assumes the risk of a falling market which means the collateral benefits or rights of ownership are worth less.

These benefits are pledged for credit so that credit can only be used within the limits of probable fluctuation in the value of the collateral.

Credit is purchasing power in the hands of the borrower and therefore its impact must vary with purchasing power of the dollar in the real estate market. The ability of the borrower to provide for the debt depends on the amount of his reasonably assured income, the amount of the loan, period of repayment, rate of interest, and the relationship of repayment demands to income receipts.

Fisher than shows the impact on the purchasing power of $25.00 a month where the loan term is stretched from 10 years to 30 years and the interest rate is dropped from 5% to 4%. As you will recall it meant a change of purchasing power from $2,357 to $5,236 or 120%.

In a buyer's market additional credit should not push housing prices toomuch higher for the buyer will tend to buy a better house rather than pay more for his previous choice. But in a seller's market an attempt to gain housing benefits for those without liquid assets by leberalizing terms will only accentuate the problem. Therefore credit policies must reflect housing demand characteristics.

CHART I

OUTLINE OF PROPERTY DEVELOPMENT LECTURE

I. DESCRIPTION OF PROPERTY DEVELOPMENT LECTURE

   1. VARIETY OF SCALE AND TYPE
   2. DEVELOPMENT AND MANAGEMENT
   3. CASH FLOW AND DECISION PROCESS

II. OUTLINE OF DEVELOPMENT DECISION AREAS

III. PROPERTY DEVELOPMENT AND TIME CONSTRAINTS

IV. PROPERTY DEVELOPMENT TRENDS

   1. NEW CAPITAL SOURCES
   2. SHIFT TO CONSUMPTION SYSTEM STRATEGY
   3. DEVELOPMENT OF NEW JOB OPPORTUNITIES

Chart II

The Development Process

A. SELECTION OF A GRAND STRATEGY--THE DEVELOPMENT OBJECTIVE

B. DETERMINATION OF EFFECTIVE DEMAND

C. DETERMINATION OF TECHNICAL FEASIBILITY

D. DETERMINATION OF LEGAL-POLITICAL FEASIBILITY

E. ETHICAL AND ESTHETIC SUITABILITY

F. FINANCIAL FEASIBILITY

CHART IV

I. HISTORICAL DIVISION AND SEPARATION OF DEVELOPMENT PROCESS BY FUNCTION

II. CONTEMPORARY TREND TO FULL SERVICE OF THE LAND USE CONSUMPTION SYSTEM

III. QUICK SALE VS. LONG TERM RELATIONSHIP WITH CONSUMER

IV. IMPLICATIONS --

1. BIGGER PROJECTS
2. LARGER CAPITAL ENTRY REQUIREMENTS
3. LARGER PERMANENT DEVELOPMENT ORGANIZATIONS
4. PUBLIC AGENCY--PRIVATE CORPORATION PARTNERSHIP

Business 520

City-County Building, 210 Monona Avenue

A great deal of information concerning real estate is a matter of public record because of the public interest associated with it. Most of the information about real estate located in Dane County (Madison is located in Dane County) can be found in the City-County Building, 210 Monona Avenue, Madison, Wisconsin. You will use some of this information for Projects I and II.

For your benefit, arrangements have been made for orientation at the various offices. It may be necessary for you to return to complete your data collection; these offices close sharply at 4:30 and are not open on weekends.

(1) City Assessor's Office (Room 101)

(a) Information:

- parcel number (for tax purposes).
- legal description (may not coincide word-for-word with the description on the deed, but describes the property nonetheless).
- assessed valuation--land, improvements, and total.
- tax (the current tax rate in Madison is $45 per $1,000 of assessed value).

(b) As a thumb rule (no exact guide) property in Madison is assessed at 60-65% of market value.

(c) Information items listed in (a) may also be obtained from the County Treasurer's Office.

(2) Building Inspector's Office (Room 109)

(a) Information:

- zoning.
- building permits.
- building inspections.

(b) Zoning information is presented on a zoning map.

(3) City Engineer's Office (Room 115)

(a) This office is in charge of and keeps records of all of the municipal utility systems in the City of Madison. These include water, sanitary sewer, and storm sewer.

(over)

PUBLIC RECORD SYSTEMS

Basic reference sources:

1. Tract Index - organized by property descriptive (and location) (Index to Tract Index)
2. Grantor-Grantee Index - organized by seller and buyer (parties), or other party designation such as mortgagor-mortgagee.
3. Both systems cross-reference their entries to the other.
   (a) Tract index contains seller-buyer or other party designation
   (b) Grantor-Grantee Index contains property description

Organization of basic reference sources:

1. Tract Index Organization:
   (a) Lower right hand label indicating section by number, subdivision by name.
   (b) Column heads:

   Lot by number (if subdivided)

   Document number

   Instrument (Volume and page)

   Date of transaction

   Date of recording

   Grantor

   Grantee

   Description: "Part of Lot 38;" and cross references, as with mortgage and satisfaction.

Organization of basic reference sources: (con't.)

2. Grantor-Grantee Index Organization:

(a) General Index -- Grantors:

1. Index (alphabetical) by surname, and firms and corporations

2. Column heads:

Document number

Instrument type

Time of reception

Grantors (surname and given names)

Grantees (surname and initials)

Description of real estate

Recording location (volume and page)

To whom delivered

(b) Grantee Index

1. Index (alphabetical) by surnames, firms and corporations

2. Column heads:

Document number

Grantees (surname and given name)

Grantors (surname and initials)

Recorded (location) volume and page

Instrument type

Basic instruments and location:

1. Basic references are guides to the instruments which represent the legal documentation of real estate transactions.

2. Deeds

(a) Photostats of documents located in separate deed volumes arranged by volume number and page.

(b) Deed types: warranty, (joint tenancy), quit claim, sheriff

(c) General information:

Parties (grantor, grantee)

Property description

Witnesses

Cash consideration (revenue stamps)

3. Mortgages

(a) Photostats of documents located in separate mortgage volumes arranged by volume number and page.

(b) Mortgage types: straight, amortized, purchase in only refinancing. Satisfactions of mortgages included in same volumes.

(c) General information:

Parties to mortgage

Face amount of mortgage, not outstanding amount.

Terms

Property description

4. Miscellaneous

(a) Photostats of several types of official documents relating to real estate transactions are bound in a series of volumes called "Miscellaneous."

4. Miscellaneous (con't.)

(b) Types of documents located in "Miscellaneous"

1. Land contracts (parties, amount, terms of payment, property description)
2. Terminations of Life and Joint Tenancies.
3. Easements
4. Releases (from tax and contractors liens)
5. Subdivision restrictions
6. Affidavits (relating to title)
7. Leases

1st 2 pages missing

III. Cities may grow by internal expansion. Either it creates new surface space or permits higher densit development of existing space.

A. Vacant land areas such a golf courses may be subdivided. Presently in Milwaukee a subdivider is building a golf course on the far north side, which, when, completed, he will trade for an existing golf course which is now in the middle of a well developed area. The city may encourage this kind of development by assesing the land holdings of the golf course at a value comparable to improved building lots in the area. The tax burden may become unacceptable to the golfer.

B. Reclamation of swamp areas, ravines, and lake shore are familiar to all of us. Northwestern Universit is acquiring land for a whole new campus by filling in the lake shore to the east for nearly a mile out into the lake. Pittsburg is filling in an ugly graving with a big research center, built like an inverted pyramid, over a roadway running along the bottom of the steep ravine. Fort Lauderdale has built a city of canals by pumping out a swamp to create dry building sites and dredge channels for pleasure boating.

C. Land use can be intensified by a succession of uses:
1. Structural alteration or conversion - for example changing the old mansion to a boarding house.
2. Structural replacement as we see on State St. - a two story MeNeal and Moore store is being replaced by a ten story dormitory and shopping complex.
3. Greater density is also possible by permitting taller buildings or vertical extension of present buildings. Only a few years ago the Campus Motel added a third story.

IV. Physical growth can also be explained by the fancy term polynucleation. This expression applies to the entire metropolitan area and is kind of an extension of the clusters found in early axial development.

A. One form of growth by polynucleation is the gradual integration of a city with its satellite. Madison has expanded to include Monona Village, Middleton, and earlier such sattelites as Shorewood, Nakoma, and Maple Bluff. Each of these areas had been a relatively complete suburban unit.

B. As these communities grow toward each other there results progressive coalescence, a coalescence which occurs quite quickly near the center of the metropolitan area and declines as one reaches the perimeter. The sprawl effect continually creates new nuclei which will eventually coalesce with the main city area.

C. Present planning theory makes great use of polynucleation on several scales of planning activit.

1. City planners try to encourage subdivision by neighborhood. They will analyze the direction of growth and select a section of land appropriate for redevelopment in the nest three to five years. After selecting the appropriate kind and quality they will plan suggestdd street patterns, locate parks and schools, and plan necessary facilitees as fire protection and storm water drainage. On the basis of this plan the city Budget will be designed to build the school, the park, or the water shed in this neighborhood before devdloping some other area. Developers will flock to the area where they can find building sites which enjo the advantages of city services and schools of the newest design.

2. Another phenomenon has been the appearance of private firm with land holding so large that they can build an entire town. They create the necessary economic base as they go along creating a semi independent satalite community. Last month House and Home magazide reported 75 such towns under construction. For example Centex is building a town northwest of Chicago around an industrial park which it also built. The Irvine ranch is building a town south of Los Angeles. To start a suitable economic base it has given the state of California 1,100 acres for a new University which is now under construction.

3. Each nucleus in a metropolitian planning district permits control of size and direction of development, prevention of sprawl and creation of better related more efficient land use.

4. Prehaps most important the space between these nuclei will be used for parks, forrest preserves Truck farming, expressway systems, reservoirs, and the continual problem of cemeteries.

5 These greenbelts should provide a visual break in the urban patern for esthetics - and the gloomy ones point out it creates a fire break to check fire storms.

6. While the nuclei concept means urbanized areas will become more extensive, actual land use for for areas which are not greenbelt will become more intensive. Subdividers now use small lots in cluster plans and planned unit developments which mix apartments and single family homes.

V. Lets change the subject slightly and return to the subject of the economic growth patern of cities. This is the subject of urban land use structure.

A. Urban land use structure is a geographic expression of economic competition for location, for situs patterns, the basis of the productivit of real estate space and use. Whoever finds a specific sight most useful, most productive, is willing to pay the best price for it. Unless the community has some objection as reflected in zoning and building laws, land will have a tendency to be sold to the highest bidder.

B. The arrangement of land uses within the physical urban area and the way these uses change will also represent the economic efficiency of the land use layout.

C. As you are aware there are three versions of theories, conceptual interpretations if you will, which have evolved from each other:

1. Concentric zone theory
2. Sector theory
3. Multiple nucleii theory

D. The idealized concept of concentric zone theory is a set of concentric circles around the core of the city. Topography would make breaks in the circles.

E. Within each circle land uses would be arranged by zone - RUR text is the current version of several which have been put forth:

Zone 1- Central Business District
Zone 2- Wholesaling and Light Mfg.
Zone 3- Low income housing merging into zones 2 and 4
Zone 4- Heavy Manufacturing
Zone 5-"Bright-light" area of neighborhood shopping center and higher dwelling units
Zone 6- Commuters zone

F. Each ring has independent growth power with an expansion effect and with transition problems. Consider the conversion of the Prospect Avenue area in Milwaukee. This transition also reflects the evolutionary stages of land use. Therefore there are zones which reflect:

(a) Age of structure (as in a tree)
(b) Condition of structure. (Rel. to age and transition)
(c) Value for smaller residential structures.
(d) Income and social status of residential occupants.

G. Of course the concentric zone theory has many flaws including:
   (1) Extremes of topographical technological and institutional interference make theory almost meaningless in some cases.
   (2) Assumption of a common center.
   (3) Disregard of effects of radials (street and transit) on land use pattern.
   (4) Represents version of a large and relatively mature city in terms of range and location of uses.
   (5) Commuters zone assumes an unincorporated ares. no provision for decentralized industry and commerce.

VI. The Sector theory can be described as establishing residential segments of the city by defining the areas according to value and borders defined by radials of street and transit systems or the contours of topography.

A. The pie shaped pieces of the city that result create an irregular periphery. The Sectors tend to gravitate toward a high rent sector.

B. At the same time this sector tends to drift outward toward high land, open country, or scenic lake shores. (Chicago Michigan Avenue- Madison Square trend)

C. As the pole of value moves, value transitions take place within sectors. A high rent sector can fan out on its periphery while gradually yielding to boarding house conversions at the core. In some cases, as in Georgetown, a high rent sector can gradually convert a slum area on it periphery.

D. Although the Sector thero, is primary residential it is adaptable to other uses. Industrial sectors may develop along railroad patterns and commercial areas may string out along arterials.

E. The theory is limited because generally, it deals with only one land use, although residential land land use is dominate in terms of area.

F. While commercial uses will fit into the pattern for a CBD or string development, it is a single center concept. As such it does not adapt to multi-nucleii patterns.

G. Another flaw is that high rent areas are not always the main pole of attraction. Many times middle income areas or and industrial park is a pole for peripheral develpment fanning.

VII. The mutiple nucleii theory picutres each land use as an irregular shaped area representing points of maximum concentrationof use. One use may merge into the next.

A. Each single use may have many different points of nucleation within the urban structure. The theory is flexible because it will account for:

1. City use patterns at different stages of city area growth.
2. For a metropolitian area it will picture the coalescing of the central city with satalite communities.
3. The pattern will reflect influences of topograph and institutions on the land use pattern. It may cover as many uses as you may define a point to include.

B. However this theory does not explain ecomomic relationships of the various nucleii or the causal sequenne of development. The theory produces a pattern which is weak on transit or radio effects.

C. All three theories are inadequate for a number of reasons:

1. Use classification of an area reflects only one of the following factors. obscuring desirable hetero geneity: FIRST FLOOR USE -INTENDED USE or DOMINATE USE.
2. No provision is made for the large land areas committed to public uses such as streets. parks schools, churches, and hospitals.
3. It is difficult to recoginze land uses in transition where land use is classified as is no.1.

VII. Economic patterns of land use structure are becoming less sharply defined as has been true of cities in the past.

A. During the semester we will find that zoning of land uses is becoming more flexiable. More sophisticated. The public will accept more mixed land uses as compatible.

B. Sociologists, Marketing experts, and real estate people are beginning to realize heterogeneous of land can be more stimulating more condusive to mental health, More efficient, and more natural.

C. Future urban development may be better related to a total community plan as planning departments make themselves known and effective.