

CHAPTER - VFunctional Classification of Urban Agglomeration

Urban centres being the agglomeration of human population and influenced by the site and situation perform certain essential functions. The varied nature of urban functions renders the study and grouping of urban centres into functional types sometimes a difficult task. Functions provide a more effective and useful means for classifying urban centres than any other attributes like population size and its ethnic composition, site and situation. The main problem, therefore, is to find out a suitable formula to define specific functional categories based on which the classification of urban centres of different of sizes can be made.

A good number of attempts have been made to present functional classifications of towns in different regions of the world. The methods used to classify towns into functional classes falls under three categories, empirical, empirical-cum-statistical and purely statistical. The first is known as the qualitative approach while the latter two are referred to as quantitative methods.

The empirical methods are absolutely based on faith, observation, personal knowledge and talent of the investigator. Aourousseau⁽¹⁾ is a Pioneer in this line and he has been followed by Mekenzie⁽²⁾, Hall⁽³⁾, Gist and Halbert⁽⁴⁾, Weimer and Hoyt⁽⁵⁾. The next category of methods used for the functional

classification of towns combines the empirical and statistical bases. The contribution of Harris⁽⁶⁾ belongs to this type followed by Kneedler⁽⁷⁾, Jones⁽⁸⁾, Hart⁽⁹⁾ etc. The third and latest category of methods used is one which depends solely on statistics. They are better understandable and more reliable. Most of the earlier works lack statistical approach but modern workers have tried to classify the towns based upon statistical data. But the same method can not be applied to all the regions since it depends upon the nature of the data available.

It may be pertinent here to make a note of the methods already used in previous works by different authors. In this regard Arousseau⁽¹⁰⁾, pioneering in the field of Town's classification, makes it on the basis of their functions and classifies them first into active and non-active (or inactive) types. Active towns are further divided into centres of administration, defence, culture, production, communication and recreation.

Mckenzie⁽¹¹⁾, a sociologist, has classified American communities into four broad groups - (i) primary service community which functions as an intermediate link between the rural countryside, producing primary products, and the metropolitan centre. (ii) Commercial community which may be explained as centre of collection and distribution. (iii) Industrial community and (iv) Other communities (recreation, political, education and communities for defence).

But his work does not provide any specialisation index for any of the functions.

Hall⁽¹²⁾ in considering the growth of various Japanese towns has grouped them into castle towns, temple and shrine towns, commercial towns and modern industrial-cum-commercial cities.

Gist and Halbert⁽¹³⁾ have followed the principle of classification adopted by Auroousseau⁽¹⁴⁾, adding further in the list diversified towns, i.e., towns which do not specialise in any particular function.

Weimer and Hoyt⁽¹⁵⁾ have made their study on the basis of the source of employment and have categorised towns into industrial, commercial, political, recreational or health resorts and educational centres.

Harris⁽¹⁶⁾ is perhaps the first one to make a classification of American towns on the basis of statistical criteria. He has studied the occupational structure and employment figures and thus has classified American towns into manufacturing with two sub types depending upon the degree to which manufacturing activity dominates in the economic base of the town, retail, diversified, wholesale, transport, mining, university centres and resort and retirement centres.

Kneedler⁽¹⁷⁾ has accepted Harris' method with some modifications in the study of Economic Classification of cities. Hart⁽¹⁸⁾ has utilized Harris' approach in the classification of cities in the American south based on the data for 1950. He

has brought forth eleven types of cities taking entirely occupational data.

Pownall⁽¹⁹⁾ is again the first one who has used simple percentage deviations from the national mean as criteria for classifying the towns of New Zealand into different functional types.

Alexander⁽²⁰⁾ has utilised an altogether different base for his study. He has studied basic and non-basic or primary and secondary services of towns and has classified economic functions on the basis of space-relationships. It reveals one group of economic ties which bind a city to other areas and it permits a classification of and comparative analysis of settlements providing further method for classifying individual economic activities within a city.

Nelson⁽²¹⁾ has developed a method more similar to that of Pownall. He has used statistical procedure which is simple and widely understood. According to him, standard deviations are a useful device for assessing the varying proportions of urban functions in American cities. He has calculated separately the mean percentage of each function for the towns and also their respective standard deviations and has thus distinguished ten functional categories of American cities and three classes of specialisations of all the functional categories. The functional categories are manufacturing, retail trade, wholesale trade, professional services, public administration, finance insurance and real estate,

mining and diversified centres. The three classes of specialisation are (i) Mean +1SD (ii) Mean +2SD and (iii) Mean +3SD. The degree of variation can be compared by the use of standard deviation between the activities having very high percentage and that with very low ones. The mean percentage varies from function to function which in turn depends upon total workers in an individual town. In this classification a city might provide more than one type of service in outstanding proportions.

Webb⁽²²⁾ has developed his method for determining specialisation indices and functional indices while classifying the small urban centres of Minnesota, U.S.A. by taking the ratio of the percentage employed in a function in a town to the mean percentage employed in that function in the urban complex. The ratio of local percentage to mean percentage of all the towns is the best means of functional specialisation. Later on he has suggested specialisation index as a derivative of functional index. He has calculated specialisation index by summing up all the functional indices and dividing them by hundred. Finally he has classified seven categories of towns grouping them as 'most specialized', least specialised and intermediates, etc.

Maxwell⁽²³⁾ in his study of functional structure of Canadian cities has taken into consideration the dominant functions of each urban centre and its degree of functional specialisation. Janaki⁽²⁴⁾ has classified towns of Kerala,

showing the impact of physical and economic factors on their functions and growth, into (i) administrative centres, (ii) commercial and industrial towns, (iii) agricultural, collecting and distributing centres, or market towns, (iv) temple towns and (v) plantation towns. But her classification lacks statistical approach.

Lall⁽²⁵⁾ has proposed a scheme for classifying Indian cities. He has prepared four arbitrary positive values with reference to the median values for measuring the specialisation in major industry groups, while the minor ones have been classified into normal and above normal intensity classes. Singh⁽²⁶⁾ has classified 467 towns of Uttar Pradesh by standard deviation method of Nelson and has found six categories of towns - manufacturing, commercial, transport, service, agriculture and diversified.

Singh⁽²⁷⁾ has calculated the functional indices for each of the eight occupational groups of all the 243 towns of Uttar Pradesh. Further he has calculated the specialisation index of each town for distinguishing the specific functions and has designated the towns as monofunctional, bifunctional, trifunctional, quadrifunctional and polyfunctional, the latter including pentafunctional, Hexafunctional, Hepta functional and octafunctional or diversified according to the number of their specific functions.

Sinha⁽²⁸⁾ has introduced a new method for functional classification of towns of Chotonagpur for which he has

considered the workers population for 1961. He has paid proper attention to both local as well as regional significance of each function. He has also calculated standard deviation from the mean for eight functional groups. To find out specialisation of towns and to compare the functional structure of each town, the functional specialisation has been adopted with little change. Specialisation Index has been calculated by adding up all the functional index value of 8 functions of an urban centre and dividing by 8 instead of 100 in Webb's method for considering the number of functional activities.

Biswas⁽²⁹⁾ has made an attempt to make an appraisal of the different methods of functional classifications for making a study of the urban centres in the district of Burdwan. He has used five methods for this purpose (i) Census method, (ii) Weaver's method, (iii) Doi's method, (iv) Rafiullah's method and (v) Nelson's method. In comparing these methods, the author is strongly in favour of Nelson's method in the classification of towns since it is based on a scientific approach and he considers regional mean values which, according to him, are the right indicators for assigning a town its true character.

In referring to the work of different authors it is intended to show that there is wide difference in the principles adopted for making classification of urban centres as characterised by their functions. Without going into the merits and demerits of the principles mentioned above, an

attempt has been made here to classify the urban agglomerations of West Bengal on the basis of their predominant functions which may be defined as the main activity in which the largest number of the working forces are employed. The urban agglomerations of West Bengal have been ranked in order of their importance in different functions viz. the function having the highest percentage of employment.

Nelson's method of standard deviation has been applied in the present study to classify the urban agglomeration of West Bengal. The occupational data compiled by the Census of India can well be used for this purpose. Moreover, the standard deviation method is a very simple and universally adopted one in any statistical calculation. Lastly, the SD values can be used for comparing the degree of variation in specialisation in any particular activity.

In the present classification of urban agglomerations nine industrial categories taken from Indian Census of 1971 have been used which include two agricultural groups combined to make one. Neither Nelson nor Harris has considered agriculture as an important function in towns but it finds a place in many of the Indian towns where some people may remain engaged in such primary activities using land not yet completely built-up.

The employment percentage of workers engaged in each of the category has been taken as the base for functional classification of urban agglomerations and standard deviation

Table - 99

Average and Standard Deviation of Various Functions

Values	Agri- cul- ture	Min- ing	House -hold indu- stry	Manu- fac- turing	Cons- truc- tion	Trade & comm- erce	Transpo- rt & communi- cation	Other services
Average	11.86	3.12	6.02	20.02	4.49	13.44	14.55	21.43
Standard Deviation	12.02	7.91	10.62	19.32	12.07	8.09	13.91	10.82
Average +1SD(SD ₁)	13.88	11.04	16.64	39.34	16.56	26.53	28.46	32.30
Average +2SD(SD ₂)	35.90	18.95	27.26	58.66	28.63	34.62	42.37	43.12
Average +3SD(SD ₃)	47.92	26.86	37.88	77.98	40.70	42.71	56.28	53.94
Average +4SD(SD ₄)	59.94	34.77	48.50	97.30	52.77	50.80	70.19	64.76
Average +5SD(SD ₅)	71.95	42.68	59.12	116.62	64.84	58.89	84.10	75.58

from the averages, therefore, calculated for each of the eight activity groups as shown in the Table-99.

Using the average and the standard deviations, the urban agglomerations have been grouped into appropriate functional categories like agricultural, mining, household industry, manufacturing, constructional, commercial, transport, other services and diversified. Five degrees of variation from the average are recognised and centres are given their own ratings as they occur. Centres that are 1SD from the average in agriculture and classed as agricultural centres and 2SD from the average as agricultural 2 and so on. Similar procedure is followed for other activity groups. Centres that do not merit any functional category in SD valuations, are all, including the average towns, designated as Diversified towns. A list of urban agglomerations with their mean and standard deviation in each function is enclosed at the end of this work (Appendix-1).

Categories of Urban Agglomerations According to Function

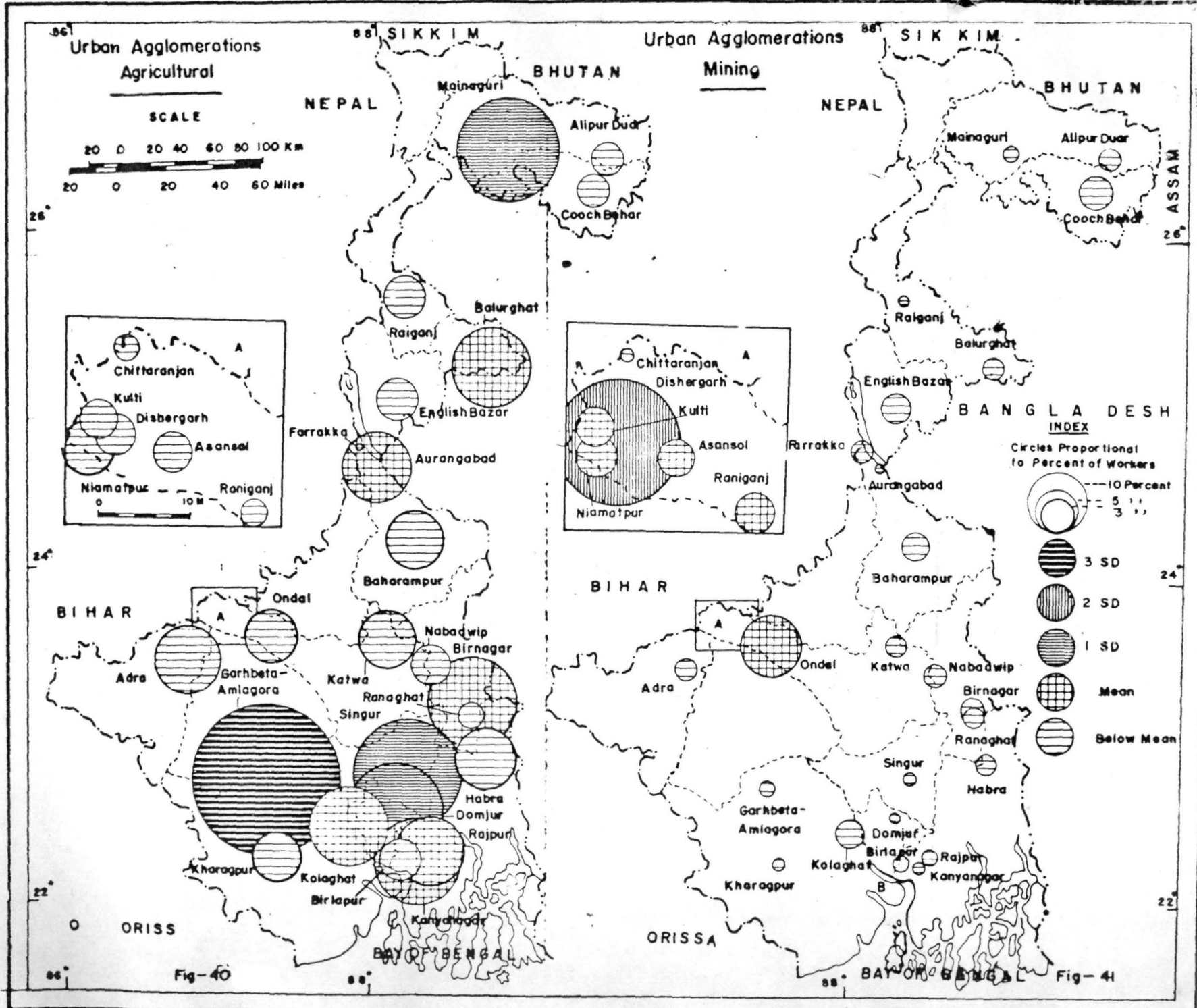
It may be worthwhile to make an overall assessment of the relationship of functional character and the size of the urban agglomeration.

1. Agricultural : According to this classification, 10 urban agglomerations have been identified to be agricultural in character, having significant percentage of population engaged in agriculture which is above the average (11.96%).

Out of a total number of 10 urban agglomerations in this category, 4 are recognised as agricultural as they occur in SD computations (Fig.40). Singur (33.73%) Mainaguri (30.42%) and Domjur (26.91%) occur in 1SD (23.99%) and Garhbeta-Amlagora - (55.73%) in SD_3 (47.92%) category. It is highly interesting to note that urban agglomerations belonging to this category of 'Agricultural' are mostly those in class III and IV groups by the size of their population. As a matter of fact, Garhbeta-Amlagora is originally a overgrown village and being highest in hierarchical order in this category, still has agricultural workers, more than those employed in non-agricultural activities. Again Balurghat, a district headquarters has more than 15 per cent of its total workers still engaged in agricultural activities.

2. Mining : This group of urban functions includes mining and quarrying, as the major activities. In general 6 centres come under this category, 5 of them being average centres (Ondal, Niamatpur, Raniganj, Asansol and Kulti) having above 3.13 per cent workers in this group (Fig.41). The only centre notable for this activity is Dishergarh (44.27%) and having SSD value seems to be very highly specialised in mining activity.

3. Household industry : In all, seven urban agglomerations belonging to this category have the mean value above 6.02 per cent which are Aurangabad (59.43%) Birnagar (15.83%), Nabadwip (14.40), Domjur (12.37), Niamatpur (6.33),



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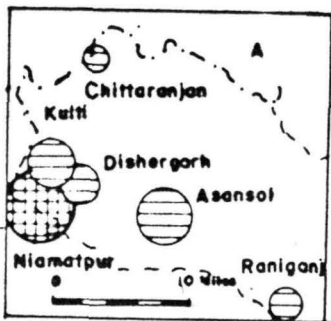
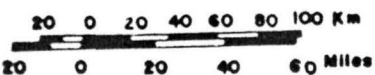
Kanyanagar (6.30) and Katwa (6.08) (Fig.43). Aurangabad, though small in the size of population, is very highly specialised in household industry having 5SD value, while other centres do not fall in SD computation.

4. Manufacturing : Manufacturing is one of the most important urban functions in West Bengal. Only 3 urban agglomerations have a labour force above the mean (20.02) in this activity. Out of these 3 centres, 3 are classed as manufacturing as they stand above SD ratings (Fig.43). Kulti has 1SD and Chittaranjan and Birapur have 3SD value with 45.15 per cent, 32.11 per cent and 33.99 per cent labour force respectively engaged in manufacturing activities. The first one is less specialised while latter two are highly specialised in SD rating.

5. Construction : Construction, a new function in Indian towns beginning particularly with the implementation of the new development plans, includes all the public construction works pertaining to road, railway lines, bridges, dams etc. Among the urban agglomerations Farrakka (69.10%), Kolaghat (5.17%) and English Bazar (5.73%) which maintain a considerable section of their labour force engaged in such activities, stand above the mean (4.49%) (Fig.44). Farrakka is recognised as very highly specialised as a constructional centre as it scores 5SD value in spite of the fact that it is small in the size of its population.

Urban Agglomerations
House-hold Industry

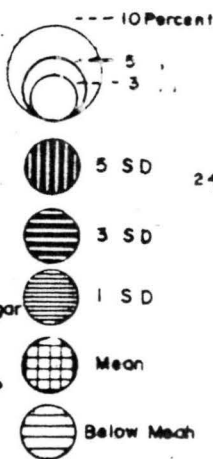
SCALE



Urban Agglomerations
Manufacturing

INDEX

Circles Proportional to Percent of workmen



BIHAR

ORISSA

Fig-42

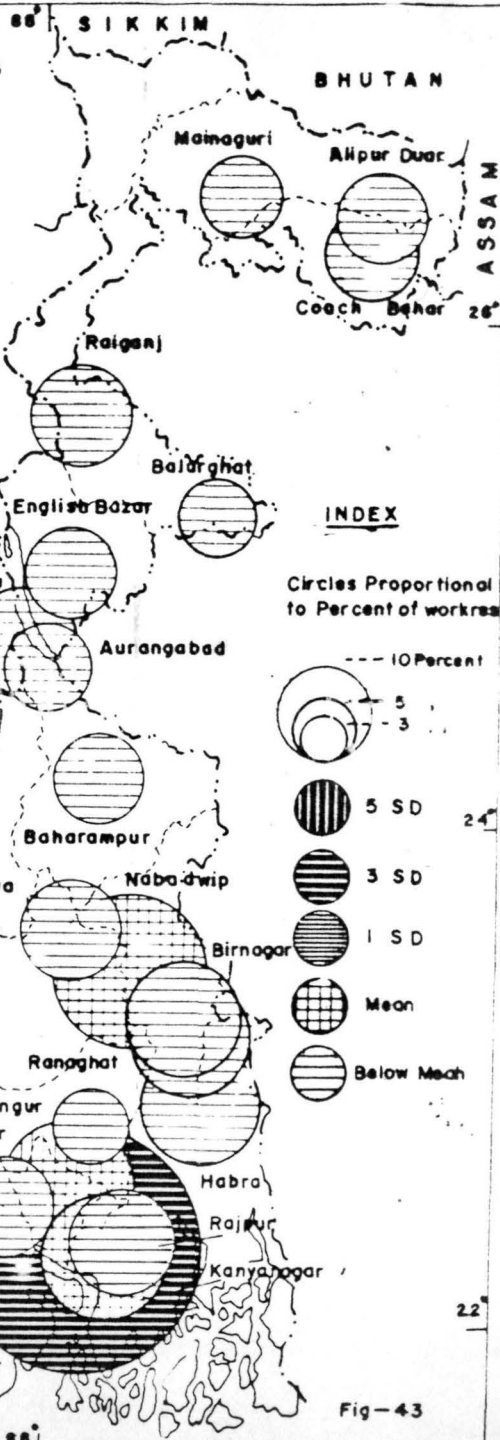
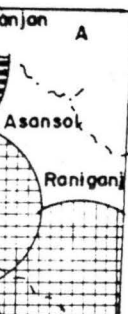
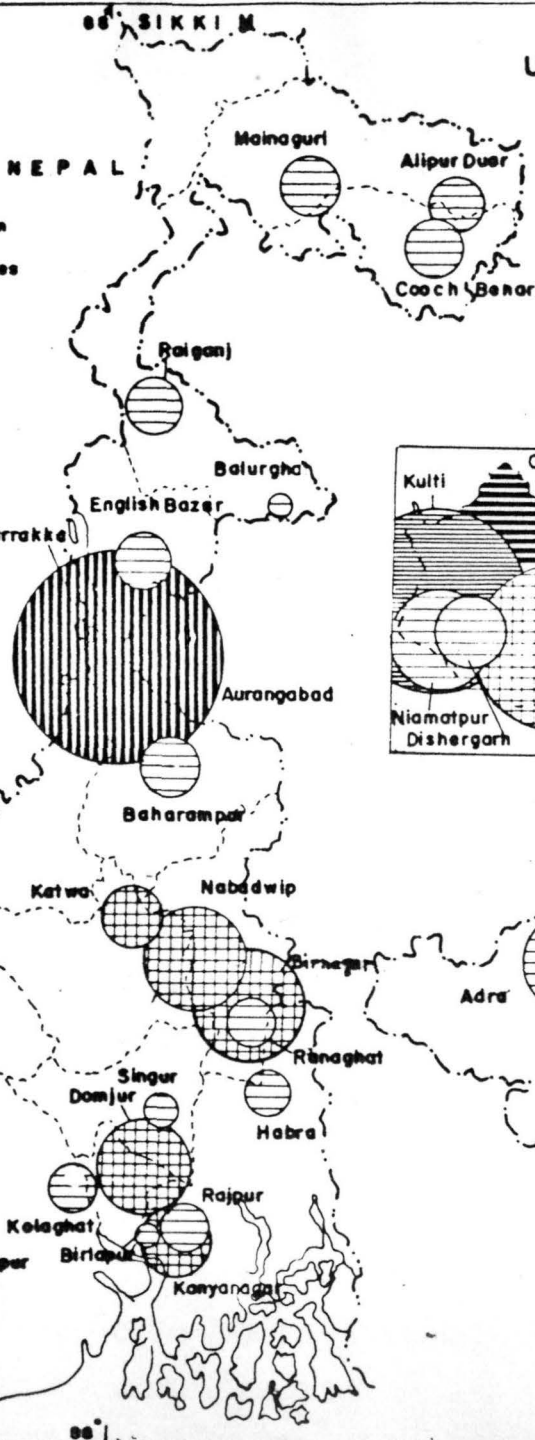
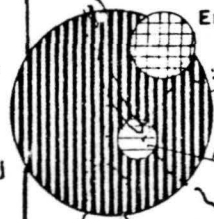
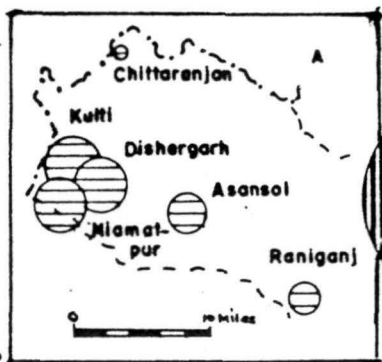
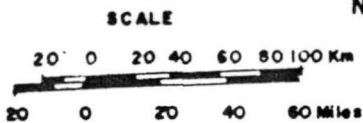


Fig-43

6. Trade and commerce : In all considerations, trade and commerce appears to be one of the most important urban functions of the region. It includes both basic and non-basic activities. Although 15 urban agglomerations belongs to this category, presenting about 50 per cent of the total number of urban agglomerations in the State, most of these are average centres, having little above 13.44 per cent of total working force engaged in such activities (Fig.45). However, 6 of them may be classified as commercial centres namely Nabadwip, Habra, Ranaghat, Raiganj, Katwa and Kanyanagar though these centres having 1SD value do not show high specialisation in these activities.

7. Transport : West Bengal possesses only few urban agglomerations specialising in transport as a major function. There are 3 centres having a working force above the mean (14.55%) engaged in this activity. The percentage of workers required to bring a town into this groups is 23.46. As a result out of 3 urban agglomerations 5 are recognised as outstanding transport points as they fit in SD evaluation (fig.46). Alipur Duar and Niamatpur with 1SD and Kharagpur, Ondal and Adra with 2SD have an important place as transportation points. For instance, Kharagpur and Ondal having above 50 per cent of total labour force engaged in this activity are primarily thriving on their nodality. Except Niamatpur, all centres are important as railway centres from which routes diverge in all directions.

Urban Agglomerations
Construction

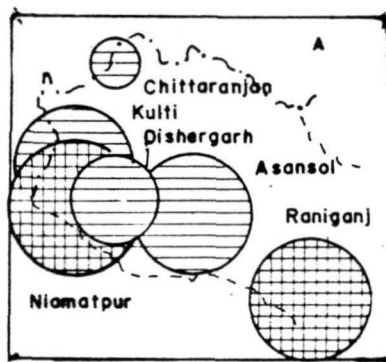


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Fig-44

Urban Agglomerations
Trade & Commerce

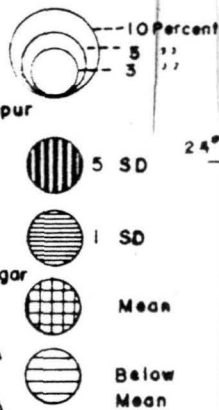


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Fig-45

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Circles Proportional
to Percent of Workers



8. Other services : This group comprises administrative, health, education, science, religious and welfare services, legal services, community services, recreation and personal services. Altogether, 12 urban agglomerations of West Bengal may be classified as service centres (Fig.47) where services ^{form} the primary functions which show a score above the average (21.48%). Of these centres, 6 may be considered as outstanding service centres as they score above SD ratings. Balurghat (37.04%), Baharempur (39.70%), English Bazar (37.19), Cooch Behar (38.09) and Singur (26.93) have 1SD value and Rajpur (44.13) has 2SD value. The first four centres are district headquarters and as such they have attracted the workers engaged in administrative activities as well as those engaged in personal and professional services.

9. Diversified : Such centres which do not fall into any of the above categories and where percentage of employment values fall below the SD value, are considered as diversified in functional character. There are 4 urban agglomerations in West Bengal which can be said to have no specialised function and have not even a predominant function. They are - Asansol, Raniganj, Birnagar and Kolaghat. It is a characteristic feature of even very large towns in India to have their working force engaged in a variety of functions, but none of the functions attaining enough importance to give a minimum degree of specialisation. As it will be clear from the Table-100 among 30 urban agglomerations from which Calcutta

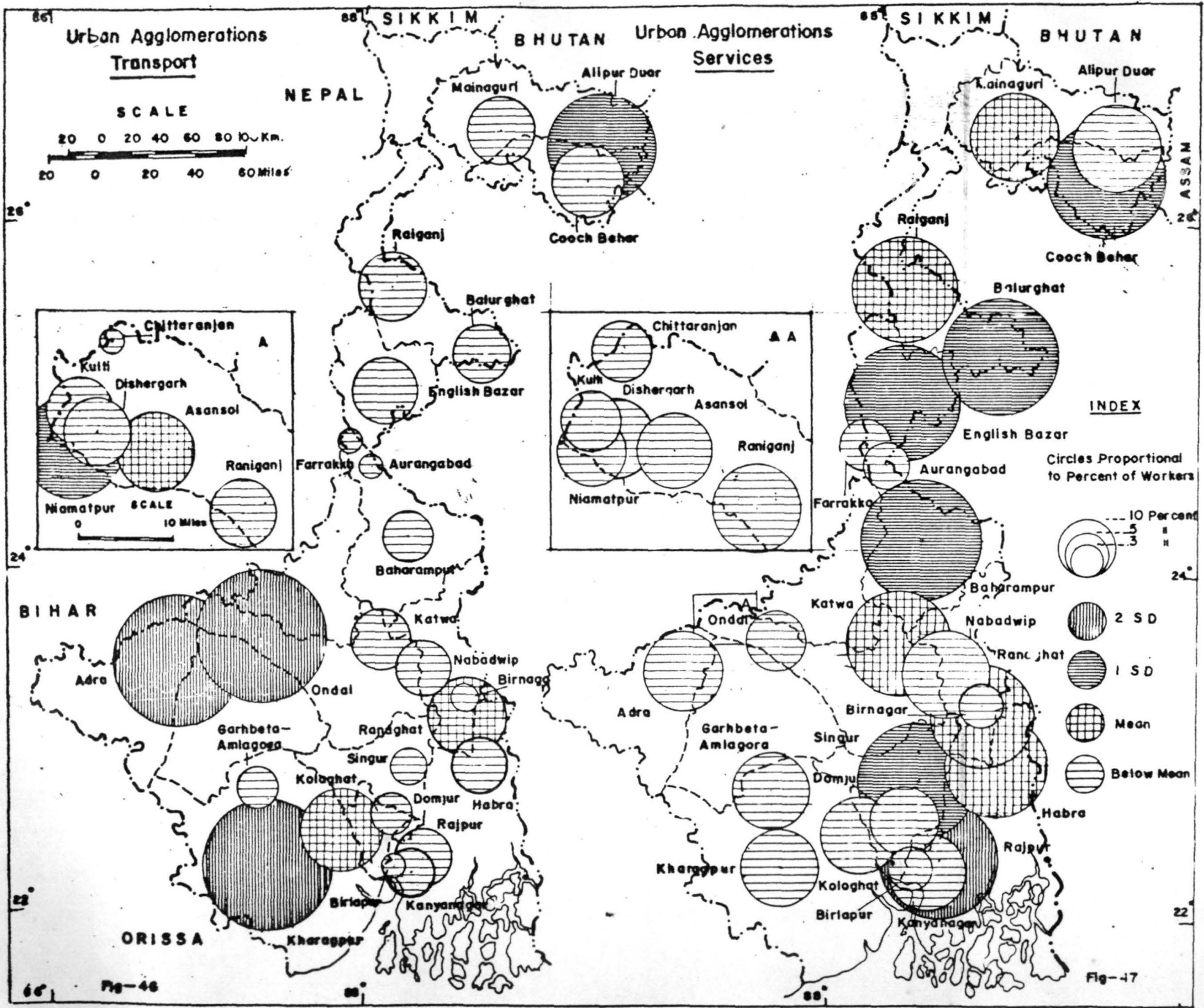


Table - 100

Percentages of workers engaged in different functions to total urban agglomerations

workers

Name of urban agglomerations	Wor- kers	Agri- cul- ture	Min- ing	House- hold Ind- ustr- ies	Manu- fac- tu- ring	Const- ruc- tion	Trade & comm- erce	Trans- port	Servic- es
1. Asansol	17.95	8.67	27.03	13.71	28.24	11.55	17.01	16.82	13.15
2. Kharagpur	10.77	8.79	1.18	2.38	6.45	3.46	5.34	30.30	8.24
3. Nabadwip	6.15	2.85	3.35	18.69	6.21	4.21	8.70	2.91	5.55
4. Habra	5.34	7.29	1.89	3.08	4.66	4.41	7.58	2.36	6.83
5. Raniganj	3.64	0.97	6.30	1.21	5.91	1.65	3.94	2.37	3.51
6. Balurghat	3.71	8.45	1.76	0.63	1.27	1.56	4.96	1.81	6.14
7. Ondal	2.67	2.67	12.60	0.22	0.68	1.77	1.79	7.41	1.21
8. Baharampur	5.01	5.55	4.63	5.58	2.00	6.55	6.40	2.00	8.90
9. English Bazar	4.55	3.04	4.34	4.01	1.89	6.63	5.93	2.80	7.57
10. Ranaghat	3.04	0.64	1.15	2.05	2.46	1.78	4.66	2.78	3.88
11. Cooch Behar	4.54	1.86	5.21	4.42	2.12	5.64	5.54	3.53	7.73
12. Kulti	3.21	1.87	4.61	2.00	6.35	5.09	3.09	2.17	1.45
13. Alipur Duar	3.73	1.48	2.44	3.19	1.54	4.90	4.38	6.81	3.37

Table-100 contd.

14. Birnagar	1.69	4.94	1.01	5.60	1.29	0.76	1.33	0.46	1.62
15. Raiganj	2.67	1.74	0.30	2.47	1.51	2.36	4.31	1.94	3.64
16. Rajpur	2.13	3.65	0.33	1.36	1.39	2.63	1.39	0.99	4.21
17. Chittaranjan	3.47	0.30	0.31	0.51	12.43	0.29	0.64	0.34	1.51
18. Birlapur	1.30	1.11	0.36	0.34	6.60	0.03	0.32	0.13	0.41
19. Katwa	1.34	2.12	0.64	2.35	1.00	1.62	3.07	0.97	2.30
20. Dishergharh	0.75	0.44	14.62	0.33	0.21	1.01	0.37	0.50	0.53
21. Aurangabad	1.39	2.23	0.11	17.35	0.52	0.97	0.76	0.03	0.36
22. Adra	2.20	3.32	0.12	0.56	1.07	0.35	1.00	5.33	1.70
23. Mainaguri	1.31	7.03	0.61	1.36	0.64	1.22	1.31	1.31	1.75
24. Domjur	1.15	3.93	0.10	2.93	1.23	0.72	1.04	0.33	0.61
25. Garbeta-Amlagora	1.05	7.60	0.40	0.59	0.21	0.22	0.75	0.30	0.79
26. Kolaghat	0.35	1.95	0.36	0.54	0.47	1.62	0.95	0.97	0.64
27. Niamatpur	0.91	0.33	2.06	1.21	0.43	1.02	1.14	1.46	0.52
28. Farrakka	0.34	0.01	0.46	0.05	0.56	21.36	0.24	0.07	0.25
29. Singur	0.31	3.51	0.14	0.24	0.26	0.34	0.60	0.14	1.34
30. Kanyanagar	0.33	0.91	0.03	0.44	0.30	0.13	0.46	0.11	0.24

and Mrigala are excluded for reasons explained earlier, Asansol has the highest percentage of working force in mining, manufacturing, trade and commerce and services but no sector is predominant enough to put it above SD values. Hence, one may conclude that strange though it may sound, Asansol can not be considered to be specialised in any particular function but has earned equal speciality in all of them, giving it a diversified character in spite of the fact that both Asansol and Raniganj are Class I centres considering the size of their population.

From the above study it appears that in West Bengal out of 30 urban agglomerations, only 3 are very highly specialised, namely Dishergharh, Aurangabad and Farrakka, each having scored 5SD value. Dishergharh is specialised in mining, Aurangabad in household industry and Farrakka in construction. Following this, another 3 urban agglomerations namely Chittaranjan, Birlapur, and Garhbeta-Amlagora are highly specialised with 3SD value of which the former two are specialised in manufacturing and latter, surprisingly enough, in agriculture. Another 4 urban agglomerations are specialised with 2SD value and they are Kharagpur, Ondal, Adra and Rajpur of which the former 3 are specialised in transport and that is mainly the railway and the last one is in 'other services'. For instance, Kharagpur is the headquarters of the South-Eastern Railway's Divisional office while Ondal and Adra are very important railway junctions. Another 16 urban

agglomerations have a score value of 1SD. Of these, three are (Mainaguri, Domjur and Singur) specialised in agriculture, one (Kulti) in manufacturing, six (Nabadwip, Habra, Ranaghat, Raiganj, Katwa and Kanyanagar) in trade and commerce, two (Alipur Duar and Niamatpur) in transport and five (Balurghat, Baharampur, English Bazar, Cooch Behar and Singur) in 'other services'. Singur having 1SD value in both 'Agriculture' and 'Services' may be called service centre as it has engaged large proportion of total workers than agriculture. The remaining four (Asansol, Raniganj, Birnagar and Kolaghat) urban agglomerations have a diversified character in their functions. These centres have crossed mean value in many functions but they do not have any specialised functions.

It is obvious that in most cases every urban agglomeration has originated from a single specialised function which in course of time attracted other functions, allied to the parent one, and thus ultimately has given rise to a complexity of urban functions.

On the whole, therefore, it can be concluded that out of 30 urban agglomerations considered in terms of their activities, 26 emerge with values above the SD, of which 3 are agricultural, 1 mining, 1 household industrial, 3 manufacturing, 1 constructional, 6 trade and commerce, 5 transportation and 6 are service centres.

Thus, the functional classification of the urban agglomerations gives more or less a clear idea about their functional specialization. It is obvious that a large number

of urban functions are common to each of them but it is interesting to observe that one or more than one such common functions get prominence to become the determining function for urban growth and thus contributing to the emergence of agglomerations. Further, it is the central city or town in the agglomeration which plays a vital role in attaining the character of functional specialization in most of the cases where as the other constituents of the agglomerations adopt a more subdued role and are dominated by the central city or town in their functional performance. It is important to note that such functional specialization is found in the case of 26 urban agglomerations while in the case of 4 urban agglomerations the character is diversified regarding their activities.