Central Place Systems and Spatial Interaction in Nilgiris and Coorg (South India)

By Steen Folke

Abstract

The process of spatial integration in two South Indian districts is investigated by means of the central place systems and the patterns of spatial interaction. In Coorg a central place hierarchy of low order and a comparatively small interaction among the centres. In Nilgiris a tendency towards primacy in the central place system and marked spatial contrasts in the interaction pattern.

Introduction

This article presents an attempt to assess the level to which the spatial integration process (see below) has advanced in the two South Indian districts of Coorg and Nilgiris. The paper is one of a series, the purpose of which has been to investigate some aspects of the plantation system in the area (cf. *Folke,* 1965). Both districts are dominated by plantations, but they are different in many other ways (cf. *Folke,* 1966), and this paper traces the differential development in terms of spatial integration.

One of the important preconditions for an analysis of this sort is fulfilled up to a point: whether a result of topography or history, both Nilgiris and Coorg to some extent function as regional entities. In accordance with the theory of spatial integration outlined below, the analysis concentrates on a study of the interaction patterns and the central place systems. Hence the article may be viewed as a modest attempt to explore the "possibilities of connecting central place and human interaction theories" (*Olsson,* 1965). The central place systems are examined by way of selected indicators, and the patterns of interaction are exposed in an investigation of bus traffic in the two districts.

Spatial Integration and Urban Development

During the last fifteen years there has been among geographers a growing interest in the problems of economic development. One of the results has been a volume of "Essays on Geography and Economic Development" edited by *Ginsburg* (1960). With contributions by *Philbrick* (1957) and *van Paassen* (1962), some of the essays in this book, particularly those written by *Ullman* and *Larimore,* give an outline of what might be called a geographical theory of economic development.

Obviously the process of economic development has geographical aspects. Man's utilization of the earth leads to an areal differentiation as the culture advances from the most primitive hunting and gathering stages. Some areas are cultivated, others built up, and some developed into roads. Divison of labour and specialization are among the main agents of change. In course of the development process the economy goes from largely subsistence to largely exchange. This transformation is accompanied by an increase in the interaction (transport, all sorts of communication, exchange of ideas etc.) between different places. The process of differentiation leads to continued expansion and intensification of all connections. Hence the development has the dual character of areal differentiation and spatial integration. Fig. 1 shows this in a schematic way.

Certain economic functions and activities are concentrated in towns, because such concentration is advantageous. In course of the development process some towns grow into cities, and new towns emerge. Alongside with the population growth the number of central functions increases, more and more specialized functions being included. A system of central places, closely interconnected, becomes the backbone of the area.

Most central place studies have been carried out in the western countries, but the number of analyses from underdeveloped areas is sufficiently large (cf. *Berry and Pred,* 1965) to prove the usefulnes of the central place theory in these parts of the world. There are important differences, however, between the urbanization process in highly industrialized and less developed countries (cf. *Pitts,* 1962). The towns and cities of the underdeveloped countries bear the stamp of the colonial experience. The concepts of orthogenetic versus heterogenetic cities (*Redfield and Singer,* 1954), and generative versus parasitic cities (*Hoselitz,* 1955) are suggestive in this context.

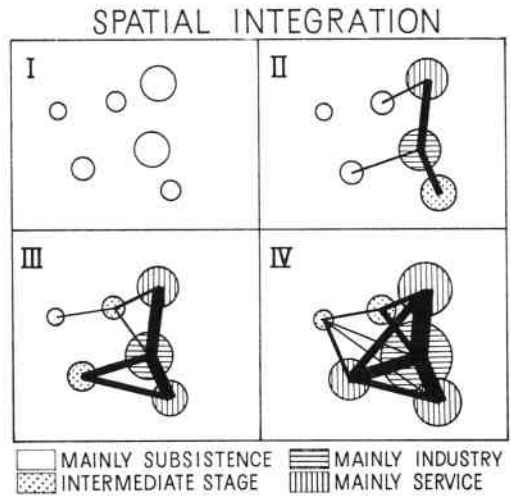

Fig. 1. The development process has the dual character of areal differentiation and spatial integration. In a schematic way the figure shows the development from isolated areas of subsistence activities to the complex, differentiated, and highly integrated society.

Fig. 1. Udviklingsprocessen omfatter på samme tid areal-differentiation og regional integration. Figuren viser skematisk udviklingen fra isolerede selvforsyningsområder til det komplicerede, differentierede og højt integrerede samfund.

Central Functions by Indicator Method

The number of central place studies from India is rather small. Worth mentioning is the invetigation by *Kar* (1962) of the urban hierarchy in the comparatively advanced Calcutta region. In his survey of the central place system in two districts of Punjab, *Mayfield* (1962) stressed the need for research into the great regional variety in India. He indicated, however, that his own method would be of limited value in other, economically less advanced parts of the country. A simpler and more easily applicable method was used by *Prakasa Rao* (1964). The method adopted in the present study bears some resemblance to the latter. It is not very time-consuming and it can be duplicated in local studies over most of the country. It is not suited, however, to the analysis of economically more complex industrial areas, since it has been developed for the study of small towns entirely dominated by tertiary activities at an elementary level. Throughout it should be borne in mind that the central place analysis has been designed to throw light on the spatial integration.

The districts of Nilgiris and Coorg are in an intermediate stage of economic development. Compared to other South Indian districts they are economically well off. In the study conducted by the National Council for Applied Economic Research (1963) the per capita income of Coorg (1955-56) was found to be 361 Rs., which was higher than in any other district of Mysore State. The corresponding figure for Nilgiris was 495 Rs., higher than in any other district of Madras, including Madras City. The comparatively high income

Fig. 2. A "shandy" (weekly market) in Sanivarsante, Coorg. Such markets play an important rôle in the retail trade. The turn-over comprises foodstuffs, clothes, utensils etc. (23. 5. 1964).

Fig. 2. Et „shandy" (ugentlig marked) i Sanivarsante, Coorg. Sådanne markeder spiller en betydelig rolle for detailhandelen. Blandt de vigtigste varegrupper er fødevarer, beklædningsgenstande og husgeråd.

level in either district is primarily due to the important plantation sectors described at some length in *Folke* (1966). However, as accounted for in that paper, the economy of Nilgiris is more diversified than the economy of Coorg.

The central place systems of Nilgiris and Coorg were investigated by means of indicators covering the categories of administration, communication, finance, education, and retail trade. Each category was represented by one type of central function, and most of the types were subdivided according to assumed position in the functional hierarchy. The functions used as indicators were: administrative status, banks, post offices, high schools, and "shandies". A "shandy" (fig. 2) is a weekly market, which plays an enormous rôle in the retail trade pattern of rural India.

A score was allotted to each of the central functions, taking into account the importance and the number of occurrences of that particular function. Obviously the score values are open for discussion. If an indicator, say a commercial bank, occours several times in one place, each occurrence adds 2 to the score. Table 1 shows the score system and the number of occurrences in Nilgiris and Coorg.

Table 1. Central functions (indicators), 1964.

		Score Values	Number of occurrences Nilgiris	Coorg
Administration	District centre	5	1	1
	Taluk centre	4	3	3
	Nad/Firka centre	2	10	11
Communication	Post Office, Main	5	1	1
	P. O. with telegraph & -phone	3	11	9
	P. O. with telegraph or -phone	2	19	3
	P. O. without telegraph or -phone	1	14	9
Finance	Bank, Head-Office or State-	4	5	4
	Bank, Commercial	2	11	11
	Bank, Co-operatice	1	20	13
Education	High School, State-	3	4	5
	High School, Other	1	30	24
Education	"Shandy" (weekly market)	2	14	15
Diversity index	Five categories	4	4	5
	Four categories	3	1	7
	Three categories	2	6	5
	Two categories	1	13	2

Data on the functions listed in table 1 were obtained in the spring of 1964 from various authorities (the collector's /deputy commissioner's office, head post office etc.) in Nilgiris and Coorg. The "diversity index" indicates how comprehensive and balanced the services offered by a particular place are. Central Places which had functions, belonging to all five categories (administration, communication, finance, eduction, retail trade), were given an additional score of four; four categories represented added three to the score, and so on.

Central Place Systems of Nilgiris and Coorg

It was found that one or more of the functions used as indicators occurred in 66 places in Nilgiris and 32 places in Coorg. Figures 3 and 4 are scatter diagrams showing the distribution of central places according to their score. No less than 49 of the localities in Nilgiris and 13 in Coorg have a score of 3 or less and have been left out in the following analysis. The importance of these centers is limited to – at the most – two kinds of functions (of the lowest type, plus 1

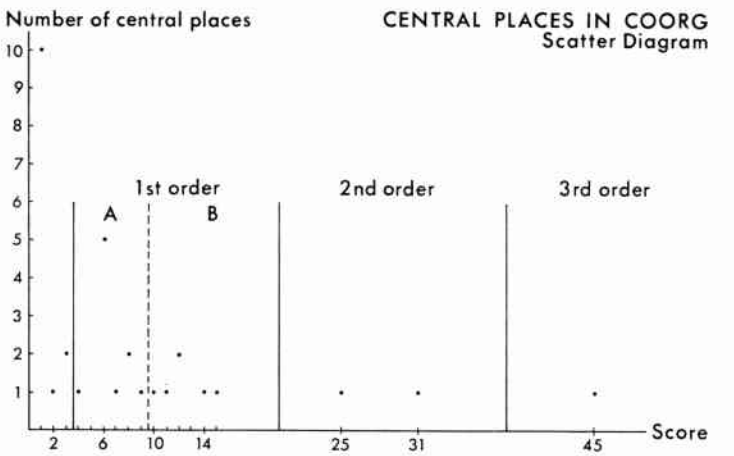

Fig. 3. Scatter diagram of central places in Coorg, 1964. The classification takes into account only those places with a score of more than three. The subdivision of the first order central places is arbitrary.

Fig. 3. Fordelingsdiagram over „central places" i Coorg, 1964. Klassifikationen tager kun hensyn til centre med over tre points. De to grupper „central places" af første orden er fremkommet ved en arbitrær deling.

point added by the diversity index). 17 central places in Nilgiris and 19 in Coorg have reached a score of 4 or more. None of these has scored in only one category (cf. the diversity index in table 2).

It appears from fig. 3 that the central places in Coorg fall into three groups, central places of first, second, and third order, respectively. The first-order central places are further arbitrarily subdivided into a category "A" (4-9 points) and a category "B" (10-14 points). In Nilgiris the central places fall into four groups (fig. 4), central places of first, second, third, and fourth order, respectively. As in Coorg the first-order group has been subdivided into "A" and "B" categories (limiting value: 8). With the class limits adopted the central places of a certain order should be comparable from one district to the other.

A comparison of figures 3 and 4 shows that there are significant differences between the system of central places in the two districts. Coorg has 1 central place of third order, 2 of second order, 6 of first order (B), and 10 of first order (A). The system is hierarchical. In Nilgiris the central place system does not have the character of a normal hierarchy. This district has 1 central place of fourth order, 1 of third order, 2 of second order, 2 of first order (B), and 11 of first order (A). The distribution is much more dispersed than that of Coorg, i.e. the distances between the groups (fig. 4) are greater.

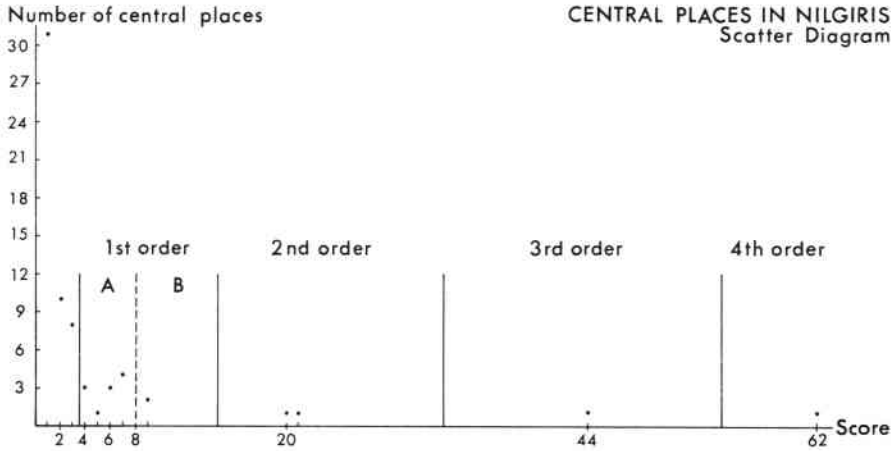

Fig. 4. Scatter diagram of central places in Nilgiris, 1964. The classification takes into account only those places with a score of more than three. The subdivision of the first order central places is arbitrary.

Fig. 4. Fordelingsdiagram over „central places" i Nilgiris, 1964. Klassifikationen tager kun hensyn til centre med over tre points. De to grupper „central places" af første orden er fremkommet ved en arbitrær deling.

The hiatus between the two towns with the greatest scores and the rest is notable. This resembles the case of primacy often observed in city size distributions (cf. *Berry*, 1961).

Naturally the distributions shown in figs. 3 and 4 are to a certain extent influenced by the score values assigned to the central functions listed in table 1. The significance of the results might be questioned as they were arrived at by means of a hierarchy of functions A control has been carried out: the procedure was repeated, all functions were given the score value 1, and the diversity index was disregarded. Table 2 lists the scores of the central places in Nilgiris and Coorg. One column shows the "weighted" scores (identical with those of figs. 3 and 4) computed from the values in table 1; the other shows the "unweighted" scores calculated for control.

Switching from weighted to unweighted scores does not lead do any dramatic changes. There are no shifts in the ranking of the central places, but the difference between the system of Coorg and that of Nilgiris becomes less pronounced. Using the simpler method would also involve some adjustments of the class limits. But on the whole the control supports the validity of the conclusions reached by the more elaborate method.

It is interesting to compare the first-order central places of Nilgiris and Coorg (table 2). Those belonging to the "B" category are gene-

Table 2. Central places (two classifications), 1964.

	Population (1961)	Scores weighted	Scores unweighted	Diversity Index	Order
Coorg					
Mercara	14,453	45	16	4	3
Virajpet	8,138	31	12	4	2
Somwarpet	5,137	25	8	4	
Kushalnagar	2,902	15	6	4	1 B
Ponnampet	2,621	14	5	3	1 B
Sanivarsante	1,391	12	5	4	1 B
Gonicoppal	2,749	12	5	3	1 B
Sunticoppa	1,306	11	4	3	1 B
Napoklu	–	10	4	3	1 B
Murnad	–	9	4	3	1 A
Kodlipet	1,667	8	4	3	1 A
Srimangala	–	8	4	3	1 A
Hudikeri	–	7	3	2	1 A
Bhagmandala	–	6	3	2	1 A
Ammatti	–	6	3	2	1 A
Chethalli	–	6	3	2	1 A
Madapur	–	6	3	2	1 A
Siddapur	–	6	2	1	1 A
Kutta	–	4	2	1	1 A
Nilgiris					
Ootacamund	50,140	62	22	4	4
Coonoor	30,690	44	16	4	3
Gudalur	8,328	21	8	4	2
Kotagiri	15,509	20	7	4	2
Sholurmattam	–	9	4	3	1 B
Wellington	12,067	9	3	2	1 B
Pandalur	–	7	3	2	1 A
Aravenu	–	7	3	2	1 A
Devarashola	–	7	3	2	1 A
Naduvattam	–	7	3	2	1 A
Tumanatti	–	6	2	3	1 A
Aruvankadu	–	6	2	1	1 A
Kullacombai	–	6	2	1	1 A
Katary	–	5	2	1	1 A
Ketty	–	4	2	1	1 A
Selas	–	4	2	1	1 A
Manjoor	–	4	2	1	1 A

rally very small towns – in Coorg classified as "notified areas". Wellington in Nilgiris has an exceptionally large population for this group; its low ranking is due to the fact that functionally it is part of the Coonoor agglomeration (and Coonoor has most of the central functions). The "A" category of first-order central places comprises largely market villages for which population figures are not available. The combined scores of the first-order central places in Coorg are generally greater than those of Nilgiris. The same is true of the diversity scores. It appears that the first-order central places are more developed and balanced in Coorg than in Nilgiris. One may point to the large number of central place "embryos" in Nilgiris (the 49 localities with a score of 1-3, against 13 in Coorg) and venture a hypothesis that the central place system of Nilgiris is expanding, while that of Coorg is stagnating or stable (cf. below).

The method is not suited to comparison between the central places of the highest orders. The choice of indicators is too limited to differentiate among the more complex towns. It is somewhat misleading that the score of Mercara is almost equal to that of Coonoor. Mercara derives its importance from being a district centre. The size of Coonoor is twice that of Mercara and the services offered more varied and complete. On the other hand the method adopted does single out Ootacamund, a town of 50,000 inhabitants and the capital of Nilgiris, as superior to any of the two third-order central places. (If Wellington is added to Coonoor, however, this agglomeration almost catches up with Ootacamund).

The Spacing of Central Places in Coorg and Nilgiris

Figs. 5 and 6 show that also concerning the spacing of central places is there a considerable difference between Coorg and Nilgiris. In Coorg they are spread over most of the district. Mercara (3rd order) is centrally located, and Somwarpet and Virajpet (2nd order) serve North and South Coorg, respectively. Most of the first order central places lie in a belt from Kodlipet in north to Kutta in south along an axis running through the most fertile and intensively cultivated parts of Coorg. Tendencies towards a Christaller type of spacing may be noted in the Somwarpet-Mercara-Virajpet area.

In Nilgiris the two dominant central places, Ootacamund ("Ooty") and Coonoor are located near each other. Several first-order central places are clustered in the Ooty-Coonoor area. The second-order central places Kotagiri and Gudalur lie in the eastern and western portions of the district, respectively. But apart from the Ooty-Coo-

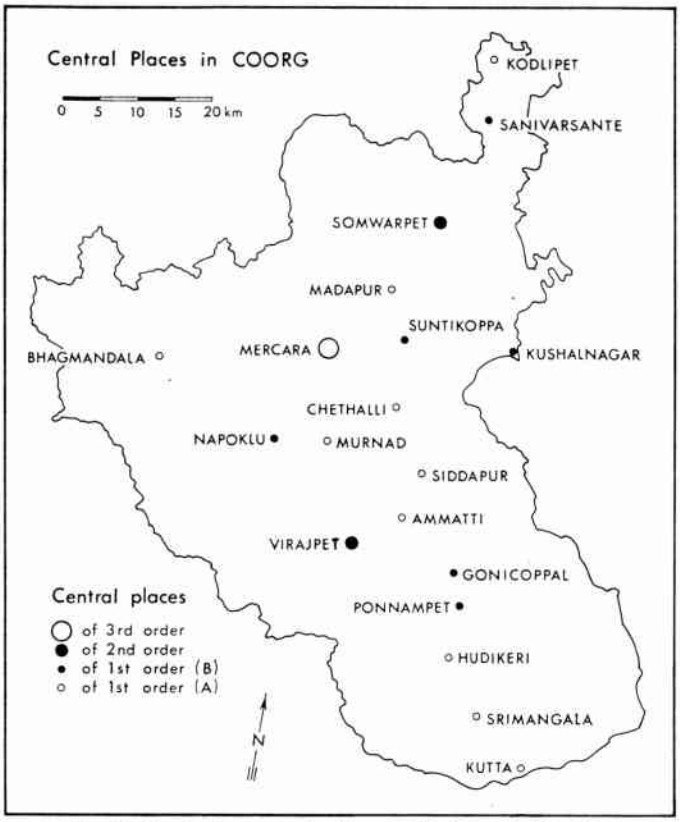

Fig. 5. Central places in Coorg, 1964 (cf. table 2).

Fig. 5. „Central places" i Coorg, 1964 (jfr. tabel 2).

noor area the number of central places is indeed limited. The mountainous nature of Nilgiris to some extent explains the irregular spacing of the central places. However, the contrast between the highly developed Ooty-Coonoor area and the outlying, ill-served portions of the district is a result of the interplay of other factors (see below).

Spatial Interaction in Coorg and Nilgiris

The level to which the spatial integration process has advanced is reflected in the interaction pattern of the district. It is clear from the theory outlined at the outset that the more advanced the integration process, the more developed all kinds of connections between places. The pattern of spatial interaction can be measured in many ways, but in areas like Coorg and Nilgiris the range of communications is evidently more limited than in highly developed industrial

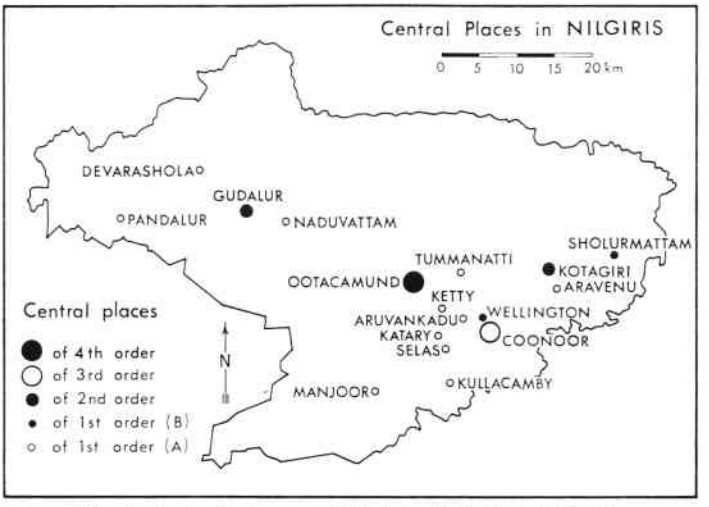

Fig. 6. Central places in Nilgiris, 1964 (cf. table 2).

Fig. 6. „Central places" i Nilgiris, 1964 (jfr. tabel 2).

countries. Letters are comparatively unimportant in a largely illiterate population, telephones in the two districts can be counted in hundreds, and private motor cars are very scarce. Bus traffic was found to be the most suitable and easily available expression of the spatial interaction pattern.

In areas of intermediate development like Nilgiris and Coorg the importance of busses can hardly be exaggerated. A quotation from *Spate* (1957) may well illustrate this: "Perhaps the most powerful agent of change is the battered, ramshackle motorbus, packed to the running-board and coughing its way through clouds of dust along the unmetalled roads to the nearest town". Bus traffic has often been used for the delimitation of city and town umlands, for instance by *Prakasa Rao* (1964), but here it is used as a measure of the degree of spatial integration.

Figures 7 and 8 show the bus service frequencies in Coorg and Nilgiris in the spring of 1964 (based upon material obtained in the regional transport offices of the two districts). In Coorg the bus network covers most of the district, and there are many stretches of road with approximately the same bus frequency. Mercara is an important junction, but places like Kushalnagar, Gonicoppal, and Virajpet (cf. fig. 5) are almost of the same importance. The stretch of road with the highest frequency (Gonicippal-Ponnampet) has 22 double-trips per day.

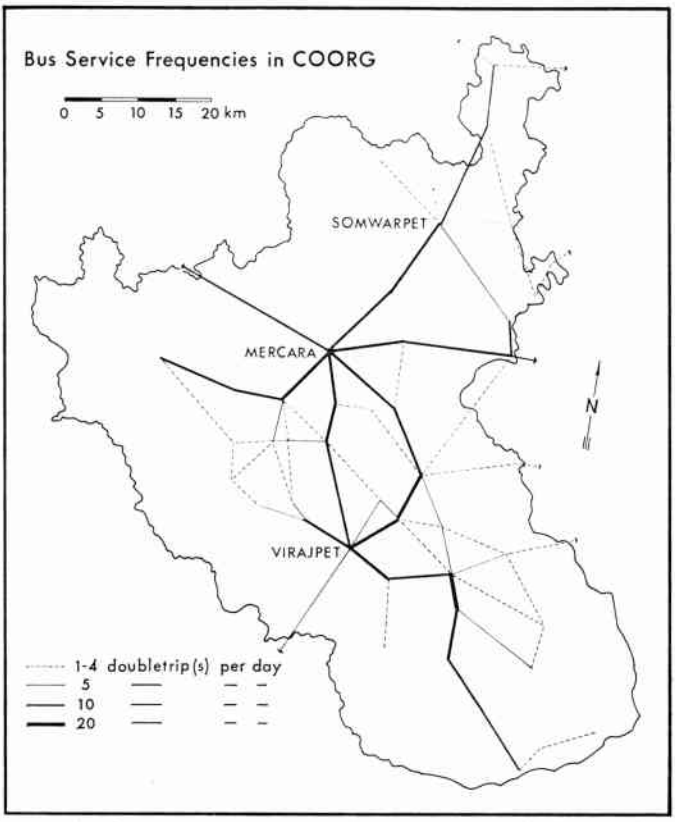

Fig. 7. Bus service frequencies in Coorg, 1964 (data from the Regional Transport Office, Mercara). The frequencies are a measure of the spatial interaction.

Fig. 7. Bustrafikkens turfrekvenser i Coorg, 1964. Frekvenserne er et mål for interaktionen.

In Nilgiris one can speak of a network only in the Ooty-Coonoor area. A great many of the other lines are of a cul-de-sac nature, many of them originating and terminating in Ooty. Important routes lead to Gudalur and Kotagiri and split into all directions. Manjoor's prominence as a bus junction is partly due to the large Kundah hydro-electric project. The overwhelming majority of the services are to be found, however, in the Ooty-Coonoor area. Thus the stretch of road between Ooty and Coonoor is served by 110 double-trips per day. The spatial contrast exposed in the interaction pattern then corresponds to that observed in the central place pattern.

Conclusion

The investigation of the central place system and the interaction patterns, as measures of the degree of spatial integration, shows that

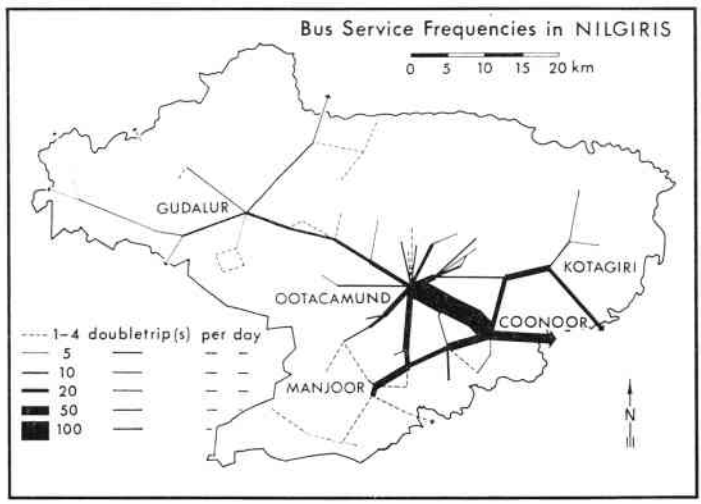

Fig. 8. Bus service frequencies in Nilgiris, 1964. (data from the Regional Transport Office, Ootacamund). The frequencies are a measure of the spatial interaction.

Fig. 8. Bustrafikkens turfrekvenser i Nilgiris, 1964. Frekvenserne er et mål for interaktionen.

the development process has taken different courses in Coorg and Nilgiris. In Coorg a central place hierarchy of low order has emerged, and urbanization is weak (in 1961 only 13 % lived in urban areas). Moreover the system appears to be balanced and stable. The interaction among the centres is comparatively small, and a number of connections has been developed to the same intensity.

In Nilgiris on the other hand there is no normal hierarchy of central places. The tendency towards primacy (fig. 4) suggests that the largest towns have not grown in an "organic" way out of the area. Ootacamund and Coonoor Town Group alone contain 25 % of the district's population (the "urban" population of Nilgiris amounts to 44 % of the total (1961), but this cannot be compared with other districts, since "urban" includes extensive plantation areas, cf. *Folke,* 1966). A number of embryonic central places is emerging and the system appears to be expanding. The interaction pattern shows a marked concentration to the Ooty-Coonoor area, where urbanization is steadily advancing, particularly through the development of satellite towns.

Both Nilgiris and Coorg are important plantation districts, but Coorg has by and large only the traditional agriculture apart from the plantations (cf. fig. 6 in *Folke,* 1966). Here the process of spatial integration has not gone very far.

Fig. 9. The main street in Mercara, Coorg. The street is lined by two-storey buildings with bazaar-shops. The atmosphere of the town is definitely Indian (16. 3. 1964).

Fig. 9. Hovedgaden i Mercara, Coorg. Til begge sider to-etagers huse med forretninger af bazartypen i underetagen. Byens atmosfære er afgjort indisk.

In Nilgiris on the other hand one finds besides the plantations a peculiar type of agriculture aiming at the market. Further a number of hydro-electric projects, which in their phase of construction contribute to the economic activity of the district. The industry is weak, but developing; the Ooty-Coonoor area has several factories producing specialized articles like sewing needles, film, and cordite. Finally tourism and recreation are great assets in Nilgiris.

The development started in the colonial epoch (cf. *Folke,* 1966), when Ootacamund was summer residence for the administration of Madras Presidency. The towns, Ooty and Coonoor-Wellington, did not develop in a "natural" way out of the district's own resources, but were superimposed on the area. While Mercara, the capital of Coorg, is essentially Indian (fig. 9), Ooty and Coonoor-Wellington have the air of British-conceived garden cities (fig. 10). In the terminology of *Redfield and Singer* (1954) they are heterogenetic. The urbanization in Nilgiris has continued after independence, and the process of spatial integration has reached a relatively high level.

RESUMÉ

Denne artikel er led i en serie (jfr. *Folke,* 1965, 1966), som beskriver nogle økonomisk-geografiske problemstillinger i de to vigtige sydindiske plantagedistrikter, Coorg og Nilgiris. I sammenligning med andre om-

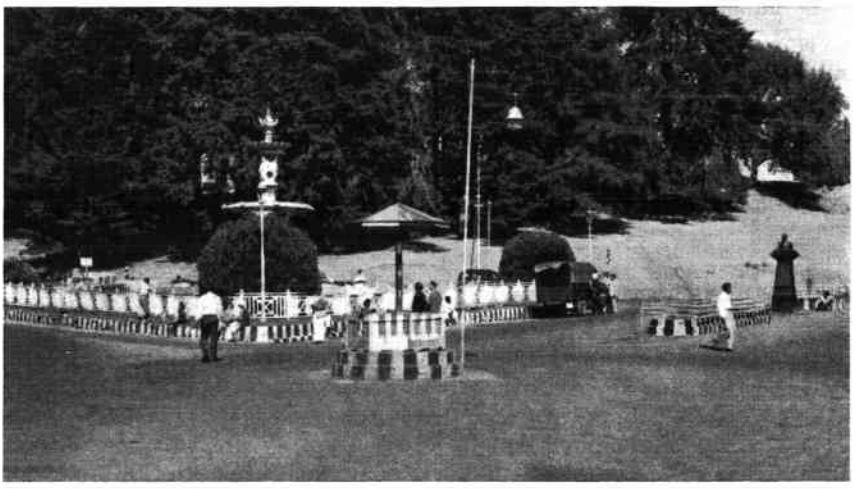

Fig. 10. "Charing Cross", an important street intersection in Ootacamund, Nilgiris. As well as Coonoor-Wellington, Ootacamund bears the impress of its British past. (1.4. 1964).

Fig. 10. „Charing Cross", et gadekryds i Ootacamund, Nilgiris. Ligesom Coonoor-Wellington bærer Ootacamund præg af sin britiske fortid.

råder i Sydindien har begge distrikter nået et højt økonomisk udviklingsniveau, målt ved per capita indkomstens størrelse. Artiklen søger at belyse, hvor langt den regionale integrationsproces er forløbet i de to distrikter.

Den regionale integrationsproces (fig. 1) kan beskrives som en geografisk parallel til den økonomiske udviklingsproces. Når et område udnyttes af mennesket, ledsages udnyttelsen af en arealdifferentation, så snart udnyttelsen går ud over de primitiveste former (indsamling, jagt m. v.) Nogle arealer opdyrkes, nogle bebygges, og andre anvendes til veje. Der sker en geografisk strukturering.

Under udviklingsprocessen ændrer økonomien karakter fra overvejende naturaløkonomi til overvejende pengeøkonomi. I den første fase er selvforsyningslandbruget dominerende, siden indføres markedsafgrøder i stigende omfang, og denne transformation ledsages af en tiltagende interaktion mellem forskellige områder. Arealdifferentiationen fortsætter, den menneskelige aktivitet specialiseres, og samtidig med denne specialiserings- og differentieringsproces vokser antallet af forbindelser (alle former for kommunikation, person- og varetransport, udveksling af tanker og ideer) mellem forskellige steder. Det er denne proces, man kan kalde den regionale integrationsproces.

Under den regionale integrationsproces udstrækkes og intensiveres forbindelserne, og der udvikles et funktionelt hierarki, som beskrevet af *Philbrick* (1957). I forbindelse med processen sker der en koncentration af centrale funktioner i byer, fordi en sådan koncentration medfører fordele for funktionernes udøvelse. Efterhånden som processen forløber, vokser nogle byer, og nye opstår. Parallelt med væksten i indbyggerantal

vokser antallet af centrale funktioner, som byerne udøver, idet stadig mere specialiserede funktioner inddrages. Der opstår et system af „central places" med forskellig størrelse og svarende hertil centrale funktioner i forskelligt omfang (se *Berry & Pred,* 1965).

I artiklen søges det niveau, som den regionale integrationsproces har nået i Nilgiris og Coorg, bestemt ved en analyse af centrenes størrelse og fuldkommenhed samt interaktionens omfang og intensitet, målt ved bustrafikkens turfrekvenser.

Systemet af „central places" undersøges ved hjælp af en række udvalgte funktioner (tabel 1), der anvendes som indikatorer. De udvalgte funktioner repræsenterer kategorierne administration, kommunikation, finansvirksomhed, handel og undervisning. Centrene er blevet tildelt points afhængigt af forekomsten af de pågældende funktioner. Resultatet er præsenteret i fig. 3 og 4.

I Coorg fremkommer således 10 „central places" af 1. orden (A), 6 af 1. orden (B), 2 af 2. orden og 1 af 3. orden. Systemet er hierarkisk. I Nilgiris har systemet ikke karakter af et normalt hierarki. Her fremkommer 11 „central places" af 1. orden (A), 2 af 1. orden (B), 2 af 2. orden, 1 af 3. orden og 1 af 4. orden. Fordelingen er mere spredt end for Coorg (afstanden mellem grupperne, målt på x-aksen, er større).

Man kunne indvende mod fremgangsmåden, at funktionernes vejning (pointstildelingen i tabel 1) er afgørende for resultatet. En kontrolberegning med uvejede indikatorer (vist i tabel 2) godtgør, at vejningen ikke influerer synderligt på resultatet, selv om forskellene mellem de to distrikter bliver mindre markante.

Lokaliseringen af de således bestemte „central places" er vist i fig. 5 og 6. I Coorg ligger de ret jævnt spredt over hele distriktet. I Nilgiris er der en meget stærk koncentration i området omkring Ootacamund og Coonoor, mens resten af distriktet er dårligt forsynet med „central places".

Interaktionsmønsteret i de to distrikter er belyst ved bustrafikkens turfrekvenser (fig. 7 og 8). I Coorg dækker busnettet det meste af distriktet. Ingen af forbindelserne er udviklet til særlig stor intensitet, men mange vejstrækninger ligger i nærheden af den højeste frekvens, som er 22 dobbeltture om dagen. I Nilgiris er busnettet højt udviklet i Ootacamund-Coonoor området, mens resten af distriktet betjenes ved stiklinier herfra. Mellem Ootacamund og Coonoor køres 110 dobbeltture om dagen. Kontrasten mellem området omkring disse to byer og resten af distriktet – som den fremgår af interaktionsmønsteret – svarer til den, der blev observeret i „central place" mønsteret.

Tages „central place" systemerne og interaktionsmønstrene som mål for graden af regional integration bliver det klart, at udviklingsprocessen er forløbet forskelligt i Coorg og Nilgiris. I Coorg er der udviklet et „central place" hierarki af lav orden, og urbaniseringen er svag (i 1961 boede kun 13 % i byer). Interaktionen mellem centrene er ret ringe, og en række forbindelser er udviklet til samme intensitet.

I Nilgiris er der derimod ikke noget normalt „central place" hierarki. Store spring (fig. 4) indicerer, at de største byer ikke er vokset „organisk" ud af området. Ootacamund og Coonoor Town Group rummer alene

25 % af distriktets befolkning. Interaktionsmønsteret udviser en tydelig koncentration til området omkring disse byer.

I begge distrikter spiller plantagedrift en dominerende økonomisk rolle. Men Coorg har ved siden af plantagedriften stort set kun det traditionelle landbrug. Her er den regionale integrationsproces ikke nået særlig langt. Nilgiris derimod har et stærkt specialiseret landbrug, en række hydroelektriske projekter, en spirende industri og endelig turisme som et stort aktiv.

Udviklingen i Nilgiris begyndte i kolonitiden, da Ootacamund var sommerresidens for den britiske administration af Sydindien. Byerne, Ootacamund og Coonoor-Wellington, blev ikke udviklet „naturligt" af distriktets egne ressourcer, men blev indplantet udefra. Mens Mercara, som er Coorgs hovedstad, ligner andre indiske byer (fig. 9), minder Ootacamund og Coonoor-Wellington snarere om engelske „garden cities" (fig. 10). Urbaniseringen i Nilgiris er fortsat også efter uafhængigheden, og den regionale integrationsproces er nået ret vidt i området omkring disse byer.

REFERENCES:

Berry, B. J. L. (1961): "City Size Distributions and Economic Development". Econ. Dev. and Cult. Change, 9 (4): 573-588.

Berry, B. J. L. & Pred, A. (1965): "Central Place Studies – a Bibliography of Theory and Applications". 2nd rev. ed. Philadelphia.

Folke, S. (1965): "An Analytic Hierarchy in Comparative Regional Study". Geografisk Tidsskrift, 64: 188-205.

Folke, S. (1966): "Evolution of Plantations, Migration, and Population Growth in Nilgiris and Coorg (South India)". Geografisk Tidsskrift, 65: 198-239.

Ginsburg, N., ed. (1960): "Essays on Geography and Economic Development". Chicago.

Hoselitz, B. F. (1955): "Generative and Parasitic Cities". Econ. Dev. and Cult. Change, 3: 278-294.

Kar, N. R. (1962): "Urban Hierarchy and Central Functions around Calcutta in Lower West Bengal, India, and Their Significance". Proceedings of the IGU Symposium in Urban Geography, Lund 1960: 253-274.

Larimore, A. (1960): "A Measure of Economic Change: Sequent Development of Occupance in Busoga District, Uganda", pp. 111-123 in Ginsburg (ed.).

Mayfield, R. C. (1962): "An Urban Research Study in North India", pp. 45-52 in Pitts (ed.).

NCAER (1963): "Inter-District and Inter-State Income Differentials, 1955-56". National Council of Applied Economic Research, New Delhi.

Olsson, G. (1965): "Distance and Interaction – a Review and Bibliography". Philadelphia.

Philbrick, A. (1957): "Principles of Areal Functional Organization in Regional Human Geography". Economic Geography, 33: 299-336.

Pitts, F.R., ed. (1962): "Urban Systems and Economic Development". Eugene.

Prakasa Rao, V. L. S. (1964): "Tovns of Mysore State". Calcutta.

Redfield, R. & Singer, M.B. (1954): "The Cultural Rôle of Cities". Econ. Dev. and Cult. Change, 3: 53-73.

Spate, O. H. K. (1957): "India and Pakistan". 2nd ed. London.

Ullman, E. L. (1960): "Geographic Theory and Underdeveloped Areas", pp. 26-32 in Ginsburg (ed.).

van Paassen, C. (1962): "Geografische Structurering en Oecologisch Complex". Tijdschrift van het Koninklijk Nederlandsch Aardrijkskundig Genoteschaap, 79: 215-233.