

# CHAPTER-10

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## REGIONAL RELATIONSHIP AND BOGRA'S POSITION IN THE REGION :

(PART:-1)

## REGIONAL RELATIONSHIP

Urban centres interact with settlements in the adjacent region as well as with far-flung areas. These interactions manifest themselves in various forms such as the movement of people, goods and communications. Regarding the amount of interaction exerted on region Yeates and Garner (1971) point out that many factors, out of which two general features, stand out as particularly important at all urban centres, in accordance with variation in the volume of interaction generated are the population size of the urban area and its functional specialisation.

Therefore, the influence of urban centre on or interaction with the surrounding areas constitutes a significant aspect of the theme of urban-region relationships and at present, it is a major concern of urban geographers specially for planning purposes. It has been widely accepted by the geographer and other planning machineries that if the study of urban centres is not furnished with the study of regional relations, then it leads to an incomplete form of study.

The study of city-regional relationship gained maturity by the notable works of Mekenzie (1933), Harris (1940), Smaller (1944), Bogue (1949), Green (1955), Dickinson (1956) and so on.

In our study of Bogra's interaction with the surrounding area, the following points<sup>are</sup> similar to those put forth by Borah (1944) in his study of Gauhati :

- (1) The extent and degree of Bogra's influence on its neighbouring areas ;
- (2) Character of Bogra's influence in different distant zones or its environs;
- (3) Gradient of influence from the town to the surrounding areas;
- (4) The spread of Bogra's influence related to its relative accessibility; and
- (5) The spatial pattern of urban influence and the reciprocity of the rural economy on the town.

#### 1. DELIMITATION OF ZONE OF INFLUENCE

As a normal process, the degree of influence of the towns on its surrounding regions decreases with distance. There lies an intense interaction in the area, closer to the town, which has direct influence. The supply zones which extend far away from Bogra town, cater to the needs of the market which serves a large clientele because of the central functions like retailing, banking, health services, transport, entertainment etc. Beyond this, there lies a much larger area whose people, though not direct participants, are more or less tied to the town in many ways. And finally, there is an area of economic, cultural relationship where the central town's influence is diffused and limited.

However, the extent of the region varies greatly depending on the nature of different criteria used and the purpose for which they are defined. Hence, different terms like hinterland, umland, urban field, zone of influence, sphere of influence, catchment area, tributary area etc. have been used to represent the city region. Again, the zone of influence is purposively sub-divided in many ways like primary and secondary zone of influence. The third category zone may be the less significant or specialised in some functions.

At the outset, the two approaches to delimit the zones of influence commonly used namely 'radial' and 'concentric' are considered. Centripetal and centrifugal forces are meaningfully examined. In this study different level of forces for different indices are evolved. Hence, the degree and extent of influence or interaction varies according to the indices giving rise to different types of zones of influence.

#### **Method of Delimiting Zones of Influence by Empirical Observation:**

It can be remarked that demarcation of the town-region cannot be made with mathematical accuracy. The criteria for defining the region widely vary and there is no specific method for accurate demarcation. However, we are to follow the conventional ways to delimit the different orders of complementary region of Bogra town empirically and theoretically.

In our study, political boundary (District, Upazila, Union, Mauza) is considered to determine the zone of influence.

In case of bus services, newspaper circulation etc. accessibility from the roads are considered for delimiting the zone of influence.

Normally interaction between the town and its environs is controlled by the physical barrier, inadequate road network etc. In case of Bogra, the presence of the Jamuna and Padma rivers delimit the primary or secondary zones of influence. Various variables like vegetable, milk, whole-sale commodities including special type of items, fruits, fish, newspaper circulation, bus services, passenger flow, education services, Medical services etc. have been chosen for delimiting their respective supply zones and a composite cartographic representation of the same has been worked out to gather a comprehensive knowledge of the over all sphere of influence of Bogra.

#### Milk Supply Zone:

Bangladesh has an acute shortage of milk and milk products, hence it relies on imported milk powder, which is very expensive and beyond the purchasing capacity of the lower income group.

In Bogra, a private entrepreneur operates a mini dairy farm (Rajiv Dairy Farm) at Baldhar which is about 11 kilometres South-West of Bogra town (Fig.7.12). The daily supply is about 200 litres to the town. Ghee (clarified butter) is also produced.

As milk is a perishable produce, its supply zone is

restricted to few hours of travel to Bogra town. In some areas, there is a lack of instant transport facility which has initiated supply of varied forms of milk products.

Table 10.1 Daily Average Milk Supply to BOGRA Town, 1988,

Milk Supply from (1)	Supply (in litres) (2)	
<u>UNIONS</u> (Bogra Upazila)		
1. Madla		200
2. Sabgram		145
3. Khottapara		40
4. Rajapur		45
5. Shakaria		45
6. Lahiripara		45
7. Fafore		30
8. Erulia		30
9. Asekpur		20
Total		600
(1)	(2)	%
<u>UPAZILAS:</u>		
1. Bogra	600	20%
2. Kahaloo(only Dairy farm)	200	6.67%
3. Bariakandi	400	13.33%
4. Gabtoli	300	10%
5. Sonatola	1500	50%
Total	3000	100%

Source : Field Work.

There is no organised way of collecting milk. Some people have engaged on daily basis to collect milk from different villages or from village bazars. Small quantities of milk is also brought by individuals from proximity areas.

However, information was collected from different suppliers to restaurants and Yoghurt Makers (curd). By contacting milkmen at ferry ghats and other places information was also collected. The following Table 14.1 and Fig. 14.14 show the supply of milk from the tributary areas. From the table it is evident that out of the total 3,000 litres, Bogra Upazila yields 600 litres (20%) of milk of which a large quantity comes from East Bogra. Sonatola Upazila yields the highest quantity (50%). The largest supply centre, Shukhanpukur in the same Upazila supplies 1,200 litres. The above mentioned dairy farm supplies 6.66%. On the whole, East Bogra yields about 90% milk supplied to Bogra town.

It should be mentioned here that there is great potentiality for pasture in the recent flood plain region of East Bogra. It is observed that the poor, by rearing cattle, make a secondary source of income.

#### Vegetable supply and Redistribution:

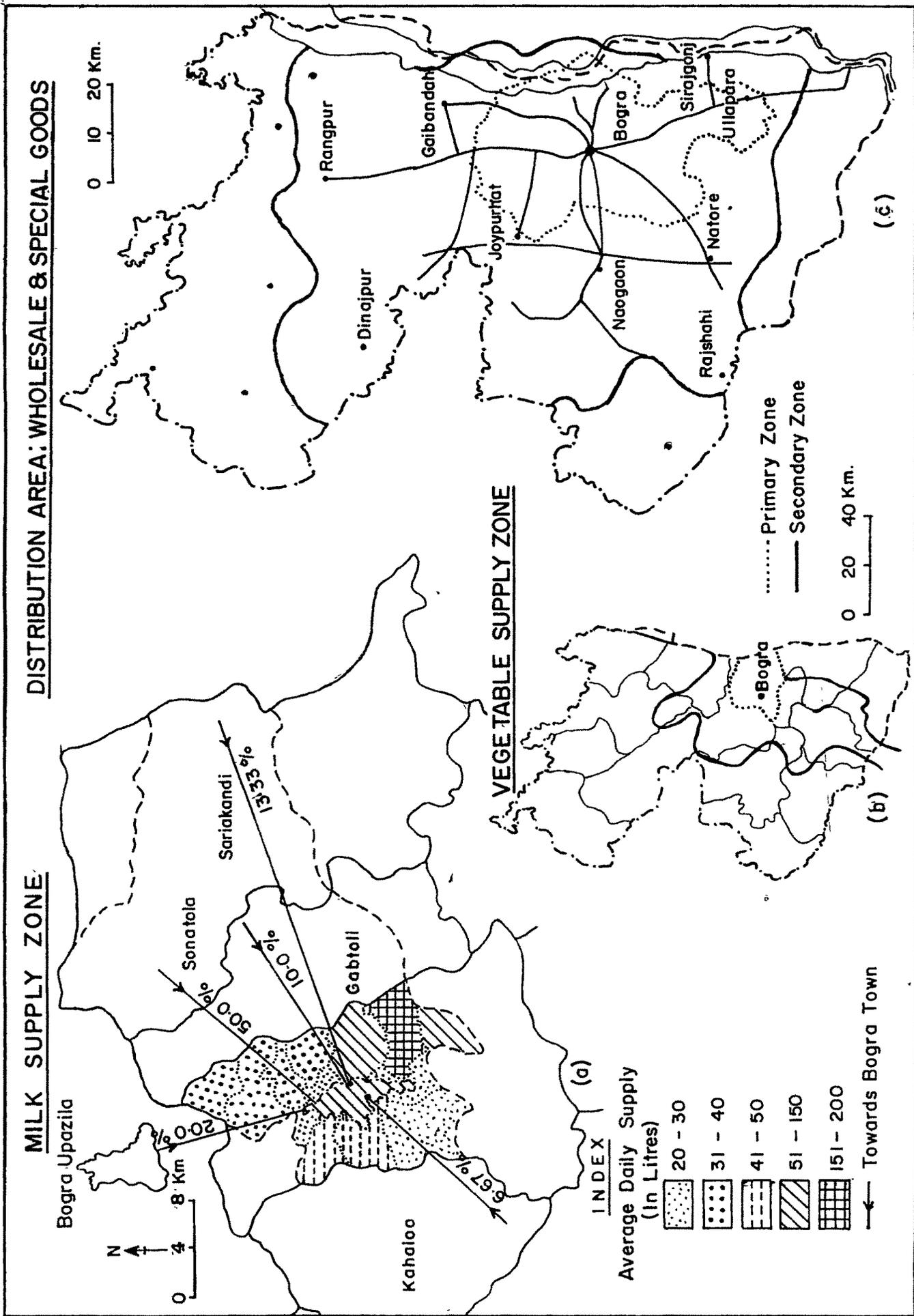
Like milk, vegetable is carried by producers individually to Bogra town. Some persons are also engaged for selling vegetables collected from rural markets. All sorts of vegetables and some spices are grown in eastern and northern flood plains. East Bogra grows the country's best quality of chilli. Excess of demand is met by other distant areas including India. Generally onion and garlic are imported from India by the government. The following vegetables besides those locally produced are supplied from the neighbouring and distant areas (district wise) as mentioned:

Brinjal	-	Naogaon, Jessore
Parvar (Potto)	-	Rangpur, Joypurhat, Gaibandha
Papaya	-	Natore, Jessore
Onion	-	Rajshahi, India also.
Garlic/Ginger	-	Taragonj (Rangpur)
Potato	-	Joypurhat, Rangpur

As regards transport of vegetables, they are carried by train, rickshaw-van and on shoulders. In Bogra town, the central market comprises two markets i.e. Rajabazar and Fattah Ali bazar which are on either side of the railway line market. Another important market centre is Kali<sup>o</sup>tolahat which performs wholesale trade along with Rajabazar. There are about 20 'Arot' (warehouse) where the vegetables are brought from distant areas. The supply zone is shown in Fig. 10.1b. Through interrogation with the vegetable vendors (194) information was gathered regarding the supply of vegetables, producing areas and place of residents of the vendors. It revealed that about 65% vegetables come from eastern and northern flood plain areas and in the same way 80% people out of the 194 were residing in the producing area. From the survey it was observed that daily average sale of vegetables was 200 quintals.

The central market serves the entire town as well as the surrounding area ranging 5 to 10 kilometres from the municipal limit.

The supply and marketing of vegetables, a product of daily need, gives rise to definite daily movement which is inter



twined in the life of the urban area.

#### Fruit Supply Zone:

There is an interaction of Bogra with other districts also in terms of fruits supply. Some quantity of fruits are produced locally. Information collected about the supply of fruits from all the wholesalers of fruits is shown in Table 10.2 and Fig 10.2a

#### Mango

40 % mango is carried from Dinajpur and  $\frac{45}{1}$ % from Nawabgonj, and only 15% from Naogaon and surrounding area. During the season an average daily supply constitutes 2 to 3 truck-loads and for the year it is approximately 80 to 90 truck-loads.

#### Pineapple

65% of the total supply comes from Madhupur (Tangail District), 30% from Rangpur and the rest of it from local area. Approximately 155 truck loads in a year (seasonal) is recorded as the supply.

#### Water-Melon

Out of 115 truck loads 40% is local and 60% from Natore district.

#### Coconut and Green-Coconut

Out of the annual 100 truck-loads, about 60% comes from



Khulna and 40% from Jessore. The quantity of coconuts coming from the nearby areas is negligible.

Lichee :

In case of supply of lichee, Rajshahi and Dinajpur contribute 50% and 40% respectively and the balance comes from local area.

Redistribution :

30% mango, 50% pineapple, 40% coconut, 15% water-melon and 20% lichee serve the rural service centres within the upazilas and a small quantity of pineapple (10%) and coconut (5%) are supplied to the market areas outside the district limit.

Table 102 supply of Fruits and Redistribution. (season time.1987-88)

A. Supply

- (1) Mango : Total 90 Trucks = 100%  
 -From -> Local Area - Dinajpur Nawabgonj Naogaon  
                   10%           40%           45%           5%
- (2) Pineapple : Total 155 Trucks = 100%  
 -From -> Local Area Rangpur Madhupur (Tangail)  
                   5%           30%           65%
- (3) Water-Melon : Total 115 Trucks = 100%  
 -From -> Local Area Natore  
                   40%           60%
- (4) Coconut and Green Coconut : Total 100 Trucks = 100%  
 -From -> Khulna Jessore  
                   60%           40%
- (5) Lichee : Total 100%  
 -From -> Local Area Rajshahi Dinajpur  
                   10%           50%           40%

**B. Redistribution (out of 100%)**

<u>Name of the district Limit</u>	<u>Town Area</u>	<u>Upazilas</u>	<u>Adjacent Areas of Fruits</u>
Mango	70	30	
Pineapple	40	50	10
Coconut	55	40	5
Water Melon	85	15	
Lichee	80	20	

Source : Field Work

#### Fish Supply Zones :

Fish is one of the most important daily items in the diet and a means of livelihood in Bangladesh. Though the supply of fish is in great quantity, yet it is insufficient. The supply is largely met by fresh water fish and hilsa fish. The consumption of sea fish is very insignificant in the Northern Region. Hilsa fish which is supplied from the Southern Coastal and some riverine areas of Bangladesh satisfies practically the major part of the demand. The Barind Tract which has numerous ponds is a rich source of fish. The supply from the rivers and depressions (bil), which are the perennial sources of fish, is declining due to siltation and utilisation of water for irrigation. Fig. 10.3. corresponding to table 10.3. exhibits the source areas of fish and supply towards Bogra town. Information was collected from wholesalers.

Table 10-3 Fish Supply &amp; Redistribution

## (1) Hilsa Fish :

-yearly supply to Bogra Town 11,200 (28,000 Maunds) quintals

<u>Source Areas:</u>	<u>Percentage of Total Supply</u>
(1) Chittagong region	15%
(2) Chandpur region	20%
(3) South Coastal region	60%
(4) Goalando Area	5%
<u>-Redistribution</u>	
(1) For Bogra town	40%
(2) For surrounding area	35%
(3) Other areas (Naogaon, Gaibandha, Joypurhat district and Singra upazila)	25%

(2) Fresh-water fish:

-Yearly supply to Bogra Town- 2,600 quintals (wholly consumed in local market)

<u>Source Areas :</u>	<u>Percentage of the total supply</u>
(1) Nagarbari-Singra Belt	55%
(2) East-Bogra (rivers and bils)	7%
(3) West Bogra (Shibgonj and Dupchachia) and Naogaon District	20%
(4) Other Upazilas	8%

Source : Field Work

## Hilsa Fish Supply :

Approximately 11,200 quintals (28,200 maunds) of fish in a year is supplied to the town. Out of the total supply about 60% fish comes from Barisal-Patuakhali area, 15% from Chittagong region, 20% from Chandpur and 5% from Goalando.

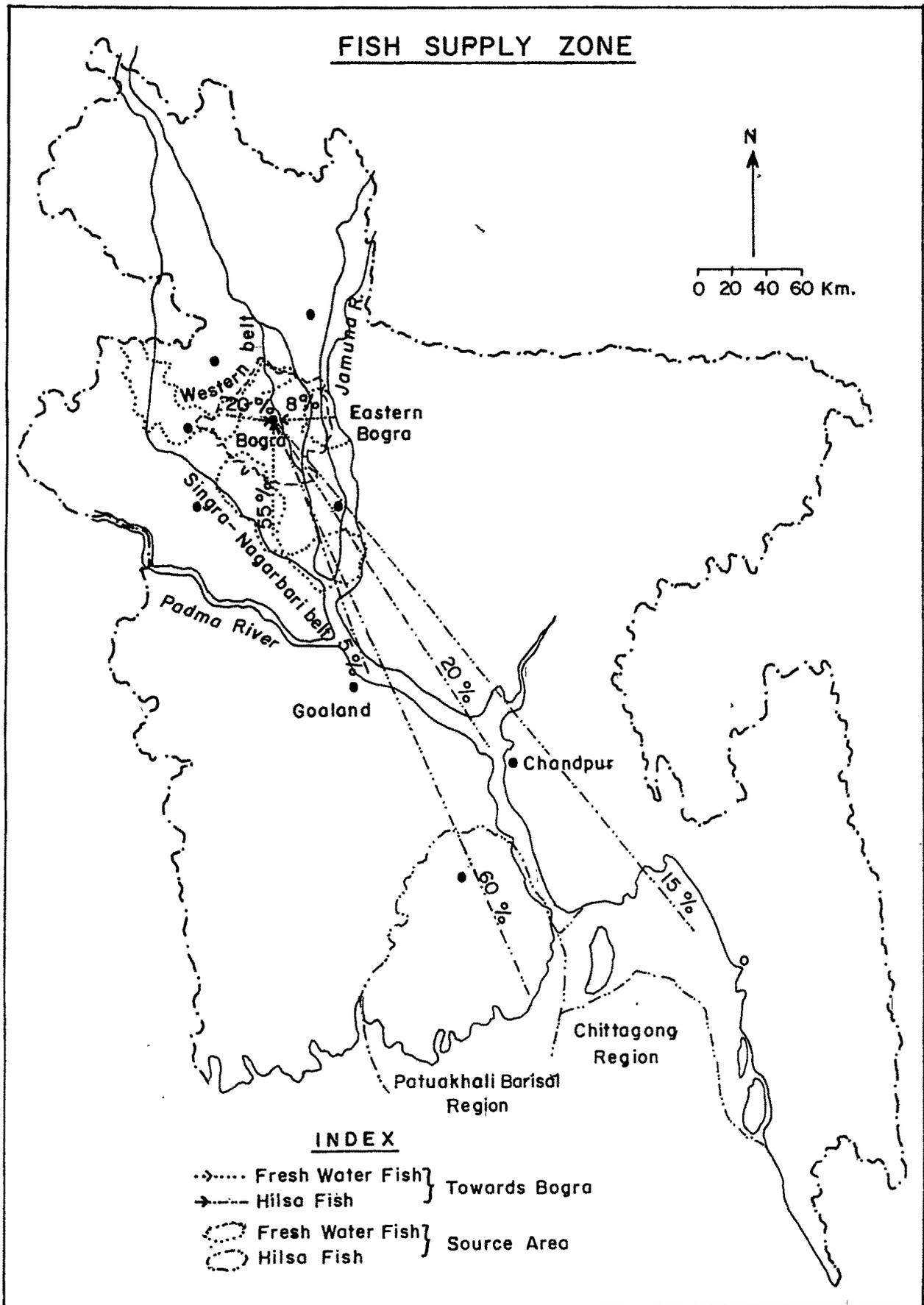


Fig. 10-3

#### Fresh-Water Fish :

Nearly 2,600 quintals of fish in a year is supplied to Bogra town. The major portion of fish comes from Nagardari-Singra (Chalan bil) belt, ponds of western Barind area, eastern riverine areas and depression.

#### Redistribution :

It is to <sup>be</sup> note that entire supply of fresh-water fish is consumed locally in Bogra town. But about 25% of hilsa fish enters the market <sup>of</sup> the Upazila regions and a large quantity to the surrounding districts.

#### Wood Supply Zone :

Out of the total wood and other wood products supplied to Bogra town, 35% comes from Jssore, 30% from Dinajpur and 10% from Bogra district itself and the remaining comes from Naogon & (Fig.10.2b). Natore Districts Saw dust, shaving and fuel wood are essential commodities used by the people.

#### Trade Area: Wholesale and Specialised Goods :

From market survey, it is evident that wholesale trade area encompasses all most entire Bogra district, lower part of Joypurhat, Dinajpur and Gaibandha districts, upper parts of Sirajgonj and Natore districts. It covers an area of approximately 40000 Sq. km. The items traded includes various industrial products like match, utensils, ink, bakery products, etc. Except these various convenience goods, groceries, books,

cloth, machine parts etc. are traded. For special types of goods like agricultural machineries, pumping sets, vehicles (from cycle to automobiles), medicine, luxury items (T.V., Freezer etc.) have wide range of market. The limit of trade area expands farthest covering almost 3/4th of the Northern Region which may be regarded as secondary zone of influence. This zone expands beyond the Jamuna river upto a certain distance .

#### Education Service (Student Flow) :

Education is an important social function of urban areas which satisfies the needs of not only the local dwellers, but also of distant areas according to the standard of institutions. There is no institution of higher level at Bogra but for a number of different types of medium grade institutions, some of which are of regional and some of national importance.

To find out the influence area of Bogra with the help of this indicator, addresses of first year students (1987) from important institutions were collected namely, from three degree colleges, Law college, Institute of Vocational training, Polytechnic, Nursing Training, Medical Assistant, Primary Teachers Training, Commercial and Multi-Lingual short-hand Academy.

From the analysis it is found that the flow of students from distant areas are mainly for specific course of education including honours degree. Table.10.4 exhibits the number of students from different destination and fig.10.5a give

their distribution.

Out of the 4585 students Bogra Upazila alone holds 2233 (49%) of which Bogra and nearby areas contribute 25% of the students. Again, Bogra district (excluding Bogra Upazila) represents 32% of the total students and the whole district accounts for 81%. Therefore, 19% of the students are from other districts. 100 (2%) students coming from other districts beyond Northern Region are also shown in the figure.

Amongst the Upazilas, Gabtoli has closer contact with Bogra and sends more students (310). Other important areas are Káhaloo (218), Shibganj (200), and Sariakandi (194). The flow of students to various institutions in Bogra has a close relation to the proximity of the place, from where they originate or to the rapid and convenient mode of transport.

#### Medical Service Zone :

One of the important services provided by Bogra town is the medical service. This is an important indicator to delimit the town's zone of influence like education and other services. Different types of health centres in Bogra are of immense significance.

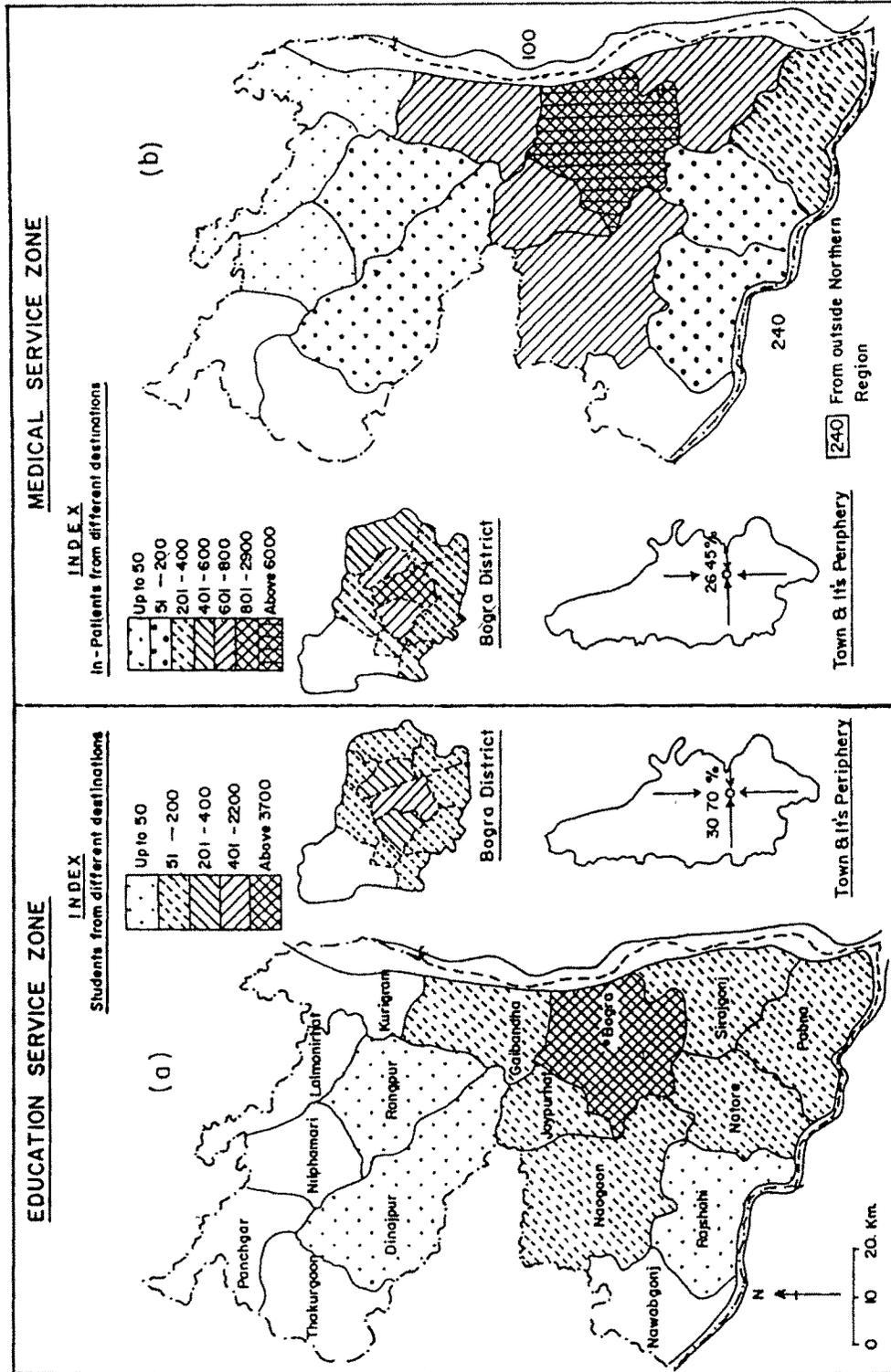


Fig. 10.4

**Table 10.4** Students and In-patients by their Place of Residence, 1987

	No. of Students	%	No. of In-Patients	%
* Total	4585	100%	10460	100%
1. All Districts (excluding Bogra)	878	19.00	3635	35.00
2. Bogra District	3707	81.00	6825	65.00
3. Bogra Upazila (excluding Bogra Environs)	1095	24.00	1125	11.00
4. Bogra Environs	1138	25.00	1805	17.00
5. Bogra Dist. Region (excluding Bogra Upazila)	1474	32.00	3895	37.00
* Total				
Upazilas				
	4585	100%	10460	100%
1. Kahaloo Upazila	218	5.88	657	9.63
2. Gabtoli "	310	8.36	743	10.89
3. Sariakandi "	194	5.23	435	6.37
4. Bonatola "	94	2.54	312	4.57
5. Dhunut "	82	2.21	238	3.49
6. Bherpur "	97	2.62	365	5.35
7. Nandigram "	72	1.94	305	4.67
8. Adamdighi "	88	2.37	235	3.44
9. Dupchanchia "	119	3.21	259	3.79
10. Shhibganj "	200	5.40	346	5.07
Districts				
1. Naogaon District	116	0.67	621	3.60
2. Joypurhat "	182	2.94	705	11.50
3. Sirajgonj "	157	0.84	600	3.22
4. Natore "	92	0.86	75	0.72

5. Fohna	"	55	0.35	221	1.42
6. Rajshahi	"	35	0.23	128	0.83
7. Rangpur	"	46	0.27	169	0.99
8. Dinajpur	"	27	0.15	117	0.65
9. Gaibandha	"	168	1.07	730	4.66
£ Others	"	100	2.00	240	2.00

Source : Information collected from respective departments.

for its people and its surrounding region, The most important hospitals are : Christian Mission Hospital and Mohammed Ali General Hospital of which Mission Hospital specially serves for the women and children. It mostly draws patients from the town and the adjacent Upazilas. For some specialised type of treatment, patients from surrounding districts are attracted to the private clinics. The General Hospital has wide service area. It is a fact that the expansion of medical service areas and the corresponding increase in the flow of patients are largely the results of transport development.

However, to delimit the zone of influence, addresses of in-door patients (1987) were collected from the Mission Hospital, General Hospital, T.B. Hospital, Eye-Hospital and other private clinics.

Table.10.4. Figure: 10.4b show the pattern of flow of patients from different areas. Of the total 10460 patients, Bogra and its proximity accounts for 17% and Bogra Upazila only 11%, Bogra district (excluding Bogra Upazila) 37% but the patients enumerating from the entire district is 65%, 240

(2%) patients are recorded as patients coming from beyond the Northern Region. Amongst the surrounding districts Naogaon, Joypurhat, Gaibandha and Sirajganj show a greater flow of patients ranging from 600 to 730.

The large movement of patients to Bogra for medical attention and treatment explains the reputation earned by its medical centres and also their accessibility and extent of influence on distant areas.

#### News Paper Circulation.:

The newspaper circulation from an urban centre is a sure indicator of measuring urban zone of influence. To highlight the positive role of newspaper circulation in the region, Smailes (1953:139) views that "their circulation areas reflect as satisfactorily as can any single index the extreme effective range of a city's regional influence as a community's focus".

Publication of newspaper in Bogra, is a tradition (Appendix I:30), but in the recent days, there has been a thrust in the publication of the same. At present, there are four dailies i.e the Karatoya, The Dainik Bangladesh, the Uttaranchal and The Uttar Barta; and three Weeklies i.e the Sharani, the kankon and the Jeebon. At the time of data collection, the printing of Dainik Uttaranchal was stopped.

Table IQ-5 reveals the daily and weekly (9050) average imprints circulation of news paper. The daily 'Karatoya' has the

# NEWS PAPER CIRCULATION FROM BOGRA

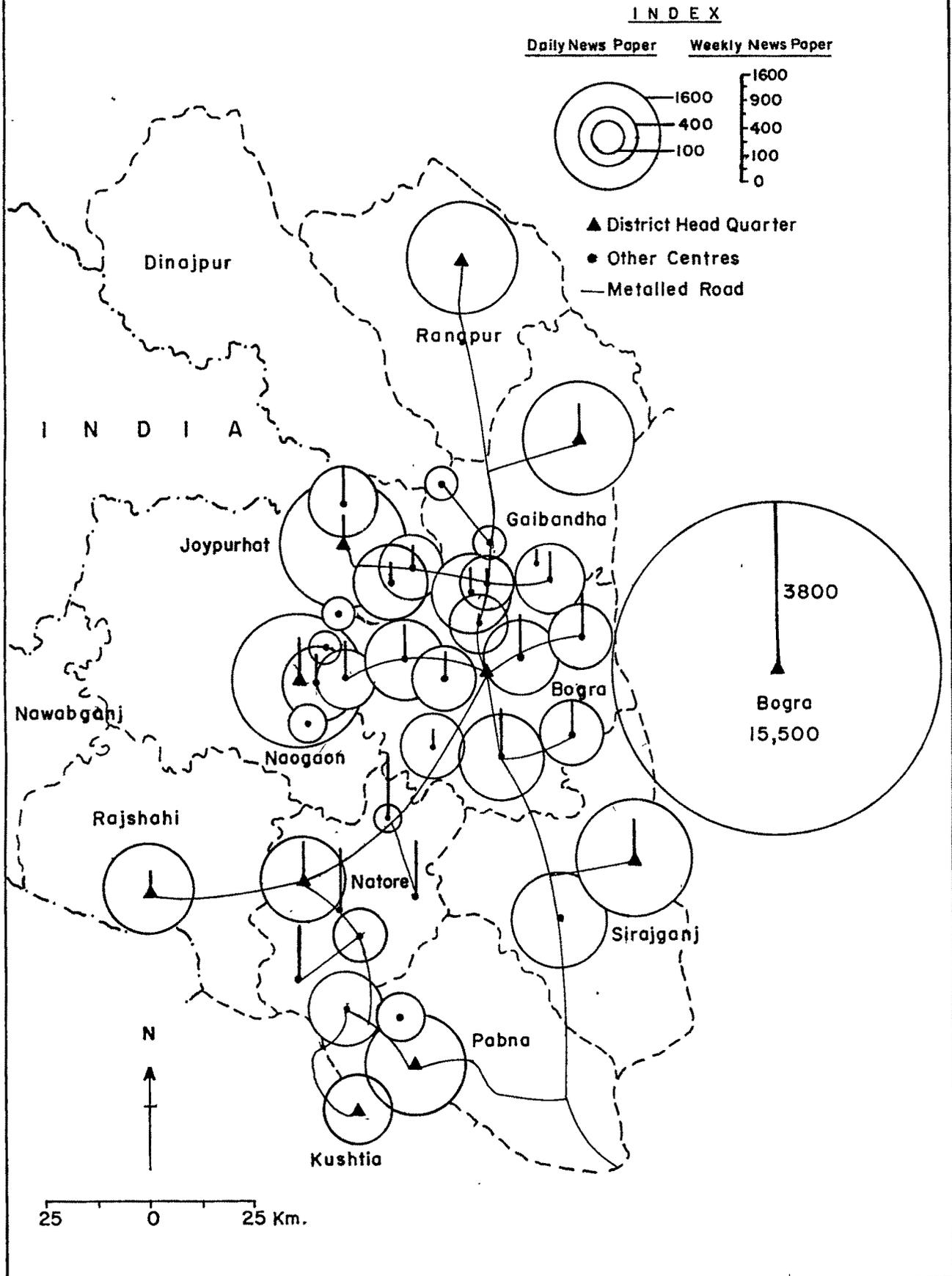


Fig. 10-5

largest circulation of about 16,000 papers. Uttar Barta issues 13,000, and Dainik Bangladesh 2,500. Bogra also contributes remarkably to publication of weekly paper amounting to 12,000 copies.

Fig.10.5. shows the circulation following the channel of communication. Papers published by different presses have different service areas. In Bogra town, according to the information gathered, 15,500 papers are circulated. Generally, distribution of papers is looked after by teen agers, and old or handicapped people.

The areas of maximum circulation are Naogaon (2850), Joypurhat (2400), Gaibandha (1800), Natore (900), Sirajgonj (2,150) and Pabna (1425) town besides greater part of the Bogra district. The extent of paper circulation is more towards Natore and Pabna. The weekly newspaper has captured good market in this region (fig.10.5). Few papers are carried to Kushtia town which is in the Southern Region.

Table 10-5 Daily Newspaper Circulation (1988)

S1. Name of the No. Places 1	Daily 2	Weekly 3	S1. Name of the No. Places 1	Daily 2	Weekly 3
1. Bogra Town	15500	3800	20. Rajshahi	1100	60
2. Gabtoli	680	250	21. Pabna	1625	-
3. Sariakandi	525	300	22. Ishwardi	675	-
4. Dhunut	525	150	23. Naogaon	2850	225
5. Bherpur	1000	300	24. Gaibandha	1800	150
6. Sonatola	625	100	25. Sirajonj	2150	250
7. Kahaloo	550	100	26. Ullahpara	1300	-
8. Nandigram	500	50	27. Natore	900	200
9. Shibgonj	800	100	28. Rangpur	1800	-
10. Dupchanchia	830	200	29. Kushtia	700	-
11. Adamdighi	400	100	30. Tilakpur	150	-
12. Santahar	700	100	31. Raninagar	150	-
13. Mokamtola	375	25	32. Atrai	350	-
14. Mohasthan	375	25	33. Bonpara	500	-
15. Joypurhat	2400	100	34. Gobindagonj	200	-
16. Panchbibi	600	150	35. Bhoraghat	200	-
17. Akkelpur	100	-	36. Mohimagonj	-	110
18. Kethlal	700	50	37. Singra	150	600
19. Kalai	500	50	38. Baraigram	-	480
			39. Gurudaspur	-	525
			40. Lalpur	-	500
			Total	44285	9050

Source : Newspaper's press offices.

### Vehicular Traffic Flow :

Passenger flow, bus or railway traffic flow are essentially important indicators for defining the zone of influence.

Because of Bogra's nodality, passenger buses ply to all district towns and many other important places, on way or nearby areas within the Northern Region. Some buses ply also outside the region. The frequency to Jessore and Kushtia towns of Southern Region is less but to Dhaka which is at a distance, it is more. All the buses from the 11 districts towards Dhaka pass through Bogra town. All the surrounding districts and Rangpur, Dinajpur, Rajshahi are well connected with Bogra by frequent bus services.

Social interaction is more intense, wherever the connection is by local bus service with several halts (stops) on way than by express services, which stops at only few places.

Therefore, within a road length of 20 to 100 kilometres (Fig.10.6) intense flow reflects greater linkage of Bogra to the region. In this respect the district towns and some important places have a bus frequency of both local and express services or any one type : Sirajgonj (42), Naogaon (59), Santahar (133), Dinajpur (49), Joypurhat (125), Natore (92), Rangpur (84). Besides these, Rajshahi (42), and Gaibandha (31) are linked by express service. The frequency of buses to important places ranges from 40 to 125. The intermediate places on distant routes through which buses pass naturally show higher frequency towards Kethlal Point (156), Gabtoli (120), Singra (122), Mokamtola

(B50), Sherpur (16B), and so on.

Passengers going to district areas beyond Bogra, change buses at Bogra as it is a junction of several routes.

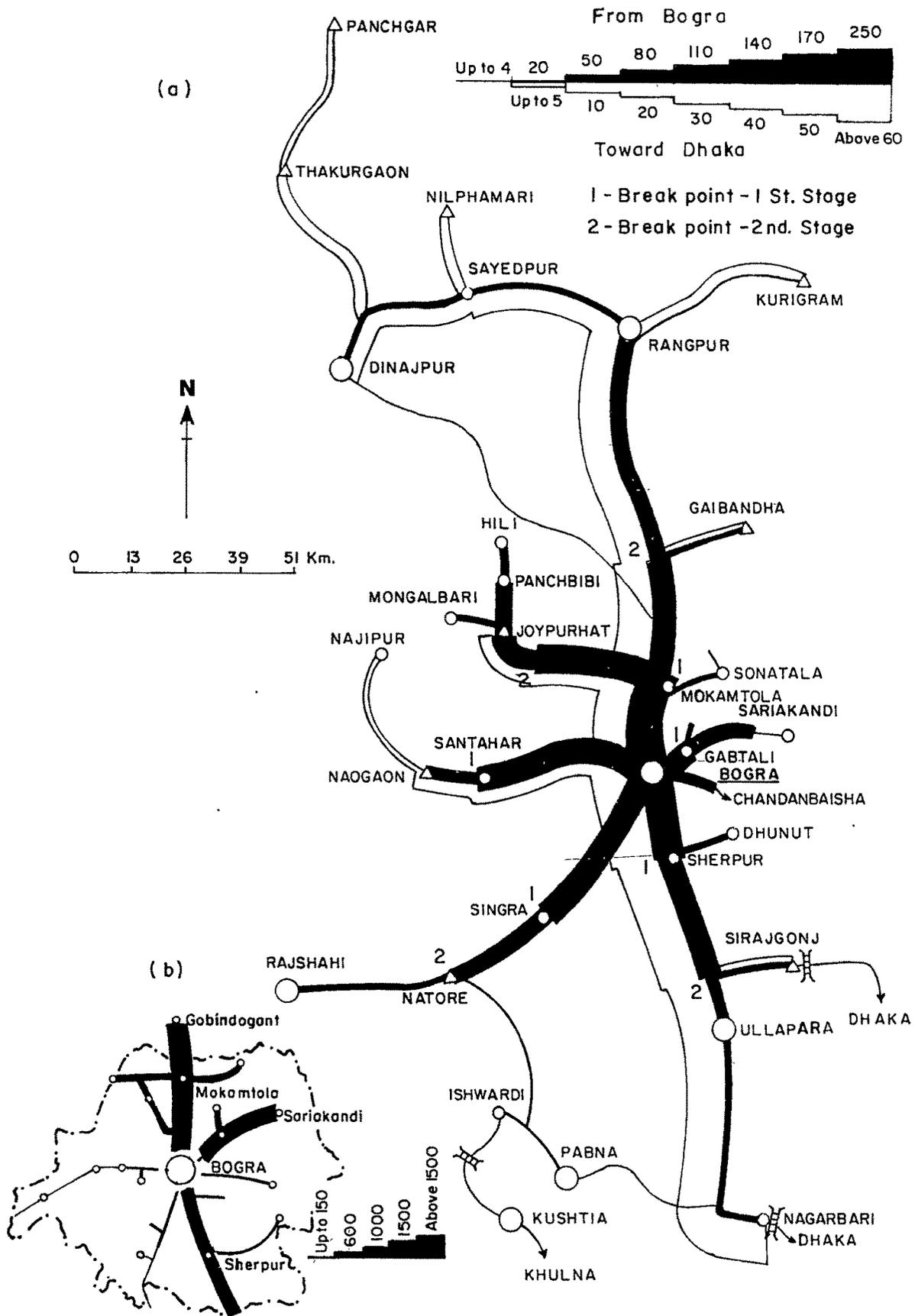
Buses from 11 districts which pass through Bogra towards Dhaka number about 70. 10 buses from Bogra connect it to Dhaka. Besides these, one mini bus runs via Sirajgonj and Tangail towards Dhaka.

The study highlights few features for instance, frequency of bus service is not uniform on all roads radiating from the town. Further, a sharp fall in bus service between 15 km. and 50 km. (mainly intermediate points) away from the town is observed. The highest frequency of bus services is found along Dhaka-Rangpur Road constituting around 70% in which, all the bus services converge on and radiate out of Bogra.

It can be concluded that the area located within the high frequency of bus services is attracted more towards the central town Bogra, than those located beyond the break points. Break point is a point on a bus route at which there is a sharp fall in the frequency of bus services.

From the analysis of Fig. 10.6b there emerges different picture of break point. First, most of the insignificant centres are the break points very near to the town namely Sherpur, Gabtoli, Mohasthan or Mokamatola, Singra.

# INTENSITY OF BUS SERVICES



Rickshaw-Van Traffic From Rural Areas

Fig. 10-6

Table 10.6 a  
 Frequency of Bus & Mini-Bus services from Bogra to different directions

From Bogra towards	No. of Services
1. Rajshahi	40
*2. Santahar	133
*3. Joypurhat	125
*4. Panchbibi	115
5. Hili	46
*6. Rangpur	84
7. Gaibandha	31
8. Sirajgonj	42
9. Nagarbari	50
*10 Ullapara	72
11 Mangalbari	21
*12 Singra	122
*13 Natore	92
14 Sonatola	50
15 Mohimagonj	02
16 Naogaon	59
*17 Gabtoli	120
18 Naruamala	30
19 Sariakandi	90
20 Dhunut	54
*21 Sherpur	168
*22 Mokamtola	250
23 Kethlal	20
*24 Kushtia	03
25 Jessore/Khulna	01
26 Dinajpur	49
27 Pabna	08
*28 Ishwardi	08
29 Kurigram	04
*30 Polashbari	115
*31 Mohasthan	166

(\* Important Nodal points from where buses ply in different directions.)

Table 10:6.b.

Day and Night coach services towards Dhaka via Bogra and from Bogra.

Route.

1.	Nazipur	---	>	Naogaon	-----	>	Bogra	---	>	Dhaka	6			
2.	Joypurhat	-----	>	Bogra	---	>	Dhaka	9						
3.	Baibandha	-----	>	Bogra	---	>	Dhaka	4						
4.	Rangpur	-----	>	Bogra	---	>	Dhaka	9						
5.	Dinajpur	---	>	Sayedpur	---	>	Rangpur	---	>	Bogra	---	>	Dhaka	10
6.	Thakurgaon	---	>	Sayedpur	---	>	Rangpur	---	>	Bogra	---	>	Dhaka	7
7.	Panchgarh	---	>	Sayedpur	---	>	Rangpur	---	>	Bogra	---	>	Dhaka	4
8.	Nilphamari	-----	>	Rangpur	---	>	Bogra	---	>	Dhaka	6			
9.	Kurigram	-----	>	Rangpur	---	>	Bogra	---	>	Dhaka	4			
10.	Sayedpur	-----	>	Rangpur	---	>	Bogra	---	>	Dhaka	2			
11.							Bogra	---	>	Dhaka	9			
	T O T O A L B U S E S										70			

Table 10:c.

Truck plying to different directions from Bogra (average in a month, in percentage).

Total Number of Trucks			302					
1.	Bogra	---	>	Jessore	---	>	Khulna	40%
2.	Bogra	---	>	Dhaka	---	>	Chittagong	25%
3.	Bogra	---	>	Rangpur	---	>	Dinajpur and surrooundings	20%
4.	Bogra	---	>	Naogan and	>	Joypurhat area	5%	
				Bogra				
5.	Bogra to other areas							10%
[Sources : Transport Association Offices]								

Secondly, some distant places are of prime importance according to the functional aspects, namely joypurhat, Rangpur Natore, Santahar, Ullapara.

So, considering both the distribution of break points, we can come to the conclusion that the area within the break points of high frequency of bus services (1st stage) reveals high degree of contact with Bogra town. In the 2nd stage break points areas of prime importance can be considered equally significant.

It is evident from the study that the services of bus and other vehicle and the rapid growth have brought the town closer to the surrounding rural areas to a greater extent. The dense population of the area forming a threshold assures the development of services and that of the town.

#### **Authorickshaw Service :**

Another important mode of transport convergence is autorickshaw services from Bogra to immediate vicinity within a maximum radius of 12 km. Table 10.6a show the frequency of autorickshaw services. There are four places on main routes for its service namely Najirah (cantonment) on Dhaka Route, Gabtoli on Sariakandi route, Mahasthan on Rangpur route and Ranirhat on Natore route. One branch road stretches from Ranirhat to malancha where frequent auto-rickshaw services are available.

#### **Truck Services :-**

These days, trucks have become the most important media

for transport of goods all over the country. From Bogra region more than 90% goods are carried by trucks. There are around 300 trucks under Bogra Truck Association, giving services to intra-district and inter district of Bangladesh.

Table 10.6 shows the monthly average truck services in percentage. We find greater contact with Jessore/Khulna Region (mainly Khulna) which has 40% of total service followed by Dhaka/Chittagong (25%). Here Dhaka is the main area of contact. Other Northern districts account for 20%.

#### Isochrome :

"In the delimitation of the sphere of influence of urban centres, it is desirable to know the time taken in travelling between the city and the country side. Time can be ascertained for a number of points and isopleths then interpolated for intervals of an hour or so. Isopleths which join places having the same travelling time to the centre of the city are sometimes called isochrones (Haggett & Chorley, 1967: 438-39). This technique is an important measure to find out city-region relationship. In our study, points are placed along the route on different considerations. Area having frequent bus services (mainly local bus services) with frequent halts, are more influenced area of Bogra town. In this respect., higher the frequencies and more the frequent halts, more is the intense city-region relationship. So to reach the place of destination on routes with frequent halts, it takes much more time than long route having express services.

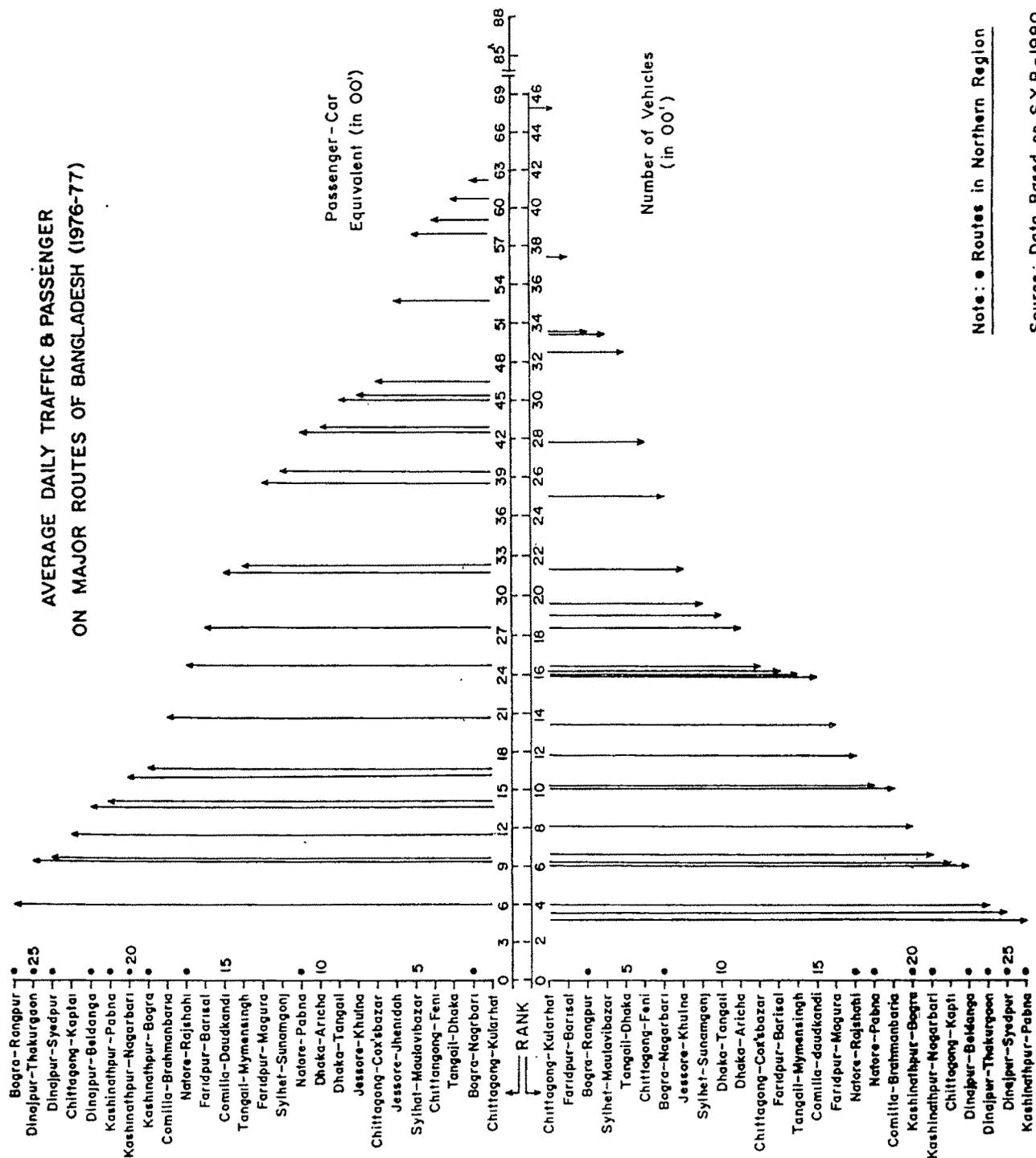


An attempt is made to represent the data in a simplified manner by the following method. First, All the respective routes are drawn connecting the urban areas to Bogra. Then considering the actual road distance, straight lines of the same distance are drawn from Bogra town to the urban areas. So, considering the time required to reach the destination, time-spaced isochrones are marked on the straight line. A clear picture of the distribution pattern of isochrones gives a sharp comparison amongst different routes. (Fig 10-7).

Several urban centres which may fall along the traffic route are connected separately by straight line drawn from Bogra. The time distance relationship varies according to the nature of services: Express or ordinary. The relationship between urban centres is brought out outstandingly by isochrones. From the isochrone representation, it is noted that isochrones are closely spaced on routes which have express bus services, and widely spaced where the urban centre, are connected by ordinary services. The interaction or relationship between Bogra and Dhaka, though at a distance, cannot be compared with other distant centres.

Frequent local bus services with frequent halts taking more time show intense interaction with the respective centres eg. : Bogra-Ullapara, Bogra-Gabtolli, Sarikakandi, Bogra-Mokamtola-Sonatola, Bogra-Santahar, Bogra-Nandigram-Singra; frequent local bus services with less frequent halts and more frequency of express services with less halts in the same route denotes high

### AVERAGE DAILY TRAFFIC & PASSENGER ON MAJOR ROUTES OF BANGLADESH (1976-77)



Note: ● Routes in Northern Region

Source: Data Based on S.Y.B.-1980

interaction with the centre as Bogra-Rangpur-Dinajpur, Bogra-Natour, Bogra-sirajgunj, Bogra-Nagarbari; high frequency express services with few halts consuming less time also show comparatively high interaction with the centre for example Bogra-Natore-Rajshahi, Bogra-Gaibandha etc; less express services with few stoppage indicate less interaction eg. Bogra-kurigram, Bogra-Nilphamary, Bogra-Natore-Ishwardi or Pabna, Bogra-Nagarbari-Dhaka. Very few express services towards the distant areas like Bogra-Kushtia-Jessor-Kulna, Bogra-Panchgarh etc. exhibit very low interaction.

#### Traffic Flow on Different Routes of Bangladesh

Fig 10.8 (for detail see Appendix II:405) highlights the traffic flow and passenger-car equivalent on major roads and highways in Northern Region as well as Bangladesh. Through the distribution of ranks according to different routes, the position of each route can be clearly seen within the Northern Region, in terms of total vehicles, the Bogra-Nagarbari (2497) Bogra-Rangpur (3363) Roads show the highest figures. At the same time, in case of passenger-car equivalent, Bogra-Nagarbari road exhibits the highest number (6238) followed by Natore-Pabna (4256). But, according to the number of total vehicles in the Bogra-Rangpur road, the P.C.E. (589) as depicted in the table (Appendix II:405) is questionable. However, from the analysis, Bogra's position in regional context is understood.

#### THEORETICAL APPROACH

Other than empirical approach, some traditional models

have been considered for demarcation of the zone of influence of Bogra town.

#### Gravity Model/Breaking-Point Theory :

A modification of the interaction theory\* refers to the breaking-point theory which is viz. location of the boundary line separating trade areas around two towns unequal in size. The formula can be written as :

$$B_p = \frac{d_{ab}}{1 + \sqrt{\frac{P_a}{P_b}}}$$

Where  $B_p$ - indicates break-point distance which predicts the location of line

' $d_{ab}$ '- distance between two towns 'a' & 'b',

and ' $P_a$  & ' $P_b$ ' are the population sizes of towns 'a' and 'b'

#### Basis of the Study :

(i) Like time-distance isochrones actual route distance is represented in the straight line for individual centre. Here we can gauge the relative distance of urban centres at a glance. Moreover, there are number of urban centres on the same routes. To overcome the problem of demarcation the breaking point method has been adopted with a little modification where straight lines are considered instead of actual road.

(ii) In some cases, we may assume hypothetically the degree or proportion of "pull effect" between two urban centres other than delimiting the influence area.

### SPHERE OF INFLUENCE BY BREAKING POINTS (Trade Relation)

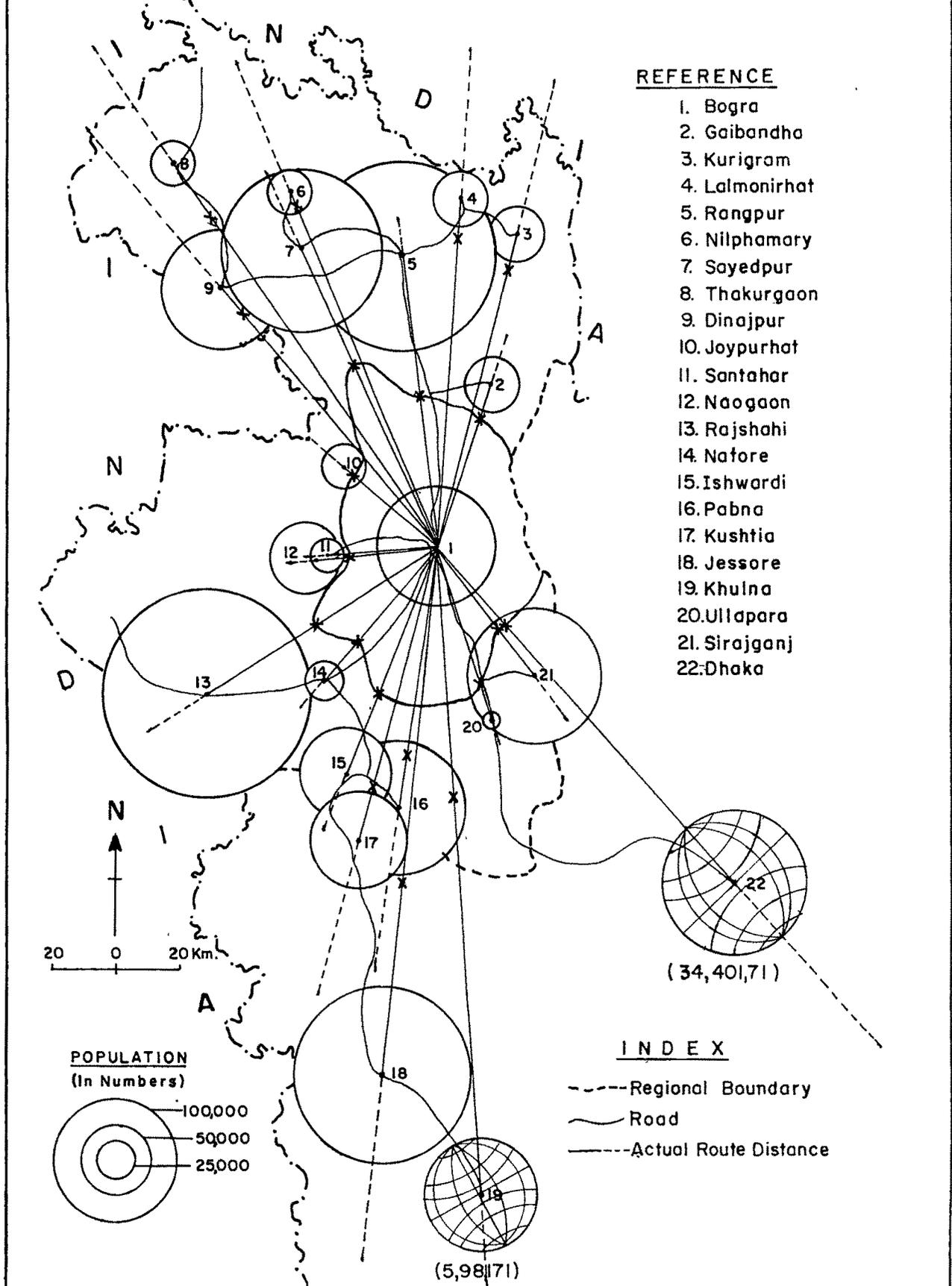


Fig 10-9

(iii) Here places are selected on the basis of bus services.

Mainly the places which are more intensely connected, with Bogra- the boundary line is drawn on the basis of respective breaking-point. Rajshahi, Natore, Naogaon, Santahar, Joypurhat, Dinajpur, Rangpur, Gaibandha and Sirajgonj show stronger relationship with Bogra. Though Pabna and Ishwardi are far, their interaction is more with Bogra.

& Table 10-7

Thus, with reference to Fig. 10.9<sub>A</sub> the boundary line runs separating the trade or influence area of urban centres from that of Bogra town and vice versa. For example, In between Bogra (A) and Dinajpur (B), breaking-point lies at the distance 91 kilometres from Bogra and 93 Kilometres from Dinajpur. In this case, they are almost close to each other. Here, Bogra's trade area spreads upto 91 kilometres.

In actuality, places not stated above have little interaction with Bogra and less population. Dhaka and Khulna, in terms of commodities flow, are strongly connected with Bogra and their degree of influence is more than Bogra because of the population and functions.

Based on arbitrary observation the pull effect between Bogra and Dhaka is calculated. For example, total distance from Bogra to Dhaka is 232 kilometres i.e. 100% pull effect. Breaking-point distance for Bogra is 20 kilometres i.e. 8.62% and for Dhaka 91.38%. In case of small centres with lesser population than Bogra, Bogra's pull effect is more.

Table 10.7 Measurements of Sphere of Influence by Breaking Points  
(Population-Distance)

Urban centres	Population	Distance (in km.)	Breaking points	
			B-A	A-B
Bogra (A) to B	94,496			
Dinajpur	96,718	184	93	91
Pabna	1,09,065	157	81	76
Rajshahi	1,71,762	120	75	45
Natore	31,210	71	26	45
Rangpur	1,53,174	108	61	47
Sayedpur	1,26,608	144	77	67
Ranchgarh	13,147	245	89	156
Joypurhat	37,122	58	22	36
Naogaon	52,975	48	21	27
Gaibandha	39,561	71	28	43
Sirajgonj	1,06,774	72	37	35
Lalmonirhat	36,439	171	65	106
Kurigram	47,641	163	68	95
Nilphamari	29,558	160	57	103
Thakurgaon	33,404	211	79	132
Santahar	11,000	43	11	32
Ishwardi	72,123	110	51	59
Jessore	1,48,927	250	140	110
Kushtia	74,892	160	75	85
Khulna	5,98,171	320	229	91
Ullapara	10,382	64	16	48
Dhaka	35,40,147	232	200	32

## (b) Time-Space and Population Relationship

Gravity model can be applied by taking population and time required to reach other centres (by bus). Sharifuzzaman (1984) adopted the model using union population (lower revenue unit) and the time distance from the Sirajgonj district head-quarter with some modification. Here, population of the town is taken against union population.

In the same way, we have applied this in our study by taking the district-wise population against Bogra town population. Here, we consider that district headquarters are the centres of activities that serve the population of their respective district region. The main objective of this modified application is to understand the regional relationship. The result obtained, supports our hypothesis. The formula may be written as :

$$T_{jk} = \frac{T_{ij}}{1 + \sqrt{p_i/p_j}}$$

Where  $T_{ij}$  = Time to travel from i to j,  
 $p_i$  = Population of i town/area  
 $p_j$  = Population of j town (study area).

The modification is as given below.

Here,  $p_j$  = Bogra's urban population  
 $p_i$  = Population of other respective district.

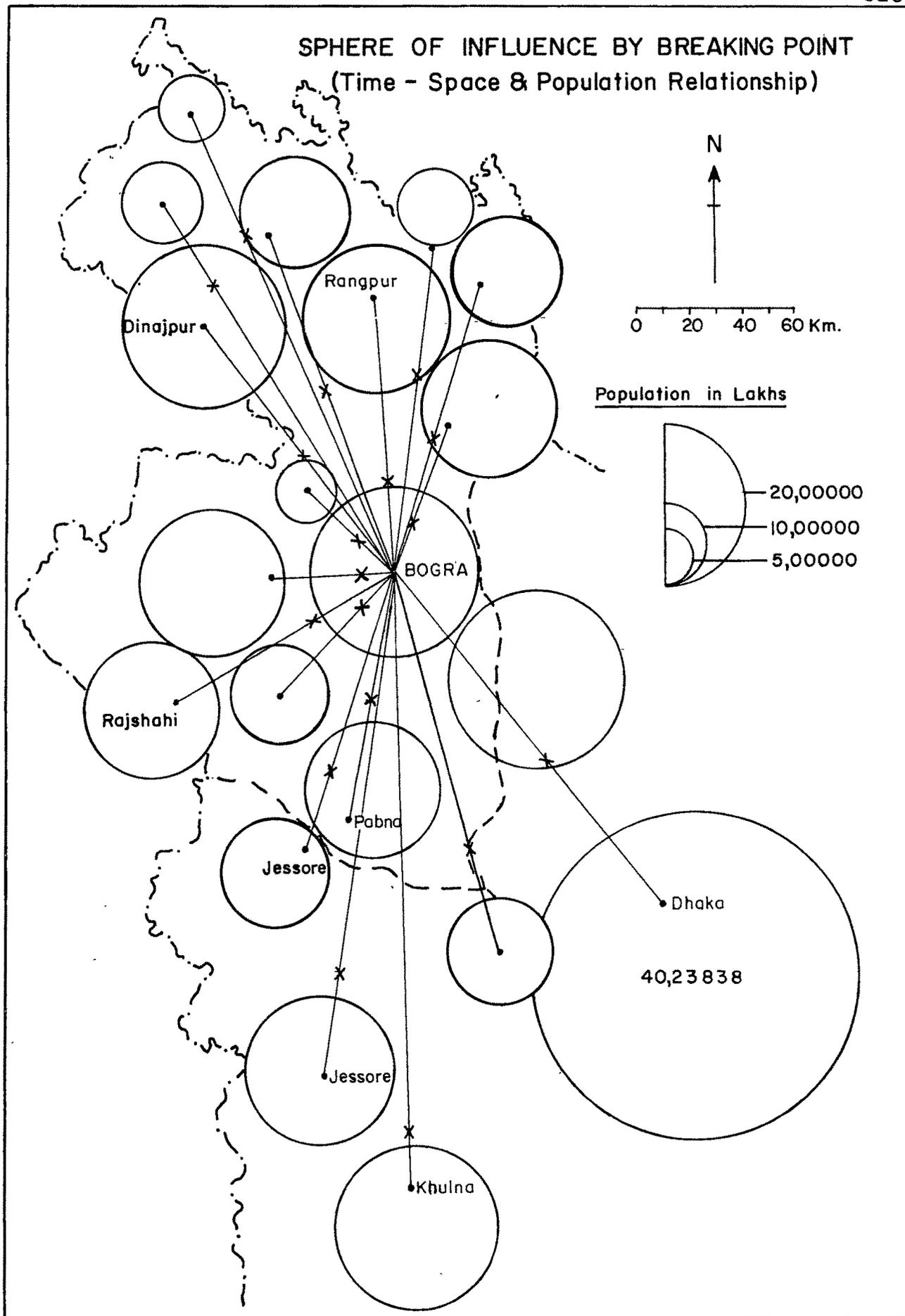


Fig.10-10

Tabel 107.6 Measurements of Sphere of Influence by Breaking points (Time-Space)

District Headquarters	Population (District) p <sub>i</sub>	Time taken from i to j T <sub>ij</sub> (Minutes)	T <sub>jk</sub>	Distance from Bogra (in inch) (d)	Breaking point (in inch) $\frac{T_{ij} \times d}{100}$
Bogra	94,401* (p <sub>j</sub> )				
Doypurnat	6,19,351	120	33.70	0.9	0.30
Malajpur	18,04,015	240	44.70	2.45	1.09
Maharurgaon	8,17,732	300	76.14	3.40	2.59
Manchgar	5,78,218	360		3.92	
Pabna	15,52,519	250	49.30	1.95	0.97
Sirajgonj	18,65,937	180	33.09	1.20	0.40
Tajshani	15,41,205	165	32.80	2.00	0.67
Tatore	10,66,158	110	25.23	1.26	0.32
Taogaon	17,21,959	110	20.87	0.97	0.20
Tangpur	17,03,367	150	28.63	2.15	0.60
Tilphamari	11,50,170	235	52.34	2.75	1.44
Taimonirhat	8,00,449	230	58.82	2.55	1.50
Turigram	12,66,425	210	45.06	2.27	1.03
Saibandha	15,69,691	150	29.53	1.24	0.37
Dhaka	40,23,838	450	57.10	3.35	1.91
Shuina	17,57,243	480	90.40	4.83	4.37
Jessore	17,07,195	420	60.00	3.94	3.15
Kushtia	12,36,133	300	64.93	2.20	1.57

\*urban Population

Accordingly, the position of breaking points from Bogra town to all the directions have been computed in Table 10.7b and cartographically represented in Fig. 10.10.

Fig 10.10 clearly indicates the degree of influence of Bogra town over the district corresponding to the size of population and time-distance. The cross-mark in the time-space distance over a particular route indicates the breaking point. The cross marks closer to Bogra town represent the pull effect on respective districts namely Naogaon, Joypurhat, Gaibandha, Natore and Sirajgonj. Cross-marks placed on the routes away from Bogra reveals the decreasing pull effect of district regions according to their size of population and their distance. Khulna, Jessore and Panchgarh are far away from Bogra and have lesser pull effect.

#### Theoretical Delimitation of Urban Region :

A simple model for theoretical delimitation of service area corresponding to urban centres may highlight, the spatial efficiency of a centre to some extent. One draw back of this method is that it does not consider the factor of competing towns. Here overlapping of service areas is a common phenomenon.

However, the formula may be put as, the delimitation of service area, i.e.

$$R^2 = \frac{T \times A}{U}$$

Where 'T' is the population of a town,

'A' is the total area of the district and

'U' is the total urban population of the district.

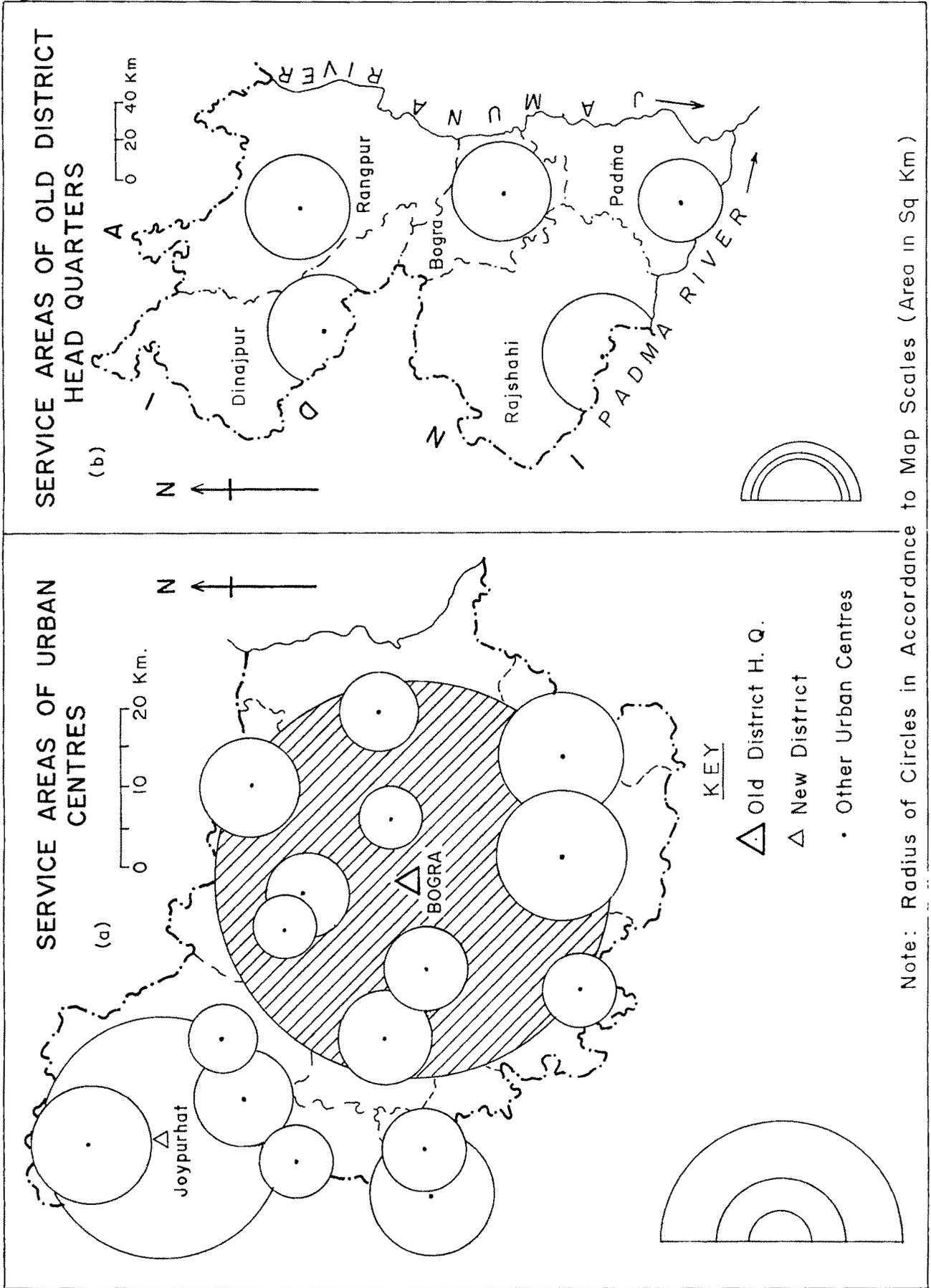
#### Method & Analysis :

The calculation is shown in Table 10.8 on the basis of which, Figure 10.11 shows the service area of each urban centre, in Fig 10.11 and using the formula we get the service area in sq.km. . Then, to delimit the service area shown by circle for each centre, the radius, is found out by using  $\pi r^2$  (area of any centre) and finally the 'r' (radius) is calculated in kilometre. Then length in relation to radius is measured from the given scale in the map (fig.10.11) and accordingly respective circles are drawn to represent their own service area.

#### Service Areas of urban centres : Old District Region :

Fig 10.11 exhibits the theoretical service areas for all declared urban centres in the old district region. At a glance, it is understood that the impact of other centres is less than that of Bogra town. Which is the only major town in the old district region.

Besides the upazila centres, two urban centres give remarkable result. Among them, Santahar a railway junction in Adamdiah upazila located in the extreme west and another is Mohasthan a business centre and shrine under Shibgons upazila. Amongst the lower order urban centres Shapur upazila headquarter is an old urban centre showing larger service area ( 213 sq.km. ). Another important upazila is Dhunut which is in remote and backward area.



Note: Radius of Circles in Accordance to Map Scales (Area in Sq Km)

Table 10-8<sup>a</sup> Service Area

Urban centres	Population (1981)	Calculated Area	Calculated
		in sq. km. $\frac{TA}{u}$	Radius $r = \sqrt{\frac{\text{cal. Area in km}^2}{\pi}}$
Bogra	94,496	1811	24
Joypurhat	37,122	705	15
Sherpur	11,161	213	8.24
Adamdighi	4,400	84	5.17
Dhunut	10,660	203	8
Dhupchanchia	5,606	107	6
Gabtolli	2,187	42	3.66
Kahaloo	3,143	60	4.37
Nandigram	2,557	49	4
Sariakandi	3,871	74	4.85
Shibgonj	1,483	28	3
Mohasthan	3,957	75	4.88
Sonatola	6,633	126	6.34
Akkelpur	3,404	67	4.62
Kalai	2,675	51	4
Kethlal	7,329	139	6.65
Panchbibi	9,142	174	7.44
Santahar	11,000	209	8

Table 10.8(b)

Old district  
Headquarters

Bogra	94,496	1811	24
Rangpur	1,53,174	1999	25.23
Dinajpur	96,718	2239	26.70
Pabna	1,09,065	1276	20.00
Rajshahi	1,71,762	2841	30.00

Source : Data Computed

\*population 1982/83

## B. Study of 5-old District Towns :

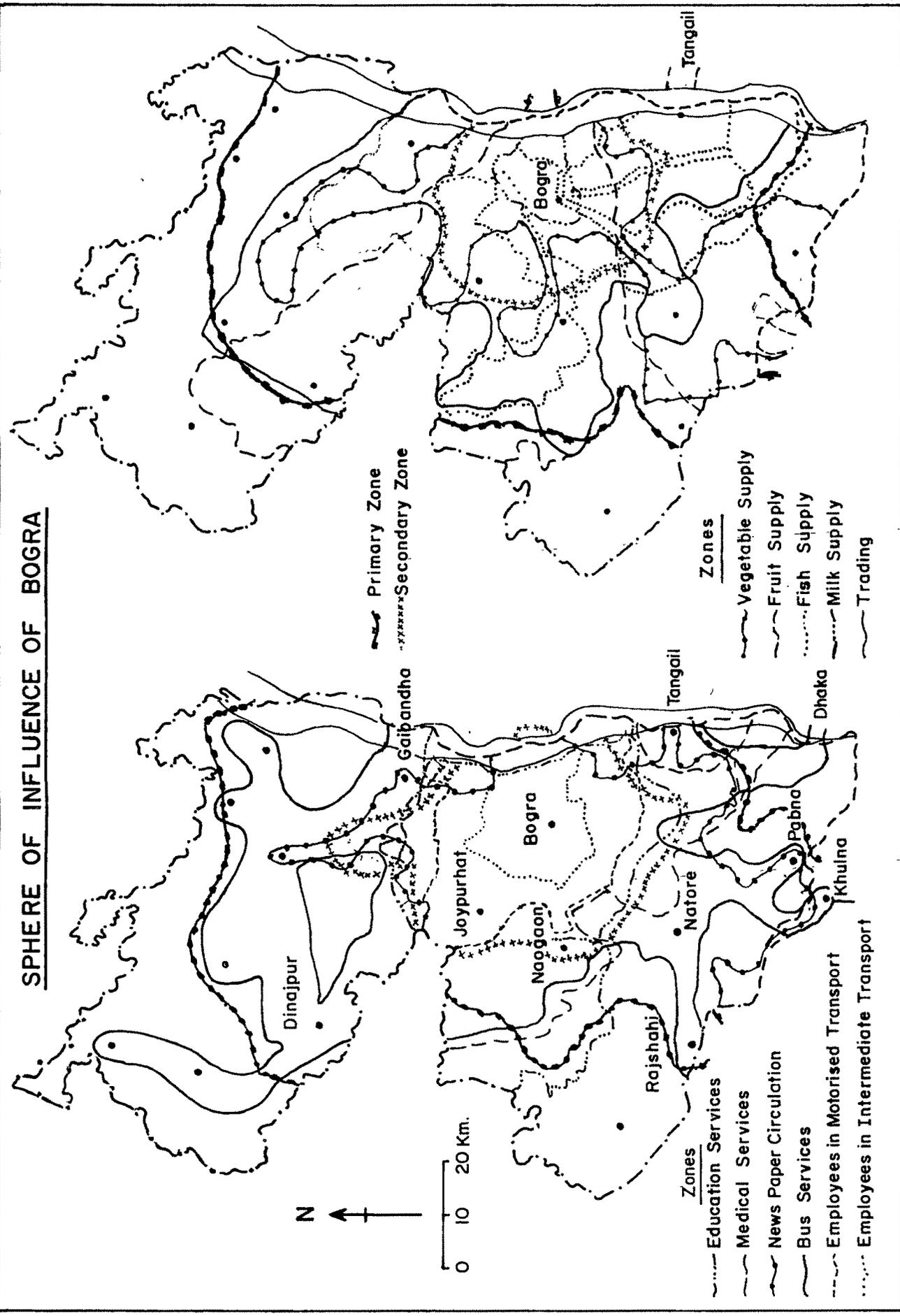
Rajshahi and Dinajpur and Pabna are less advantageous due to geographical location and international boundary. The locations of the first two centres in the border (India) restrict the spatial extension of service areas. In case of Pabna, the spatial influence is somewhat obstructed by the presence of Padma (Ganga) river.

Bogra and Rangpur enjoy the advantages of favourable geographical location. In some district regions, the service areas of centres, overlap because of their close spacings.

Thus in all respects, Bogra shows a dominant position in the Northern region. Fig. 10.11b

Fig. 10-12

# SPHERE OF INFLUENCE OF BOGRA



## STUDY OF SIX VILLAGES

Six villages were selected from different locations and survey was conducted by providing questionnaire (Appendix III.4.12) to the households of the villages. The main objectives of the study are:

- (1) To find out urban-rural relationship and degree of impact of Bogra town on these villages;
- (2) To measure migration and movement of people towards Bogra town;
- (3) To assess the spatial organisation and pattern of economic activities;
- (4) To understand distance Vs. influence ;
- (5) To evaluate the impact of location and road network;

Table 10.9 & Fig 10.13 show the various socio-economic aspects and interaction pattern.

### Geographical Location and Some Characteristic Features

#### A. Peripheral Villages:

(a) Puran Bogra: Puran Bogra is in the western highland circumvented by international route and station-WAFDA road. It is about 2 km. away from the town centre. It enjoys the most favourable location and accessibility. This village is characterised by mixed classes of people with different occupational and income groups, increasing land value specially along the major roads, potential area for developmental work and slow rate of migration. Here houses are mostly kutchha

interspersed with few buildings.

(b) Naruli :- Naruli is located in the eastern bank of the river Karatoya and closer to the town centre. Due to loose soil the house structure differs from west Bogra. The houses are thatched or made of C.I. sheet. There are number of pukka houses. Here urban influence is dominant and high rate of migration from east Bogra increases the population. One regional road passes by the side of the village. Internal road network is also good.

(c) Bhatkandi :- Bhatkandi is in the worst location having no important road connection or bridge to connect the town. It is about 2 km. to the south east of Bogra town. It is predominated by rural culture and traditional way of livelihood.

#### **B. Distant Village :-**

(a) Dhap :- Dhap is located in the extreme east of Bogra district near Sariakandi Upazila centre where the flood havoc and embankment erosion of river Jamuna are devastating. In this region, there is no important, urban centre except Upazilas. So, interaction with Bogra is more than other distant villages.

(b) Indoil :- Indoil is in the extreme west of Bogra district lying beside Santahar road, and is having close ties with nearby Santahar (railway junction) and Adamdighi Upazila headquarter. It is approximately 37 km. away from Bogra town.

(c) Loaknath para :- Like Indoil Loaknathpara is also a rural village situated in between Bogra and Santahar railway route. So railway is the principal mode of transport for the villagers to

between  
travel, Bogra and Santahar.

### Socio-Economic Condition of the Villages/Spatial Interaction with the Urban Centres

The Table<sup>10-9</sup> shows the general picture of the socio-economic conditions of each village on different aspects like amount of agricultural land per household, literacy rate, income level, recreational and other amenities.

Occupation and place of work, monthly movement of heads of households and migration are examined and interaction. It is observed that distance from an urban centre has immense effect on the occupational structure of the people of the rural area. Villages closer to any urban area has less predominance of primary activities. The average monthly movement of people forms an essential part of the study to understand the interrelation between different centres.

#### Peripheral Villages:-

Bhatkandi :- Here though agriculture activity is dominant but yet we find urban influence on occupational structure. Out of 171 household surveyed 57% heads of the households are found in agricultural activity, 6% in business 17% in service sector and 23% in other activities. On the other hand as secondary, occupation it is 6% in agricultural, 9% in business and 25% in other activities.

Regarding place of work 51% heads of household work in the town. From the table it is

Table 10.9 Households Survey of 91x Villages : Some Socio-Economic Indicators & Spatial Interaction.  
(in Percentage, head of the household)

Name of the Villages	No. of household	Literacy				Land holding (in bighas)				Monthly Income (in Rupee)				Items in household (in %)				
		VI-X	XII	Graduation	Nil	1-4	5-9	10-14	15-20	> 20	1000-1400	1500-1900	2000 & above	Radio Recorder	T.V. cycle	Motor cycle		
Indoil	79	38.98	30.38	17.38	8.86	5.06	18.99	5.06	5.06	5.06	32.91	29.12	17.72	20.25	37.00	8.85	24.05	2.53
Loknathpara	58	17.24	13.79	27.39	15.52	25.86	12.07	25.86	10.34	17.24	39.66	13.70	12.07	34.48	48.28	15.82	51.72	8.42
Dhap	75	28.00	22.66	30.67	12.00	6.67	30.68	25.33	5.33	13.33	34.66	22.67	16.00	26.67	34.00	-	18.66	1.22
Bhakkandi	171	60.23	19.80	12.87	4.68	2.89	46.77	32.16	7.02	4.10	34.00	35.83	14.51	12.54	28.00	2.00	17.00	0.54
Puran Bogra	223	36.32	32.29	14.80	10.31	6.28	53.81	29.60	4.04	2.24	31.39	34.98	19.28	14.35	38.11	7.62	23.31	1.22
Naruli	80	13.75	18.75	38.75	16.25	12.50	37.50	25.00	8.75	6.25	22.50	28.75	26.25	22.50	73.75	37.50	12.50	3.75

Name of the Villages	PRINCIPAL OCCUPATION			SECONDARY OCCUPATION			PLACE OF WORK			MONTHLY MOVEMENT : AVERAGE & NO. OF DAYS (in Percentage)						
	Agri-culture	Service	Business	Agri-culture	Service	Business	Others	Bogra	Others	Days	From Indoil to Bogra	From Dhap to Bogra	From Kamdi to Bogra	From Loknathpara to Bogra	From what Kamdi to Bogra	From Puran Bogra to Bogra
Indoil	59.49	16.46	17.72	6.33	20.25	2.53	13.92	3.80	7.59	1.4	57	6	3	47	26	22
Loknathpara	41.40	32.76	15.51	10.33	29.31	-	8.62	12.07	25.86	5.0	9	6	23	12	21	22
Dhap	41.34	12.00	33.33	13.33	12.00	4.00	30.67	14.67	42.66	10-14	8	11	28	10	14	11
Bhakkandi	57.30	14.04	5.85	22.81	5.85	2.92	8.77	24.56	4.09	15-19	4	12	5	10	14	13
Puran Bogra	37.67	16.59	30.04	15.70	13.00	8.08	13.45	15.70	11.20	20	5	53	20	10	20	20
Naruli	12.50	28.75	42.50	16.25	6.25	3.74	2.00	10.00	6.73	11.25	5	3	73	-	60	44

observed that 60 % head of household commute daily (twice in a day also).

**Puran Bogra :-** In case of Puran Bogra, heads of households engaged in different activities predominantly are in agriculture (37.67%) and business (30.04%) 'Other' activities and service sectors hold almost equal share. Secondary occupations constitute additional source of income to a considerable extent. Here number of people are engaged in crafts, masonry and other tertiary services are found in Bogra town and the By-pass. From the above mentioned table, it is found that about 44% heads of household visit the town daily. But larger number i.e. 64 % visit once in 15-30 days.

**Naruli :-** As villages near any urban area have less dominance of primary activities. So is the case of Naruli which is an urbanised village adjacent to the CBA. Out of 80 heads of households only 13% are in agricultural activity. A large number of people have secondary source of income from different informal occupations. The place of work of most of the people is Bogra town.

#### Distant Villages :-

The villages near the upazila centres or other small towns have some impact on their occupation structure unlike the villages at the proximity of Bogra town (Table 10.9). Agriculture is the dominant activity of the villages except Dhap. Amongst the distant villages, Loaknathpara is one from where 17.24% people

work in Bogra town. Greater percentage of people visit Bogra once in 4 days in a month. we find each village has more interaction with its nearest urban centre (Fig 13.2).

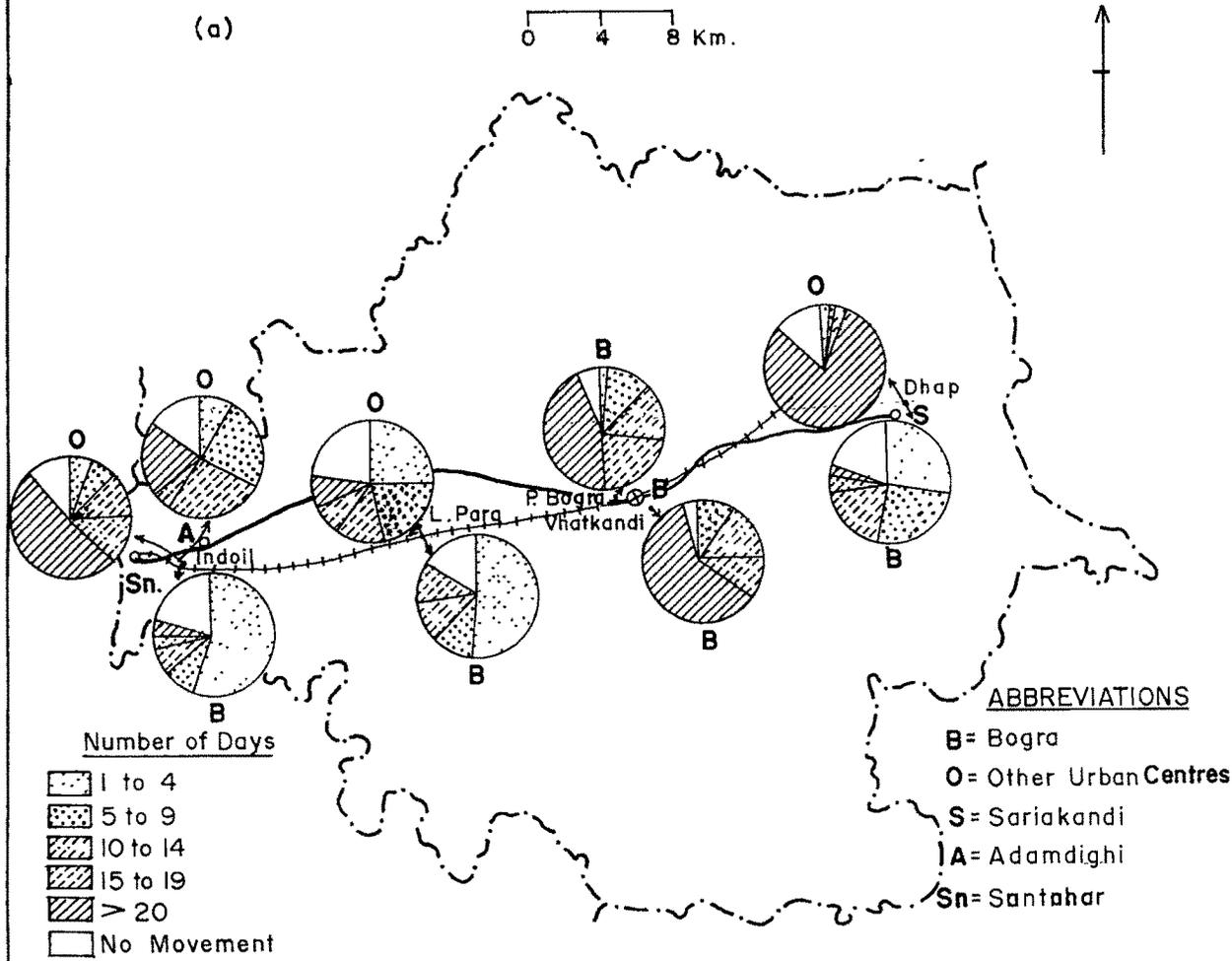
#### Migration :

From the analysis of migration data (Table 10.10) it is interestingly observed that rate of migration is much higher in later period 1971-88 than 1950-70 followed by the emergence of Bangladesh. Another remarkable evidence is the population growth by migration in fringe area (detailed discussion is in chapter 2) in which it may be pointed out that fringe area always attract migrants. Again, the villages Naruli and Bhatkandi (where the land value is low) situated on the eastern bank of the river Karatoya have continuous inflow of flood affected people from the east. As Naruli is closer to the central business area and enjoy good infrastructure, it holds 73% migrants whereas Bhatkandi holds only 40%. About 38% migrants have come from Bariakandi alone.

Puran Bogra has cent percent migrants from west Bogra. In all the cases greater percentage of migrants came from within Bogra districts. Puran Bogra village having unique site and situation, receives more migrants (40%) from outside Bogra district in comparison to other villages.

The Table 10.10 b also shows number of migrants from selected distant villages settled in Bogra town i.e. 4, 6, and 4 from Indoil, Loaknathpara and Dhap respectively (Fig 10.13b).

MONTHLY MOVEMENT TOWARDS BOGRA AND OTHER URBAN CENTRES



MIGRANTS: BOGRA & STUDY VILLAGES

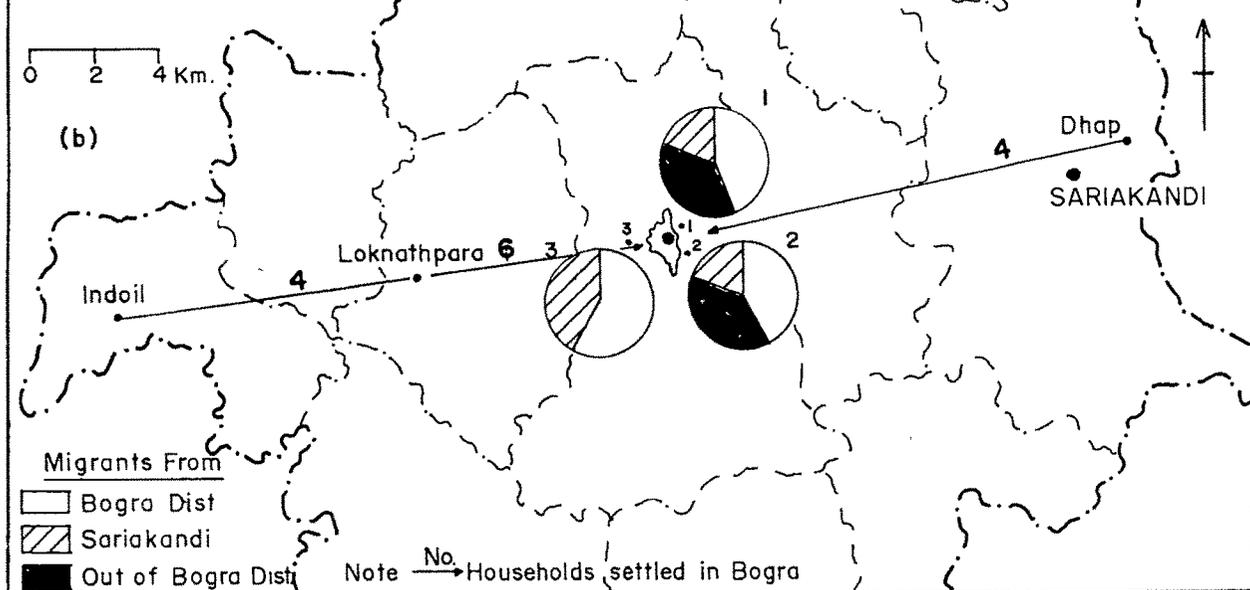


Fig.10.13

A.

From the above discussion, it may be concluded that different levels of socio-economic conditions in the villages, their location channel of communication<sup>m</sup> nearness to the urban centre etc. are responsible for their varied development. From this study, Bogra's interaction with the surrounding region is measured to some extent.

Table 10.10 Migration

Name of the villages	No. of House holds surveyed	Total Migrants (1950-86)	% of the migrants	Migrants in the periods (A)		Migrants from (A)		
				1950-70	1971-86	within bogra DISTRICT *	Sariatkandi Panchite	outside bogra DIST.
Naruli	160	58	73.00	27.58	72.42	44.83	27.59	17.24
Bhatkandi	171	68	40.00	29.41	70.51	42.65	28.24	17.11
Puran Bogra	223	40	18.00	22.50	77.50	80.00	-	40.00

\* Excluding Sariatkandi.

B. No. of Households settled in Bogra town :

Migrants from ---> Indail - 6  
 Loaknathpara - 4  
 Jhap - 4

Source : Field work, December 1988.

### 3. STUDY OF TWO UPAZILAS

The introduction of Upazila system (see chap. 1) in Bangladesh, has had a great impact on rural development and decentralisation of concentration in the urban areas. To determine the changes taking place in the socio-economic conditions, study of two Upazilas has been done.

Taking two Upazilas as sample, efforts have been made to find out the development in commerce, industries, economic, social and public institutions etc. The development of two Upazilas before and after the inception of Upazila system has been considered. Again, we have ~~only~~ selected there two Upazilas : One in the extreme east where there is no other important urban centre other than Bogra. At the same time there is no interregional road linkage with Sariakandi except Bogra. The other Upazila, Adamdighi in the extreme west is directly connected with Santahar Railway Junction and Naogaon town and also with Bogra.

#### Description of Functions and Interrelationship :

There has been allround development with sharp growth after the establishment of Upazila system. Consequently interaction with Bogra town for various purposes has been examined.

#### Infrastructure :

The <sup>two</sup> Upazilas are well linked with bogra town by ~~po~~ ~~CKa~~ road and frequent bus services. For Adamdighi, the impact of the Upazila system can be seen from the increase of developmental

activities leading to increase in the number of banks from one to three, establishment of a college and cinema house and rapidity in constructional work. Regional feeder roads and electricity supply lines are connected to this place.

In Sariakandi, two banks, one cinema hall, one kindergarten school were established after the introduction of Upazila system. Among the pre-established schools and college one is a girls' school. It should be mentioned here that establishment of Kindergarten represents some sort of social change and taste.

#### Commercial Activities :

Infact, in any rural service centre or urban centre, commercial function is the major function that leads the people of the region to carry out frequent trips towards these centres. Here the analysis shows that the rapid progress of commercial and service establishments immediately followed the introduction of Upazila system. Local people of the surrounding areas are served from here to some extent. More and more enterprising activities are developing in the emerging growth centres. Increasing number of restaurants, groceries and pan shops indicate large scale flow of rural people. However, the growth of different types of establishments or newly appearing establishments are shown in table 10.10.

#### Small Scale Industries :

Small scale industries and light engineering workshops are rapidly being setup with the introduction of Upazila system

Table. 10.10a

Growth of Different Types of Commercial, Industrial, Economic  
and Social Institutions (before & after Upazila system)

Sl. No.	Types of Establishment	Adamdighi		Fariakandi		Type of Establishment	Adamdighi		Fariakandi		
		1989	1982	1989	1982		1989	1982	1989	1982	
<u>Commercial</u>						<u>Industries</u>					
1	Groceries/General Store	30	10	42	12	1. Rice Mills	30	8	7	2	
2	Medicines	6	2	9	6	2. Boilers(Rice)	72	15			
3	Foot Wear/Leathers	2	0	2	-	3. Flour Mills	10	2	5	1	
4	Machine Parts	3	1	5	-	4. Oil Mills	2	-	-	-	
5	Books/Stationary	2	-	4	1	5. Biscuit/Bread Factories	1	-	-	-	
6	Cloth stores	5	-	25	11	6. Saw Mills	1	-	2	-	
7	Furniture	5	-	3	-	7. Ice Cream factory	2	-	2	-	
8	Pan/Bidi	20	10	25	10	8. Letha/Machines	1	-	-	-	
9	Biscuit/others			6	3	9. Shoe factory	1	-	-	-	
10	C.I.Sheet			5	-	10. Welding	1	-	5	-	
11	Cement	3	-	4	2						
12	Fertilizer	7	2	8	8						
13	Diesel Oil/Fuel	3	0	2	2						
14	Utensils			2	-	<u>Institutions</u>					
15	Barbar Shops	7	2	2	-	1. Banks	3	1	2	-	
16	Tailors	8	4	13	3	2. Cinema Halls	1	-	1	-	
17	Photo studio	2	-	3	1	3. Preprimary Schools	-	-	1	-	
18	Watch	1	-	-	-	4. Primary Schools	2	1	1	1	
19	Restourants	14	3	11	3	5. High Schools	2	2	2	2	
20	Repairing					6. Madrasha	1	1	1	1	
(a)	Cycle	6	2	6	3	7. College	1	-	1	1	
(b)	Radio	3	1	2	-						
(c)	Watch	2	-	1	1						
(D)	Goldsmith	2	1	2	0						
21.	Others	7	2	10	4						

Source : Field Work

Note : Figures in respective period indicate Total establishment

(table 10.10). Some of the important agro-based industries in Adamdighi worth mentioning are the rice and flour mills.

On the other hand, small scale industrial development in Sariakandi is unlike Adamdighi. It may be due to lack of entrepreneurship, lack of threshold population, less scope of marketing, absence of large number of moneyed men and some other geographical factors. Most of the industries have been set up after Upazila formation.

Relationship With Bogra Town and Other Comparatively Lower Order Towns :

Most of the commodities are brought from Bogra or other towns to Upazila centres. The average number of trips made by businessmen to Bogra for purchasing of goods has been taken as an indicator to gauge the relationship and the impact of competitive towns on trade of the region (Table 10.11).

Table 10-II

## Itemwise Shopping Trips (monthly)

Name of the Items	From Adamdighi		From Sariakandi
	Bogra	Noagaon	Bogra (in days)
	(in days)	& Santahar	(in days)
1. Medicine	2-3	10-15	7-8
2. Leather Products	1-2	2-3	5-6
3. Grocery/Stationary	2-4	10-15	10-11
4. Machine Parts	7-8	2-3	5-6
5. Photographic Work	-	10-15	12-13
6. Clothes	-	8-10	8-10
7. Utensils	2-3	6-7	5-6
8. Cement	1-2	1-2	1-2
9. Tin	-	-	2-3
10. Fertilizer	-	10-15	2-3
11. Bakery	3-4	1-2	7-8
12. Fuel	-	8-10	7-8

Source : Field work

Effect of Upazila System on Bogra Town :

It should be noted that according to the central place theory, every lower order central place is nested in the next higher order central place. According to their size and functions, they make a certain order of service area. This system starts from rural central village to capital city or regional centre. In this connection we may refer to the study of 'Rural Community Area' by Patel and Rangaswamy (1966) in which they studied three central villages and 52 villages as their service area. Here the field investigation of 52 villages and their dependence on the establishments of the central villages have facilitated the determination of service zone around the central villages.

However, as the degree of functions of a centre increases, the degree of extent of service area expands. Now, Upazilas are of higher order rural service centres or growth centres comprising lot of villages and rural market centres. Then district comprises number of Upazilas with their associated areas. For district level administrative purpose the entire area under the jurisdiction of the district town. The commercial and other social activities have no such administrative limit.

Surrounding villages of Upazila are served by Upazila centre and Upazila by nearby towns. Sariakandi is totally under the influence of Bogra town but, in the case of Adamdighi, the influence of Bogra town is divided due to presence of Santanar and Naogaon towns. Yet, Bogra's supremacy in commercial sector

engulfs the near and far areas beyond the district boundry.  
Developed communication system is the only reason for the  
expanding influence.

From the above analysis, it is found that there is a  
reciprocal relationship between the town and the rural areas.  
When one develops, the impact is felt on the other also.

## (PART:-11)

## BOGRA AS AN EMERGING REGIONAL CENTRE IN THE NORTHERN REGION

From the preceding discussions sufficient indications are there in favour of Bogra's position in comparison to other selected four district headquarters.

The overall socio-economic development, locational advantage, public and private initiative for different enterprises have created a field for Bogra to emerge as a future regional centre in the Northern Region. The following study brings about other additional features which support the validity in this matter.

## 4. PUBLIC AND PRIVATE ORGANISATION:

Bogra, since the beginning was a headquarter for a <sup>n</sup> larger district, which comprised Joypurhat also. After the formation of new a district i.e. Joypurhat (after 1982), it has become the headquarter of Bogra district. So, for administrative purpose an entirely new district region (excluding Joypurhat see fig.!) is formed around Bogra. But there are some offices located in Bogra which serve the old district region also. In the first place, Bogra is politically the regional centre of present district region. We place some examples that show the influence of Bogra beyond its district boundary.

## Establishments/Organisations/Firms/Others :

<u>Public Sector</u>	Service Area in the Northern Region (N.R)
1. Bangladesh Bank-(1964), 1st branch in N.R.	10 Districts (at present)
2. Shilpa Bank (Industrial " " bank 1962)	Bogra only (at present)
3. Office of the geological survey of Bangladesh	N.R.
4. Divisional office-Inspectorate of Factories and establishments	N.R.
5. Divisional Forest Office	N.R.
6. Divisional Trade Union Office	N.R.
7. Divisional Office-Project Civil Works Directorate (For Road Development)	N.R.
8. Office of the superintendent Engineer Rural Electrification Board	N.R.
9. Directorate of Archaeology and Museums, Office of the Regional Director	N.R.
10. Office of the Joint Collectorate Customs and Excise	N.R.
11. Office of the Assistant Collectorate Bogra Division	4 Districts
12. Essential Drugs Co. Ltd. (Govt. Management)	N.R. and Southern Region
13. Rural Development Academy (Near Bogra, 2nd. in Bangladesh)	National Level
14. National Training and Research Academy for Multilingual Shorthand (only in Bangladesh)	Do
15. Office of the Telephone & Telegraph	4 Districts
16. Telephone Training Centre (Several in Bangladesh)	National Level (More or less)
17. Fish-seed Multiplication Farm (Mini-hatchery (only one in N.R.))	N.R.

18. Assistant Director Office of the Sericulture (Ressom Procolpa)	3 Districts
19. Offices under Power Development Board (11 offices)	
(1) Office of the Executive Engineer (18 Town Project)	18 towns
(2) Office of the Suptd. Engineer Operation & Maintenance Circle	6 Districts
(3) Office of the Asst. Engineer Grid. sub-station	3 Districts
(4) Office of the Executive Engineer Planning & Development Division	5 Districts
(5) Office of the 14 Towns-Distribution	1 in N.R. (service- 14 towns)

**B Private Concerns :**

1. Divisional headquarter of Oil-companies Jamuna/Meghna/Burma Eastern oil co.	N.R.
2. Medicine Companies :	
(i) Albert David Medicine co. (1958) (one in N.R.)	N.R.
(ii) Hoechst Pharmaceutical co. Ltd. (1973) (Divisional Depot)	Do
(iii) Squibb of Bangladesh Ltd. (1985) (one in N.R.)	Do
(iv) Glaxo (Bd.) Ltd. (1974) (1st in N.R. now in other areas also)	3 District (At present)
(v) Pfizer Laboratories (Bd.) Ltd. (1973) (1st in N.R.)	3 District (At present)
(vi) Fisons (Bd.) Ltd. (1973) (1st in N.R.)	3 District (At present)
(vii) Gononoshasthaya pharmaceutical ltd.	N.R.
(viii) Cibageigy (1st in N.R.) (1982)	8 District (At present)
(ix) B.P.I. (Bangladesh Pharmaceutical Industries, 1973) (1st in N.R.) and so on	N.R.
(x) Jayson Pharmaceutical Ltd. (1956)	N.R.
3.	
(i) Northern Beverage Industries and (ii) Tabani " " (Multinational, only two in N.R.)	N.R. and Southern region
4. Several Sales Agents of Motor Vehicles	N.R.

C Religious Shrine :

1. One of the greatest shrines of Bangladesh  
at Mohasthan\* (near Bogra), National Level

Note \* Mohasthan is a historical place of interest and important  
from archaeological point of view.

Some Developmental Proposals and Consequences :

It is always logical and rational that there should be a common place and common functions from where people of the region will avail of services by spending minimum transport cost and minimum time. No doubt, in this regard, Bogra is the most fortunate. Rangpur also forms a common centre but for extreme northern areas only. More over if we consider population, greater Rangpur & Dinajpur districts (extreme northern areas) comprise 96,88,000 population(1981). And greater Rajshahi and Pabna (south and west) comprise 86,81,000 population. In between the two Bogra has 27,18,000 population, thus, having scope for expansion and offering services to both northern & southern areas and avoid a lopsided concentration of population either in the north or south.

However any Govt./Semi-govt. establishments, that are concerned with the region for a headquarter should find this place a suitable location.

As Rajshahi is a Divisional H/Q. it is too far from extreme northern districts and has no direct communication link. But now it is difficult to shift the already established divisional level administration infrastructure to Bogra because

of political pressure and local peoples sentiments (Secondary & higher secondary institutions) which are situated in Rajshahi should have been at Bogra. Like in the Southern and Eastern Regions, Education Boards are situated at Jessore & Comilla instead of Khulna & Chittagong respectively. Now, in Bangladesh, there is only one Madrasa Board in Dhaka. Another Board may be established at Bogra.

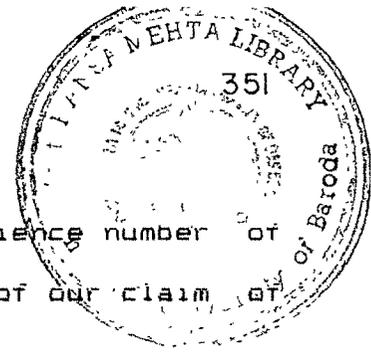
Around the middle of the 1980s, the then government established one High Court bench at Rangpur without considering the location and people's convenience. It was expected to be set up at Bogra.

There is no question of disparity for localising regional headquarters of any office establishment or Institution for at Bogra, as Bogra is ideally situated in all respects.

In case of private sectors, where business is of prime importance, Bogra can fulfil the demand because of its location and also a large market.

#### 5. SELECTION OF SITE FOR REGIONAL CENTRE :

Evidences show that most of the flourishing urban centres of the world owe their foundation and growth to favourable site and situation. (for reference see chapter 2.). Transport and communications system, high concentration/density of population, availability of various kinds of natural resources etc. always play key role to ensure the prosperity of a town. In these respects foundation of National Capital/State



Capital/Regional Centre shall have to enjoy/experience number of criteria. The following suggestion is in support of our claim of Bogra's centrality.

Previous Suggesions:

There are some suggestions in geographical literature for the best location for administrative capitals. Adeyigbe (1978) carries out a fruitful study referring to some other scholarly works. However, the suggestions imply the ideal site for a capital that are to satisfy three conditions:

(i) Central Location :

The site must be located at a point of minimum aggregate distance from all parts of the political units, the geographic centre density the point, satisfies this condition (Sada, 1967).

(ii) Core Area Location :

The capital must be located at the core or nuclear area of the state where it can most embody and represent the traditions and historical values of the state, (pounds:1963188)

In this respect, <sup>referring</sup> Whittlesey (1967) comments that the nuclear area is that in which the state originated and is usually the same as the core, which is the portion of the state that supports the densest and most extended population and has the closest mesh of transportation lines.

### (iii) Route Centre Location :

The capital must be located at the combination of routes, that is, at the route centre (Money ; 1960 : 273 )

As regards the practical application of these suggestions Adejuyigbe (1972) views that it is difficult to achieve all of them, or even any two of them together. He cites some examples in this respect like the capitals of France, U.K., U.S.A. In conclusion he has stated the pattern of population concentration is the principle determining factor in the choice of the general area for the administrative capital of any political unit. Further he argues that physical, economic and social factors are considered in the choice of particular sites. Precisely, it is to note that the normal and logical location for an administrative capital is the site near the centre of population influence which is acceptable on the basis of physical features, transport network, as well as economic and social factors.

### Bogra's Position in the Light of Above Discussion :

Throughout the preceding study, our examination reveals that Bogra considerably satisfies the conditions to become a regional capital or regional centre. In the locational analysis (chapter 2) we have found that Bogra's location is not at the calculated geographical centre, but near to it in comparison to other old district headquarters. At the same time, the site is located at a point of minimum aggregate distance in

relation to all other major urban centres in the Northern Region. Moreover, the study of network analysis or connectivity measurement (chapter 8) shows highest order of connectivity which necessarily indicates Bogra as a nodal centre.

On core area principle, we may evaluate that Bogra district region and surrounding area are densely populated and in many ways, economically and socially connected with Bogra town supported by unique transport linkages. Moreover, growing secondary and tertiary activities, political influence and interest of private entrepreneurs have been increasingly directed to this centre. All these factors have made Bogra the 'Heart of the Northern Region'.

Finally, we may conclude that at present, every where core areas are well served by communications as a result of which "a capital is always located in a highly accessible area or the place with the highest population potential index" (warntz; 1965 : 5-6 ).

#### BOGRA DISTRICT AS A POSSIBLE NUCLEUS OF REGIONAL DEVELOPMENT IN THE NORTHERN REGION .

Zaman (1987) in his research on strategy of development for the backward Northwest Region (Northern Region) has analysed the overall situation prevailing in the region and future trend of development. As the development activities tend to take place in a favoured location, Zaman has applied growth pole-growth centre concept for his study as the possible development strategy. According to him, the approach represents a

hierarchical form of growth pole and growth centres aiming at rapid urbanisation and industrialisation in the region. Naturally the growth pole falls in the highest spatial hierarchy. To explain the need for forming growth pole Zaman (1987 :134) argues that " the high congestion of the Dhaka metropole results from its domination of the spatial structure, and the lack of large growth centres to compete with the metropole, the role of growth pole in the Northwest region would be to counter the growth of large metropole on one hand, and restrain the out flow of resources from the region on the other".

In the approach he has considered four-tier hierarchy as :

- (1) One growth pole at Bogra,
- (2) Growth centres at district centres level,
- (3) Growth points at the thana level, and
- (4) Rural growth centres at the union council level.

For practical sense, Zaman (1987 : 136) argues that some relevant criteria initially should be considered that would help to create necessary provisions for the establishment of a growth pole which is important for the basis of industrial and administrative functions. On the other hand, it should be such an area that is able to generate necessary employment opportunities in occupations related to availability of natural resources and local skills.

To find out the possible location of growth pole he has measured location quotient using employment data. But practically it does not give expected result. Then he follows descriptive

method as what is seen in reality. In this respect, it is considered on the basis of the study of strategic location, flooding, mineral resource potential, and possibilities of development of physical infrastructure for 5-010 district headquarters.

As regards location, though Rajshahi is the largest city and divisional headquarter of the region, it is in the remote west. Pabna also lies in the extreme corner of the region. These two district towns are far away from Rangapur and Dinajpur. In the same way Rangapur and Dinajpur towns are in the extreme north. Amongst them Bogra is in the middle of the region.

However, studying all the aspects Zaman (1987 :151) finally concludes in selecting Bogra as a growth pole from the above point of view. He identifies the possible reasons :

- (1) Bogra's location at the centre of the region,
- (2) Bogra district is not seriously affected by seasonal floods,
- (3) Bogra has the largest mineral resource reserve in the region,
- (4) The transport system is more highly developed than in the other areas,
- (5) Lastly, the location of industries favours the agglomeration of industries in Bogra.

Here, again we may add that the newly discovered coal mines in the Rangpur and Dinajpur districts (not far from Bogra),

REAPPRASSED CONSTRUCTION OF Yamuna Bridge, International Route (under construction) etc. will favour tremendous development of the town provided that these plans materialise and are implemented.

In conclusion, it may be pointed out that the <sup>has been proved</sup> ~~view~~ through different methods and descriptive analysis, ~~it~~ <sup>has been proved</sup> Bagra's superiority, comparing region to region, district (old) centre to centre in terms of location, economy social, future resources workability, transport and communication, industrial agglomeration, role of private entrepreneurs and government emphasis on developmental activities including office function. All the above factors only endorse our view that Bagra is not only a district headquarter but it is an emerging regional centre/regional capital/Growth pole.