“Metropolitan Structures Around the World”

What is common? What is different? What relevance to Marikina in the context of Metro Manila?

Marikina,
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Metropolitan Structure, density and livability

There are three aspects to the quality of life or “urban livability” of a large city:

1. The efficiency of its spatial structure
2. The consistency between its infrastructure, its regulations and its spatial structure
summary

• A. Metropolis seen as labor markets

• B. Densities, Land use regulations, Poverty and Metropolitan Structure
A. Metropolis as labor markets

- Cities urban structures have been shaped by economic forces, they have been very seldom the result of design.

- The raison d’être of large cities is the size of their labor and consumer markets
Cities spatial structure

• The spatial structure of cities matters

• The spatial structure of a city can be defined by:
  – The spatial distribution of population
  – The pattern of daily trips
Distribution of population in Hong Kong
Spatial distribution of population in 7 major metropolis represented at the same scale.

- Jakarta: 14,908,000 people, 2,942 km²
- Moscow: 8,543,000 people, 470 km²
- Shanghai: 7,397,000 people, 244 km²
- London: 6,626,000 people, 1,062 km²
- Berlin: 4,212,000 people, 1,176 km²
- Paris: 7,877,000 people, 893 km²
- New York: 10,752,000 people, 2,674 km²
Metro Manila spatial distribution of population shown in 3 dimension
THE MOST COMMON URBAN SPATIAL STRUCTURES

A

The Classical Monocentric Model,
- strong high density center with high concentration of jobs and amenities
- radial movements of people from periphery toward center

B

The "Urban Village" Model
- people live next to their place of employment
- people can walk or bicycle to work
- this model exists only in the mind of planners, it is never encountered in real life

C

The Polycentric Model
- No dominant center, some subcenters
- Jobs and amenities distributed in a near uniform manner across the built-up area
- Random movement of people across the urban area

D

The Composite Model
- A dominant center, some subcenters
- Simultaneous radial and random movement of people across the urban area

"Order Without Design" Bertaud 2006 (unpublished)
City spatial structures and densities

- Urban densities are key factors in determining cities’ livability
- Urban Densities are not created by idiosyncratic urban design considerations but are linked with
  1. the spatial structure of the city and,
  2. the interaction between Government action (regulations, infrastructure investments and taxation) and the real estate market.
- Average built-up densities vary widely across the main cities of the world, they are the product of government action and markets, which reflect cultural preferences and resources.
Comparative Average built-up densities

Metro Manila density about 150 p/ha
Marikina density about 200 p/ha

source: “Order Without Design” Alain Bertaud, 2003
The Built-up Area of Atlanta and Barcelona Represented at the Same Scale

**Atlanta:**
- 2.5 million people (1990)
- 4,280 km² (built-up area)

**Barcelona:**
- 2.8 million people (1990)
- 162 km² (built-up area)
Density profiles

- The profile of densities is key to understanding a city’s structure and its livability.
- Cities where the land market works reasonably well have a common structure.
Density Profile of 9 cities
Density profile of 9 cities (same vertical scale)
Density profile of 3 cities without land markets

**Brasilia**

**Moscow**

**Johannesburg**
B. Densities, Land use regulations, Poverty and Metropolitan Structure

- Land use regulations have 2 contradictory effects on densities and land price:

1. Direct effect is to decrease densities and land price: minimum plot size, maximum floor area ratio, minimum road width; all contribute to a decrease of densities and price.
2. But an indirect effect of regulations could increase densities: some regulations might decrease the supply of land, therefore pushing land price up and as a consequence densities.
Density and land price
Effect of Land use regulations on the location of the poor:

1. Land is always affordable to all income groups. For a given price of land, different income group will adjust their consumption of land (and therefore density).

2. Land use regulations always implies establishing maximum density thresholds in specific locations, these thresholds are typically lower than the one reached by an unregulated market.

3. Land use regulations, when enforced, reduce the locational choice of the poor to the areas where the affordable density is lower than the permitted density.

4. Land use regulations, when not enforced, fragment land markets into two sectors: the formal and the informal market. Poor households pushed by regulations into the informal market loose the normal contractual guarantees given by the State to its citizens. As a consequence, they have to pay more for land and infrastructure for a lower level of service, and they do not have access to the formal financial markets.
Typical Land price profile

Variation of the Price of land with distance to center

Distance from city center (km) vs. Land Price ($/m^2)
Affordable densities for 2 income groups

Densities corresponding to a fixed expenditure for land when distance from the city center varies

- Densities corresponding to a consumption of land worth $5,000
- Densities corresponding to a consumption of land worth $20,000
- Price of land
Zoning density profile

Densities corresponding to a fixed expenditure for land

- Densities corresponding to a consumption of land worth $5,000
- Densities corresponding to a consumption of land worth $20,000
- Price of land

Upper limit imposed on density by zoning regulations
The case of Metro Manila

• Metro Manila is a high density polycentric city
• Public transport will be always difficult to operate in the metropolitan area because of the dispersion of origins and destinations of trips
• On the other hand, the high density make it difficult to provide enough road space and parking for private cars;
• The system of jitneys seems to be the most efficient compromise between mass transit and private cars
Relationship Between Spatial Structure and the Effectiveness of Public Transport

- Individual car is the only effective mean of transportation
- Dominantly Polycentric
  - Atlanta
- A combination of public transport and individual cars are effective means of transportation
  - Jakarta (Jabotabek)
  - Paris
- Public transport is the only effective mean of transportation
  - Teheran
  - Shanghai

Very Low Density — Very High Density
The role of urban planners is to make use of Planning tools to meet development objectives set up by Municipality.