CHAPTER VI

NATURE AND FLOW OF TRAFFIC

Traffic is the core element of any circulation system, which reflects the complexities of economic interdependence. Interdependence will lead to the advent of new scientific system of traffic slows and pattern of transport system. Ultimately it will give rise to technological change and economic change in cost and price structures that have accompanied it and have in turn caused widespread change in the patterns of transport systems, as well as the human activities. It is at this juncture that attention is directed to what many geographers will consider "transport flows" to be one of the core components of the transport system.

It is, therefore, necessary to find out some way of measuring and mapping the flow of traffic including volume, density and speed of movement and its origin and destinations.

Passengers and goods traffic are the two aspects of any form of transportation system. Each transport system depicts different characteristics of passenger and goods traffic. Moreover, in the tiny hilly
state of Manipur, the system of rail and water transport is out of sight. The road transport, therefore, is used for bulk of the passenger and goods traffic in the state. The air and water transport too to some extent help in the movement of passenger and freight traffic.

ROAD TRAFFIC

Physiography allows only the road transport in Manipur among the various land transportation media. It is almost entirely reposable to carry inter- and intra-state transporation of both passenger and goods traffic. There are a number of agencies, which carry both passenger and freight traffic internally as well as externally. Before advent of the government transport agency- the Manipur State Transport (M.S.T.), private agencies like Manipur Drivers Union (M.D.U.) operated transport services internally, as well as externally upto Dimapur during the 1930's and 1940's. However, during the late 40's, on the 15th August 1949, the State Government started the M.S.T. as a department to fill up the gaps left by the private operators. It was converted into the Manipur State Road Transport Corporation (M.S.R.T.C.) in 1976. It operated both
passenger and freight traffic in and outside Manipur. During the 1960's and 1970's it took sole responsibility of inter-state passenger traffic. But during the 1980's, private agencies emerged on the scene to share the transport responsibilities to some extent. In case of goods agencies like ABC India Limited, M.D.U., Manipur Apex Co-operative Marketing Society, Food and Civil Supply Department, Public Works Department and a host of private operators are operating their fleet of buses and trucks in the movement of inter- and intra-state goods traffic.

PASSENGER TRAFFIC

Map 29 unfolds the general passenger bus traffic flow in Manipur, both in the valley and hills, during the middle of the year 1986. Frequency and density of passenger buses plying on different routes radiating from or converging at Imphal are influenced by the density of population, presence of good roads and a number of social, cultural, and physical factors. It also shows the differences in the density of traffic flows from one route to another and depicts and following general features and characteristics.

(1) Concentration of all passenger buses from different directions with varying densities at Imphal.
(2) Imphal, being the main centre of all routes serves both the terminating and originating place for all traffic, while other small towns, district headquarters and administrative centres serve as originating and destinating places for different routes at varying wave lengths and density.

(3) Decrease of traffic density is noticed on all routes away from Imphal.

(4) Existence of one main primary regional transport centre is shown and the other routes serve as its tributary and distributory arteries. But development of some secondary regional centres are also seen such as Churachandpur and Ukhrul. These two secondary centres also serve as the centre of concentration for a limited number of routes of different density and frequency. A few buses ply in between Churachandpur to Santing (20 km), Thanlon (150 km), Parbung (226 km) and Sipikwan (Tipaimukh) (256 km), and from Ukhrul to Rahachunou (76 km) and 4 bus services to Hunding (4 km) and Awang Kasom (51 km).

(5) Traffic density is minimum at the terminals and no traffic saddle lies in between the two centres and
the main centre Imphal. However, due to physical
isolation, at Jiribam, the main traffic is attrac-
ted towards Silchar (Assam) and hence, a traffic
saddle may be expected considering Silchar as a
main Primary centre outside Manipur. It was found
from the personal observation that bus services are
very frequent in between Silchar and Jirighat (Assam)
than Jiribam and Imphal.

(6) Variation in the density of bus traffic is
observed on different routes (during the year 1986).
Indo-Burma Road has got the highest density of bus
services (230) by about 110 buses upto Thoubal per
day. Density decreases abruptly from Thoubal as 80
bus services are diverted towards Yairipok and 20
in and around Thoubal. About 30 buses services ply
in between Imphal and Wangjing and 25 upto Sugnu, and
13 to Chandel. On the Tiddim Road, the density is
about 150 services. The density decreases slowly
beyond Bishnupur, and upto Churachandpur the servi-
ces are only about 50 per day. Away from Churacha-
ndpur the bus services are meagre. On Imphal-Dimapur
Road, the bus services are about 140 per day upto
10 kms and beyond that the density goes on decreasing from one centre to the next centre (one terminal to the next terminal). On the Imphal-Ukhrul Road, the density of services is about 60 per day, and 80 per day on the Imphal-Mayang Imphal Road. There are about 60, 40, 30, 20 and 15 daily bus services on New Cachar Road, Imphal-Pukhao Road, Imphal-Kangchup Road respectively. The last 3 route are of short distances, less than 20 kms.

(7) On the basis of available data collected from the personal investigation, it is found that internally short distance services up to the range of 1100 km from Imphal are operated by both private and M.S.R.T.C. buses, while long distance services are rendered by MSRTC to connect the remote villages in the midst of the densely forested hills. The MSRTC has connected Sipikwan (Tipaimukh) (322 kms) via Churachandpur on the south-west corner of the state bordering Mizoram, and Jesami (202 kms) via Ukhrul on the extreme north-east, bordering Nagaland.

(8) The Map 29 also displays the variation in the pattern of traffic flow. This is due to varia-
tion in the degree of diversification. The pattern on Indo-Burma Road is more significant since there are a number of latitudinal diversification as well as longitudinal terminals. While Tiddim Road and Imphal-Dimapur Road have less latitudinal diversification and more of longitudinal terminals. Imphal-Ukhrul Road also shows some latitudinal diversions while other roads have less number of diversions or no diversions at all.

(9) Another peculiar feature is the resemblance of traffic pattern/system as a living organism. The traffic flow is a living organism in the sense that the flow is continuous from small centres to the main centre and reciprocal response to the small centres/terminals on all routes. Imphal, the main centre, acts as its brain and master control body, while the different roads on different directions serve as its nerves. Through these routes, the secondary regions and villages depend for the varied services-economic, social and infrastructural on Imphal- the nerve centre of the state.

(10) An important feature of the traffic flow
is the movement of goods along with passengers in the buses. Most of the perishable goods such as vegetables, raw fishes and different items of daily consumptions are brought to Imphal by buses. There are no separate buses or trucks to carry such goods, which are collected from small farms from various localities. The farmers themselves bring those materials to the main town in the buses with them. While non-perishable goods for whole-sale distribution in the state are carried by trucks from Imphal to other small markets and towns.

THE CAUSAL FACTORS

The variation in the density of passenger traffic flow on each route is influenced by different factors singly or in combination. These factors are analysed herewith.

1. The Level of Economic Development: An efficient system of transport is a must for the economy of any country. The economically developed regions have higher density of roads and transport arteries. In
a backward and hilly state like Manipur, population is concentrated mostly along the roads, more favourably on the alluvial plains than in the hills. Neatness to the roads is advantageous to the dwellers both in their movement and transhipment of goods. The level of economic development influences the traffic density on the road for the frequent trips of the people to one or other centre for various purposes. The plain areas are more developed than the hills in the state. In the plain, the traffic density on the road is higher due to the higher level of economic development in the field of agriculture, industry, cultural and socio-economic conditions of the people etc. But in the hills, the level of economic development is lower which has led to lower density of traffic.

2. The density of population and surface condition of Road: The higher the density of population, the higher is the density on traffic. The plain districts of Imphal, Bishnupur and Thoubal have the high density of population as well as a higher density on road traffic. But the hills districts are having lower density of
population, and consequently a lower density of traffic. Tamenglong district with the lowest traffic density has the lowest density of population too. The lower density of population of the hill districts may be attributed to the poor road surface, and lesser traffic density on the road. But on the good surfaced roads, traffic density is higher as on Indo-Burma Road, Tiddim Road, Imphal-Dimapur Road and other roads in and around Imphal.

3. The Number of Vehicles: The number of vehicles, especially the buses, plying at different routes directly affect the traffic density. The higher the number of buses, the faster will be the movement and greater the coverage of distance per unit of time. The frequency of bus services are very high on the Indo-Burma Road as every 2-3 minutes one bus leaves Imphals on this route. While frequency of buses is one bus for every 4-5 minutes on Tiddim Road, and one hour for every 6-8 minutes on Imphal-Dimapur Road.
4. **Physiography**: Physiography plays important role primarily on the construction and pattern of roads. On the level land the construction of road is easier and the movement of passenger traffic is with little friction. While on curved roads with narrow bridges and culverts, in the hill areas, there are obstructions on easy, speedy and free flow of traffic. In the plain districts of Imphal, Bishnupur and Thoubal, the roads are laid straight, wide with broader bridges, allowing faster movement of buses from one place to another, while the roads in the hill districts are constructed on the sides of the steep slopes of hills, and are generally narrow with many curves and bends which lead to slow movement of traffic. These difference in the density of traffic flow are influenced by topographic variations.

5. **Location of administrative centres, educational, and public institutions**: With the administrative reorganisation of the state into eight districts and 30 sub-divisions, many places have become administrative centres. Educational and public institutions have been established at important centres and towns.
Consequently these centres have been linked with Imphal, which attract traffic from these centres to Imphal for variety of services. The density of traffic has increased on these routes. Heavy traffic on Indo-Burma Road via Thoubal upto Chandel, Bishnupur and Churachandpur on Tiddim Road, Senapati on Imphal-Dimapur Road are mainly due to these factors.

6. The existence of local daily markets: The density of traffic flow is also affected by the existence of daily markets on different routes. Density of traffic is high on the routes where there are such local markets. In case of Indo-Burma Road, important local daily markets are Lilong, Thoubal, Yairipok, Wangjing Pallel, Chandel, Kakching, Sugnu and many other small daily markets, while on Tiddim Road, Nambol, Qinam, Bishnupur, Ningthoukhong, Moirang, Kumbi, Wangoo, and Churachandpur are important market centres. On the Imphal-Dimapur Road Sekmai, Motbung, Saparmeina, Kangpokpi, Senapati, Maram and Mao are the important daily markets. Existence of such daily markets enforces the population to move along with the goods
for sale from one place to another. Hence traffic density is higher on these roads. While on other roads, the low traffic density is mainly due to the least number of such daily markets. There are only one or two markets on other roads. Kangchup and Lamsang on the Imphal-Kangchup Road, Khumbong on the New Cachar Road, Samurou, Mayang Imphal and Wangoi on Imphal-Mayang Imphal Road, Lamlai, Litan and Ukhrul on Imphal-Ukhrul Road, Sagolmang and Saikul on Imphal-Pukhao Road are the few notable daily markets, which attract less traffic on these roads.

7. The Road Pattern and Quality of Road: The straightness of road favours a more traffic density than a curved one. In the plains, the roads are always laid straight and wide with good quality of the road surface, gradient and visibility, which favours the average speed and capacity than the hill roads. If the road is unsurfaced and narrow, the speed will be lesser and even the vehicle life will be shortened and accidents are frequent. Most of the roads in the hills are narrow, curved and unmetalled, and follow a long circuitous pattern e.g. Churachandpur-Tipaimukh
Road in Churachandpur district follow such a pattern.

**GENERAL CONDITION OF PASSENGER TRANSPORT**

From the above analysis, it is inferred that the road transport, being the sole medium of movement, it poor in Manipur except in the plain districts of Imphal, Thoubal, and Bishnupur. Private buses are operating mostly in the plains, and a few in the hills, where the quality of the road is good. Only the Manipur State Road Transport Corporation is operating its services upto the remotest part of the state to its maximum efficiency.

**Private Operators**

Prior to 1949, all means of transport in Manipur were in the hands of M.D.U. and Manipur Motor Association (M.M.A.) led by Mr. B.Barah. These agencies operated their services, both inside the state and outside Manipur upto Dimapur. The type of vehicle used were 4 cylinder type i.e. 1/3rd of the present size. Seats were not comfortable and usually planks were laid over the board to enable the passe-
ingers to sit only. Before the Second World War there were only 12 such vehicles, and after the war the number increased to about 100. Some routes were plied daily, others once, twice or thrice a week. Before the advent of automobiles, the traffic as well as the mode of transportation were quite rude. Bullock carts were used over the Imphal-Dimapur Road for passenger and freight traffic. They carried about 6 mounds (2.5 quintals) per cart. But during the 1930's power driven automobiles were introduced. The wheels of bullock carts were also wooden. But soon the iron spoke wheel replaced the wooden. These vehicles carried both passenger and freight traffic. Average carrying capacity were only 12 maunds and can accommodate about 10 to 15 persons. These were the new additions and steps towards modernisation of transport system.

M.S.R.T.C.

Though the private operators and unions served the public with commendable enthusiasm and zeal, adequate transport facilities could not be
provided and there were wide gaps between the requirements of the public and the services offered. To fill up these gaps, the Government of Manipur started Manipur State Transport on August 19, 1949 as a department to supplement the then existing transport services. On its start, it had a fleet of 7 buses, 12 trucks and 2 station wagons.

In the meantime those private operators stopped their service on considering their interest and profit. In course of time the MST grew in size. On March 27, 1976, MST was converted to Manipur State Road Transport Corporation (MSRTC) taking over all assets and liabilities of the Transport Department. The Corporation is managed now by a Board of directors consisting of 7 members, 4 from State Government including its General Manager and 2 from Central Government and one non-official nominated by the State Government. The General Manager is the head of the Corporation, who is assisted by heads of various branches and sectors.

In 1976, the MSRTC had operated on 30 routes covering about 1,717 kms (Inter-state, district
and city services). In 1982-83, the total fleet strength was 120 buses and 37 trucks. During 1984-85, it had only 86 buses and 34 trucks, of which on the average only 30 buses and 20 trucks were on road.

During the year 1984-85 the corporation carried about 10,00000 (ten lakhs) of passengers and operated on some 12 lakhs kms. of distance. In 1985-86, it had 127 buses and 51 trucks. Of which 90 buses and 31 trucks at the average were on road. With the addition of 9 super Delux buses it had considerably improved in its operation of services on all of its routes during the period. In particular the new super De- luxe services which have been introduced from Imphal to Dimapur and Imphal to Moreh, by providing the passengers quite a luxurious journey, have rendered services to the best satisfaction of the people.

The corporation have been continuing to provide much better facilities to the passengers. Right from its establishment the corporation had monopoly over the Inter-state services, viz, Imphal - Dimapur Service and recently introduced Imphal - Silchar via Jiribam Service, on which the losses and deficits have always exceeded the income. The main reasons for heavy losses were
(1) due to mixed operations along with other private operators almost on all the routes throughout the year (2) taking away of the monopoly of transportation of goods of all Government Departments which actually had contributed nearly 50% of the monthly income of the Corporation (3) very sharp and rapid rise in the price of all the motor parts and other materials, particularly tyres and tubes etc. (4) Heavy and rapid increases in the staff expenses due to increase in A.D.A. and other allowances. 1

During the preceding two year, the corporation had shown its capabilities to render the best services to the public. In the year 1984-85, under traffic operation it had three types of services, viz, (1) Inter State Service from Imphal to Dimapur, and from Imphal to Silchar via Jiribam, (II) District services and (III) City services. During the year it had 23 outstations. There were 39 routes under district service and 10 routes under city services. In addition to these services, the corporation also operated School services, within Imphal area on contract basis. It had continued to have three major workshops, viz, (1) Running Maintenance workshop for all the buses/trucks. (2) Light
Vehicle-Repairing workshop at Moirangkhom Yard and (3) Engine Reconditioning and body repairing/construction sections at Mantripukhri H.O. which provide the required services to the corporation and also to the State Government Departments.

GOOD TRAFFIC

It is very difficult to have a comprehensive idea of any of the elements of goods traffic flow in Manipur because of the lack of data related to it. There is no centralised agency for goods transport. It is entirely in the hands of the private operators. In Imphal there are various agencies operating on goods traffic of which A.B.C. (Assam Bengal Carrier), is the biggest agency operating more than 300 trucks per month regularly, while other agencies are operating lesser number of vehicles to carry different commodities. These agencies inter-state goods traffic, especially inward traffic. The data available from the police check-posts and forest check-posts are the only means to have the idea
of goods traffic on important highways and roads. Besides, the number of goods vehicles counted on the important roads also give a general idea of the movement of goods.

The goods traffic density map (Map 30) depicts the origin and destination points of goods. It shows that there is a heavy concentration of goods traffic on the Imphal-Dimapur Road (N.H.39) with a flow of about 120 to 150 trucks per day carrying different items of goods. Table 6 gives a general idea about the nature and type of goods as well as the origin and destination. Moreover, the yearly distribution of rice by the Good and Civil Supply Department is also shown by Map No. indicating the volume as well as the destination.

Nature of Goods Traffic

It is evident from Table 6 that the nature of goods carried in different districts is closely associated with the nature of economic activity in the district. Food grains, fuels, textile goods, are transported from neighbouring
TABLE 6.1
AVERAGE WEEKLY GOODS TRAFFIC TERMINATING AT IMPHAL

<table>
<thead>
<tr>
<th>From</th>
<th>Number of Trucks</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>ITEMS</td>
</tr>
<tr>
<td></td>
<td>Foodstuff</td>
</tr>
<tr>
<td>Dimapur</td>
<td>60</td>
</tr>
<tr>
<td>Gauhati</td>
<td>20</td>
</tr>
<tr>
<td>Calcutta</td>
<td>5</td>
</tr>
<tr>
<td>Others From</td>
<td>5</td>
</tr>
</tbody>
</table>

176
### Table 6.1

#### Average Weekly Goods Traffic Originating From Imphal

<table>
<thead>
<tr>
<th>TO</th>
<th>Numbers of Trucks</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>I T E M S</td>
</tr>
<tr>
<td></td>
<td>Foodstuff Non-food Iron &amp; Iron sheets Cement Gas Others Total</td>
</tr>
<tr>
<td>Moreh</td>
<td>2 1 1 1 3 4 8</td>
</tr>
<tr>
<td>Kakching</td>
<td>4 1 1 1 4 11</td>
</tr>
<tr>
<td>Chakpikarong</td>
<td>1</td>
</tr>
<tr>
<td>Chandel</td>
<td>1</td>
</tr>
<tr>
<td>Churachandpur</td>
<td>4 2 1 1 8</td>
</tr>
<tr>
<td>Bishnupur</td>
<td>3 1 1 5</td>
</tr>
<tr>
<td>Ukhrul</td>
<td>4 2 1 8</td>
</tr>
<tr>
<td>Saikul</td>
<td>1 1 2</td>
</tr>
<tr>
<td>Tamenglong</td>
<td>1 1 2</td>
</tr>
<tr>
<td>Nongba</td>
<td>1 1 2</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>50</strong></td>
</tr>
</tbody>
</table>
states through N.H.39 and 53, while the forest produces are brought from neighbouring hill districts to Imphal and other centres (Map 31).

The Casual Factors: The density and nature of goods traffic themselves speak of their casual factors. They are (a) The situation of the state, (b) The spatial structure of economy and degree of economic activity, (c) the density and characteristics of population, (d) the distribution of urban settlements, (e) the pattern of roads, and (f) the surface condition of routes.

a) The state is traversed by the two National Highways No.39 from the north to south east, and No.53 from west to the centre, on which the volume of goods traffic is higher (Map 30).

b) The two plain districts of Thoubal and Bishnupur have a prosperous agricultural and piscicultural economy. Hence, the goods traffic on the roads in these districts are mainly agricultural produces (Map 32) and fishes. In hill districts, with thick growth of forests, forest produces comprise the goods traffic (Map 31).
c) The density of population is unevenly distributed. The densely populated districts of Imphal, Thoubal, Bishnupur are also well served by a dense network of roads in comparison to the hill districts. The movement of goods traffic is quite higher in the densely populated plain districts.

d) The urban centres are mostly located in Imphal, Thoubal and Bishnupur districts. As urban centres are the transport nodes, the movement of goods traffic is mostly concentrated on those roads which connect the nodes.

e) Like the passenger traffic, goods traffic densely is affected to a limited extent by the road pattern. The pentagonal roads in the hill districts have less traffic than the plain districts.

f) The surface condition also influences the goods traffic to some extent. On the roads with poor surface condition and lack of bridges, the goods traffic is smaller and liable to interruptions.

INLAND NAVIGATION

River traffic in Manipur has now declined to
a dead point except some traffic along the Jiri river. The decline may be due to opening of new roads, construction of bridges to connect the villages on either road. Earlier the river traffic flourished well on all the important rivers of the valley, and lakes. Several canals also had been dug out for navigation between the rivers. However these canals are left unused since a long time as marshy areas. Now a days the country boats and canoes are found only in the surrounding fishing villages of Loktak Lake and other adjoining lakes in Bishnupur and Thoubal district which are used mainly for fishing purposes only. The one time water traffic between Moirang and Thanga, Sendra have been stopped due to the opening Moirang-Sendra-Thanga Road.
REFERENCES


2. White, H.P.