

Classification of Cities – Age and Functions

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Component-I (B) - Description of Module

Items	Description of Module
Subject Name	Geography
Paper Name	Urban Geography
Module Name/Title	Classification of Cities – Age and Functions
Module Id	UG-06/
Pre-requisites	Cities, Classification, Age, Functions
Objectives	To Study About the Classification of Cities
Keywords	Age, Stage of Development, Functions, Classification

Component II - e-Text

Classification of Cities –Age and Functions

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I - Introduction

Hamlets, villages, towns, cities and mega-cities form the cultural landscape of the world. Within these settlements be it new or old, resides the population of nearly 7.3 billion people. The question now emerges that how can one classify these settlements; the most obvious answer is rural and urban settlements based on their functions or economic activity. People in rural settlements mostly pursue agriculture or primary activity while in urban areas they are generally engaged in non-agricultural activities. This quantitative classification leaves some qualitative aspects untouched which scholars have tried to bridge through the concepts like rural-urban fringe, rural –urban continuum, ruurban, peri-urban, urban corridor to name a few. In fact today it is more common to think in terms of a continuum rather than water tight compartments clearly cut or divided into two – rural or urban. But here, we are dealing mainly with the classification of urban places and to do so, we need to define an urban place. Numerous attempts have been made to define an urban place and the most basic definition of urban place was provided by OPCS Census, 1981 and Key Statistics for Urban Areas, 1984. According to them urban areas are made up of:

1. permanent structures and the land on which they are situated
2. transportation corridors (roads, railways and canals) which have built-up sites which are less than 50 metres apart
3. transportation features such as railway yards, motorway services areas and car parks (operational airfields and airports are also included)
4. mineral workings and quarries
5. any area completely surrounded by built-up sites

This definition is not extensive so as to cover the variations in the nature of the urban place across the world. As we find that varied bases have been used to define urban population. Some examples taken from the United Nations Demographic Yearbook 1988 (United Nations, 1990) covering all the continents are sited here –

1. Asia –
 - a) India – towns (places with municipal corporation, municipal area committee or cantonment board); also all places having 5000 or more inhabitants, a

density of 400 persons per square kilometre and at least 75 per cent of its male working population engaged in non-agricultural activities.

- b) Japan – cities (Shi) having 50,000 or more inhabitants with 60 per cent or more of the houses located in the main built-up areas and 60 per cent or more of the population engaged in manufacturing, trade or other urban types of business.

2. Europe –

- a) France – Communes containing an agglomeration of more than 2000 inhabitants living in contiguous houses or with not more than 200 metres between houses.
- b) Netherlands – Municipalities with a population of 2000 or more inhabitants.

3. Africa –

- a) Botswana – Agglomerations of 5000 or more inhabitants where 75 per cent of the economic activity is of the non – agricultural type.
- b) Ethiopia – Localities of 2000 or more dwellings

4. North America –

- a) USA – Places of 2500 or more inhabitants and urbanized areas
- b) Canada – Places of 1000 or more inhabitants having a population density of 400 or more per square kilometre.

5. South America –

- a) Argentina – Populated centres with 2000 or more inhabitants.
- b) Peru – Populated centres with 100 or more dwellings.

6. Australia – population clusters of 1000 or more inhabitants and some areas of lower population if they contain 250 or more dwellings of which at least 100 are occupied.

A review of these representative definitions reveals seven bases which used either singly or in combination to identify the urban function of the population-

- i. Specifically named settlements
- ii. Settlements designated urban by administrative status
- iii. A minimum population
- iv. A minimum population density
- v. The proportion engaged in non-agricultural occupations

- vi. A contiguity either to include a sub-urban area or to exclude an area of loosely scattered settlement
- vii. Functional character (Carter, 1976)

The above discussion clearly brings forward the thought that function or functional character of a settlement is of prime importance in the process of taxonomy. And this has become one of the guiding parameters in the classification of urban places.

II - Classification of Cities on the basis of Age

A. Taylor's Classification:

Griffith Taylor (1949) attempted to identify stages in the development of the cities. On the basis of these stages he classified cities into six categories.

1. **Sub-infantile**- The initial cluster in a single ill-defined street town.
2. **Infantile** - Town in a second stage have no clear differentiation between industrial, commercial and residential area, through there is a tendency for the bigger houses to be located near the margins. There are no factories.
3. **Juvenile** - There is a fairly clear segregation of an extensive commercial quarter towards the centre of the town, through separation of function is in no way complete. The residential area also show no clear differentiation.
4. **Adolescence** – This stage shows clear differentiation of residential zone.
5. **Early maturity** – In this stage also there is a differentiation of residential zone, the different between the two lies only in degree.
6. **Mature** -A mature town is one in which there are separate commercial area as well as four zone of residential houses, ranging from mansions to shacks.

The classification is interesting from an academic point of view, but is unpractical as no specific determinants have been stated. Moreover, it is applicable only to western cities under a particular economic system.

B. Mumford's Classification:

Lewis Mumford (1938) an American historian, sociologist, philosopher of technology, and literary critic suggested six stages of development of cities. Mumford was influenced by the work of Scottish theorist Sir Patrick Geddes. His six stages of development of cities are:

1. **Eopolis**: The beginning of urbanisation of course is rooted in the rural scene. Men used to be involved in hunting. As they slowly learned, they became producers and settled in village. They also indulged in fishing and mining. At this juncture of time depending upon their religion, they set up a temple, cathedral or mosque. Subsequently, a market also developed.

2. **Polis:** As more and more villages developed many found that they have certain things common with their neighbour's. The settlements slowly developed into a brotherhood of traders and became richer because of accumulation of wealth from nearby villages. The religious establishments extend further and so does the market squares. There was a social stratification according to which people belonging to the higher hierarchy occupy central place while the others spread outwardly such that the people of lower level took peripheral places.
3. **Metropolis:** Small towns and villages in a region come together as a single entity. The entity is the city which has a compact site, good water and food supply, ample land etc. This becomes metropolis, the mother of city. As the city streamlines its production, a surplus occurs. The surplus at this stage is characterized by the specialization of trades.
4. **Megalopolis:** The stage is marked by more diversity of cultures. There is migration from all around. Indifference between the people increases. There is also a class struggle. Further developments are hence down wards. The city begins to decline.
5. **Tyrannopolis:** The economic and social scene slowly metamorphoses into more or less parasitic state. This stage of the development of city is marked by the indifference. People are involved in pomp and pleasure. This is what happened towards the end of Roman era. The environment of the city deteriorates and people flee towards the countryside. The commercial activities are marked by booms and slumps.
6. **Necropolis:** The city decays further. The civilization follows a downward trend. War, famine and diseases erupt and lead the city towards destruction. The cultural institutions also erode greatly.

III - Classification of Urban places on the basis of Functions -

Urban centres are numerous, and these vary in their functions, location, size and in their social composition, culture and heritage also. It is therefore meaningful to classify towns into categories for better understanding about their role in the regional and national context. There are several methods, ways and means to classify urban centres. Site and situation of towns, population, size and functions, their social and cultural environment, etc., are some of the recognized bases to put them into groups. Out of all these bases of classification, the variable of 'function' is widely accepted and reliable too. 'Reliable' in the sense that urban place itself is defined as a unit characterized by non-agricultural activities.

Non-agricultural activities here, include administrative, industrial, commercial, cultural, etc. It is rare instance that an urban place is 'mono-activity' centre. Often towns develop diversified activities and are known to possess multifarious functions like economic,

administrative and cultural. Nearly all towns are supposed to provide various services like health, education, municipal (water, electricity, sanitation), transportation and marketing.

In the following discussion an attempt has been made to put forward various classifications adopted by scholars all over the world on the basis of the function of an urban place.

A. Arousseau's Attempt:

In 1921, M. Arousseau classified towns into six classes with twenty eight sub types. The six classes were administrative, defence, culture, production-towns, communication and recreation. This list is quite comprehensive and has sometimes being found useful. His classification though a simple one, however, suffers from the defect of over-generalization. Moreover, some of the classes are specific to a particular country at a particular time only. To classify a town into one major category the cut-off point of one-class has been decided by the arbitrary percentage, and therefore it is subjective.

Economic activities too are neglected. These are important in the sense that a town also caters for the need of people residing outside its municipal limits. Various classes of functions as suggested by Arousseau create confusion in the sense that both functional and locational characteristics are mixed; for example, under communication-class group of towns performing function of 'transfer of goods' are put. Towns with tidal-limit, fall-line-towns, bridgehead towns point out attribute of location in performance of their function. It is thus doubtful that such towns are exclusively communicational, and not locational. Similarly, pilgrimage centres are cultural towns, but these equally are significant in their geographical location on mountainous terrain, in valleys or on banks of rivers.

In spite of all these critics, Arousseau's classification marks a significant stage and provides a springboard for sophisticated methods. It is actually a comprehensive scheme bringing together polygonal functional urban activities to classify urban centres.

B. Harris's Classification:

Chauncy D. Harris remedied the deficiencies of the former subjective and judgement-based classifications. In his paper '*A Functional Classification of Cities in the United States (1943)*', he was able to identify quantitatively dominant function out of multifunctional character of cities. He devised a scale of reference from his study of 984 towns (population more than 10,000) in United States based on the data provided by 1930 Census. He used two sets of information – i) employment and ii) occupational figures reduced to percentages to indicate cut-off points for urban activities varying in importance.

He identified nine principal categories of towns – *manufacturing (M), retailing (R), diversified (D), wholesaling (W), transportation (T), mining (S), educational (E), resort or retirement (X) and others (P)*. A condensed form of Harris’s classification is given in the Table 1.

Table 1

<i>Criteria used by Harris in Functional Classification of Cities of USA</i>		
<i>Types</i>	<i>Principal Criterion</i>	<i>Secondary Criterion</i>
Manufacturing Cities (M' subtype)	Employment in mfg. equals at 74% of the total employment in mfg. + retailing + wholesaling.	Mfg. and mechanical contain at least 45% of gainful workers (occupation figs.)
Manufacturing Cities (M subtype)	At least 60% of total employment in mfg. + retailing + wholesaling	Mfg. and mechanical contain between 30% and 45% of gainful workers.
Retail Centres (R)	In retailing at least 50% of the total employment in mfg. + wholesaling + retailing	At least 2.2 times of wholesaling alone.
Diversified Cities (D)	Employment in mfg. + wholesaling + retailing is less than 60%, 20% and 50% respectively of the total employment in these activities.	Mfg. and mechanical contain between 25% and 35% of the gainful workers.
Wholesale Centres (W)	Employment in W at least 20% of the total employment in M + W + R.	At least 45% as much as in retailing alone.
Transport Centres (T)	Transport and communication at least 11% of the gainful workers, and workers in transport and communication equal at least one-third the number in mfg. and mechanical.	At least 2/3 the number in trade.
Mining Towns (S)	In extraction of minerals for more than 15% of the gainful workers (for cities of more than 25,000 pop.)	—
University Towns (E)	Enrolment in colleges — (university, technical institution, liberal arts colleges and teachers' colleges) at least 25% of the pop. of the city.	—
Resort and Retirement Towns (X)	No satisfactory statistical criterion was found.	—

Source – S. Ghosh (2008) *Introduction of Settlement Geography*, pp. 34.

Harris’s classification suffers with some defects and is not universally viable. He used metropolitan districts as functional units because the industry-group data such as those published now were not available during that time. Consequently, number of cities which were too small to have metropolitan districts were left unclassified.

Carter (1975) labelled Harris’s classification as subjective because the decisions to access or delete with a minimum number or cut-off points seem to be a personal one and were set by simple empirical means. Under the class of ‘Transport and Communications’, workers engaged in telephone and telegraph services were omitted, which was nothing more than a subjective decision.

C. Howard Nelson's Classification:

Nelson through his classification removed the shortcomings of the earlier classifications by using a stated procedure that could be objectively checked by other workers. His paper 'A Service Classification of American Cities' was published in the journal Geography in 1955. He decided to base his method of classification entirely upon major industry groups as listed in the 1950 Census of Population for standard metropolitan areas, urbanized areas and urban places of 10,000 or more population. He omitted the little significance groups like agriculture and construction, and finally, arrived at the nine activity groups (manufacturing; retail; professional services; wholesale; personal service; public administration; transport and communication; finance, insurance, real estate and mining).

The problem of city specialization, and also the degree of specialization above the average was solved by giving margins of different degree to different size classes. He did find a definite tendency for the percentages employed in some activities vary with city size. The question – 'When is a city specialized?' was solved by using a statistical technique – the Standard Deviation (SD).

Table 2

<i>Nelson's Nine Activity Groups (1950)</i>									
	<i>Manu- facturing</i>	<i>Retail Trade</i>	<i>Professional Service</i>	<i>Trans- portation and Communi- cation</i>	<i>Personal Service</i>	<i>Public Adminis- tration</i>	<i>Wholesale Trade</i>	<i>Finances Insurance and Real Estate</i>	<i>Mining</i>
	<i>Mf</i>	<i>R</i>	<i>Pf</i>	<i>T</i>	<i>Ps</i>	<i>Pb</i>	<i>W</i>	<i>F</i>	<i>Mi</i>
Average	27.07	19.23	11.09	7.12	6.20	4.58	3.85	3.19	1.62
Standard Deviation	16.04	3.63	5.89	4.58	2.07	3.48	2.14	1.25	5.01
Average Plus 1 SD	43.11	22.86	16.98	11.70	8.27	8.06	5.99	4.44	6.63
Average Plus 2 SD	59.15	26.49	22.87	16.28	10.34	11.54	8.13	5.69	11.64
Average Plus 3 SD	75.19	30.12	28.76	20.86	12.41	15.02	10.27	6.94	16.65

Source – H. J. Nelson (1955) 'A Service Classification of American Cities', *Geography*, Vol. 31, pp. 195.

A city can be specialized in more than one activity and to varying degrees. Thus he showed for each city all activities that qualified for plus 1, plus 2, or plus 3 SDs above the mean. Table 2 indicates averages and SD in percentages for selected nine activity groups as developed by Nelson(1950).

Suppose, any city which is classified as Pf 2F, it means that it has 22.87 or more but less than 28.76 per cent of its labour-force employed in professional service and 4.44 or more but less than 5.69 per cent employed in finance, insurance and real estate. In short, the table indicates, the number of SDs shows the degree to which the urban centre stands out for the activity in question. A city which does not fall even under 1 SD, average in any activity appears as diversified D, in Nelson's classification.

IV - Functional Classification of Indian Cities

The urban geographers have applied a number of techniques to classify the urban places in India on the basis of their functions. Most of the classifications have utilised the occupational data provided by the Census of India. The first attempt was made by Amrit Lal (1959). He used the location quotient (L.Q) method to determine the functional classification of the Class I cities of India. According to Lal, all the Class I cities of India, except a few, are multifunctional in nature. Qazi Ahmad (1965) used 62 variables to classify 102 Indian cities on the basis of their functions. Subsequently, Ashok Mitra (1971, 1973) used seven categories of workers as variables grouped into three major functional types, e.g. manufacturing, trade, transport and services.

In India, the problem of classifying urban centres is not an easy task. This is because of several reasons. First, the number of towns in India is too large to handle on some viable grounds. The size of towns has a wide span ranging between 5,000 to 10 million. Secondly, the towns of India have a long historical background and have been under various regimes dating back thousand years from birth of Christ to the present era of democratic set-up. And finally, the data about functions and economy of Indian cities have not yet been standardized because of the absence of a suitable urban agency to deal with these. Under these circumstances classifications and categorization of urban places in India differ from state to state and from author to author. The most common functional classification of the Indian cities is –

1. Administrative Cities: The main function of the administrative cities/towns is to administer the country, state or any other administrative unit. It includes not only the capital cities of the country, but also all the centres of states, districts and other administrative divisional headquarters of the country. In the administrative cities are placed the legislative, executive and judiciary of the respective administrative unit. New Delhi, Mumbai, Kolkata, Chennai, Bangalore, Hyderabad, Lucknow, Jaipur, Patna, Bhopal, Chandigarh, Aizawl, Kohima, etc. are essentially administrative cities.

2. Defence Towns: The dominant functions in a defence town pertain to security and defence of the country. In fact, such towns are characterised with cantonments, barracks, military training centres, garrisons, air-force bases, air-fields, harbours, strategic locations, and naval headquarters. Adampur, Ambala, Halwara, Jalandhar, Jamnagar, Jodhpur, Khadakwasla, MOHO, Pathankot, Udampur, Vishakhapatnam, etc. are some of the examples of defence towns.

3. Cultural Cities: These cities perform either religious, educational or recreational functions. The cities of Allahabad, Amritsar, Ajmer, Bodh-Gaya, Dharamshala, Gangotri, Hardwar, Kushipur, Nashik, Peerankalyar (Uttarakhand), Pushkar, Varanasi, etc. are the religious centres in which the religious rituals are performed, and the markets are full of religious books and accessories re-quired for the religious rituals.

The educational cities like Aligarh, Gurukul, Kharagpur, Pantnagar, Shantiniketan, etc. are some of the examples of educational cultural centres.

4. Collection Centres: The mining towns, fishing ports, lumbering centres are included in this category. The urban places of Zawar near Udaipur, Digboi in Assam, Ankleshwar in Gujarat, Bailadila in Chhattisgarh; Kathgodam, Haldwani and Kotdwar in Uttarakhand, Machlipatnam, Kakinada, Naysari, Mahe, Kozhikode, Cuddalore, etc. are some of the examples of collection centres.

5. Production Centres: The urban places having manufacturing industries are included in the category of manufacturing cities. The manufacturing cities are generally well connected with the areas of raw material and the markets where the manufactured goods can be sold. Thus, these cities are well connected by roads and railways. Bhilai, Bhadrawati, Bokaro, Coimbatore, Dhanbad, Durgapur, Jamshedpur, Vijainagram, Vishakhapatnam, etc. are some of the important manufacturing centres of India.

6. Transfer and Distribution Centres: The main functions performed at the transfer centres are trade, commerce and services. This category includes several categories of towns. The market towns are characterised by markets containing wide range of goods, godowns, cold storages and wholesale markets. The most important commercial centres are Mumbai, Kolkata, Chennai, Ahmadabad, Gwalior, Indore, Ludhiana, Muzaffarpur, Phagwara, Surat, etc.

7. Resorts: The urban places which cater the recreation needs of people are known as resorts or recreation towns. These towns may be based on health-giving water (hot-springs), seaside-recreation, mountain-climbing, sports facilities, national parks, tiger reserves and places of aesthetic beauty. Bageshwar, Dehra-Dun, Dalhousie, Darjeeling, Dharamshala, Gulmarg,

Kullu, Manali, Mt. Abu, Nainital, Pahalgam, Panchmadhi, Ooty, Ranikhet, etc. are some of the examples of resort towns.

8. Residential Towns: Some of the towns and cities are developed just to provide residential accommodation to the urban people. In Delhi, Rohini, Indrapuram, Saraswati Vihar, Zakirnagar, etc. are some of the examples of residential towns. Panchkula near Chandigarh, and Partapur near Meerut are essentially residential towns. Similar residential towns are found at the outskirts of Mumbai, Kolkata, Chennai, Bangalore, Hyderabad, Jaipur, etc.

9. Seaports: The basic task of seaports is to export and import goods. Diamond Harbour, Haldia, Kandla, Kochi, New Mangalore, New-Tuticorin, Okhla, Paradeep, etc. may be included in this category.

10. Cities with Diversified Functions: As stated, most of the cities and towns of India are multi-functional. The capital cities are also the commercial, manufacturing, cultural and recre-ational centres. The seaports are engaged in trade and commerce, beside cultural activities. Cities like Mumbai, Delhi, Kolkata, Chennai, Vishakhapatnam, Jaipur, Allahabad, and Varanasi, are performing highly assorted functions.

Over the period of time number of cities have seen changes in their functional character. One has to keep in mind these changes while attempting a functional classification of cities. For example, some of the important cities of the past have disappeared as they lost their strategic, administrative, manufacturing or commercial importance.

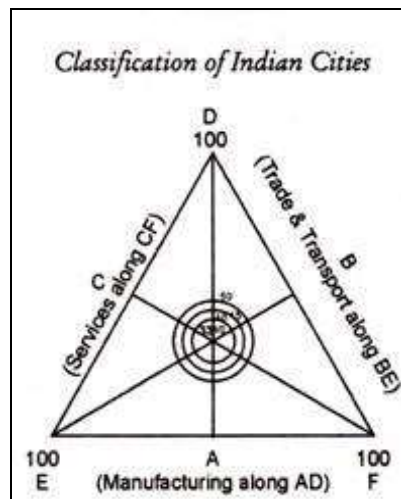
B. Mitra's Classification of Indian Cities:

Ashok Mitra, a former Registrar General of the Census of India, attempted a comprehensive classification of all Indian Cities. He grouped the seven industrial categories' of workers into three broad groups:

- (a) Manufacturing Town (percentage of workers in III, IV, V and VI put together is greater than the percentage in VII + VIII or in IX).
- (b) Trade and Transport Town (percentage of workers in VII + VIII is greater than IX or in III + IV + V and VI put together).
- (c) Service Town (where percentage of workers in IX is greater than workers in III + IV + V + VI or percentage in VII + VIII).

Degree of specialization in each of the three basic groups (a, b, and c) was identified by a triangular method on a graph. The three sides of an equilateral triangle represent three groups by 100 values as shown in Figure 1.

Figure 1



The values of all the three groups are then plotted, and a point for each town within the triangle's perpendiculars was located. Three circles from the in centre point ($33 \frac{1}{3}$) are drawn proportionately to represent 40, 45 and 50 values respectively.

These show increasing tendency for specialization. The points within the first circle show highly diversified functions; points between first and second circle are moderately diversified; points between second and third represent specialized predominant function; and the points outside the outer (third) circle show highly specialized predominant function.

The classification of 2,528 towns shows that as many as 736 were agriculture, (total number of workers exceeding the number of workers in three non-agricultural groups), and out of 1,792 non-agricultural towns, 655 were manufacturing towns, 708 as trade and transport towns, and 429 as service towns.

Mitra's classification, on the whole, brings the major categories of cities with their specialization. It distinguishes three broad functional categories - manufacturing, trading and service (administration) among cities. Majority of cities show no clear specialization in one economic activity and have diversified economic base. The diversified city with multiple functions constitutes the most common and representative type of cities.