Urbanization and globalization

Stuart H. Sweeney
Department of Geography
University of California, Santa Barbara

Winter 2004

Overview

- P/D/U/E in the news
- Urbanization processes (R/U)
- Settlement systems (single country, multi-city)
- Globalization (multi-country, multi-city)

Urbanization processes

- Trends

Urbanization processes:  Trends

- modern urbanization – 1800 to present
  - acceleration in urban / rural balance

Urbanization processes:  Trends

- hunter-gatherer — agricultural revolution
- villages
- ‘urban’ is feature of the settlement system but is not the dominant form

Population
- processes (B,D,M)
- patterns

Development
- processes
- patterns

Urbanization
- processes
- patterns

Environment
- processes-L,H,A,B
- patterns

P/D/U/E interactions

Table 8.1 Population of the world’s ten largest metropolitan areas over the last millennium

<table>
<thead>
<tr>
<th>City</th>
<th>1500</th>
<th>1800</th>
<th>1900</th>
<th>2000</th>
</tr>
</thead>
<tbody>
<tr>
<td>London</td>
<td>1.10</td>
<td>6.5</td>
<td>17.8</td>
<td>28.8</td>
</tr>
<tr>
<td>New York</td>
<td>0.86</td>
<td>4.2</td>
<td>14.0</td>
<td>17.8</td>
</tr>
<tr>
<td>Paris</td>
<td>0.80</td>
<td>3.3</td>
<td>17.5</td>
<td>28.8</td>
</tr>
<tr>
<td>Mumbai</td>
<td>0.80</td>
<td>3.3</td>
<td>17.5</td>
<td>28.8</td>
</tr>
<tr>
<td>Tokyo</td>
<td>0.09</td>
<td>2.7</td>
<td>14.0</td>
<td>14.0</td>
</tr>
<tr>
<td>Bombay</td>
<td>0.20</td>
<td>0.10</td>
<td>0.01</td>
<td>0.01</td>
</tr>
<tr>
<td>Shanghai</td>
<td>0.20</td>
<td>0.30</td>
<td>0.40</td>
<td>0.50</td>
</tr>
<tr>
<td>Lagos</td>
<td>0.13</td>
<td>1.5</td>
<td>13.5</td>
<td>13.5</td>
</tr>
<tr>
<td>Manilla</td>
<td>0.13</td>
<td>0.39</td>
<td>1.4</td>
<td>1.4</td>
</tr>
<tr>
<td>Osaka</td>
<td>0.11</td>
<td>0.38</td>
<td>1.4</td>
<td>12.4</td>
</tr>
<tr>
<td>Beijing</td>
<td>0.10</td>
<td>0.38</td>
<td>1.4</td>
<td>12.4</td>
</tr>
</tbody>
</table>

Population in millions
Urbanization processes: Trends

<table>
<thead>
<tr>
<th>Location</th>
<th>Period</th>
<th>Population</th>
<th>Comment</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rome</td>
<td>A.D. 100</td>
<td>650,000</td>
<td>World's largest city</td>
</tr>
<tr>
<td></td>
<td>600-800</td>
<td>50,000</td>
<td>Barbarian invasions</td>
</tr>
<tr>
<td></td>
<td>900</td>
<td>40,000</td>
<td></td>
</tr>
<tr>
<td></td>
<td>1000</td>
<td>35,000</td>
<td></td>
</tr>
<tr>
<td></td>
<td>1377</td>
<td>17,000</td>
<td>Pope returned from exile</td>
</tr>
<tr>
<td></td>
<td>1400</td>
<td>33,000</td>
<td></td>
</tr>
<tr>
<td></td>
<td>1500</td>
<td>35,000</td>
<td></td>
</tr>
<tr>
<td></td>
<td>1600</td>
<td>109,000</td>
<td></td>
</tr>
<tr>
<td>Alexandria</td>
<td>730</td>
<td>216,000</td>
<td>Sixth largest in world</td>
</tr>
<tr>
<td></td>
<td>800</td>
<td>100,000</td>
<td>After several sieges</td>
</tr>
<tr>
<td></td>
<td>1365</td>
<td>40,000</td>
<td>Plundered by Cypriotes</td>
</tr>
<tr>
<td></td>
<td>1400</td>
<td>40,000</td>
<td>&quot;Heaps of ruins&quot;</td>
</tr>
<tr>
<td></td>
<td>1634</td>
<td>30,000</td>
<td></td>
</tr>
<tr>
<td>Mexico City</td>
<td>1500</td>
<td>80,000</td>
<td>Spanish conquest leader</td>
</tr>
<tr>
<td></td>
<td>1524</td>
<td>30,000</td>
<td>After destruction by Spaniards</td>
</tr>
<tr>
<td></td>
<td>1600</td>
<td>75,000</td>
<td>Rebuilt</td>
</tr>
<tr>
<td>Baghdad</td>
<td>765</td>
<td>400,000</td>
<td>Caliphate established in A.D. 780</td>
</tr>
<tr>
<td></td>
<td>932</td>
<td>1,100,000</td>
<td>World's largest city</td>
</tr>
<tr>
<td></td>
<td>1000</td>
<td>125,000</td>
<td>Declining power of Caliphate</td>
</tr>
<tr>
<td></td>
<td>1298</td>
<td>30,000</td>
<td>Sacked by Mongols</td>
</tr>
<tr>
<td></td>
<td>1400</td>
<td>90,000</td>
<td>Timurid attacks; city sacked in 1401</td>
</tr>
<tr>
<td></td>
<td>1638</td>
<td>30,000</td>
<td></td>
</tr>
</tbody>
</table>

Urbanization processes: Types of cities

- Why do cities exist?
  - Trading cities
  - Market cities
  - Industrial cities
  - Other pure functions (government, religion, outpost)

Urbanization processes: Two-sector model (R→U)

Push factors: (Why leave the rural sector?)

1. High birth rates & surplus labor
   - safety net, land tenure laws, famines
2. Labor saving technologies
3. Consumer tastes (parity ratio for agricultural sector)
4. Economic viability of “small” farms
   - low prices, price fluctuations, government intervention, mechanization and credit crunch.

Pull factors: (What is the utility of urban areas?)

1. Agglomeration
   - internal versus external scale economies
2. City as engine of growth (base multiplier concept)
   - employment is self-reinforcing (positive feedback)
3. Decision context of potential rural to urban migrant
   - choice under uncertainty
   - expected probability of employment in rural versus urban
   - expected wage rate in rural versus urban
   - vagaries of youth and perceived immortality
Urbanization processes: Two-sector model (R→U)

Economic context: urbanization & sectoral composition

1. Primary sector: agriculture, mining, lumber, livestock
2. Secondary sector: manufacturing
3. Tertiary sector: services
4. Quaternary sector: research & administration

Urbanization processes: Balanced urbanization / complexity

- What types of problems are related to urbanization?
- Problems with rapid growth (in-migration)
  - Ghettos / shanty towns
  - urban services and infrastructure
  - perception and migration decisions
- Problems of advanced urban areas
  - urban core (CBD)
  - out-migration
  - decreasing returns to scale
  - crime, congestion, pollution
Settlement Systems: Patterns

- Settlement ‘chains’ = rank size distribution
- Rank size rule
  a. \( P(\text{rank}) = P(1)/\text{rank}, \) let rank=r
  b. \( P(r) = a r^{-b} \)
  c. \( \ln(P(r)) = \ln(a) - b \ln(r) \)
- Examples
- Implication: binary and primate distributions

Hypothetical perfect rank size distribution.

\( y = 2E+07x^{-1} \)

\( R^2 = 1 \)
Settlement Systems: Rank size rule

Empirical distribution for U.S. metro areas

Rank-size Distribution of 1990 MAs

\[ y = 5 \times 10^7 x^{-1.0967} \]
\[ R^2 = 0.9795 \]

Empirical distribution for Oregon places

Oregon: Rank-size Distribution of 1990 Places

\[ y = 3 \times 10^6 x^{-1.5545} \]
\[ R^2 = 0.805 \]

Settlement Systems: Central Place Theory

- **Centrality**
- **Threshold**: minimum market size needed to earn profit
- **Range**: max. dist. consumer is willing to travel to purchase product.

Threshold

Range

Delivered Price

Distance

Demand

Price

Demand

Distance

Settlement Systems: Central Place Theory

- Excess Profits → Spatial Competition

- Central place hierarchy, ordering, nesting

Settlement Systems: Central Place Theory

- Excess Profits → Spatial Competition

- Central place hierarchy, ordering, nesting
Excess Profits Spatial Competition

Central place hierarchy, ordering, nesting

Threshold

Range

Settlement Systems: Central Place Theory

Assumptions:
1. Uniform spatial distribution of population/income
2. Isotropic transport surface
3. Consumers patronize nearest store
4. No excess profits (range=threshold)

Given 1-4, spatial equilibrium yields *hexagonal* trade areas
Central Place Theory (cont.)

- Relax Assumptions:
  > Population/income variation
  > Transport surface
  > Consumer behavior
  > Profits