CHAPTER - IV
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CHANGES IN ZONE OF INFLUENCE OF SMALL
AND MEDIUM TOWNS

- Introduction

- Definitions

- Review of Literature

- Choice of Method

- Methodology

- Regional Analysis

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INTRODUCTION :

The study of zone of influence of small and medium towns has been attempted in this chapter, to find out its relevance with the generative and parasitié nature of towns. It is generally accepted that if the places are growing in their population and functional sizes, they expand their zone of influence. Further, it is also accepted that if the places are growing at the regional rate of growth, then their zone of influence remains static, which reflects that they are growing at a regional rate of growth. On the other hand, if the places indicate positive change in their zone of influence, then such places are growing at higher than the regional rate of growth. However, some of the places indicate negative change in their zone of influence, then such places are growing at very low rate which is less than regional rate of growth.

The analysis of the zone of influence of small and medium size towns in the study region will further help us in finding out their generative and parasitic character.

DEFINITIONS :

The influence of the towns on the surrounding area is an important aspect discussed by various geographers. Any town either big or small has its area linked by economic and social bonds. The towns do not exist only to serve the people living within the bonds, they are also intimately connected with areas

surrounding them. Because of this very nature of towns they are called the foci of the surrounding area. The zone of influence of towns is also called 'Umland'. Many other expressions such as 'catchment area', 'Urban field', 'tributary area', 'city region' and 'complementary area' have appeared in the published literature in the field of urban geography. This umland has been defined by several geographers. Dickinson (1947) has defined term umland as the portion of an urban field that is nearest to the city upto a distance of 20 miles. Taylor (1949) has consider the term umland of a city that portion of surrounding area which is linked culturally with the city. Prof.Singh,R.L. (1955) has defined it as 'the area, in which, the region and the city are culturally, economically, politically interrelated forms the umland of a particular town or city'.

There have been two approaches to the identification and delimitation of zone of influence. The first has looked outward from the city in order to findout the areas served by it. The second has look inward from countryside (Carter,1972).

The problem of delimiting the sphere of influence of towns is two-fold. The first problem deals with the actual fieldwork and collection of data empirically. Second problem concern with the use of mathematical model, which is very easy but gives doubtful result. When large number of cities to be consider, field data collection becomes laborious, time consuming and costly. In such cases generally empirical methods are

avoided and theoretical models and quantitative methods are used.

REVIEW OF LITERATURE :

In empirical studies, several geographers have calculated the zone of influence of cities by considering various services and functions. Among them the work of following geographers is important. Dickinson (1930 and 1933), Park and Newcomb (1933), C.D.Harries (1943), Schultze (1951), Bracey (1953), Whitelaw (1962), Scott (1964), Green (1950) and Aughton J.P. (1972) have worked and delimited the zone of influence of towns. In India, R.L.Singh (1955), U.Singh (1961), Alam (1965), Dwivedi (1964), Mukharjee (1962) and Dixit (1968) have studied the zone of influence of cities by considering various functions and services.

Apart from these empirical methods, several authors have used theoretical models for calculating zone of influence of urban centres. Reilly (1931) has put forward his law of retail gravitation and tried to calculate the retail trade area of city. Stewart (1958) and several others, have used gravity potential model of human interaction. In India Mahadeo and Jayshankar (1969) have used modified gravity potential model and calculated the amount of interaction between two major cities of Karnataka.

Prakash Rao (1958) in simple mathematical model tried to calculate the zone of influence of towns of Karnataka.

CHOICE OF METHOD :

In order to find out changes in the zone of influence of thirty nine towns we have used a mathematical equation derived by V.L.S.Prakash Rao (1958). Since the area under study is large and inspite of our efforts the empirical data of small and medium towns could not be procurred. It was impossible to study the sphere of influence by the way of fieldwork, hence, the theoretical method has been adopted.

METHODOLOGY :

V.L.S. Prakash Rao has given a working formula for calculating the zone of influence. It is accepted as a working hypothesis that each urban centre primarily exerts some influence as a service or market centre on the nearby or another urban centre. The degree of such influence depends on its population size and function. This hypothesis is used as a basis to work out a formula and apply it to design a map for showing sphere of influence.

The working formula can be expressed as :

$$D = \frac{T \times A}{U} \qquad \ldots\ldots \quad I$$

$$R = \frac{\overline{T \times A}}{U} \qquad \ldots\ldots \quad II$$

Where, D = Degree of urban influence

A = Total area of the study region

U = Total urban population of the
      study area

T = Town population

R = Radius of the circle

$\frac{A}{U}$ = is the standard value and is a
      constant (K)

In order to find out the change in the sphere of influence it has been calculated for the year 1961 and for the year 1981. Table 4.1 gives the details of theoretical range "R" for the year 1961 and 1981.

REGIONAL ANALYSIS :

The obtained 'R' values of two different period for all small and medium size towns have been depicted in Fig.4.1, which clearly indicates that in the study region, there are twenty towns, whose zone of influence shows remarkable negative change. They include Alore, Harnai, Khed, Malwan, Pophali, Rajapur, Sawantwadi and Vengurla from Ratnagiri district, Murgud, Malkapur and Panhala from Kolhapur district; Akkalkot, Dudhani, Karmala, Maindargi and Mangalwedhe from Solapur district; Rahimatpur and Satara Road from Satara district and only one town, Ashta from Sangli district. Most of the towns showing decrease in the zone of influence are the stagnant towns or declining towns of the study area. Such towns can be called stagnant or parasitic towns. (Fig 4.1)

There are seven towns in the study region, who indicate slow generative character have their sphere of influence in a

TABLE 4.1 : Zone of influence of small and medium towns.

Sr.No.	Town	Radius (1961)	Radius (1981)
1	Alore	10.34	09.03
2	Chiplun	26.02	26.82
3	Dabhol	14.85	14.57
4	Dapoli Camp	14.42	14.95
5	Harnai	16.41	10.81
6	Kankavli	-	07.39
7	Khed	17.44	15.92
8	Malwan	27.23	20.75
9	Pophali	14.99	10.94
10	Rajapur	18.54	14.86
11	Ratnagiri	35.26	34.98
12	Sawantwadi	25.07	21.54
13	Vengurla	22.39	17.51
14	Gadhinglaj	21.07	21.86
15	Gandhinagar	15.45	16.35
16	Jaysingpur	21.37	24.42
17	Kabnur	-	27.42
18	Kagal	20.02	20.27
19	Kurundwad	21.29	20.90
20	Murgud	15.88	14.62
21	Malkapur	12.85	10.44
22	Panhala	09.00	07.44

Table 4.1 Conti..

Sr.No.	Town	Radius (1961)	Radius (1981)
23	Vadgaon	18.95	18.93
24	Ashta	23.79	23.04
25	Kirloskarwadi	-	22.41
26	Tasgaon	26.31	25.59
27	U.Islampur	29.42	28.64
28	Vita	23.53	24.46
29	Koregaon	-	19.04
30	Mahabaleshwar	15.83	15.60
31	Mhaswad	20.80	19.94
32	Panchgani	15.43	14.64
33	Phaltan	28.11	29.00
34	Rahimatpur	19.52	17.02
35	Satara Road	18.01	16.43
36	Wai	27.23	26.75
37	Akkalkot	29.75	26.55
38	Dudhani	16.34	14.36
39	Karmala	21.63	20.38
40	Kurduwadi	23.07	22.94
41	Maindargi	21.35	16.59
42	Mangalwedhe	23.42	20.43
43	Sangola	19.04	19.91

SOUTH MAHARASHTRA
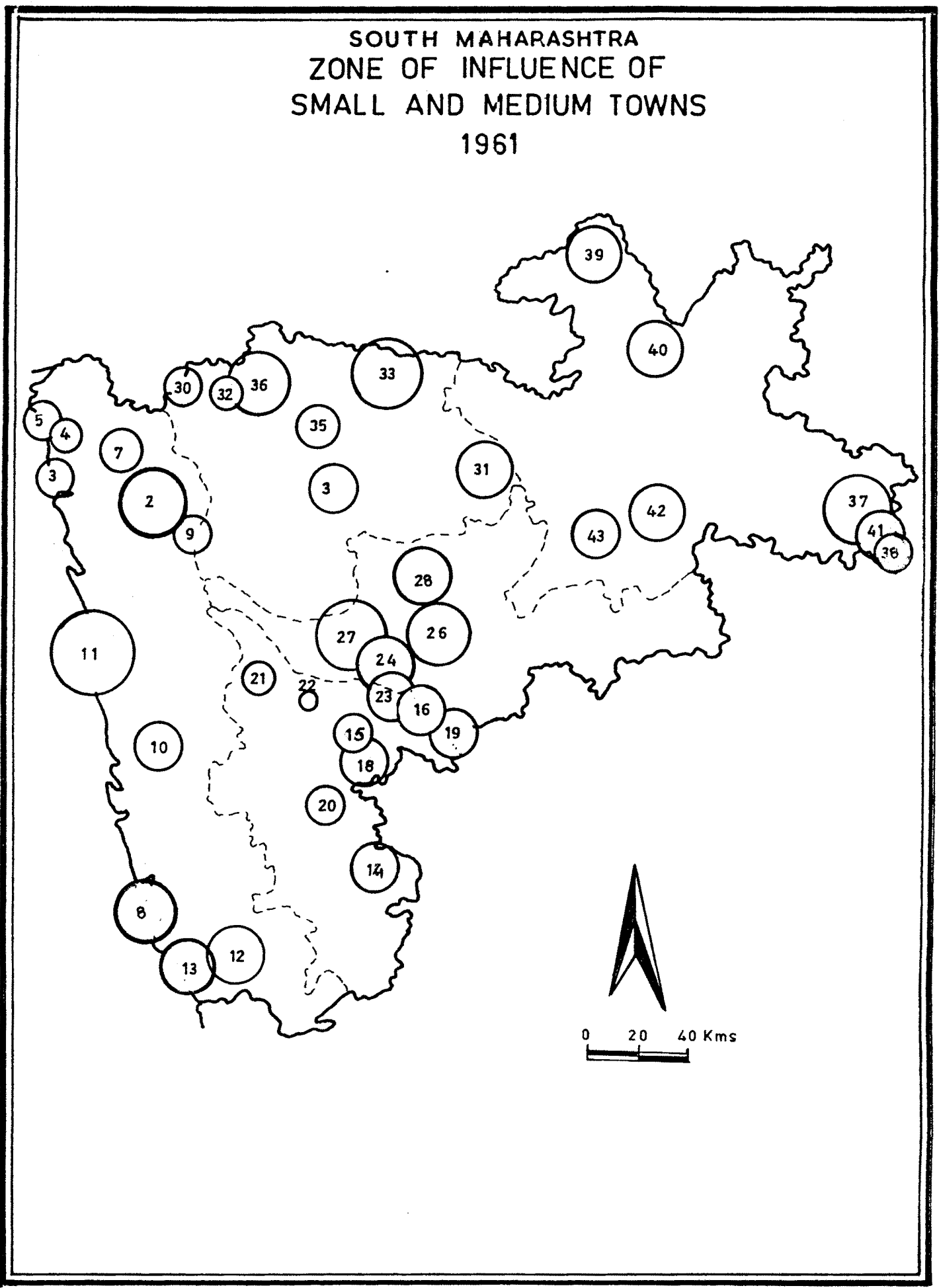# ZONE OF INFLUENCE OF
SMALL AND MEDIUM TOWNS
1961

Fig. 4·1

SOUTH MAHARSHTRA
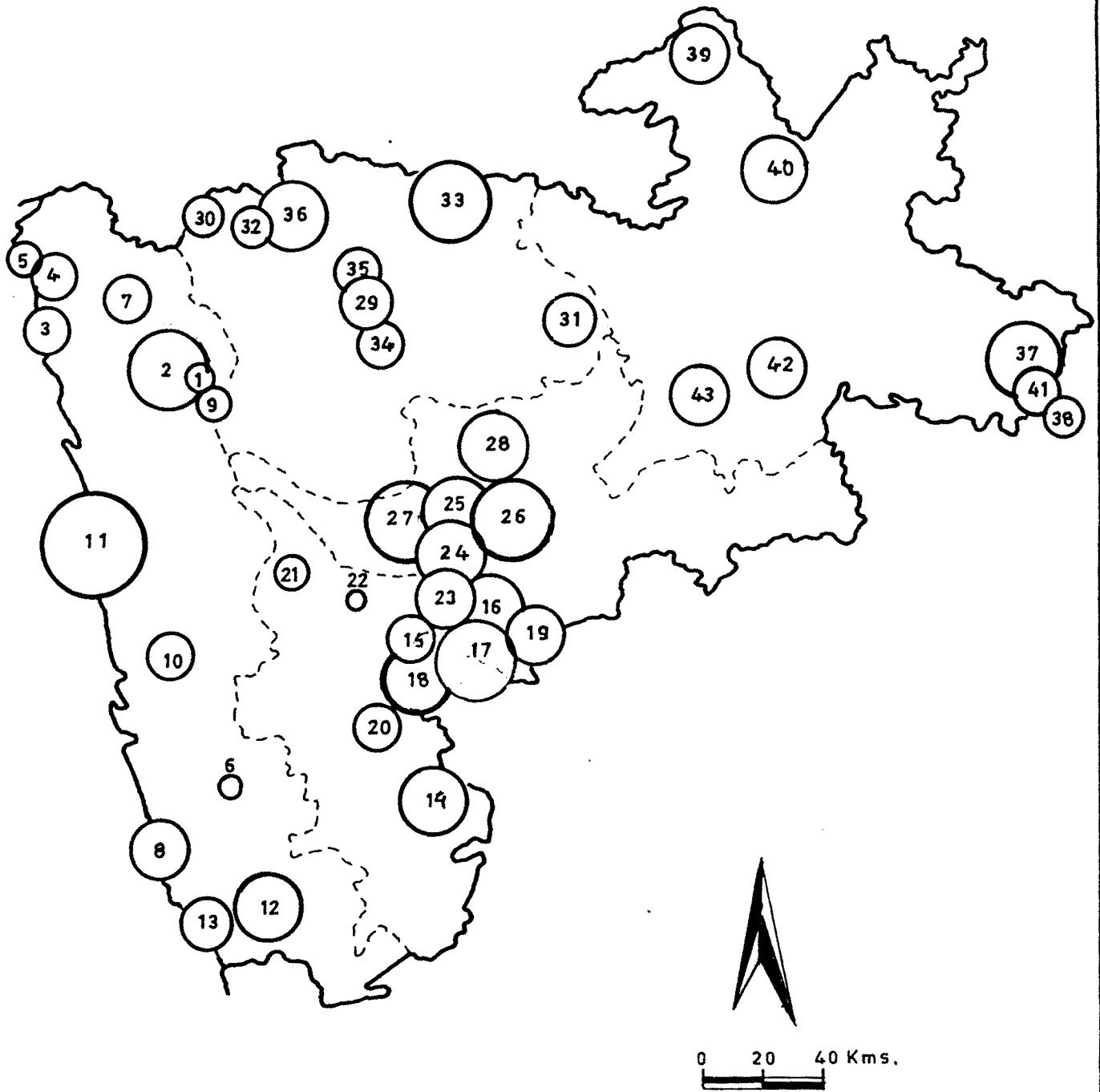ZONE OF INFLUENCE OF
SMALL AND MEDIUM TOWNS
1981

Fig. 4·2

static position, where the deflection in the zone of influence
is comparatively less, they include Ratnagiri, Vadgaon, Tasgaon,
Mahabaleshwar, Mhaswad, Kurduwadi and Wai. Most of these
towns have a static zone of influence with the very little
fluctuation. All these towns are growing but their rate of
growth is very slow. On the other hand there are several towns
in the study area whose rate of growth of population and functions
is higher than the average rate of growth of towns in the study
area. They include Chiplun, Dabhol and Dapoli Camp from Ratna-
giri district; Gadhinglaj, Gandhinagar, Jaysingpur, Kagal and
Kurundwad from Kolhapur district; U.Islampur and Vita from
Sangli district and Panchgani and Phaltan from Satara district.
There is only one town from Solapur district Sangola which
indicate higher change in the zone of influence. (Fig. 4.2)

Regional analysis of zone of influence clearly indicate
generative and parasitic character of towns. This character of
different towns will be given due consideration while identifying
the generative and parasitic character of town.

The present analysis will certainly help in finding out
the growth and nongrowth character of small and medium size
towns. In many cases inspite of high population growth the
towns could not increase their zone of influence because in
proportion to growth in population of town, the overall increase
in the urban population in a region is also observed. The plotted
circles of zone of influence of small and medium size towns
indicate the change effectively.

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