CHAPTER VII

FUNCTIONAL STRUCTURE OF TOWNS

PURPOSE AND SIGNIFICANCE

Even from early times, towns have been distinguished into types on the basis of their predominant functions. Function is the driving force of towns, and more basically, it is their function of essentially non-agricultural or non-food procuring type which distinguishes them from the villages. Functional structure of towns not only suggests the type of resource base of the country of their setting, but also hints at the role they are playing in the life of the community at large, and the nature of relationship each town bears to others.

Functional specialization is a necessary corollary of an integrated urban system of a region, and implies a high level of complementary interaction amongst towns. Where towns are isolated from one another—each with its own hinterland over which it has a good deal monopoly—there can be little specialization in functions. There each town would perform be a diversified one, serving almost all the needs of its hinterland. Functional specialization, therefore, proceeds as well as necessitates a high level of interaction and integration amongst towns of a region. Study of functional structure and specialization serves also as complementary to central place hierarchy of an urban system.*

The degree of specialization of towns in certain function/s at the cost of some others is roughly the reciprocal

* For details of all notions regarding central place hierarchy see Chapter IX of this work, where this scheme has been applied and urban system worked out for Malwa.
of their deviation from the central place system. That is, the extent to which various towns are specialized in one or more functions at the cost of other functions, largely accounts for discordance in components and attributes of a central place system. In so far as this holds, an analysis of functional structure of towns becomes complementary to the study of regional urban system within the conceptual frame work of central place theory, or, in other words, it largely accounts for residual from central place scheme as applied to any particularly region.

Nevertheless, it is too restrictive a view, nay, a hiper- Christallerian constrictiion upon an urban system- to regard functional specialization as a sheer 'deviation' or 'distortion' from the normal organisation of towns in an urban system, as some foremost human geographers would tend to do.* For one thing, although central place functions have been the essential role of towns and cities, they are, by no means, their sole function. Even from the earliest times, towns in many cases have acted as break of bulk points or transport entrepots. Not infrequently towns have also existed basically to perform specialized functions peculiarly suited to their site, location, local resource base, etc. This third mode of urban existence became overwhelmingly important and wide-spread in the wake of the industrial revolution, where upon the areas of inanimate energy and industrial raw materials became the chief haunts of urban activities (Jain, J.L., 1974, p.24). Such activities are governed by notions radically different from the tenets of the central place theory.

In the present work the analysis of functional structure and specialization of towns is pursued as a link in the whole

* For example, see Hagget's (1965, op.92-100) treatment of such aspects of an urban system as sheer 'distortions' due to functional specialization route orientation, resource localisation etc.
work, which not only reveals some diagnostic features of the functional bases of towns but also identifies the implicit nexi between the essentially 'central place character' of the whole urban system, and the ubiquitous nature of resource base of the region. And this renders quite natural and logical the remarkably regular or even distribution of towns over the region, i.e. in consonance with 'central place' character of the urban system. Thus this analysis has 'important bearings on the distributional characteristics as well as on the hinterland relationships of towns, as Smith (1965, pp. 111-112) himself concluded, after a long and unsparingly critical review of functional schemes, to be the purpose of such studies. Moreover, in order to identify which sectors of the economy are more absorbptive to the growing labour force of towns, change in their functional structure has also been analysed and cartographically portrayed for the decade 1961-71. Thus this study points also to the forces of urban growth dynamism in the region.

THE METHODOLOGICAL OVERVIEW

Emphasis on the recognition of type of towns on the basis of dominant function/s started seriously from the early decades of this century. In the early phase, however, these empirical schemes were subjective or intuitive in nature, and leant critically upon the experience and ingenuity of the author. Subsequently, efforts were made to get rid of this subjectivity of classification, and to base it more and more on the objective statistical methods. All these latter methods came to reckon on the data on labour force in each function.

Aurousseau, M. (1921) is regarded the pioneer in the systematic classification of towns on a functional basis. Among others who followed in the wake of Aurousseau. James,
H. E. (1930) focussed on Indian towns and recognised six classes - Capital Cities, religious towns, manufacturing towns, military posts, inland marts, and sea ports. Among the methods essentially statistical and more or less objective in nature, that by Harris, C. D. (1943) is the most important early work. After a close study of the functional structure of some typical towns he worked out diagnostic or critical limits for each function, beyond which the proportion of the function in the town's total labour force could make the town specialized. Also, these critical proportions were required to bear certain ratios with certain other functions. However, both these proportions and ratios were intuitively decided, which made it very difficult to adopt the method in other regions by other workers. Harris's method was followed, with some modifications by many workers. Among them, important is the scheme given by Pownall, L. L. (1953), who measured the positive deviation of proportion of a function in a town's labour force against mean of such proportion of the appropriate size class of towns. A more complete and more sound method on these lines was developed by Nelson, H. J. (1955). He measured a town's proportion against the mean proportion of all towns for a function, and categorised the positive deviation on the basis of standard deviation (abbreviated as S. D.) of the respective function. This is a very effective, and yet simple method. It is largely from this S. D. method of Nelson that method adopted in this work is derived.

All functional classificatory schemes of towns are 'particularistic' in the sense that the average functional size of all towns of the region under study is presumed to be the 'normal' with reference to which functional structure of individual towns is measured. But this is a biased presumption, for a region in question, i.e. its all the towns taken together - may itself be specialized in some functions and be deficit in others, in comparison to national or international average. In the Malwa Plateau itself, for example, the function
of Mining is extremely poor. Against the extremely small regional averages, some towns with only a score or two persons in mining may appear as well-nigh specialized in this function, but against the averages of M.P. or India these towns would all be conspicuous only by an extremely small size of mining, and the reverse of specialization. However, functional specialization is altogether a relative term relative to the particular region considered in each study. Therefore, these comparisons should be related to the particular circumstances and character of the areas being investigated. They cannot be put forward as of universal application (Carter, H., 1972, p.54).

It is a commendable suggestion, indeed made from certain quarters at this time, that out of the total employment in a given function of a town, only that part should be reckoned in its functional specialization that is devoted to the population outside the town itself, because the self-consumed part of the function simply does not contribute to the 'economic-base' of the town. Following Alexander's (1954) terminology, it is only the 'basic' part of a town's function that should be counted upon, while the 'non-basic' should be carefully excluded. Alexandersson's (1956) was first important study of industrial structure of towns incorporating this 'basic - non-basic' notion. However, his derivation of the non-basic part, to be excluded, is rather involved. Another very important study on these lines is that by Ullman, E. and M.F. Dacey (1960). They adopted a simpler and more direct measure of non-basic - basic part. However, the validity of this simple measure of non-basic part by use of minimum proportion of that function in any one town is open to question (Carter, H. 1972, p.57). Much the same method is followed more recently by Maxwell, J.W. (1967).

However, it should be noted that the real force for this basic - non-basic distinction in functional classification
studies, rest upon the conviction that the proportion of non-basic part of a function is significantly different for towns of different types. Nevertheless, in view of the essential uniformity in the urban character of Malwa in all respects, as illucidated and substantiated in this work, and also in view of the very broad functional classes employed, such refinement was deemed superfluous.

THE PRESENT METHOD

The method adopted in the present analysis is largely akin to that of Singh, O.P. (1968), who, improving upon the S.D. method of Nelson (1955), developed a method to suit his wider aim of portraying not only functional structure and specialization of towns, but also the position or ranks of various towns in each function. This wider purport is more rational because functional size and the degree of functional specialization are two independent variables, and each directly governs the functional position of towns. However, his method does not help in working out an aggregate functional position of a town, for which purpose some improvements were further made over this method, as detailed in the sequel of this chapter.

As noted before, all functional classification schemes compare the functional proportion of towns with 'normal' or regional average proportion. But in this present study, the regional average is taken to be represented not by the proportion of each function in the total regional labour force, but, instead, by the mean of functional proportion of all individual towns. These two figures differ significantly, due, largely, to the great variation in the size of towns, which have greatly different functional structure. The structure of a handful of large towns predominates the average regional structure, so that, the regional functional proportion are very nearly the same as obtained in large towns, and very much dissimilar to that found among the host of small towns. Therefore, for each
function, the mean proportion of all individual towns are worked, hereafter called Mf (Mean Functional Share) of respective functions.

Another concept basic to the present scheme is that a town in order to be called an average one in a function, should possess as much share in total regional population of the function as it has in the total working population of the region. Thus, the functional share/size share ratio should be one. If the ratio is more than one for a given function, i.e., the functional share is larger than the size share of a town, the town is specialized in that function. To make these ratios comparable with the mean proportion of the function (Mf), these ratios are multiplied by Mfs' respective functions, and the values thus obtained are tabulated column-wise for each function. These figures are Functional specialization Index. Now, to measure the degree of specialization, mean and S.D. of these values for each function were worked out. Then for each town above the mean, different categories of specialization were assigned according to the location of towns in one of the following categories:

1. Between Mean to Mean + 1 S.D.
2. Between Mean + 1 S.D. to Mean + 2 S.D.
3. Between Mean + 2 S.D. to Mean + 3 S.D.
4. Above Mean + 3 S.D.

**Formula for Functional Specialization Index**—The foregoing description of the Index of functional specialization as developed there step by step, may be summarized in the form of an equation as follows:

\[
\frac{Cf}{Rf} \times 100 = F.C.I. \quad (1)
\]

\[
\frac{Ct}{Rt} \times 100 = S.I. \quad (2)
\]
\[ \frac{F.C.I.}{S.I.} = F.S.Q. \] (3)

\[ F.S.Q. \times Mf = F.S.I. \] (4)

Or \[ F.S.I. = \frac{Cf}{Rf} \times \frac{Rt}{Ct} \times 100 \times Mf \] (5)

Where:

- \( Cf \) = Stands for a centre's labour force in a given function.
- \( Rf \) = Stands for a Region's total labour force in that function.
- \( F.C.I. \) = Stands for Functional Centrality Index, i.e. per cent share of a centre-Cf-into Rf, for a given function.
- \( Ct \) = Stands for a centre's total labour force.
- \( Rt \) = Region's total labour force.
- \( S.I. \) = Size Index, i.e. per cent share of a town's Ct into Rt.
- \( F.S.Q. \) = Stands for Functional Specialization Quotient, i.e. the ratio of F.C.I. to S.I.
- \( Mf \) = Stands for Mean of shares of labour force of all individual towns - Cf-in a given function.
- \( F.S.I. \) = Stands for Functional Specialization Index.

A dispersion diagram was prepared for each function (Plate 17 A-G), showing functional share (F.C.I.) on abscissa and F.S.I. on the ordinate, for all towns above the mean F.S.I. On the ordinate slabs were also marked for categories Mean + 1 S.D., M * 2 S.D. and so on. The utility of these diagrams lies in the fact they combine the degree of specialization (F.S.I.) with the relative functional size, i.e. in relation to the total size of the region in that function or F.C.I. of towns. Thus these diagrams bring out both the degree of specialization as well as the functional status of a town in a given function. If the diagram be divided into quadrangles then the position of a town in the upper right
quadrangle signifies a paramount importance of that town in that function—big functional size and high degree of specialization—that in the lower right quadrangle signifies large towns with low specialization, that in lower left quadrangle marks unimportant small towns with very little specialization, while in upper left quadrangle shows small towns highly specialized in that function.

A comparative picture of relative size of total labour force of individual towns and their respective functional sizes in a given function can be obtained from another set of diagrams (Plate 16 A-C) showing functional share (F.C.I.) on the abscissa and the size of total working population (S.I.) on the ordinate, on logarithmic scales. A line of 45° angle from x axis marks the line of equal S.I. and F.C.I., i.e. where F.S.Q. is equal to one. Towns falling below the line have more functional share as compared to their share in the total labour force, i.e. they are specialized in that function.

The above method, while effectively portraying both the hierarchy or the status of a town and its level of specialization in any single function, fails, however, to portray a composite picture for all functions together. Then, in order to effect an aggregate functional hierarchy of towns, towns were arrayed in descending order of F.C.I. for function, and ranked. The Rank correlation amongst these functions was worked out according to Kendall’s Concordance (w) formula. This worked out to be 0.735 for the present study. Then the ranks of a town in all the functions were summed up and the mean rank was worked out. These ranks were correlated with the towns ranks of total working population, according to Spearman’s Rank correlation coefficient (rho). However, this only depicts the aggregate functional hierarchy of towns. Therefore, in order to portray both the aggregate functional hierarchy and a composite mosaic of specialization in various
functions, all towns were mapped by circles scaled according to their aggregate functional score—sum of their F.C.I.'s in all functions and divided into sectors according to the share of component F.C.I.'s in the aggregate score. These sectors were shaded according to their category of the degree of specialization.

SELECTION OF FUNCTIONS

The functions selected are much the same as adopted by the census of India, 1971 in which total workers are divided into 9 broad functional groups. Of them the first two are cultivators and landless agricultural labourers, third includes other primarily activities, and the fourth is mining and quarrying. Next group refers to manufacturing industries subdivided in House-hold, and other than House-hold. Construction and Trade and Commerce are next two classes, while the last two classes are Transport, Storage and communication, and other services.

The first two categories are purely agricultural and therefore, non-urban. They are, as such, excluded. Mining is a remarkably poor function over whole of Malwa, practically absent with only 0.0013% labour force in it. It is though included in the initial stages only to bring out an extremely poor status of this immensely important factor of urbanization-industrialisation it is excluded from the final analysis. Construction is though essentially a non-basic activity, it however shows some notable regional variation. As such it too has been included. Thus non-agricultural working population of towns which make their labour force for the present purpose has been divided into following functional categories:

(1) Trade and Commerce
(2) Manufacturing Industries
(3) House-hold Industries
(4) Transport, Storage and Communication
(5) Construction
(6) Primary Production, other than agriculture
(7) Services

PATTERN OF FUNCTIONAL SPECIALIZATION

This section focusses upon an analysis of the nature and characteristics of various functions in respect of specialization in and dominance of these functions in the towns forms as well as variations there in along the size spectrum. Reference in this section is continuously made to Plates 16, 17 & 18 and Table 7.1.

TRADE AND COMMERCE

This function has the largest number of towns, i.e. 45 specializing in it, though mostly quite moderately only (Fig. 17.9). This is very extensive function sharing a large proportion in the working population of very many towns, most of the towns are only a little above or little below the mean value, which is quite high. Mean of F.S.I. works out at 25.9 and S.D. value at 7.35. Only one town, Beraasia, is highly specialized in this function above 2 S.D. It is highly specialized in Trade and Commerce largely because of its poor resource base of other functions and also because there is no good town for quite some distance from it to provide these services to the rural populace. Nalkhera, Ashoknagar and Ashta are other towns fairly highly specialized - only a little below 2 S.D. All other towns also, that are notably specialized in this function are only small ones. No large town is notably specialized in it.

There is also some regular variation in the distribution of share of this function. Towns of eastern part generally have somewhat smaller share of this function, that do the towns of the western part.
Inconce alone contains just over 1/4 the total size of this function. Bhopal is just half of it, but is below the mean F.S.I. Next lower town with a marked specialization in this function is Mandsaur with 2.8 F.C.I., while Vidisha is has just 2%. Sehore, Ashoknagar, Basoda and Shajapur are other important towns.

SERVICES

A very large number of towns are specialized in various personal, professional and public services comprising this function— as many as 40 towns have F.S.I. above the mean value of 38.55. Variability is comparative very small, S.D. being 11.4 or about 30 per cent of the mean value. Besides the 40 towns specializing in this function, 22 others are only marginally below the mean F.S.I. by less than 1/2 S.D. Among the 40 specialized towns, as many as 29 are only moderately specialized i.e. are below the mean + 1 S.D. value, while two others are just above it. Six more towns are above Mean + 1 S.D. of which, Dhar, Kannod and Mhow are more important. Only 4 towns are very highly specialized, Jhabua, Mhow, Rajgarh and Raisen. Mhow is a purely training centre, while the small towns of Jhabua, Raisen and Rajgarh have their sole ‘raison d’etre’ in their functions as district headquarters. Among large towns, only Bhopal is specialized in it, and that too, only moderately. However, but for the purely industrial township of Govindpura and a purely retail trading town of Bairagarh, Bhopal—the capital of new Madhya Pradesh State, would have been very highly specialized in services. If Malwa be divide into two parts eastern and western, the dividing line passing a little west of Bhopal, then one finds the most of town specializing in services fall in western part, while eastern part has only 5 such towns of which only one is above the Mean + 1 S.D. line. All these five towns belong to Sehore and Vidisha districts only. Quite often it is only small towns
that are highly specialized in this function, which fact underlines the importance of this factor, along with Trade and Commerce, in early stage of towns, when their urban economic base in other sectors is indeed very poor.

Bhopal has the highest status in the functional hierarchy sharing just over 1/5 of total regional size of this function, while the largest city, Indore is just below this level. Amongst the towns specialising in this function, next largest share is contributed by Mhow, with F.C.I. of 5. Other towns of some consequence are, in the order of F.S.I., Mandsaur, Dewas, Neemuch, Vidisha and Sehore. Neemuch is an old cantonment town while all other towns are district headquarters.

HOUSE-HOLD INDUSTRY

Industries, grouped under this function absorb over 8.0% of the regional working population. Several small towns of the region have such prodigious proportions of their labour force engaged in this function, that Mf works out at as high as 14.7. Similarly mean F.S.Q. also works out at 1.65 which is highest of all functions. Consequently, F.S.I. values are also very high. The mean F.S.I. works out at 24.7 and S.D. value also at the high pitch of 16.7. Thus this function has very wide variation. Another result of this very wide specialization of only handful of towns, giving high mean F.S.I. and S.D. values, is that quite a few towns with a substantial share of their labour force engaged in the function, that would otherwise have come up as well high specialized, have been markedly dwarfed. Of 29 towns specializing in this function two Garhakota and Deori are extremely specialized. Begumganj and Chanderi are also very highly specialized while Rahatgarh and Rehli are highly specialized, being above the mean + 2 S.D. mark. Raghogarh, Ramapur, Petlawad, and Sagar all above
Mean + 1 S.D. level— are other towns worthy of note. It will be apparent, that all the highly specialized towns belong to Sagar district, excepting the Chanderi town of Guna district. The close-by town, are Begumganj, is also highly specialized, and all its characteristics are very similar to the towns of Sagar district. In other parts of the region some small towns in south western part and in Guna district are also specialized. In Sagar district, out of its 8 towns only the railway junction town of Bina is below the mean F.S.I., and only two are below the Mean + 1 S.D. level— Khurai and Banda towns are deficient in this function, as are also a few towns of the north western part. It should be noted that this function is greatly affected by the bidi making industry, which absorbs huge man-power. The whole Sagar district and some adjoining areas may be regarded as a mono-functional Bidi making tract. Only a comparable case, outside this Bidi tract, is Chanderi, which is traditionally famous for cloth printing industry. Except for Sagar city, all towns specializing in this function are only small ones. However, there are few towns, particularly among the small ones, that are markedly deficient in this function. But for the radical modification, due solely to the prodigious size of Bidi making industry in a few towns, this function would have shared many characteristics in common with Trade and Commerce and services, particularly the universally high proportion and preponderence in small towns.

In the hierarchy also, this function is largely dominated by the Bidi making towns of Sagar district, along with Begumganj and Chanderi. Sagar city, absorbing just over 1/5 the total work force of this function in the region, is apparently the paramount, followed by Garhakota whose F.C.I. is at par with that of Bhopal-4.5%. Begumganj and Deori are other notable towns in the hierarchy.
MANUFACTURING INDUSTRY

Manufacturing Industries, the hallmark of modern urbanism, has a much smaller share in the size of labour force compared to the Trade and Commerce or the services. It is largely concentrated in a handful of large towns, and the whole array of small towns is conspicuously deficient in this function, so that whereas class I towns have well over 1/4 of their labour force in this function, the same function absorbs little over 10 per cent labour force in small towns. Due to this large disparity between large and small towns in this respect, the mean F.S.I. in this function works out at 0.57 i.e. little over half the normal. If for all towns works out at 13.5. Mean F.S.I. is small (7.7) and S.D. is comparatively large (4.5). A purely industrial town Nagda is extremely specialized in this function, F.S.I. over 35. Indore and Ujjain are also very highly specialized in this function and both stand only a little below the Mean + 3 S.D., while standing a little below M + 2 S.D. level, Bhopal is also highly specialized. Jaora, Ratlam, Dewas and Mandsaur are other notable towns and stand just above M + 1 S.D. (only Jaora stands almost midway between 1 S.D.) and the 2 S.D. There are 20 more towns above the mean F.S.I. of which Guna and Sehore are notable.

All these towns notably specialized in this function, except Bhopal, belong to western Malwa, while eastern Malwa is notably deficient in it. Particularly for their sizes, Sagar and Bina are very much poor in this function. However, towns of Guna district show some measure of specialization in this function while those of Sagar and Vidisha, districts and small towns of Sehore district are very poor. Only the small Rahatgarh town of Sagar district is peculiar example of high specialization in this function, for which no apparent reason
can be attributed. Nevertheless, the fact remains, that except for vigorous growth of Bhopal, eastern Malwa is much poorer in manufacturing Industry as compared to the western Malwa. Indore and Ujjain thrive basically on cotton textile industries, and diversified agro-industries, Ratlam, Jaora, Mandsaur etc. on the agro-based industries. Bhopal spurred in industrial sector with the advent of massive plant of heavy electrical equipments the BHEL, while the new centre of Nagda is a large synthetic fibre plant.

In hierarchy, Indore stands by for the first, contributing over 1/3 of the labour force in this function, followed by Bhopal and Ujjain- F.C.I. almost 20 and 12 respectively. Ratlam and Nagda share about 4% each, while Jaora, Mandsaur and Dewas share about 2.5% each, of the function.

In view of the whole array of small towns markedly deficient in this most important urban function, it is worthwhile to analyze them a little further. Some small and medium sized towns that are notably specialized in some other function/s are particularly deficient in manufacturing, i.e. manufacturing has suffered the most for their specialization in other functions. For example, Bina with as high a F.S.Q. as 4.83 in Transport and Communication has low as 0.25 F.S.Q. in manufacturing. About a score of other such towns, also repeat much the same story, they may be divided into groups:

(1) Those specializing highly in one function mostly at cost of manufacturing, for example, Bina, Dhar, Garhakota, Narsingarh, Deori, Bhanpur, Chanderi, Depalpur etc.

(2) Those moderately specializing in more than one (2, 3 or more) functions again largely at the cost of manufacturing, for example, Mhow, Vidisha, Shujalpur, Agar, Manasa, Rajgarh, Banda etc.
Only very large towns are exception to this phenomenon as they have a viable and multifarious urban economic base, and are specialized in more than one functions including manufacturing Industries. Among such large towns, however, Sagar is a peculiar case of high specialization in House-Hold industry largely, at the cost of manufacturing Industry.

TRANSPORT, STORAGE AND COMMUNICATION*

This group of functions has a close similarity with the Manufacturing Industry in that both are largely concentrated in a handful of large centres leaving a large number of small towns deficient in them, have small mean size and high variability, and are rather fortuitous in distribution. Urban Malwa as a whole has 8.6% of it labour force engaged in this function against 9.8% for M.P. as a whole. However, the mean of these values of individual towns (Mf) works out at 6.5 and mean F.S.Q. 0.9. Mean F.S.I. is 5.1 with S.D. value as large as 9.3. All these data imply that only a few towns specialize highly in it, while very many others are very poor in it.

Bina a purely railway junction town is the most extremely specialized town in this function with it F.S.I. over 31. Another extremely specialized town is Shamgarh F.S.I. above 20. Other specialized towns are Ratlam and Hatpilpalya - both above the mean + 2 S.D. level, while Neemuch is just below this level and Guna is somewhat midway between the 1 S.D. and 2 S.D.

To discuss the distribution of these towns, it is of fundamental importance to refer to the map of transport network, Plate 23-B. Of the two dozen towns specializing in this function, very many are in the western part of Malwa. More closely observing, one finds, that but for Bina this function is usually poor in the eastern most of Raisen and

* (Abbreviated as Trans. and Communication).
Sagar districts and adjoining area, though Sagar and Banda are above the mean F.S.I., south western part, i.e. Jhabua, Dhar districts, eastern Mandsaur and eastern Dewas districts and most parts of north central Malwa, i.e. Shajapur and Rajgarh districts are markedly poor in this function; while south central Malwa, and western parts of Mandsaur, Guna and Vidisha district, and the city of Bhopal are rich in it. To put it differently, all viable towns on major roads or railways and particularly on their crossing or bifurcation points are naturally more specialized in this function, particularly the towns along the road and the railway from Neemuch via Ratlam to Indore and Ujjain, Indore to Kota, Indore to Ahmedabad, Indore to Guna, Bhopal to Mungaoli etc. Small towns of Patipalya and Shamgarh have peculiar positions on road and railway, respectively. In the east, Sagar is an important node of roads.

The largest city of Indore though slightly below the mean F.S.I. shares 1/5 the total size of this function, followed by Bhopal (17%) and Ratlam (11.5%) and Ujjain (8.5%). Among smaller towns Bina is most important whose F.C.I., 5.65, is slightly higher than that of Sagar, followed by Neemuch (3.8%) and Guna (2.6%).

Thus this function maintains fairly good direct relation with population size of towns.

The medium sized towns of Dewas and Sehore have every reason by way of the location on railway and bifurcation of important routes to specialized in this function. However, they are both slightly below the mean F.S.I., probably due to over shadowing effect of large cities nearby.

CONSTRUCTION

This is essentially a non-basic function with little scope for any town to markedly specialize in it. That is why
the per cent share of this function in the working population of M.P., of Malwa as well Mf of this function for towns of Malwa, work out very close 3.6. Again this close agreement of these figures is further corroborated by the Mean F.S.Q. of 0.95. Thus even fast expending city like Bhopal is but slightly specialized in it. A notable degree of specialization in this function can be met with only in small towns. Development like construction of some big public work, industrial plant, or similar construction in road, railways, water works etc. It could also be found in small towns recently given higher administrative status, which requires good deal of construction activity. Such towns are not much specialized in some other function.

Of the 30 towns above means F.S.I. only one is very extremely specialized. Only 5 towns are above the Mean + 1 S.D. mark, of which one Kurwai - is only a little below the Mean + 2 S.D. mark. Of them all, the most notable is Gandhi Sagar Hydral Colony - it is a special case of a purely construction colony. It came up in 1961 with just over ten thousand population, as the Gandhi Sagar Dam on the Chambal river was in rapid progress. A decade later, when the project was nigh completed, it was reduced to 2/5 of its size. It is though still overwhelmingly a construction colony, its leaning very heavily on Primary production also. Other notable towns are Neemuch and Vidisha.

PRIMARY PRODUCTION

This is the least urban of all functions- next only to agriculture which has been excluded. A heavy preponderance of this function belonging to primary sector of economy is a measure of rural rather than urban economic base of towns which
are very much at the threshold of urbanism. No wonder, then, that only small towns specialize in it.

Urban Malwa, as a whole, has only 1.7% of its non-agricultural labour force engaged in this function, against 2.1% for urban M.P. as a whole, which fact bears a testimony to more advance over all situation of Malwa as compared to M.P. in this respect. However, the Mf for Malwa works out at double this figure i.e. at 3.1, sheerly due to a host of small towns having a large share of labour force in it. Mean F.S.Q. and F.S.I. values work out at 0.5, and 4.7 respectively, while the S.D. value of F.S.I. is 3.2.

Of the three dozen towns above the mean F.S.I., Bhanpura is extremely specialized with F.S.I., over 20. Gandhi Sagar and Dharampuri are also very highly specialized above Mean + 3 S.D., while Narayangarh and Depalpur are just below this level. Narsingarh is another town a little above the Mean + 2 S.D. An usual degree of preponderance of this practically rural function in Bhanpura is an outcome of the historical nay, whimsical factors, throwing an insignificant place into eminence (vide Chapter II, History, of this work). In the absence of any urban economic base, the town dwindled drastically after the ebb of political favour. Second very highly specialized town Dharampurility in an inhospitable, remote nook of the region. Gandhi Sagar is special case - a large purely construction colony now shorn of most of its functional base, and reduced to 2/5 of its size a decade ago. In the want of an urban economic base it leans now so heavily on this function. Only Guna is an important viable town with some measure of specialization in this function. It has high position only in Transport and Communication (which is so natural for location on railway and the most important Agra-Bombay highway); but it is deficient in household Industry, and Trade and Communication and also somewhat in the services.
Table 7.1 Mean and S.D. values of Functions

<table>
<thead>
<tr>
<th></th>
<th>Trade</th>
<th>Manu-</th>
<th>House-</th>
<th>Trans-</th>
<th>Cons-</th>
<th>Primary</th>
<th>Serv-</th>
<th>Comme-</th>
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<td>and fact-</td>
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<tr>
<td>Functional Specialization Quotient</td>
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<tr>
<td>Mean</td>
<td>1.112</td>
<td>0.567</td>
<td>1.646</td>
<td>0.751</td>
<td>0.951</td>
<td>1.530</td>
<td>1.033</td>
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<tr>
<td>S.D.</td>
<td>0.334</td>
<td>0.362</td>
<td>1.253</td>
<td>0.676</td>
<td>0.783</td>
<td>1.039</td>
<td>1.041</td>
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<td>Functional Specialization Index</td>
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<tr>
<td>Mean</td>
<td>25.89</td>
<td>7.67</td>
<td>24.70</td>
<td>5.09</td>
<td>3.72</td>
<td>4.70</td>
<td>38.55</td>
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<tr>
<td>S.D.</td>
<td>7.35</td>
<td>4.48</td>
<td>18.70</td>
<td>4.18</td>
<td>2.84</td>
<td>3.22</td>
<td>11.40</td>
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<tr>
<td>Mean+1 S.D.</td>
<td>33.24</td>
<td>12.15</td>
<td>43.40</td>
<td>9.27</td>
<td>6.56</td>
<td>7.92</td>
<td>49.95</td>
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<tr>
<td>Mean+3 S.D.</td>
<td>47.94</td>
<td>21.11</td>
<td>80.80</td>
<td>17.63</td>
<td>12.26</td>
<td>14.36</td>
<td>72.75</td>
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<tr>
<td>Mean Functional Share (Mf)</td>
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<td></td>
<td>22.78</td>
<td>13.54</td>
<td>14.71</td>
<td>6.51</td>
<td>3.65</td>
<td>3.07</td>
<td>37.03</td>
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</tbody>
</table>

Thus, leaving only Guna, all towns notably specialized are small ones— all below ten thousand population, only Bhanpura being a little above this mark. Had not the jumble of petty principalities enjoyed a measure of freedom of internal administration, very many of these small towns, the headquarters of respective earst-while princely status, would simply not have risen to town- hood, as they have practically no other urban functional base.

SUMMARY REMARKS ON CHARACTERISTICS OF FUNCTIONS

Analysis of functional structure of towns of this region reveals the following characteristics.
(1) Services absorb the largest share of working population of towns of all sizes - one third of the labour force. This share increases, at a very moderate pace, inversely with the size of towns. This universally high preponderance of services have little scopes for any appreciable measure of specialization in this function, except in the usual case of purely training centres (such as Mhow), or purely administrative small towns (such as Raisen).

As a large section of service personnel come from outside the town and most often from over long distance, this high preponderance of services indicates a weak force of urbanization in the immediate hinterland of towns, and a lack of spontaneous impulse of urbanism.

(2) The second largest sharing function is Trade and Commerce generally more than 1/5. It has many features in common with the service. Like it, this is also a universally distributed function, and inversely related with the town sizes. As the people employed in this function are generally local or from the immediate hinterland, this function marks a spontaneous gush of urbanization. Particularly in small and medium sized towns this function is vitally important as this group of persons, more than any others, maintains functional links with larger villages around (weak market place etc.) on one hand; and with the larger towns on the other. In this function also scope for specialization is meagre. Thus, in the early stages of town these functions are more germane to their growth than other functions, and constitute the genuine urban personnel. Those towns where these functions are markedly poor, lean very heavily on the 'hardly urban' function of Primary Production.

(3) At variance with these two functions, Manufacturing Industry has a small share as compared to the overall development of the region. This is not hard to realise in the background of poor industrial base for basic, heavy industries
over the whole of this region. This function is largely concentrated in a handful of large towns, leaving most of the small and medium towns highly deficient. This situation has been more so because many of the small towns so deficient in this function—sprang up only recently and through factors and processes which are historical—cum—polito—administrative, and not economic. Once given this politico—administrative leverage, their places in the background of general economic development of hinterlands, soon availed the readily available avenues of Trade and Commerce. Hence the predominance of service and Trade and Commerce and the deficiency of Manufacturing in the smaller towns of the region.

(4) Transport and Communication is a companion of Manufacturing Industry and repeats much the same story. Quite often it a necessary corollary preceding or attending upon the development of heavier type of industries. Apart from the rather weak Manufacturing function, the development of transport, has been inadequate. This again reflects the incoherent, non-centralised administration through the numerous princely states. Both these functions increase in status directly with the size of towns. However, towns large or small, located on the major routes, or bifurcations thereof, are often markedly specialized in Transport and Communication.

(5) House-hold Industry, generally supposed to increase inversely with town size, presents a highly irregular picture in Malwa. Here it is overwhelmingly predominated by the border district of Sagar, due to its Bidi making industry, which requires a huge man power. Sagar city itself contains well over 1/4 the total work force the region in this function. Outside the Sagar district and adjoining areas, Chanderi is very highly specialized in this function by virtue of its historically famous industry of cloth printing.

(6) Primary Production is hardly an urban activity, and its share in total working force of the region is extremely small.
However, as villages emerged to townhood out of their rural milieu they heavily lean on this function in their early stages, particularly if other services or Trade and Commerce are not so promising. This simply indicates their very poor urban economic base, and their unviable standing.

(7) As observed by Alexelevson (1956), this study also suggests, that large towns tend to specialize less, and small towns do more. Large towns specialize very often in Manufacturing Industry and Transport and Communication, and occasionally in services.

(8) Small towns are specialized more, though no so much in Malwa more as Alexelevson (1956) would suggest, because they specialize mostly in Trade and Commerce and services which have but little margin for specialization. Often they specialize highly in household Industry, and only rarely in manufacturing or Transport and Communication.

(9) Taken as whole, towns of Malwa are specialized to lesser degree than do those of most other part of the country, not infrequently they are diversified.

FUNCTIONAL ASSOCIATION

At variance with the general notion — of dominance of that function in town's economy in which it is highly specialized, the functional dominance and functional specialization often do not go hand in hand. It is inherently because of the strong inverse relation between the average size of a function and the frequency as well as the degree of specialization in it. As such, the functions absorbing the bulk of labour force have few towns highly specialized in them. Thus the functional dominance can not be denoted adequately by functional specialization alone.
In spite of this intrinsic disharmony, functions do tend to be associated frequently with certain other functions. Moreover, towns usually are structured in certain generalised ways, so that certain towns are essentially monofunctional, bi or tri functional, or diversified. On this basis the towns of Malwa are classified into following types (Table 7.2).

Table 7.2: Towns of Malwa classified on the basis of Association and specialization of functions.

I. **Monofunctional**: F.S.I. above mean + 3 S.D.
   Garhakota H, Deori H, Begumganj H, Chanderi H, 
   Jhabua S, Raisen S, Bina N, Nagda M and Dharampuri P.

II. **Monofunctional with one secondary function**
   Mhow S+N, Songatch S+N, Dhar S+N, Rajgarh S+C, 
   Barailey S+T, Kornod S+P, Dewas M+S, Ashta T+S, 
   Indore M+T, Jaora M+C, Sagar H+N, Rehli H+M, 
   Raghogarh N+T, Bhanpura P+T, Shamgarh N+T.

III. **Bifunctional**: F.S.I. above mean +2 SD in two functions
   Alirajpur S+T, Mhowgaon S+P, Akodia T+P, 
   Gandhisagar C+T, Petlawad H+P, Narayangarh P+C, 
   Neemuch N+C, Ratlam N+M, Rahatgarh H+M.

IV. **Tri-functional**: F.S.I. above mean+1 SD in 3 functions
   Sehore T+M & S, Nalkhera T+M & P, Mandsaur M+T & S, 
   Ujjain M+N & C, Hatipalya N+S & H, Shajapur 
   S+T & C, Sardarpur P+T & S, Rajgarh H+T & P, 
   Ramapur H+T & P.

V. **Multi-functional with one dominant Function**: F.S.I.
   Mean−1SD to M+1 SD in several and above Mean+1SD in one function—
   Basoda T, Ashoknagar T, Biora T, Berasia T, Susner T, 
   Vidisha C, Khurai C, Kurwai C, Bhopal M, Guna N, 
   Narsingarh P, Bagli S.
VI. **Diversified**—No function above Mean + 1 SD
Sironj, Bad Nagar, Shujalpur, Khachrod, Sarangpur, Mehidpur, Agar, Kukshi, Tarana, Rampura, Manasa, Mungaoli, Jawad, Manawar, Alot, Chacheda, Binaganj, Bandnawar, Sitama, Khilchipur, Garoth, Banda, Khatgaon, Sailana, Tal, Thandla, Ichhawar, Bhauras, Sawer, Depalpur, Jobat, Malhargarh.


(1) **Monofunctional Towns**—There are nine such towns in Malwa, which are extremely specialized more than Mean + 3 S.D. in some function. Four of them are specialized in household Industry, two in services, and one each in Transport and communication, Manufacturing, and Primary Production. Of these functions Household Industry supports the largest share of labour force and is thus the most dominant function, followed by Services. Five of them specializing in the Household Industry and Services are small towns.

(2) **Monofunctional Towns with one secondary function**—Fifteen more towns are also almost monofunctional but they are specialized to some extent in a secondary function also. Five of them are highly specialized in Services, out of which three have Transport and Communication as the secondary function. Three towns are specialized in the Household Industry. Three more towns have Manufacturing as the first dominant function. There are towns of all size classes among them.

(3) **Bi-Functional Towns**—Towns with specialization above mean + 2 S.D. in two functions are classed as bifunctionals. Among the nine such towns there is much heterogeneity in the sizes of towns and in functional combinations, so that no generalization can be made about them.
(4) **Tri-Functional and Multifunctional towns with one dominant function** - Eight towns are Tri-functional and twelve are multifunctional with one somewhat dominant function. They also do not have much in Communication. However, Trade and Commerce, Services and Manufacturing are more dominant, and are frequently associated in the former class, while Trade and Commerce is more frequently the dominant function in the latter class, more so among the large towns.

(5) **Diversified Towns** - Thirty-one towns are not specialized in any function, i.e. they do not specialize in any function above mean + 1 S.D. and are therefore, classed as diversified. They are confined to lower range of town sizes—below 20 thousand population mark, but for marginal exceptions. Following points may be noted regarding the spatial distribution of these types of towns.

Distribution analysis of these types of towns reveals that:

1. **Monofunctional towns** mostly occur in eastern part of the region and are generally predominated by the Household Industry, excepting Raisen (Services) and Bina (Transport and Communication). Only 3 towns occur in the western part, they are Nagda (Manufacturing), Jhabua (Services), and Dharampuri (Primary Production).

2. Out of the 15 monofunctional towns with one secondary function, only 4 belong to eastern part and 11 to the western part. In the eastern part, 3 towns are again dominated by Household Industry, while only Barhali is Service dominated. In the western part, smaller towns are usually dominated by Services, and large ones are dominated by Manufacturing.

3. Out of 9 Bifunctional towns all except one, Bahatgarh (Household Industry + Manufacturing) belong to the western part. Very small towns lean heavily on Primary Production.

4. Only one Trifunctional town, Sehore belongs to the eastern part, and eight others occur in the western part of the region. In all of them Services, in combination with Manufac-
turing, and Trade and Commerce, makes the dominant functional associations.

(5) Half of the 12 multifunctional towns with one dominant function, belong to Guna and Vidisha districts, where their dominant function is either Trade and Commerce or Construction. None of them is in the extreme western part.

(6) Among the largest group of diversified towns, only four belong to the eastern part and all the rest to the western part of the region. Mandsaur, Ujjain, Ratlam and Dhar districts share several of them each. Thus these diversified towns are more frequently met with in the extreme western part.

FUNCTIONAL STRUCTURE AND SIZE CLASSES OF TOWNS

The functional structure of urban working population for each size class, and trends therein are portrayed in Plate 16-H. A close study of this reveals the following salient features:

(1) Primary Production has the smallest share in the total to work force of towns except in the lowest class in towns with i.e. 5000 population. For the 3 upper classes it is negligible, gradually increases upto class V, and then suddenly rises to farely high share of about 10 per cent in lowest class.

(2) Construction is the second smallest function. It is constant for all size classes, except in lowest classes where is rises suddenly due solely, to a purely construction colony of Gandhi Sagar.

(3) The two functions rise substantially from V to the VI class, entirely at the cost of Transport and Communication, which is practically nil in the lowest class. But for a notable rise in class III, due to purely Transport and Communication towns like Bina, this function would give a gradual decrease towards small size classes.
(4) Household Industry gives an irregular and unconventional trend fairly large in upper most class (solely due to Sagar town) pretty small in the II and III classes, and then very large in the remaining smaller classes.

(5) Manufacturing Industry, like the Household Industry, has larger or very large share in class I, and falls substantially in class II and remain constant upto class III. However, contrary to the trend of Household Industry, it decreases steadily towards lower size classes. Class II towns are very poor in this function, and some extremely specialized towns in this function such as Nagda is in class III.

(6) Trade and Commerce has high share in all classes, more so in the small towns from ten thousand to twenty thousand population size.

(7) Services has the largest share in all classes. It is, however, least in classes I and IV. From the latter class it increases appreciably in both sides, more steeply towards class II.

(8) Thus, small towns appear to be largely dependent on services, Trade and Commerce and Household Industry, where as large ones depend on Manufacturing Industry, Transport and Communication and Services.

CHANGE IN THE FUNCTIONAL STRUCTURE: 1961-71

As discussed, the 'trade and commerce' is one of the significant group of functions of the towns. At the same time, its dominance has highly enhanced during 1961-71 (Table 7.3). Besides, manufacturing, transport and communication, and services have also recorded upward trends. It is notable that another ubiquitous function of the region, i.e. household industries declined rapidly. However, there is wide spatial
variation in patterns of changes in the region. There are portrayed in Plate 19 which shows per cent share of different functions in the working population of towns as per 1961 and 1971 censuses. Any change, unless quite negligible, in these proportions has been distinguished for increase* and for decrease by different shades. A close observation of this map reveals following points:


<table>
<thead>
<tr>
<th>Function</th>
<th>% Proportion 1961</th>
<th>% Proportion 1971</th>
<th>Net change</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Trade and Commerce</td>
<td>17.3</td>
<td>19.6</td>
<td>+2.3</td>
</tr>
<tr>
<td>2. Manufacturing</td>
<td>20.8</td>
<td>22.5</td>
<td>+1.7</td>
</tr>
<tr>
<td>3. Household Industry</td>
<td>12.0</td>
<td>8.5</td>
<td>-3.5</td>
</tr>
<tr>
<td>4. Transport and Communication</td>
<td>7.1</td>
<td>8.4</td>
<td>+1.3</td>
</tr>
<tr>
<td>5. Construction</td>
<td>6.9</td>
<td>3.5</td>
<td>-3.4</td>
</tr>
<tr>
<td>6. Primary Production</td>
<td>2.9</td>
<td>1.8</td>
<td>-1.1</td>
</tr>
<tr>
<td>7. Services</td>
<td>33.0</td>
<td>34.0</td>
<td>+1.0</td>
</tr>
</tbody>
</table>

(1) Excepting for only in very small towns, Trade and Commerce has increased in all other towns-by a large margin in small towns than in the larger ones. This gain in this function is somewhat larger in western part than in the eastern part.

(2) Change in the share of services is more variable. Only 34 towns have increased notably and few more only nominally. However, a large number of towns have decreased usually by a much larger size. No sizeable contiguous areas of increase are discernible. However, several small towns of Mandsaur and Dewas have mostly increased. Similarly several towns of Sagar Guna and Dhar districts excepting their headquarters
decreased. Important examples of increase are Bhopal, Jhabua and Raisen all administrative centres, and Gandhi Sagar.

(3) Among the small number of towns specialized in Household Industry, this function has decreased in relative share in all but one centre—Chanderi where it has increased very highly. In other towns also it has mostly decreased appreciably.

(4) Manufacturing Industry can be sustained in substantial measure only in viable towns. However, few such towns have shown a notable change in this function. Most notable example is Nagda which is purely a Manufacturing town. However, quite few small towns have shown some increase in this function of which the very great increase of Rahatgarh is of doubtful validity.

(5) Transport and Communication have a very small share and very few towns specialize in it. Change in its share in individual towns is also quite small. Among larger towns only Sagar, Neemuch, Vidisha and Bina have shown somewhat large gain, as it has done also in smaller towns like Biora, Shamgarh, Nanawar, Sardarpur, Berasia, Chaohura—Bina ganj etc. Towns like Guna, Vidisha, Sehore, Rajgarh and Shajapur have also shown some increase in the share of this function.

(6) There can be expected but little change in construction. Only the purely construction town of Gandhi Sagar has decreased to almost 1/3 its share in 1961. Bhopal too, often the first vigorous phase of construction for new capital, reduced its share to 1/4 its position in 1971.

(7) There are very few towns in which Primary Production showed a gain. In all others it has only declined. For the region as a whole its share has decreased to 2/3 its position in 1961.

(8) Lastly, this map subtly, though very boldly, brings out the fact, which has been noted before that it is the smaller
and medium towns that specialize very much in one function and remain deficient in several others, while the large towns are more generally, balanced. As single very large Pennanlooks more bold than several small ones together, it is the smaller towns that appear to dominate the map.

**CHANGES IN FUNCTIONAL STRUCTURE AND GROWTH OF TOWNS, 1961-71**

After analysis of change in the functional structure of towns, it is quite logical to deduce the significance of these changes to the urban growth dynamism of towns. It should be realised, however, at the outset, that quite clear cut relations are hard to establish merely from such an exercise primarily because whereas the functional change refers to the working population of towns, their growth refers to the total population of towns. Then, it is possible that in some towns, particularly the small ones, a substantial part of the growth may have been absorbed in non-workers or in the agricultural workers. This part of the net growth will not be revealed, and may tend to blur the otherwise clear-cut relationships.

It should also be realised that the functional structure of towns may change over time even without any growth of population. By the same logic it is perfectly possible that a highly increased or a highly decreased town may retain the same functional structure as before. However, if there has been a strong trend of growth, as well as notable change in functional structure, a cause and effect relationship between them is highly probable.

Nevertheless, following point can be deduced from this analysis:

(1) The towns of Sagar district so far depending almost exclusively on Household Industry have in the last decade
started shifting to other activities, particularly, Manufacturing Industry, and Trade and Commerce. Services, is gaining in the Sagar town but in others it is rather giving way. Household industry is shrinking from its unusually wide expansion. In Bina, only Transport and Communication, and Trade and Commerce are dynamic and all other sectors are stagnant.

(2) Chanderi is a peculiar example where Manufacturing has very much declined, giving way to Household Industry.

(3) Whereas Household Industry every where, and services in very many case, are a stagnant sector, in some places Manufacturing Industry or Transport and Communication are lending more support, while is Trade and Commerce is the more ubiquitous dynamic sectors.

(4) Services is a rather less supportive function, and towns with a heavy preponderence of services are mostly very slow. However, Jhabua and Raisen are notable exception to this. In the western part, towns dominated by services are more slow generally.

(5) Finally, it may be concluded that very many towns of Malwa, particularly the small and medium ones lean too, heavily upon services, Trade and Commerce plus Household Industry or Primary Production. As all these functions except, Trade and Commerce, are in phase of lull now, these towns are usually not as dynamic as those in other part of M.P. Instead, towns leaning upon Manufacturing and/or Transport and Communication are somewhat more dynamic as these sectors of economy are expanding.

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