Regional Planning Techniques

Andrew M. Komba
Department of Regional & Rural Development
Institute of Rural Development Planning, 2013
Email: andrewkomba@yahoo.co.uk
Dodoma, Tanzania.

MODULE STRUCTURE

Code: RPUR 8101
Name: Regional Planning Techniques
Credits: 10
Contact: 96 hrs

Module objective

To enable students acquire a formed knowledge of relevant theories, methodologies and techniques for formulating, implementation of regional development plans based on the strategic framework.

Course Outline

Module Contents

1.Nature and history of regional development planning
2.Theories for regional development planning
3. Approaches, Methods and techniques for regional planning
4.Regional/district planning process in Tanzania
5.Roles, qualities and regional planers professional ethics
6.Problems and issues in development planning
7.Regional plan, budget interface and coordination.
8.Strategic planning framework.

1.0 Introduction to Regional Planning?

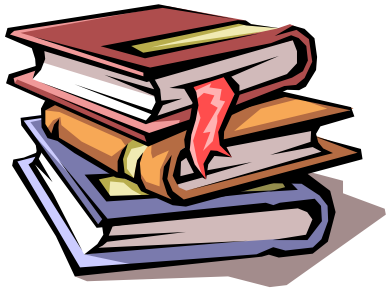
1.1 Planning

Planning has been going on throughout history – man has a natural urge to plan, it is part of his organizational make-up.

- Planning as one of the basic 'social drives' of society – a drive which is learned in society, and upon the satisfaction of which rests the survival of society.
- Rapid increase in planning – private actions and market forces often resulted in situations which the nation is not willing to tolerate and which only be improved by means of a control mechanism – PLANNING.

Why Planning?

- Problem with the laissez-faire approach ? Market failure?
- Rapid rise in population, increasing affluence and rampant technology have all increase the need for planning.
- But what is the control mechanism called **Planning?**



What is Planning

- A general theory of planning has not yet been written, however certain features of planning in general, **features common to all types of planning, can be identified.**

- A sequence of actions which are designed to solve problems in the future all planning involved a sequential process. (Programming, Identification, Formulation, Financing, Implementation, monitoring and Evaluation).

What is Planning…?

"Planning is primarily a way of thinking about social and economic problems, planning is oriented predominantly towards the future, is deeply concerned with the relation of goals to collective decisions and strives for comprehensiveness in policy and program. Wherever these models of thought are applied, there is a presumption that planning is being done" (Friedman in Glasson, 1978:19)

1.2 Nature of Regional Planning…

Regional Issues.

- Increasing urbanization and increasing standard of living and personal mobility;
- Depressed industrial and rural regions suffering from economy imbalanced.
- Addressing economic forces (ie. Market theory, Theory of the Goods e.tc).
- Existence of separate regional cultures, political identities and desire for autonomy.

Nature of Regional Planning…

- Regional planning can be seen as an attempt to guide the development of a region or sub-national area.

- Friedman defines regional development as “the incidence of economic growth. It is ultimately the result of the location of economic activities in response to differential regional attractions. Shifts in the location pattern have direct repercussions on income, employment and welfare. Since spatial organization is a function of activity and attraction patterns, regional development is simply an expression of these patterns”.

Nature of Regional Planning…

(ii) Discipline

Academics and Researchers – wishing to understand variations in living standards, productivity, trying to answer questions about why there is so much diversity

To Physical Planners – finding land for new homes, infrastructure, transport links, attracting inward investment, a key concern in recent years is how to achieve sustainable development.

Nature of Regional Planning…

(iii) Planning and Administration

Regional Administration and Local Governments and public policy makers – who need to track resource use, effectiveness of policy, impact on social cohesion, regional policy is also the largest portion of the national budget.

Economic growth through industry and commerce – likely structure of demand, supply chains, potential access to subsidy, a wide range of companies are interested in regional economic growth projections.

1.3 History of Regional Planning

Regional Planning is traced from the classical age (e.g. the construction of military roads in the Roman Empire), then in the Middle Ages (e.g. granting municipal rights or staple rights) and in the modern age (e.g. in line with the 19th century.

History of Regional Planning…

- During the era of industrialization, the construction of railroads, establishment of industries, etc.)
- Later regional planning was featured by complex regional development plans (taking economic, social and then environmental effect into account in 20th century(Krause, 1998).

History of Regional Planning…

- The first regional development programs initiated by the state were elaborated in the United States and in the United Kingdom after World War I.

- Followed by the world economic crises (as part of the economic policy reform New Deal) the management of the program for the development of Tennessee Valley (1933) was the responsibility of an independent government agency (Tennessee Valley Authority; TVA idea from President Roosevelt).

History of Regional Planning…

- In 1957 The (European Community, European Economic Community) European Union was established as a result of the Treaty of Rome The EU stressed a particular effect on the regional

  development practice in the Western European countries.
- The fundamental reason for that is that in the course of the enlargements increasingly heterogeneous regions joined the community, as a result of which the enforcement of the cohesion principle has caused more and more problems

  (Schmals, 1997; Schiess, 2003).

History of Regional Planning…

- The signatory nations of EU expressed namely their endeavors to ‘strengthen the unity of their economies and provide for their harmonic development by reducing the differences existing between the regions, by moderating the backwardness of those in less favorable situations.”
- In 1960’s practices of regional planning became common even in developing countries such as China, India, Hungary and later took root in African states including Tanzania.

History of Regional Planning in Tanzania…

- Growth Strategy in 1960s
- Growth Pole Strategy in late 1960s
- Basic Need Strategy by World Bank 1970s
- Income Redistribution Strategy 1980s
- Regional Integrated Development Programmed (RIDEPS) in 1980s
- Local Level Planning Systems in 1990s

2.0 REGION CONCEPTS AND METHODS

2.1 The Concept of Region

What is a region? A voluminous and somewhat turgid literature has been devoted to this question, with a variety of answers. One irreverent suggestion is that a region means an area which a regional economist gets a grant to study. Be that as it may, it is clear that the most appropriate and useful definition depends on the particular purpose to be served.

Regional Concept…

Regions have been delimited on several criteria: economic, administrative, physical or activity regions. Geographers, economists and administrators invariably delimit the regions in different manner.

Problems in defining regions

Harry W. Richardson (194) wrote. “Defining regions precisely is such a nightmare that most regional economists prefer to shy away from the task, and are relieved when they work with administrative regions on the grounds that policy considerations require it or that data are not available for any other spatial units.” The following is the **evolution** of definitions and use of regions.

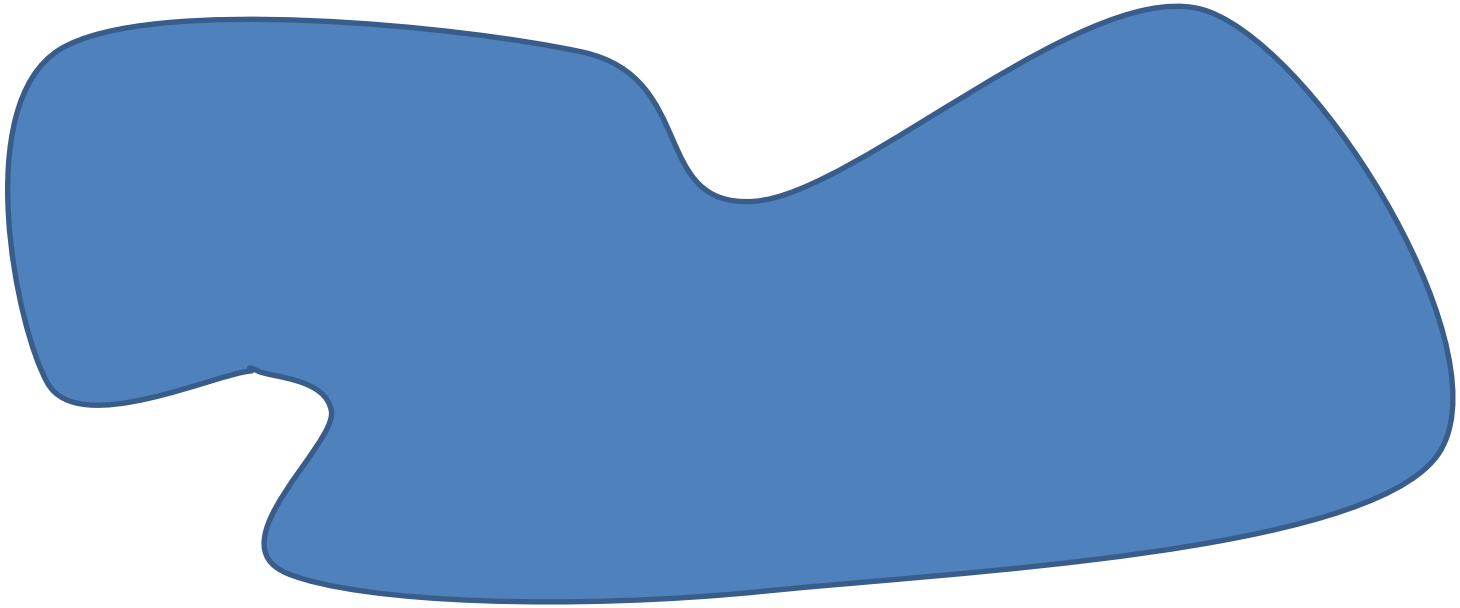
Regional Concept…

- A region is a sub-system within a system (the country itself) and if sub-systemsdevelop greater inter-connectivity, the greater will be the efficiency of the system.
- All regions are ‘problem regions’ in one way or the other, level of development notwithstanding. A structural set of different types of regions has its own ‘dualism’ everywhere. The essential task of planning is to bind various regions into a system in which only those inequalities remain in which simply cannot be obliterated.

Evolution in definition and use of regions

Physical region **Chorological Approach**

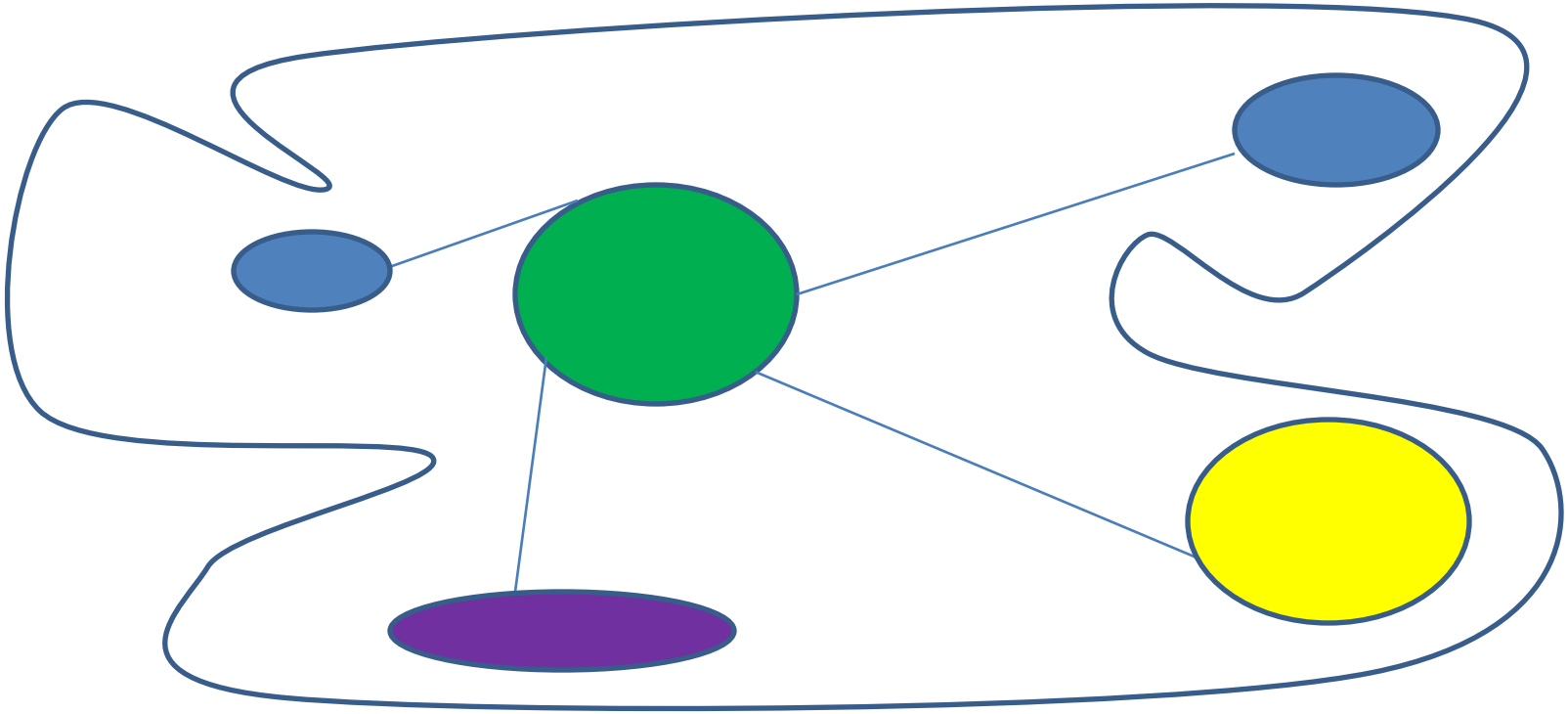
The physical and geographical differences between regions both determined and differentiated social and economic activity and space structures.



Evolution in definition and use of regions…

Economic region **Regional Science**

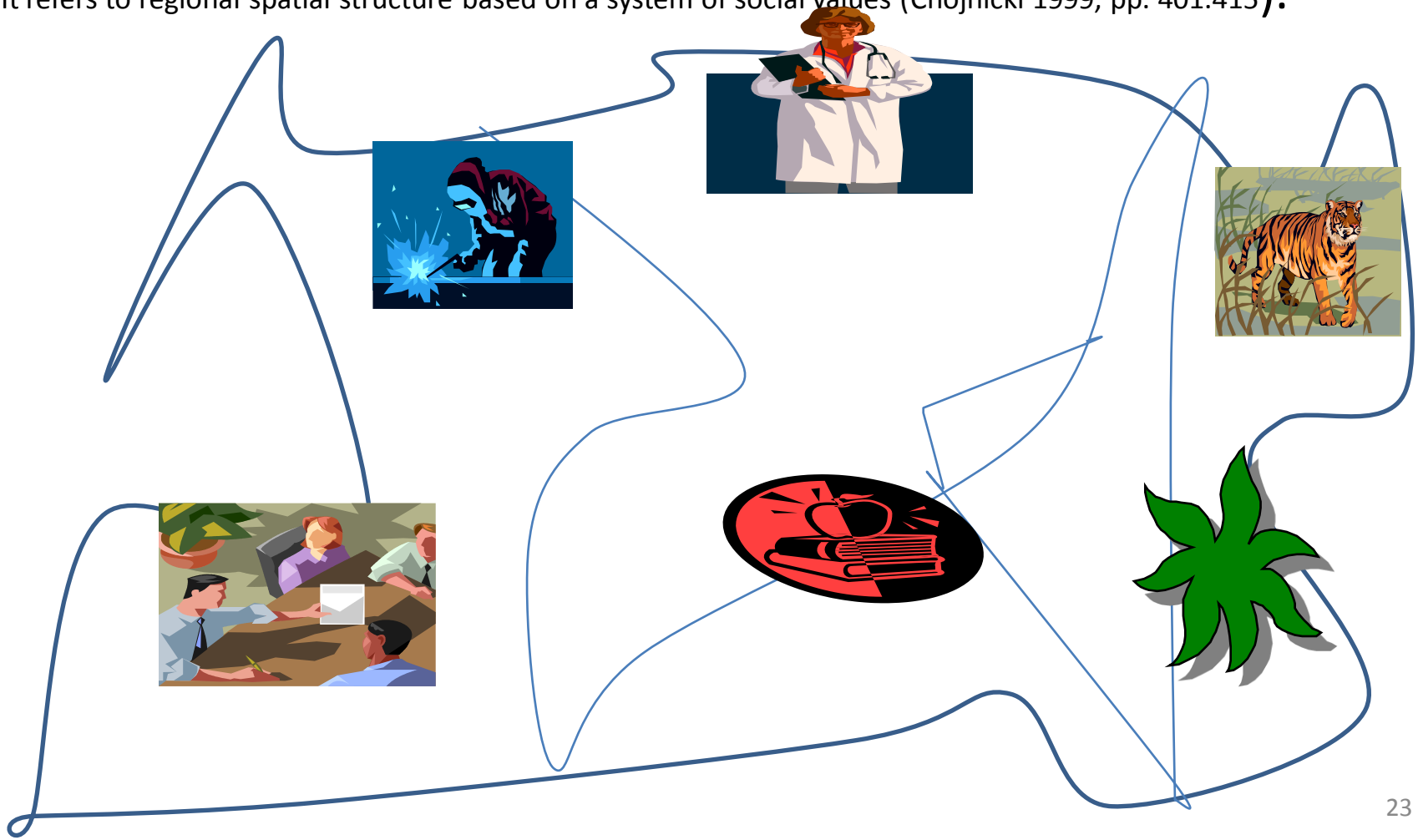
Regional studies were dominated by Regional Science, a discipline which combined economic, geographic and planning approaches and focused on theoretical and quantitative analysis of regional economy issues.



Evolution in definition and use of regions…

Social region **Analysis of social and structure**

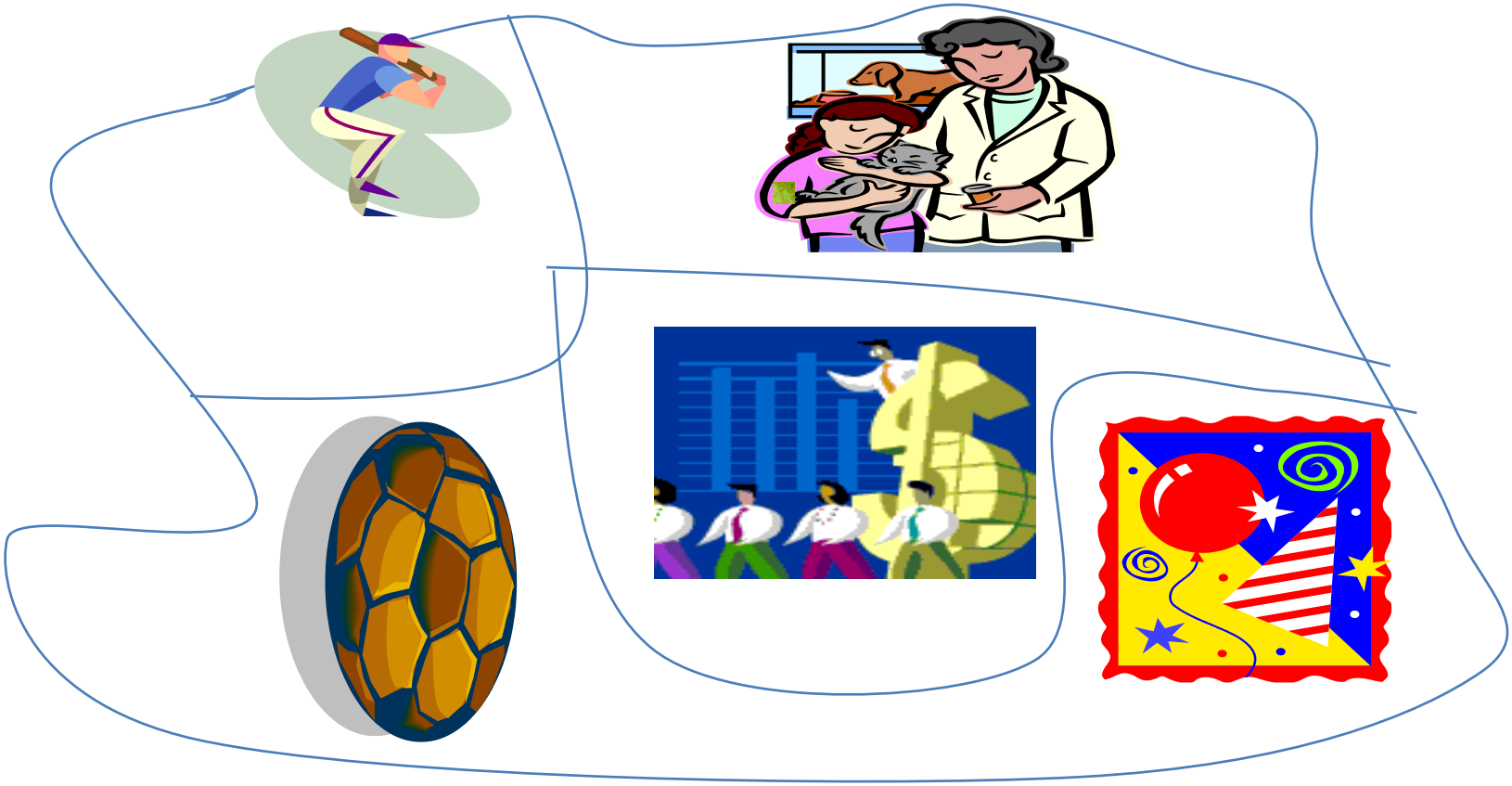
It refers to regional spatial structure based on a system of social values (Chojnicki 1999, pp. 401.415).



Evolution in definition and use of regions…

Cultural factors **Humanistic approach**

Cultural regions are structure influenced by beliefs, values , way of living and meanings of a given community that shapes both institutional and social relations



Region Concept…

More definitions

- Top down - sub-division of national space
- Bottom up - aggregations of urban and rural space
- Geographical sub-set of the national economy
- Variety of economic and social experiences in a limited geographical space
- Differentiated from surrounding areas by its' characteristics
- Boundaries driven by convention and custom

Region Concept…

- Common to all definitions of a region is the idea of a geographical area constituting an entity, so that significant statements can be made about the area as a whole.
- A normal attribute of a region is general consciousness of a common regional interest; this is fortunate because it makes possible some rational collective efforts to improve regional welfare.

Region concept…

- A region is a sub-system within a system (the country itself) and if sub-systems develop greater inter-connectivity, the greater will be the efficiency of the system. Regions could be objective or subjective. Region is objective when it is an end to itself, but it is subjective when is a means to an end.

- The basic to this idea in region is a high degree of correlation of economic experiences of the region's subareas and interest groups. Since this correlation can reflect either of two quite distinct features of internal structure, we distinguish two different typologies/types of regions: the homogeneous/formal and the heterogeneous/ functional.

Region Concept…

2.2 Homogeneous Regions

These are formal regions and if the basis of homogeneity is topography, rainfall, climate, economic, social or cultural and other geo-physical characteristics of which are geographer's darlings.

A *homogeneous region is demarcated on the basis of internal uniformity. The big five (5) regions of Southern Tanzania is* a homogeneous agricultural region because all its parts grow the same main crop in the same way.

Some external change, such as a new farm price support or loan program, a series of drought years, or a change in the world demand for maize, will affect all of the regions in a similar way;

Region Concept…

- What is true of one part of the region is true of other parts, and the various parts resemble one another more than they resemble areas outside the region.

- Under the homogeneous regions , internal differences in a region are uni- important. Sometimes, however, a clear-cut homogeneous region may have, as many differences in sub-regions as to make them quite different but yet a region may remain ‘homogeneous’.

Region Concept…

- The homogeneous or formal region are normaly defined in largest area over which a generalization remains valid. In their concept, formal regions are internally homogeneous. Formal regionalization is achieved by clustering spatial units at lower level (e.g. communities, municipalities, postal zones) so as to minimize between group variance on one or more variables.

Region Concept…

- Economic and spatial homogeneity is more relevant for planning. The structure of employment, the occupational pattern, the net migration, the density of population, the resource and industrial structure, if similar in a space, the regions become homogeneous in economic sense. The greater the economic similarities, the greater the interest the economists will have in homogeneous regions.

- In Tanzania we may considers agro-ecological zones as part of homogeneous criteria; southern higher lands, east coastal zone, southern coast tip, northern zone, western zone, central zone and lake zone. We may also think of ; semi arid regions against with high rainfall experienced regions.

Region concept…

2.2 Functional /Polarized / Nodal / Heterogeneous /Regions

- Functional regions (FRs) are internally social and economic heterogeneous that causes mutual complementarity and independence. In the quantitative literature, the functional region has often been defined as that aggregation of elementary spatial units (ESU) at lower level which maximizes the ratio of intra-regional (within-region) to inter-regional (between-region) interaction. The third structural class, the nodal region, is defined by cores and regional dominance in networks (**Drobne and Botagaj, 2012)**

Region concept…

- Functional/ polarized or nodal regions look to a centre-a large town usually-for service. Its influence extends beyond the area of the city. The villages are dependent upon it for services and marketing. There is little concern for uniformity when a polarized or nodal region is taken. Cohesiveness is due to internal flows, contacts and interdependencies. The city region need not correspond to the administrative region because hinterland of several clear-cut regions may be served by a city. A capital city may attract customers form several districts around the capital city.)

The concept of region…

- A nodal region will have heterogeneous economy around it. Regional economists are more concerned with what happens within a nodal region and spatial dimension of the nodal region assumes importance. Population and industries agglomerate and there are core regions with higher per capita income generation through higher production of goods and services. Within regions there are dominant cities or nodes to which flows of inputs, goods, people and traffic gravitate. Within the cities there are nuclei that form business and social centres and which are discernible at a glance from an intra-metropolitan traffic-flow density map. (Richardson, 1974).

The concept of region…

- Nodal regions provide an understanding of the functional relationship between settlements, which fill up the space. Big, medium, small and tiny settlements dot the space and because of their intra-regional differentiation, flows emanate. These heterogeneous units in rural and urban areas are functionally related because each settlement cannot have all the functions and facilities.

Region concept…

- All functions require a particular threshold population and other facilities (each settlement cannot have a college; or, unless there is electricity there cannot be cinema hall; or a bank branch will require not only critical minimum deposit-credit ratio). The size of the settlement and the hierarchy of functions are mutually determining. Lower and higher order functions can naturally be found in the same order hierarchy of the settlements. Thus between hamlets and metropolitan cities there are lower and higher order functions in all types of services (from one-man post office to head post office; from primary school to Institutions of higher learning and so on).

Region concept…

Functional; linkages are revealed by the flows of men, materials and money. Such linkages result in the emergence of the dominant nodes-focal points, which attract and provide all types of flows. In a hierarchy of settlement we find several nodal points which receive and provide flows and functions. Each node

Regional Concept…

has some settlements to support and receive and provide flows and functions. Each node has some settlements to support and receive sustenance e.g., a city receives its food items from the villages; while the villages receive goods of the secondary sector from the urban nodes.

Regional Concept…

2.3. Planning Regions

Planning regions depend upon the type of multi-level planning in the country. A very small country will naturally have one level planning. Markedly different geo-physical or agro-climate areas may be chosen as planning region for special cases e.g., developing a mining or plantation or power grid region. A planning region in a multi-level set up requires regional plan, which is a spatial plan for the systematic location of functions and facilities in relation to human settlements so that people may use them to their maximum advantages. In fact more important than reducing the regional disparities is the task of ensuring that backward region and rural areas have basic minimum needs. Planning region for different activities can be different and a regional plan will be locational in character for that activity/function

Regional Concept…

- Boudeville defines a planning region in the following words
- “It is an area displaying some coherence or unit of economic decisions”.
- Klassen defines planning region as must be large enough to take investment decisions of an economic size, must be able to apply its own industry with the necessary labor, should have a homogeneous economic structure, contain at least one growth point and have a common approach to and awareness of its problems. In short, a planning region should be defined according to the purpose of one’s analysis.

Regional Concept…

- Ideally a planning region should have adequate resources to establish a satisfactory pattern of savings, capital formation, investment, production, employment, income generation and consumption pattern. It means that the area should be economically viable. However, this usually is not the case.

Regional Concept…

- In Tanzania the hierarchy of planning region would be (i) macro level/region (ii) meso/district level (ii) and micro/local level. A planning region is (or should be) large enough to enable substantial changes in the distribution of population and employment to take place within its boundaries, yet small enough for its planning problems to be tackled effectively. It should have a viable source base, a manpower base, and internal homogeneity/cohesiveness. It should be such that satisfactory levels of mutually satisfying levels of production, exchange, and consumption levels obtained.

Region concept…

(i)**Macro Regions**

Macro region is naturally bigger. Macro region can be a state of even a group of states, if the states of a country are not big enough. A Macro-major region can be a zone. It may comprise of a few Administrative Zones . For example in Tanzania we have Southern Highlands, East Zone, Southern Coast, Western, Northern, Lake Zone of which their major function is to support regional inter-trade and production networks mutual consultation, supervision, and coordination of Administrative Regions.

Region concept…

- A macro region usually has a common resource base and specialization in that resource base, so that production activities can develop on the principle of comparative advantage based on territorial division of labor.

Region concept…

(ii) **Meso Regions**

Meso region can be identified with a ‘division’ of a state. Meso region is usually a sub-division of a state (Administrative Region), comprising of several districts. There should be some identifiable affinity in the area which may even facilitate planning. It can be cultural or administrative region and it will be even better if it is a homogeneous physical region

Region concept…

resource) region.

A meso region can also become a nodal region provided the combined micro regions or parts thereof can be developed in a complementary manner. A metropolitan area can be one micro region and the area of influence can be another micro region..

Region concept…

(iii) Micro regions

Various nodal points within a meso region could be micro region, though in many cases micro regions are basically rural areas, which may have a number of minor nodes without any organizational hierarchy influencing the entire area. The basic characteristic of a micro region is its smallness. There can be some specific micro regions such as belts of extraction of mineral or a reclaimed area, or a not-so-big command area of an irrigational projects, administrative districts etc.

Regional Concept…

- **Regionalization**

  Regionalization is the process of subdivision of the country or an area into its constituent regions. This is often done by geographers and others to establish logical subunits for didactic or analytical purposes. Planners may establish regions to facilitate the management of business, transportation or industrial activity. Governments may delineate regions for the purpose of administration or for the establishment of ,service delivery, electoral, planning districts.

Regional concept…

Regionalism

Regionalism is the feeling that a people who share a common identity have for being part of an area they inhabit. A political component of regionalism is the desire to assert self-governance or sovereignty in their region. Regionalism may intensify with discontent of the locals with their perceived political status in a larger entity and hence provide a basis for separatism.

2.4 Delineation of Regions

Regions delineation is not static; it changes as a result of the interaction of a number of factors (under the effect of geopolitical, social, technical, ecological, and economic factors). Delineation of space may take place according to a number of criteria (e.g. natural and human geography, public administration, political, cultural, ethnic, etc.)

Delineation of Regions…

Delineation of Homogeneous Regions

There are no universally accepted objective methods of regionalization. This is due to the complexity of factors that affect the generation of the phenomenon (Krachoo et al, 2000). However the following are common techniques

(i) Fixed Index Method:

Under the fixed index method, a number of characteristics common to regions are chosen. (E.g. population, density, per capita income, unemployment, rate of industrialization) An arbitrary /random weight is given to each index and a single weighted mean is obtained for each region, then contiguous regions with similar indices are grouped together in order to minimize the variance within the group.

Delineation of Regions…

Regions/Population				
a .7800000	B 6380000	C 4500000	D 6500000	e
F 30000000	g	h	i	j
k	L 63900000	M 4500000	n	o
p	q	R 7300000	s	T 96000000

Delineation of Regions…

(iii) The Variable Index Method

Under the variable index method, variable weights are assigned to highlight the different regions. The weight given to each activity, in each region is different, in accordance with the value or the volume regionally produced.

Delineation of Regions…

(iii) The Cluster Method:

Cluster means grouping together. This concept is used to implement IRDP. This concept is used in the planning as a strategy to strengthen lateral links and to dissipate growing vertical links in the settlement system. Such a cluster while providing greater viability and threshold for development efforts will also create for themselves a greater bargaining power in bringing about reciprocity in exchange of goods and services (Rengasamy, 2002, Madurai Institute of Social Sciences Regional Planning & Development)

Delineation of Regions…

Delineation of Functional Regions…

(i) Gravitational Technique

Essentially, the concept of gravity is adapted to examine the attraction between two areas of human activity (e.g., two counties) and their potential for interaction (i) . The basic premise is that the attracting force for interaction between two spatial units is proportional to the population mass of the where two units. A friction against interaction is caused by the intervening space over which the interaction must take place. That is to say, interaction between two is centers of activity varies directly with some function of the population size (mass) of the centers and inversely ; and with some function of distance.

Delineation of Regions…

Stated mathematically, the general gravity-flow
i= term defined previously model may be written:

$$I_{ij} = \frac{f(P_i P_j)}{f(D_{ij})}$$

Where

Iij = Measure of interaction between center i and j

Pi,Pj = Population of center i and j respectively and

Dij = Distance between center i and j

2.5 Regional Planning Interface

The functionality of regions has led into two different interfaces called (i)intra-regional and (ii) inter-regional planning.

(i)Intra-regional Planning

Intraregional planning is the type of regional planning which is directed towards resource allocation *within regions or between sub regions, and between various policy fields – economic development, social, environmental, transport, and so forth.*

(ii)Inter-regional Planning

Interregional planning, on the other hand, is concerned with the allocation of resources between regions (Glasson, 1978:27).

3.0 Regional Planning Theories and Models

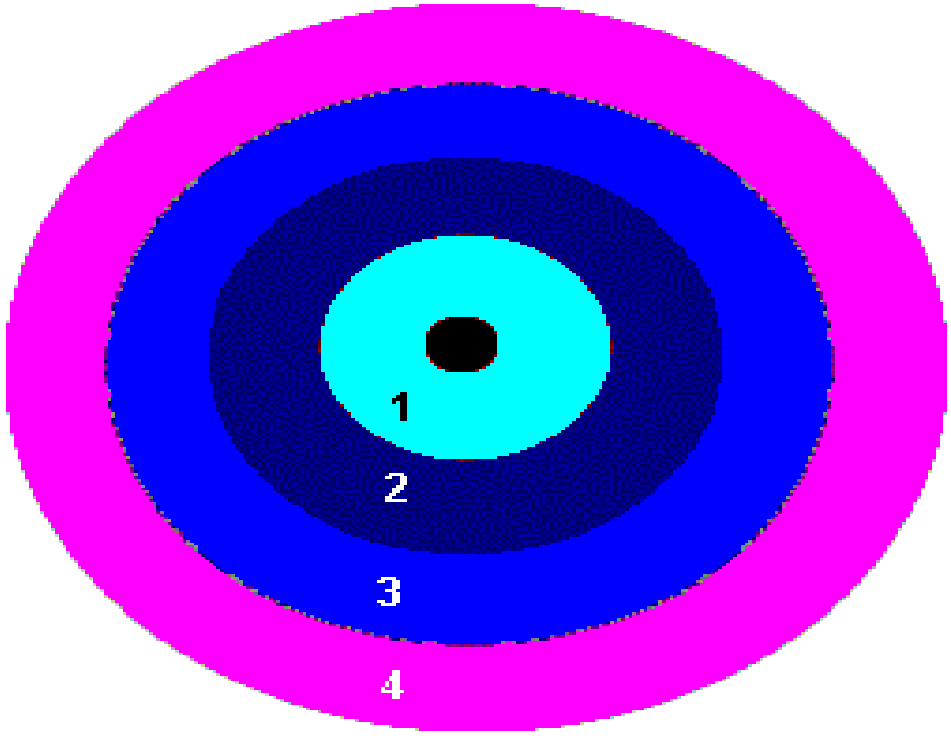
1. Physical and Land Use Theories and Models
   a) Model of Agricultural Land Use by Von Thunen
   b) Central Place theory
   c) Losch Model
2. Theories of Regional Economic Convergence
   a) Export Base Theory
   b) Neoclassical Exogenous Growth Theory

3 . Theories of Regional Economic Divergence
   a) Cumulative Causation Theory
   b) Growth Pole Theory

3.1 Physical and Land Use Theories and Models

3.1.1 Von Thunen Model of Agricultural Land Use (1850).

- The first location theory
- A concentric model



● Central City
1 Intensive farming and dairying
2 Forest
3 Increasing extensive field crops
4 Ranching, animal products

Von Thunen Model….

Model Assumptions

1. There is **only one market available**, self-sufficient with no outside influence.
2. All **farmers are market oriented**, producing goods for sale. (Not subsistence.)
3. The **physical environment is uniform**; there are no rivers or mountains.
4. **All points at equal distances** from the market have equal access to the market.
5. All farmers act to **maximize profits**.
6. The **dietary preferences** of the population are those of **Germanic Europeans**.

Von Thunen Model….

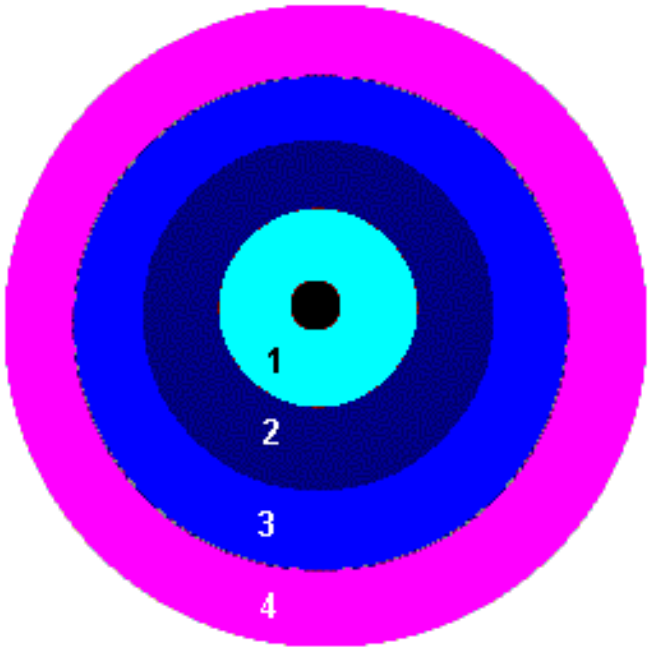
Land Value

- The main concept is land rent or land value, which will **decrease** as one gets farther away from central markets.
- Rent is highest in the closest proximity to urban markets. (Bid-Rent Theory)
  - Thus, agricultural products that have intensive land use, have high transportation costs and were in great demand would be located close to urban markets.

Von Thunen Model….

Major Steps

- Distance from the city
- Preservation of food
- Amount of space



Von Thunen Model….

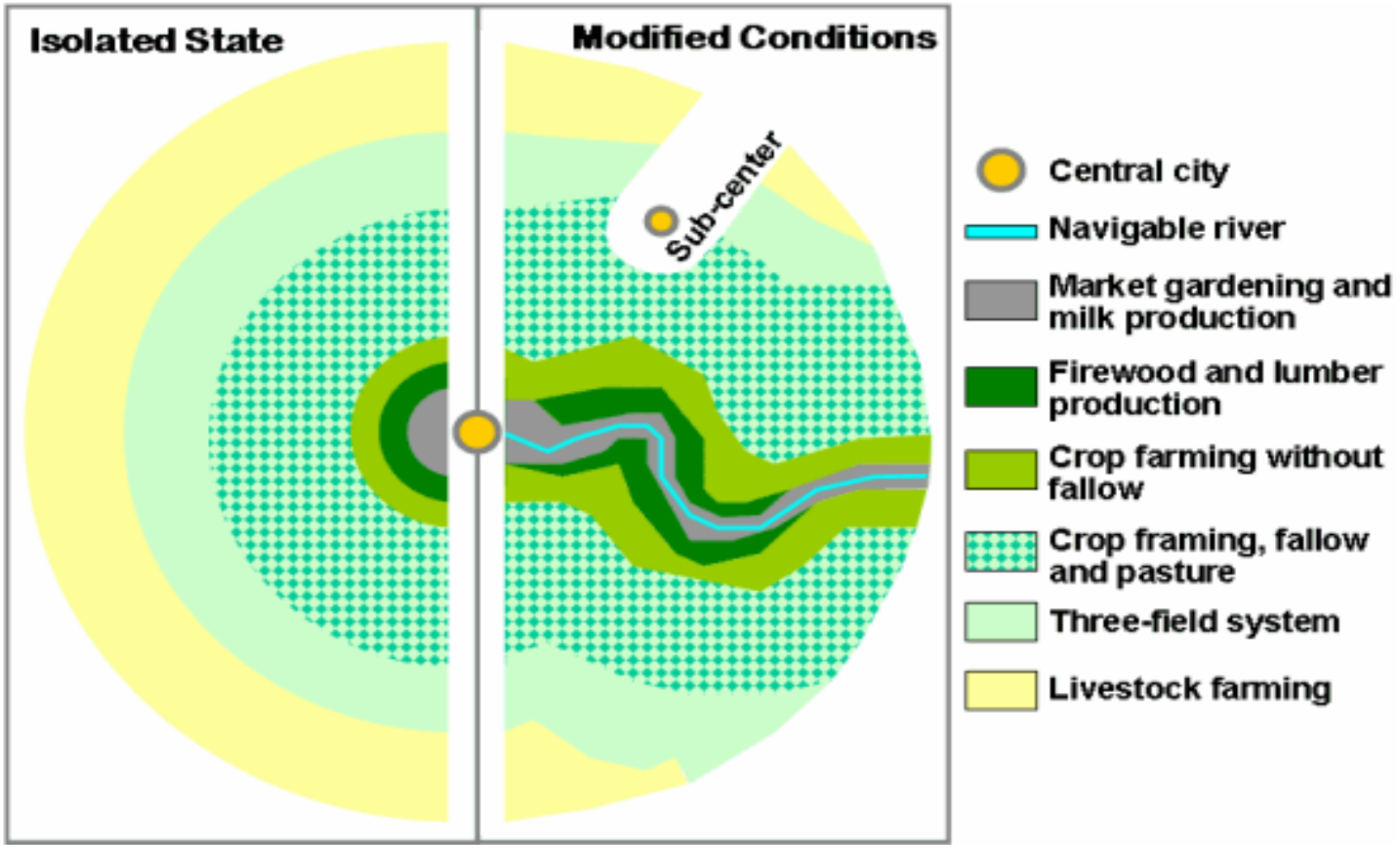
1. Dairying and gardening of fruits and vegetables would be closer to the urban market while…
2. Timber and firewood for fuel and building materials would be in the second zone.
3. Mixed farming, commercial grain and orchards and
4. Extensive cattle ranching would be located farther away. Transportation is cheap: the animals can walk to the city for butchering.

Von Thunen Model….

Why??

- Some products spoiled more quickly, needed more sensitive transportation, or generate higher prices at market.
- These products mean the farmer can afford higher land rent.

Landscape and topography determine the Structure :



3.1.2 Central Place Theory (1993)

- Central Place Theory (CPT) is an attempt to explain the spatial arrangement, size, and number of settlements. The theory was originally published in 1933 by a German geographer Walter Christaller who studied the settlement patterns in southern Germany.
- The aims of CPT is to explain the spatial organisation of settlements and their hinterlands.

Central Place Theory…

- In the flat landscape of southern Germany Christaller noticed that towns of a certain size were roughly equidistant. Therefore , he suggested the need for center points/places
- A central place is a settlement that provides goods and services.
- This could be a village, conurbation or city.
- Thus the may forms a hierarchy

Central Place Theory…

- By examining and defining the functions of the settlement structure and the size of the hinterland he found it possible to model the pattern of settlement locations using geometric shapes.
- **Assumptions:**

  Christaller made a number of assumptions such as: All areas have

  (i) an isotropic (all flat) surface

Central Place Theory…

(ii) an evenly distributed population

(iii) evenly distributed resources

(iv)similar purchasing power of all consumers and consumers will patronize nearest market

(iv) transportation costs equal in all directions and proportional to distance

(v) no excess profits (Perfect competition)

Central Place Theory…

- **Central Place, low order, high order, sphere of influence**

(i) A Central Place is a settlement which provides one or more services for the

population living around it.

(ii) Simple basic services (e.g. grocery stores) are said to be of low order while

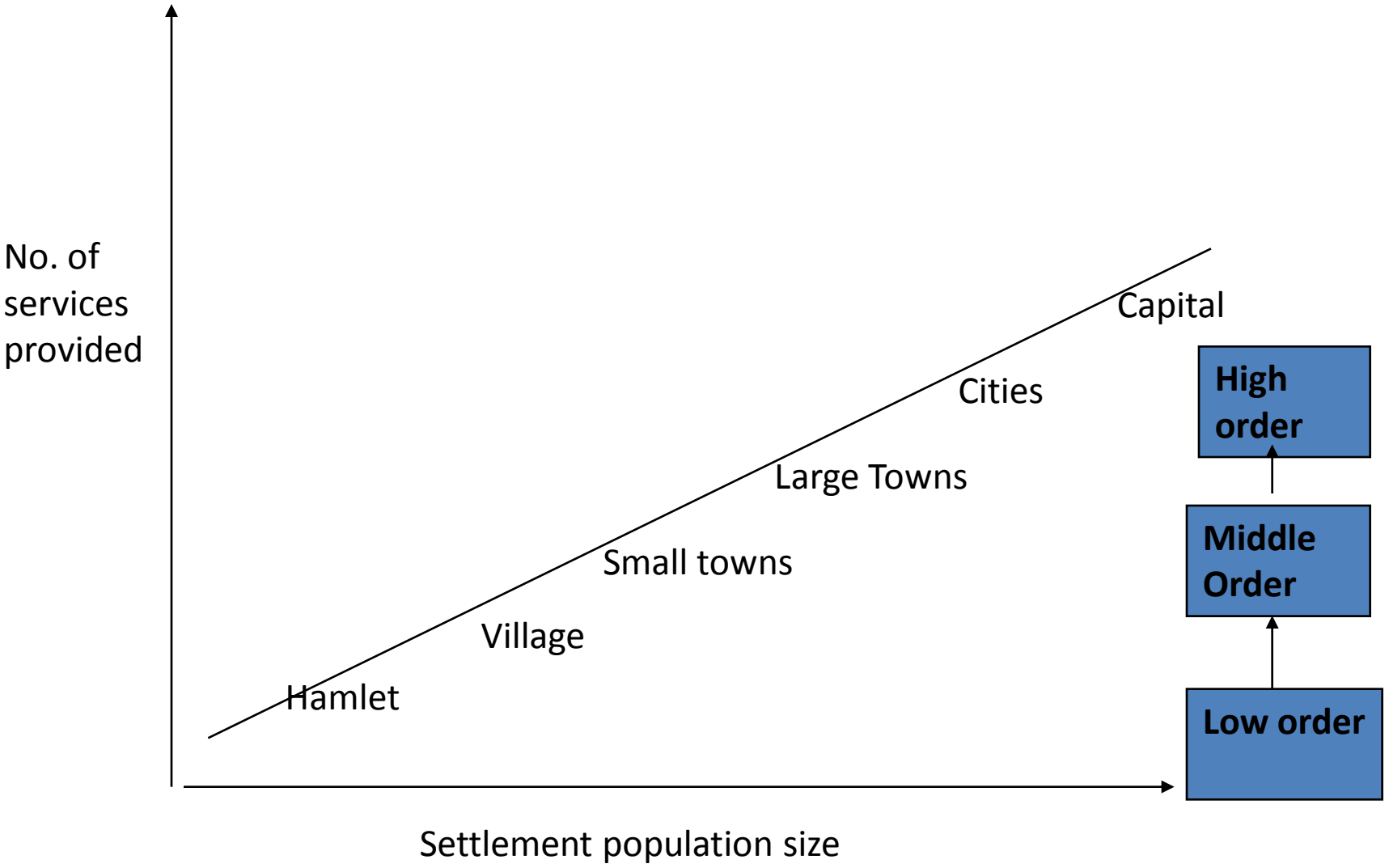
- specialized services (e.g. universities) are said to be of high order.

(ii) Having a high order service implies there are low order services around it, but not vice versa

(iv) Settlements which provide low order services are said to be low order settlements.

(v) Settlements that provide high order services are said to be high order settlements.

(vi) The sphere of influence is the area under influence of the Central Place.


No. of services provided
Capital
Cities
Large Towns
Small towns
Village
Hamlet
High order
Middle Order
Low order
Settlement population size

Central Place Theory…

Details of the theory

The theory consists of **two basic concepts:**

(i) Population Threshold

- This the minimum population that is required to bring about the provision of certain good or services

(ii) Market range /range of good or services

This is the average maximum distance people will travel to purchase goods and services

Central Place Theory…

- From these two concepts (Threshhold & market range) the lower and upper limits of goods or services can be found. With the upper and the lower limits, it is possible to see how the central places are arranged in an imaginary area.

Central Place Theory…

More Assumptions

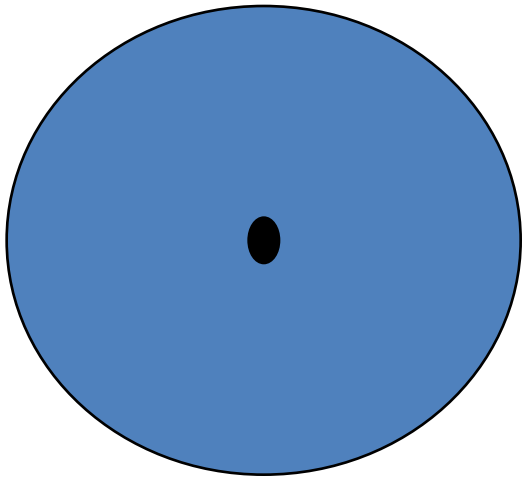
- The larger the settlement the fewer in number there will be
- The larger the settlement grows in size the further apart they will be
- As a settlement increases in size so to will the number of functions increase
- As a settlement increases in size the number of high order services will increase

Central Place Theory…

- The ideal shape for a sphere of influence would be circular

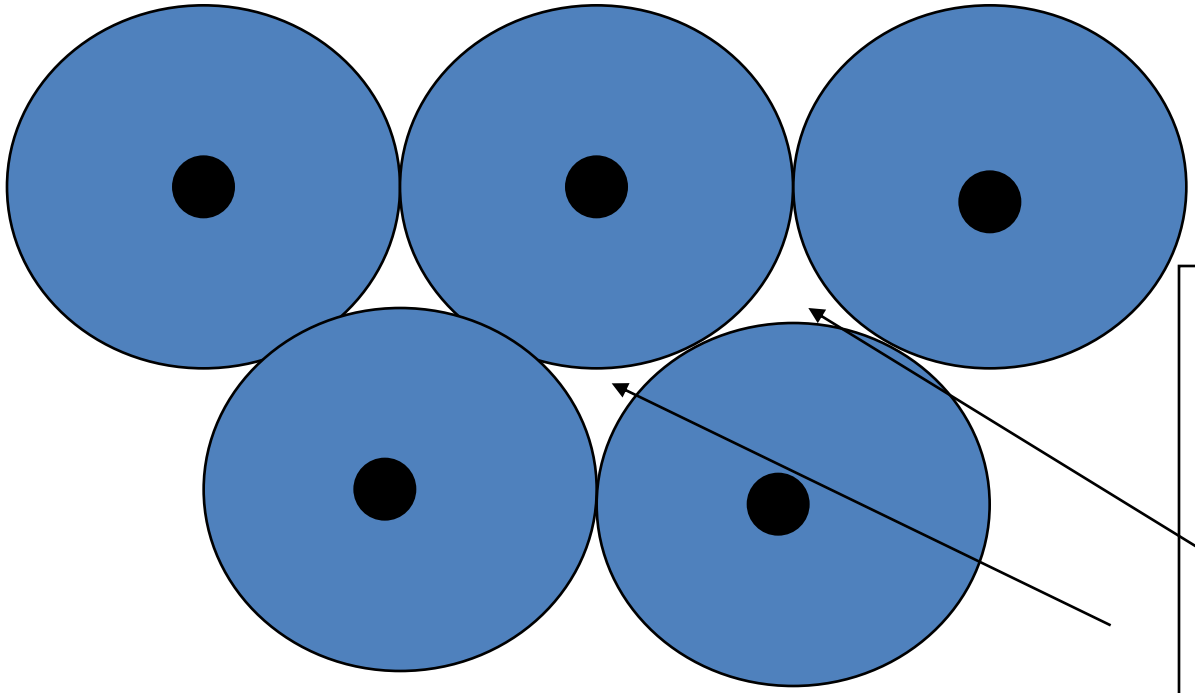
Central place

Boundary of trade areas



All the distances to the edge of the circle would be equal

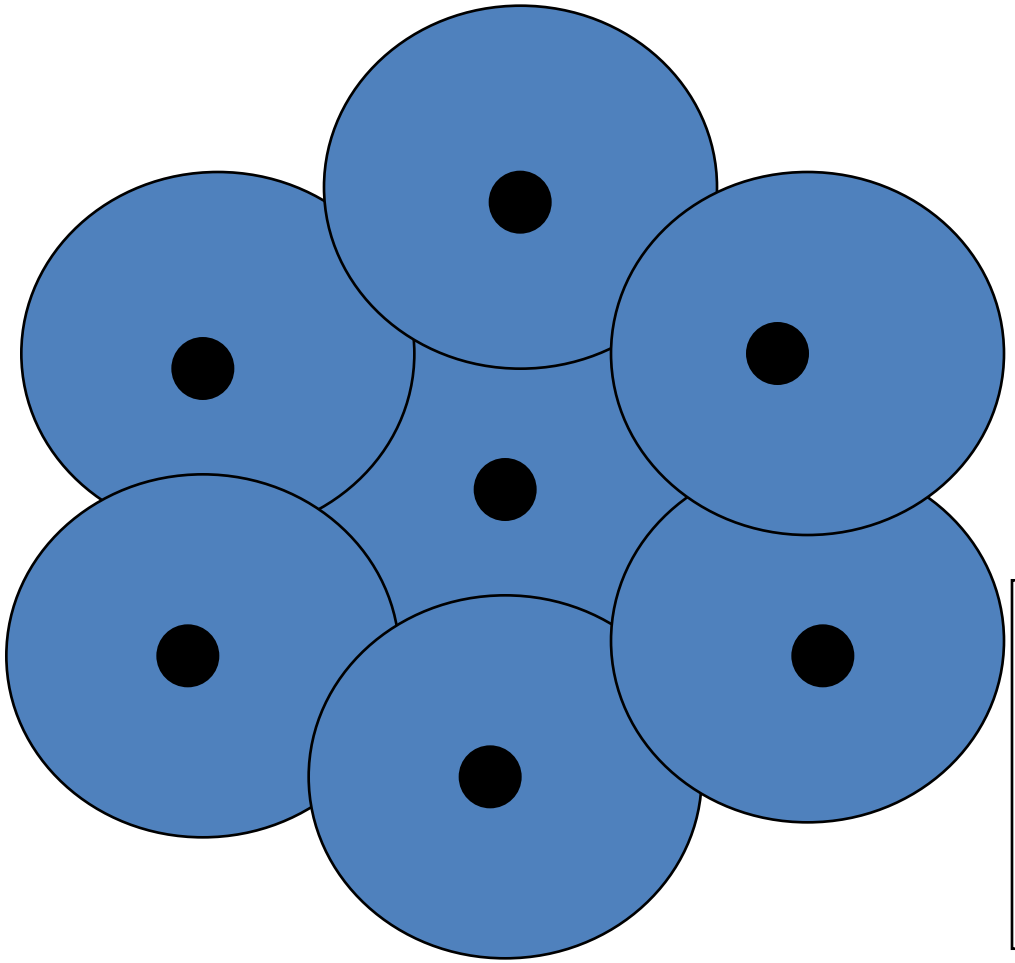
Central Place Theory…



More Central Places

Place in between are not served by any central place

Central Place Theory…

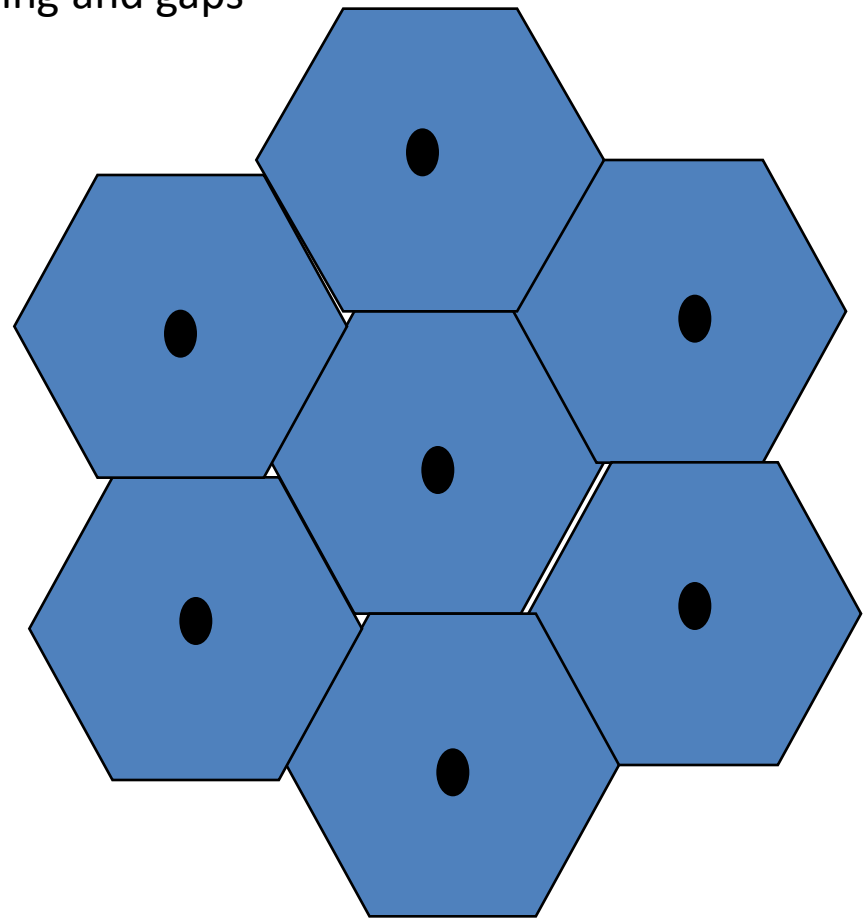


<u>Overlapping Problem</u>

Areas served by more than one place- this goes against the basic principles of the model

Central Place Theory…

Best shape are hexagons as they avoid overlapping and gaps



Central Place Theory…

The theory came up with three K- principles

- (i) The **marketing principle** is better known as the k=3 system, where a hexagonal space is envisaged with the central places serving two lower-order places each or one-third of the lower-order neighbors surrounding them. So, including the central place itself, a total of three places are served. The goal in the marketing principle was to serve a maximum number of consumers from a minimum number of centers. The hierarchy in the marketing model follows the rule of 3s (1, 3, 9, 27, 81 . . .), where a consumer equidistant from three higher order places

Marketing, Transportation, and Administrative Principles

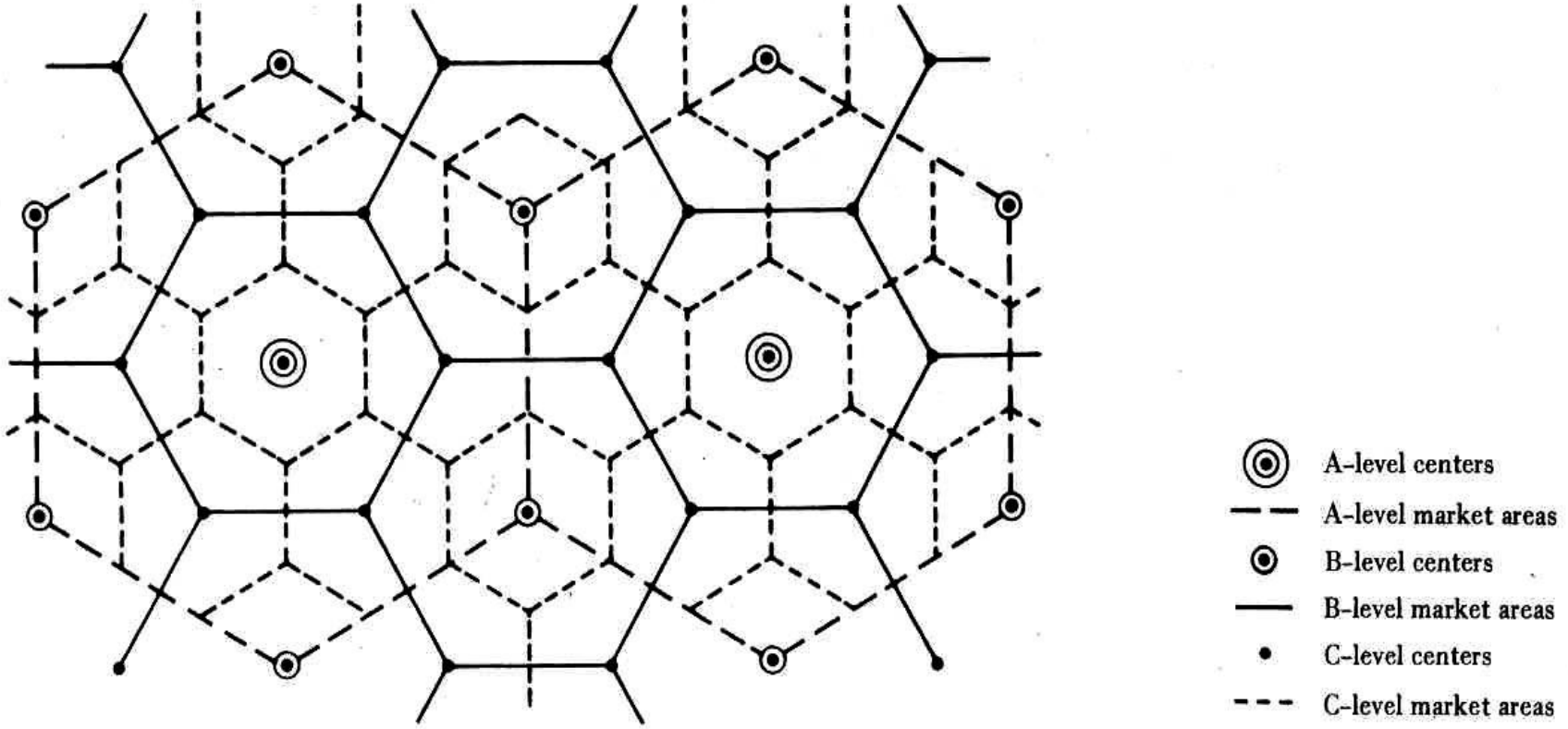
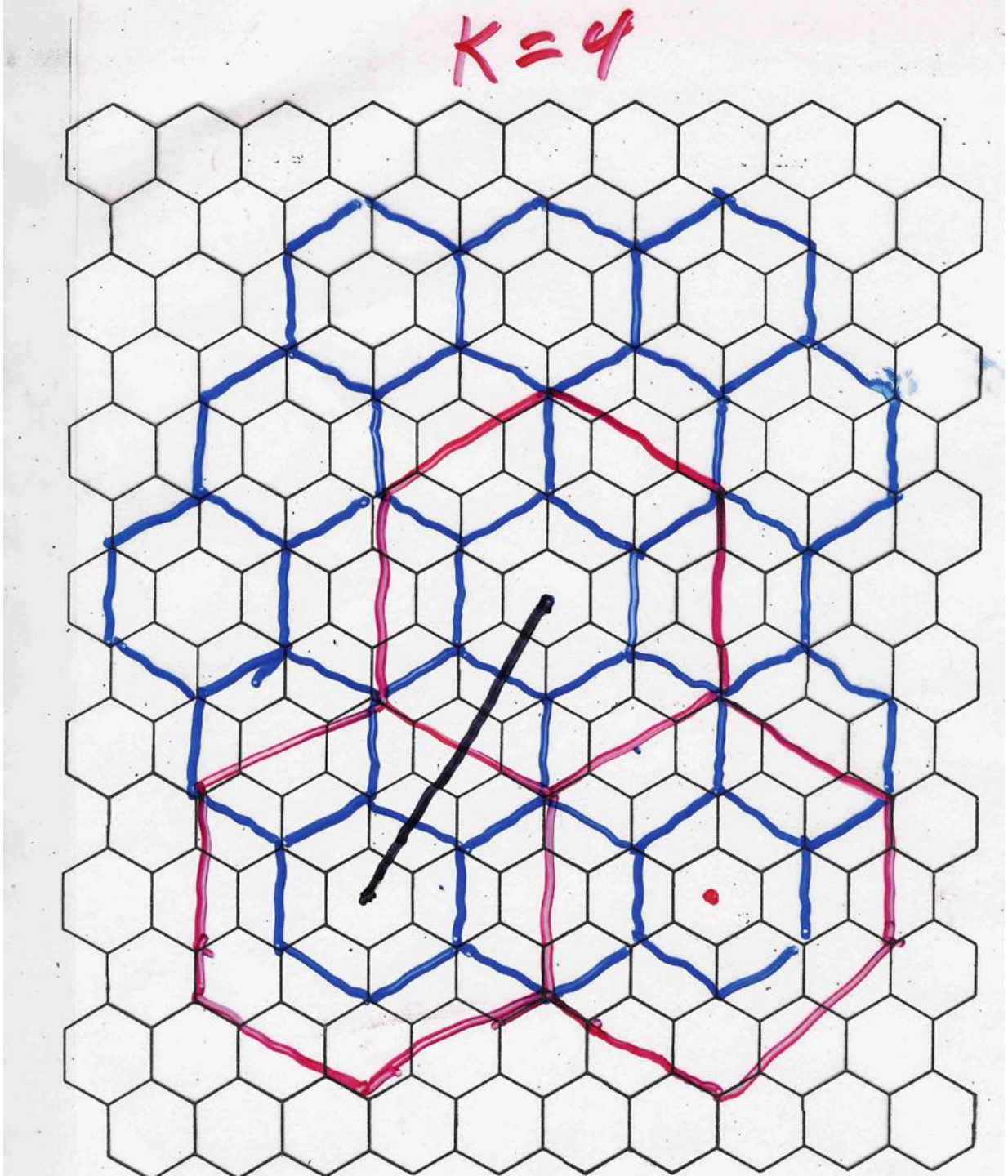


Figure 1.9 A hierarchical spatial arrangement of central places according to Christaller's $k = 3$ principle.

Central Place Theory…

(ii) Transportation model*, the goal was to minimize the network length and maximize the connectivity of centers being served. To minimize transportation costs, a different model of k=4 is proposed, where the hexagon is shifted so that the settlements are located at the center point of each side, and each central place serves a half-share of the surrounding hexagon; thus, the number of places served is four.*

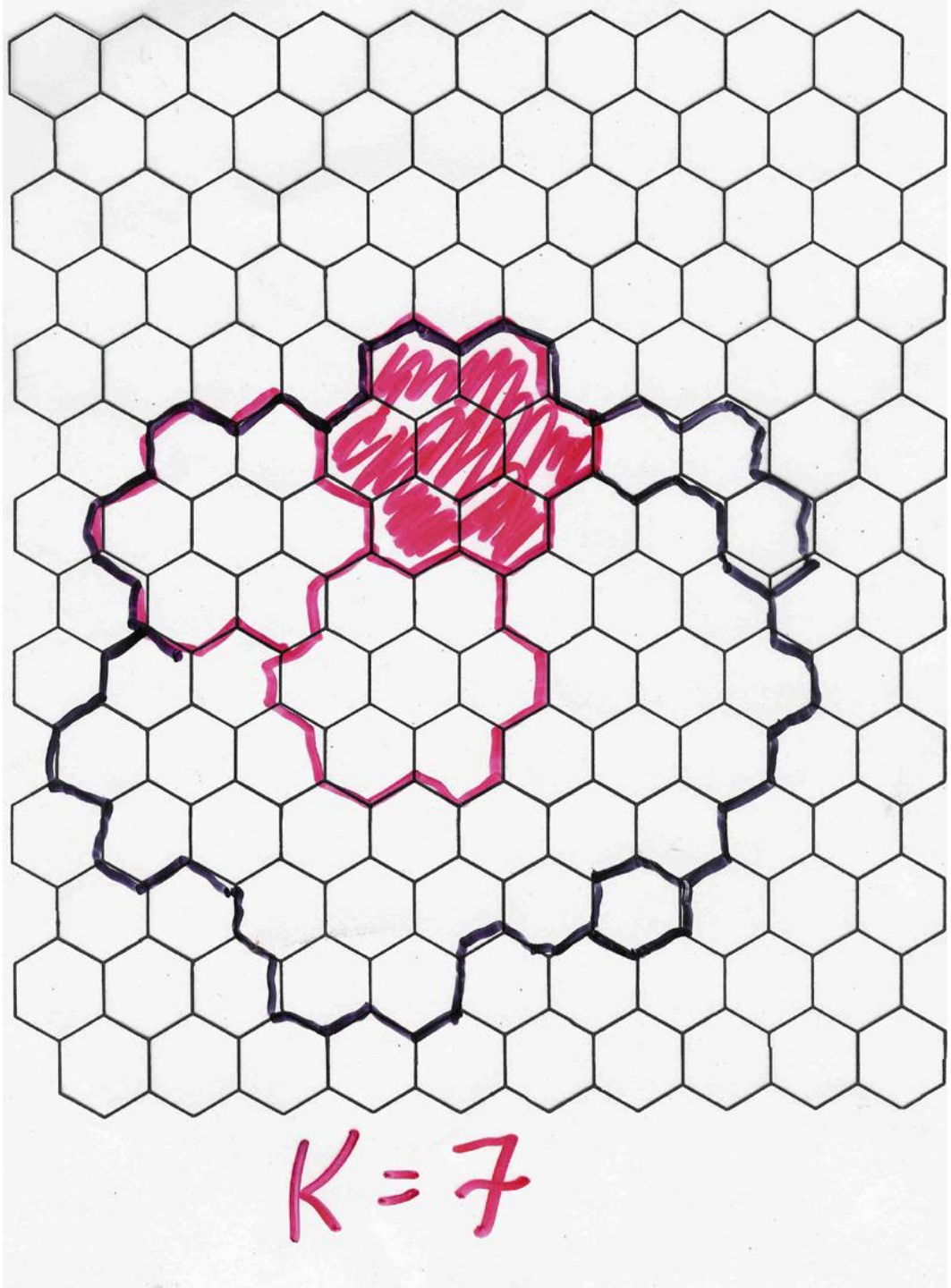


Transportation Principle

Transport routes are straight, passing through second order centers

Central Place Theory…

(iii) The ***administrative model****, the goal was to provide a hierarchy of controls where the lower level centers are completely controlled/administered by the higher order places. The administrative model is where k=7, and all the six lower-order places in the hexagon are served by the central place.*



Administrative Principle

Central Place Theory…

Some critiques on CPT

- The pattern of cities predicted by central place theory may not hold because of the failure to meet initial assumptions.

- Production costs may vary not only because of economies of scale but also by natural resource endowments (i.e. not a homogeneous plain)
- Transportation costs may not be necessary be equal in all directions

- Rural markets (initially households) are not evenly distributed

Central Place Theory…

- Non economic factors (culture, politics, leadership) may be important but not evenly distributed

- Competitive practices may lead to freight absorption and phantom freight (other forms of imperfect competition)

Economic and Planning Implications

- The theory does a reasonably good job of describing the spatial pattern of a particular space.
- It explains why there is a hierarchy of centers
- Central place theory does a good job of describing the location of trade and service activity.

3.1.3 Central Places by August Losch (1940)

- The German economist August Lösch expanded on Christaller's work in his book *The Spatial Organization of the Economy* (1940). Unlike Christaller, whose system of central places began with the highest-order, Lösch began with a system of lowest-order (self-sufficient) farms, which were regularly distributed in a triangular-hexagonal pattern. From this smallest scale of economic...

Losch Model…

- Lösch derived several central-place systems, including the three systems of Christaller. Lösch's systems of central places allowed for specialized places. He also illustrated how some central places develop into richer areas than others.

Lösch Model

Ten Smallest Market Areas

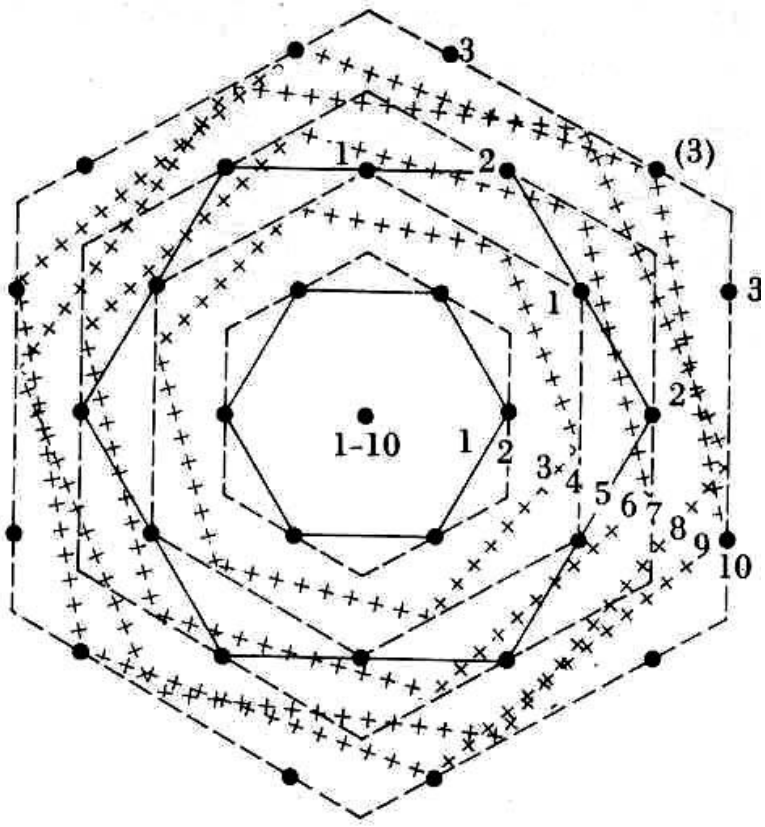


Figure 1.11 Lösch's ten smallest market areas focused on the "metropolis." *Source:* A. Lösch (1954), *Die räumliche Ordnung der Wirtschaft* [The Economics of Location] (Stuttgart: Gustav Fischer), fig. 27.

Lösch Model

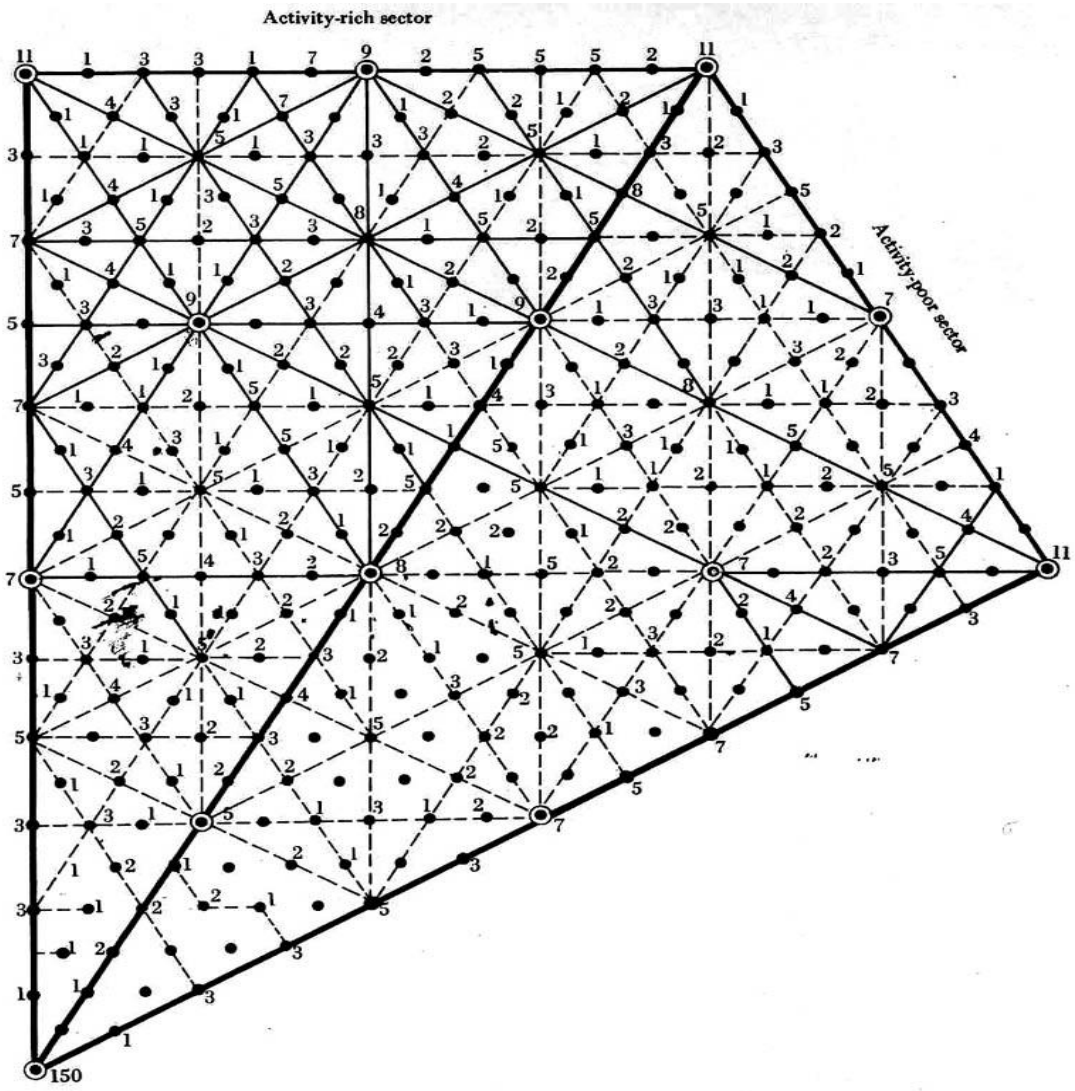


Figure 1.13 Transport lines and clusters of economic activities in Lösch's "activity-rich" and "activity-poor" sectors. *Source:* A. Lösch (1954), *Die räumliche Ordnung der Wirtschaft* [The Economics of Location] (Stuttgart: Gustav Fischer), fig. 32.

Lösch's System Of Transport Lines and Centers With Activity-rich And Activity-poor sectors

Lösch Model

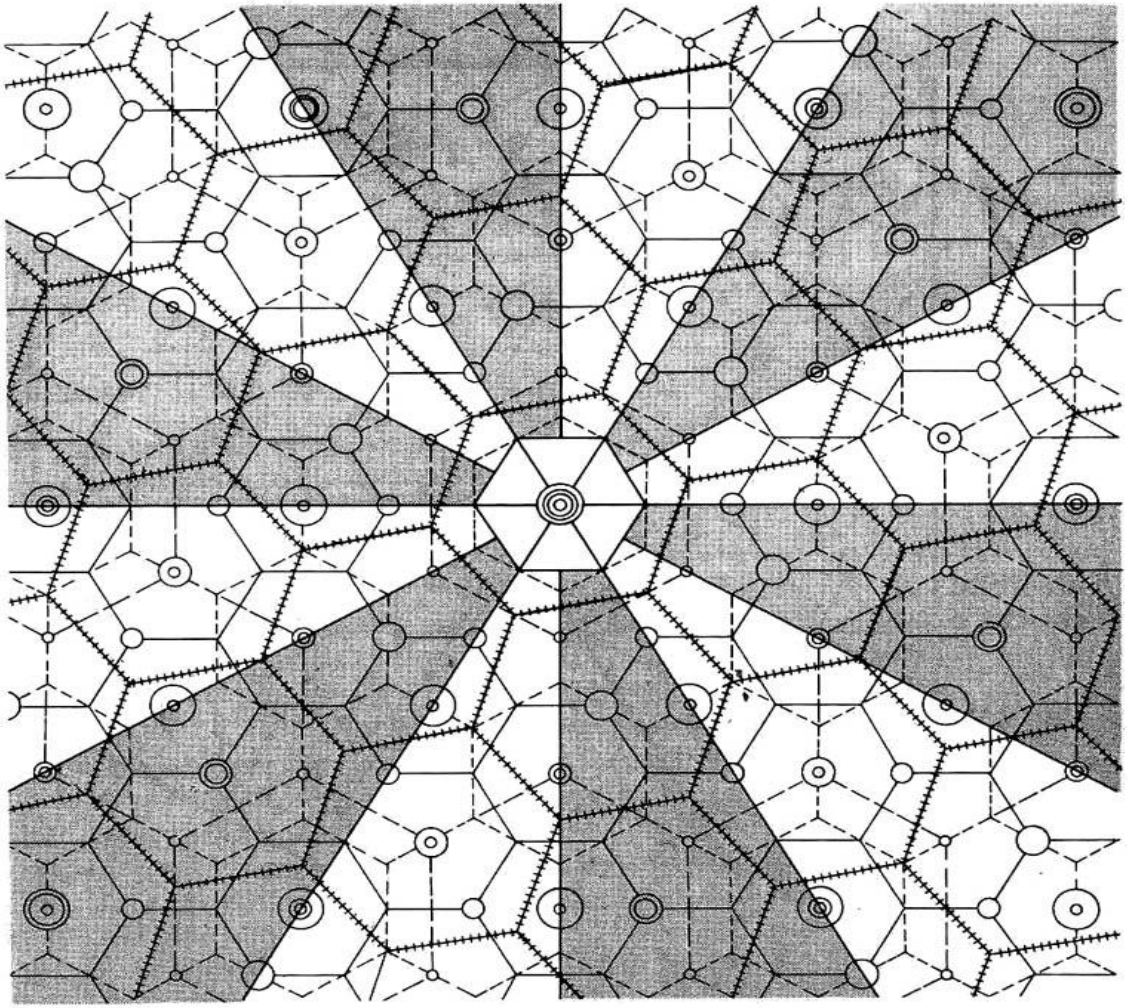


Figure 1.12 Theoretical spatial arrangement of market areas and production centers according to Lösch. *Source:* A. Lösch (1954), *Die räumliche Ordnung der Wirtschaft* [The Economics of Location] (Stuttgart: Gustav Fischer), fig. 28.

3.2. Theories of Regional Economic Convergence

3.2.1 Export Base Theory

3.2.2 Neoclassical Exogenous Growth Theory

Theory of Economic Base

- Among all theories discussed in this review, few have been as influential as the export base model developed in the 1950s by Charles Tiebout
- Also North (1955) argues that regional growth in local political, economic, and social institutions is largely determined by the region's response to exogenous world demand.

Theory of Economic Base

- This response produces growth in both the economic base, or export sector, and the "residentiary," or nonbasic, sector, which exists only to serve the basic sector.
- The theory points out that regions need not necessarily industrialize to grow, since a region's exports may consist of either manufactured goods, service-based goods, or agricultural goods.

Theory of Economic Base

- As regions grow, their economy becomes more diversified, due to increases in local production to serve increasing local per capita incomes and the emergence of new industries serving export markets. Over time, regions will tend to "lose their identity as regions"

  (North 1955, 258).

Theory of Economic Base

- With the increasing diversity of regional export bases and the mobility of factors of production, production will tend to disperse across regions over time, and per capita incomes will tend toward interregional convergence

3.2.1 Theory of Economic Base

The Theory

- The economic base technique is based on the assumption that the local economy can be divided into two very general sectors: a) basic (or non-local) sector and b) non-basic (or local) sector.
- Economic base theory asserts that the means of strengthening and growing the local economy is to develop and enhance the basic sector.
- The basic sector is therefore identified as the "engine" of the local economy and called as the economic base of the local economy.

Basic and Non-basic Sectors

- Basic is production for export outside the country
- Non-Basic is production of goods and services for consumption inside the country
- Total Economy = Basic + Non-Basic

Basic Sector

- Basic sector is made up of local businesses (firms) that are entirely dependent upon external factors.
- Local resource-oriented firms (like logging or mining) and manufacturing are usually considered to be basic sector firms because their fortunes depend largely upon non-local factors and they usually export their goods.

Basic Industries

- Agriculture
- Mining
- Tourism
- Federal government
- Manufacturing (partly)

Non-basic Sector

- The non-basic sector is composed of those firms that depend largely upon local business conditions.

- Almost all local services are identified as non-basic because they depend almost entirely on local factors.

Non-basic Industries

- Retail,
- Commercial banking,
- Local government
- Local public schools
- Services

Base Multiplier

- An injection (export sales) increases income in the area by an amount greater than the sale.
- The method for estimating the impact of the basic sector upon the local economy is the base multiplier, which is the ratio of the total employment in year *t* to the basic sector employment in that year.
- It can also be defined as the employment multiplier that estimates the impact of local basic sector employment on overall employment growth.

$$BM = \frac{E_r^t}{BE_r^t}$$

Use of Multiplier

- Estimates and projections of the base multiplier allow analysts to calculate impacts.
- For example - if the basic multiplier for an area is two, this means that for every new job in the basic sector there will be an additional job created in the non-basic sector.

3.2.2 Neoclassical Exogenous Growth Theory

- The mainstream neoclassical economic view of regional economic growth draws heavily on the literature of regional economic growth developed by Roy F. Harrod (1939) and Evsey D. Domar (1946).

- In contrast to the demand-side approach of export base theory, neoclassical growth theory models regional growth using supply-side models of investment in regional productive capacity

Neoclassical Exogenous Growth Theory….

- Early versions of this theory are often referred to as *exogenous growth theory, because* savings rates, population growth rates, and technological progress parameters are all determined outside the model.

The models developed by Solow (1956) and Swan (1956) have been the most influential in modern growth theory, primarily due to the more general form of the regional production function, which allows for substitutability among production inputs in accordance

Neoclassical Exogenous Growth Theory….

- with production functions that assume constant returns to scale and a positive elasticity of substitution among inputs (Barro and Sala-i-Martin 1999). These features generate predictions of *conditional convergence* of growth rates over time across countries and the leveling off of per capita incomes within countries

Neoclassical Exogenous Growth Theory….

- If growth parameter values are the same across countries, then neoclassical exogenous growth theory also predicts absolute convergence in per capita incomes.

Borts and Stein (1964) modify the neoclassical growth model for the regional context by allowing for open regional economies with net exogenous labor and capital inflows.

Neoclassical Exogenous Growth Theory….

- Barro and Sala-i-Martin (1999) argue that interregional convergence is more likely than international convergence, because factors of production are more highly mobile across regions. Furthermore, *absolute convergence in per capita incomes across regions* within a country is more likely due to the homogeneity of savings rates, depreciation rates, population growth rates, and production functions within countries.

Neoclassical Exogenous Growth Theory….

Williamson (1965) modifies the Borts and Stein (1964) argument somewhat by suggesting several rea-sons why interregional convergence maybe more likely during the later stages of a nation's development.

(i)First, labor migration rates in relatively underdeveloped nations are unequal due to differences in the costs of migration and differences in the way migrant workers

- are perceived vis-à-vis indigenous workers

Neoclassical Exogenous Growth Theory….

(ii) Second, initial endowments or constraints, external economies of scale, and immature capital markets in some regions may impede equal capital flows across regions. Third,

- central government policies may be biased toward regions that are more politically mobilized or where economic growth creates the need for additional capital investments.

Neoclassical Exogenous Growth Theory….

(iii) Finally, there may be few interregional linkages in the early stages of national growth.

3 .3. Theories of Regional Economic Divergence

3.3 . Theories of Regional Economic Divergence

3.3.1 Cumulative Causation Theory

3.3.2 Growth Pole Theory

3.3.1 Circular Cummulative Causation by Gunnar Mydal

Models of circular and cumulative causation (CCC) differ significantly from the neoclassical tradition. One reason why is that cumulative causation models identify postive/negative feedback mechanisms and emphasize the endogeneity of factors such as resource endowments considered exogenous in the neoclassical models considered earlier.

Circular Cummulative Causation by Gunnar Mydal

According to this model comparative development depends on the relative weight of unequalizing centripetal forces of attraction and suction and equalizing centrifugal forces of diffusion. Myrdal, for example, called the former backwash effects. An example is the way in which net flows of capital and labour are directed towards more rather than less developed areas.

Circular Cumulative Causation by Gunnar Mydal

As his aim was to explain increasing economic inequality between developed and underdeveloped areas, these forces received particular attention. Myrdal recognized however that there were also spread (trickle-down) effects that worked so as to equalize development.

Circular Cumulative Causation by Gunnar Mydal

- In addition he emphasized the importance. institutional factors in shaping development trends and argued for (i) active policy intervention in order to promote greater equality which he thought would also contribute to greater economic growth. An example of such public action is provided by net flows of public expenditure put in place specifically to counteract the unequalizing effects of market mechanisms

Circular Cumulative Causation by Gunnar Mydal

- Another strand of circular and cumulative causation models is rooted in the work of Kaldor who himself drew on the earlier work of Young. At the centre of this approach was the idea that (ii) economies of scale were a fundamental characteristic of economic life (yet were assumed not to exist in the neoclassical tradition).

Circular Cumulative Causation by Gunnar Mydal

- Essentially Kaldor argued that national and regional growth was export-led. The growth of exports depends on the (iii) efficiency wage (the ratio of real wages and productivity). And (iv) Increased exports of manufactured goods imply increased output.

Circular Cumulative Causation by Gunnar Mydal

- Increased exports of manufactured goods imply increased output. The consequent increase in output implies, as a result of economies of scale, external economies or spillover effects. Next increased productivity improves competitiveness contributing to righteous/good spiral

3.3.2 Growth Pole Theory

Growth poles theory of the French economist F. Perroux is fundamental to the phenomenon of polarization.

The concept of growth poles in Perroux's work denotes an individual region with a high degree of dominance, although the one which occupies an abstract economic space rather than a specific geographical space.

Growth Pole Theory…

- The growth pole theory of regional economic growth places Myrdal's theory of cumulative causation into a spatial context.
- Perroux's (1950) "space as force" view of spatial interaction, which defines space as a type of network that is held together by centripetal forces, has formed the basis of most growth pole theories.

Growth Pole Theory…

- Perroux's (1950) original formulation, a growth pole referred to linkages between firms and industries.

(i) The theory introduce "Propulsive firms" are those that are large relative to other firms and generate induced growth through inter-industry linkages as the industry expands its output.

Growth Pole Theory…

- A related perspective is Friedmann's (1966) center-periphery model, which includes elements of Myrdal's theory of unbalanced regional growth and export base theory.

Growth Pole Theory…

- Hirschman (1958) argues similarly in his discussion of backward and forward linkages between firms.

  Boudeville (1966) is credited for placing Perroux's formulation into geographic space. For Boudeville, a growth pole is defined in terms of the presence of propulsive firms and industries that generate sustained regional growth through linkages with other firms in a region.

Growth Pole Theory…

- Hirschman (1958) discusses how polarized development may benefit both the growing region and the surrounding hinterland.

- Like Myrdal's "spread" and "backwash" effects, Hirschman argues that growth in a developed region produces favorable "trickling-down" effects within a lagging region as the lagging region's goods are purchased and labor hired by the developed region.

Growth Pole Theory…

- Growth may also produce unfavorable "polarization" effects resulting from competition and trade barriers erected by the developed region

- Despite these similarities, Hirschman rejects Myrdal's cumulative causation approach as overly bleak due to the fact that it hides "the emergence of strong forces making for a turning point once the movement towards North-South polarization within a country has proceeded for some time"

Growth Pole Theory…

- Friedmann also points out that regions may vary in the extent to which supply constraints
- limit a region's ability to respond to increased
- demand for exports.

- Thus large urban areas have the initial advantage in the competition for new growth because of the decreasing cost benefits of urbanization economies.

Growth Pole Theory…

- All these factors tend to work to the advantage of core regions, which are incumbents in the economic development game.

Growth pole theory was largely abandoned in the 1980s due to growing dissatisfaction with the perceived lack of coherence between traditional notions of growth poles and empirical reality. Many growth pole policies were shown to fail in their intended objectives of inducing new economic growth in lagging regions

Growth Pole Theory…

- Other criticisms also emerged, such as the inappropriate use of input-output analyses to examine the spatial interactions between firms, the difficulties of translating

- Perroux's original abstract formulation into useful theories of regional economic development, the lack of emphasis on the process of structural change within growth poles over time, the weak behavioral basis of the theory, and the lack of explanation within the theory about why some growth poles tend to grow faster than others

4.0 Approaches, Methods and techniques for regional planning