

PAKISTAN GEOGRAPHICAL REVIEW

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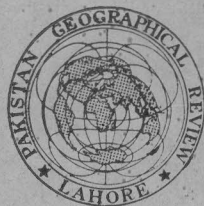
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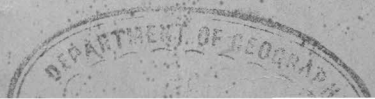


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Pakistan Geographical Review

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Pakistan Geographical Review

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URBANIZATION TRENDS IN WEST PAKISTAN, A GEOGRAPHICAL ANALYSIS¹

KAZI S. AHMAD

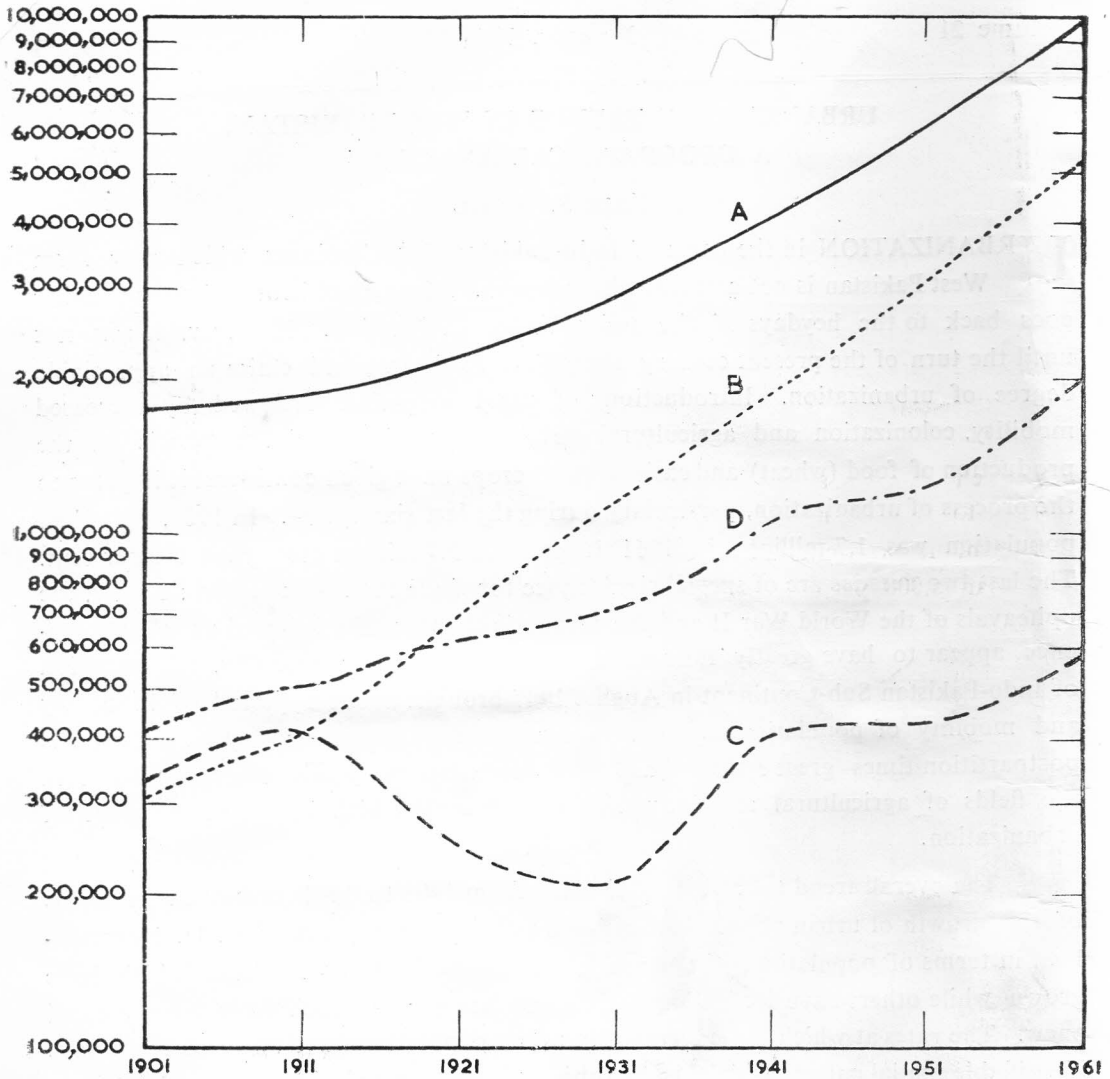
URBANIZATION in the parts of Indo-Pakistan Sub-Continent which now form West Pakistan is not a recent phenomenon. Here, the history of urban living goes back to the heydays of the Indus Valley Civilization. However, it was not until the turn of the present century that West Pakistan could claim an appreciable degree of urbanization. Introduction of canal irrigation followed by increased mobility, colonization and agricultural development with special emphasis on the production of food (wheat) and cash (cotton) crops have given considerable impetus to the process of urbanization, particularly during the last sixty years. In 1901, the urban population was 1.7 million, in 1961 it grew to 9.7 million more than 470 per cent. The last two decades are of special significance for more than one reason: Firstly, the upheavals of the World War II and the economic changes that followed as a consequence, appear to have greatly influenced the urban pattern; secondly, the partition of Indo-Pakistan Sub-Continent in August 1947 brought about a period of instability and mobility of population unusual in normal circumstances; finally, during the postpartition times great strides have been made by this newly emerged nation in the fields of agricultural and industrial development which increased the pace of urbanization.

The overall trend towards urbanization from 1901 to 1961 measured in terms of the growth of urban population, appears to be almost uniform (Fig. 1). Nevertheless, in terms of population, there are some towns in West Pakistan which have grown while others have declined and still there are others which have been created anew. The rates at which these changes in urban population have taken place do have identifiable spatial pattern which can be subjected to geographical treatment. What has, therefore, been attempted in this paper is the identification of such changes in the

¹The paper was presented at a Symposium on Urban Geography held at Edinburgh under the auspices of the 20th International Geographical Congress, 1964, London. The author is thankful for the assistance rendered by Dr. I. H. Zaidi and Mr. A. A. B. Rizvi in the preparation of this paper.

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GRAPH SHOWING THE GROWTH OF URBAN POPULATION
IN WEST PAKISTAN
1901 — 1961



- A** GROWTH OF TOTAL URBAN POPULATION
B POPULATION GROWTH OF TOWNS WITH 100,000 PERSONS AND OVER
C POPULATION GROWTH OF TOWNS WITH 50,000 TO 100,000 PERSONS
D POPULATION GROWTH OF TOWNS WITH 10,000 TO 50,000 PERSONS

FIGURE 1

pattern of urbanization in West Pakistan since 1901. The changes have been analysed and interpreted.

It may be possible to visualise the future state of urbanization in the light of the trends.

METHOD OF STUDY

The study of urbanization trends in West Pakistan presents methodological complications: 1) because of the unusual events mentioned above and 2) because of the definitional changes in decennial censuses which create problem of comparability. Students of urbanization have, therefore, concentrated more on recent trends rather than the trends where a wider time span was involved. Efforts, therefore, have been directed towards normalising extraordinary situations and devising means to achieve statistical comparability of the data produced by different definitions.

Prior to 1881, to be a town a settlement had to have a municipality and cantonment, irrespective of its population size; or its had to have a population of 5,000 persons living together in continuous houses and suburbs; or it had to have a population less than 5,000 without having municipality and cantonment but with urban characteristics². According to 1931 *Census*, the areas that came under the fold of towns were municipality and notified areas or cantonments or civil lines not within municipal limits or a continuous collections of houses, inhabited by not less than 5,000 persons which the Census Superintendents decided to treat as a town³.

The 1951 *Census* definition included all towns having a population of 5,000 and above plus all incorporated municipalities and towns managed by notified area committees despite their having a population less than 5,000⁴.

In 1961, the 1951 definition was maintained except that additionally the Provincial Directors were empowered to treat a settlement of continuous houses as urban, even if it had a population smaller than 5,000 but having urban characteristic.⁵

The result of the difference of definitions in 1951 and 1961 was that the population of urban settlements having less than 5,000 population constituted 3.5 per cent of the total urban population in 1951 and 2.2 per cent of the total urban population in 1961.⁶

²*Census of India*, 1881, Vol. 1, Report pp. 18, 545.

³*Census of India*, 1931, Vol. 17, Part I pp. 88-89

⁴*Census of Pakistan*, 1961, Vol. 1, Pakistan Report and Tables, (Karachi : Manager of Publications, 1955) p. 39.

⁵*Census of Pakistan*, 1961, Census Bulletin No. 2. (Manager of Publication, Karachi, 1961) p. 13.

⁶K.J. Krotki, *Urbanization through large or small towns*, a paper presented to a seminar on Urban Rural Differences and Relationship with special reference to the role of small towns in planned development, held in December at New Delhi, under UNESCO, 1963.

In order to even out the effect of definitional changes in the decennial censuses from 1901 to 1961 which is the time span of this study a consistent numerical limit, well above the census limit for town population (10,000) has been fixed. By so doing, all towns under study could be traced in all Censuses being used. Doubts have been expressed by census authorities about the accuracy of 1941 data⁷. This doubt including the effect of World War I and the cholera epidemic of 1911 has been taken care of by averaging percentage variations of the decades from 1901 to 1941 which should be fairly representative of the conditions prevailing upto 1941.

It was also considered desirable to reduce the effect of extraordinary circumstances, viz. migration and expanding economy during the latter decades. In order to do so, progressive means have been employed from the average of 1941 for arriving at the averages of 1951 and 1961. These means have been mapped and spatial differentiation of decennial (1941, 1951 and 1961) growth rates in West Pakistan, have been identified and interpreted. *ahsil*⁸ boundaries have been used for the purpose of areal grouping of the towns in accordance with their growth rate.

BACKGROUND OF URBANIZATION

As a result of the developing agrarian economy in the area now constituting West Pakistan, most of the towns that have been entering into the urban fold were the *mandi* (market) towns. These were few in number and archaic in type. The growth of urban population had been gradual before 1900 and in the following two decades of the twentieth century. In the later decades the process of urbanization has accelerated as is evident from the following table (See also Fig. 1.)

TABLE 1—URBAN POPULATION AND ITS PERCENTAGE TO THE TOTAL POPULATION FROM 1881 TO 1961

Census Year	Urban Population	Percentage of Urban population to total
1881	1,392,000	11.4
1891	1,472,000	10.6
1901	1,716,000	10.4
1911	1,831,000	9.4
1921	2,140,000	10.1
1931	2,921,000	12.4
1941	4,169,000	14.7
1951	6,019,000	17.8
1961	9,654,000	22.5

Source: *Census of India*, 1881 and 1891, Vols: Bombay, Panjab and Baluchistan; *Census of India*, 1901, 1911 and 1921 and 1931, Vols: Bombay, Panjab, Baluchistan and North West Frontier; *Census of India* 1941, Vols: Bombay, Panjab, Baluchistan, North West Frontier and Sind; *Census of Pakistan* 1951 and 1961. The figures have been rounded.

⁷Since any future political settlement was essentially to be based on the numerical strength of Hindu/Muslim Population, there was a tendency on the part of Hindu/Muslim workers to over enumerate the respective populations.

⁸*Tahsil* is a subdivision of a district.

The widespread plague epidemic during the decade 1901-1911 corresponds with the low progress noticed in 1911 (9.4 per cent). Davis suggests that this drop in the urban population was not so much due to heavy casualties in town, as it was due to the evacuation of towns and fleeing of people to the villages.⁹

The first significant rise in urbanization is noticed in 1931 when the urban population constituted 12.4 per cent of the total. It has been surmised that even this figure was not correct and that population was higher than shown in 1931. This is said to be due to the effect of economic depression and non-coöperation movement which tended to produce sub-normal returns.¹⁰ In any case the interest in and economic advantages of urban living had started infiltrating into the rural areas. The 1941 rise is partly due to the economic motive and partly to the anti-money lender legislation of former Punjab which made money lender's class to shift to town with their capital.¹¹ The investment of this capital in towns gave a fillip to the development of industry, trade and commerce which showed their impact on accelerated urbanization.

Quite a significant progress in the percentage of urban population is again noted in 1951 (17.8). There were two reasons for it. Firstly, the increased importance of towns which had developing cantonments where retired personnel were settled. Secondly, the immigration of Muslim population from across the Indian territory. Persons coming from "agreed areas" (East Punjab), having got land, settled both in villages and in towns whereas those coming from non-agreed areas settled mostly in towns.

What is of interest and should attract attention is the greater increase of urban population in 1961 than the increases of previous decades *i.e.* 22.5 per cent as against 13.9, the average for the decade 1901-1961. The rate of growth has differed with the size of towns. The largest towns (100,000 and over) have witnessed very high growth rate (Fig. 1 and Table 2).

TABLE 2—DISTRIBUTION OF URBAN POPULATION AND ITS DECENNIAL PERCENTAGE VARIATIONS BY CLASSES OF TOWN SIZE

Decennial year	100,000 and over Population.	Variation per cent	50,000 to 100,000 Population	Variation per cent	10,000 to 50,000 Population	Variation per cent
1961	5,630,000	76.7	643,000	33.5	2,261,000	57.0
1951	3,185,000	69.2	486,000	7.3	1,440,000	19.9
1941	11,882,000	45.5	452,000	84.0	1,201,000	67.4
1931	1,294,000	76.8	246,000	17.5	717,000	15.8
1921	732,000	76.0	298,000	37.6	619,000	19.5
1911	415,000	22.4	478,000	20.3	517,000	7.4
1901	339,000	—	398,000	—	481,000	—

Source: Same as Table 1:

⁹K. Davis, *The Population of India and Pakistan* (New Jersey: 1 Princeton University Press, 1951), p. 127.

¹⁰Davis, *Op. cit.*, P 127.

¹¹K.U. Kureshy, *Urban Development in West Pakistan* (unpublished Ph.D. thesis, University of London, 1956) p. 167.

From the above table it becomes clear that in West Pakistan the importance of smaller towns is comparatively decreasing and that of the large towns 100,000 and over is increasing.¹²

The 1951-61 decade, particularly its latter part, has been a period of effective strides in the field of economic development. The results of the establishment of Pakistan Industrial Development Corporation in 1951 were felt during the later part of this decade. And the rapid reforms in the fields of agriculture, industry, education and communication etc. under the new regime installed in 1958 showed their impact in 1961. The Second Five Year Plan concluded with an appreciable rise in the Gross National Product (GNP).

The GNP has increased from 2.2 per cent in the first plan period to 4.2 in the first three years of the present plan.¹³ Thus there has been a significant improvement in the climate for economic growth.¹⁴

AREAS OF URBANIZATION

Before entering into the study of spatial pattern of urbanization trends in West Pakistan, it is well to keep in view few important though known facts. Pakistan is a discontinuous physical entity with its two wings about 1,000 miles apart. Its less populous more sparse western wing is more urbanized than eastern wing with a higher density. This is summarised as follows :

TABLE 3—POPULATION 1961

	West Pakistan	East Pakistan
Population	43 million	52 million
Density	138 persons per sq. mile	922 persons per sq. mile
Urban Population	9,654,000	2,641,000
Urban percentage	22.5	5.2

Source: *Population Census of Pakistan, 1961.*

Out of the 130 new urban centres that have been listed in 1961 and were rural in 1951, 112 were in West Pakistan and only 18 in East Pakistan (Fig. 4). During this decade (1951-61) the rate of growth of Urban population has also been faster in West Pakistan (60 per cent) than in East Pakistan (43 per cent).

¹²Krotki has also reached the similar conclusion, *op. cit.*, footnote 6, p. 13.

¹³*Dawn*, July 5, 1964, p. 6.

¹⁴Government of Pakistan, *The Second Five Year Plan, 1960-65* (Karachi: 1960, Planning Commission) p. 3.

In West Pakistan, an examination of the location pattern of the urban settlements during the period under study (1901-1961) particularly in 1941, 1951 and 1961 reveals that major areas of urban settlements are a) Sind Plain along the Indus, b) the Punjab Plains where the towns have been almost uniformly spaced, and c) north western Sub-montane strip and adjacent hills (Figs. 2, 3 and 4). These are the areas where major developments in agriculture, industry, roads (highways) and railway have taken place.

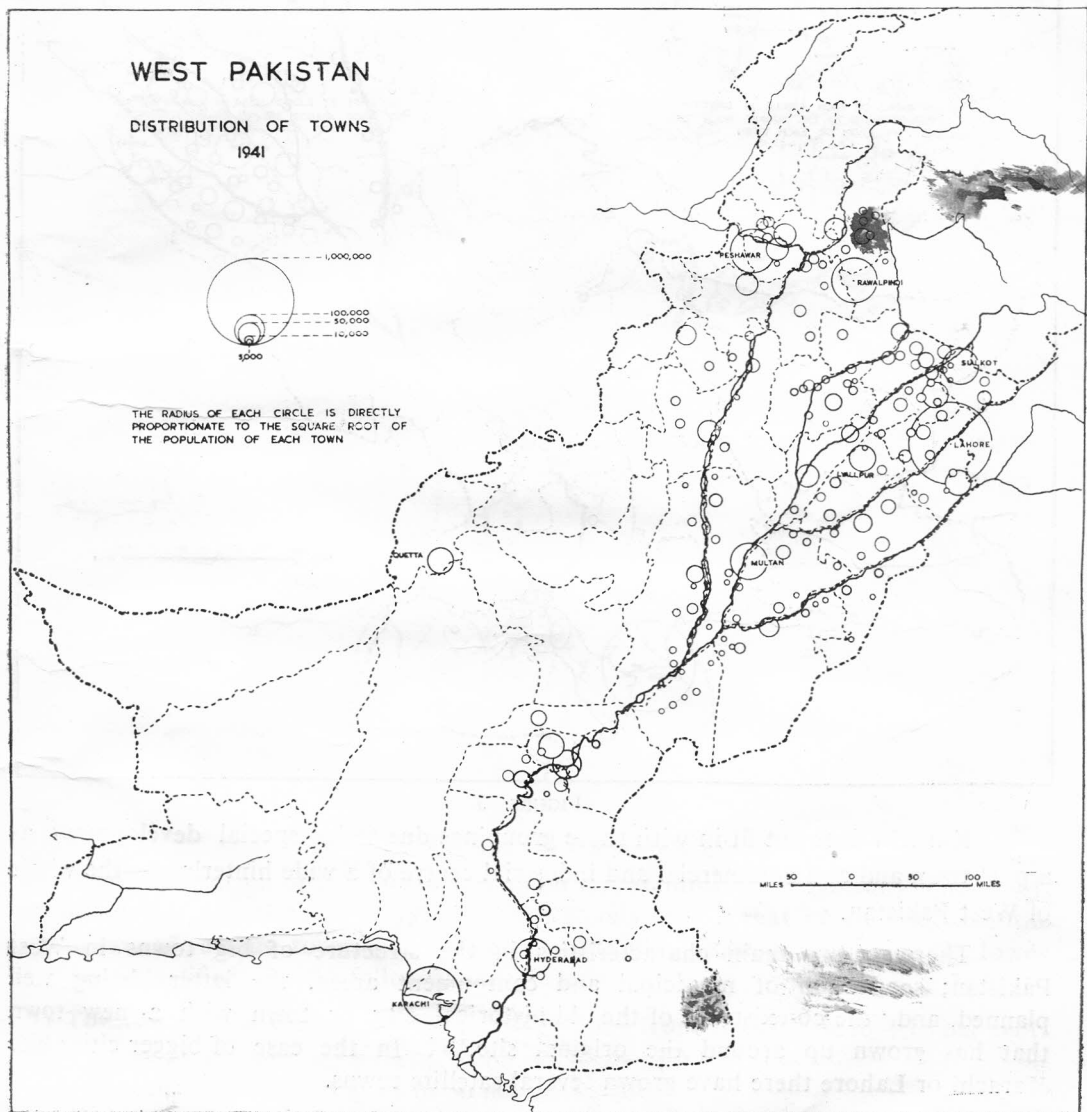


FIGURE 2

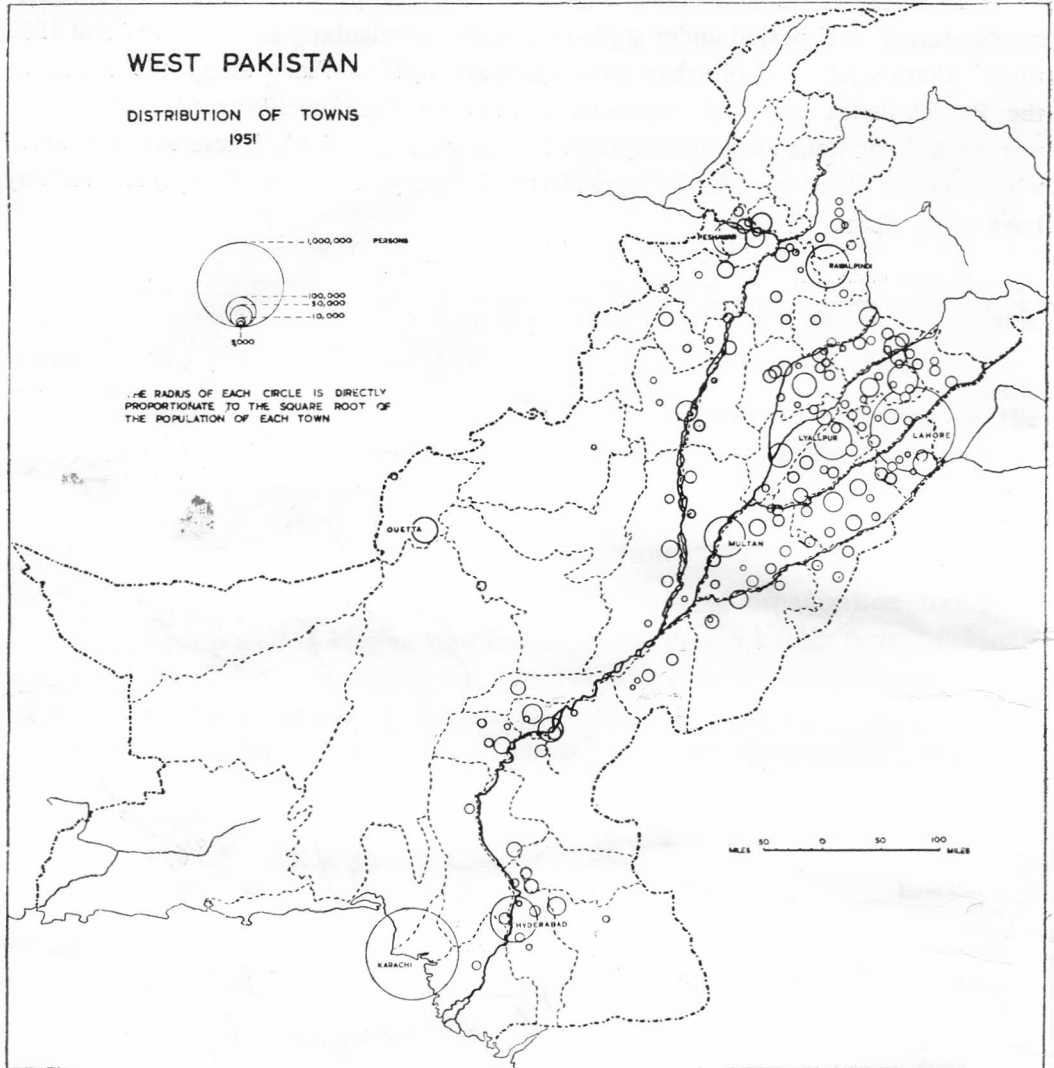


FIGURE 3

Karachi does not fit in with these groupings due to its special development as a port town and as a commercial and industrial centre of a wide hinterland—the whole of West Pakistan.

There are two main characteristics in the structure of big towns in West Pakistan; separation of municipal and cantonment areas, the latter being well planned, and “the co-existence of the old historical city or town with a new town that has grown up around the original site.”¹⁵ In the case of bigger cities like Karachi or Lahore there have grown several satellite towns.

¹⁵ K. S. Ahmad, *A Geography of Pakistan* (Karachi: Oxford University Press, 1964) p. 152.

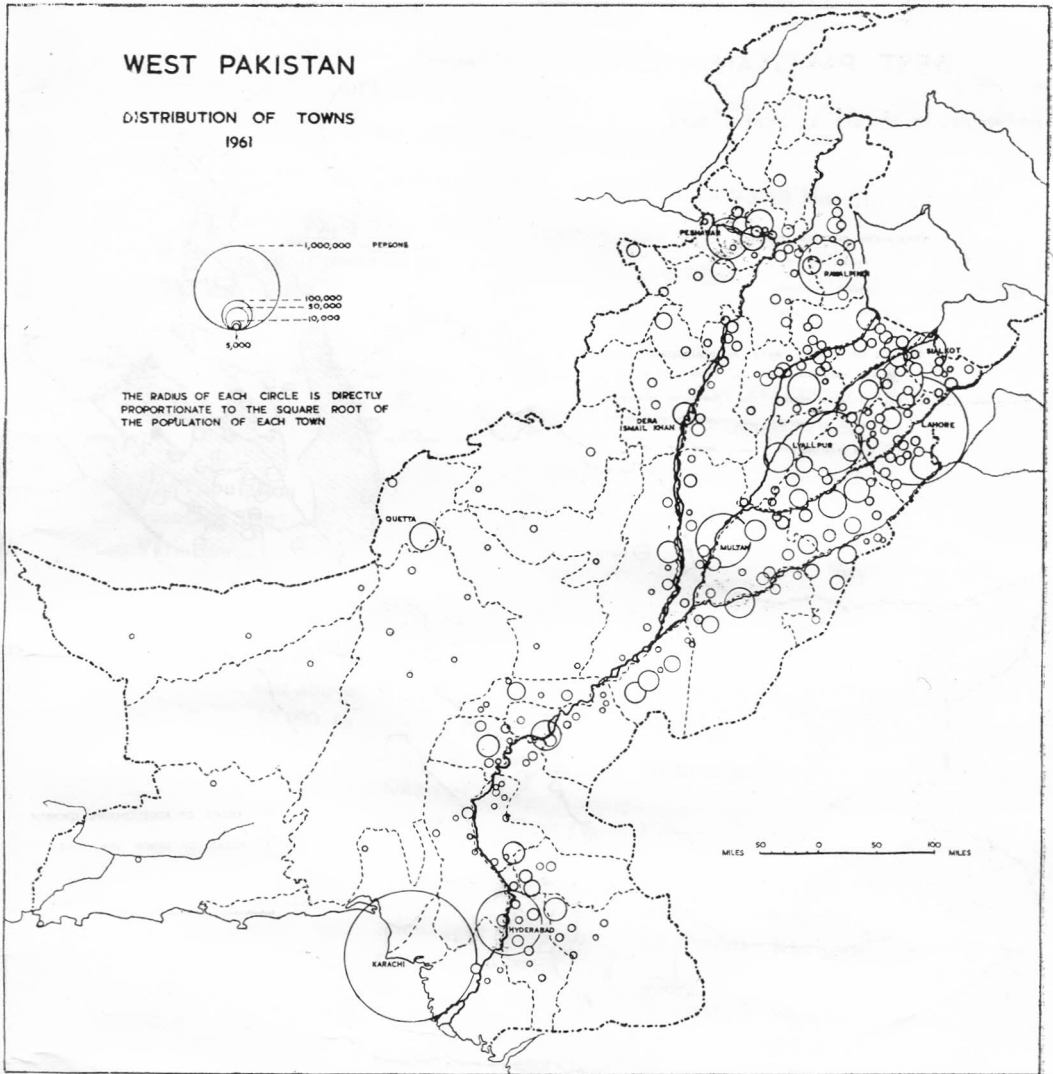


FIGURE 4

SPATIAL TRENDS OF URBANIZATION

As examination of the figures 4, 5 and 6 representing the conditions upto 1941, for the decades 1941-51 and 1951-61 respectively reveals that in each decade the growth rate of various towns has differed significantly. Keeping it in view the towns have been classified into the following categories :

- 1) Towns of minor variations—variations ranging from 10 per cent to +15 per cent.
- 2) Towns of accelerating growth, to be subdivided into
 - a) obtusely accelerating 15 to 50 per cent growth.
 - b) moderately accelerating : 50 to 100 per cent growth and
 - c) highly accelerating 100 per cent growth and over.

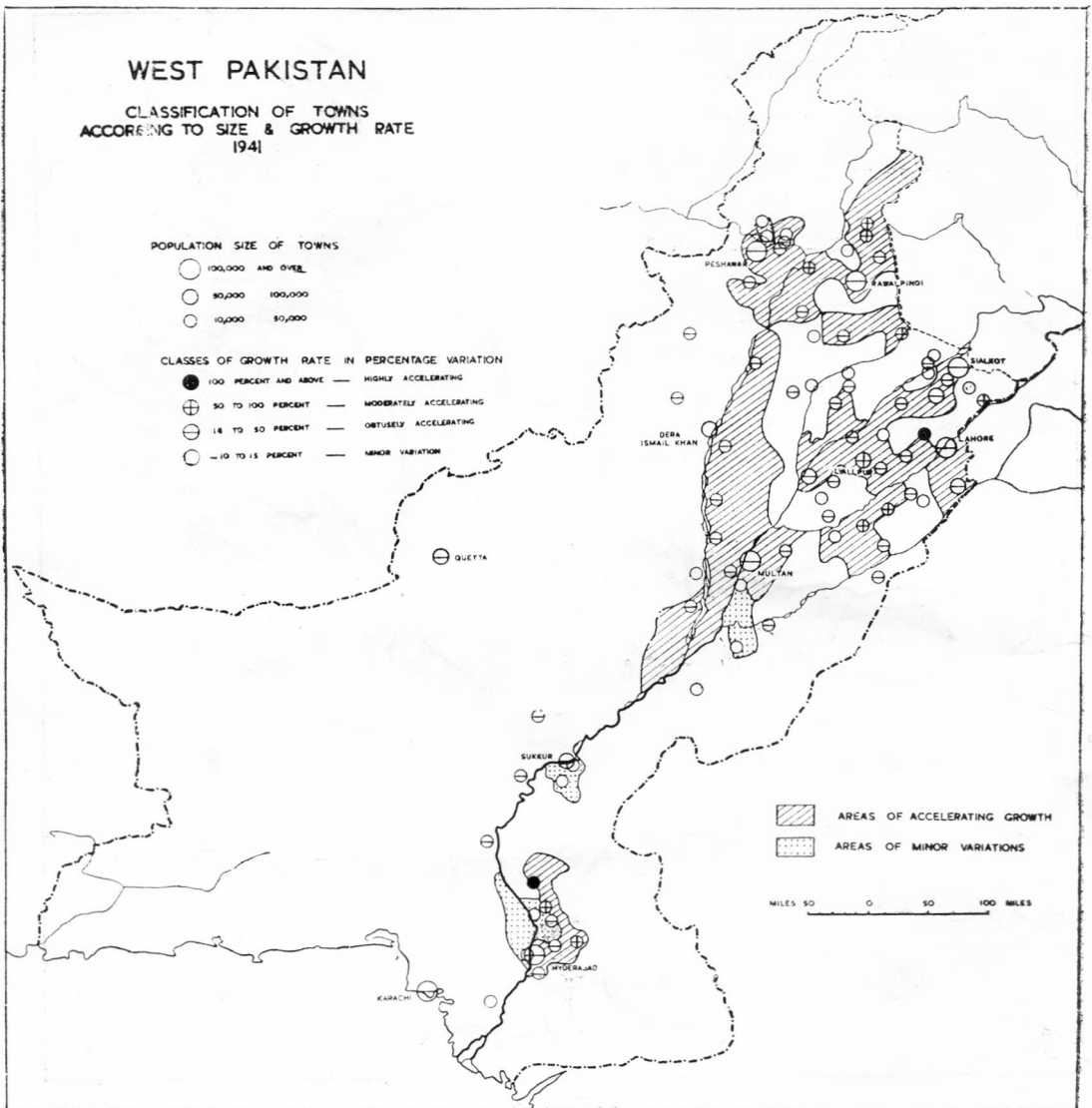


FIGURE 5

These categories have been employed in the analysis of urban growth patterns in West Pakistan.

Urbanization Trends 1901—1941

During the period 1901—1941, the towns of West Pakistan as a whole have grown at obtusely accelerating rate¹⁶ though there are quite a few under the category of minor variations and in other higher categories as well (Table 4). The distributional pattern of these towns has some areal groupings as can be seen in Figure 5.

¹⁶ The Average of the percentages of decennial variations from 1901 to 1941 is 37.5.

Areas of Minor Variations

The towns under this category are twenty-three in all, out of which only two (Thatta and Khanpur) have been declining. Most of these towns are located adjacent to areas of accelerating urbanization.

There are two groups of towns in this category in the Sind Plain :

1) Kotri-Hala and 2) Khairpur-Rohri. Further north a third group is formed by Ahmadpur East-Shujabad in the Punjab Plain. Thatta and Khanpur stand as isolated examples.

TABLE 4—DISTRIBUTION OF TOWNS BY CLASSES OF PERCENTAGE VARIATION AND POPULATION SIZE IN EACH DECENNIAL YEAR

Class of Population Percentage Size Variation		Towns					
		1941				1951	1961
-10 to +15	Total	23				23	12
	100,000 and above	None				Peshawar=1	Sialkot=1
	50,000 to 100,000	Dera Ismail Khan=1	Bahawalpur=1				None
	10,000 to 50,000	Gujrat	Dera Ghazi Khan	Kohat	Larkana	Kohat	Dera Ismail Khan
		Charsadda	Khairpur	Dera Ghazi Khan	Dera Ismail Khan	Nowshera	Wazirabad
		Ahmadpur East	Khanpur	Charsadda	Khairpur		
		Wazirabad	Khushab	Wazirabad	Bhakkar	Bhera	Jampur
		Kotri	Rohri	Leiah	Rohri		
		Bhera	Toba Tek-Singh	Bhera	Jalalpur Jattan	Pindigheb	Pasrur
		Jalalpur Jattan	Shujabad	Chakwal	Tangi	Talagang	Chunian
		Tangi	Sangla Hill	Thatta	Pindigheb		
		Thatta	Hala	Pasrur	Talagang	Haripur	
		Pasrur	Talagang	Tank	Chunian		
	Chunian	Haripur	Haripur				
		=22	=22		=11		
15 to 50	100,000 and above	Karachi	Lahore	Lahore	Hyderabad	Lahore	Rawalpindi
		Hyderabad	Multan	Multan	Rawalpindi	Gujranwala	Peshawar
		Rawalpindi	Peshawar	Gujranwala	Sialkot	Quetta	Sukkur
		Sialkot	=7	=6			=6

TABLE 4—Continued

Class of Percentage Variation	Population Size	Towns					
		1941		1951		1961	
15 to 50	50,000 to 100,000	Gujranwala Sukkur Kasur	Quetta Jhang = 5	Quetta Jhang Kasur	Sukkur Montgo- mery = 5	Bahawalpur Montgo- mery Jhelum	Mardan Gujrat = 5
	10,000 to 50,000	Sargodha Kohat Larkana Nowshera Jacobabad Hafizabad Mianwali Gojra Jaranwalla Daska Dadu Nankana Sahib Mitha Tiwana Muzaffar- garh Jampur Pindigheb Tank	Bahawalpur Mardan Khanewal Chiniot Bahawal- nagar Kamalia Bannu Tando Adam Bannu Tando Adam Daska Pakpattan Bhakkar Leiah Tando Allah Yar Chakwal Tando Mohammad Khan Murree Kot Adu Pattoki Bhalwal = 34	Mardan Jacobabad Bannu Tando Adam Gojra Khushab Dadu Tando Allah Yar Shujabad Tando Mohammad Khan Sangla Hill Kot Adu Mansehra Bhalwal = 36	Gujrat Ahmadpur East Mianwali Abbottabad Adam Pakpattan Shahdadpur Kotri Toba Tek Singh Nankana Saheb Narowal Muzaffar- garh Jampur Hala Risalpur = 43	Larkana Chiniot Charsadda Kamalia Hafizabad Bannu Tando Adam Gojra Khushab Shahdadpur Kotri Dadu Toba Tek Singh Nankana Sahib Chakwal Narowal Tangi Sangla Hill Thatta Pattoki Risalpur Bhalwal	Dera Ghazi Khan Sheikhupura Jacobabad Khairpur Ahmadpur East Mianwali Abbottabad Pakpattan Bhakkar Daska Leiah Rohri Tando Allah Yar Jalalpur Jattan Shujabad Mitha Tiwana Mazaffar- garh Kot Adu Hala Mansehra Tank = 43

TABLE 4 - Continued

Class of Percentage Variation	Population Size	Towns					
		1941		1951		1961	
50 to 1000	Total	12		14		17	
	100,000 and over	None		None		Karachi	Hyderabad
	50,000 to 100,000	Lyallpur =1		Sargodha =1		Multan =4	Sargodha
	10,000 to 50,000	Mardan	Montgo- mery	Okara	Mirpur Khas	Khanewal	Nawabshah
		Okara	Mirpur Khas	Jhelum	Khanewal	Bahawal- nagar	Khanpur
		Jhelum	Abbottabad	Bahawal- nagar	Kamalia		
		Shahdadpur	Chichawatni	Hafizabad	Bannu	Jaranwala	Chichawatni
		Narowal	Mansehra	Jaranwala	Chichawatni	Campbellpur	Tando
		Risalpur		Mitha	Murree		Muhammad Khan
				Tiwana			
				Pattoki		Murree	
		=11		=13		=9	
100 and over	Total :	3		5		1	
	100,000 and above	None		Karachi	Lyallpur	Lyallpur	
	50,000 to 100,000	None		None			
	10,000 to 50,000	Campbell- pur	Sheikhupura	Nawabshah	Sheikhupura		
		Nawabshah		Campbellpur			
		=3		=3			

Source : Compiled from the *Census of India, 1941, Census of Pakistan, 1951 and 1961.*

The towns falling in these groups have not progressed much for several reasons ; the adverse economic effects of the two world wars, the cholera epidemic and the neglect of these areas in terms of development. There is a general absence of agricultural centres in these groups. The railway towns like Kotri, Rohri and Khanpur, the

main centres of these groups, always supported the same number of people as required for the working of railway junctions. It was not until these centres were associated with the functions other than those as railway junction that they started growing.

Further north in the Punjab Plain another group, Gujrat—Wazirabad, is located on either side of the Jhelum. The progress of this group has been held up because the people appear to have been drawn away to bigger towns in the doabs. The isolated centres like Dera Ismail Khan and Dera Ghazi Khan west of the Indus have been due to the persistent nomadic state of the people and the lack of agriculture.

Other isolated towns in Punjab under this category were Toba Tek Singh, Talagang and Chunian. In the North West the Charsadda—Tangi group of minor variation has been due to the proximity to Peshawar and the rise of Mardan City.

Areas of Accelerating Growth

Out of sixty-one towns with accelerating growth during 1901-1941 as many as forty-six have witnessed obtusely accelerating growth, twelve moderately accelerating growth and only three (Nawabshah, Sheikhpura and Campbellpur) have recorded highly accelerating growth. It is interesting to note that except Lyallpur all other big towns (50,000 and over) fall under the category of obtusely accelerating growth.

In the Sind Plain, there is an areal group of accelerating urbanization in a triangle formed by Mirpur Khas, Hyderabad and Nawabshah. Other isolated towns in this category, though of less importance, are Dadu, Larkana, Jacobabad and Sukkur. Rise of this group and isolated towns has been the result of irrigation under the Sukkur Barrage Project which enhanced their importance as market towns. Karachi developed as a port town.

Further north in the Punjab Plain there are three important areas 1) Mianwali-Jampur axis including Bhakkar, Leiah, Kot Adu and Muzarffargarh. The new Thal Canal together with the rail and road connecting Mianwali and Multan in this strip provided the main impetus, 2) Scattered groups of towns in the Bari, Rechna and the Chaj Doabs including a) Gujranwala—Sialkot, b) Lyallpur—Jhang Sargodha, c) Montgomery—Sheikhpura Lahore, and d) Multan—Khanewal. The accelerated growth of these groups may be ascribed to the general development of agriculture and market towns under irrigation. The Punjab on the other side of the border (India) also recorded similar developments in urbanization during this period.

¹⁷J.P. Bhattacharjee, *Interaction of Urbanization and Rural Development in India, Ekistics*, Vol. 17, No. 98. (January, 1945).

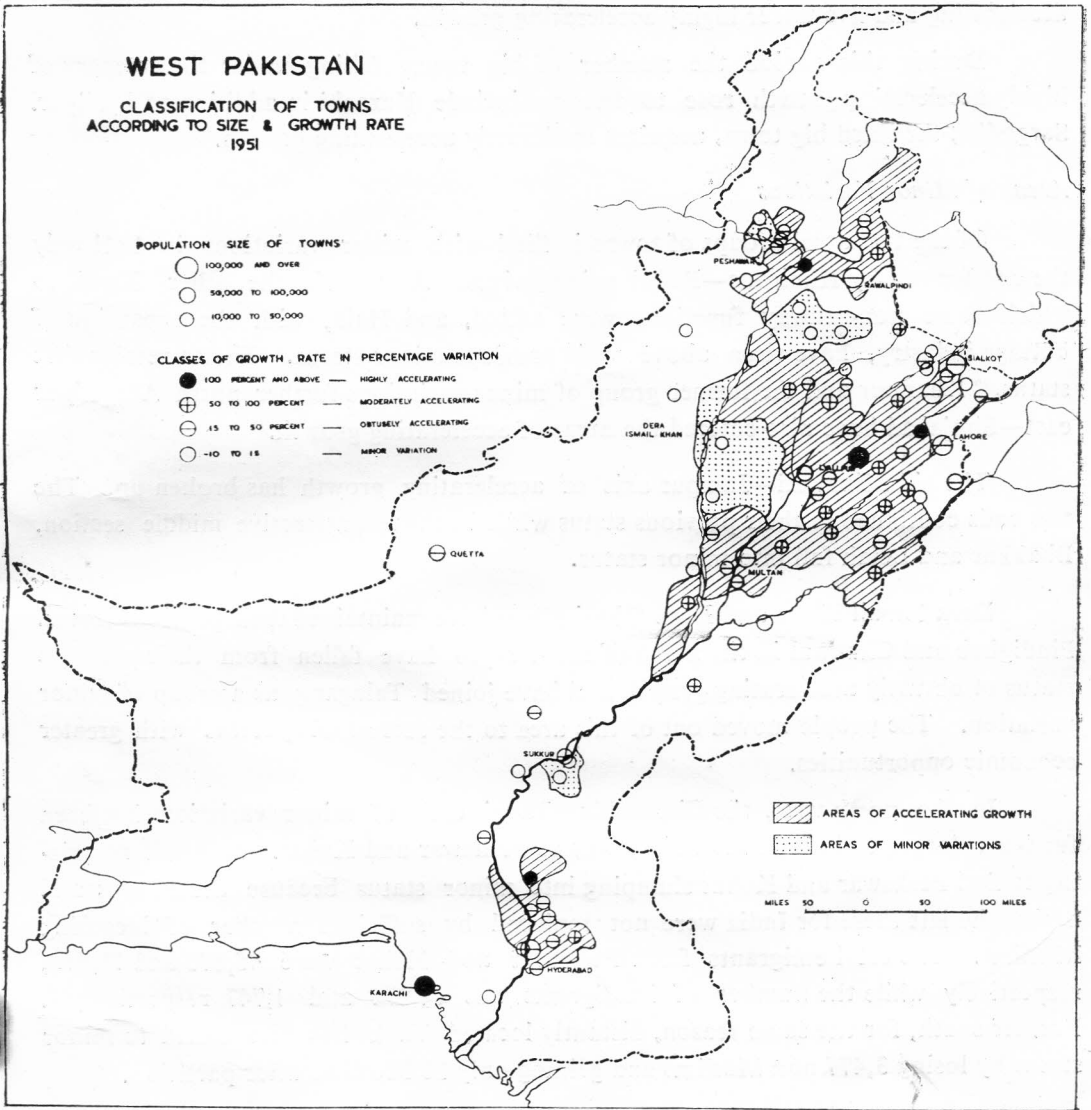


FIGURE 6

Urbanization Trends During 1941-51

In 1951, there were significant changes in the number of towns under varying growth rates (Table 4). These changes were still more interesting in terms of their areal pattern (Fig. 6). The number of towns with minor variations remained the same but the number of declining towns rose to four (Dera Ismail Khan, Tank, Bhera and Pasrur). The towns under accelerating growth decreased to forty-two, out of which

twenty-four fall under the category of obtusely accelerating, thirteen under moderately accelerating and five under highly accelerating growth.

During this period the number of big towns falling under the category of highly accelerating growth rose to two to include Karachi in addition to Lyallpur. Sargodha, the third big town, acquires moderately accelerating growth.

Areas of Minor Variations

Of the two areal groups of towns in Sind with minor variations in 1941 only the one formed by Khairpur—Rohri axis survives. As regards the other, Kotri, to which some non-railway functions were added, and Hala, with the expansion of cottage industry, have risen above their previous minor status. Thatta retains that status. Khanpur and the former group of minor variations further north Ahmadpur east—Shujabad have also entered the areas of accelerating growth.

The old Mianwali—Jampur axis of accelerating growth has broken up. The two ends continued in their previous status while in the less attractive middle section, Bhakkar and Leiah fall into minor status.

Dera Ismail Khan and Dera Ghazi Khan have maintained their previous status. Pindigheb and Chakwal in the north of the Punjab have fallen from their previous status of obtusely accelerating growth and have joined Talagang as a group of minor variation. The people moved out of this area to the surrounding towns with greater economic opportunities.

In the north west, the Charsadda—Tangi area of minor variations has been further enlarged to include such big towns as Peshawar and Kohat. It is not surprising to find Peshawar and Kohat slumping into minor status because the Hindus and Sikhs who left there for India were not replaced by sufficient number of incoming Muslims. The total emigrants from Peshawar and Kohat were 45,875 and 11,812, respectively while the number of immigrants was 14,274 and 1,747 respectively¹⁸. Further south, for the same reason, distantly located Tank has also fallen to minor status by losing 3,477 non Muslims and gaining only 30 Muslims after partition.

Areas of Accelerating Growth

Mirpur Khas - Hyderabad - Nawabshah triangle which showed accelerating urbanization during 1901-1941 has developed further to include Kotri and Hala. Mirpur Khas and Hyderabad have progressed because they were the first two big

¹⁸The entire population of Hindus and Sikhs in 1941, has been assumed to have flown to India after partition in 1947 as the 1951 Census does not show the presence of any of the other communities, *Census of India 1941*, N. W. F. P., p. 22., *Census of Pakistan 1951*, N. W. F. P., p. 22.

¹⁹ *Ibid.*

railway stations on the Khokhrapar route, where the refugees from India found it easy to settle during the post partition years. Larkana, which had seventy-one per cent Hindu population²⁰ in 1941 has fallen to the minor status because of the exodus of its bulk of the population to India.

Karachi, the port town in 1941, became capital of the new nation of Pakistan in 1947. This status of Karachi coupled with its locational advantages for the incoming Muslim Refugees from Bombay, Central India, Utter Pradesh, Delhi and Rajputana states and its development as an economic and commercial hub of Pakistan, attracted a large number of emigrants. Thus in 1951 with about fifty-five per cent²¹ of the refugee population, Karachi rose from a town of 435,887 persons in 1941 to 1,068,459 in 1951, recording a highly accelerating growth rate of 102.3 per cent.

The urbanized areas in the Bari, Rechna and Chaj Doabs continued to show accelerating growth. In the Bari Doab, Khanewal and Chichawatni have risen from obtusely accelerating to moderately accelerating status while Montgomery has fallen from moderately accelerating to obtusely accelerating growth. Bahawalnagar, south of the Sutlej, close to Indian border, received a large number of immigrants and thus rose from obtusely accelerating to moderately accelerating status.

In the Rechna Doab, Hafizabad, Jaranwala and Kamalia have progressed into moderately accelerating growth. Lyallpur has risen into highly accelerating growth while Sheikhpura maintained its status. The growth of these towns was due to their increasing importance as commercial and industrial centres. In Chaj Doab while all towns have maintained their former status in accelerating growth, Sargodha with its nodal position has stepped up into moderately accelerating growth.

In the north, there is a crescent of towns of accelerating growth running from Mardan in a curve through Campbellpur and Rawalpindi to Mansehra. Whereas the towns in this area, in general, show obtusely accelerating growth, Campbellpur and Murree have recorded highly and moderately accelerating growth respectively. The former is an important bridge town on the Indus while the latter is a principal hill station and is located close to Rawalpindi.

In short, during 1941-51 urbanization has been associated partly with agricultural development but mainly with India-Pakistan migrations.

²⁰ *Census of India, 1941*, Vol. Sind, p. 22.

²¹ K.S. Ahmad, "A Geographical Study of the Refugee Population and Some of its Problem", *Pakistan Geographical Review*, Vol. 10, No. 2 (1955) p. 3.

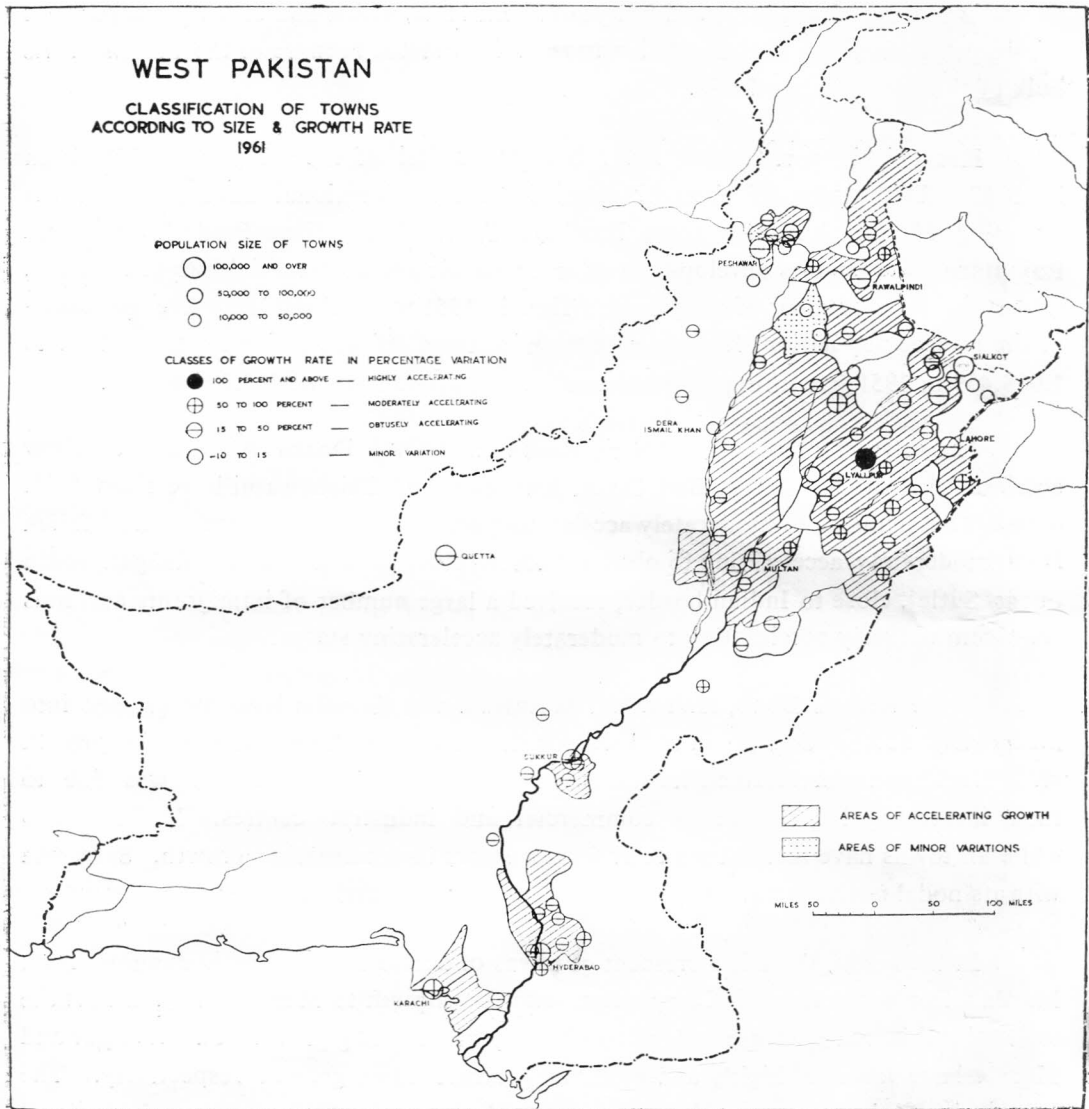


FIGURE 7

Urbanization Trends during 1951-61

In 1961 the growth of urbanization attains great proportions spatially (Fig. 7.) Most of the towns of minor variation have developed accelerating growth and thus the number of towns in this category has risen to fifty-four. The number of towns with minor variation has been reduced to twelve. Several towns of previously obtusely accelerating growth have attained moderately accelerating

status. Almost all the bigger towns with a population of 50,000 and over, which were previously obtusely accelerating, have risen to the moderately accelerating status. Lyallpur still stands out with highly accelerating growth. All this development in urbanization has been considerably influenced by the pace of industrialization and decentralization of industries.

Areas of Minor Variations

The most significant point in 1961 is the almost complete dismemberment of the areal groups of towns with minor variations. Pindigheb-Talagang is the only group which persists in this category though decreased in size. Some isolated towns of minor variations are found near about the groups of accelerating urbanization. Sialkot on the border of Kashmir has been reduced to the status of minor variation.

Areas of Accelerating growth

The areas of accelerating urbanization have been much more pronounced in 1961 than in the case of previous decades. In the Sind Plain the towns of minor variations have now practically disappeared. Here during this decade three areas of accelerating urbanization are found 1) Karachi - Thatta, 2) Mirpur Khas-Hyderabad-Nawabshah triangle, and 3) Sukkur - Rohri - Khairpur. Dadu, Larkana and Jacobabad stand as isolated towns of accelerating growth. The first two areas include towns both of obtusely and moderately accelerating growth. The third area is wholly obtusely accelerating. The increasing importance of these towns was due to the great fillip given to agriculture as a result of the opening up of Ghulam Muhammad Barrage at Kotri and partly to the establishment of industrial estates in some of these towns.

Further north, the 1941 Mianwali-Jampur axis of obtusely accelerating growth has reappeared under the same status as Mianwali-Dera Ghazi Khan axis. This was due to great land reclamation works effected by the Thal Development Authority and the establishment of new industries.

On account of the development of commerce and industry in the Sutlej-Jhelum Doabs the towns located on the railway lines have either maintained their previous status or have progressed into higher status, like Multan, Jhang and Jalalpur Jattan.

Lyallpur in Rechna Doab is the only town in West Pakistan which has maintained its highly accelerating growth. This was mainly due to its increasing importance both as agricultural and industrial centre. Sheikhpura on the other hand has declined from highly accelerating status. It appears to be due to the piracy of Lahore on the one side and Lyallpur on the other.

Further north Jhelum along with Chakwal, now forms an area of obtusely accelerating growth.

In the north-west, Peshawar has regained its obtusely accelerating growth of 1941. Charsadda-Tangi group has also risen to obtusely accelerating status. These together with Mardan and Risalpur make a group of accelerating urbanization. Nowshera, formerly in the same group has fallen to minor status. Keeping in view the great expansion of industry in this area, the fall of Nowshera appears to be anomalous. It becomes clear when it is realized that the industrial establishments are located outside the municipal limits of the town and are thus not included in its population in the census of 1961. In part it is also due to the fact that the population of cantonment area during this decade has been reduced.

Quetta, an isolated urban centre in north Baluchistan, has maintained an obtusely accelerating growth in all the decades.

During the period 1951-61 the most significant trend in urbanization is the increasing importance of *mandi* and industrial towns throughout the ecumene²² of West Pakistan. This pattern of urban growth in West Pakistan is also partly borne out by the fact that there has been an increase of 55.01 per cent in non-agricultural labour force as compared to 19.75 per cent in agricultural labour force²³.

SUMMARY AND CONCLUSION

In 1941, which reflects the position of urbanization since 1901, the principal urbanized areas are found to be located in Bari, Rechna and Chaj Doabs between the Sutlej and Jhelum, where impetus was afforded by the development of canal irrigation, colonization and the growth of *Mandi* towns. Similarly in the Lower Indus Plain the area commanded by the Sukkur Barrage was more urbanized.

In 1951, besides economic development, the exodus of Hindus and Sikhs and influx of Muslim refugees from India had a significant effect on the trend of urbanization. Towns near Indo-Pakistan border like Lahore, Bahawalnagar and Hyderabad showed accelerating growth on account of the settlement of Muslim immigrants whereas those distantly placed, like Peshawar or Larkana, slumped with the emigration of Hindus and Sikhs.

From 1951 onwards the development plans started making greater impact on the urbanization trends. The emerging pattern in 1961 shows an appreciable departure from that of the preceding decades. Rapid industrial and commercial expansion and integrated development of new areas under the command of new canals are the main factors behind this new trend, the chief features of which are, 1) creation of new townships in new agricultural areas like Thal 2) growth of old townships as a result of the policy of decentralization of industries as in the case of Bannu and Khanpur or Khairpur.

²² Parts of West Pakistan which have a population density of 100 persons per sq. mile and lie within 5 miles of motorable road or railway station. I. H. Zaidi, *Administrative Areas of West Pakistan: A Geographical Evaluation*, (unpublished Ph. D. Dissertation, Syracuse University, 1961) pp. 79-81.

²³ *Population Census of Pakistan, Economic Characteristics*, Census Bulletin No. 5. (Office of the Census Commissioner, Home Affairs Division, 1963) p. vii.

GEOGRAPHY IN NATIONAL PLANNING, WITH SPECIAL REFERENCE TO URBAN DEVELOPMENT

K. U. KURESHY

MEANING AND SCOPE OF PLANNING

MODERN planning is a philosophy, arising out of economic, social and political exigencies, and is no longer a series of design, finding expression in architectural monuments, and the like.¹ In a free society, it is a highly democratic process, purporting to achieve the greatest good of the greatest number. The characteristic features of modern planning are :

- 1) its purposefulness,
- 2) scale, and
- 3) technique.

The purpose is to obtain the optimum use of resources, together with the best possible distribution of exploits, over different areal units, and among men. The optimum to be achieved is an integral one, satisfying both the individual and collective criteria. In meeting the individual criteria, it must ensure maximum per capita income, security of employment and leisure for the pursuit of higher values of life. In fulfilment of the collective criteria, it must vouchsafe the maximum economic, social and political (including military) stability of the area under planning. The purpose of planning is to be achieved through a perfect economy of means to be employed.

The scale of modern planning is large. It encompasses the entire resources in men and material of the area under planning. The areal unit falling within the purview of planning is either a region or a state in the former case, it can be termed as regional planning, and, in the latter, as national planning. A state may consist,

¹H.V. Miller, 'Training Geographers for planning,' The Journal of Geography Vol. 47, (1948), pp. 177-183.

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as it generally does, of several distinct regions, thus, making it possible, and in fact profitable, to execute national planning by regions.

The technique, though useful, is complex, necessitating a thorough scrutiny before the actual execution of the plans. It consists of working out a well thought out and consequently sound, scheme of priorities and proportions for the efficient exploitation of the various resources. These resources are of unequal areal distribution, giving rise to what is known as 'areal differentiation'. Further, the technique tends to balance the various competing needs on the same resource or resources. In essence, it seeks to establish coordinated economies.

Planning envisages a better future use of the existing resources. It is not done in vacuum, but seeks to modify the existing distributional patterns to the maximum advantage of man. In this sense, it involves a skilful grafting of the future on the present, resulting from the past. The necessity is, therefore, obvious of a steadfast enquiry into the past trends and the present patterns. For the ultimate success of planning, this enquiry shall have to be of an academic nature, comprehensive and detailed, concerning itself only with facts 'significant for its fruitful completion'.

A significant fact is one of more direct application to the understanding or solution of a particular problem. The necessity of utilising significant facts or data arises when the available information is of unnecessarily profuse, complicated, unsystematised and discordant nature. In such a case, the significant facts are sifted from the nonsignificant.

Man, for whose benefit planning is done, is curiously enough not very responsive to it. This is not characteristic of the Eastern Society alone, but is, in a large measure, true also of the West. When the reactions of the willing emigrants from London to the nearby new towns were ascertained, about a decade ago, through a gallop poll, they generally expressed their dissatisfaction.

This was their reaction to what was planned to be a comfortable living for them in the 'garden town', basically of the conception of Howard, an idealist. Therefore, assessment of the human reaction to the proposed changes should form an integral part of the enquiry, referred to above.

GEOGRAPHY AND ITS SCOPE

Like any other dynamic concept, geography has been variously defined. Some of the better known definitions are given in the footnote.²

The points that emerge from a study of these definitions, apart from the conceptional niceties, are set out in the following paragraphs.

The object of geographical studies is the composite landscape, as against the study of an individual element of the landscape. Sciences dealing with the individual elements of the landscape, e.g., botany dealing with flora and zoology with fauna, may have their merits, but geography dealing with the composite landscape has its own specialisation, in fact a useful one.

On the basis of the differences of the distributional patterns, the land is parcelled out into divisions each having in it a homogeneous distribution. A division of this nature, marked out as an area of individuality or of distinctive character, on the basis of some prefixed criteria, is the areal unit of treatment in the subject of geography. It is this concept of a homogeneous area in geography which is generally known as the 'regional concept'.

A region may either be a single-criterion or a multiple-criteria areal unit of homogeneous character, standing out as distinct from the other surrounding units. The selection and the number of criteria will depend upon the purpose of the study. Depending upon the prefixed-criteria, the regions may be of different scales—macro, medium and micro. Also, these may form a spatial hierarchy, a number of them existing in one and that one in turn existing in another of a still larger scale.

The study of the distributional patterns, or of areal differentiation, has for its purpose the understanding of the interrelationship of phenomena both physical and cultural. The interrelationship may be traced between several physical

²The Glossary Committee of British Geographers defines Geography as "The Science that describes the earth's surface with particular reference to the differentiation and relationships of areas." L. D. Stamp (Ed.), *A Glossary of Geographical Terms* (London: Longmans, 1961) p. 209; According to James "Geography.....deals with the association of phenomena that give character to particular places, and with likeness and differences among places." P. E. James and C. F. Joesn. (Eds), *American Geography: Inventory and Prospect* (Syracuse: Syracuse University Press, 1954) p. 6; "The study of the areal differentiation of the earth surface, as shown in the character, arrangement, and interrelations over the world of elements such as climate, relief, soil, vegetation, land use, industries, or states, and of the unit areas formed by the complex of these individual elements." *American College Dictionary* (New York: Random House, 1947). Commenting upon the merits and limitations of the various definitions of the subject at the University Seminar held at Kaptai (East Pakistan) over a year ago the present writer put forward the following definition, which seemed to have been well received there. "Geography is the study of distributional patterns of features and phenomena, both physical and cultural in their mutual interrelationship giving a distinctive character to an area."

phenomena or between several cultural (human) phenomena, but the emphasis in general has been towards establishing the relationship between physical forces on the one hand and human activities on the other. On purely academic grounds, the emphasis may not be fully justified, but it has its own utilitarian value. Devoid of the basically untenable connotations of determinism, "environment", as Sauer sees it, "is a term of geographical appraisal".²

The interrelationship may either be recorded at one particular moment, or data being available, as a process through time. The studies in time-space continuum are more useful, particularly for establishing causal relationships. Causal relationship is often likely to be confused with coincidence, and, therefore, for its determination is needed, aside from the maturity of the investigator, a knowledge of the sequence of occurrence of phenomena. That makes studies in time-space continuum so useful.

Because of the multiplicity of features and phenomena forming a landscape, significant phenomena alone can be fruitfully studied, "the individual fact enters, into a geographical study, with a degree of importance that increases with the extent to which it is interrelated, on many sides and internally, with neighbouring circles of phenomena, both forward and backward as cause and effect".³

In the study of the distributional patterns, the incidence of an element of a complex is not studied as such, but in its efficiency (for a purpose). The efficiency, for example, of rainfall is to be determined in relation to other elements of the complex, temperature, porosity of soil, runoff. In this example of rainfall its mere incidence, measured in terms of inches, does not carry much meaning. While twenty inches of annual rainfall in Lahore is inadequate for crop production, ten inches of rainfall is enough for the growth in Taiga forests.

From the above study it is clear that modern planning is wide in scope, larger in scale and complex in working. It, therefore, has to rely on the knowledge and technique of enquiry of various disciplines. The discipline that is more comprehensive in nature is likely to be of greater application in planning.

Geography stands out as exceptionally useful in this respect. So great is its application that some of the terms of basic comprehension in planning, for example, "region", "distributional patterns" or "areal differentiation", "significant data," are of geographic origin and definition. Other terms, like "resources" and "integral optimum", geography includes in its glossary in common with some other disciplines.

²C. O. Sauer, "Foreword to Historical Geography." *Annals, Association of American Geographers*, Vol. 31 (1941) pp. 1-24.

³R. Gradmann in R. Hartshorne, *Perspective on the Nature of Geography* (Chicago: Rand McNally and Company, 1959) p. 38.

The great advantage of geography for the purpose lies in its specialisation in the study of the composite landscape and the total complex, together with the spatial interrelationship of the constituents of the complex :

- 1) among themselves at any one place,
- 2) across space with those of other areas, and
- 3) in time-space continuum.

Geography forms a bridge between the physical and social sciences. As Mackinder puts it, geography "ranges values alongside of measured facts". Both these sciences are of use in planning, but more so in their integration is the speciality of geography. The resultant scope of geography is wide, but man occupies a central position in that wide field. He is the interpreter of the complex, forming the object of study, for his benefit. Therefore geography in its applied field shares with planning the common cause—a better future for man.

One of the most important aspects of the discipline of geography, which is of prime use in planning, is the "Visual way of thinking" of that discipline. Illustration is the speciality of geography, although other disciplines also make some use of illustrative diagrams. In geography, cartographic representation, as an aid to its studies, has been developed into a technical subject, full of niceties and complex details, with these developments, illustratives are capable of condensing in them a mine of information in its multifarious relationships. Being condensed in one or a series of illustrations, the entire voluminous data can be comprehended at a glance, which is of great help in planning.

Geography treats the statistical and the cartographic methods of analysis as complementary to each other. It is because both the methods individually have their own limitations. The purely statistical method is not capable of revealing spatial relationships, with their attendant problems and the right approach to tackling these problems. The cartographic analysis, depending upon the limitations of scale, is in cases likely to be unnecessarily generalised. But if treated in a complementary manner, as these are in geography, the two methods together are capable of revealing a pattern of distribution, which, in its relationship with the other patterns of distribution of related phenomena, is of ready utilisation in planning.

The utility of geography is great in the present period of specialisation. Specialisation is good in its own way, but until the water-tight division of the several physical and social sciences is changed into an integrated concept, these sciences cannot be fully employed in the service of mankind. Geography is and further promises to be such a composite and integrated discipline, with its own specialisations and a sound illustrative mechanism.

SCOPE OF GEOGRAPHICAL PLANNING

The scope of geographical planning is vast. In this context, geographical planning means those aspects of planning in which the utility of geography is more direct. It includes the following :—

- 1) Ecological planning,
- 2) Economic planning,
- 3) Agricultural land use planning,
- 4) Town and country planning,
- 5) Inter-country cooperative planning.

The terminology used here for the types of planning is not universally recognised, but can be regarded as a satisfactory one. Also, there is bound to be a certain amount of overlapping, according to various ways of thinking, in the several types of planning enumerated here. These types of planning are briefly introduced below. A somewhat detailed treatment of the same appears in an allied article by the present writer, under publication in the *Science*, Karachi.

Ecological Planning

Ecological planning signifies planning for the maintenance of the man—land balance, which sets the limits of growth, permanence and the welfare of human population. It includes considerations of the balance and the vital circulation of a region, its energy and natural resources in soil, vegetation, water and animal wealth, available for the human population of the region on a continuing basis.

Ecological planning can be regarded to be different from economic planning, which also includes the above aspects, in matters of emphasis. In the ecological planning of exploitation of resources the emphasis is on the maintenance of proper proportion of land under natural vegetational cover of various categories and under cultural forms, including agricultural land, so as to maintain and perpetuate the ecological balance.

Economic Planning

For the purposes of the present discussion, economic planning is understood in a narrower sense. It includes the spatial distribution of industries, determination of the relative importance of several industries and their size, protection of small scale and cottage industries against large scale industries and the infant indigenous industries from foreign competition, provision of banking and credit facilities, and the construction of means of communication and transportation.

Agricultural Land Use Planning

Agricultural land use, as treated here, signifies the uses of the agricultural land to which it is put or can be put, as distinct from total land use planning, forming a part of ecological planning, in our scheme of treatment,

For agricultural land use planning, recording of the existing use is more important than in some other cases. A better use can only be suggested after a thorough study of the existing pattern and the factors influencing this pattern. The factors include physical factors, such as climate, soil and topography; social and historical factors, such as ownership, land tenure, laws of education and the degree of political security enjoyed in the past by the region of study; economic factors, such as working costs, transportation charges, agricultural prices, labour wages, economies of mechanisation, inter-crop competition, competition from non-agricultural claims on land, and economics of reclamation of culturable wastes and marginal land.

Town and Country Planning

The planning, as treated here, relates to the judicious apportionment of the open land (excluding the acreage allocated to natural vegetational cover under ecological planning) between agricultural and other cultural needs. The cultural needs embrace all man-made features like brick-and-mortar areas, recreational land, commercial and strategic uses and other multifarious uses of the kind. After the apportionment, as the basic part of this planning, it includes the detailed planning of uses on non-agricultural land.

Inter Country Cooperative Planning

The inter-country cooperative planning signifies the putting of the resources of a number of neighbouring countries to the best possible use by the cooperative effort of these countries for their common benefit. This type of planning is of recent occurrence, and is manifest in the form of the European Economic Community popularly known as the European Common Market. The prerequisite of the successful functioning of such an economic community is that the participating countries should have what can be regarded as 'geographical unity', so that the economic union could be an effective one. One of the sure indices of the geographical unity of a group of countries is the extent of reciprocity in their existing trade. The six countries of Europe, form into the Union in 1957, previously enjoyed, marked degree of such a reciprocity; thirty-one per cent of the exports and thirty-two per cent of imports of these countries taken together were within the area now forming the common Market.

Urban Planning

Urban planning is an important segment of town and country planning. In fact, in practice, the whole was necessitated as a result of what can be described as "demographic combustion" in the part, that is the town.

The great process of urbanisation in the West started with the Industrial Revolution. By the early thirties of the present century, the areal expansion of the

large-size urban centres had reached a "saturation point",⁴ necessitating urban planning primarily with a view to:

- a) arresting the process of deterioration in the standards of urban living, and
- b) "bring the country back" to the urban centres, where the roadside mile stones within a big city like Karachi, began reading, "Karachi 5 miles".

In comparison with the West, the occurrence of events in the orient, and hence in Pakistan, was only delayed. But it did come, with the attendant problems, in varying degrees, emphasising the need for planning. Urban planning, its need and scope are discussed in the following paragraphs with reference to Pakistan.

In Pakistan, urbanisation as a progressive phenomenon can be regarded to have started with the beginning of the present century, gaining momentum, decade after decade, attaining large dimensions after Independence. The same is borne out by the following table.

TABLE 1—RATE OF RURAL AND URBAN GROWTH, PAKISTAN, 1901-1961

Decade	Percentage Increase		
	Total	Rural	Urban
1901-11	11.9	8.8	8.5
1911-21	6.7	6.2	16.1
1921-31	8.8	7.5	32.1
1931-41	18.8	17.0	44.9
1941-51	7.9	5.0	41.9
1951-61	23.6	19.8	56.4

Source: *Population Census of Pakistan*, 1961, Bulletin No. 2, P. 14.

It can be noticed that while in the earliest decade the percentage increase of rural population was slightly higher than that of urban population, in all the later decades the percentage increase of urban population has been such higher.

A similar steady growth of urban population, expressed as percentage of total population at the time of several censuses, is noticeable, especially at the later censuses, in the figures given in Table 2.

TABLE 2—URBAN POPULATION AS PERCENTAGE OF TOTAL POPULATION, PAKISTAN, 1961

Census Year	Urban Population as Percentage of Total Population
1901	5.1
1911	4.9
1921	5.4
1931	6.5
1941	7.9
1951	10.4
1961	13.1

Source: *Population Census of Pakistan*, 1961, Bulletin No. 2, P. 14.

The decline in 1911 is "accidental, since a plague epidemic in that year caused many cities to be temporarily evacuated."⁵

⁴R.E. Dickinson, 'Some New Features of Growth and Distribution of Population in England and Wales', *Geographical Review*, Vol. 22 (1932), p. 280.

⁵K. Davis, *The Population of India and Pakistan* (Princeton, 1951), p. 127.

Comparing the two wings of the country, West Pakistan is much more urbanised than East Pakistan. In 1961, urban population as percentage of the total in West Pakistan was 22.5 per cent whereas in East Pakistan it was only 5.2⁶

Urban planning relates to the following broad aspects :—

- a) Size and distribution of settlements.
- b) Functional specialisation of towns.
- c) Intra-town and inter-towns communications.
- d) Distribution of functions within the urban complex.
- e) Determination of congestion, sprawl and over-crowding and assessment of the need in development and redevelopment.

Out of these heads c, d and e above, seem to merit more urgent attention and offer greater scope in our country.

SIZE AND DISTRIBUTION OF SETTLEMENTS

A study of the growth of urban population in Pakistan, by size-classes of towns, over the period 1901-1961, reveals :

- 1) There has not been a simple relationship between the rate of increase and the size—class of towns.
- 2) The over 100,000 class (cities) has been distinct in showing the highest and constantly accelerating rate of increase. The over 5,000 class (small town) has been showing a rate of increase second only to that of the over 100,000 class.

The implications of 1 and 2 above are that, firstly, in Pakistan the stage has not yet been reached when urbanisation in itself becomes a force for further urbanisation, as is, for example, the case in India.⁷ It seems to suggest that whatever need is felt today for urban planning is likely to be far segmented in years to come. Secondly, the rate of growth of the over 5,000 class is indicative, among several other things, of an ever-increasing pressure of population on soil, causing a marked swing of rural inhabitants to the nearest small towns, not so much in pursuit of what is generally known as the "freedom of city", but as a bare necessity, arising out of adversity at home. It reemphasises the need for curing the agricultural menaces, like water-logging and salinity. Lastly, the largest size urban settlements, the cities, have been undergoing increase at such a rate that these are by now 'overgrown'. In 1961, out of a total of 391 urban centres only 16 were cities, which together account

⁶Population Census of Pakistan, 1961, Bulletin No. 2.

⁷Davis, *Op. cit.*, pp. 129-30.

for as much as 56.1 per cent of the total urban population. This overgrowth of the cities, if allowed to continue further, would give rise to problems so serious as to defy easy solution. The tendency can best be arrested by planning their economic activity, which in the case of these cities might mean curtailment or, at best, *status quo*.

The planning of distribution of settlements has its scope in the newly reclaimed lands, like the Guddu Barrage Area. The Thal Development area furnishes a good example of such a planning for other areas of present and future colonisation.

FUNCTIONAL SPECIALISATION OF TOWNS

Excepting the numerous agricultural marketing centres, the towns of Pakistan do not show any marked functional specialisation between them. On the contrary, a variety of functions seem to be discharged by a small number of towns. The towns exhibiting greater functional variety are mostly those which rank high in the administrative hierarchy. These centres assumed great importance in our region of study, without a predominantly industrial basis of urbanisation.

With an increasing industrial basis of our economy the assignment, of specialised economic functions to towns is now a practicable proposition. The present policy of decentralisation of industries and the improvement of the economic activity of the under-developed regions of the country, also seem to favour a functional specialisation of towns. A shift in future from the industries in consumers' goods to the large-size basic industries will make a planned functional specialisation of towns inevitable.

INTER-TOWN AND INTRA-TOWN COMMUNICATIONS

Since Independence, a marked improvement in the density of network of inter-town communications has taken place. It reflects an improvement in the economic activity of the country. More means of communication will have to be planned in keeping with the decentralisation and dispersal of industries. For a quicker flow of goods, and with a view to effecting a decrease in accidents, the arterial roads shall have to be planned to bypass the larger urban agglomerations.

The intra-town communications, especially of larger urban centres, deserve greater improvement. Excepting only a few large-size urban centres having a rectangular pattern of roads, or its modifications, our old cities predominantly have an irregular pattern. It is the outcome of a gradual evolution of communications, without a large measure of conscious planning. The system has resulted in or, alternatively, is the outcome of a number of focal points in various parts of the city. The former city gates of old towns have now resulted in an unnecessary tunnelling of traffic between the older and newer parts of these towns through very

few connecting routes. The former circular defences of some of these towns have now given rise to inner ring roads (circular roads), which is certainly advantageous. But these have got to be supplemented with outer ring roads to facilitate traffic. In the inner parts of our old cities the roads are narrow and of uncertain width and of direction, causing extreme congestion of traffic.

The necessity of improvement in the intra-town system of communications and the width, layout and traffic control arrangements of the individual roads, is further emphasised by the heterogeneous character of traffic on them, consisting of animal driven vehicles, cycles, rickshaws and automobiles. The planning of intra-town communications and transport will be based on a judicious enquiry relating to the present and future volume and nature of traffic on them.

DISTRIBUTION OF FUNCTIONS WITHIN THE URBAN COMPLEX

The small size towns of Pakistan mostly exhibit a simple functional structure, most of the urban land being under residential function, and some under the agricultural marketing and commercial function, of local scale. On the contrary, the functional structure of the big cities is complex. The broad categories of functions in general are :

- 1) industrial, 2) commercial, 3) residential, 4) administrative buildings, educational institutions, city libraries and other public buildings, 5) cantonments and 6) open recreational land.

The location of these functions in the urban complex is generally inappropriate, and the segregation of functions imperfect.

We have in Pakistan, as a result of the developments in the historical periods, two main strains of urbanism :

- 1) the compact old bazaar town, representing the Eastern element, and
 - 2) the open "mechanically laid out" town, representing the Western element.
- Old historical centres, which retained their high administrative status during the British period, are specimens of towns in which an admixture of the two elements has taken place. But these elements have not been properly integrated or harmonised. The indigenous parts of these urban centres stand in apathetic contrast to the anglicised parts, and the whole complex of a town presents an ill-conceived distribution of functions. This needs correction in a planned manner, properly phased to allow the day to day economic life of the city remain as undisturbed as is possible.

DETERMINATION OF CONGESTION, SPRAWL AND OVER CROWDING,
AND ASSESSMENT OF THE NEEDS IN DEVELOPMENT AND REDEVELOPMENT

Congestion is the outcome of an unnecessarily high rate of development of urban land and sprawl implies too low a rate of development. In modern planning both are taboos. In our country both are evidenced concurrently in the same urban centre, the former in the old parts of the city and the latter in anglicised portions and in the Post-Independence aristocratic residential colonies, like Gulberg in Lahore and Pakistan Employees Co-operative Housing Society in Karachi.

Overcrowding signifies a high rate of occupancy of habitable rooms of residential house. In our cities there is a painful contrast in the poor and rich quarters. While the former quarters are over-occupied, seriously impairing the standards of urban living of the occupants, the latter are under-occupied, even as judged from the Western standards of comfort.

The problem offered by the above-mentioned ills has only had a part solution in the post-Independence Development of new residential areas, generally called 'satellite towns'. The scale of development is to be determined through a proper appraisal of the overall housing shortage and the "spill population" from the overcrowded areas.

Some of the considerations of modern urban planning are that the residential area as a whole should be conveniently related, in both position and scale, to the rest of the town, allowing reasonably good access to the town centre, the main areas of employment, and other residential areas. The dwellings should be conveniently sited in relation to shops, schools, open space and the other places that the residents have frequent need to visit, that is to say certain other land uses will normally be required within a residential area, for the general convenience of the residents. Most of these considerations have been taken note of in the Post-Independence residential colonies. In the richer of these colonies, however, a basic requirement is lacking. Because of a markedly low rate of development in them the residential units have so far remained a ramshackle collection of houses, without integration into a wholesome neighbourhood. This limitation shall have to be discretely avoided in planning future residential areas.

The house-types shall of necessity have to be determined for future. The huge detached bungalows with spacious lawns may have either to be restricted in number or totally abandoned in favour of semi-detached houses. It is surprising to note that over the past several years and the second plan period as much as twenty-five per cent of the total expenditure in the public and private sectors taken together has been devoted to development, including the development of land, construction of

buildings, supply of services. Still, a housing back-log of "substantial proportions" exists.⁸ The explanation partly lies in the construction of palatial buildings by the rich, instead of utility houses.

The congestion of buildings, as also an inappropriate distribution of functions over the urban land, calls for redevelopment on a scale to be determined by field-work. Redevelopment signifies the "creative demolition" of the existing brick-and-mortar area. To the redevelopment needs of our urban centres we have been most indifferent in the past. The contrast in the large slum-like districts and the ultra-modern fashionable quarters, coexisting in our cities, should no longer be allowed to persist.

⁸Planning Commission, *Outline of the Second Five Year Plan* (Karachi: Government of Pakistan, 1960), pp. 88-91.

ELECTION DATA ANALYSIS AS A TOOL OF RESEARCH IN POLITICAL GEOGRAPHY

HAMIDUDDIN AHMAD

AT the very outset it might be a good idea to ask ourselves a fundamental question: "Is the study and analysis of Election Data a legitimate form of Geographical Research?" Indeed a random browsing of literature pertaining to political behaviour of people seems to heighten this doubt. If one were to confine his attention to electoral analyses published during the 1930 and thereon it would seem that more political scientists than geographers have bent their energies towards group political behaviour¹. Add to this the fact that elections are such an integral part of politics, and a self respecting, orthodox geographer might very well leave the arena as a place to which he does not belong. But would this be a rational approach commensurate with the modern concepts of geography? Before answering this question (which would be an obvious No) it would be more appropriate to delve a little in the field of Elections and Election Data amidst all their implications and ramifications.

GEOGRAPHIC SIGNIFICANCE OF VOTING BEHAVIOUR

What do the elections signify, apart from the very obvious fact of electing some individuals belonging to a particular political party and rejecting others? They signify the likes and dislikes, prejudices, as well as well reasoned decisions and political predilections of a group of people as influenced by social, economic, ethnic, cultural, and above all by the technological and geographical forces operating in a certain area and over a given period of time. These sets of forces could be studied individually or collectively by scholars belonging to different disciplines: a sociologist could sift and manipulate election data and bring out something pertinent to the social dynamics of a particular group of people; an economist using the same or a modified set of data, but with different postulates, could present a rationale that would make sense out of

¹For additional information see: Warren E. Miller, "Party Preferences and Attitudes on Political Issues 1948-51, *American Political Science Review*, Vol. 47 (1953), pp.45-50; Miller and Janowitz, "The Index of Political Predisposition in the 1948 Election", *Journal of Politics*, Vol. 9 (1952), pp 711-722; also a whole series of monographs published by the Social Sciences Research Centre at Michigan University, Ann Arbor, U.S.A.

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the political behaviour of the people when seen from an economic point of view. A social anthropologist could study the same phenomenon with a view to measuring cultural and ethnic variations from place to place. In a similar fashion but on a more comprehensive scale a geographer would bring into play the whole gamut of geographical forces ranging all the way from Physical Geography, Urban Geography, Industrial and Agricultural Geography, Economic Geography, to Anthropogeography *et al* and then present a meaningful picture of the political climate of a region or country.

Having thus established, at least in a theoretical sense, the credentials of a political geographer *vis-a-vis* election data we may pause here and ask ourselves another question: "But have the Political Geographers done any work in this connection and have they published anything that would prove their credentials? Also, have they carried out any analysis that brings out the relationship between the voting behaviour of the electorate and the attendant geographic phenomena?". The following brief references to the works of two outstanding political geographers would remove much of this doubt. Writing under the head", "Political, Geography: A Complex Aspect of Geography", Derwent Whittlesey of Harvard College stated, "Political Geography is not so much connected with group political behaviour as with the study of areal differentiation based on political phenomenon".² In 1950 Hartshorne dealt with the same problem by stating that "the study of election statistics has (considerable) value for political or social geography".³ A few years later he elaborated his views a little more and defined, "political geography as the study of areal differences and similarities in political character as an interrelated part of the total complex of areal differences and similarities. This interpretation of areal differences in political features involves the study of their interrelation with all other areal variations, whether physical, biotic or cultural in origin."⁴

DEVELOPMENT OF GEOGRAPHICAL INTERPRETATION

If we were to dig into relevant literature in political geography it would at once become apparent that the use of election statistics as a medium for studying areal differences and similarities in the political character of people has been carried out for quite some time, though, as mentioned earlier, not on a very sustained basis. One of the earliest electoral studies was conducted by E. Krehheil, a British

²D. Whittlesey, "Political Geography : A Complex Aspect of Geography" *Education*, Vol. 50 (1935) pp. 293-298.

³R. Hartshorne, "Functional Approach in Political Geography", *Annals Association of American Geographers*, Vol. 40 (1950) p. 101.

⁴Hartshorne, "What is Political Geography," *American Geography Inventory and Prospects*. P.E. James and C.F. Jones (Eds), (Syracuse : Syracuse University Press, 1954), p. 178.

geographer, who examined the significance of geographic influence in the analysis of British Elections between 1885 and 1910. His paper was largely based on a correlation between election results and occupation statistics, and enabled him to conclude that the industrial and poor farm areas returned Liberal representatives while the fertile agricultural areas returned Conservatives. At the conclusion of his paper Krehheil observed.⁵

“It is evident that geographical or natural factors have contributed materially in creating conditions which determine political predilections”.

Results of a similar investigation were presented by C.O. Paullin⁶ in his famous publication, *Atlas of the Historical Geography of the United States*. In this atlas Mr. Paullin published a number of maps showing, first, presidential elections in the United States of America and, second, the way in which district members voted on selected congressional measures. These maps not only revealed the general dichotomy between the Republican North and the Democratic South, but also demonstrated that within the “solid south” there was a complex pattern of regional differences not always appreciated, at that time, by political commentators. It was also possible to recognize strong correlation between the distribution of other phenomena, such as cotton and tobacco production, the high ratio of negroes in the district population, and the low level of expenditure on school and other educational services. These correlations tended to be positive with respect to the Democratic Party and negative with respect to the Republican Party.

In the United States, Paullin was not alone in this field of research. John K. Wright studied the areal differences in the voting behaviour of the American people by compiling the returns of several elections on a county basis. Thus the breakdown of election data for the southern states indicated that the “solid south” was not so solid but had a complex pattern of regional differences based on such factors as racial composition, agricultural system, soils and land forms.⁷

So much for the earlier works of geographers in the United States. What of the contribution of European Geographers? Since the last war a great deal of work in the field of electoral geography has been done by French Geographers. The first of these was a geographical study of elections in the Ardeche region of France

⁵E. Krehheil, “Geographic Influences in British Elections”, *Geographical Review*, Vol. 2. (1916) pp. 410-432.

⁶C.O. Paullin, “*Atlas of the Historical Geography of the United States*.” (New York; 1932).

⁷J. K. Wright, “Voting Habits in the United States” *Geographical Review*, Vol. 22 (1932), pp. 666-72.

by Andre Siegfried. All other French authors have acknowledged and stressed the importance of this work. In it, an examination of the physical and human geography of Ardeche in the first half of the book suggests two distinct regions. The first is a lowland valley where the majority of the inhabitants are Protestant ; the second is a less fertile region of high relief populated mainly by Roman Catholics. The second half of the book demonstrates that this geographical division accorded with the division of the Ardeche between the right and left flanks of the French political life during that period.

Siegfried's study considerably helped Goguel⁹ who reviewed the French elections over a sixty-year period commencing in 1890. He was able, in the same way as Wright, to indicate the areas of constancy and change in party preponderance ; he found that positive correlations existed between religious and political groups while there was no uniform correlation between the occupation structure of the areas and the party supported.

One of the areas of political stability outlined by Goguel was the Savoy region of South-east France, which had a continuous record of left wing support. Three micro-studies within this region by Hugonnier, Billet, and Thiervoz,¹⁰ provide interesting correlations with, and divergencies, from, Goguel's conclusions. The first two writers, studying the evolution of political opinion in two separate areas, discovered the same dichotomy as Siegfried did between the interfluvial and the valley zones. This dichotomy was evident in respect of occupation, religious profession, age structure and population trends. They further agreed that this division was the product of the present century and that the motive force was industrialization. The industries were established on the valley floor and attracted both local and outside labour. The immigrants were largely young people with radical ideas and frequently with indifferent attitude to religion. These studies proved that whereas Goguel may have been correct in denying any correlation between specific industries and political parties, he certainly underestimated the significance of industrialization in accounting for electoral patterns. This point was further illustrated by Thiervoz who examined the influence of the silk industry on the evolution of the electoral patterns in the remoter regions of Savoy. He found that as the industry developed so the left wing strength in the area also increased, although, since mainly local labour was employed, the degree of radicalism was less than in the more accessible areas where heavier industries were established.

⁸A. Siegfried, "*Geographie Electorale de l'Ardeche*", (Paris : 1947).

⁹F. Goguel. "*Geographie des Elections Francaises de 1890—1951*" (Paris-1951).

¹⁰R. Thiervoz, "La Industrie en Valdaine et ses Repercussions Demographiques, Sociales et Electorales", "*Revue de Geographie Alpine*, Vol. 42, Part I, pp. 81-105 ; J. Billet. "L'Expression Politique en Gresivaudan et son Interpretation Geographique", "*Revue de Geographie Alpine*, Vol. 46, Part I (1958) pp. 97-128; and, S. Hugonnier, *op. cit.*, Vol. 42, Part I (1954).

Postwar (World War II) American contributions are represented by two notable papers. The first by Vera K. Dean¹¹ examines the pattern of voting in respect of Newfoundland referendum to decide whether the territory should have a confederation or a responsible form of government. The division between the supporters of these two forms of government seemed to accord with religious cleavage on the island between the Roman Catholics and the Protestants. This cleavage was made deeper by the greater industrial interests of the Roman Catholics and their fear of competition from the Protestant dominated Canadian firms. The second paper by Kish¹² analyses the results of the 1946 plebiscite held in Italy to decide the future form of government. The national picture indicated the prime importance of historical associations and physical factors, while the microstudy in Emilia revealed a correspondence between party and elevation, the latter being largely a measure of soil fertility and farming opportunities.

In all these studies, geography is used to explain electoral patterns and the extent to which some of the forces enumerated have moulded the political attitudes of the people. However there is one aspect of the above studies that stands out—namely, the dichotomist approach of the earlier geographers in the analysis of electoral behaviour. The results have been presented in “either and or” fashion, even though the postulates employed are fairly comprehensive and deal with a large number of geographic forces that bear on social and political behaviour. In a way this was symptomatic of the stigma of determinism that had been stuck to some of the nineteenth and early twentieth century geographers, and also due to the fact that the concepts and framework of geography, at that time, were rather limited. It is not the intention of this paper to explain the concepts or the circumference of modern geography. However we can say this with a certain amount of confidence that a modern political geographer can and does take into account not only the aspects of physical geography but also assesses the economic, historical, sociological, political, psychological and demographic factors. He deals not only with the urban-rural dichotomy but also with the constantly changing socio-economic forces that evolve both in the rural and urban settings under the influence of modern technology. Thus he deals not only with cities *per se* but with a variety of cities. He has to classify the cities not only with respect to their size but also with respect to their structure and their dominant characteristics. An Industrial city as opposed to a Service city poses very different problems; so also, in their turn, do Wholesale, Retail, Diversified, Residential, Financial or College cities.

¹¹K. Dean, “Geographic Aspects of the Newfoundland Referendum,” *Annals, Association of the American Geographers*, Vol. 39 (1949), p. 70.

¹²G. Kish, “Some Aspects of the Regional Political Geography of Italy,” *Annals, Association of American Geographers*, Vol. 43 (1953), p. 178.

He must also take into account such man-created forces as Zoning Regulations, and Segregated Residential Patterns. (The term Segregated Residential Patterns refers not only to racially segregated housing but also to segregated housing caused by socio-economic differences within the same race.)¹³ Likewise he must also be aware of the different political and social attitudes of the farmers from the humid and/or arid regions of the same country ; or of the conflicting interests of the cash crop growers vs. subsistence farmers vs. market gardeners vs. subsidized farmers etc.¹⁴ (It would be a rear political party and a rarer still politician who could present a programme that would cater to the mutually conflicting social and economic needs of all the urban and rural people cited above). Thus a modern analyst of electoral data believes that only such an assessment will enable the geographer to understand "*La Realite Politique*".¹⁵ While denying determinism he avers that the socio-economic milieu, itself a product of the physical set-up, and the spiritual atmosphere in which the individuals are reared mould their political predilections.

SOME METHODOLOGICAL PROBLEMS

So much for the conceptual framework of reference. What about the method or technique that should be employed to conform to our frame of reference? In view of the earlier observations some might think that the dichotomist approach is entirely outdated or else ineffectual. That, of course, is not true. In many a

¹³E. G. Erickson, *Urban Behaviour*, (New York : Macmillan, 1954) pp. 207-224.

¹⁴For a further study in this connection the reader is referred to F. Gosnell, *Grass Roots Politics* (Washington D.C.: American Council of Public Affairs, 1942). This is one of the most comprehensive studies in Political ecology with respect to both conceptual framework and the techniques employed in studies of such nature. Gosnell attacked the problem first by establishing a number of postulates and then subjecting them to empirical as well as the most detailed statistical tests. Thus, for example, in the chapter, "Industrial Politics : Pennsylvania," he has analyzed the election data with respect to social, economic, and political differences between the blue collar workers and the farm workers ; in "Progressive Politics Wisconsin," the differences in the social and political attitudes of urban, suburban, and rural residents have been revealed ; in "Farm Politics Iowa," the differences between the political reactions of farmers in the dry areas versus the farmers of the humid areas, or between hog raisers and the cattlemen with respect to particular policies of the administration have been correlated with significant geographic forces.

The writer of this article himself conducted a detailed analysis of Gubernatorial elections in the State of Kansas, U.S.A., and was able to point out significant differences between the political predilections of the comparatively rich Anglo-Saxons raising wheat, corn, hogs and cattle or else manufacturing high value products in the rolling hills of North-eastern Kansas, and the comparatively poor south-eastern section of the state (Kansas Balkan) noted for its warmer and humid climate, shallower and poorer soils, smaller landholdings, a delinquent Lead and Zinc Mining Industry, and a very substantial minority made up of Italo-Slavic stock. Similarly the large scale wheat farmers of Central and Northern Kansas displayed a more conservative attitude than the Oil, Gas and Aircraft workers of South-central Kansas.

¹⁵J.R.V. Prescott, "The Function and Methods of Electoral Geography," *Annals, Association of American Geographers* Vol. 49 (Sept. 1959), p. 297.

human society and communities the political pattern is so clear-cut that a series of choroplethic maps, or simple line-graphs would suffice to carry out a dichotomist analysis of the political behaviour. But such situations are few and rapidly declining in numbers. In a majority of areas the problem is more complex, with a myriad of socio-economic, geographic and technological forces tugging at the electorate in different directions. For such communities or nationalities what is needed is ; first, a careful identification of the various forces seemingly in operation ; second, the development of various postulates ; third, the gathering and sifting of quantifiable data ; fourth, the application of modern statistical technique to test the authenticity of the various postulates ; and lastly the presentation of a rationale for the evolving political mozaic.

SOME PROBLEMS OF MAPPING POPULATION IN URBAN AREAS AT A NATIONAL SCALE

A. BUCHANAN

THE aim of this paper is to describe some of the problems encountered by the maps section of the Ministry of Housing and Local Government when mapping the 1961 census. The maps section is a headquarters section whose responsibilities include the study of social and economic distributions and trends over the whole of England and Wales, and the production of maps illustrating these. Because of this the section is not usually concerned to study and map the detail of individual towns. Maps prepared in the Ministry, like all maps showing a distribution over a wide area, tend to be compromises, striking a balance between the sparsely populated rural areas and the most congested urban ones. In the past, most maps have been based on statistics for local authority areas or other fairly large statistical units, but we are becoming increasingly conscious that for some subjects it is necessary to show the detail of all the parts to reveal the whole. I propose to describe the urban problems of two maps of population now in preparation for the 1/625,000 series.

POPULATION DISTRIBUTION

The first of these maps is '*Population Distribution*' which we are preparing jointly with the Scottish Development Department who in turn are co-operating with the Geography Department of Glasgow University. We originally envisaged a very simple map complementary to Population Density 1951. It was to have been rapidly produced, but the problems of depicting both urban and rural population on the detailed topographic base have involved a considerable amount of experiment, and have made it clear that the original project would have been unsatisfactory. This was to show the distribution of population in Rural Districts by green proportional symbols and graded dots, and to show the total population of each urban administrative area, by a single red proportional circle as on the map of '*Population of Urban Area 1951*'. The scale of symbols used on that map was to be used again, since it had been so constructed that symbols covered the average built-up area of the towns to which they referred. In relatively few cases did towns conform to an ideal shape however, and some irregularly shaped towns appeared on the map to be surrounded by 'desert' areas when in reality the built-up area was continuous across their boundaries.

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Consideration of the experiment suggested that it was misleading to distinguish between the population of urban and rural administrative areas by either treatment of the statistics or by the colour of the symbols. Many urban authorities are composed of several settlements grouped together for local government purposes while some large towns have several nuclei which can be distinguished even at ten-mile scale. It would have been wrong to ignore such features in urban areas while showing similar ones in rural areas. Again many large towns have outgrown their boundaries and their continuous built-up areas have spread into surrounding local authorities. It would have been extremely unfortunate to have shown continuous settlement of this type in two distinct colours simply because it was split by a certain type of boundary. The result of this experiment was a decision to show the distribution of population within urban areas, when appropriate, by sub-dividing the population wherever there was a physical break in the built-up area. All symbols were to be in the same colour, red, regardless of the administrative status of the authority.

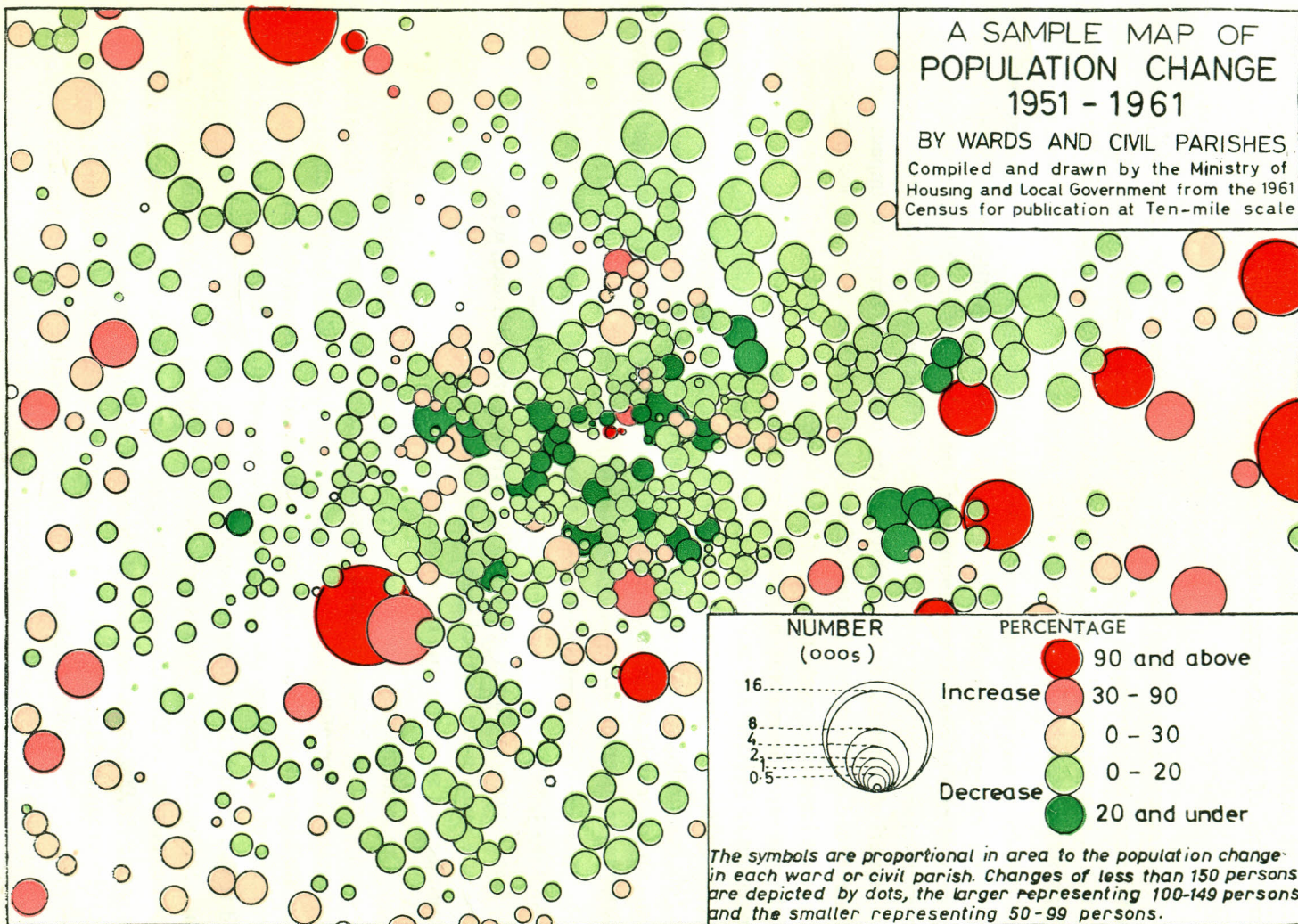
The need to delegate as much of the work as possible to the draughtsmen, and the desire for objectivity led to the preparation of a set of rules about using physical and man-made barriers between residential areas such as rivers, motorways, railways and industrial areas, but these quickly proved unworkable. Continuous coastal towns such as Ramsgate and Herne Bay were shown by one symbol leaving extensive 'urban deserts' since there was no break in development, but the symbol in no wise reflected the shape or extent of the built-up area. On the other hand, small railway junction towns such as Ashford might be shown by several symbols. It was clear that our objectives in showing the urban population could not be set down in the form of rigid rules, they could only be stated in terms of principles, and the adoption of a flexible approach with the exercise of a great deal of subjective judgment was necessary.

It now began to appear illogical to observe boundaries, and it was decided to reflect shape as accurately as possible within the limits imposed by the size of town and the circular shape of symbols. If a town was very compact it would be shown by one symbol regardless of whether or not it straddled a boundary, but if it was very irregular in shape it might be shown by several. This would make it possible to show the approximate spatial relationship of neighbouring settlements, *e.g.* if each of two sprawling contiguous towns had been shown by a single symbol, the map would have given the impression that there was a wide gap between them, but by emphasizing the the shape of the town, the continuous nature of the development would be seen. At the same time it was decided that compact settlement below the size limit of the smallest symbols should not be shown by groups of dots,

A SAMPLE MAP OF POPULATION CHANGE 1951 - 1961

BY WARDS AND CIVIL PARISHES

Compiled and drawn by the Ministry of
Housing and Local Government from the 1961
Census for publication at Ten-mile scale



POPULATION CHANGE, 1951—1961.

This has been sampled from the Population Change Map of South East England prepared by the author.

but that the gap between the smallest symbol and the 200 dot should be filled by four separate sizes of dot each representing a range of 200 persons.

POPULATION CHANGE

The second map I want to mention is '*Population Change 1951—61*', another Ten-Mile map being prepared jointly with the Scottish Development Department. Basically it is a very simple map, which will show every ward or parish in the country with an intercensal change of more than fifty persons.

This new map will be more informative and less misleading in showing urban population changes than the previous maps in the Ten-Mile series. The earlier map showed rate of change by tinting the entire area of each local authority, and numerical changes by open circle. Thus they emphasized proportionate change rather than numerical, since the area of colour on the map, and hence its impact on the eye, depended on the physical extent of an authority, rather than on its population. As a result large rural authorities tended to dominate the map, and urban changes, which are most important numerically and to the country as a whole (80% of the population of England and Wales live in urban administrative districts) were made to look insignificant. Immediately the statistics were mapped by proportionate symbols this problem was resolved: the important changes, whether they occurred in urban or rural administrative areas, always showed up as such, and the map became more meaningful.

However the ten-mile scale seemed extravagant for such maps—it is possible to show the information shown on the map of change 1939—47 at 30-mile scale. When the first country volumes of the 1961 census were published, we began to think in terms of a much more detailed map which would use the ten-mile scale to greater advantage and show the true extent of urban changes.

The continuously developed area of many towns has now spread far beyond the administrative boundaries and because of the size and structure of the surrounding districts a map of population change by complete local authorities fails to give an accurate impression of what is happening to the population of the 'true' town. In such cases an understanding of the parts is essential to an understanding of the whole, and it was decided to prepare a map of population change by the smallest statistical units for which census figures were available, namely wards of urban authorities and parishes of rural in England and Wales, even though this involved mapping statistics for some 16,000 units. A choropleth map would have tended to hide the distinction between urban and rural changes as noted earlier but a map using coloured symbols on the other hand would emphasize the numerical change, and the symbols themselves would provide an easy guide to the extent of truly urban change.

The Ten-mile map will be a map which enables the user to study the structure of change within a single town and to compare what is happening in towns of similar size, even allowing for the weaknesses of the statistics—enumerated population. To take an example of one local authority, quite apart from defining the 'true' town, the census tables show that the population of Reading C. B. increased by 5700, or five per cent between 1951 and 1961. An examination of the changes in the wards reveals that this net change is the difference between an increase of 15,000 in five mainly peripheral wards offset by a decrease of 9,300 in the other eight wards. Larger towns may show even more striking differences the net increase in Leeds was about 3500 or less than one per cent but this was made up of an increase of 58,600 in 12 wards offset by a decrease of 55,100 in the other 17. While the whole local authority may not be gaining greatly, the social impact of these internal changes is tremendous. Some towns may be static or even declining in all their wards, *e.g.* parts of London, but the map allows such towns to be contrasted with those where great changes are taking place, often due to slum clearance and local authority building, whereas a map of change by local authorities would fail to show this.

As well as showing changes within the boundary of a town however, the map will enable the user to see the extent of the increase of the true town—most large towns have spread well beyond their boundaries. While we may talk of Reading C. B. increasing by 5,700 it is evident from the map that we should include the increase in some of the adjoining parishes to obtain the true picture of Reading's population growth which, in fact, amounts to 22,800 or 17% over the ten year period. It need hardly be said that this picture would be obscured if the subject were mapped by local authorities.

While stressing the advantages of the map of population change by wards and parishes, especially for those wishing to study towns within the national context, we nevertheless see a continuing need for smaller scale maps of change by local authorities, for comparison with maps showing other census data not available in greater detail. We also see a need for a study using both of the maps I have described, which will examine the real size and growth of towns.

NEWS AND NOTES

REPORT OF THE VISIT TO 12TH ANNUAL MEETING OF THE BRITISH ASSOCIATION FOR THE ADVANCEMENT OF SCIENCE HELD AT CAMBRIDGE (1ST SEPTEMBER TO 8TH SEPTEMBER, 1965)

I had the pleasure to represent the Pakistan Association for the Advancement of Science at the 127th meeting of the British Association for the Advancement of Science held at Cambridge from September 1 to September 8.

The inaugural meeting of the Association was held in the evening of the first September at which Sir Cyril Hinshelwood read his presidential address on "Science and Scientists". Regular meetings of the Association started from the morning of 2nd September. The meetings were divided into seventeen sections including that of geography. The programme of each section for each day provided for the reading of papers, holding of symposia and lectures on subjects of academic and national interest.

The sectional meetings, each day, were preceded by the Meetings of Sectional Committees to discuss various problems.

MEETINGS

The meetings of the Geography Section were held in the Department of Geography of the University of Cambridge as detailed below :—

September 2

Prof. J.A. Steers : Facilities and teaching available to Cambridge Geographers.

Dr. J.K.S. St. Joseph : Aerial photography and geographical studies - Cambridge.

Dr. G. de Q. Robin : The Scott Polar Research Institute.

Mr. B.H. Farmer : Work in the Department of Geography and its sub-departments and the role of geography in the centre of South Asian Studies.

September 3

Prof. M.J. Wise : The City Region; Presidential address.

Prof. L.G. Scheidel : The development of hydro-electricity in Austria.

Mr. N. Hilton : Planning problems in rural areas.

Mr. N. Hilton : An approach to agricultural land classification.

Dr. R.E. Pahl : Commuting and social change in rural areas.

Mr. R.E. Boote : A conservationist's approach.

Dr. I.B. Thompson : The Corsican regional plan : a study in the French approach to rural planning problems.

September 6

Symposium on World Fuel and Power resources and needs.

September 7

Mr. A.D. Walton : Current Developments in the use of fuel and power resources.

Mr. A.D. Walton : The case of Japan : Asia's industrial island power.

Dr. P.R. Odell : The demand for energy in a developing region : a case study of the Upper Cauca Valley of Colombia.

Mr. T. M. Thomas : The North Sea and its environs : a future Middle East.

Dr. S. Evans : Radio echo sounding in Polar ice sheets.

Dr. C. W. M. Swithinbank : Soviet Antarctic research.

Dr. R. J. Price and G. Petrie : Photogrammetric measurements of ice wastage and morphological change near Casement glacier, Alaska.

Mr. E. A. Smith : Conflicts of interest between reindeerherding mountain Lapp and Swede in North Sweden.

September 8

Mr. H. B. Rodgers : Development of Fuel and Power Resources in Britain.

Mr. H. B. Rodgers : Pennine water—power and the industrial revolution.

Mr. E. M. Rawstron : The changing pattern of coal production in Britain.

Mr. J. Ellenby : Some spatial aspects of electricity consumption in England and Wales 1955—64.

Visits were arranged to the Scientific departments, Museums, Libraries and Exhibitions.

EXCURSIONS

The following excursions were concluded—

September 2

City of Cambridge

(Leader : Mr. A. A. L. Caesar)

An introduction to the problems of urban geography within the city.

Geomorphology of the Cam Valley,

(Leader : Mr. B. W. Sparks).

An introduction to the problems in landform evolution passed by the Cam Valley.

Geomorphology of the Greensand Ridge

(Leader : Mr. R.J. Chorley)

Morphometry and sedimentary history of a distinctive landform west of Cambridge.

September 4

Physiography of North Norfolk Coast

(Leader : Professor J. A. Steers)

A transect along a coastline of particular interest in the evolution of coastal research in England.

Extractive Industry in Cambridgeshire and Bedfordshire

(Leaders : Professor S.H. Beaver and Mr. P. Haggett).

An introduction to the problems of location, evolution and development of a characteristic group of local industries.

September 5

Settlement of the Suffolk - Essex Borderland

(Leader : Miss J. B. Mitchell)

A transect through an area of exceptional importance in the historical geography of East Anglia.

Landforms and Drainage Problems in the Fenland

(Leader : Mr. D.E. Keeble)

Geomorphic history and associated drainage problems in the Fens.

A number of receptions were held at various colleges in the afternoon. The Council gave a dinner to the principal delegates on the 7th. The Geography section dinner was held on the 8th September.

KAZI S. AHMAD

University of the Panjab

IMPACT OF AGRICULTURAL RESEARCH ON CROP PRODUCTIVITY IN WEST PAKISTAN : A NOTE ON CULTURAL PROCESSES AND ECONOMIC DEVELOPMENT.

Agriculture and the agricultural population in Pakistan are an integral part of the economy as a whole and are intimately related to the social and economic development of this land. About three-fourths of the population of Pakistan is engaged in agriculture.

After Independence Pakistan has been taking great strides towards an industrialized economy, but all the major industries set up here, are either primarily based on agriculture using agricultural raw materials, or are orientated to serve in one way or the other, this major occupation of our people. This clearly shows that ours is an agro-industrial economy and shall remain so perhaps for all times to come, and there are reasons for that contention. God Almighty has bestowed us with suitable natural resources, such as land, climate and labour, all highly conducive to very successful agriculture and with some human ingenuity our agriculture becomes capable of producing many and varied types of foods, fibres and other goods of economic importance.

Despite the fact that agriculture has been our main-stay and major occupation of our teeming millions and nature has been kind in providing the present natural resources, it is woeful to point out that off and on, our major industry has failed us to provide, in full, our basic needs of food. This fact shows that human ingenuity required to put the agriculture on sound footings has been lacking and did not keep pace with the population and the demands of the times. It is here that the need for research in agricultural improvement was felt and Agricultural Research Institutes were established to provide the lacking element—the human ingenuity.

Agriculture, though primarily a way of life, is essentially an industry and as in the industry, so in agriculture, the land, labour, capital and management, all the four factors of production,

have to be so organised and utilized, as may yield the maximum production at the minimum cost, and the agricultural research, precisely aims at this maxim. The Organization aims at the :

- 1) development of improved varieties of crops to replace low yielding, inferior varieties already sown by farmers.
- 2) introducing new and better crops and plants to earn more profits as well as make the best use of land and labour.
- 3) improvement in practices and patterns to make the maximum possible use of land, water and labour resources.
- 4) utilization of farm produce for maximum economic returns per unit inputs.
- 5) investigation into useful inputs such as fertilizer to increase yields per unit area.
- 6) investigations to guard against diseases and pests of crops, animals, etc., to avoid wastages.
- 7) and last, but not the least, is the purpose of educating the tiller of the soil to improve his lot by judicious management of his industry—the farm, and to reap the maximum profit from his labours.

It will not be an over-statement to say that when looked critically agriculture in our country has been practically transformed to a progressive pattern and is now on the threshold of agricultural revolution. Almost all the field and garden crops, their sequence of growing, methods of their fertilizing, ways of their watering, process of their harvesting and utilization, their storage and marketing and so on, have been reorientated on the lines suggested by the research workers in these institutes. Pertinently, the question arises : what has agricultural research meant to an individual farmer,

to agriculture as a whole, and to the Nation? Very brief answer to this question has been attempted in the following paragraphs.

Let us, for illustration, take the example of wheat. Prior to the establishment of organised research in agriculture farmers were growing mixtures of inferior, disease-ridden varieties of very low yielding wheat. With the introduction of improved varieties of this grain like famous C. 591, C. 518, C. 271, C. 273, Dirk, and lately some newer improved and Mexican wheats, the yield of quality grain has invariably gone much higher. On a very conservative rate of only one maund per acre higher yield, the total extra grain in West Pakistan comes to twelve million maunds per year obtained by growing these varieties. It is actually being done now as almost all the twelve millions odd acres are now put under one of these varieties. Calculations would show that this very conservative increase is adding on an average (12 x 15) 180 million rupees annually to the gross national income of the country.

Hybrid maize is one of the most outstanding achievements of agricultural research. It has enabled the farmers to increase their acre/yields from their maize crop very substantially. Acre/yields of maize have almost been doubled with the introduction of new varieties. In 1952-53 total maize production in Pakistan was 363 thousand tons, while in 1962-63 it was 481 thousand tons. Same is the case with other crops like rice, millet, potatoes, sugarcane etc. Researches on these crops have also resulted in the total replacement of old varieties and tremendously added to economic growth of the nation just by sowing improved varieties of these grains. Not only the higher yield is the aim in evolving new varieties, but their superior quality, their better food values and other superior economic characteristics are also kept under consideration.

Prior to the establishment of research institutes, very low yielding inferior quality *desi* cotton was grown in this country. Fine quality Pak-

American cottons with superior lint, commanding world-wide demands, have put our country on the map of cotton exporting countries of the world. Their share in the economic development of our country is well known to all. Textile industry of this country is based on these cottons and export of raw cotton as well as manufactured piece goods contribute a major portion for earning the precious foreign exchange on which depends the development of the industrial pattern of the economy and defence of the country. These are the fruits of research in agriculture and if calculated in figures, the sums run into billions.

Not to dilate too much on crops I may briefly mention just a few more crops which have totally replaced their older inferior counterparts.

Thick caned sugarcane varieties having higher sucrose content, higher yields and better adaptability to our soils are grown all over the Province and the older canes can only be found in crop museums now. Naturally it should have been so because the present varieties are yielding three to four times as much a gain as the older ones.

When one has a chance to travel in the country-side, particularly in the canal colony districts of Sargodha and Multan Divisions, one's eyes always meet with spacious beautiful orchards of citrus and mango. All the trees, young or old, in those gardens were first evolved or introduced and raised through the efforts of research workers. Millions over millions rupees worth of fruit is annually produced for health and happiness of the nation.

Usefulness of crops and fruit trees apart, the practices and patterns standardised in the research institutes lead the farmer to grow crops most economically. With proper dose and time of requisite fertilizer application, now he may be able to raise at-least fifty per cent more from the same field which his father used to

till. The practices of economical water utilization lead him to sow at-least one-fourth more area with his original share of water and thus he may raise the productivity of his land per unit of water and also save his soil from soil maladies like, salinity, water-logging or alkalinity (*Sem and Thur*).

Proper sequence of crop growing greatly enhances acre/yields and in addition to help in keeping under check pests, diseases and weeds, it also maintains a balance of crop nutrients both in the lower and upper layers of soil, and in this way these treasures last longer. These benefits are not easy to evaluate in terms of money and there is no doubt that these are enormous.

Plant diseases and pests play havoc with crops and measures found out against them, have made it possible to save millions of rupees annually. Stored grain pests, rodents and fungal diseases have to be fought against constantly and research must continue to keep the ravages wrought by these enemies of the farmers and nation at the minimum.

To utilize his labours most efficiently, the farmer needs highly efficient implements and tools to till his land and attend to many an operation he is called upon to perform in his business. The agricultural research did not lag behind in this score as well. Research has resulted in the evolution of many and varied types of implements and tools, which in addition to aiding the farmer in better and efficient farming, also make some very tiring operations easier. New research directed towards mechanising agriculture has resulted in useful recommendations for selection of tractors and implements which are most suited to the varying needs of the farmers. Future of mechanised farming is bright in this country and research has made it so.

Along with the increased production per unit area, equal attention has also been paid to obtain the highest returns for the increased production. This is made possible through research in agricultural economics, marketing and a better and varied utilization of the output of the fields. Just to illustrate how utilization research can enhance farm income, the example of *guara* seed may be cited here. This lowly seed prior to its utilization as a good source of "guarine" used to sell at a very low price of rupees five/six per maund, but now it is being sold at more than rupees thirty per maund. Thanks to this type of research, farmers in the comparatively dry and sandy tracts are reaping high incomes from *guara* seed production. Preservation of fruits and vegetables has led to stability in markets and high incomes to the orchard owners. Utilization has also led to find uses for all types of farm wastes like straws, corn cobs, etc., which previously were used only as low grade fuels. All these items have raised farmer's income.

In short, it may be stated that, the present day expanding agricultural economy and bright prospects of near self-sufficiency in food of this developing nation are mainly due to the research being done in the Agricultural Research Institutes. All the money spent on the research in agriculture is far less than the additional gains even in just one year from a single crop like wheat, not to speak of the gains obtained from other crops and practices which are enormous indeed. Our whole economy is primarily dependent upon agriculture and agriculture in turn depends on the agricultural research. Therefore for an expanding economy, expanding of research, activities is very essential and is a crying need of the day.

SALEEM AZIZ (MISS)

University of the Panjab

**ABSTRACTS OF GEOGRAPHY THESES COMPLETED
IN WEST PAKISTAN UNIVERSITIES DURING 1965**

**EVOLUTION OF DISTRICT MONTGOMERY
AS AN ADMINISTRATIVE AREA : A
GEOGRAPHICAL STUDY OF HISTORICAL
PROCESSES AND ADMINISTRATIVE
PROBLEMS**

Aziz R. Miyan

(M. A., University of the Panjab, Lahore.)

The objective of this study is two-fold :

- 1) To examine the geographical and historical processes, which have led to the evolution of Montgomery District.
- 2) To consider the internal organization and administrative set-up of the Montgomery District and the manner in which they have been changing.

The investigation has been mainly directed towards tracing the changes brought about by historical processes and the different phases through which the area under study has been passing right from the proto-historic era down to the present time.

The basic assumption underlying the investigation is that all the administrative areas undergo certain evolutionary changes. Both the boundaries and the political and administrative set-up are affected by them. These territorial and administrative changes are very closely linked with each other. Moreover, an administrative area, at any time, is controlled from focal points in the study termed as "core-areas".

The "core-area" has been defined as the focus of all the administrative activities.

The study involves too much delving into the history of the district and the Province of the Panjab, whose part it formed before the creation of One Unit.

"Core-areas" and the possible extent of their influence have been studied. Various historical books and other relevant literature have been

depended upon for the purpose of demarcating the boundaries of the area at different times, whereas the archeological information and circumstantial evidences have helped in demarcating the extent of Harappa culture—the base of the study.

The internal organization of the district has also been given much importance in the study. The sub-divisions of the area have been referred to by different terms during different times. They are *parganas* of Moghul period, *talukas* of Sikh period and *tehsils* and "sub-divisions" of British period.

Footsteps of history have been followed for tracing the "core-area" and the evolutionary changes in the boundaries and the internal organization and the administrative set-up.

The study has been divided into seven chapters, each dealing with different periods of history, starting from Harappa culture. The procedure in each chapter is this :

- 1) The study of historical process operating in the area at that time ;
- 2) the location and shift of the core-area in which size and plan of the core-area have been given due consideration ;
- 3) The changes in the boundaries brought about by the shift of the core-area ; and
- 4) The form of internal administrative sub-divisions.

It has been seen during the course of study that the boundaries of the area on the north and south have been following the river courses, whereas on the east and west, they have been changing.

In the end, suggestion for a few minor changes in the boundary and the creation of a new sub-division" at Dipalpur in the administrative set up have been made.

POSSIBLE BASES OF CO-OPERATION BETWEEN PAKISTAN AND MUSLIM AFRICA

Khurshid Ahmad

(M.A., University of the Panjab, Lahore)

The main objective underlying this study is to evaluate and assess the relations between Pakistan and the Muslim nations of Africa. Since such countries of Africa are the pivotal target of this study, their ideologies have been dealt with besides their economic, cultural and political relations with Pakistan. It is essential to stress upon the importance of religious factor in these countries because religion itself culminates as a hall-mark in ideological background and existence of Pakistan. Pakistan feels itself to be spiritually bound with all the Muslim countries in the unbreakable bonds of Islamic brotherhood. But Pakistan was disappointed in her feelings as there was an unmutual and negligible response by them in the face of her problems. This sets the ball rolling for an impetus provocative towards grasping the identity of such a negative attitude of these Muslim countries towards Pakistan.

In the fold and field of a given country's foreign relations, ideological bonds form an element of cementing corner-stones, and as such their dynamism cannot be ignored.

Next to ideological relations, it was expedient to probe into the existing economic, cultural and political relations. It is vitally essential to explore Pakistan's economy on the one hand and the contemporary economies of the Muslim African countries on the other. In the cultural field, the existing cultural pacts with some countries and their causes were assessed.

In the field of politics, an evaluation of Pakistan's foreign policy was needed, as this policy affected her relations with Muslim countries and had a bearing on the Afro-Asian politics. Pakistan's stand on different issues relating to African Muslim countries had to be dwelt upon. Nasser's foreign policy had also to be weighed

since he is important in the world politics in general and Arab politics in particular.

These probes throw light as to where Pakistan stands in the comity of African Muslim countries. After exploring all avenues of evaluating Pakistan's existing relations, it was found that in all fields she had limited relations. In the ideological field it was found that Pakistan by her direct calls for Muslim unity did not hold weight. President Nasser, had entirely a different approach. Only recently do we find the changes in Algeria and Sudan to be more in line with thoughts prevailing in Pakistan rather than with those of Nasser. But the leadership in Morocco, Algeria and Sudan is afraid to go openly against the cult of Nasserism because of Nasser's hold over the masses.

In the cultural field it was concluded that though Pakistan had historical, cultural and religious bonds with the Muslim African Countries, yet this avenue could not be properly utilized. This neglect is not deliberate but is a result of the economic position of Pakistan. If Pakistan were a prosperous nation she would not have been following the policies she has to follow at the present.

In politics, Pakistan had played an important role. It was concluded that all efforts on the part of Pakistan did not go in vain. Especially when Muhammad Ayub Khan came in power did the Afro-Asians saw in Pakistan a bold exponent of Afro-Asian solidarity. Still Pakistan in the field of politics in Africa has kept a policy of aloofness. Her policies as regard to African nations have been to first assess the consensus of opinion and then act accordingly.

CULTURAL CHANGE AND ITS BEARING ON SETTLEMENTS IN MONTGOMERY DISTRICT

Nazir A. Cheema

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This attempt is confined to study the pattern of settlement organization, particularly the settlements in Montgomery District with a view to understanding 'Cultural Change and Its Bearing

on Settlements.' The topic is treated under two basic considerations, i.e., how 'Culture' and 'Settlements,' are inter-related. The term Culture' is defined in this study as a common way of life practised by a particular human group in certain area. The term 'Settlement' in this study is considered as 'an occupance unit' whether it is of the order of a cottage or a big city like Karachi.

The study area has been the seat of ancient Harappa culture which was in its prime as early as 2500—1500 B.C. Later on, during the Hindu and the Muslim occupation of India, important changes in the structure of settlements occurred. Under the British, who succeeded the Moghals, existing settlements experienced changes while newly colonized settlements were added. The Partition of India in 1947 brought other changes in the settlement pattern of the study area. To account for some of the important changes that have occurred in the course of history the author has taken into consideration the aspects such as agriculture, irrigation, trade and means of communication.

An historical review of the development of settlements in the Montgomery district has shown that every cultural change influenced the settlements in one way or the other. Every culture left its imprints on the social life of the natives and consequently the already existing settlements went on experiencing changes in their pattern, nature and form. The settlements of the pre-historic era have no obvious bearing on the present settlements. Only through the excavational evidences can be visualized the nature and form of the settlements of that era. In the light of the excavations, it can be said that the study area has the privilege of being a seat of Indus Valley Civilization. Here flourished an urban

way of life which came to sudden end. Little is known about the settlement organization in the study area of the Hindu and the Buddhist cultures. It is only *rigveda* which throws light on the general social life of this early date.

In the British period, the old settlements experienced important changes in their nature and form, whereas new settlements emerged out in the *bar* uplands—formerly a waste land where nomadic encampments were found; due to colonization, hundreds of well-planned new villages and a few market towns that came into existence added much to the settlement pattern. Factors like irrigation and colonization, agricultural development, transportation facilities and change in the population pattern gave birth to new settlements and made the existing settlements more secure. Before the present settlement organization, the irrigation was confined to *bet* and active flood planis by primitive methods and canals were 'inundation' which supplied water only in the summer season. The British introduced perennial canals and made agriculture possible in the fertile *bar* uplands.

With the advent of perennial water supply, agriculture from subsistence level developed to surplus and it was felt necessary to dispose it off in the markets which gave birth to the colony towns like Montgomery, Okara, Chichawatni and Arifwala.

In the long chronic of invasion, with the exception, of course, of all the important cultures, no invaders, not even the Muslims, modified, influenced and even reshaped the organization of settlements in the study area as did the British. Since the creation of Pakistan, the settlement organization has been going on those lines which were established during the British regime with present requirements.

BOOK REVIEWS

East Pakistan, A Systematic Regional Geography and its Development Planning Aspects. Haroun Er Rashid. Sheikh Ghulam Ali and Sons, Lahore, Peshawar, Hyderabad, Karachi (1965); V + 383 pp; maps, appendices, index; Rs. 22.50.

The book is divided into fifteen chapters dealing with various aspects of geography of East Pakistan with emphasis on economic development.

The chapter on physical features and hydrography is quite explanatory of the conditions in this land of shifting rivers, although the number of regions (22) and sub-regions (57) could have been substantially reduced for the benefit of a clear picture. It is difficult to make out anything from map No. VI, "Tippers Surface Drainage Pattern".

The chapter on climate contains some very loose statements. The monsoons which blow into Indo-Pak sub-continent have been called South-West Trades (p. 55). Further down there appears the queer statement, "These trade winds, the rains they bring and also the period of the year which they affect, are called Monsoons." The Westerly "depressions" are called "anticyclones". Such statements reduce the value of the book for students. The tropical cyclones of the Bay of Bengal have been called typhoons. There is no justification for deviating from the current terminology and call them typhoons, a term used for the storms of the China Sea.

In the chapter on historical background while considerable space has been devoted to the early history of the region very little is said about the evolution of the present Province of East Pakistan. A section on it should have been useful. The partition of Bengal has reoriented the face of the territory

now constituting East Pakistan which has had considerable impact on the economy of the land.

The chapters on agricultural products and fisheries have been well written and are supported by figures and maps. The author is very correct when he says that "Agriculture will remain the basis of East Pakistan's economy for a long time to come and the only way to improve the lot of the majority of its population will be to improve agricultural practices".

The chapter on agricultural regions is very cumbersome to read. One is lost in the labyrinth of 122 regions. The map is not very helpful. Some parts of other chapters as well are burdened with facts which will be difficult to assimilate.

The chapter on communication is loaded with unnecessary details of figures. For example table LXIX gives number of passengers carried, passage miles, freight carried, net freight-ton miles, from 1948-49 to 1961-62.

In the chapter on minerals, fuel, power and industries, the treatment of industries is too sketchy.

In the chapter on trade there are some unnecessary detailed figures from year 1947-48. They are generally too old to evaluate correctly the changes that have taken place during the last quinquennium of great development. They are mostly upto 1959. A few are upto 1961-62. Only table CVI for foreign trade by ports and land-route comes upto 1962-63.

The maps are very poor both in academic and cartographic presentation. Some of them have not been properly scrutinized e.g. in Map II the District "Chittagong Hill Tracts" is named only "iHill Tracts". In Map IV no difference has been brought out between primary and secondary divisions (Regions and Sub-regions).

The book is conspicuous by the complete absence of photographs. Some of the descriptions of the people and of the land could have been more intelligible with their help in such a unique, environment.

At the end of each chapter, there is a long list of references some of which are not so directly connected with the contents of the chapter. There is however no reference to some very important books e.g. the pioneer work of Dr. Nafis Ahmad, *An Introduction to Economic Geography of East Pakistan*, *Imperial Gazetteer of India* and *Provincial Gazetteer of Bengal*, of *East Bengal* and *Assam* are not mentioned. It is strange that there is no reference to the two reputed geographical journals published within the country—*The Pakistan Geographical Review* and the *Oriental Geographer*.

On the whole a large amount of useful material has been collected in the book which is not easily available. It would be of some help in making a proper appraisal of the geographical conditions of East Pakistan.

ABDUL HAQ MALIK

University of the Panjab

Pioneer Peasant Colonization in Ceylon: A Study in Asian Agrarian Problems. B. H. Farmer, Oxford University Press, London, New York, Toronto (1957), V+387 pp., maps, illustrations, tables, abbreviations, glossary, index £5/5s/6d.

The book is an excellent product of hard labour. From diverse sources at his disposal, Mr. Farmer has brought out an authoritative and useful piece of research on a problem which called for urgent attention. His work is not only significant in broadening one's horizons of the Peasant agrarian problems confronting Ceylon, but also throws light on the possible solution of similar problems in the developing countries of Asia. The so called Dry Zone was the cradle of civilization in Ancient Ceylon. Today, it has to saddle the burden of accommodating the excess of population of the other parts of the country. Hence, dry zone agriculture has to, necessarily,

assume special importance. It is from this standpoint that the value of Mr. Farmer's work has to be appreciated.

In his approach, Mr. Farmer refrains from the general prejudice of Western writers. He does not attempt to measure socio-economic conditions of Ceylon from a western yardstick. In most matters, he seems to be fair with the indigenous society. This fact, however, should not be over emphasized for some of the peasant problems are the direct outcome of four hundred and fifty years of colonial rule. Though the abandonment of the Dry Zone took place before the advent of the western impact yet the process of neglect of peasant agriculture was accelerated by the great interest of western powers in cash crops like cinnamon, cinchona, tea and rubber. It was only in the late nineteenth century that some attention was paid to the peasant agriculture. But by then, their lot had fallen to a very low ebb. It is since independence that a marked change in the peasant lot can be witnessed. This aspect of the problem is rather sketchily treated by the author. However, it does open the door for future research in this field.

The treatment of the material is highly praiseworthy. Its analysis is based on historical background which enables the reader to develop a more realistic perception of the problems as they exist now. Detailed statistical tables, maps, and a wealth of photographs further simplify the descriptions. He writes simply and clearly, without academic ambages which at times obfuscate rather than elucidate.

The text of the material is discussed in three parts. In the first part, he deals with a "Geographical Introduction". An attempt has been made to define the Dry Zone. Different criteria have been adopted by the author to define the region. He has, however, failed to refer to the fact, that the very term, "Dry Zone" is a misnomer. By world standards no part of the island can be considered to be dry, since the amount of rainfall varies from 35 inches to 200 inches. It is the seasonal character of the rain-

fall which has a great bearing on the Dry Zone agriculture. Dual problems, that of nature and those created by man are also considered. He pinpoints on the fact, that the Dry Zone in ancient times sustained a large population (ten million according to one estimate). If the neglect of the region was due to the natural causes having the better of man, it leads to the conclusion, that the environment had a controlling influence on man. Mr. Farmer's analysis is more in conformity with this view. He has failed to mention, that the gradual abandonment of the region was governed by the severe burdens imposed by then prevailing *rajakariya* system (forced labour). Due to excessive exploitation of this system, especially by Parakrama Bahu the Great, a stream of migrations took place to other parts of the country. It was this which was responsible for the sudden collapse of the economic super structure of this region. Hence, the environmental challenge was not instrumental in the neglect of the Dry Zone.

Regarding land use, he comments that some of the techniques of cultivation are efficient. But he commends some aspects of *chena* cultivation. The abandoning of the *chena* for five years enables the soil to be protected from sun and rain. Hence, he does not dismiss *chena* cultivation altogether as a primitive method of cultivation. On the contrary, he comments that "it is a wise concession to the nature of the region".

Moreover, Mr. Farmer has had the foresight to understand to a large extent the village society and its values. He refers to the "strong coercion which finds expression in a marked spirit of cooperation". In the conclusion of the first part, the reference that "the Dry Zone is a problem area because of malaria and physical conditions" reveals the environmentalist attitude of the author.

In the second part, he deals with the evolution of a policy of Peasant Colonization in the Dry Zone of Ceylon. This is discussed under three phases:

- 1) The old order, 1815-1914
- 2) Experiment and change, 1914-31
- 3) Achievement in Colonization, 1931-53.

In the first phase, he refers to the efforts made by the British to improve irrigation work and communications and thereby ameliorate the conditions of the Peasants. Though Mr. Farmer emphatically refers to the keen interest of the Colonial Government to peasant agriculture, in point of fact, it was plantation agriculture that was given top priority. It was, however, the fear, that the deterioration of peasant conditions would jeopardise their own position, which was largely responsible for the change in their attitude.

In the second phase, peasant conditions are discussed in the light of the second world war. Along with a drive for "grow more food", a programme of development for the preservation of the peasantry has drawn the attention of the author. A mention is also made of the large scale aid to colonists and the acceptance of the idea of Government sponsored colonization schemes.

In the third phase, he considers the achievement in colonization from 1931 to 1953. With the granting of the Donoughmore Constitution in 1931, Ceylon came to enjoy greater autonomy. Opening up of new colonization schemes and greater aid to the peasant colonization was witnessed during this period. As Mr. Farmer himself points out, Ceylonese becoming Ministers meant that "they were thoroughly steeped in the land consciousness of their compatriots, so that land questions were not likely to be forgotten".

Part three entitles, "Colonization Schemes Today". By and large, this is the most important and lengthiest section of the book. Innumerable problems connected with colonization schemes are dealt with in this part. Problems of planning, irrigation, land development, diseases, land use and social problems had attracted the attention of the author. Parallels are drawn to a few Government sponsored colonization schemes in Asia. From a comparative analysis, he points out the uniqueness of the schemes in Ceylon, not only due to their regional setting but because they affect actually or potentially, so large a proportion of the area of their country and because of the far larger part played in them

by the government organizations and assistance. In quoting D.H. Grist, Mr. Farmer points out an interesting fact, that "their have been cases where manuring has actually lowered the yields, in trials in Ceylon in *Maha* 1951-52 transplanting plus fertilizers or transplanting plus organic manure, in a number of areas, gave a smaller percentage of increase over the yields of control plots than did transplanting alone". He however, asserts, that certain manures do improve yields in certain soils. He further suggests mechanization as a panacea for agronomic ills which function satisfactorily only in large farm units. In small peasant colonies it could have adverse effects. The author is of the opinion that many peasant colonization problems emanated from their social system itself. Their cherished desire for religious observances and their resistance to

change marred the improvement of their lot. Mr. Farmer draws attention of the reader, that those who desire to improve the stock of the peasants should study their values and attitudes. He concludes, that if they could find salvation within their indigenous culture, they need not adopt western technology and capital.

Mr. Farmer's work would undoubtedly induce western scholars to view Asian problems from an oriental angle. His contribution to the study of agrarian problem in South and South East Asia would have been of greater significance, if he viewed these problems more in terms of man controlling the environment rather than the environment having the better of man.

TISSA WIRASINGHA

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