



Advanced Global Geography 12

Advanced Placement Human Geography



Location Theories and Models

“Any attempt to establish a model for the location of secondary industry runs into complications much greater than those confronting von Thünen, who dealt with primary industries (agricultural land use) The location of secondary industries depends to an important extent on human behavior and decision making, on cultural and political as well as economic factors, even on intuition and whim. Since models must be based upon assumptions, economic geographers have to assume that decision makers are trying to maximize their advantage over competitors, that they want to make as much profit as possible, and that they will take into account **variable costs**.... .

In calculating efforts to maximize advantages, one of the key issues is the **friction of distance**. This refers to the increase in time and cost that usually comes with increasing distance. If a raw material has to be shipped hundreds of miles to a factory, rather than being manufactured right next door, the friction of distance becomes apparent.” (our text - deBlij & Murphy page 370 - 371)

(Least Cost or Weberian Theory)

Alfred Weber

Theory of the Location of Industries (1909)

Economic Geographer

German

1868 – 1958

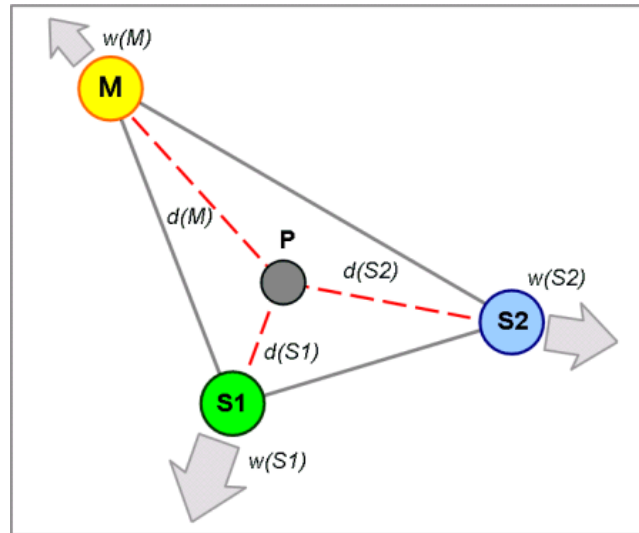
Optimum location in terms of minimum cost of 1) Transport, 2) Labour Costs, 3)

Agglomeration (clustering of production activities for mutual advantages)

Set of assumptions in order to minimize the complexities of the real world

- most raw materials are localized, i.e., found only in certain locations and the location(s) is (are) known --e.g., energy
- labour is found only in certain location (Not mobile), fixed wage, unlimited quantity
- markets are fixed known locations
- the cost of transporting raw material, energy, and finished product is a direct function of weight and distance: the greater the distance, the greater the cost; the greater the weight the greater the cost.

- perfect economic competition: there is no monopoly for any producer; many sellers and buyers.
- **isotropic plain** (physically, politically and culturally uniform plain)
- ? industrialists are *economic operators*: interested in minimizing cost and maximizing profit
- ? some raw materials are **ubiquitous** (found everywhere, e.g., water)



he recognized general factors such as transportation costs and special factors such as perishability of food

decided that it was transportation cost that was the critical determinant of regional industrial location

different from von Thünen's model - farming took place over a large area while Weber's model considered points

Criticisms:

- did not account for variation over time (changing labour & land costs) (substitution principle)
- model determined one point (site) as most profitable, it might have be the same over a larger area
- didn't take into account taxation policies and changes in consumer demand

Market Area Analysis

A. Locational Interdependence Harold Hotelling (1895 – 1973) (1929):

This is a **variable REVENUE analysis model**, as opposed to **Weber's variable COST analysis model**.

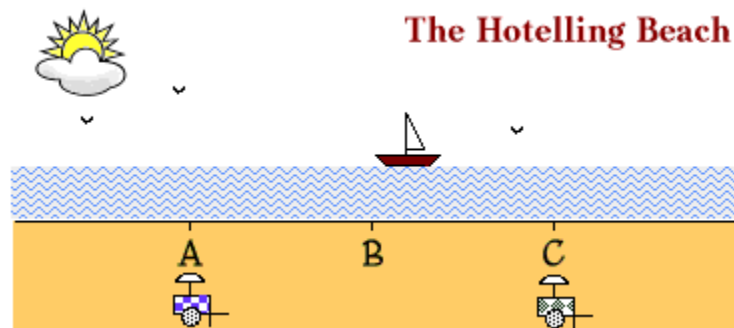
Market area analysis models are concerned with profit maximization, not cost minimization.

location that generates greatest profit will be preferred
this can be determined by identifying production costs at various locations, and then taking into account the size of the market area that each location is able to control.

producers/suppliers will monopolize as many consumers as possible
they seek **SPATIAL MONOPOLY**, hence **LOCATIONAL INTERDEPENDENCE**.

Hotelling's Assumptions:

- production costs are uniform,
- product selection is uniform,
- demand is uniform



Ice Cream Vendors Interdependent Location in Linear Market.

B. Profit Maximization Approach

August Lösch (1906-1945) German Economist

1940 *The Spatial Organization of the Economy*
The Economics of Location (English 1954)

Losch's approach is considered the most important market area analysis

Assumptions

- isotropic plain
- population evenly distributed
- identical preferences among population
- consumer paid cost of shipping product (as distance rose, so did cost)
- **people acted economically rationally**
- new production plants could enter market if profitable,

According to August Losch, the correct location of a firm lies where the net profit is greatest. The net profit is the difference between sales income and production costs.

-Entrepreneurs will prefer a location where the difference is greatest.

-It is very difficult to pinpoint a single "best" location since it is possible to replace a declining amount of one input (say, Labour) by another (say, automated technology) or increase transport cost while reducing land rent (**Substitution Principle**). With substitution, a number of different points may appear as optimal locations.

- Also, problem arises when a whole series of points exist where total revenue equals total cost (of producing a given output).

- These series of points, connected, mark the Spatial Margin of Profitability, and define the area within which profitable operation is possible

- Location anywhere within the margin assures some profit, imperfect knowledge (if the operator is not an economic operator with perfect knowledge) thus accommodated.

- Added spatial influence of consumer demand and production costs into his model

Sources of information

deBlij and Murphy text

Readings in Economic Geography (Smith, Taaffe, and King

<http://home.cc.umanitoba.ca/~rahmanmm/geo53128/notes/dec0399.htm> (notes)

<http://people.hofstra.edu/geotrans/eng/ch7en/conc7en/img/weberlocationtriangle.gif>

(image of Weber's triangle)

<http://ingrimayne.com/econ/International/Figure16.1.gif> (Hotelling's image)

<http://books.google.ca/books?id=37sr->

http://books.google.ca/books?id=37sr-KG8kQMC&pg=PA34&lpg=PA34&dq=losch+assumptions&source=web&ots=EPdseMb8S9&sig=F5SJxbROgAsKnHaIc0mBHf2HOcs&hl=en&ei=Ex6eSfSeL5PHtgeS4PGEDQ&sa=X&oi=book_result&resnum=6&ct=result (Lösch's assumptions)