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Spatial Pattern of Out - Migration from Bhaktapur Town

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Introduction

The pattern of migration is directly related to space. The movement of human beings is involved in overcoming a number of resistances which are generalized in the phrase 'friction of space'.[1] Space involves distance which itself is something to be passed over. Distance calls for an expenditure of effort, time and cost. There also is perception–distance. Distance expressed in these senses may be taken as an explanation of migration. Here our hypothesis states that distance acts as a negative factor. Decay rates rise with increasing distances of destinations.[2] It becomes a strong negative force when seasonal and daily movements of population are involved. However, it cannot resist permanent migration, when powerful opportunities exist in the distant places of destination.

Distance is also a phenomenon which structures the pattern of migration. It becomes a method in making enquiry of how and to what extent migration has its expression in space.[3] Therefore, distance conditions the pattern of migration by structurtng it and generating processes which are involved in structuring the pattern.[4] The objective of the present study is to analyse the pattern of outmigration from Bhaktapur town in relation to Space.

Data Collection

The study is exclusively based on primary data. For data collection a specific sample design was framed. The entire built-up of the town was divided into four sectors, taking the central part located at Taumadhi as the crossing point of two lines. Grids were drawn in the map. In each sector, ten percent of the total number of grids were randomly selected.

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In each sampled grid, a census was made. All the houses were approached to get information on the outmigration. The next-neighbour of the outmigrant family was the respondent who was asked to provide information on the number of pesrons involved in out-migration and destinations.[5]

In measuring the distance of destinations, route distance was considered. However, in those places which do not have direct road connection with Bhaktapur straight line measurement was made.

In Bhaktapur, outmigrants far outnumbers in-migrants.[6] This town lies in the lagging area of the Kathmandu valley, demanding for new employment opportunities.[7] During the period from 1951 to1981, 3400 people left the town of Bhaktapur. This involved about 6.7 percent of the present total population of this town. During this period, the annual growth rate of outmigration is 0.7 percent. However, the rate of outmigration in not uniform for all the three decades. In 1951 - 1961, the outmigration was 2.7 percent of the total population of the town The migration increased to 4.4 percent during the succeeding decade. It has fallen to 2.1 percent in the decade of 1971-1981 The annual growth rates of outmigration have involved 0 3, 0.4 and 0.2 percent in 1951-1961, 1961-1971, and 1971-1981 respectively. This magnitude of outmigration does not compare with the figures of the intra-country migration. According to the 1951 - 1954 census intra - country migration involved approximately 0 16 percent of the total population, and this has increased to 2 and 4.5 percent in 1961 and 1971 respectively.[8] The number of outmigrants from Bhaktapur has been relatively high during the decade 1961-1971. This period is followed by the decade of 1971-1981 when about 1000 people have moved out from Bhaktapur, and the least number is recorded in 1951-1961. These figures do not compare with the values of 1951 - 1961. These figures do not compare with the values of the nation, which show steady increase of migrants.

Model of Migration

An approach based on an inductive model of curve fitting has been applied here. Similar approaches have been used in the study of migration of population in Scandinavian countries. It is particularly in Sweden that within the framework of similar models migration pattern has been analysed.[9] An exponential migration model is applied in the present study. The proposed model is:

$$M = aD^{-b}$$

Where M is the number of migrants; D is the distance and a and b are parametres. The values of a and b parametres have been computed by logarithmic transformation.

Application of the Model in Outmigration

It is hypothetically assumed that the improvement of transportation facilities influences distance. This is well reflected in the increase of migration.[10] Equation has been estimated

for three different periods to see how the expected values change indicating their links with the development of transportation facilities in the country. The values in successive periods are as follows:

In 1951 to 1961:

$$M = aD^{-b}$$

$$M = 187.84XD^{-0.1}$$

In 1961 to 1971:

$$M = aD^{-b}$$

$$M = 70\,45XD^{-0.1}$$

In 1971 to 1981:

$$M = aD^{-b}$$

$$M = 440.53XD^{-0.6}$$

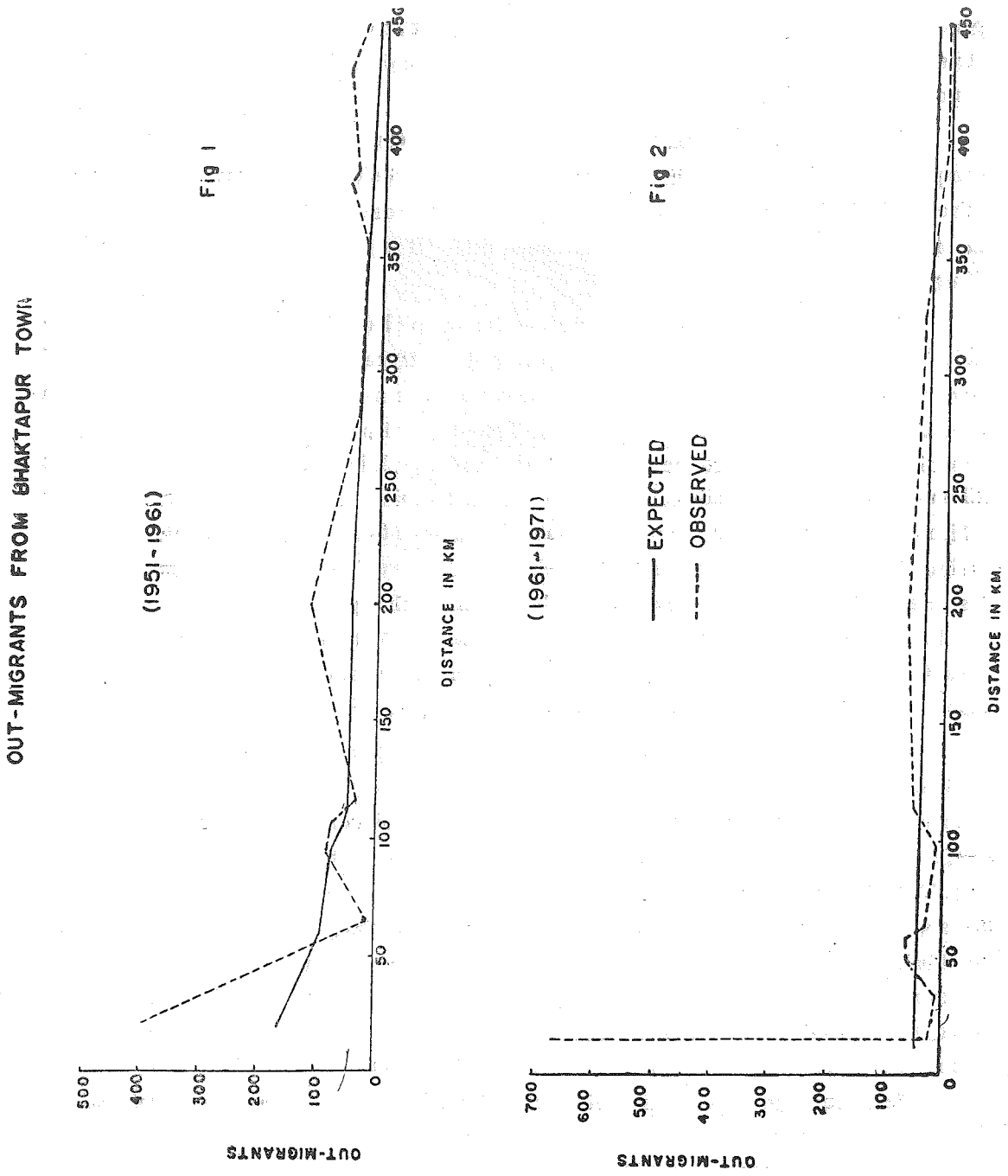
The expected number of outmigrants from Bhaktapur to different destinations has been derived from the above equations. The expected and observed value of outmigrants are given in Tables 1, 2, and 3. Fig. 1 shows that the expected curve line of outmigration during the period of 1951-1961 is very steep upto a distance of sixty-five kilometres Then it becomes gentle. From the peak point located at the distance of twelve kilometres the drop is very sharp. Outwards from the destination of sixty-five kilometres the decline is well percep-

Table 1

Out migration From Bhaktapur Town in 1951—1961

Destination	Distance in Km.	Expected Outmigrants	Observed Outmigrants	Residual
Kathmandu	12	168	400	+232
Hetauda	65	81	20	—61
Ramechhap	90	70	30	—40
Birgunj	110	64	80	+16
Narayanghat	115	63	50	—7
Pokhara	200	50	120	+70
Biratnagar	325	40	40	X
Nepalganj	440	35	60	+25
Dhangadhi	450	34	40	+6

Source: *Field Survey, 1982*


OUT-MIGRANTS FROM BHAKTAPUR TOWN
Fig 1
(1951-1961)
OUT-MIGRANTS
DISTANCE IN KM
0
50
100
150
200
250
300
350
400
450
100
200
300
400
500
Fig 2
(1961-1971)
EXPECTED
OBSERVED
OUT-MIGRANTS
DISTANCE IN KM
0
50
100
150
200
250
300
350
400
450
100
200
300
400
500
600
700

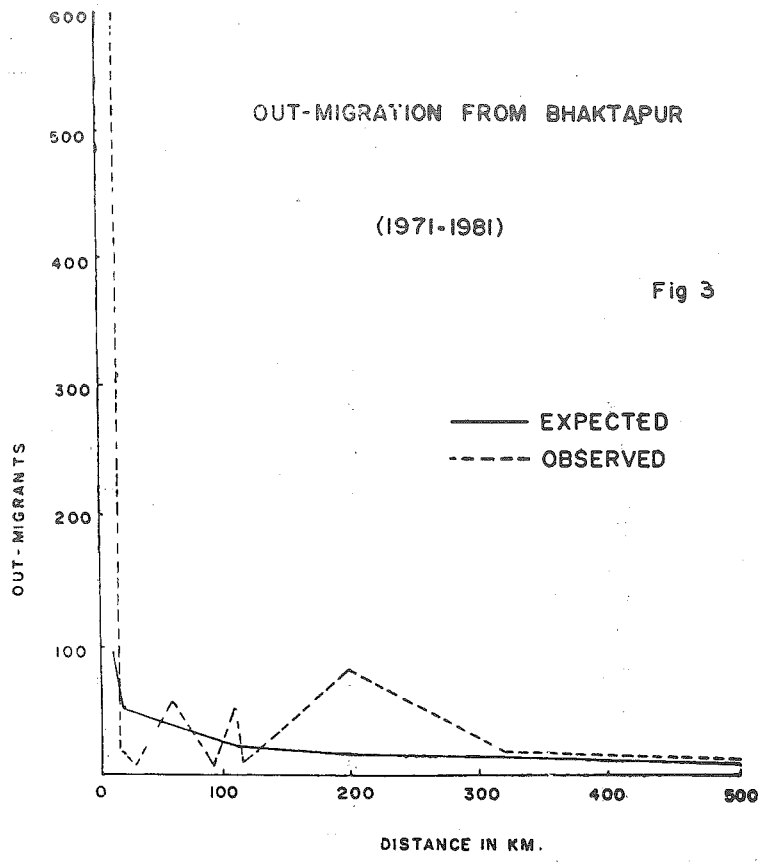
tible, although the curve is gentle. The observed curve line is not comparable with the expected one. Within the limit of sixty-fiive kilometres the curve is very steep. The trend of the observed pattern does not, in general, confirm to the expected pattern. The observed pattern is very irregular. In addition to the peak point at the destination of twelve kilometres, there are other well recognisable upward tending points. The line does not constitute a smooth curve.

Table 1 shows the pattern of residuals also. Only one destination, Biratnagar, compares in totality. Out of the eight residuals, five are positive and three cases show negative residuals. The pattern indicates that outmigration from the town of Bhaktapur during the decade under review has limited movement fields. It is excessively concentrated within a very short distance.

It is seen that expected curve line for the period of 1951—1971 is very gentle (Fig. 2). In some sections, gradient is inperceptible. Hypothetically, the pattern should have a very prominent wide field of movement from this town. But the observed pattern does not compare with the expected pattern. The observed pattern is characterised by abrupt rise and fall. There are four distinct peaks, and a peak located at the distance of twelve kilometres is very conspicuous. It is clear from Table 2 that no destination presents values which are comparable with the expected values. All seventeen observed points appear as residuals. Nine residuals are positive and eight are negative. The pattern, in general, indicates that the outmigration has wider field than during the previous decade. Some more additional destinations have appeared. This new trend of outmigration can be safely related to the development of modern transportation and communication facilities, that has taken place in the country during the decade of 1961-1971.[11]

Fig. 3 shows that the expected curve line of outmigration during the decade 1971—1981 compares broadly with the line of 1951—1961. The curve is very steep up to sixty kilometres. It becomes relatively gentle from sixty to sixty-five kilometres. It becomes gentle beyond ninety kilometres. A gradual gentle curve line is found beyond ninety kilometres. Therefore, there are four steps where the gradient of the curve line changes. Decay rates are perceptively regular with an exception of relatively steep gradient in close proximity to Bhaktapur. However, the observed pattern, like in other decades, does not conform to the expected pattern. Here the latter agrees fairly well with pattern of 1961—1971. In both cases, there are several upper peaks indicating the existence of scattered destination points. But the curve line of 1971—1981 differs markedly from that of 1951-1971 in terms of the magnitude of outmigrants at peak points, the former showing relatively very low values. Negative residuals are more numerous than positive ones (Table 3). Out of the total twelve detsinations, seven places are negative. There are only five positive residuals.

The general pattern observed during the entire period under review (1951-1981) is different from the individual pictures of successive decades (Table 4). The section of very


OUT-MIGRATION FROM BHAKTAPUR
(1971-1981)
Fig 3
EXPECTED
OBSERVED
OUT-MIGRANTS
600
500
400
300
200
100
0
100
200
300
400
500
DISTANCE IN KM.

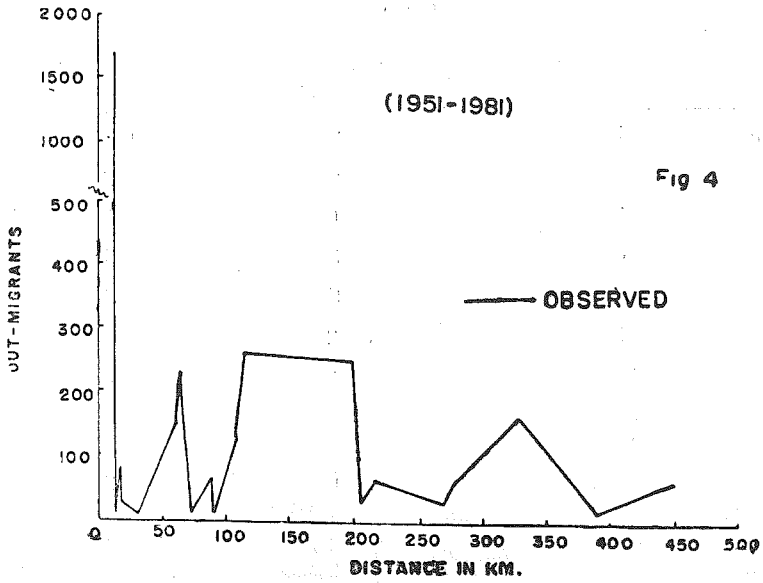

(1951-1981)
Fig 4
OBSERVED
OUT-MIGRANTS
2000
1500
1000
500
400
300
200
100
0
50
100
150
200
250
300
350
400
450
500
DISTANCE IN KM.

Table 2

Outmigration From Bhaktpur Town 1961-1971

Destination	Distance in Km.	Expected Out-migrants	Observed Out-migrants	Residuals
Kathmandu	12	55	600	+645
Deopatan	13	54	10	—44
Patan	15	53	60	+7
Dhulikhel	18	52	60	+8
Trisuli	60	47	90	+43
Hetauda	65	46	180	+134
Pathalaiya	88	45	10	—35
Birgunj	110	44	20	—24
Narayanghat	115	43	200	+157
Pokhara	200	41	40	—1
Jaleswor	206	41	30	—11
Siraha	215	41	10	—31
Ghorahi	270	41	30	—11
Palpa	275	40	60	+20
Biratnagar	325	39	100	+61
Nepalgunj	440	38	50	+12
Dhangadhi	450	38	10	—28

Source : *Field Survey*, 1982.

Table 3

Outmigration From Bhaktapur Town 1971-1981

Destination	Distance in Km.	Expected Out-migrants	Observed Out-migrants	Residual
Kathmandu	12	99	690	+591
Patan	15	67	20	—47
Tokha	28	60	10	—50
Trishuli	60	38	60	+22
Hetauda	65	36	30	—6
Bhimphedi	95	29	10	—19
Birgunj	110	26	50	+24
Narayanghat	115	25	10	—15
Pokhara	200	18	80	+62
Biratnagar	320	14	20	+6
Terathum	385	12	10	—2
Dhangadhi	450	11	10	—1

Source: *Field Survey*, 1982.

steep slope in proximity to Bhaktapur is markedly conspicuous. The greater part of the line lies at the bottom indicating the coverage of only limited fields of movements.[12] There are some bulging sections. Of them, the portion between distances of 110 and 200 kilometers is relatively remarkable. The line does not form a curve of smooth gradient. It is rather partly irregular and partly straight (Fig. 1).

It is obvious that the inductive model of curve fitting does not substantiate the pattern of outmigration from Bhaktapur. In decades, deviation rather than conformity is more obvious. Here the model does not appear a meaningful reference to explain the pattern of migration.

Table 4

Destinations of Outmigration From Bhaktapur (1951 to 1981)

Destination	Distance in Km.	Absolute Number of Outmigrants	Percent
Trishuli	60	150	4.4
Nepalganj	440	60	1.8
Patan	15	80	2.3
Kathmandu	12	1690	50.0
Hetauda	65	230	6.7
Birgunj	110	150	4.4
Narayanghat	115	260	7.5
Pokhara	200	240	7.0
Biratnagar	325	160	4.6
Dhanagadhi	450	60	1.8
Bhimphedi	95	10	0.0
Tehrathum	385	10	0.3
Palpa	275	60	1.8
Pathlaiya	88	10	0.3
Rammechhap	90	60	1.8
Dhulikhel	18	30	0.9
Siraha	215	60	1.8
Jaleswor	206	30	0.9
Ghorai	270	30	0.9
Deopatan	13	10	0.3
Tokha	28	10	0.3
TOTAL	3475	3400	100.0

Source: *Field Survey, 1982.*

Conclusion

A study of migration in relation to distance is a meaningful approach. A great many studies have been made using models which are similar to the proposed model in this study. It is obvious that distance-decay exists in movement of people. In all cases, as discussed above, the steady-fall-off of outmigration with distance is shown by the expected pattern. Although decay rates are related to distance in several places, the pattern of steady-fall-off is highly distorted in the observed behaviour. The uneven distribution of opportunities of jobs and other facilities explain well this distortion. The outmigration from Bhaktapur is highly selective in terms of destinations. Therefore, lapse rates do not show regular relation with distance.

It is noted that during all the three decades there is high discrepancy between observed and expected number of outmigrants from Bhaktapur. The distribution of outmigrants is very irregular. This is related to the locational pattern of destinations. It is found that most of the destinations are the new urban centres where potential opportunities of employment are high. These new urban centres are not evenly distributed. The scattered pattern of the distribution of outmigrants is thus related to the uneven distribution of towns which are the important destinations. The outmigrants are not evenly distributed among these new towns. Some towns like Pokhara, Hetauda, Narayanghat and Trishuli with high growth rates attracted more migrants than the old Terai towns

Foot Notes

1. A. H. Hawley, *Human Ecology* (New York: Ronald, 1950), p. 237.
2. Adams, Abler, *et. al, Spatial Organization: The Geographers View of the World* (Englewood Cliffs:Prentice Hall, 1971), p. 500.
3. See T. Hagerstrand "Migration and Area:Survey of a Sample of Swedish Migration Fields and Hypothetical Considerations on their Genesis," *Human Geography*, Series B, 1957.
4. Adams, Abler, *et. al., Op. Cit.*, footnote No. 2, p. 88.
5. See C. B. Shrestha, *Pattern of Urban Migration in Nepal* (In press).
6. See National Commission on Population *Internal and International Migration in Nepal* (Kathmandu: NPC, 1983).
7. Department of Housing and Physical Planning, *The Physical Development Plan for the Kathmandu Valley* (Kathmandu: Department of Housing and Physical Planning, 1969), p. 165.
8. R. Rana and Y.S. Thapa, "Population Migration: Nature and Scope" In D. C. Upadhya and J.V. Abueva (eds.) *Population and Development in Nepal* (Kathmandu: CEDA, 1974), p. 43.
9. See Hangerstrand, *Op Cit.*, foot Note No. 3.
10. See J. I. Clarke, *Population Geography* (Oxford: Pregamon, 1976)
11. See B. Bajracharya and C. B. Shrestha, *Transportation Communication Linkages in Nepal* (Kathmandu: CEDA, 1981)
12. See P. Hagget, *Locational Analysis in Human Geography* (London: Edward Arnold, 1969.)