PROCESSES DRIVING ETHNIC SEGREGATION IN CITIES: A CASE STUDY OF THE CITY OF COLOMBO, SRI LANKA

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Abstract

The City of Colombo, Sri Lanka has a multi-ethnic composition with Sinhalese, Tamils, Moors, Burghers and Malays comprising the key ethnic groups. During the late 20th century, the concentration of two minority ethnic groups i.e. the Tamils and the Moors has steadily increased in a few wards. Spatial and temporal changes in the pattern of ethnic segregation within the city are traced using a segregation index. Reasons for the rise in ethnic segregation within the city include in-migration of people displaced following ethnic conflicts in other parts of the country, high natural growth rates particularly within the Moor community and low socio-economic conditions leading to congestion. The wards exhibiting a high segregation index value have a large proportion of under-served settlements and are located close to the Central Business District. Urban land use zoning regulations need to be redefined to discourage segregation and to upgrade under-served settlements.

Key words: ethnic segregation, segregation index, urban planning, Colombo city

1 Ethnic segregation defined

Ethnic segregation is a common feature in cities of both developed as well as developing countries. The ‑China Townø of Chicago, ‑The Little Italyø of New York, ‑Southamptonø of London, Italian and Jewish ethnic pockets in Metropolitan Toronto are examples of this feature from developed world. The ‑China Townø or ‑Wangburaphaø of Bangkok is an example from developing world.

Taeuber (1965: 2) highlights this segregation process as follows:

> õWhether a city is in the North, South or West (of US) whether it is a large
> Metropolitan centre or a suburb, whether it is a coastal resort town, a rapidly growing
> industrial centre or a declining mining town; whether non-white constitute forty percent
> of the population or less than one percent; in every case White and Negro residences are
> highly segregated from each otherö.

Residential segregation can be referred to as a process and an outcome. The existing spatial
pattern is the outcome. Process involves the formation of the existing situation over a period
of time (Miller, and Quigley, 1990).

Ethnic segregation can be defined as spatial separation of the ethnic groups from each other.
It can be similar to, as suggested by several ecologists, physical separation of different plants
in a plant community. Many ecologists, including Burgess (1925) have pointed out that there
is physical separation of the social groups similar to the separation process in a plant
community. As in the separation of social groups, ethnic groups also separate themselves and
congregate in a particular area. When referred to as spatial separation, segregation seems to
be physical, but the literature shows there that there is physical as well as social distance
among ethnic groups (Park 1926).

Using a cluster analysis, Massey and Denton (1988) identified five key dimensions of
segregation. **Evenness** involves the differential distribution of the subject population,
exposure measures potential contact, **concentration** refers to the relative amount of physical
space occupied, **centralisation** indicates the degree to which a group is located near the
centre of an urban area, and **clustering** measures the degree to which minority group
members live disproportionately in contiguous areas.

The surfacing of ethnic segregation can be seen in all sectors of society, but it is probably most visible in the spatial distribution of minorities in urban areas throughout the world. As Waldorf (1990) pointed out, policy-makers are faced with decisions that potentially have a profound impact on these segregation patterns. Therefore, the study of segregation patterns can be considered as a prerequisite for urban planning and relocation procedures in urban management. Also ethnic segregation can be considered as a very critical political issue in some countries (Christopher 1990).

This paper examines the ethnic segregation of population groups in the city of Colombo with special reference to their spatial patterns and temporal changes from 1963 to 1981[1]. The Sinhalese ethnic group is spread out all over the city. As minority groups, Burghers and Malays are not as segregated as are the Tamils and the Moors. Therefore, the segregation of only the two latter groups will be examined in this paper.

1.1 Tracing the history of ethnic groups in the city of Colombo

Because of its natural harbour, Colombo has been a trading centre for a long period of time. As traders arrived some of them settled down in Colombo creating a wide mixture of ethnic groups. Brohier, (2007:68) wrote:

> õIn this brief analysis of race-groups which serves as a backdrop to the environment of old Colombo, it must be assumed that there were emigres from many other Asian races an clans too who had settled at the time of which I wrote, who have since been absorbedö.

The 1911 census identified 78 ethnic groups, whilst by the time of the 1921 census the number had increased up to 96. Most European races were present in Colombo, but the

majority was British accounting for 2,374 persons in 1921. The other ethnic groups present were Parsees, Arabs, Maldivians, Zulus, Kaffirs, Chinese, Japanese, Egyptians, Americans, Australians, Canadians, Cambodians, Boers, and Maoris (Department of Census and Statistics, 1911 and 1921).

Though the enumeration showed a large number of ethnic groups, most of them were present in very small numbers. A large majority of the population of Colombo belonged to five distinct ethnic groups: Sinhalese, Tamils, Moors, Burghers and Malays.

The British administrators divided the Sinhalese into two groups for census purposes ó Low Country Sinhalese and Up Country Sinhalese. The latter were the residents of the central highlands of the country, which remained as a separate kingdom until the British captured it in 1815. The majority of the Sinhalese are Buddhists and their language is Sinhala. The Tamils are of south Indian origin. One group of Tamils came to Sri Lanka as invaders and later as migrants to the northern part of the country. The second group of Tamils was brought to Sri Lanka from south India by the British as indentured labour to work in plantations concentrated in the central highlands of the country. The majority of the Tamils are Hindus and their language is Tamil.

The Moors are of Arabic origin. They came to Sri Lanka as traders and settled down. Their religion is Islam. The Moors who live in predominantly Sinhalese areas speak Sinhala and those who live in predominantly Tamil areas speak Tamil. Some Moors came later from India and, therefore, the British made a distinction between them and those who came from Arabic countries.

The Malays came originally from Malaya. They were brought to Sri Lanka by the Dutch and British during their respective colonial rule to be employed as soldiers to fight against the Sinhalese. The Malays of Sri Lanka speak Sinhala language. The Burghers are descendants of the Dutch but they speak either English or Sinhala.

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[1] The latest Census of Population used to extract statistics for this paper is that of 1981 ó the last time a countrywide census

1.2 Ethnic composition in the city of Colombo

The Sinhalese were the majority in the city throughout from 1921 to 1981 (Table 1). Their proportion was almost half of the total population of the city from 1963 to 1981 (Table 2). The proportion of Sinhalese in the city of Colombo is significantly less compared to the situation in the whole country, where they constitute around 75 per cent of the total. Tamils held the second position; their proportion in the City was 23.3 per cent in 1921, and it increased remarkably to 30.2 per cent 1953, but declined later and stood at 24.1 per cent in 1981. This is almost half of the proportion of the Sinhalese population (Table 2).

Table 1: Main Ethnic Groups in the city of Colombo: 1921 to 1981 (ranked according to relative proportion of total population)

Rank	1921	1946	1953	1963	1971	1981
I	Low Country Sinhalese	Low Country Sinhalese	Low Country Sinhalese	Low Country Sinhalese	Low Country Sinhalese	Sinhalese
II	Indian Tamil	Indian Tamil	Indian Tamil	Ceylon Moor	Ceylon Tamil	Sri Lankan Tamil
III	Ceylon Moor	Ceylon Moor	Ceylon Moor	Ceylon Moor	Ceylon Moor	Sri Lankan Moor
IV	Burgher and Eurasian	Ceylon Tamil	Ceylon Tamil	Indian Tamil	Indian Tamil	Malay
V	Indian Moor	Burgher & Eurasian	Burgher	Up Country Sinhalese	Up Country Sinhalese	Indian Tamil
VI	Ceylon	Indian Moor	Kandyan	Burgher &	Malay	Burgher

was conducted in Sri Lanka. The 2001 census was not conducted countrywide.

	Tamil		Sinhalese	Eurasian		
VII	Malay	Malay	Malay	Malay	Burgher	
VIII	Up Country Sinhalese	Up Country Sinhalese		Indian Moor	Indian Moor	

Source: Department of Census and Statistics, 1921 to 1981

The increase in the proportion of Tamils between 1946 and 1953 could be due to a higher rate of in-migration from the Jaffna Peninsula where Tamils are concentrated. The decline in proportion after 1953 could be due to out-migration as a result of the ethnic conflict of 1958.

Table 2: Ethnic Composition of the city of Colombo from 1921 to 1981

Ethnic Group	1921	1946	1953	1963	1971	1981
Sinhalese	49.40	47.93	46.51	51.09	50.79	50.12
Tamil	23.34	22.44	30.24	23.80	24.67	24.12
Moor	17.11	17.19	14.18	18.79	18.83	21.03
Malay	6.41	3.05	2.89	2.18	2.59	2.36
Burgher	1.22	4.92	4.97	2.63	1.92	1.30
Other	2.52	4.47	1.57	1.51	1.19	1.07

Source: Department of Census and Statistics, 1921 to 1981

1.3 The Segregation Index

Estimations of ethnic residential segregation have to be based upon numerical techniques, and for this purpose there are no simple rules. There are a variety of Indices of Dissimilarity ó such as Jahn et al. (1974), Williams (1948), Duncan and Duncan (1955), Cortese et al. (1976), Taeuber and Taeuber (1976), Winship (1977), Falk et al. (1978), Winship (1978), Massey (1978), Kestenbaum (1980), Inman and Bradley (1981), Massey (1981), Merschrod (1981), Morgan and Norbury (1981), Sakoda (1981), James and Taeuber (1985), White (1986). Other numerical techniques include moving averages, the residential differentiation

index, and the correlation ratio index. All these techniques attempt to capture the phenomena of segregation and desegregation.

The standard index of segregation as defined by Duncan and Duncan (1955) has been adopted to provide a numerical definition of segregation levels in this study. The Index of Segregation is defined as:

$$IS^* = \{(x_i - z_i) / 2\} / (1 - X/Z)$$

Where:

IS - Index of Segregation

X ó The total of subgroup õxö in the city

Z ó Total population in the city

x_i ó The percentage of the õxö population in the ith tract.

z_i - The percentage of the total population in the ith tract.

The Index is expressed on a scale ranging from 0 (Completely Integrated) to 100.0 (Totally segregated).

1.4 Patterns of ethnic segregation in the city of Colombo

It may be noted that from the first official census (1871) to the latest official census (2001), the Sinhalese have dominated the city except in a few wards where the Tamils and Moors are segregated. Unlike Tamils and Moors, the Burghers and Malays are not segregated in the city. Furthermore, the Burgher proportion is not significant in any ward[2] of the city. The Havelock Town ward shows the highest concentration of Burghers ó with 3.33 per cent of the total population of that ward in 1981. The number of Burghers and Malays has declined since 1953. The main reason for the decline in the Burgher population has been immigration to Australia after 1953. Significant concentrations of Malays are found in the Slave Island (21.8%), Hunupitiya (10.2%) and Wekanda (9.7%) wards.

1.4.1 Tamil Segregated Area

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[2] A ward is an urban administrative unit. The city of Colombo is divided into 47 municipal wards.

Segregation is interpreted on the basis of the Index of Segregation (IS). The intensity of segregation can thus be classified into five levels as follows:

Category	Index	Description
Em.S.	20 > IS >25	Emerging Segregation
M.S	25 > IS >30	Moderately Segregated
S.	30 > IS >40	Segregated
H.S.	Over 40	Highly Segregated

When the IS lies between 10 and 19, there would be a tendency to be segregated.

Tamils are segregated in 8 wards. Table 3 shows the wards and their intensity of segregation.

Table 3: Tamil Segregation – 1981

Ward No.	Name of the ward	Area (Ha.)	Tamil Population (1981) Number	%	Index of Segregation (IS)	Category
5	Lunupokuna	101.7	3996	33.72	20.73	Em.S.
7	Kotahena East	32.69	3945	49.38	31.43	S
8	Kotahena West	35.81	7476	60.71	38.36	S.
9	Kotahena North	27.78	9220	72.23	45.85	H.S
10	Ginthupitiya	19.91	7085	60.30	40.19	H.S
43	Wellawatta North	88.56	5052	36.04	22.00	Em.S.
46	Pamankada West	62.57	3996	37.58	23.40	Em.S.
47	Wellawatta South	67.68	4578	40.82	25.45	M.S.
Total		436.7	45,348	32.23		
Total Tamils in the city			140,276			

Source: Prepared by the author, 2005

The total Tamil population in this segregated area is 45,348 which is almost 1/3 of the total Tamil population of 140,276 in the city. Tamils in the segregated area live on 3 per cent of the land area of the city. In this regard the distribution of land area and Tamil population in the city shows a very high dissimilarity pattern when compared to other ethnic groups. Kotahena North and Ginthupitiya taken together can be considered as the core area of this

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segregation. Therefore, these wards have been categorized as the Highly Segregated area (HS), based on the Index of Segregation. The highly segregated area is circumscribed by the Segregated (S) area and Moderately Segregated (MS) areas.

1.4.2 Moors Segregated Area

Moors were segregated in 10 wards in the city in 1981. Table 4 shows the wards and the intensity of segregation in them.

Table 4: Moor Segregated Area: -1981

Ward No.	Name of the Ward	Area (Ha)	Moor Population (1981)		Index of Segregation (IS)	Category
			Number	%		
11	Masangas Veediya	23.53	5844	59.08	36.40	S.
12	New Bazzar	49.39	4100	37.89	22.85	Em.S.
15	Maligawatta West	49.07	7820	47.72	28.47	M.S.
16	Aluthkade East	25.30	8675	69.86	42.96	H.S.
17	Aluthkade West	12.70	6715	70.26	43.52	H.S.
18	Keselwatta	28.59	4087	40.46	24.55	Em.S.
19	Kochchikade South	21.11	5688	50.48	30.79	S.
25	Panchikawatta	25.79	4165	38.78	23.42	Em.S.
27	Maligawatta	17.16	4371	46.61	28.54	M.S
28	Maligawatta East	57.67	6265	50.93	30.96	S.
Total		310.31	57,730	46.89		
	Total Moors in the city		123,180			

Source: Prepared by the author, 2005

This segregated area is adjacent to the Tamil segregated area close to the Colombo harbour. The total number of Moors in the city is 123,180. Almost half of them live in this segregated area. The concentration of Moors thus appears to be higher than of Tamils (Figure 01). Segregation of Moors is more intense than that of Tamils, not only in population but also in area.

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1.5 Spatial and periodic patterns of ethnic segregation in the city

The segregation and concentration of these two ethnic groups can be analysed in two ways:

1. Importance of the particular ethnic group in the segregated area among the total population of that ethnic group in the city
2. Proportion of the particular ethnic group to the total population (all ethnic groups) within the segregated area

The Tamils are concentrated in two pockets of the city. One is at the southern end of the city whilst the other is located near the Colombo harbour. However, the Moors are concentrated in one pocket adjacent to the Tamil segregated area near the Colombo harbour. The fact that both racial groups are segregated in the central part of the city and adjacent to each other (Figure 1) is highly significant.

According to the level of concentration, the southern Tamil-segregated pocket is not very significant as it has emerged comparatively recently. Kotahena North and Ginthupitiya in the Central segregated pockets show the highest concentration of Tamils in the city. Kotahena West also shows a slightly lower IS (Index of Segregation) value than Kotahena North and Ginthupitiya. Therefore, Ginthupitiya (Ward No.10) can be considered as the nodal point of the central segregated pocket of the Tamils. As stated earlier 45,348 Tamils living in the Tamil-segregated area consists of nearly 1/3 of the total Tamil population of the city and is about half the total population of the segregated area. The total land area of this segregated area is 436.70 ha. Compared to the proportion of the population the proportion of land area is a little lower (Table 5).

Table 5: Relative proportion of Tamils and Moors in the segregated areas of the city ó 1981

Ethnic Group	Area (Ha.)	Proportion*	Population	Proportion**
Tamil	436.70	11.71	45,348	32.33
Moor	374.50	10.04	57,730	48.67

* Proportion of the total land area of the city

** Proportion of the total population of the city.

Source: Prepared by the author, 2005

The main reason for this pattern of concentration has been the Colombo harbour. Tamil labourers who work in the harbour reside in this area. This is indicated by the occupation patterns of the area which will be discussed in the latter part of this paper

Area wise, the Moor segregation is smaller than the Tamil segregation. However, the Moor population concentration is higher than that of the Tamils. The total Moor population in the segregated area is almost half of the total Moor population in the city (Table 5).

The proportional distribution of each ethnic group to the total population of the segregated areas is shown in Table 6.

Table 6: Population and proportion of ethnic groups by segregated areas ó 1981

Ethnic Group	Tamil Segregated area		Moor Segregated area		Sinhala Segregated area	
	Number	%	Number	%	Number	%
Sinhalese	33,045	35.93	32,652	28.93	227,812	59.98
Tamil	45,348	49.30	18,390	16.30	76,538	20.15
Moor	10,533	11.45	57,730	51.14	54,917	14.46
Other	3,051	3.32	4,092	3.63	20,557	5.41
Total	91,977	100.0	112,864	100.0	379,824	100.0

Source: Prepared by the author, 2005

In both segregated areas, Tamils and Moors are present in very high proportions. The percentage of Tamils in the Tamil-segregated area is almost 50 per cent while Moors show a little higher percentage than the Tamils (Figure 2). In the Tamil segregated area, the Sinhalese percentage (35.93) is a little higher than their percentage in the Moor-segregated area (28.93). About 20 per cent of Tamils live in the Sinhala majority area while the Moor percentage in the Sinhala majority area is 14.46. Thus it may be noted that the Moor segregation is stronger than the Tamil segregation of the city. Although area wise the Moor segregation is smaller than the Tamil segregation, population wise their segregation is

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stronger than that of the Tamils. Therefore, within this limited area Moors are both segregated and concentrated.

Tracing the origin and the expansion of these segregated areas is an interesting albeit complicated task. The main reason being that ward boundaries have changed periodically thus posing technical constraints to comparative analysis. Although there has been no significant change to ward boundaries during the period 1963 to 1981, the pre-1963 situation cannot be compared with the recent situation because many boundary changes took place prior to 1963. The analysis in this paper will therefore be limited to the post 1963 situation.

In 1963, the area covered by the Moor segregation area was a little bigger than the Tamil segregation. However, with the drastic expansion of the Tamil segregated area by 1971 and 1981, the Moors segregated area became smaller than that of the Tamils. Population wise the Moor segregation has continued to be bigger than the Tamil segregation throughout the period from 1963 to 1981 (Table 7).

Table 7: Relative Importance of the segregated areas from 1963 to 1981

Year	Segregated areas as a proportion of the total area of the city		Population of the segregated area as a Proportion of the total population of the city	
	Tamil Segregated area	Moor segregated area	Tamil Segregated area	Moor segregated area
1963	6.60	7.00	30.95	42.77
1971	9.34	6.48	29.18	38.77
1981	11.71	10.04	32.33	48.67

Source: Prepared by the author, 2005

There has been no significant change of the proportion of the Tamils in the segregated area. But the Moor proportion has increased from 42 per cent to 48 per cent from 1963 to 1981.

Time series data show that both segregated areas are expanding not only in area but also in population. Although the relative proportion of the Tamil population within the segregated

area has not increased, the relative proportion of the Moor population has increased from 47% to 51% (Table 8).

Table 8: Expansion of the Tamils and Moors segregated Areas: 1963-1981

Year	Area in Ha.		Population		Percentage*	
	Tamil	Moor	Tamil	Moor	Tamil	Moor
1963	246.66	261.08	37,750	40,837	50.31	47.42
1971	348.14	241.65	40,294	41,763	51.04	51.16
1981	436.70	374.5	45,348	57,730	49.30	51.14

* Particular ethnic group as a percentage of total population of the segregated area

Source: Prepared by the author, 2005

Thus both time series as well as spatial data show that the proportions of the Moor segregated population are increasing relative to the proportion of the Tamil segregated population.

1.6 Probable future expansion patterns of segregation

Expansion patterns of segregation were also identified using the Index of Segregation. Wards with an IS of more than 10 and less than 20 have been identified as wards that exhibit tendencies towards ethnic segregation of population in the future.

On the basis of that criterion, there is a very strong tendency for both Tamil and Moor-segregated areas to expand. The southern pocket of the Tamil segregated area will expand towards the North and East (Figure 3). The Central Tamil segregated area is likely to expand in the eastern and south-western directions. The south western ward is Fort (Ward No. 20) where the Central Business District of the city is located. The name of the wards and the Index of segregation of Tamil-segregated pockets are shown in Table 9.

Table 9: Wards with a tendency towards Tamil segregation

Southern segregated pocket		Central segregated pocket		
Name and number of the tending ward	Segregation Index	Name and number of the tending ward		Segregation Index
42	Havelock Town	17.92	4	Aluthmawatha	15.17

| 46 | Pamankada East | 12.00 | 6 | Bloomendhal | 17.14 |
| | | | 20 | Fort | 16.73 |

Source: Prepared by the author, 2005

The Moor-segregated area will expand towards the northeast and southwest. There is a strong tendency for six more municipal wards to be added to the Moor segregated area. Their names and the Index of segregation are given in Table 10.

Table 10: Wards with a tendency towards Moor Segregation

Southern segregated pocket			Central segregated pocket		
Name of the tending ward		Index of Segregation	Name of the tending ward		Index of Segregation
13	Grandpass North	17.85	21	Kopannavidiya	18.02
14	Grandpass South	17.18	22	Wekanda	19.99
26	Maradana	17.41	23	Hunupitiya	18.74

Source: Prepared by the author, 2005

1.7 Social and economic factors accounting for ethnic segregation in the Colombo City

An unusual expansion pattern of the Moor segregation emerged from 1963 to 1971. Maradana (Ward No. 26) exhibited Moor segregation in 1963. But in 1971 and 1981 Maradana did not belong to the Moor segregation. This declining trend of the Moor segregation can be explained only by examining the changes that have taken place within residential lands in the city. With infrastructure development in the city, some residential lands were converted to other uses. A study of land use changes of the Maradana municipal ward shows that a large extent of residential lands has been converted to transport, communication and utilities and commercial uses within this period.

There is also a strong relationship between population concentration and ethnic segregation in the city. The correlation coefficient between population density and the percentage of Moor population by municipal wards shows a very strong positive relationship. From 1963 to 1981 the correlation coefficient between the percentage of Moors and their population density

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changed only very slightly (from 0.680 to 0.690). The percentage of Sinhala population and their population density shows a highly significant negative relationship (Table 11). This pattern of relationships shows the socioeconomic status of the ethnic groups. Compared to the other ethnic groups, Moors generally live in small housing units and are concentrated within limited areas. Therefore, the plots of land belonging to Moors are small in commercial areas such as Colombo city. The middle class and lower class Moors live in highly congested environments.

Table 11: The relationship between ethnic groups and the population density by Municipal wards from 1963 to 1981

		Sinhala	Tamil	Moor	Other
Population Density 1981	Pearson r	-0.722*	0.144	0.690*	-0.265
	Sig. (2 tailed)	0.000	0.334	0.000	0.027
	N	47	47	47	47
Population Density 1971	Pearson r	-0.725*	0.123	0.690*	-0.150
	Sig. (2 tailed)	0.000	0.409	0.000	0.313
	N	47	47	47	47
Population Density 1963	Pearson r	-0.689*	0.160	0.680*	-0.313
	Sig. (2 tailed)	0.000	0.284	0.000	0.032
	N	47	47	47	47

* Correlation is significant at the 0.01 level (2-tailed)

As mentioned earlier, there is segregation of Tamils and Moors in the central part of the city. This central segregated area and the area of high population concentration (i.e. where population density is greater than the average density of the city) are almost the same (Figure 1 and Figure 4). But the situation of the southern segregated pocket is different from the central segregated area. The population density of the southern segregated pocket is relatively low and falls on the lower end of the legend of the map which is lower than the mean. This indicates the different socio-economic status of the southern and the central Tamil segregated pockets. People who live in the central pocket are on lower rungs of the socio-economic ladder while the other group is in the middle and the upper rungs. These differences in socio-economic status can be visualised in the occupation structure, housing condition and the size of the plots of land.

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Almost 40 per cent of the population of the central segregated area are employed in production and related activities. Most of them are labourers in the Colombo harbour. Tamils who live in the southern pocket on the other hand show an almost equal distribution of workers within each occupational category with the exception of agriculture and fishing (Figure 5).

The density of under served settlements also indicates the different social status of the two ethnic pockets. The southern pocket falls below the average density (2135) of under served settlements. In 2001 there were only 1988 under served housing units in the southern Tamil segregated area while there were 4090 such units in the central segregated area. Figure 6 shows the distribution pattern of the under-served housing units in the city. It indicates that the southern part of the city falls below the average for the city. But the central part of the city is well above the average.

1.8 Conclusion

Although the aim of this paper is not the validation of the segregation index introduced by Duncan and Duncan, it may be noted that this index shows very good spatial representation of the concentration and separation of minor ethnic groups from the others. The distribution of Moors and the Tamils within the City of Colombo coincides with the pattern identified by the index. Many studies have used this measure, as it has much intuitive power and is compatible with census data formats. Cutler, Glaeser and Vigdor (1999) used this index in an attempt to measure the patterns of segregation through time at the tract level and Frey and Farley (1996, pp 36) use the same measure to examine segregation in a multiethnic context in the United States. Therefore, it can be concluded that the Duncan and Duncan segregation index is well suited for the study of ethnic segregation in the City of Colombo.

Ethnic segregation levels in the city of Colombo have risen steadily in the last few decades. It must be noted however that the level of segregation is as yet not a critical issue in Sri Lanka

unlike in the USA or South Africa. Black ghettos especially in the USA are totally isolated from white populations unlike the segregated pockets in the city of Colombo. The percentage of other groups is very significant in any segregated area of Colombo. With the relatively low levels of urbanisation and migration in the country, stronger ethnic segregation than the current pattern is not to be expected.

Although urbanization and migration are not significant, as indicated in the population census of 2001, natural factors like average annual population growth (AAPG) will contribute to a stronger pattern of Moor segregation than that prevailing at the present. It may be predicted that Moor segregation and concentration will continue and get stronger. With an AAPG of more than 5 per cent among the Moors, it is likely that the Moor segregated area will encompass the municipals wards surrounding the currently Moor segregated area. Therefore, planners and decision-makers need to be cognizant of the ongoing segregation processes and patterns. They need to ensure that steps are taken to create the environment necessary to avoid segregated pockets like the American Ghettos.

Similar to urbanization, segregation is also a one-way process. Segregation, population concentration and area under minority groups demonstrate increasing trends in both developed and developing countries. Some municipal wards in the city of Colombo show a high proportion of concentration of minority groups. For instance, in Kotahena North the proportion of Tamils are almost ¾ of the total population, while in Aluthkade East and Aluthkade West the proportion of Muslims is 69.86 and 70.26 respectively. Interestingly, the Tamil proportion in Kotahena North is higher than the total Tamil proportion in the Northeast Province of Sri Lanka ó where the Tamil proportion (65% according to the 1981 census) is higher than that of other ethnic groups. Such a strong concentration of minority groups within the Colombo City may be a critical factor in the future in a country like Sri Lanka where ethnic unrest and conflict have prevailed for over two decades.

As we seen earlier, the central segregated area is almost coincident with the highly populated and the under-served settlement areas of the city. This relationship between a low socio-

economic status and the segregation of minority populations of the city is likely to create socially vulnerable areas within the city. Some studies have indicated that the central segregated area has the worst air quality in the city. With the increase of levels of segregation in the future, the central area will be the most vulnerable residential area in the city. Urban planners and environmentalists should be aware of the implications of the location of such a vulnerable area in close proximity to the CBD of the city. Urban land use control zones (zoning regulations) should be redefined to discourage segregation and the concentration of under-served settlements in the city. Upgrading under-served settlements and introduction of new urban land use zoning regulations should be carried out to prevent further segregation of ethnic groups.

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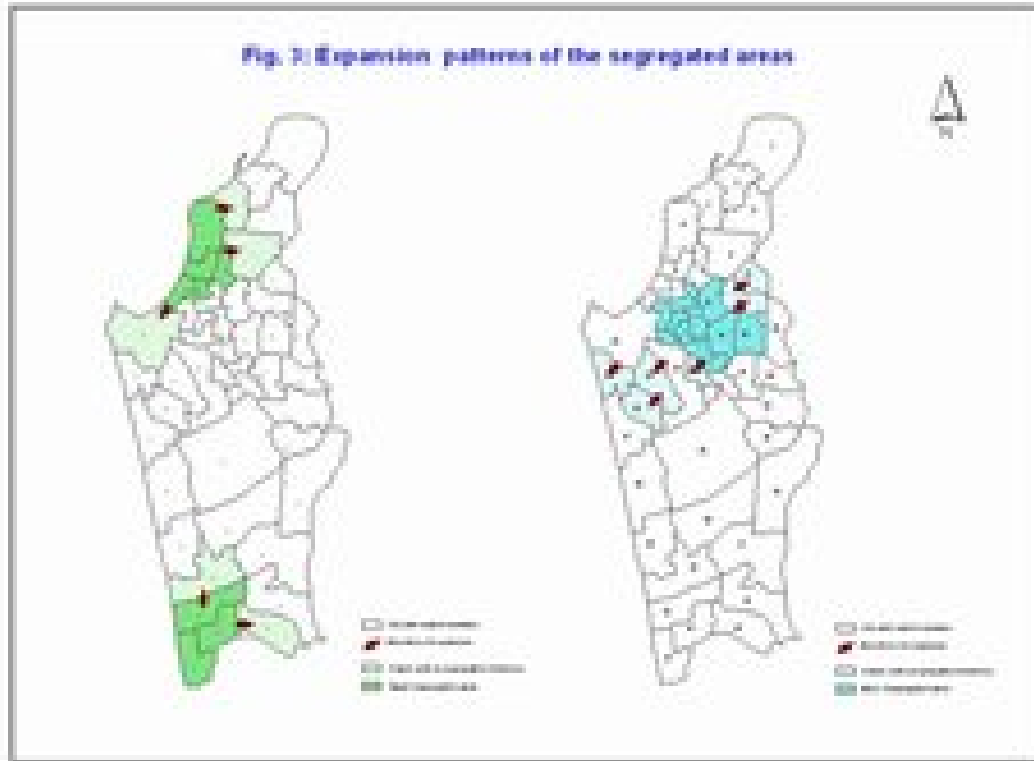
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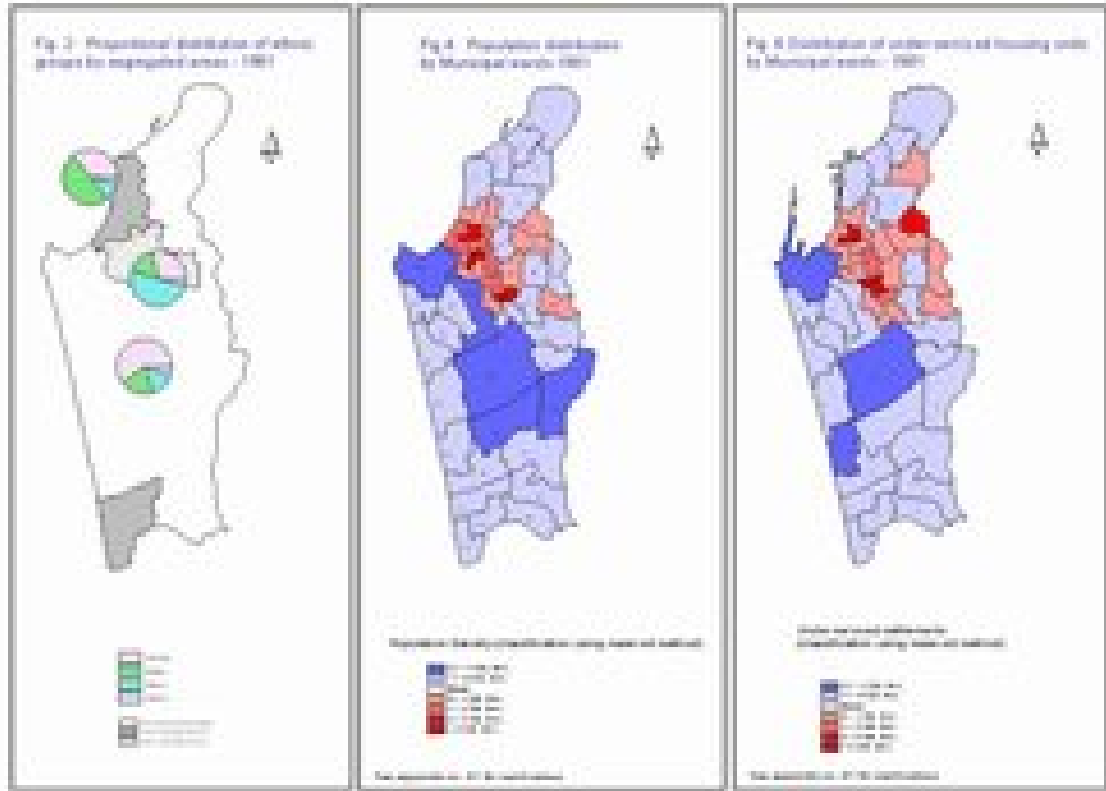
APPENDIX

No.of Ward	Name of Ward	No.of. Ward	Name of Ward
1	Mattakkuliya	24	Suduwella
2	Modara	25	Panchikawatte
3	Mahawatta	26	Maradana
4	Aluthmawatha	27	Maligakanda
5	Lunupokuna	28	Maligawatte- East
6	Bloemendhal	29	Dematagoda
7	Kotahen East	30	Wanathamulla
8	Kotahena West	31	Kuppiyawatte East
9	Kochchikade North	32	Kuppiyawatte West
10	Ginthupitiya	33	Borella North
11	Masangas Weediya	34	Narahenpita
12	New Bazzar	35	Borella South
13	Grandpass North	36	Cinnamon Gardens
14	Grandpass South	37	Kollupitiya
15	Maligawatta West	38	Bambalapitiya
16	Aluthkade East	39	Milagiriya
17	Aluthkade West	40	Thimbirigasyaya
18	Keselwatte	41	Kirula
19	Kochchikade South	42	Havelock town
20	Fort	43	Wellawatta North
21	Kompannaweediya	44	Kirulapone
22	Wekanda	45	Pamankada East
23	Hunupitiya	46	Pamankada West
		47	Wellawatta South

Figures

Figure 01: Segregation Patterns of Colombo City from 1963 to 1981

Fig. 3: Expansion patterns of the segregated areas
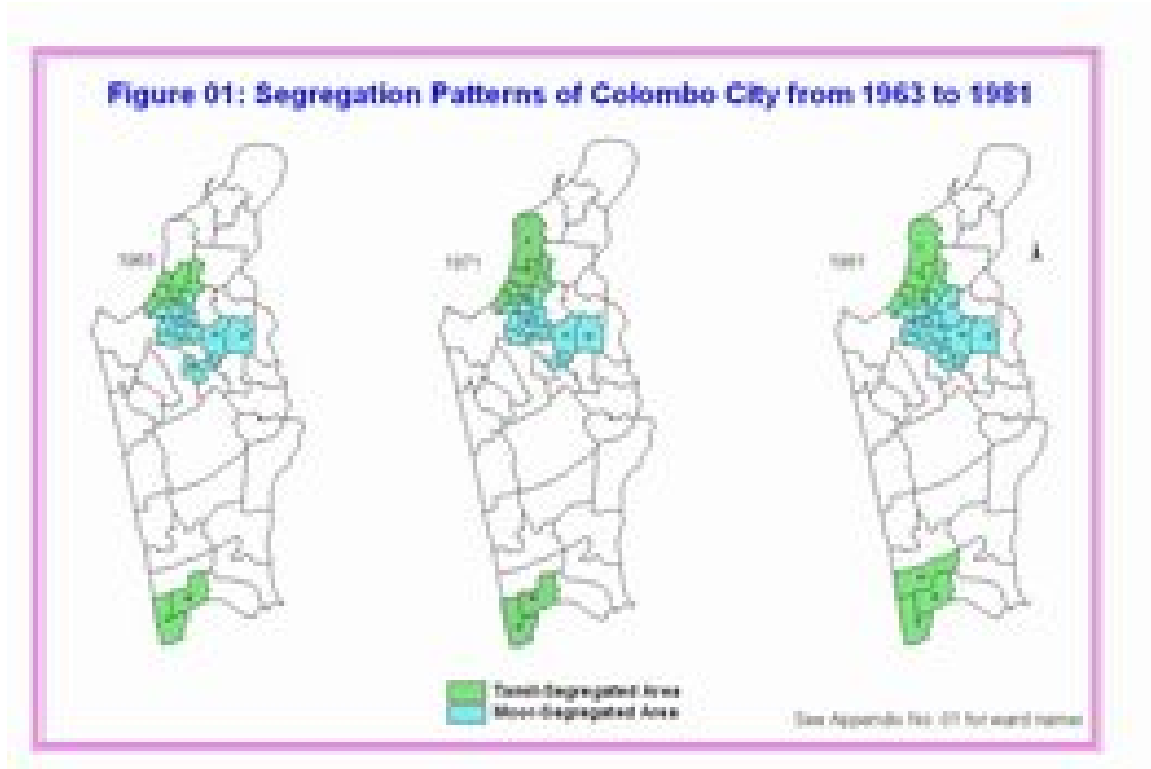
Figure 5: Occupational patterns of the central Tamil-segregated area 1981

1. Professional and Technical
2. Administrative and managerial
3. Clerical and related workers
4. Sales workers
5. Services
6. Agriculture and fishing
7. Production and related workers
8. Others and not stated