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SPATIAL PATTERN OF CO-OPERATIVE SECTOR HOUSING DEVELOPMENT AND ITS ROLE IN URBAN FRINGE EXPANSION

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ABSTRACT : The paper examines the spatial pattern of development induced by co-operative societies and assesses their ro'e in fringe development. Using the available data, attempt has been made to essablish a relationship between the deistance from the core of the city and the extent of development in the fringe area, largly determined by land value differentials both through space and time. Finally an anology has been drawn betwen ecological process of invasion – sucession and the succession in landuse from agriculture to market gardening, market gardening to residential area and residentical to commercial area. In the process, the urban edge is pushed further into agricultural lands.

Urban development and expansion is aided and facilitated by both governmental as well as non-governmental agencies and in a few cases by individual efforts. With the advent of the governmental agencies such as City Improvement Trust Board, Housing Board, Bangalore Development Authority, Housing and Urban Development Corporation etc., and their active participtionn in urban development in recent years, the private unorgainsed sector is gradually being edged out of the urban developmental activities. Due to the difficulty in finding finance and a host of restrictive and controlling regulations and difficulty associated with getting buildiug materials, the individual house builders have banded themselves and organised into a number of house building co-operative societies so that the society takes care of the purchase of land and its development for residential uses.

The main objective of this paper is to examine the spatial pattern of development induced bv these Co-operative societies and examine their role in the process of fringe development. The paper will also study the pattern of urban development by Co-operative vis-a-vis the pattern formed by the governmental agencies. It also attempts to examine the distance-development relationship and correlate it to land value both through space and time as well as venture suggestions regarding the pattern for future development.

Review of Literature

A number of studies like that of Alam (1972), Singh (1964), Nangia (1972), Mahahdev and Bore Gowda (1978) have analysed the influence of main city on the development of fringe areas. Bhattacharya (1978) has highlighted the administrative problems of the fringe and Kabra (1980) has provided a blue print of voluntary action to develop fringe area and Tangamani and Bore Gowda (1980) have stressed the potentials of fringe as an area for recreation and its planning. The nature and delineation of the fringe zone was attempted by Srivastava (1975), Bore Gowda and Mahadev (1979). The role of public policy in residential development process is illustrated by Kaiser and Weiss (1970), while Kaiser, Massic, Weiss and Smith (1968) have

attempted to predict the behaviour of landowners on the urban fringe and Morrill (1965) applied simulation technique to explain the expansion of the urban fringe. Attempts at examining the role of private agencies and co-operative societies in the expansion of the fringe areas are rare in the Indian context.

Methodology

In analysing the land value and its relationship with the distance from the city, land value data has been standardized. Since house building co-operative societies have purchased agricultural lands in different time periods, comparison of the value of land in different villages and distance zones becomes difficult. To make comparisons easier and meaningful, transactions of land acquisition in different years (1964–76) have been brought to a standard year i. e., 1973. The land value of the different years has been standardised to tally with the year 1973 taking into account the rate of inflation during various years.

Data regarding the number, year of establishment, intensity of activity, etc., of the house building co-operative societies have been collected from the office of the Registrar of Co-operative Societies. The price for the land paid by the societies was ascertained from the records of the individual house building societies. By interviewing speculators/agriculturists and real estate agents, who sold lands to the societies, the then prevailing prices were estimated to get a general picture of the market rates.

This study however has not attempted to find out the reasons for malfunctioning of the societies, problems associated with the purchase, development and allotment of sites by the co-operative house building societies due to certain constraints.

Study Area

To illustrate the role of co-operative housing development and consequent expansion of the fringe, Bangalore city and its environs have been selected as the study area. Bangalore, an important metropolis, has grown by leaps and bounds since the last three decades due to industrialization and other related activities as well as due to its functions as the capital of the enlarged Karnataka State. The problem of housing was evident in Bangalore as early as 1941. Fig. 1 compares the inerease in housing stock and population for three decades. Though proportionately the percentage of increase of housing stock is greater than population increase, in absolute numbers, the gap is considerably widening. During 1961 and 1971 there were 142,300 and 245, 775 houses respectively and during the same period the population of the city was 9,07,627 and 14,22,282 persons. Since the percentage increase of houses during 1961-71(73 per cent) was greater than the population increase (56 per cent), the average number of persons per dwelling came down from 6.4 in 1961 to 5.57 in 1971. This improvement is seen mainly because of the active role played by the State Housing Board, House Building Co-operatives, Local Authorities, City Improvement Trust Board, the present Bangalore Development Authority and various other Government Agencies. Though there has been a great deal of building activity in recent years and a large number of residential houses have been constructed, the general complaint of scarcity of housing accommodation and the high rates of rent, speak of the continuing acute housing problem.

The rural-urban fringe is a transitional zone found on the edge of the metropolis. It is characterised by heavy influx of population into these areas, with land uses different from adjoining rural areas and with majority of the workers engaged in non-agricultural pursuits. The traditional zone has been delineated by Bore Gowda (1977) by analysing spatial, occupational, demographic, and land use determinants, within a radius of 30 kms from the city centre. Thus delineated fringe of Bangalore, is polygonal in shape extending between 7 to 22 kms, depending on the accessibility from the

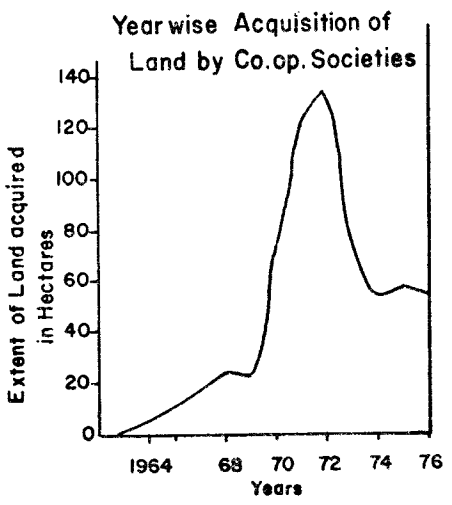


FIG.2

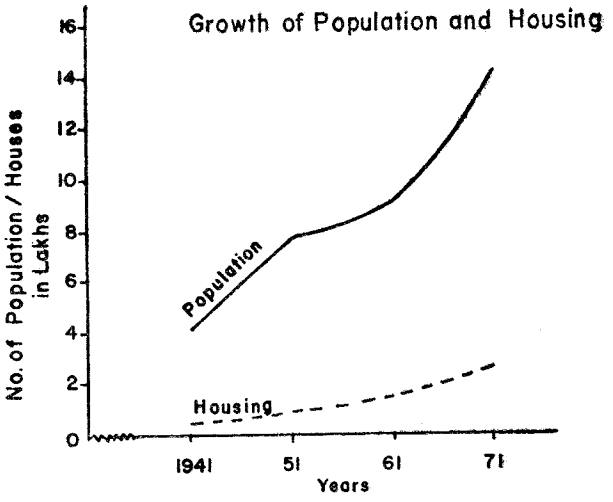


FIG.1

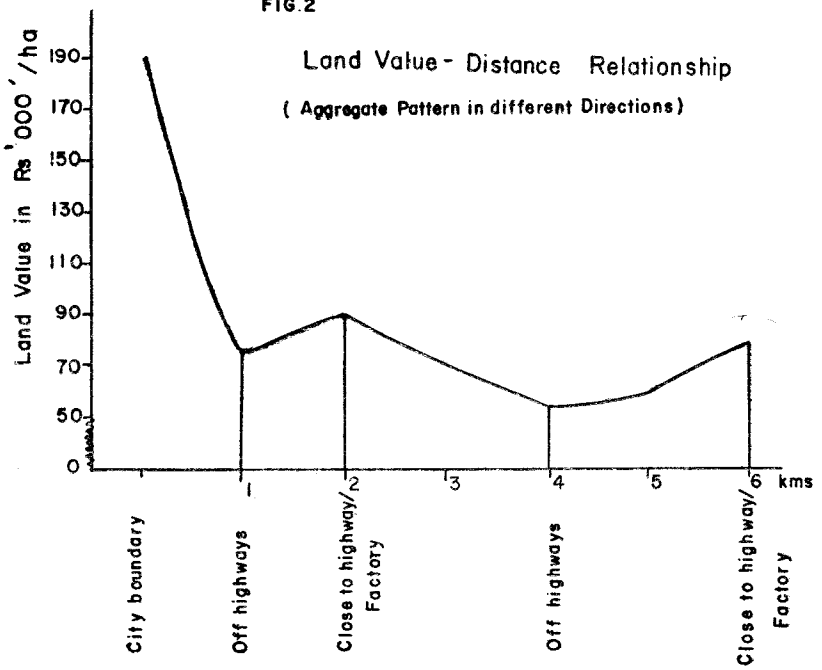


FIG.3

city, The fringe area and its expansion has been directly influenced by the different activities of the main city. Certain activities of city specially. space consuming activities like aerodrome, industries etc., have necessarily been located in the fringe area. Housing, both by public and private agencies is getting concentrated in the fringe areas due to the lack of space in the city. Hence the rate of economic development and intensification of activities within the city determines the rate of expansion of residential land use on the fringe. Since today's fringe is going to be tomorrow's city, planned expansion of the fringe is desirable. But due to the operation of a number of agencies, both public and private, haphazard development of the fringe is more common than planned development. Hence, it is attempted in this paper to suggest the various measures to achieve regulated and planned expansion of the fringe.

Agencies Promoting Housing Development

There are a number of agencies as mentioned earlier, like the State Housing Board, City Improvement Trust Board, Bangalore Development Authority, speculators, co-operative societies etc , which are operating in and around the city constructing houses, developing sites, both residential and industrial.

The Karnataka Housing Board (1956) is the major organization in-charge of housing in the public sector. From its inception upto the end of 1970, it has constructed 9070 houses under subsidised industrial housing scheme, 2460 under subsidised rental housing, 2365 under low income group housing and 627 houses under middle income group housing. It has also sanctioned cash loans amounting to Rs. 72,18,000 to 2560 individuals under the low income group housing and Rs. 50, 88, 890 to 870 individuals under the middle income housing scheme, within the Bangalore Metropolitan Region.

Bangalore City Improvement Trust Board, established in 1945, has laid out more than 65 extensions, 160 schemes of development of industrial suburbs, and industrial sites. During 1945-77, 68,400 sites comprising residential, commercial, institutional and industrial sites have been distributed to the needy public. In 1976, Bangalore Development Authority was established to achieve better co-ordination among many organisations functioning within the Bangalore Metropolitan Area. Today Bangalore Development Authority is vested with powers to ensure planned growth of city.

The contribution of the State Government in the matter of housing is more or less confined to the building of quarters for its empolyees. Marginal contributions in solving the housing problem has also been made by the Bangalore City Corporation and other public sector undertakings.

The Public industrial enterprises, mostly the ones in the central sector have provided housing accommodation to their workers, which amounts approximately to 10,000. The table I shows the houses provided by major industries.

To supplement the Governmental efforts, house building co-operative societies have been formed. By the end of 1977, 176 house building co-operative societies were in existence operating in and around Bangalore City. In all these societies, 53,622 persons have enrolled as members, accounting for an average of 305 members per society. However, there is a wide variation in membership ranging from less than hundred to 7331 (Aircraft Employees House Building Co-operative Societies) members. Jayanagar House Building Co-operative Society ranks second in its size (5528 members) and in financial position. Of the 176 societies, some of them are defunct, a few are continuing negotiation to acquire land and majority of them have formed sites and only a few have constructed houses for their members.

Nature and role of societies

A variety of people like labourers in in-

dustries, government offices, quasi-government institutions like LIC, Banks and citizens, who feel that securing sites through either public agencies (City Improvement Trust Board / Bangalore Development Authority) or by themselves is difficult, have formed co-operative societies with the main objective of owning a house. The non-officials and business people have registered 113 house building co-operative societies. This category includes the businessmen, common people, and even the slum dwellers (1 society) and the downtrodden classes like Scheduled caste and Tribal (9 societies) persons. Next in importance are the workers working in various industries (25 societies) of which Binny Mill alone has 6 societies and even the large scale industries like HAL which have partially accommodated their workers in their own housing schemes also have formed societies. This shows that the number of houses provided by these factories (Table I) is insufficient and in fact the Aircraft Emyloyees House Building Co-operative Societies is the largest with 7331 members. Eighteen societies have been formed by the Government employees. Employees of the various banks both nationalised and non-nationalised have 12 societies to meet their requirements, post and telegraph employees have 5 and L. I. C. employees 3.

Ownership of Land

The Co-operative societies have purchased lands from different types of persons, who may be categorised Into agriculturists, speculators, estate agents and absentee landlords. Speculators have sold more land than the others (Table II) for the highest price of Rs. 1 lakh per hectare, while it is less from agriculturists (Rs. 64, 000) which account 42.6 per cent. of the total land acquired. Estate agents and absentee land lords have sold for a price higher than agriculturists but lower than speculators with a rate of Rs. 96,945 and 86,000 respectively.

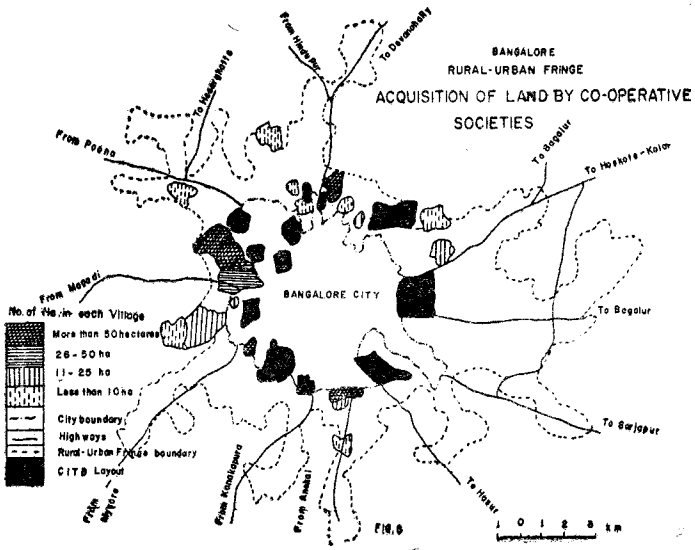
The spatial Pattern of House Building Co-operative Societies

The house building co-operative societies have acquired and developed 5.85 square kilometre of space, of which 42% of the lands are located within the city corporation and remaining in the fringe area, mostly in the interstitial area between highways and adjacent to the lay-outs of City Improvement Trust Board. In general, it is found that most of the co-operative housing development has taken place only after the year 1964 and they have developed beyond the areas developed by governmental agencies i. e., the inner margin has been developed mostly by City improvement Trust Board / Bangalore Development Authority, whereas the outer margin has been developed by the co-operative housing societies, the main reason for this being the relative advantage enjoyed by the governmental agencies in acquiring the desired lands within the corporation limits or nearer to the boundary. Most of the development by the co-operative societies are not found on major highways radiating out of the city, but only in the interstitial areas and along minor roads. This is mainly because most of the land along the highways has already been developed by industries since the accessibility is at a premimum. Even if undeveloped land is found on the highways, the societies cannot compete with the industries since the land value is much higher than the value usually paid for residential activity. Hence, the residential areas have been pushed into the interior both because of non-availability of space as well as high land value along the developed highways. The attractive land value in the interior has given rise to haphazard development.

Analysis of the intensity of housing development by the co-operative societies in chronological order reveals that, this activity started in the initial years of 1960's. Up to the year 1969, growth of societies and their active role was sluggish and since 1970 it gained the momentum and 1972 was the peak year with more number of co-operative societies playing an important role in

housing (Fig. 2). Again from the year 1973, the intensity seems to have declined mainly due to the adoption of strict regulations and zoning of landuse in the metropolitan region of Bangalore. With these new rules, conversion of land from agriculture to non-agriculture can be done only according to master plan prepared by the expert committees on the growth of Bangalore. However, it is to be noted here, that due to certain loopholes and lacuna in the zoning regulations haphazard land conversion and development is continuing to take place unabated.

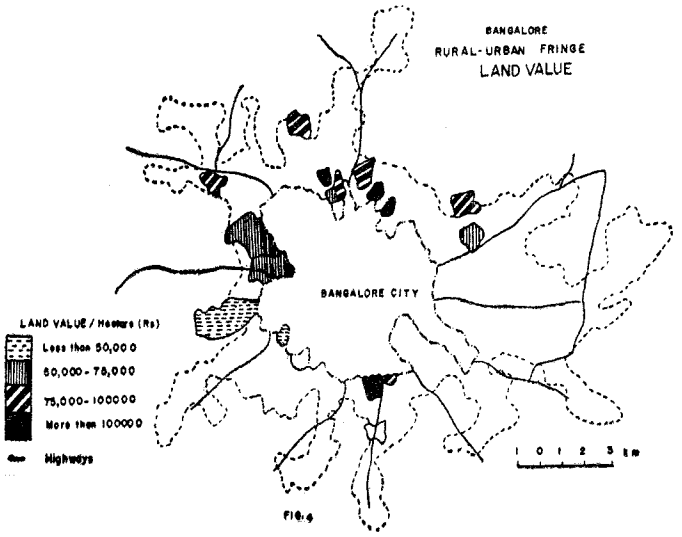
Most of the lands acquired by these cooperative house building societies are all prime agricultural lands. Since the price offered by these societies and speculators is higher than the prevailing price, agriculturists without foreseeing the future have sold their lands.



The societies, because they cannot compete with industries and other urban uses along the highways and within the city limits, are attracted by agricultural lands in adjoining villages which are relatively cheaper. Even in these villages, the price paid by the societies for agricultural lands varied from one part of the fringe area to the other, depending on the nearness to urban development, industrial establishments and the highways. Figure 5 shows the villages in which societies have purchased lands, their distance from the corporation boundary, and the extent of the land acquired. Figure 4 reveals average cost of the land per hectare while distance land value relationship is given in figure 3. It is observed that the land value is inversely related to the distance from the city, with the exception of those villages which are close to industrial sites and urban development inspite of their location at a farthest distance. Within the the city limits near the boundary, average value per hectare of land is Rs. 1 lakh, while on the border Rs. 92,000(Cholanaikanahaly). At 1 km of distance from the corporation boundary, it is Rs. 76,954 (Nyanappana Setty Palya), at 2 kms. a high value of Rs. 1,20,943 (Attiguppe) exists due to its closeness to ITI factory and K. R. Puram. At 3 kms. of distance it decreases to Rs. 46,491 (Nagarabhavi), at 5 kms it is Rs. 39,015 and at 6 kms, since all the villages are nearer to the factories like Vijinapur and

Hormav (near ITI), they have land value of Rs. 79,885 per hectare (refer Fig. 4).

Extent of the land acquired by House Building Co-operative Societies again is determined by the accessibility and development already achieved. In Agrahara Dasarahally, which is within the city limits and close to Binn Mill. 52 hectares of land has been taken by societies. Next in importance are Avalahally (46), Kathariguppe (40) and Marenahally (45) which are again close to Banashankari lay-out and Jayanagar extensions respectively and are located on the edge of the corporate boundary. As the distance increases land value decreases, with the exception of villages near the industries. It varies with time. During sixties, when there was not much building activity was existing, the land was available relatively at cheaper rate: it reached peak during 1972-73. The trend is almost stagnant in recent years and only marginal increase is found in land value. Land value also varies with the size of plot acquired, the larger the



size of plot lower will be the value.

The spatial pattern of expansion of these co-operative societies could be summed up as follows :

(a) The operation of these societies is well within the boundary of the rural-urban fringe and only a few societies are operating within the boundary of the corporation.

(b) Since residential activity cannot compete with the industrial or commercial activities, the societies are not operating on highways but on the other hand they are infilling the gap created by industrial development in the interstitial areas.

(c) sites / houses developed or that could be developed by the societies are concentrated in outer margin of City Improvment Trust Board developments and corporation limits.

(d) with the increasing distance from the city, the number and intensity of operation by the societies decreases.

(e) The intensity of development is higher in those areas which are already developed, close to factories and close to highways.

Role of Co-operative Societies in the Process of Expansion of the Fringe

Expansion of the fringe areas depends on the various processes that are operating in the city and its adjacent areas as well as their intensity of operation. Housing is one of the important processes boosting the

fringe development. The role of co-operative housing as explained earlier, is determined by the distance / accessibility to the main city, infrastructural development, transporttational facility and host of other interrelated factors, which cumulatively result in the expansion of fringe areas, the rate and direction being determined by the accessibility.

Co-operative societies have purchased agricultural lands in the fringe area to form sites and to build houses because of lower land value. This establishes relationship between the co-operative societies and the agriculturists, and once the land transactions are over, it will cast its shadow on the other agricultural lands. In due course, the agricultural lands are left fallow in anticipation of an offer by urban developers, thus attracting the speculators and others. It is a continuous phenomenon, gradually moving out from the developed areas towards agricultural lands, thus causing expansion of the fringe. This transaction can be viewed in the following terms.

Due to greater demand, both by public and private agencies, agricultural lands are invaded and there is a succession in land use; from agriculture to market gardening, market gardening to residential area and residential to commercial area. The whole process of this operation follows an ecological invasion succession process. In this invasion-succetsion process, a particular activity like industry may compete and can succeed in direct conversion from agriculture to industrial use. This direct conversion from agriculture to industrial uses precludes the residential activity in those areas and this forces the residential activity to skip the adjacent strip of agricultural land meant for industrial use. In this process, the urban edge is pushed further into the agricultural land and there is a continuous land conversion as time advances.

Table I

Provision of Housing by Major Industries

Name of the Industry	Total workers	No. of workers Provided with houses	
Hindustan Aeronautics Ltd.	22520	2450	(10.9)
Hindustan Machine Tools & Watch Factory	7000	2100	(30.0)
Indian Telephone Industries	14000	1928	(13,8)
Bharat Electronics Ltd	10100	1132	(11.2)
Minerva Mills	2869	85	(3.0)
Imperial Tobacco Co.	2182	196	(9.0)
Government Electric Factory.	950	63	(6.6)
New Government Electric Factory	3000	84	(2.8)
Motor Industries Co.	5500	..	..
Sri Krishna Spinning & Weaving Mills	1800	263	(14.6)
Mysore Sprinning & Manufacturing Co.	3027	167	(5.5)
Bangalore Woollen, Cotton & Silk Mill	7400	600	(8.1)
Total	80,348	9,068	(11.28)

Source : Rame Cowda, K. S. (1974), **Bangalore – Its Growth and Development.** Dept. of Town planning, Bangalore.

Table II
Ownership of the Land

Land purchassed from	Extent of the acquisition in Hectares	Average cost of land per Hectare in Rs.	Year of maximum transactions
Owners of the land in the village	249.29 (420,6)	64,000	1971
Speculators/urban developers residing at Bangalore.	278.10 (47.6)	1,00,033	1973
Estate agents	(42.20) (7.2)	96,945	1973
Absentee landlords	15.10 (2.6)	86,000	1974

Source : Compiled by the Authors.

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