Sprawl/Sustainability/Planning

TSC 220x
2/15/10
Sprawl?
Sprawl

- Popular term
- Derogatory
- Hard to define
Sprawl

• “The awkward spreading out of limbs of either a man or a community. The first is a product of bad manners, the second of bad planning.” (Charles Abrams, 1971)

• “Sprawl is a pattern of land use in an Urban Area that exhibits low levels of some combination of eight distinct dimensions: density, continuity, concentration, clustering, centrality, nuclearity, mixed uses, and proximity.” (Galster et al, 2001)
Sprawl

• Pattern: existing built environment
• Process: unchecked development over time
• Cause: externalities
• Consequence: fragmented decisions
Sprawl, Sustainability, Planning

• What is the connection?
Change in Motor Fuel Price Relative to Other Goods
1960-2001 (1984 = 100)

Sprawl, Planning, & Sustainability

- Constructing place out of:
  - Consumption (23% of global petroleum; 21% of total energy consumption)
  - Mobility (765 vehicles/1000 people; 1.78 vehicles per HH; 91% of personal travel by personal vehicle)

USEIA, 2008; USDOT, 2003
# Potential Costs of Sprawl

TABLE I

**TYPES OF COSTS ANALYZED**

<table>
<thead>
<tr>
<th>Economic Costs (capital and operating)</th>
<th>Environmental Effects</th>
</tr>
</thead>
<tbody>
<tr>
<td>Residential (capital only)</td>
<td>Air Pollution</td>
</tr>
<tr>
<td>Open Space/Recreation</td>
<td>Water Pollution, Erosion</td>
</tr>
<tr>
<td>Schools</td>
<td>Noise</td>
</tr>
<tr>
<td>Streets and Roads</td>
<td>Vegetation and Wildlife</td>
</tr>
<tr>
<td>Utilities (sewer, water storm drainage, gas, electric, telephone)</td>
<td>Visual Effects</td>
</tr>
<tr>
<td>Public Facilities and Services</td>
<td>Water and Energy Consumption</td>
</tr>
<tr>
<td>police, fire, solid waste collection</td>
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<tr>
<td>library, health care, churches,</td>
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<tr>
<td>general government</td>
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<tr>
<td>Land</td>
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*RERC, 1974*
View of Savannah, as it stood the 29th March, A.D. 1734.

To the Hon. the Trustees for establishing the Colony of Georgia in America.

This View of the Town of Savannah, is humbly dedicated by their Eminent Servant.

Obed and most obedient Servant.

vve de Savane dans la Georgia.

Giler Gorden.
Gallatin Reports to Congress

- 1808 Sec. of Treasury Albert Gallatin presents report to Congress addressing transportation problems afflicting the nation
- Suggests national system (federally funded) of roads and canals
  - Blueprint: Intracoastal waterway; Erie canal
### Miles of Railroads in Operation

<table>
<thead>
<tr>
<th>Miles of Operation</th>
<th>Passengers Carried</th>
<th>Freight Carried</th>
<th>Revenue per Mile</th>
<th>Cars in Service</th>
<th>Year</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>50,000</td>
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<td></td>
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<tr>
<td>100,000</td>
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<tr>
<td>150,000</td>
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<tr>
<td>200,000</td>
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<tr>
<td>250,000</td>
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</tbody>
</table>
Turn of the Century

- Industrialization
- Transportation
- Immigration
- Population
- Pollution
- Density

Changing conditions in the American city
GARDEN-CITY

AGRICULTURAL LAND 5000 ACRES
AGRICULTURAL COLLEGE
NEW FORESTS
NEW FORESTS

CITY, 1000 ACRES
CHILDREN'S
COTTAGE HOMES

LOW PASTURES
 ARTESIAN WELLS
 BRICKFIELDS
 RAILWAY STATION

Houses and Gardens
Central Park

Asylums for Blind and Deaf
Farm for Epileptics

Convolvescent Home
Convalescent Home

SCALE
0 1/4 1/2 3/4 MILE

N.B.
Diagram only.
Plan cannot be drawn until site selected.
FOREST HILLS GARDENS
DESIGNED FOR THE SAGE FOUNDATION HOMES CO.
HOME OF MODEL T

Here at his Highland Park Plant, Henry Ford in 1913 began the mass production of automobiles on a moving assembly line. By 1915 Ford built a million Model T’s. In 1925 over 9,000 were assembled in a single day. Mass production soon moved from here to all phases of American industry and set the pattern of abundance for 20th Century living.
Town of Tomorrow at the New York World's Fair

This village of fifteen model houses is located directly in front of the Crane Exhibit where the latest developments in plumbing and heating equipment and valves and fittings are on display.
The Clay Committee presents its report with recommendations concerning the financing of a national interstate highway network to President Eisenhower on Jan. 11, 1953. Standing behind the president are (from left) Gen. Lucius Clay, Frank Turner, Steve Betchel, Sloan Colt, William Roberts, and Dave Beck.
1956

• Federal-Aid Highway Act
  – Signed into law June 29th (Ike was in the hospital)
• Allocated $25 billion over a 12 year period to build an expanded version of the 41,000 mile system envisioned by the 1944 act - to be completed by 1972
  – As of 2006 system was just over 46,000 miles and cost about $128 billion (in 1956 $)
  – Federal share of planning and construction costs was 90%
Citizen Consumer

• Consumption emerges as important organizing identity in early post-war life
  – Production reverts to consumer goods
  – Consumption of goods as civic responsibility (does this sound familiar?)
  – Full-scale Fordist production
    • Mass goods for mass market
    • Levittowns
From Modest to McMansion

The average square footage of a new single-family home

<table>
<thead>
<tr>
<th>Year</th>
<th>Square Footage</th>
</tr>
</thead>
<tbody>
<tr>
<td>1950</td>
<td>983 sq. ft.</td>
</tr>
<tr>
<td>1970</td>
<td>1,500 sq. ft.</td>
</tr>
<tr>
<td>1990</td>
<td>2,080 sq. ft.</td>
</tr>
<tr>
<td>2004</td>
<td>2,349 sq. ft.</td>
</tr>
</tbody>
</table>

Source: National Association of Home Builders (Housing Facts, Figures and Trends for March 2006)
Slum Clearance

DEMONSTRATION OF BLIGHT

I land use
II condition of existing structures
III age of existing structures
IV land coverage
V existing zoning
VI commercial obsolescence
VII residential obsolescence & tenant data

AGE OF EXISTING STRUCTURES

The existing buildings are old and 80% have been in use at least 30 years. Many are considered ruinous, some commercial structures date from the 1840’s and 1850’s and several residential structures even the early 1800’s.

The balance of the buildings, or the relatively recent construction, consists of the New York University School of Commerce, apartment buildings and the garage and other accessory buildings, but these were all in existence by the late 1920’s.

Age contributes to obsolescence in these commercial structures because it prevents their adaptability to the requirements of present day business.
Detroit

- 1900 – 1940 population grows by 468%
  - 285,000 to 1,600,000
- 1943 Riot
- 1950 – 1960 population falls by 10%
- 1967 Riot
- 1970 to 2000 population falls by 37%
  - 1,500,000 to 950,000
Detroit, 2008

- 808,398 population
  - 33% poverty; 48% of children
- 274,853 HH
  - 21% HH no vehicle available
- 367,789 HU
  - 25% HU vacant
Detroit

• “This summer the editors at Time Inc. did something a little out of the ordinary for us or, frankly, for anybody: we bought a house in Detroit. As houses go, it's nice enough — three stories, five bedrooms, 3½ baths with a yard and a basement. We paid $99,000, about $80,000 above the average price of a house in the city limits.

• Why would we ever do such a thing? Because we believe that Detroit right now is a great American story. No city has had more influence on the country's economic and social evolution. Detroit was the birthplace of both the industrial age and the nation's middle class, and the city's rise and fall — and struggle to rise again — are a window into the challenges facing all of modern America. From urban planning to the crisis of manufacturing, from the lingering role of race and class in our society to the struggle for better health care and education, it's all happening at its most extreme in the Motor City.” – John Huey, Time, Sept 24, 2009
Comparing Detroit to three other major cities

- **SAN FRANCISCO**
  - Population: 751,682
  - Square-mile area: 46.69

- **BOSTON**
  - Population: 581,616
  - Square-mile area: 48.43

- **MANHATTAN**
  - Population: 1,537,195
  - Square-mile area: 22.96

**Boston, Manhattan, San Francisco TOTALS**
- Population: 2,870,493
- Square-mile area: 118.08

Source: University of Detroit Mercy

Detroit Free Press
“On July 28, 1967, the President of the United States established this Commission and directed us to answer three basic questions: What happened? Why did it happen? What can be done to prevent it from happening again?”

“To respond to these questions, we have undertaken a broad range of studies and investigations. We have visited the riot cities; we have heard many witnesses; we have sought the counsel of experts across the country.”

“This is our basic conclusion: Our nation is moving toward two societies, one black, one white--separate and unequal”. – Report of the National Advisory Commission on Civil Disorders, 1968
Population Loss/White Flight

• Detroit
  – 1950: 1,849,000 (1,545,000 white)
  – 1990: 1,027,000 (222,000 white)

• St. Louis
  – 1950: 856,000 (702,000 white)
  – 1990: 396,000 (202,000 white)
Suburban Population Growth

• Livonia, Michigan
  – 1950: 17,000 (99% white)
  – 1990: 100,000 (99% white)

• St Charles, Missouri
  – 1950: 14,000 (97% white)
  – 1990: 54,000 (96% white)
1950 to 2000

- California (220%)
- Texas (170%)
- Florida (477%)
- Georgia (138%)
- Arizona (585%)
- Colorado (225%)
- Nevada (1148%)
Population Distribution by Region: 1900 to 2000

(Percent)

Source: U.S. Census Bureau, decennial census of population, 1900 to 2000.
Population Density by Region: 1900 to 2000

People per square mile of land area

Source: U.S. Census Bureau, decennial census of population, 1900 to 2000.
Mass suburbanization brought the middle class into visible contact with the processes of land development (the bulldozer).
1972 Clean Water Act

- Designed to clean the nation’s rivers and streams, with particular attention on urban watersheds
- Dramatically expanded federal funding for municipal water treatment facilities
1970/7 Clean Air Act Amendments

- Established ambient air quality standards for the nation
- Identified key pollutants:
  - Lead, hydrocarbons, carbon monoxide, nitrogen oxides, ozone
- Directed at cleaning up urban air (where concentrations of pollutants highest)
  - Tied air quality to regional transportation planning
Growth in Passenger Miles of Travel and Associated Factors, 1975-1999 (U.S.)
Smart Growth

Master Plan Goals:
1. Direct new development to the existing core areas to the greatest extent possible.
2. Develop standards and bylaws that result in more sustainable development of existing green space.
3. Facilitate sustainable increases to affordable housing stock.
4. Revitalize downtown area with flexible zoning provisions that focus on Transit Oriented Design.