Chapter VII

TYPES AND PATTERNS OF SETTLEMENT

The factors which have led to the variation of settlement patterns are many and varied. It is important to realise that the pattern so produced is a result of a number of forces, working either in conjunction or in opposition, over a long period of time.\(^1\)

The type of settlement mostly represents a particular form of settlement based on the spatial arrangement of the houses within the limits. Their form and appearances in different sub-regions can be distinguished depending on the physical and cultural

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elements. Generally, compact, semi-compact and linear types of settlements are dominated by climate, geologic-topographical conditions and the degree of material culture. The patterns of settlement, i.e., the actual arrangement of streets and roads, may be of several types like radial, star-shaped, 'checker-board', circular, fan-shaped, etc. These patterns may exist in either of the types mentioned above.

The settlement patterns in Mizoram are largely affected by factors like topography, climate, fertility of soil, availability of cultivable land and drinking water at one hand, and political and economic factors like development of road links on the other hand. The forces of the latter factors are more operative especially after the mid-sixties till today.

Based on the study of available topographical maps and an extensive field work by the researcher, the followings are the broad types and patterns of settlements identified in Mizoram:


i) Compact Settlement

The study of 1:50,000 topographical maps and an extensive field study reveals that nearly 30 per cent of the total settlements in Mizoram are compact. One of the important factors responsible for the compact settlement is availability of gentle and undulating terrain where drinking water is easily available with close proximity to cultivable lands. It has been mentioned earlier that the defence factor has led to corporate tribal groups to cluster in villages under the protection of their chief, clan or leaders; and this has greatly influenced the organisational set-up of the village.

The compact settlements are generally located on hill tops and gentle slopes within limited areas, demarcated in most places by geographical barriers such as precipices or escarpments. A good example of this type of settlements are Durtlang, Sihphir, Lungdai (Plate 7.2) and Sialhawk in Aizawl district and Khawhri and Cherhlun (Plate 6.2) in Lunglei district.

The compact settlements are also common in places where settlements are set up either on a fertile flat land or surrounded by an already cultivated plot of lands. The compact settlements have been chiefly characteristics of
the fertile plains since ancient times⁴. Settlements like Lokicherra (Zawlnuam), Hortoki, Champhai (Plate 7.1) etc. depict a compact type as they are surrounded by cultivated flat plains. Another compact settlement like Kawrtethawveng, on the other hand, owes its distinctiveness to the existence of orchards in the area adjacent to village boundary that limits the horizontal growth of the village.

Settlements are also found at the sides of the rivers which can be identified as compact settlement, for example, Bairabi, Sairang, Chawngte and Tlabung (Demagiri). The first two settlements are located along the river Tlawng in Aizawl district while the latter are located along the rivers Tuichawng and Tuilianpui respectively in Chhimtuipui district. These settlements have developed as a 'port village' depending on these rivers that serve as transport routes.

Recently, particularly after 1967, many of the hitherto semi-compact villages are transformed into compact settlement largely due to grouping of villages. This grouping of villages is largely responsible not only

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in changing the settlement pattern in Mizoram, but also in reducing the density of settlement thereby keeping the number of settlements low. The impact of grouping of villages on settlement and population will be discussed later.

ii) Semi-Compact Settlement

About 40 per cent of the total settlements in Mizoram can be classified as semi-compact settlement. The factors responsible for development of semi-compact is more or less the same as those responsible for the compact settlement; but geographical restrictions seems to be a little less significant at several places. Semi-compact settlement developed mainly on areas where sources of drinking water is numerous. Among the many examples of this type of settlement are Kawrthah, Serhmun, Kanhmun, East Lundar, Lengpui, Rawpuichhip, West Phaileng, Ratu, etc. in Aizawl district; Lawngtlai, Tuipang(V) in Chhimtuipui district; Hnahthial, West Bungmun and Haulawng in Lunglei district.

In few places, semi-compact settlement are identified as they have nucleated site with few small hamlets linked with the newly constructed project, road and site. Examples are Luangmual, Tanhril, Seling-Thingsulthiah in Aizawl district. It may be noted that
the practice of heterogenous occupation by different sections of the population, ranging from primary to tertiary sectors has led to the development of semi-compact pattern of settlement. Settlements of this type are found throughout the state.

iii) Linear Pattern of Settlement

The development of linear pattern of settlement in Mizoram is of a recent phenomena. The growth of linear pattern of settlement is the consequence of development of infrastructure facilities like construction of new roads. It has been pointed out that most of the settlements in Mizoram are located at the hill tops. But when the highway cannot pass through them due to engineering problem, the settlers are tempted to come down along the roadside establishing a new settlement thereby forming a linear pattern. Transport linkage is most essential for the rural cultivators that they can sell their agricultural produce at reasonable price. As a result, many of the hitherto hill top settlements are subjected to change their house sites thereby forming linear pattern of settlement. A remarkable example can be seen at Dampui (Plate 7.6), Khumtung, Rengdil, New Vervek, Keifang and Khawhai in Aizawl district, Tawipui and Thingfal in Lunglei district.
When the size of settlement enlarges as a result of natural increase in population, a new pattern of settlement is generally marked lineating along the road sides. This type is evident in the case of Pangzawl, Rengtekawn, Tlungvel and Khawzawl (Plate 7.7).

A number of settlements are also identified, located along the river banks mostly in conjunction with the roads. Example of this type can be seen at Tuirial and Tuipui (Plate 7.8) along the Seling-Champhai road, and Tut (Daplui) along the Sairang-West Phaileng road.

In contrast to the numerous patterns noticeable in the plain areas elsewhere in the country, only very few patterns are noticed in the region. A distinctive feature of linear pattern observed in Mizoram is a typical V-shaped and meandering pattern. The V-shaped pattern is evident at Tuirial and Tuipui where the road, after crossing the river turns with an inclination angle of about 30°, taking a V-shaped feature. Meandering pattern is identified at place where the main road inside the settlement area is bending. Rengtekawn, Vairengte and Pangzawl are good example of this type.
TYPES OF SETTLEMENT

COMPACT SETTLEMENT

No. 84 E/5 Kawtethawveng
No. 84 E/5 Mamit
No. 84 E/4 Khawtailung
No. 84 E/4 N. Vanlaiphai

SEMI COMPACT SETTLEMENT

No. 84 E/3 Bungzun
No. 84 E/3 Lungpho
No. 84 E/7 Ruantlang
No. 84 E/7 Zote

LINEAR SETTLEMENT

No. 84 B/14 Thingtal
No. 84 E/2 Kawkulu
No. 84 B/5 Maubawk

1 0 1 2
KILometRES

Fig. 7.1
IMPACT OF GROUPING OF VILLAGES ON SETTLEMENT AND POPULATION

Political disturbance broke out in Mizoram in 1966. The establishment of Mizo National Front (MNF) in 1961 with its emphasis on political self-determination, calling for greater Mizoram and secession from India found favour with different sections of the population of Mizoram. Consequent upon the murder of Laimana in December, 1965 (who was supposed to be the inner circle of MNF), misunderstanding prevailed between the Government officials and the MNF; that the latter was compelled, as they claimed, to break into rebellion.

In February 28, 1966, the MNF attacked at several places throughout Mizoram and took control of almost all important centres including Aizawl and Lunglei. However, Aizawl and Lunglei were recaptured from MNF occupation as a result of the operations of Jet Fighters and deployment of more army personnel.

The MNF was declared unlawful by Government of India and was thus forced to go underground, and formed the underground government called 'Mizoram Government'. Some of the MNF dominated areas were recaptured during 1966, but many of the interior villages were still under the control of the MNF, and the MNF activists could always find food and shelter from these interior villages. In
order to put an end to this, the scheme of grouping of villages was recommended by the Central Government.

Under such circumstances, grouping of villages into larger units as counter-insurgency tool was extended throughout Mizoram except the extreme southern portion of Pawi-Lakher region as this region was not affected by MNF activities. The main objective of the scheme was thus, to facilitate the effective operation of security forces against the MNF which had taken control of interior villages spread out in far-flung areas.

Another objective of grouping of villages was to accelerate the process of developmental works and to bring home immediately impact of developmental programmes hitherto almost impossible owing to the scattered nature of villages coupled with extremely inadequate communication facilities. Thus, the scheme was introduced under the provisions of Defence of India Rule, 1962 and the Assam Maintenance of Public Order Act, 1953.

The grouping of villages in Mizoram during 1967-1970 involved a total population of 2,36,162. All the 104 grouping centres were provided with Army posts and civil


6. Ibid., p. 4.
administration. There were, of course, some villages in different parts of Mizoram which were excluded from the grouping scheme and shifting operation where the MNF movement was normally less active. District-wise population of such ungrouped villages were as follows:

<table>
<thead>
<tr>
<th>Village</th>
<th>Population</th>
</tr>
</thead>
<tbody>
<tr>
<td>Aizawl</td>
<td>10,431</td>
</tr>
<tr>
<td>Lunglei</td>
<td>2,000</td>
</tr>
<tr>
<td>Chhimtuipui</td>
<td>24,000</td>
</tr>
</tbody>
</table>

Thus, the total population of ungrouped villages in Mizoram at the completion of grouping scheme was 36,431 and besides, these grouped villages, the district headquarters of Aizawl, Lunglei and Saiha each had a population of 32,000, 12,000 and 1,500 respectively. The total population not directly affected by the grouping scheme was 81,931 while 2,36,162 population was directly involved in the grouping operation.

Thus, out of the total population of 3,18,093 in 1970, as much as 2,36,162 persons or 82 per cent of the total population was directly affected by the introduction of the scheme of grouping of villages in Mizoram.

A conspicuous impact of grouping of villages on settlement of Mizoram was the total reduction of number of villages. The total number of settlements, i.e., 730 in 1961 census was reduced to 229 as recorded in the 1971 census. Numbers of remote and scattered villages were brought together at several grouping centres.

The impact, as a consequence, resulted in changing the feature of settlement patterns. Many of the hitherto semi-compact settlements were built up into compact settlement or some were enlarged to make up a linear form and vice-versa. The resultant structure of village built up depend mainly upon the configuration of land surface. Linear form along either the road or elongated watershed is most common development of settlement as a result of grouping of villages in Mizoram.

The immediate effect of grouping of villages in Mizoram was the total dislocation of jhuming as villagers had to leave the year's jhum cultivation and were unable to make fresh start in the grouping centres, which they were forced to do, because of the seasonal character of jhum depends purely on monsoon rains. Thus, widespread famine condition naturally followed the introduction of the scheme. In later years, the concentration of agricultural workers in the grouping centres soon
exhausted available land, and the already short cycle of jhuming had to be further shortened. This had been reducing agricultural yields incredibly, and only few families in most of the grouping centres were able to harvest paddy large enough to sustain themselves for the whole year.

As the villages cannot afford to spend many days away from daily agricultural work during the peak season as weed-out work has to be heavy, it was almost impossible to do wage labour outside the village during this particular season. This restricted them to seek employment outside their own villages. In spite of the emotional and sentimental attachment that they have for the village land, the villagers realised the low economic yields of agricultural work under jhum cultivation. As such, they were willing to shift to other occupations whenever they could find them.

One important aspect of the grouping of villages in Mizoram has been the loosening of village solidarity. The people of villages may still be bound together by sentimental attachment to village land, but villagers, especially those who came from other villages, especially those came from other villages, lost loyalty and found it hard to identify themselves as true members of the
hitherto neighbouring village which in some instances turned out to be traditional village rival.

The settlement patterns in the grouping centres which followed the method of concentration of members of any particular village in one block or street also helped deteriorating village solidarity. Thus, the settlement patterns in the grouping centres upset village solidarity while retaining original village loyalty and identity. Thus, people in many instances, still retain the sentimental bond of the old village, which may cut across familial ties. Members of village councils in the grouping centres virtually complain the existence of village sub-group and rivalry within the grouping centres in matters connected with the administration of church, politics, school management and so on. In this way, villagers in the grouping centres gradually lost village solidarity based on tribal setting. As a result, people feel less attached to the village resulting in the consequent migratory flow of population to towns in search of commercial openings. Thus, during the decades 1961-1971, the population of Aizawl town increased from 14,257 in 1961 to 31,740 in 1971.

The structural consequences of villages has, thus, been tremendous. Hitherto remote villages were brought
into larger units. This naturally disturbed the traditional village harmony based on homogeneity and attachment to village land. Both these bases of traditional village structure had been shattered and a new structure based on occupational differentiation and heterogenous character emerged. Thus, the masses of the village communities who were left to fight their survival with the traditional system of jhum cultivation became poorer as their original adaptation to their village jhum practices has been shattered with the introduction of grouping of villages which kept the economy of the villagers into no better condition.

SPATIAL ANALYSIS OF SETTLEMENT

The spatial patterns in the density of rural population in an area is a function of complex interplay of physical, economic, social and technological forces. But natural forces play more prominent role than others in this respect. This is especially true of the developing world where application of modern technologies are limited and economic are predominantly agricultural in nature.

In 1981 Mizoram census, there were 721 inhabited villages and 15 uninhabited villages as against 229 and

one uninhabited village in 1971 census which indicated the increase in the number of enumerated villages by 31.76 per cent. The rapid increase in the number of enumerated villages during the decade is due to large scale grouping of villages. As political disturbance broke out in Mizoram on the 1st March, 1966, several smaller villages were grouped together for security reasons. In view of this measure, the number of villages found in 1971 were much less in comparison to that of 1981 census on account of the fact that the grouped villages, as time passed, returned to their old villages and thus re-occupied them. The number of inhabited villages in Mizoram in 1981 census and the previous censuses is indicated below:

**Table 7.1**

**Number of Inhabited Villages during 1961, 1971 and 1981**

<table>
<thead>
<tr>
<th>State/District</th>
<th>1961</th>
<th>1971</th>
<th>1981</th>
</tr>
</thead>
<tbody>
<tr>
<td>MIZORAM</td>
<td>730</td>
<td>229</td>
<td>721</td>
</tr>
<tr>
<td>Aizawl District</td>
<td>395</td>
<td>106</td>
<td>390</td>
</tr>
<tr>
<td>Lunglei District</td>
<td>335*</td>
<td>29</td>
<td>161</td>
</tr>
<tr>
<td>Chhitmuipui District</td>
<td>-</td>
<td>94</td>
<td>170</td>
</tr>
</tbody>
</table>

* Includes Chhitmuipui District.

**Source:** Census of India, 1981, Series 31, Mizoram General Population Table, p. 16.
To study the spatial patterns of settlement in Mizoram, a quantitative approach has been applied, considering different indices such as size (population), density and spacing of settlements. The analysis of size and spacing is relevant because 'rural density is also regarded to be a correlate size and spacing of rural settlements'.

**Village Size Analysis**

The relation between density and spacing is reciprocal; as the spacing increases, the density of village will decrease, and with the decrease in spacing, the density will increase. Similar relationship exists between the density of villages and area, and size of villages. Here, village size analysis has been studied taking mainly population size into consideration as the data for village area is not available.

The size of villages are described with the number of population which is classified into seven broad population ranges, viz., (i) less than 200; (ii) 200-499; (iii) 500-999; (iv) 1000-1999; (v) 2000-4999; (vi) 5000-9999; (vi) 10,000 and above indicating therein the rural population.

Table 7.2

Village by Population Size, 1981
(Percentage to Total Rural Population in 1981)

<table>
<thead>
<tr>
<th>State/District</th>
<th>Less than 200</th>
<th>200-499</th>
<th>500-999</th>
<th>1000-1999</th>
<th>2000-4999</th>
<th>5000-9999</th>
<th>10000-above</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mizoram</td>
<td>6.79</td>
<td>23.61</td>
<td>23.18</td>
<td>23.93</td>
<td>22.49</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Aizawl</td>
<td>4.87</td>
<td>17.75</td>
<td>22.89</td>
<td>25.35</td>
<td>29.15</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Lunglei</td>
<td>8.99</td>
<td>31.96</td>
<td>18.12</td>
<td>28.80</td>
<td>12.12</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Chhimtuipui</td>
<td>12.13</td>
<td>37.85</td>
<td>30.24</td>
<td>12.45</td>
<td>7.33</td>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>

Source: Census of India, 1981, Series 31, Mizoram General Population Table, p. 29.

As seen from the above table, there is no village with a population of more than 5,000 in Mizoram. It is observed that 23.93 per cent of the total population are confined in the village size 1000-1999 in different 62 settlements, which is 8.59 per cent of the total rural settlements of the State. There is only slight variation in the confinement of population in the lower range of population size of 500-999 and 200-499 as they comprised 23.18 per cent and 23.61 per cent of the total population of the state. In the range of 500-999 population size, there are 127 settlements (17.61 per cent), whereas there are as many as 267 settlements (37.03 per cent) in the range of 200-499. In the range of village size less than
200 persons, there are as many as 235 villages which is 32.59 per cent of the total settlements in Mizoram, but contained only 6.79 per cent of the total population of the state.

Table 7.3 furnishes the distribution of settlements into various population ranges at district level. As to the total number of settlements, the largest number of settlements are under the population size of 200-499 in all the districts. This is one of the indicators that the geographical conditions do not favour the growth of large sized settlement as resources are limited. Among the three districts, the percentage value of the number of settlements between 200-499 is highest in Lunglei district, which is 42.24 per cent, followed by Chhimtuipui district (41.76 per cent), and it is lowest in Aizawl district with 32.82 per cent. The lowest number of settlements is found in the population size of 2000-4999 in all the districts. The value is 6.67 per cent in Aizawl district, 1.86 per cent in Lunglei district, and only 0.59 per cent in Chhimtuipui district.

The average village size for the whole Mizoram is 516 persons. At district level, the size of settlements decrease towards the south. It is 623 in Aizawl, 430 in Lunglei and 349 in Chhimtuipui district. Geographical
### Table 7.3

**Distribution of Villages by Population Size**  
**District-wise 1981**

<table>
<thead>
<tr>
<th>District/State</th>
<th>Population range</th>
<th>No. of villages in each range</th>
<th>Percentage of villages in each range</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1-199</td>
<td>122</td>
<td>28.72</td>
</tr>
<tr>
<td>Aizawl</td>
<td>200-499</td>
<td>128</td>
<td>32.82</td>
</tr>
<tr>
<td></td>
<td>500-1,999</td>
<td>124</td>
<td>31.79</td>
</tr>
<tr>
<td></td>
<td>2000-4,999</td>
<td>26</td>
<td>6.67</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td></td>
<td>390</td>
<td>100.00</td>
</tr>
<tr>
<td></td>
<td>1-199</td>
<td>59</td>
<td>36.65</td>
</tr>
<tr>
<td>Lunglei</td>
<td>200-499</td>
<td>68</td>
<td>42.24</td>
</tr>
<tr>
<td></td>
<td>500-1,999</td>
<td>31</td>
<td>19.25</td>
</tr>
<tr>
<td></td>
<td>2000-4,999</td>
<td>3</td>
<td>1.86</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td></td>
<td>161</td>
<td>100.00</td>
</tr>
<tr>
<td></td>
<td>1-199</td>
<td>64</td>
<td>37.65</td>
</tr>
<tr>
<td>Chhimiutipui</td>
<td>200-499</td>
<td>71</td>
<td>41.76</td>
</tr>
<tr>
<td></td>
<td>500-1,999</td>
<td>34</td>
<td>20.00</td>
</tr>
<tr>
<td></td>
<td>2000-4,999</td>
<td>1</td>
<td>0.59</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td></td>
<td>170</td>
<td>100.00</td>
</tr>
<tr>
<td></td>
<td>1-199</td>
<td>235</td>
<td>32.59</td>
</tr>
<tr>
<td>Mizoram</td>
<td>200-499</td>
<td>267</td>
<td>37.03</td>
</tr>
<tr>
<td></td>
<td>500-1,999</td>
<td>189</td>
<td>26.21</td>
</tr>
<tr>
<td></td>
<td>2000-4,999</td>
<td>30</td>
<td>4.16</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td></td>
<td>721</td>
<td>100.00</td>
</tr>
</tbody>
</table>

**Source:** District Census Handbook, Aizawl, Lunglei and Chhimiutipui, Census of India, Series 31, Mizoram, 1981.
factors like terrain, climate and socio-cultural factors are responsible for this trend. At block level it varies from only 302 in Tuipang block to 847 in Serchhip block. The village size is fairly high in Aizawl district except in the block of Reiek (392) and Lokicherra (453) which registered the sizes below the state's average of 516. Irregular landscape with little communication lines are the main factors that restrict the growth of village size in Reiek, while hot and humid climatic conditions are responsible for low settlement size in Lokicherra block.

In Lunglei district, the difference in village size is marked by topography. The western block of West Bungbum and Lungsan are characterised by low altitude with hot and sultry weather, whereas Lunglei and Hnahthial block are highly elevated embraced with healthy climatic condition. As a result, the size is small in West Bungbum (314) and Lungsan (391) whereas it is fairly high in Lunglei (412) and very high in Hnahthial (716). Except Sangau block, all the blocks in Chhimtuipui district have very small size of settlements due to the fact that they are either characterised by rugged topography with little means of transport or thickly vegetated low elevation with adverse climatic condition, or both. Cultural element has its own influence in the case of Sangau block. Sangau village, the block headquarter has been the centre of one
of the Christian religious factions headed by Vanawia. Migration into this village has led to large size of settlement in this block (548).

Spatial Analysis of Villages

The spatial distribution of rural settlements shows that the average number of villages per 100 km$^2$ of rural areas comes to 3.47 which is very low as compared to the density figure of the other states of the country. Out of 20 blocks in Mizoram, only 7 blocks have a density figure higher than the average. Chawngte block has the highest density of settlements, i.e., 7.28 per 100 km$^2$ as against only 1.91 settlements per 100 km$^2$ in Ngopa block which is the lowest in the state.

The inter-village distance or spacing is calculated at 2.71 km. The highest village spacing is observed at Ngopa block, i.e., 3.87 km. The lowest spacing, i.e., 1.96 km is, observed at Aibawk block. If the average number of 3.47 villages is supposed to be uniformly distributed over 100 km$^2$ forming a hexagonal pattern, the average theoretical distance between adjacent villages in the region should be about 2.71 kms.

The gross pattern reveals certain striking facts of the space-size relationship of rural settlements. It may
NO. OF VILLAGES PER 100 SQUARE KM.

- More than 4.50
- 3.50 - 4.49
- 2.50 - 3.49
- Less than 2.50

Fig. 7.3
be seen that the universal application of the rural spacing and size relationship (higher spacing between larger settlements and lower spacing between smaller settlements) can be applied only in eight of the twenty blocks, i.e., Ngopa, Serchhip, Khawzawl, Hnahthial, East Lungdar, Darlawn, Reiek and Chawngte - all having related values between size and spacing.

Taking village spacing and size of settlements as yardsticks, the following categories have been identified:

1) Areas with Low Spacing and Size of Settlements (More than 2.50 kms)

Under this category, there are eight blocks namely, Aibawk (1.96 km), Tlangnuam (2.01 kms), Lokicherra (2.07 kms), Chawngte (2.11 kms), Thingsulthliah (2.52 kms), West Phaileng (2.38 kms), Lawngtlai (2.41 kms) and Reiek (2.41 kms). These blocks have population sizes of 583, 688, 453, 354, 794, 543, 331 and 392, respectively. It is observed here that the space-size relationship is applicable to only four blocks namely, Lokicherra (453), Chawngte (354), Lawngtlai (331) and Reiek (392). West Phaileng, in spite of its low spacing, has large population size, i.e., 543 persons due to the fact that it is well served by good transport route. The influence of suburb (Aizawl town) is responsible for large size
settlements in the blocks of Tlangnuam (688) and Thingsulthliah (794). They are well connected by transport links and share the urban economy to a considerable extent, that keep the size of settlements large. Topographical influence is an attributable factor for large size settlement in the case of Aibawk block. An elongated watershed which featured the block in a north-south direction serves as the only alternative for human habitation. The settlements so located on the watersheds are connected by roads with Aizawl town.

2) Areas with Moderate Spacing and Size of Settlements (2.5-2.99 kms.)

Seven blocks are identified under this group of spacing. They are Thingdawl (2.60 kms), Lungsen (2.66 kms), Darlawn (2.67 kms), West Bumphmun (2.69 kms), Lunglei (2.70 kms), Tuipang (2.74 kms), and East Lungdar (2.82 kms). Again in this category the universal application of the rule of spacing and size relationship can be applied only in the two blocks of Darlawn (583) and East Lungdar (687). The function of complex interplay of physical, economic and social forces are reflected in these areas into reverse space-size relationship. In spite of their respective moderately spacing, Lungsen, West Bumphmun, Lunglei and Tuipang have lower population size than they are supposed to. Another inverse
relationship is observed in the block of Thingdawl where the size is much higher (644) if considered in terms of its spacing. Good communication network (NH No. 54 and others) as well as availability of cultivable fertile river plains along river Tlawng has led to large size settlement in Thingdawl block. In the blocks of Lungsen (391), West Bumghmun (314), Lunglei (412) and Tuipang (302), either geographical (natural) or social factors are responsible for lower population size in spite of moderately high spacing. The dominance of Chakma population in the blocks of Lungsen and Tuipang with small but numerous scattered settlements have led to lower size of villages. In West Bunghmun, improper transport route and adverse climatic condition has been responsible for smaller population size; where steep slope and scarcity of cultivable land may be the influencing factors in Lunglei block.

3) Areas with Higher Spacing and Size of Population (3.0-3.4 kms)

Only two blocks, i.e., Khawzawl and Hnahthial are identified under this group. They are both linked with good transport routes and having moderate climatic conditions. Moreover, these two blocks are well drained by river Tlawng and its tributaries, which provide cultivable fertile plots at several places. These factors
RADIAL DISTRIBUTION AND FUNCTION OF RURAL SETTLEMENTS

Fig. 7-5
favour the development of large village size. As a result, Khawzawl has an average population size of 674 and Hnahthial has a size of 716 persons per village.

4) Areas with High Spacing and Size of Population (More than 3.5 kms)

Under this category falls three blocks, namely Ngopa (3.87 kms), Serchhip (3.78 kms) and Sangau (3.72 kms). The space-size relationship is best suited to the blocks of Serchhip (794) and Ngopa (776). Ngopa block, located on a huge Sialkal range that form the watershed, is well drained by river Tuivai. Availability of cultivable land for jhum and moderate slope support the growth of settlement size. Serchhip block which is located at the heart of the state has always enjoyed positive character such as good road network, moderate climatic condition and easy availability of cultivable land. Sangau block, in spite of its extreme location and difficult terrain, has a high village size due to socio-cultural factors as pointed out earlier.

DISPERSION ANALYSIS OF VILLAGES

Dispersion analysis of several attributes is influenced by physico-cultural environment and evolution with the changing pattern of socio-economic forces working with the development of science and technology. The
actual distribution of settlements can be predicted through any statistical analysis with every unit having its own trend and identity considering the distribution in general as random. To measure the deviation from such distributional pattern is termed as 'Dispersion Analysis'\(^1\). In fact, the settlements are not always evenly spaced, nor on the other hand, they are spaced strictly in random pattern\(^1\).

In the present analysis, the concept of nearest neighbour analysis has been adopted. The nearest neighbour statistics \((R_n)\), applying the index of randomness, shows the level of association between observed mean spacing \((r_o)\) and expected spacing \((r_E)\)* in random situation, which has been computed with the statistical expression advanced by Clerk and Evans (1954)\(^1\) as:

\[
R_n = \frac{2 \sum r}{n(n-1)}
\]

---


* The derivation of formula is also taken from: Mahmood, Aslam, "Spatial Distributions and Interactions", Statistical Methods in Geographical Studies, New Delhi, 1977, pp. 72-76.

where \( d \) denotes density of villages per square kilometre, \( N \) is the number of settlements, and \( A \) is the area of the place.

1) Clustering (\( R_n \) Value less than 0.89)

This category covers an area of 23.19 per cent of the total rural area of Mizoram and contains 19.45 per cent of the total rural population. It consists of five community development blocks, namely, Aibawk, Thingsulthliah, West Phaileng, Reiek and West Bungmun. The index of randomness (\( R_n \) value) ranges between 0.701 in Aibawk block to 0.867 in West Bungmun block showing a clustering pattern of settlement. The observed mean inter-village distance of Aibawk, Thingsulthliah, West Phaileng, Reiek and West Bungmun comes to 1.96 km, 2.25 kms, 2.37 kms, 2.41 kms and 2.69 kms respectively. Among these five blocks the village density is lowest in West Bungmun (0.026/km\(^2\)), and highest in Aibawk (0.032/km\(^2\)). Apart from physical factors, socio-economic factors have a remarkable influence on this pattern.
2) Random (\(R_n\) Value 0.89-1.11)

This group covers an extensive area covering as much as 62.96 per cent of the total rural area of the state. It contains 63.61 per cent of the total rural population of the state. This group consists of eleven different blocks, namely, Thingdawl, Lokicherra, Lawngtlai, Tlangnuam, Darlawn, Hnahthial, East Lungdar, Tuipang, Lunglei, Ngopa and Khawzawl. Index of randomness ranges from 0.900 to 1.093 showing a more or less random pattern of settlement distribution. Among these blocks, the observed mean inter-village distance is lowest in Tlangnuam, i.e., 2.01 km; it is highest in Ngopa, i.e., 3.87 kms. The density of villages ranges from 0.019 km. per square kilometre in Ngopa to 0.056 per square kilometre in Tlangnuam block.

3) Moderate Dispersion (\(R_n\) Value 1.12-1.34)

This category includes three blocks, such as Chawngte and Sangau in Chhlimtuipui district and Lungsen in Lunglei district. As the index of dispersion varies from 1.176 in Chawngte to 1.213 in Lungsen, and to 1.244 in Sangau block, it appears that the villages are moderately dispersed. The mean observed spacing of villages is 2.11 km. in Chawngte, 2.66 kms in Lungsen and 3.72 kms in Sangau block. The village density varies from 0.028 per
square kilometre in Sangau block to 0.078 per square kilometre in Chawngte, whereas Lungsen block has a village density of 0.052 per square kilometre. This category which covers only 11.06 per cent of the total rural area of the state contains 12.60 per cent of the total rural population of Mizoram.

4) High Dispersion (Rₙ Value more than 1.34)

Only one block falls under this category, namely, Serchhip. It has an Rₙ value of 1.454 which is the highest among all the blocks in Mizoram. As it consists of only one block, the area covered is also very small - only 3.77 per cent of the total rural area of the state, but it has a high mean observed inter village spacing which is 3.78 kms. The high spacing of villages is correlated by high population size; the average population per village being 847 persons. The density of village per square kilometre in this block is 0.037.

The dispersion analysis of villages by Rₙ value reveals that the distribution of villages in Mizoram as a whole depicts a random pattern except in the case of Serchhip and Sangau which show a high dispersion pattern.
NATURE OF DISPERSION OF RURAL SETTLEMENTS

R \text{Rn} \text{VALUE}

- **HIGH DISPERSION**: More than 1.34
- **MODERATE DISPERSION**: 1.12 to 1.34
- **RANDOM**: 0.89 to 1.11
- **CLUSTERING**: Less than 0.89

Fig. 7.6
Fig. 7.7
URBAN POPULATION AND URBAN SETTLEMENT

The rural and urban population and settlements are interlinked. The rural and urban systems are the basic components which form the spatial organisation. The urban settlements with their population components work as an agent of transformation in themselves and also effect the surrounding countryside. They not only alter the environmental quality but also improve the socio-economic structure. The urban population and settlements play vital role in space, because they, while catering to their town needs, also serve the rural population of surrounding countryside.

Prior to the 1971 census, there was only one town in the whole Mizoram, namely, Aizawl town which was the Class IV category. In 1971 census, Lunglei was declared as Class IV town. In the 1981 Census, the following places, namely, Champhai, Kolasib and Serchhip within Aizawl district and, Saiha within Chhimtuipui district were declared as census towns. All these new towns were Class V category, i.e., population of 5000 to 9999. Thus in the 1981 census, there were six towns in the whole Mizoram. The towns were classified into six categories:
Table 7.5
Classification of Urban by Population Size

<table>
<thead>
<tr>
<th>Population</th>
<th>Class</th>
</tr>
</thead>
<tbody>
<tr>
<td>1,00,000 and above</td>
<td>I</td>
</tr>
<tr>
<td>50,000-99,999</td>
<td>II</td>
</tr>
<tr>
<td>20,000-49,999</td>
<td>III</td>
</tr>
<tr>
<td>10,000-19,999</td>
<td>IV</td>
</tr>
<tr>
<td>5,000-9,999</td>
<td>V</td>
</tr>
<tr>
<td>Below 5,000</td>
<td>VI</td>
</tr>
</tbody>
</table>

According to this classification, there is no town under Class I, III and VI in Mizoram. There is one Class II town namely Aizawl, one Class IV town, i.e., Lunglei and four Class V towns such as Champhai, Kolasib, Serchhip and Saiha.

According to 1981 Census classification of town as stated above, there were only six urban settlements possessing the characteristics of town. They have a total urban population of 1,21,814 persons, comprising 24.67 per cent of the total population of Mizoram. Even though there were only six urban towns, the process of urbanisation has undergone a rapid progress, as may be seen in the following statistics:
Table 7.6
Number of Urban Centres in Various Classification of Towns (1901-1981)

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Aizawl</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>Lung lei</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>1</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>Chhimtuipui</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>MIZORAM</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>1</td>
<td>1</td>
<td>2</td>
<td>6</td>
<td></td>
</tr>
</tbody>
</table>


From the above table, it is seen that a number of towns increased rapidly from 2 in 1971 to 6 in 1981. Judging from the trend of population growth in the state as a whole, and the coming up of various growth centres in the otherwise predominant rural areas within the state, the addition of new towns in 1991 is expected to be fairly large. The growth of urban population from 1951 to 1981 is given in the following table:

Table 7.7

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Aizawl</td>
<td>6,950</td>
<td>14,257</td>
<td>31,740</td>
<td>97,591</td>
</tr>
<tr>
<td>Lung lei</td>
<td>-</td>
<td>-</td>
<td>6,019</td>
<td>17,205</td>
</tr>
<tr>
<td>Chhimtuipui</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>7,018</td>
</tr>
<tr>
<td>MIZORAM</td>
<td>6,950</td>
<td>14,257</td>
<td>37,759</td>
<td>1,21,814</td>
</tr>
</tbody>
</table>

As it is obvious from the table 7.7, urban settlement grew at a very fast rate during 1961-1981. The growth rate during 1961-1971 was 100 per cent, which was doubled during 1971-1981 with a growth rate of 200 per cent. Consequent upon the high growth rate of urban settlements, the urban population also grew at an even more higher rate during the same decades. The urban population which was 6,950 for all Mizoram was increased to 14,257 making a growth rate of 105.13 per cent. It is to be seen that the growth of urban population was more pronounced in the latter two censuses of 1971 and 1981. It registered 164.84 per cent growth rate during 1961-1971, and was as much as 222.60 per cent growth rate during 1971-1981. This proved that the region has undergone a rapid progress of urbanisation*. The factors which accelerated the urban growth, apart from natural growth, is the heavy inflow of migration from rural areas of the state which has been described in the preceding chapter.

The list of towns and their population according to to 1981 census, is given in page 228.

*Statistically, urbanisation can be expressed as follows:

\[ U = \frac{PU}{PT} \times 100; \quad \text{where, } U=\text{Urbanisation, } PU=\text{Population in urban areas, and } PT=\text{total population.} \]
Table 7.8
List of Towns and Population, 1981

<table>
<thead>
<tr>
<th>Name of town</th>
<th>District</th>
<th>Population</th>
<th>Classification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Aizawl</td>
<td>Aizawl</td>
<td>74,493</td>
<td>Class II</td>
</tr>
<tr>
<td>Lunglei</td>
<td>Lunglei</td>
<td>17,205</td>
<td>Class IV</td>
</tr>
<tr>
<td>Kolasib</td>
<td>Aizawl</td>
<td>8,282</td>
<td>Class V</td>
</tr>
<tr>
<td>Champhai</td>
<td>Aizawl</td>
<td>7,487</td>
<td>Class V</td>
</tr>
<tr>
<td>Serchhip</td>
<td>Aizawl</td>
<td>7,329</td>
<td>Class V</td>
</tr>
<tr>
<td>Saiha</td>
<td>Chhimtuipui</td>
<td>7,018</td>
<td>Class V</td>
</tr>
</tbody>
</table>


SPATIAL CHARACTERISTICS OF URBAN SETTLEMENT

In spite of the fact that only six towns exist in Mizoram, one could see that they are well distributed in the state in terms of space, though the districtwise distribution shows parity. The urban population is represented in Figure 7.8. Some of the important statistics connected with spatial characteristics of urban settlements is given in the table 7.9.

It is clear from the above table that Aizawl, the State Capital is the largest by area as well as population size (677). It is followed by Lunglei and Saiha by area as both are district headquarters, respectively. But by the size of population density, Serchhip (Aizawl district)
has surpassed all the other four urban centres having 488 persons per square kilometre. Champhai and Kolasib (both in Aizawl District) also have larger population density (374 and 230 respectively) than Lunglei (202) and Saiha (132). It is observed here that density decreases towards the south in the case of urban population and settlement also.

**Table 7.9**

**Spatial Characteristics of Urban Settlements**

<table>
<thead>
<tr>
<th>Urban Settlements</th>
<th>Area in km²</th>
<th>Population</th>
<th>Population Density</th>
</tr>
</thead>
<tbody>
<tr>
<td>Aizawl</td>
<td>110</td>
<td>74,493</td>
<td>677</td>
</tr>
<tr>
<td>Lunglei</td>
<td>85</td>
<td>17,205</td>
<td>202</td>
</tr>
<tr>
<td>Kolasib</td>
<td>36</td>
<td>8,282</td>
<td>230</td>
</tr>
<tr>
<td>Champhai</td>
<td>20</td>
<td>7,487</td>
<td>374</td>
</tr>
<tr>
<td>Serchhip</td>
<td>15</td>
<td>7,329</td>
<td>488</td>
</tr>
<tr>
<td>Saiha</td>
<td>53</td>
<td>7,018</td>
<td>132</td>
</tr>
</tbody>
</table>


The observed mean spacing of the urban settlement, taking Mizoram as a whole, was 48 kilometres, which was much higher than the expected spacing, i.e., 29.63 kilometres. The $R_n$ value is calculated at 1.619 indicating that the urban settlements in the state is highly dispersed.
PLATE NO. 7.1: A compact settlement of Champhai, whose horizontal growth being restricted by the surrounding landuse.

PLATE NO. 7.2: Lungdai village depicts a compact settlement largely due to the geographical barrier, i.e., steep precipice on the west.
PLATE NO. 7.2: Serkhan village, located on a hill slope is a good example of *semi-compact* settlement.

PLATE NO. 7.4: Kawrthah village has been transformed into *semi-compact* largely due to village grouping.
PLATE NO. 7.5 : Hill top and hill slope settlement of Bunghmun village in Aizawl district. Note the house pattern, and the house sites being shifted down along the road. The trees on the western slope serve as the barriers against cyclone.

PLATE NO. 7.6 : Dampui village, the hitherto hill top village has transformed into linear type as a result of later development of road below the original village site.
PLATE NO. 7.7: Khawzawl, formerly semi-compact, has also transformed into linear type as road develops.

PLATE NO. 7.8: Tuipui village is a good example of settlement which is developed along both the river and the road.