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THE EFFECT OF INDUSTRIALIZATION ON WORKING AND LIVING

SPATIAL PATTERNS IN AN INDIAN MIDDLE-SIZED TOWN

by

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This paper examines the effect of industrialization on the working and living spatial patterns in an Indian middle-sized town.

According to the traditional pattern proposed by SJOBERG (1960) for pre-modern Asian towns, the urban morphology reflected a model of socially stratified societies, with the high status people concentrated in the centre of the town where most economic activities (arts and trade, commerce) as well as the seat of political power were also located, and with the low status people confined to the urban periphery. As pointed out by BRUSH (1977), various empirical studies show how this type of urban structure has survived into the present time in many Indian cities. However, this author, among others (RAD, 1983; SCHENK, 1986) also underlined that this preindustrial urban pattern cannot apply strictly to the recent urban development in India, which proves to be more complex. For example RAD (1983) emphasizes the "dual" structure of the Indian city, with its "bazaar-peasant economy" and "firm type of capitalist economy", which is reflected in the urban morphology by a "traditional core" and "industrializing and tertiarizing belts or strips along transport axes".

Taking these "typical" urban patterns as a reference point for the case study of a medium-sized industrial town, this paper will analyse the extent to which the industrial development taking place in this town has led to a spatial residential segregation of the industrial production workers from the other socio-occupational groups, in particular the industrialists.

The residential pattern will be compared to the location pattern of the industrial establishments in the town, in order to appraise the degree of intermingling - or segregation - of living and working spaces.

The spatial distribution of the industrial production workers on one hand, and of the industrialists on the other, will also be compared to the spatial distribution by caste, in order to determine whether residential segregation results mainly from a classical caste-based segregation, or whether economic class also plays a major role beyond more traditional cultural divisions.

Another aspect to be examined is whether the in-migrants' pattern of settlement in town strengthens or on the contrary dilutes the residential segregation.

Two extreme forms of combination of working and living spaces which

are generated by the attraction effect of the industrial labour market will then be put forward : a total integration of both spaces in the case of the inter-state migrant labourers who live in the premises of the factories and a total dissociation in the case of the commuters who maintain their rural residence while working in town.

The focus in this paper is on the population engaged in the industrial sector, since the latter plays a leading role in the economy and more generally in the dynamics of the town under study, as it will be shown below.

Before examining the selected issues, a brief presentation of the context of this research, the study area and the source of data is also necessary.

1 - CONTEXT OF THE STUDY

1-1-Purpose of the research and study area

The study presented here is part of an ongoing research project on the urban development, industrialization and migration processes in Indian middle-sized towns. Our project focuses on the interactions between spatial mobility and economic activities, in order to understand some specific aspects of the dynamics of Indian middle-sized towns, as related to their surrounding rural environment. It aims to investigate the role of the labour markets of medium-sized industrial towns in population attraction and settlement, as well as the means of socio-economic insertion of the in-migrants.

This project is based on the case study of a fast growing middle-sized industrial town, namely Jetpur in Gujarat (Western India), which ranks amongst the most urbanized and industrialized states of India [1]. The selected town is located in the region of Saurashtra, western peninsular Gujarat. This region which accounted for 9.58 millions inhabitants in 1981 consists of six districts, including Rajkot district where Jetpur is located. This town exemplifies mono-industrial development based on a traditional activity, the dyeing and printing of textile (essentially cotton saris) which was promoted by local entrepreneurs.

1-2-Source of data

The findings presented in this paper are based on primary data from our own demo-economic surveys. The system of investigation adopted combined several types of approaches and surveys, which were conducted in four phases from October 1987 to May 1989. This consisted in the following : a preliminary phase of qualitative observation, a statistical survey on migration and employment covering 10 per cent of the households of the urban agglomeration and five nearby villages (about 2400 households), a survey of 50 industrial establishments and a collection of 64 workers' migration and occupation biographies.

A more detailed presentation of these surveys is given in the appendix.

2 - THE DEVELOPMENT OF THE DYEING AND PRINTING INDUSTRY IN JETPUR AND ITS DEMOGRAPHIC AND ECONOMIC IMPACT

2-1-Origin and development of the dyeing and printing industry in Jetpur

Dyeing and printing of textiles was a traditional craft in the Saurashtra region and its origin in Jetpur could be traced to the beginning of the 19th century. However, the industry in its present form has developed since 1947 with the introduction of the technique of screen printing which gradually supplanted block printing [2].

At its beginning the industry was promoted by local entrepreneurs, Khatriis by caste, for whom dyeing and printing is an ancestral activity. The bright economic prospects of this industry then attracted many entrepreneurs, who did not necessarily belong to the traditional community of artisans. Amongst the newcomers were Vaniyas, a traditional caste of traders, and Kanbis, a traditional caste of cultivators. The latter in particular played an increasing role in the industrial development of Jetpur, by reinvesting in this industry profits set aside from agricultural incomes, especially from cash crop agriculture [3].

The dyeing and printing industry in Jetpur developed considerably with the best period for expansion occurring from the mid-sixties to the mid-eighties. Today the number of printing units set up in the urban agglomeration and its immediate surroundings approximates 1200, all belonging to the small scale sector [4]. The development of the screen printing industry also promoted several ancillary manufacturing and servicing activities : about 250 small units manufacturing screens, about 100 small units engaged in finishing processes, and about 20 units manufacturing dyes or other chemicals used in the printing process, located in the town and the nearby villages.

2-2-Industrial sprawl and location of the establishments

The increasing number of industrial establishments set up in Jetpur has been accompanied by a sprawl and decentralization of the industrial zones. Initially the printing units were located in the inner city, relatively close to the river Bhadar, on the bank of which the town is situated, and whose water is especially favourable to develop the colours and prints. This location factor was important in the past, as long as the saris were washed directly in the river. But the flow of the river has become insufficient to fulfil the requirement of the increased number of printing factories. In addition, the construction of a dam on the Bhadar river, 22 kilometres upstream from Jetpur, in 1964, has considerably reduced the flow of the river.

Soon after the independence of India, in the late forties and in the early fifties, another factor contributed to the location of the industrial establishments amid the inner residential zones. Following the partition of the country, a massive out-migration of Muslims to

Pakistan affected particularly the very prosperous community of Memons from Jetpur. These rich traders left behind all their properties, spacious houses and big buildings. Thus many buildings were available at a very low cost. Some Khatri artisans, the first entrepreneurs in Jetpur, took advantage of this situation and converted the properties evacuated by the Memons into printing factories. More specifically, the Sindhi Khatri, migrants from Sindh in Pakistan, who were traditionally engaged in dyeing and printing craft and arrived as refugees in Gujarat after the Partition, could benefit directly from the custodian property system. This system of exchange of property between refugees from Pakistan and refugees from India allowed the Sindhi Khatri to settle in Memons' houses and start printing units in these buildings.

Progressively the printing factories were set up in the peripheral zones of the town, then outside the Municipality boundaries, in particular along the transport axes, and on the territory of adjoining villages, especially Navagadh, located northwest of Jetpur (fig.1).

For example, in March 1988, 364 printing factories situated on Jetpur revenue land, but outside the residential site, on non agricultural land used for industrial purpose, were registered on the Revenue records. In Navagadh, at the same period, 246 printing factories located on the territory of the village were registered with the local administration.

The first reason for this centrifugal movement is the scarcity of land in the inner town, as well as its appreciating price. The second set of reasons pertains to taxes, which are higher within the civic administrative boundaries of the town whereas outside the Municipality limits entrepreneurs in particular avoid the octroi tax.

Coming back to the land factor, the Kanbi entrepreneurs played a major role in the relocalisation of the factories towards the outskirts of the urban agglomeration. Belonging to agriculturists' families, these newly converted entrepreneurs could acquire agricultural land. Thus prosperous Kanbi farmers, who benefitted from the progress of irrigation facilities to develop cash crops and set aside surplus from agricultural incomes to reinvest outside agriculture, eventually bought agricultural land in the periphery of Jetpur or in adjoining villages from marginal farmers like the Kolis. Then they managed to obtain the authorization to reconvert this agricultural land to non agricultural land for industrial purpose, and set up factories. For instance, according to the data provided by the Village Panchayat of Navagadh, where many printing factories were set up, 60 per cent of the agricultural land converted for industrial purpose was purchased from marginal farmers who became landless and finally joined the proletariat. This type of transfer of land, from which the Kanbis were the first to benefit, took place mainly between 1968 and 1974. After 1974, the industrialists who set up factories were mostly rich farmers, landowners who converted part of their own agricultural land to non agricultural for industrial purpose.

2-3-Population growth and in-migration

The considerable expansion of the dyeing and printing industry in Jetpur over the last forty years has resulted in the accelerating population growth of the town, indicating high and increasing in-migration (table 1).

The census data show that the population boom of Jetpur started after 1961. The population of the town increased from 31,186 to 41,943 in 1971 and 63,074 in 1981, which corresponds to a growth rate of 34.5 per cent during the first intercensal period and of 50.4 per cent during the second one. Meanwhile the Gujarati towns belonging to the same size class as Jetpur in 1971 (namely class III with population ranging from 20,000 to 49,999) recorded an average growth rate of only 32.6 per cent from 1971 to 1981.

The population growth of Jetpur has continued at an increasing rate after 1981, as shown by the estimates based on the 10 per cent household survey conducted in 1988 : 4.2 per cent per year on an average from 1971 to 1981 and 5.7 per cent from 1981 to 1988. Today the urban and industrial spread of Jetpur also includes an adjacent village, Navagadh, which has developed into an industrial suburb at an exploding growth rate (9.6 per cent per year on an average from 1971 to 1981 and 17.3 per cent per year from 1981 to 1988). Jetpur and Navagadh together constitute an urban agglomeration of around 113,750 inhabitants (1988 estimates) [5].

The evolution of the sex ratio shows that the population has become more and more masculine, which is usually an indicator of an increasing male dominated labour in migration.

In the total population of the urban agglomeration, the in-migrants account for 44 per cent and in the employed population alone for 55 per cent [6]. The geographical origin of the in-migrants is essentially regional : 86 per cent were born in Saurashtra, and among them nearly half in Rajkot district (where Jetpur is located). Besides, 60 per cent of the in-migrants come from rural areas.

From the point of view of its population dynamics, Jetpur appears as a regional urban centre deeply rooted in its rural hinterland.

2-4-Importance of the dyeing and printing industry for the urban economy and the hinterland

The dyeing and printing industry (ancillary units included) is the most important sector of economic activity for the population residing in the urban agglomeration : 44 per cent of the employed population is concentrated in this sector. However the female workers are almost excluded from the dyeing and printing industry : they represent only 2 per cent of the persons employed in this branch. If only the male employed population is considered, the impact of the dyeing and printing industry becomes even more striking : this sector gives employment to almost half of it.

In addition the industrial sector has absorbed a large number of migrants : 56 per cent of the working population employed in the dyeing and printing industry is in-migrant.

Furthermore, this urban based industry also shows a high contribution to the livelihood of the people living in the surrounding villages of Jetpur ; in the sample of five villages located within 8 kilometres around Jetpur, 21 per cent of the total employed population, and 33 per cent of the male employed population, are engaged in this sector.

The total employment generated by the dyeing and printing industry is considerable, as the entire process of production is manual. According to the estimate provided by Jetpur Dyeing and Printing Industries Association, the maximum employment capacity of this industry would approximate 40,000 (ancillary units included, and all types of work and status in employment considered). Around 50 per cent of the production workers employed in this industry are commuters, mostly from villages located within a radius of 25 kilometres around Jetpur, but also from towns even bigger than Jetpur, up to 32 kilometres away [7].

The geographical origin of the population settled in the urban agglomeration already shows that Jetpur is a regional town deeply rooted in its countryside ; from the economic viewpoint as well, this growth centre proves to be highly integrated in its hinterland.

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The strategic role of the dyeing and printing industry for the economy of the town as well as its valuable impact on the surrounding areas have been underlined. The next sections of this paper will focus on the working population engaged in this industrial sector, the production workers on one hand, and the entrepreneur - industrialists on the other. First the working and living spatial patterns of the population settled in the urban agglomeration will be examined, then the phenomenon of commuting will be analysed separately.

3 - THE WORKING AND LIVING SPATIAL PATTERNS OF PRODUCTION WORKERS AND ENTREPRENEURS OF THE DYEING AND PRINTING INDUSTRY

3-1-From household industry to spatial and social segregation

In the early stage of the development of the hand printing industry in Jetpur, when block printing was not as yet supplanted by screen printing, this economic activity had rather the characteristics of a household industry. The pioneer entrepreneurs, Khatri, were artisans pursuing their ancestral activity, whose specific skills were acquired since childhood while working and assisting in the familial craft. The workshop was often situated within the house premises, the labour force was constituted mainly by the members of the family, whereas the number of hired workers was relatively marginal. The owner and manager of the printing unit was simultaneously a production worker, performing dyeing and printing work. Thus there was proximity of

working space and living space, and low socio-occupational differentiation in this industry.

The introduction of screen printing in 1947, and further improvements in this technique, allowed the expansion of the industry on a larger scale. Factories were gradually set up in more spacious buildings, adequately equipped, and the requirement of hired labour force increased. This industrial development was accompanied by a dissociation of working and living spaces for the entrepreneurs, and by the formation of an industrial working class.

A study of block and screen printing at Jetpur in 1964, conducted by TRIVEDI (1970), shows the survival of the household industry besides a twofold process of differentiation : spatial differentiation between the workshops and the dwellings, and residential as well as social differentiation between the entrepreneur-owners and the hired workers. At that time the author already noticed that the owners' places of residence were more concentrated in the city centre, whereas the workers' residences extended within a larger radius.

Another study of the Jetpur printing industry conducted in 1981-82 by ASHRAFF (1985), with a retrospective analysis over the previous decade, also shows the decline of household industry in dyeing and printing, and the correlative expansion of an industrial proletariat.

Today the household industry in the strict sense of the word has disappeared from the dyeing and printing industry in Jetpur. Moreover the current spatial distribution of the industrialists' residences on one hand and of the production workers', on the other, reveals that residential and social segregation has continued and got increased [8].

3-2-Present spatial distribution of industrialists and production workers' residences

With regard to their place of residence, the entrepreneur industrialists are relatively more concentrated in the core of the city, in the commercial and business area, whereas they are absent or virtually absent in the peripheral zones, in the northwestern suburb of Navagadh as well as in the eastern and southern outskirts of the agglomeration (fig.2).

For example, while the average proportion of industrialists is 5.4 per cent in the total working population of the urban agglomeration, it ranges between 10 per cent and 16 per cent in certain centrally located zones ; or still, in terms of population concentration, 33 per cent of all the industrialists live in these referred central zones which account only for 14 per cent of the total working population.

The production workers of the dyeing and printing industry, who represent 33 per cent of the total working population, are relatively less concentrated within the urban agglomeration than the industrialists, as measured by the Gini's coefficient : 0.237 against 0.429 respectively [9]. However, the workers' residences are far from

being uniformly distributed within the urban area (fig.3).

The map of the spatial distribution of the industrial production workers' residences is roughly a negative of the industrialists' one : the highest percentages of workers as related to the working population of the corresponding zone are recorded in the outskirts of the urban agglomeration, whereas the lowest ones are found in certain central zones. Thus there is a clear trend towards spatial segregation according to socio-economic demarcation lines, which even leads to a mutual exclusion in certain zones.

One striking example of the above is Bhojadhar, an industrial workers' pocket located in a distinct out-growth, southeast of the town. There the proportion of industrial workers in the working population reaches 64 per cent, whereas the industrialists are completely excluded. Bhojadhar is an out-growth of Jetpur which developed spontaneously since the late seventies, and more particularly in the mid-eighties, by encroachment of dwellings on available fallow land.

The former village of Navagadh, northwest of Jetpur, has also turned into an industrial working class suburb, with 46 per cent of its working population employed as production workers in the dyeing and printing industry.

In terms of population concentration, almost half of the industrial production workers live in an area accounting only for 32 per cent of the total working population of the urban agglomeration. This area corresponds to the zones where the percentage of industrial workers in the working population is above 45 per cent and which are essentially located in the periphery of the agglomeration (north of the railway line, east of the Bhadar river, southeastern out-growth of Bhojadhar).

The juxtaposition of the maps of the industrialists' and production workers' residences on one hand and of the location of the industrial establishments on the other, clearly shows two opposite trends : a trend towards the segregation of the industrialists working space from their living space and a trend towards the intermingling of worksites and residential zones of the workers living in the urban agglomeration. Some examples of very close association between working and living spaces among the industrial production workers are the precarious settlements of in-migrant workers living in huts just outside the gates of the factories, or even the inter-state migrant labourers housed in the premises of the factory itself. This extreme case of integration of working and living spaces and its significance will be analysed in the last section of this paper.

3-3-Class segregation or caste segregation ?

A tendency towards spatial segregation between two antagonistic classes, namely the industry owner-employers and the hired industrial production workers, has been emphasized in the previous section. However the intrinsic nature of this segregation should be scrutinized, in order to determine whether it results primarily from a traditional caste-based residential segregation associated with a

caste-based occupational specialization.

The survival of residential segregation based on caste in contemporary urban India as well as of a certain correspondence between caste and occupation has been revealed by many empirical studies, though the process of industrialization and urbanization is acknowledged as a major agent of change undermining the traditional caste-based socio-economic organisation [10].

The situation observed in Jetpur calls for a qualified appraisal.

The distribution of the working population by occupation and by caste (fig. 4) shows a relative degree of specialization [11] and in particular the survival of certain hereditary caste-based activities. To mention a few selected examples, not surprisingly the Brahmins are over-represented in professional and clerical jobs, the Vaniyas in business management, the Kanbis in agriculture, the Khatri among the entrepreneurs of the dyeing and printing industry, and the scheduled castes among the service workers.

Regarding more specifically the caste base of the new occupations generated by the industrialization process, two contrasted patterns emerge between the entrepreneur-employers of the dyeing and printing industry and the industrial production workers.

The entrepreneurs are dominated by two castes : the Kanbis, a traditional caste of cultivators, new-comers to this industry, who account for 42 per cent of the entrepreneurs, and the Khatri pursuing the ancestral dyeing and printing line, who account for 34 per cent of the entrepreneurs. A third minority but significant group has to be mentioned : the Vaniyas, accounting for 8 per cent of the entrepreneurs, and who shifted from familial occupation of textile and sari trade to sari printing industry. Needless to say, the demographic weight of each of these three castes among the entrepreneurs of the dyeing and printing industry is remarkably higher than their respective demographic weight in the total working population [12].

On the other hand, the other castes participate only marginally in this occupational group, with respect to the total number of entrepreneurs as well as with respect to their demographic weight in the whole working population.

In contrast, the industrial production workers belong to a wide span of various castes : no caste group or community is excluded, and furthermore, apart from the Vaniyas, no group is noticeably under-represented as compared to its demographic weight in the whole working population. For example, to take the two extremes of the traditional caste hierarchy, the Brahmins as well as the scheduled castes are represented in the industrial working class proportionately to their respective demographic weight.

Among the caste or community groups which are noticeably over represented as compared to their demographic weight, are the Hindu castes classified as backward in Gujarat and - to a lesser extent -

the Muslim community [13]. For instance the Hindu backward castes account for 31 per cent of the industrial production workers, but only for 25 per cent of the total working population.

It should be emphasized that the formation of the industrial working class transcends the traditional caste-based segregation lines.

Having discussed the caste composition of the classes generated by the development of the dyeing and printing industry in Jetpur it is necessary to examine the pattern of residential segregation by caste, in order to appraise the impact of the latter upon the pattern of spatial segregation by class.

An examination of the general residential pattern of the population of Jetpur's urban agglomeration according to caste or community groups reveals some tendencies of concentration and segregation [14]. However the presentation will be limited to those castes which are significant in the composition of the socio-occupational groups specifically analysed in this paper.

Concerning the entrepreneurs of the dyeing and printing industry, figures 5, 6 and 7 show the residential distributions of the Kanbis, the Khatriis and the Vaniyas (in the working population), to be compared to the residential distribution of the former (fig.2).

First of all, as measured by the Gini's coefficient, the residential concentration of each caste separately appears higher than the residential concentration of the industrialists : 0.539 for the Kanbis, 0.601 for the Khatriis, 0.745 for the Vaniyas, against 0.429 for the industrialists.

59 per cent of the Kanbi working population lives in a continuous area located in the southern part of the agglomeration and which accounts only for 22 per cent of the total working population. However this preferential residential location corresponds essentially to a concentration of cultivators, the traditional and primary activity of this caste. Thus the residential distribution of the Kanbis cannot explain the relatively high percentage of industrialists found in the central zones of the town (as related to the population of these zones).

More similarities can be observed between the residential distribution of the Khatriis and that of the industrialists. The Khatriis are more concentrated in the inner town, in certain zones where they represent 17 per cent to 21 per cent of the corresponding working population, whereas their average weight in the working population of the whole urban agglomeration is only 6 per cent. Yet, from another viewpoint, 51 per cent of the Khatrii working population lives in a continuous area accounting only for 16 per cent of the total working population.

However, there is no systematic congruence between the zones of highest concentration of Khatriis and the zones of highest concentration of industrialists. At least one zone where the Khatriis are proportionately over-represented while the industrialists are strongly under-represented could be pointed out.

As for the Vaniyas, they show a high degree of concentration around the commercial streets in the core of the town : 62 per cent of the Vaniya working population lives in areas which account only for 12 per cent of the working population of the entire urban agglomeration. Though they are a small minority group, 4.5 per cent of the working population, their relative weight increases tremendously in certain parts of the bazaar (up to 37 per cent of the concerned working population) which correspond effectively to some zones where the industrialists are also over-represented.

Regarding the industrial production workers, although they include a large range of castes/communities without salient discrimination, a comparison could be made between their residential distribution (fig.3) and that of the Hindu backward castes (fig.8) who form the relative majority group, accounting for 31 per cent of the industrial workers.

The spatial concentration of the Hindu backward castes (in the working population) is higher than that of the industrial workers, as shown by the Gini's coefficients : respectively 0.369 against 0.237. Not surprisingly, it is possible to find some common zones where these two overlapping population categories are over-represented as related to their respective average weight in the working population of the whole urban agglomeration. But the Hindu backward castes are noticeably under-represented in most part of the northwestern suburb of Navagadh, whereas this locality exhibits a strong concentration of industrial workers. Therefore the spatial distribution of the Hindu backward castes fails to reflect the specificity of the residential pattern of the industrial production workers, namely their decentralization into a ring of neighbourhoods - including the former village of Navagadh - surrounding the former town.

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Undoubtedly, the caste-community factor remains a powerful agent of spatial segregation in Jetpur, which generates a higher degree of differential population concentration than the process of industrialization has done with respect to occupational groups.

The survival of a caste-based occupational tradition among the industrialists can explain certain features of the residential pattern of the latter, more precisely the tendency to be centralized which corresponds to the spatial concentration of two castes over-represented among the industrialists.

However, as there is no simplistic one-to-one correlation between castes and the new occupations in the industrial sector, the caste-based spatial segregation fails to explain the residential pattern of the industrial working class.

This suggests that the industrial expansion has generated a specific residential pattern according to its own economic logic, with a

tendency towards the spatial segregation of the two antagonistic classes, industrialist-employers and hired production workers, and the pushing back of the latter to the urban periphery where the industrial establishments have been decentralized.

3-4-Impact of in-migration on the residential pattern of the workers

A last question to examine is whether the massive in-migration which has accompanied the process of industrialization and urbanization in Jetpur has strengthened or on the contrary diluted the spatial segregation between the industrial workers and their employers. While the proportion of in-migrants is 55 per cent in the total working population of the urban agglomeration, it is 42 per cent among the entrepreneurs of the dyeing and printing industry, and reaches 59 per cent among the production workers of this industry [15]. Herein, it is relevant to question the impact of in-migration on the residential pattern of the latter.

As shown by many examples of studies on various Indian towns or cities and as reviewed by GANDHI (1983) or SCHENK (1986), the in-migrants' settlement in town is far from being a haphazard process. On the contrary the new in-migrants have a tendency to cluster in neighbourhoods where they can find members of their kin - at best -, their caste or community, their regional or linguistic group or - at least - other migrants sharing the same economic fate.

The biographical interviews conducted with in-migrant industrial workers settled in Jetpur's urban agglomeration revealed that the process of in-migration relies upon familial and social networks. These latter play a vital role in the urban insertion - including the residential one - of the new comers.

Similarly, in Jetpur the in-migrants are not distributed uniformly within the urban agglomeration (see figure 9 for the in-migrant working population) [16]. The degree of spatial concentration of the in-migrant working population is close to that of the industrial production workers : the corresponding Gini's coefficients are respectively, 0.235 and 0.237.

The in-migrants' residential pattern shows a pronounced tendency towards decentralization . The in-migrants are strongly over-represented in the working population living in the outer fringes of the agglomeration, where their proportion is often more than 80 per cent, up to 88 per cent. Yet, in the core of the town they are relatively under-represented . Thus there are striking similarities with the residential pattern of the industrial production workers (fig.3). The peripheral zones which appear predominantly as industrial working class suburbs are also systematically zones of particularly high in-migration.

Therefore it shows clearly that the process of labour in-migration has been an important factor in residential decentralization of the industrial working class, hence strengthening the tendency towards spatial segregation from the industrialist class.

4 - TWO EXTREME FORMS OF COMBINATION BETWEEN WORKING AND LIVING SPACES

The attraction effect exerted by the industrial labour market of Jetpur has also resulted in two extreme forms of combination between working and living spaces for the workers : a total integration of both spaces, and a total dissociation.

4-1-Total integration of living and working space : the inter-state migrant labourers living inside the factories.

The trend towards intermingling of worksite and residential area for the industrial workers has led to an extreme form of integration in the case of workers housed within the premises of the factory itself. This outcome also illustrates the highest degree of residential segregation which has been generated by the process of industrial labour migration, as the concerned workers are all migrants, and essentially inter-state migrants.

This corresponds to a relatively recent and still limited type of labour recruitment in Jetpur, which is however quite indicative of a new economic logic and likely to lead to a reinforced trend. Since the mid-seventies some employers in the dyeing and printing industry have started recruiting workers from states other than Gujarat, mainly from the northern densely populated states of Uttar Pradesh and Bihar and from the bordering state of Rajasthan. Most often these workers are recruited through intermediaries, contractors or recruiting agents. They are male adults and teenagers coming to Jetpur without their family, and the duration of their stay depends directly on the duration of their engagement, temporary by nature. They are also highly mobile, as they return periodically to their native place, or go to other textile towns. They are housed within the premises of the plant, sometimes in the workspace itself. Therefore they are not at all integrated into the urban population.

Not only do these migrant workers live on the spatial fringe of the agglomeration, in big factories decentralized outside the inner town, but they are also kept at the fringe of the common urban residential system and apart from "normal" conditions of social and family life.

The share of these inter-state migrant workers in the total labour force of the dyeing and printing industry can be estimated at around 10 per cent. However, the significance of this particular segment of the industrial labour force extends beyond its demographic weight which remains still very modest. As shown in another paper (DUPONT, 1990) the inter-state migrant workers fulfil a threefold function : they can perform some exclusive operations of the process of production ; they ensure a labour supply with a great elasticity through the contract labour system which prevails among them ; they constitute a more docile and more easily exploitable labour force for the industrialists. Only the last characteristic will be elaborated here, as it is directly related to the residential segregation and the status of temporary migrant of these workers.

As the inter-state migrant workers housed in the factory premises have come to Jetpur exclusively to work without the intention of settling down in this town, and in addition from regions less developed than Gujarat, they are not demanding about working conditions and wages since these will be better than in their native place. Though the last remark could apply also to Gujarati migrants, particularly those coming from rural areas, in the case of inter-state migrant workers this predisposition is more pronounced due to their specific conditions of migration. In particular it is easier for the employer to impose longer working hours and night shifts to the workers who live in the factory itself. On the contrary the local workers as well as the migrants settled with their family in Jetpur are reluctant to accept work at night, and as far as the commuters are concerned, night shift is excluded, and moreover their working hours are limited to a certain extent by the length of transportation time or even constrained by bus and train timings. Furthermore, since the workers living inside the factories are generally under contract labour system, which prevails in Jetpur exclusively among the inter-state migrant labourers, they are constantly under the control of contractors and "masters" who set the working hours as well as the wages. Thus the industrialists are released from manpower management problems. Besides, the local labour trade unions have no impact on the inter-state migrant workers secluded behind the factory gate under "due" control, which is seen as an additional advantage by the employer.

Here it appears clearly that the absorption and reduction of the living space by the working space results in residential as well as social segregation for the workers, which altogether opens the way for increased exploitation.

Taking this factor into consideration, along with the other "advantages" of the inter-state migrant labour force, some industrialists implement a deliberate preferential recruitment policy for the latter. Though this type of recruitment is still limited within the total labour force employed in the dyeing and printing industry, the specific functions and characteristics of the inter-state migrant workers housed inside the factories allow us to foresee an increasing trend. In this case the hypothesis of tension arising between the inter-state migrants and the local workers cannot be completely ruled out, as there is already a feeling - though not widely spread - among the latter that the recruitment of inter-state migrant workers has a negative impact on the potential improvement of their own working conditions and earnings, and weakens their negotiation power with the industrialists. The germ of resentment could be increased if the local workers also have the impression that their employment might be threatened.

As analysed in the previous section, the industrial development in Jetpur has been accompanied by a trend towards residential and social segregation between the entrepreneurs and the hired workers. The present section shows how a relatively recent type of industrial labour recruitment has created a pattern of integration of the living space into the working space of the factory itself for a specific segment of the labour force. This has led to additional residential and social segregation, that is between the inter-state migrant labour

and the rest of the industrial labour force.

The significance of this last process goes beyond the case of Jetpur dyeing and printing industry. The recruitment of inter-state migrant labourers who are then housed on the worksite itself, generally under the control of contractors, is nothing exceptional in India (JDSHI, 1987). Apart from the case of migrant workers from Rajasthan, Uttar Pradesh and Bihar in the textile printing industry of Jetpur, but also Ahmedabad and Bombay, several examples can be mentioned concerning Gujarat more particularly : the migration of female labour force from Kerala for processing fish in other coastal states (MOULIK, 1984 ; MOULIK and RAJAMMA, 1987), the migrant labour from Bihar in the sugar cane factories of Saurashtra and from Maharashtra in those of South Gujarat (BREMAN, 1978), the inter-state migrant workers in the power-looms of the industrial town of Surat (SOUTH GUJARAT UNIVERSITY, 1984), the migrant workers from Uttar Pradesh and Rajasthan in brick-kilns (YAGNIK and RANDERIA, 1987), the contract migrant labour on construction sites.....

Though this specific type of recruitment is not limited to urban based industries, the important point to underline for the purpose of this study is that in all cases it results in the spatial seclusion of the migrant workers on their worksites, and their exclusion from the common residential pattern, thus also depriving them of a "normal" social life.

4-2-Total dissociation of working and living places

As mentioned above, the development of the dyeing and printing industry in Jetpur has not only attracted large numbers of in-migrants, but it also provides ample employment opportunities for the population living in the villages or even towns of the hinterland. In terms of the working and living spatial patterns, the phenomenon of commuting leads to a total dissociation between place of work and place of residence.

The impact of commuting on the rural population is sizeable. In the five villages covered by the household survey, which are located in the vicinity of Jetpur, 35 per cent of the male working population commutes daily to the urban agglomeration.

For the villagers of the surrounding areas in search of employment opportunities outside agriculture, commuting is preferred to urban migration, provided adequate communication facilities are available and transport cost remains affordable. This solution allows the commuters to preserve their familial and social life in the native place, and prevents them from facing problems of housing in town and of adjustment to urban life.

The appreciating rent of accommodation supplied in the urban agglomeration appears clearly as a repulsion factor in the alternative between urban residence and rural residence. From this angle, labour commuting can be analysed to a certain extent as a process of exclusion of the workers from the urban residential system, while

their labour force is utilized by the urban economy.

This process is more obvious in the case of the migrant workers attracted by the industrial labour market of Jetpur but who have selected a rural residence in surrounding villages. These latter provide less expensive options of rented accommodation, as compared to the level of rent in the urban agglomeration. Not surprisingly then, amongst the production workers who commute daily from the five nearby villages surveyed to work in the dyeing and printing industry in Jetpur, 37 per cent of them are migrants, and not natives of their villages of residence. The rejection of the industrial migrant workers' residences in the villages surrounding Jetpur is also the ultimate stage of a tendency already observed within the urban agglomeration, namely the decentralization of the workers' residences towards the periphery.

From the point of view of urbanization and town planning, urban industrialization which relies to a large extent upon the commuting labour force (50 per cent of the industrial production workers as mentioned above) presents an obvious advantage: the town benefits from this labour force without bearing the housing cost of it and with a limited burden in terms of civic amenities to provide for this population.

The dissociation between working place and living place is in fact deliberately aimed at in the policies of dispersion of urbanization and industrialization. Concerning more particularly the role of small and medium-sized towns in regional and urban development, one of the main functions assigned to these towns is to supply the rural population with employment opportunities outside agriculture, which should lead less to an increase in rural-urban migration and more to circular moves (daily, weekly, seasonal ones) (RICHARDSON, 1982).

In the case of Jetpur, the industrial and urban development is mainly the outcome of endogenous dynamics, which did not benefit from a specifically oriented governmental programme. Another middle-sized industrial town of Gujarat, namely Ankleshwar in Bharuch district, provides a striking illustration of the implementation of a governmental policy concerned with a more balanced industrial and urban development [17].

In the seventies the Gujarat Industrial Development Corporation set up an industrial estate in Ankleshwar which aimed at promoting this town into a growth pole in a district identified as industrially backward. At the local level the objective pursued in Ankleshwar was to reduce the pressure on agricultural land by providing new sources of non agricultural incomes in the proximity of the rural areas, but without uprooting the people from their villages. In order to avoid housing problems and the emergence of slums in the town of Ankleshwar, the employment opportunities supplied were to allow the workers to keep their rural residence. In 1982-83, an integrated development project was initiated by the Government of Gujarat in order to establish linkages between industries' requirements of manpower and rural areas' requirement of employment outside the agricultural sector. The concern about preventing migration of industrial workers from their villages

to the industrial urban area was clearly stated and two specific tasks were designed to be undertaken for this purpose. Industrial workers should be provided with housing in their own villages with the help of industries and Government; communication and transport facilities between the industrial estate and villages should also be provided for convenient commuting.

According to the estimates made by the Industries Association of Ankleshwar in October 1987, the percentage of commuters would approximate 40 per cent of the total population working in the industrial estate, and 80 per cent of the industrial production workers. Though these figures may involve a large margin of error as they are not based on a systematic survey, they suggest the significance of commuting. In the case of Ankleshwar too, the industrialization process has generated - and deliberately - a widespread pattern of dissociation between working and living places.

Coming back to the case of Jetpur, it appears also that the dissociation between working place and living place for the industrial workers has introduced another segmentation in the industrial labour force. In a situation of employment crisis, the difference in the residential patterns of the workers (residence in the urban agglomeration or outside in the surrounding villages and towns) induces an unequal capacity to cope with a drastic decline of employment opportunities.

This was revealed during the three year period of drought (1985-86, 1986-87, 1987-88) which severely hit the dyeing and printing industry of Jetpur, leading to the closure of many factories and hence considerable unemployment (DUPONT, 1989-a). The commuter workers were those most affected by unemployment, as residence far from the industrial centre proved to be a handicap. In a situation of employment scarcity, the workers living in the urban agglomeration, in the vicinity of the factories, might have better contacts to get jobs. In addition, as most of the workers in the dyeing and printing industry are engaged on a daily basis, if the probability of getting work is very low, the commuters would prefer to stay at home rather than to incur daily transportation expenses without any return. The farther from Jetpur the commuters live, the higher the transportation cost borne, and the higher the probability to remain unemployed in their village or town of residence (DUPONT, 1990).

*

The example of the inter-state migrant workers housed in the factory premises, as well as the example of the commuters, show how the different living and working spatial patterns can induce a segmentation of the industrial labour force, and create social segregation and economic discrimination.

SUMMARY OF MAIN FINDINGS AND CONCLUDING REMARKS

The case study detailed in this paper enabled us to examine the effect of industrialization on the working and living spatial patterns in the context of an Indian middle-sized town, namely Jetpur in Gujarat.

The considerable expansion of the local industry over the last 40 years has resulted in an urban and industrial sprawl and the decentralization of the factories towards the periphery of the urban agglomeration. In this respect, the urban morphology of Jetpur fits into the "dual" structure of the Indian city, with the juxtaposition of a "traditional core" (the bazaar) and "industrializing belts" and "strips along transport axes", as framed by RAO (1983).

In the process of urban and economic development in Jetpur, household industry has been supplanted by larger scale industry along with a dissociation of working and living spaces for the entrepreneurs, and the formation of an industrial working class.

This process has been accompanied by a trend towards residential and social segregation between the industrialists and the hired production workers. While the former are more concentrated in the core of the town, the latter tend to live in the outskirts, where worksites and residential zones of the industrial workers intermingle.

This spatial residential pattern also corresponds to the traditional structure of Indian cities, with the high status people living in or near the urban centre, and the lower status groups being confined to the urban periphery. However, in the case of Jetpur the tendency towards spatial segregation observed between two antagonistic classes, the industry owners and the production workers, cannot be reduced to a mere traditional caste-based residential segregation which would be associated with a caste-based occupational specialization.

In particular the caste/community base of the industrial working class proves to be widely open without salient discrimination, and the specificity of its living spatial pattern seems to correspond more to an economic logic which tends to push back the industrial workers' residences to the urban periphery where the industrial establishments have been decentralized.

Besides, massive labour in-migration has worked as a strong force of residential decentralization of the industrial working class, hence strengthening the tendency towards spatial segregation from the industrialist class.

The attraction effect of Jetpur's industrial labour market has also generated two extreme forms of combination between working and living spaces for the workers.

The first one is a total integration of both spaces, in the case of the inter-state migrant workers housed in the factory premises. This specific pattern can be interpreted as the ultimate outcome of the trend towards intermingling of worksites and residential zones for the workers, and also as the highest degree of residential segregation

which has been generated by the process of industrial labour migration.

The second extreme pattern is a total dissociation between place of work and place of residence, in the case of commuters. To a certain extent this can be interpreted as a process of exclusion of the industrial workers from the urban residential system. For the migrant workers who have opted for a rural residence in the surrounding villages of Jetpur, this is also the last stage of the tendency already observed within the urban agglomeration, namely the decentralization of the workers' residences in the outer fringes.

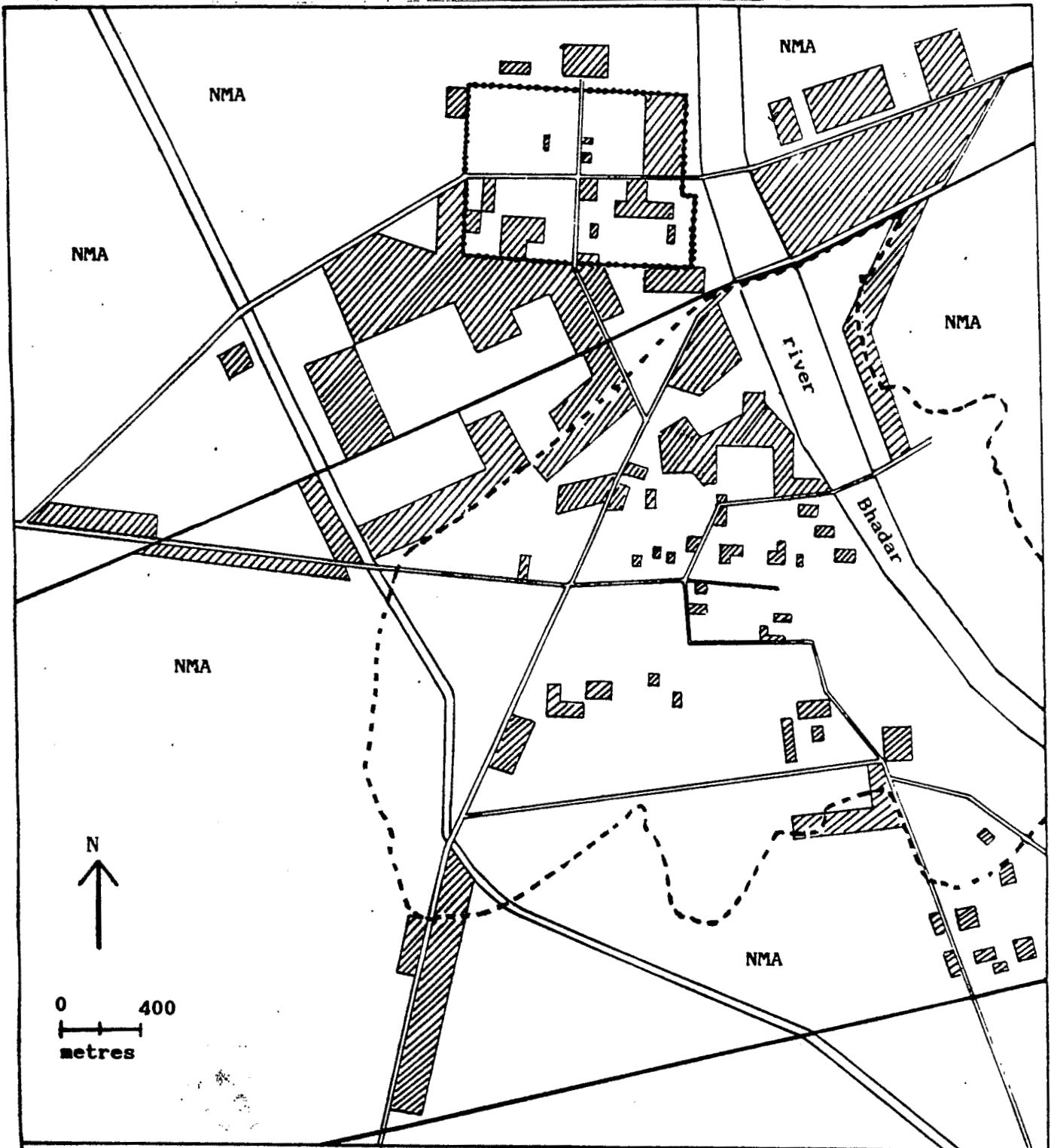
These two extreme forms of combination of living and working spaces have also induced a segmentation of the industrial labour force and economic discrimination : the inter-state migrant workers housed in the factories prove to be a more easily exploitable labour force for the industrialists, whereas the commuters are the most affected workers in a situation of severe unemployment.







More generally, the living and working spatial patterns of a population can reveal other forms of segregation and discrimination, which are not only residential but also social and economic.

TABLE 1
Population growth of Jetpur

year	population	growth rate (%)	annual growth rate (%)	sex ratio (0/00)
JETPUR				
1941	28 406			
1951	28 444	0.13	0.01	
1961	31 186	9.64	0.92	989
1971	41 943	34.49	3.01	957
1981	63 074	50.38	4.16	945
1988	92 934	47.34	5.69	920
NAVAGADH				
1961	1 626			957
1971	2 726	67.65	5.30	910
1981	6 811	149.85	9.59	922
1988	20 810	205.54	17.30	806
JETPUR + NAVAGADH				
1961	32 812			987
1971	44 669	36.14	3.13	954
1981	69 885	56.45	4.58	943
1988	113 744	62.76	7.21	899
<p>source of data :</p> <ul style="list-style-type: none"> - from 1941 to 1981 : censuses - 1988 : estimates based on the 10 % household survey, on the 1/3/1988. <p>The confidence intervals at 95 % of the total population are</p> <p>Jetpur : 90 569 - 95 427</p> <p>Navagadh : 19 062 - 22 689</p> <p>Jetpur + Navagadh : 109 481 - 118 352</p> <p>sex ratio : number of females for 1000 males.</p> <p>The confidence intervals at 95 % of the estimated sex ratios in 1988 are :</p> <p>Jetpur : 900 - 941</p> <p>Navagadh : 743 - 874</p> <p>Jetpur + Navagadh : 869 - 930</p>				

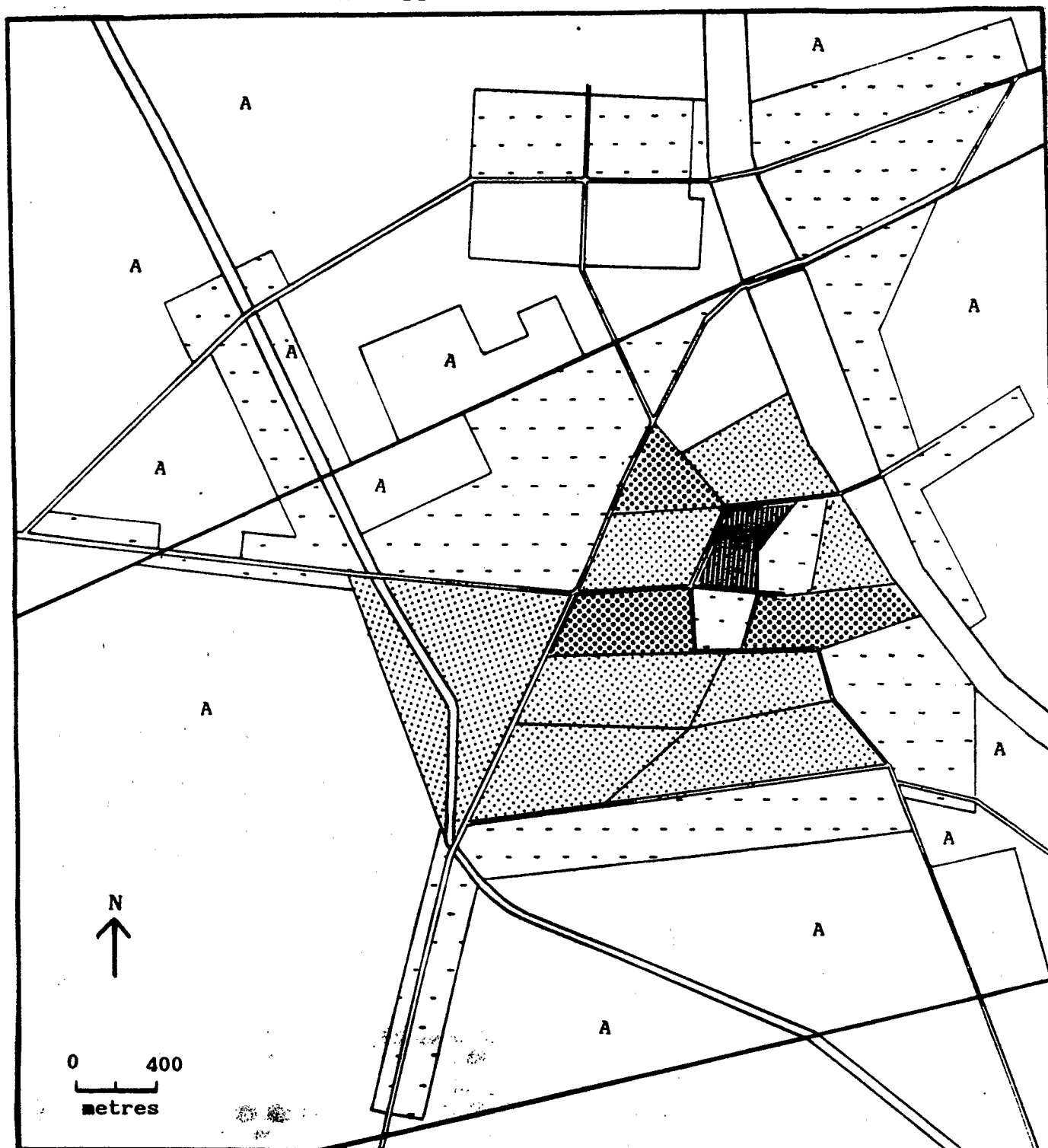
Figure 1 - Location of dyeing and printing establishments in Jetpur urban agglomeration, 1988.



-  industrial zone
-  railway
-  canal
-  road
-  Jetpur Municipality boundary
-  village wall of Navagadh
- NMA** non municipal uninhabited cultivated area

source : figure based on the map of "Jetpur Urban Land Use" in 1981 (Census of India, 1981, Series V - Gujarat, Part X-A - Town Directory), updated during the surveys conducted in 1988.

Figure 2 - Percentage of entrepreneurs in the dyeing and printing industry among the employed, in different zones of Jetpur urban agglomeration, 1988

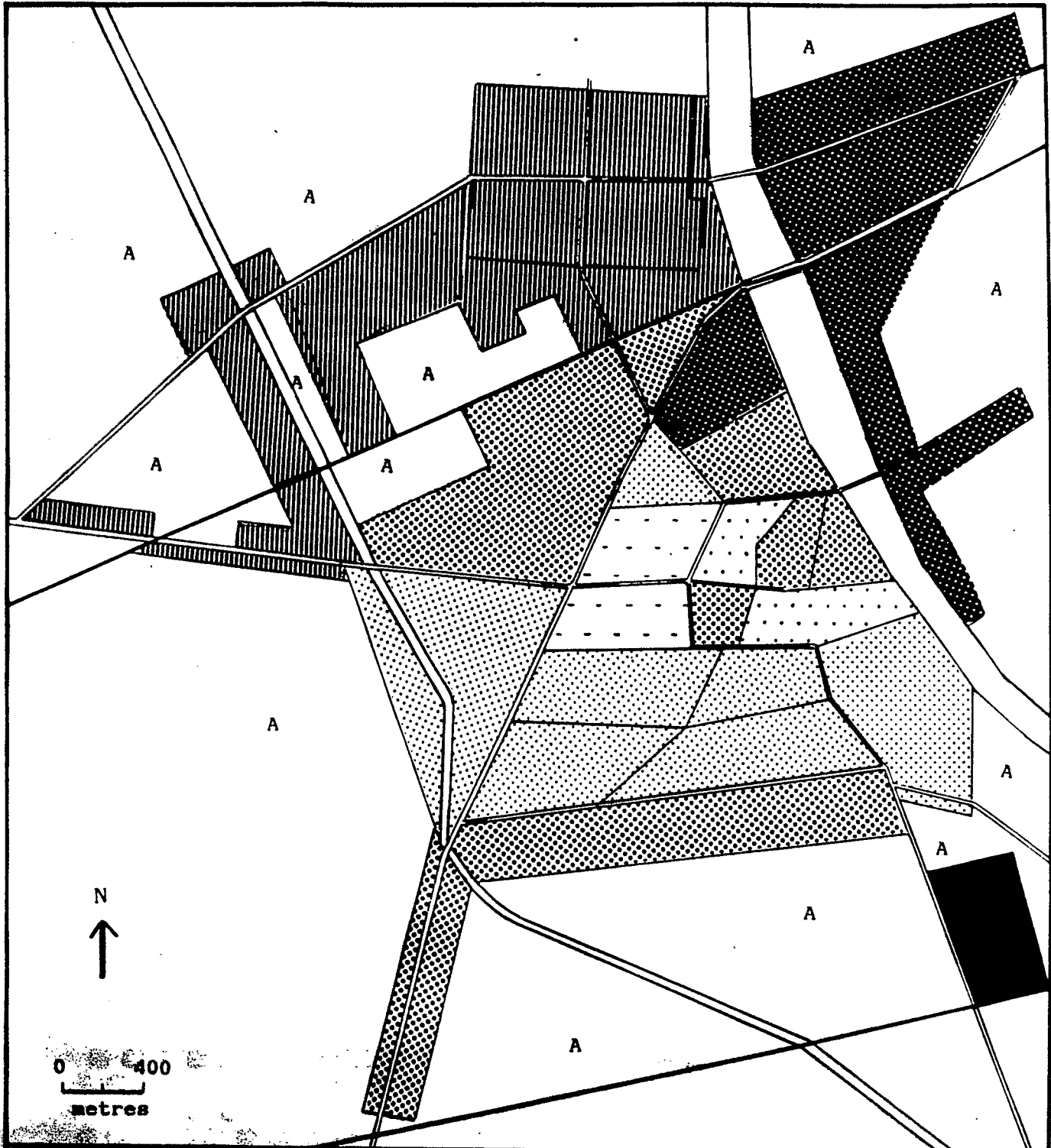


source : 10 % household survey - 1988

	open space, arable land		5 - 9.9 %
	0 %		10 - 14.9 %
	0.1 - 4.9 %		15 - 19.9 %

average = 5.4 %

Figure 3 - Percentage of production workers in the dyeing and printing industry among the employed, in different zones of Jetpur urban agglomeration, 1988.

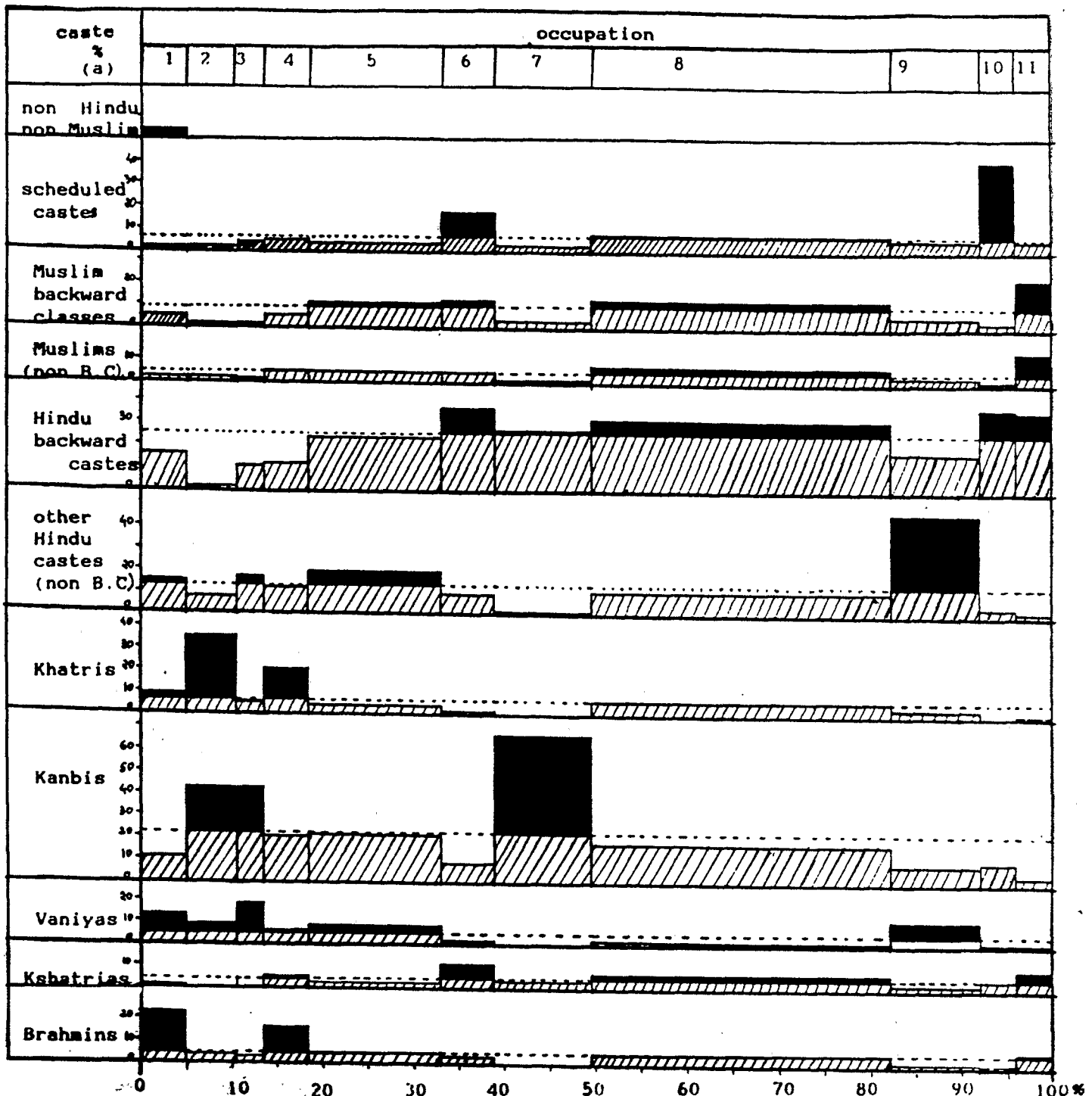


source : 10 % household survey - 1988

A	open space, arable land	[Pattern: Dotted]	30 - 39.9 %
[Pattern: Dashed]	0.1 - 9.9 %	[Pattern: Vertical Lines]	40 - 49.9 %
[Pattern: Sparse Dotted]	10 - 19.9 %	[Pattern: Dark Dotted]	50 - 59.9 %
[Pattern: Medium Dotted]	20 - 29.9 %	[Pattern: Solid Black]	60 - 69.9 %

average : 33.2 %

Figure 4 - Distribution of workers by occupation and caste group among the employed in Jetpur urban agglomeration, 1988.



occupations :

- | | |
|--|---|
| 1 - professional and technical workers | 7 - farmers and related workers |
| 2 - entrepreneurs of the printing industry | 8 - production workers of the printing industry |
| 3 - other managerial workers | 9 - other production workers |
| 4 - clerical workers | 10 - construction workers |
| 5 - sales workers | 11 - transport workers |
| 6 - service workers | |

(a) : percentage of each caste group in the occupational group under consideration
 (b) : percentage of each occupational group in the total working population

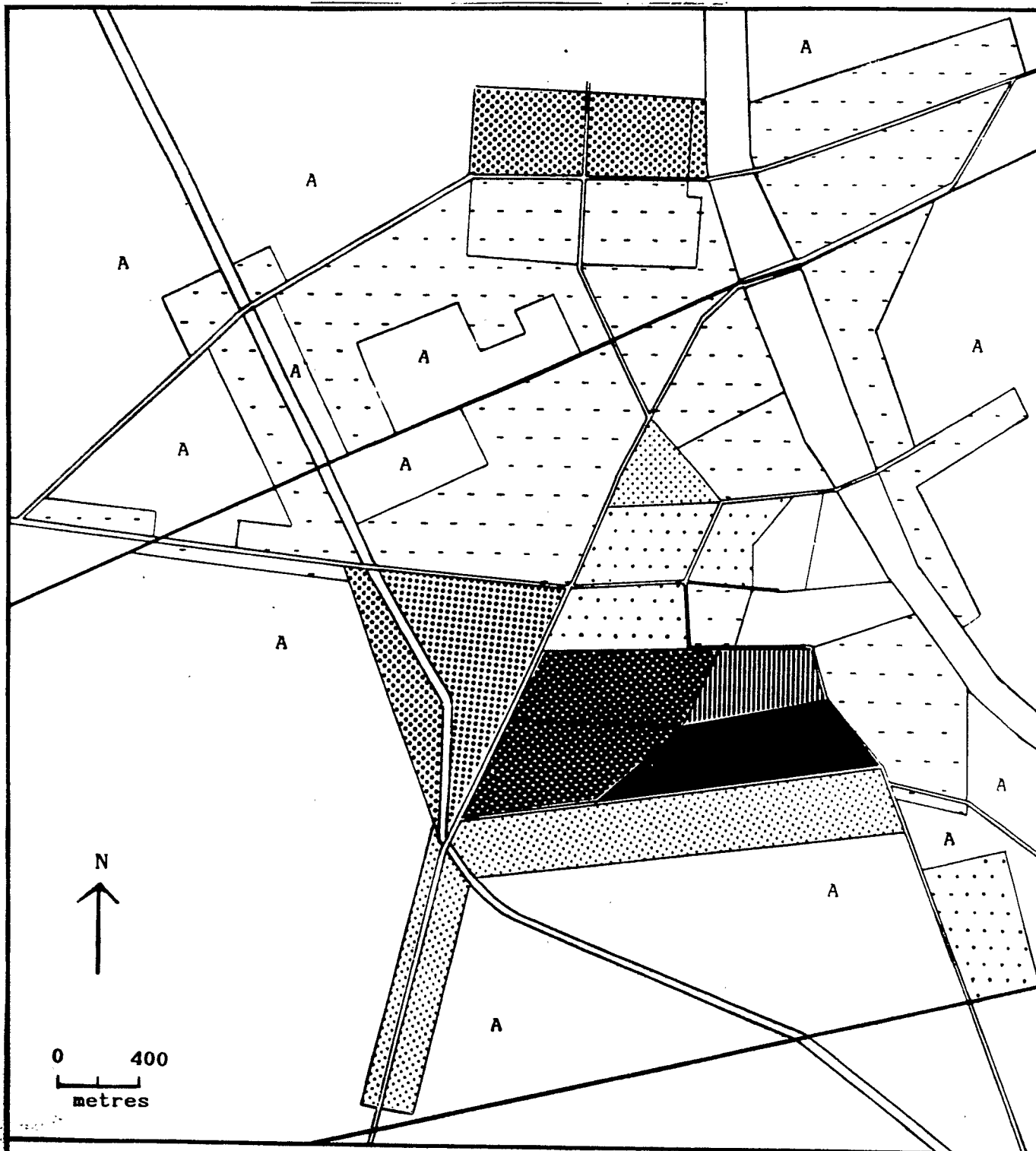
Surfaces are proportional to the number of workers

- - - - - : average percentage of each caste group in the total working population




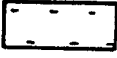



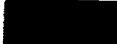
■ above the mean

source : 10 % household survey - 1988

Figure 5 - Percentage of Kanbis among the employed, in different zones of Jetpur urban agglomeration, 1988.

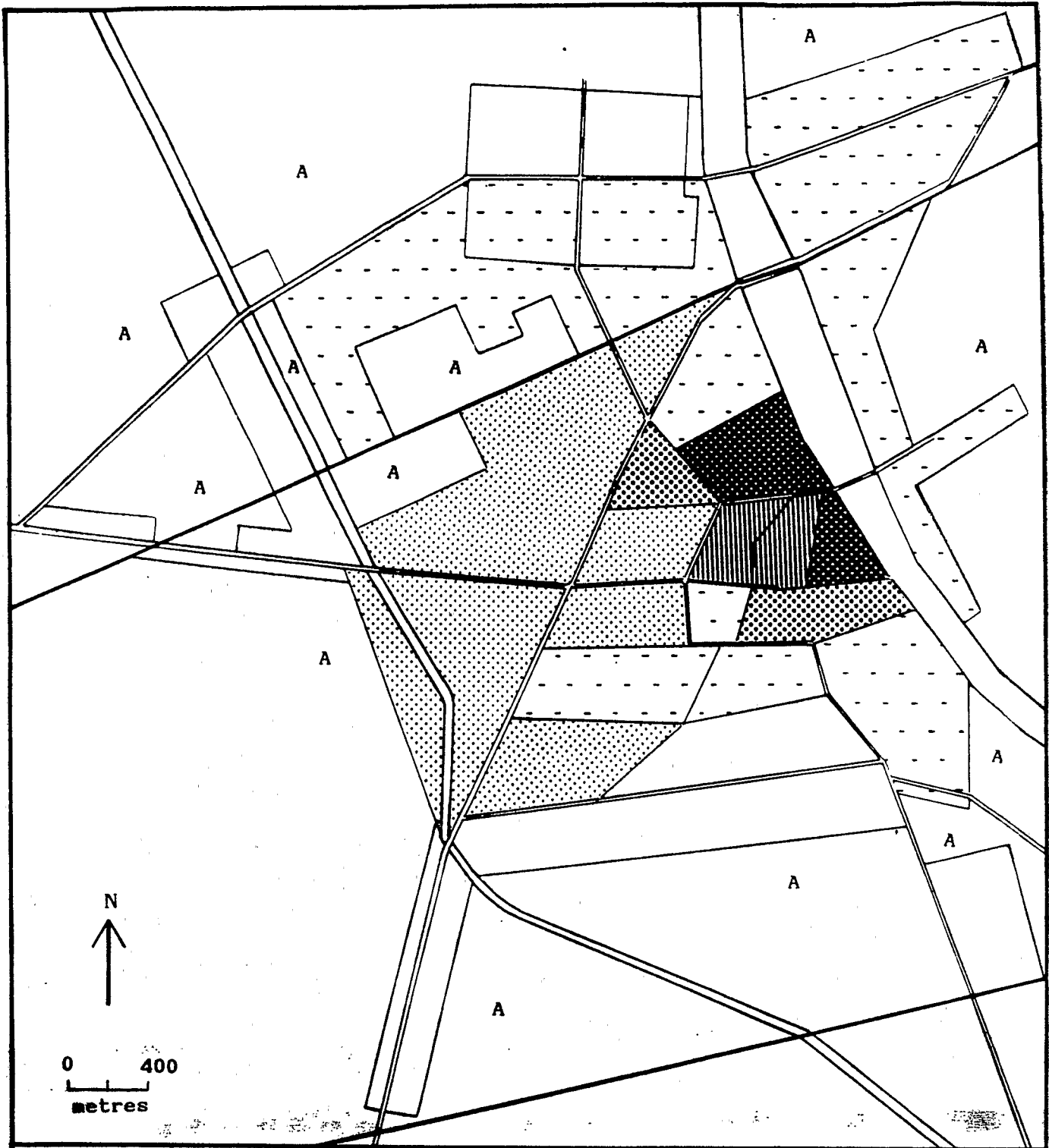


source : 10 % household survey - 1988

A open space, arable land	 30 - 39.9 %
 0 %	 40 - 49.9 %
 0.1 - 9.9 %	 50 - 59.9 %
 10 - 19.9 %	no zone: 60 - 79.9 %
 20 - 29.9 %	 80 - 89.9 %

average = 22.3 %

Figure 6 - Percentage of Khatri among the employed, in different zones of Jetpur urban agglomeration, 1988.



source : 10 % household survey - 1988

A open space, arable land

0 %

0.1 - 4.9 %

5 - 9.9 %

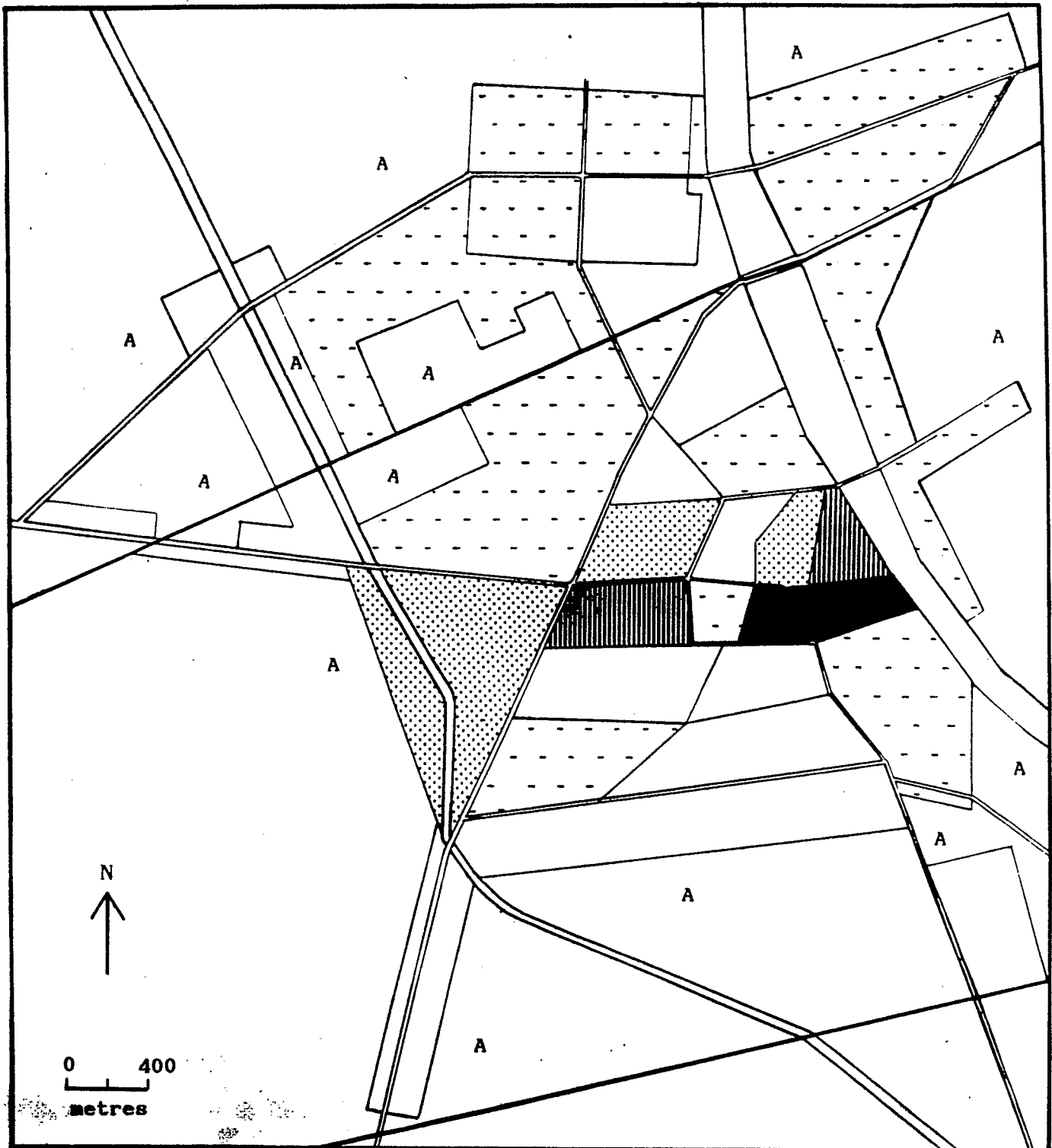
10 - 14.9 %

15 - 19.9 %

20 - 24.9 %

average = 6.0 %

Figure 7 - Percentage of Vaniyas among the employed, in different zones of Jetpur urban agglomeration 1988.



source : 10 % household survey - 1988

- A open space, arable land
- 0 %
- 0.1 - 4.9 %
- 5 - 9.9 %

no zone : 10 - 14.9 %

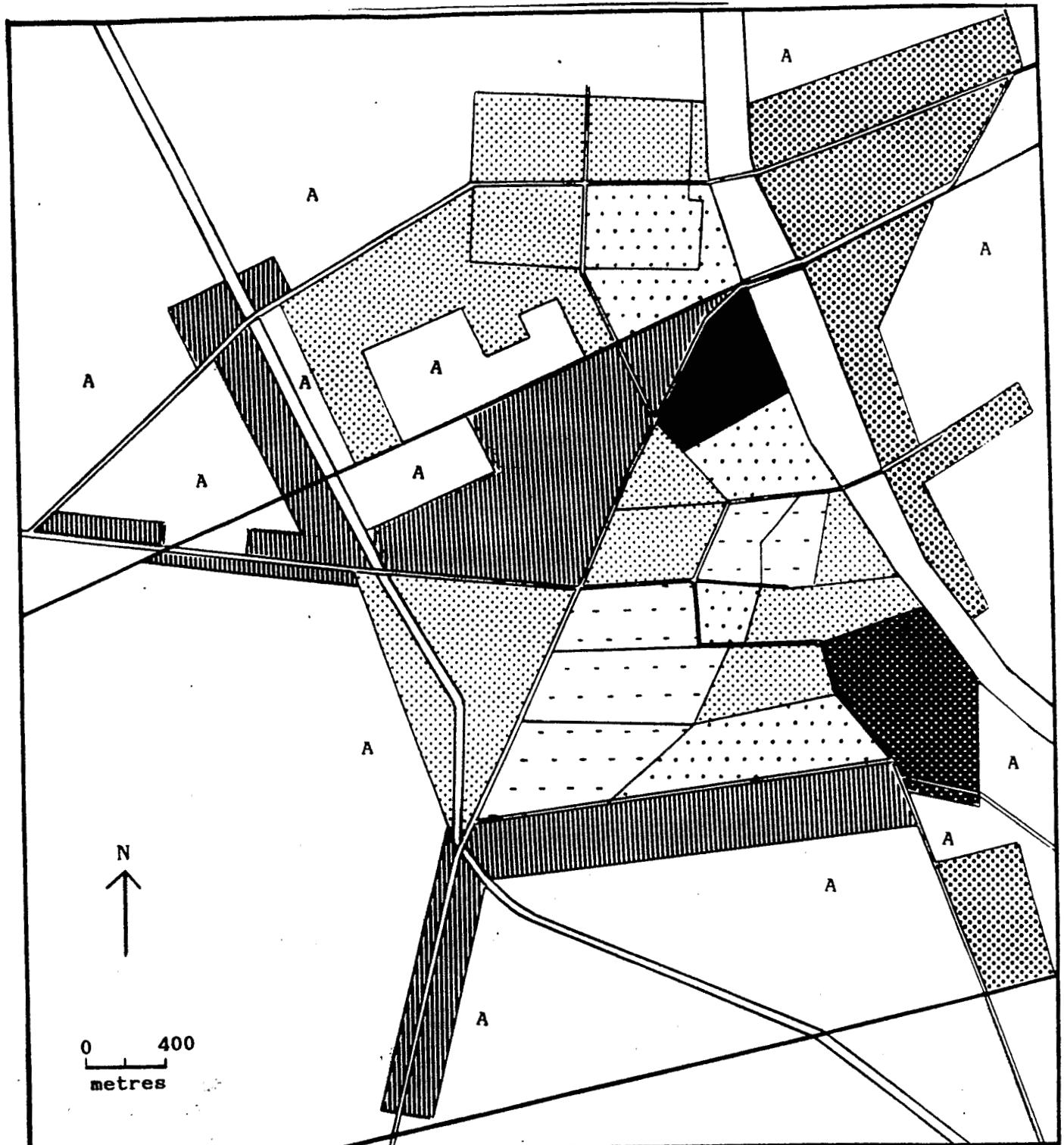
15 - 19.9 %

no zone : 20 - 34.9 %

35 - 39.9 %

average = 4.5 %

Figure 8 - Percentage of Hindu backward castes among the employed, in different zones of Jetpur urban agglomeration, 1988.



source : 10 % household survey - 1988

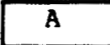



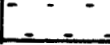

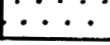


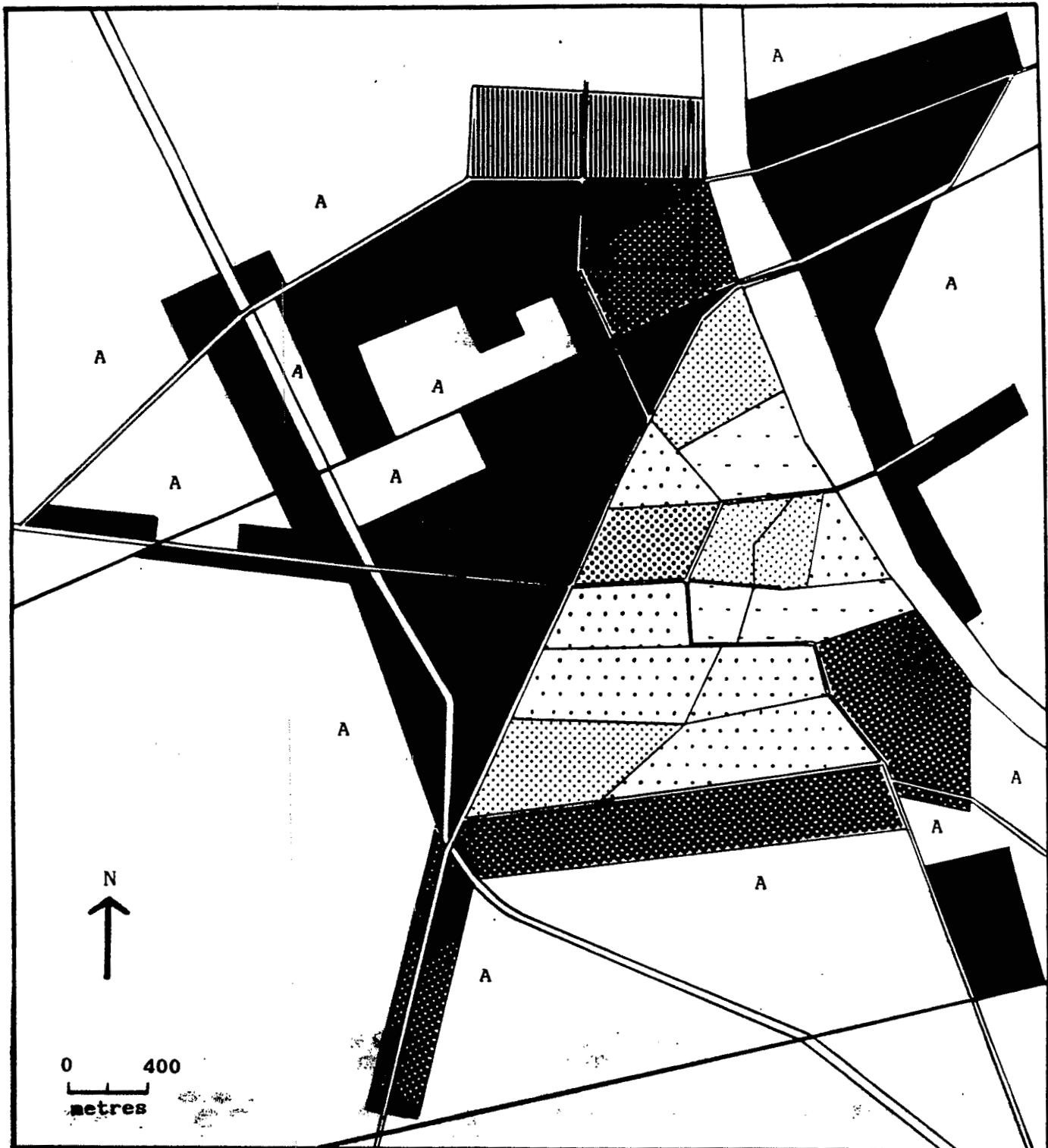
 open space, arable land	 30 - 39.9 %	
 0 %	 40 - 49.9 %	average = 24.9 %
 0.1 - 9.9 %	 50 - 59.9 %	
 10 - 19.9 %	no zone: 60 - 69.9 %	
 20 - 29.9 %	 70 - 79.9 %	

Figure 9 - Percentage of in-migrants among the employed, in different zones of Jetpur urban agglomeration, 1988.



source : 10 % household survey - 1988

A open space, arable land

no zone: 0 - 19.9 %

20 - 29.9 %

30 - 39.9 %

40 - 49.9 %

50 - 59.9 %

60 - 69.9 %

70 - 79.9 %

80 - 89.9 %

average = 54.5 %

APPENDIX
THE SYSTEM OF OBSERVATION IMPLEMENTED

The system of investigation adopted combines several levels and angles of observation : the town in its regional background, the industrial establishment, the household, the individual (entrepreneurs as well as workers). Several types of approaches and surveys, quantitative as well as qualitative, were also conducted, in four phases, from October 1987 to May 1989.

The first phase consisted of a preliminary qualitative observation, in the form of interviews conducted in Jetpur with local dignitaries, officials and industrialists. It enabled us in particular to identify the different types of spatial and labour mobility induced by the industrialization process in this town.

The second phase consisted of a quantitative survey on migration and economic activities, by the means of a household schedule with a limited number of questions, most of them closed ended. It aimed at describing the population according to its demographic, socio-cultural and economic characteristics, and at providing information on out-migration from the household. The population covered by the survey included the population of Jetpur urban agglomeration, as well as the population of the surrounding villages, in order to take into account the great number of commuters. A 10 per cent sample of households was drawn, covering all blocks of the urban agglomeration and of five villages situated within a radius of 8 kilometres around Jetpur. A systematic sampling was carried out in every block on the basis of a direct counting of the households, with the help of detailed maps previously designed. About 2400 household schedules were filled from January to April 1988 (DUPONT, 1988).

The third phase of observation focused on the textile printing industry, which is the predominant sector of activity in Jetpur. The unit of observation was the industrial establishment, 50 of which were randomly selected from the list of the Industrial Association, corresponding to a 10 per cent sample. Extensive interviews with the concerned entrepreneurs were conducted in November and December 1988, in order to collect both qualitative and quantitative information pertaining to the migration and occupation biography of the entrepreneurs as well as the setting up of the establishment, its economic characteristics and employment details.

The fourth phase followed a qualitative approach, at the micro social level and focused on the workers of the printing industry. It was based on in-depth interviews conducted with 64 workers, drawn from the individual file of the household survey, following the method of quota in order to represent the different categories of workers with respect to their occupational group in the industry as well as their place of residence and migration status. The interviews aimed to reconstruct the detailed migration and occupation biographies, and to better understand the reason for in-migrating and the choice of the town - or the reason for not migrating and the preference for a rural residence in the case of commuters, the process of insertion in the urban labour market, and the nature of the relations maintained with the native place. This survey took place in April and May 1989 (DUPONT, 1989-b).

The variety of the observations aimed at a better grasp of the different facets of the processes of urbanization and migration.

NOTES

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[1] In 1981, the rate of urbanization in Gujarat was 31 per cent against 24 per cent for India, which ranks Gujarat third among all the states of India, after Maharashtra and Tamil Nadu. With respect to gross value of industrial output, Gujarat ranked second in 1980-81 among all the states of India, after Maharashtra.

[2] A detailed description of the technique of screen printing and of the whole process of production is given in TRIVEDI, 1970.

[3] In a broader perspective this process has to be related to "the emergence of the Kanbi cultivators as a dominant middle-order caste in Saurashtra" (JOSHI, 1989). At the origin of this process, there are the land reforms and tenancy acts of the post-independence period, which gave full occupancy rights and ownership to the former tenants-at-will (especially the Kanbis) who were working on the lands of local rulers.

[4] An industrial undertaking belongs to the category of "small scale industry" when the capital invested in plants and machinery does not exceed 3.5 million rupees and 4.5 million rupees in the case of ancillary units (by 1988 criteria).

In Jetpur industrialists adopt the common practice of dividing their concern in small-sized units, in order to avoid extra taxes and to escape from labour legislation. Therefore the 1200 small scale printing units correspond only to about 500 distinct individual enterprises or familial groups.

[5] Therefore, for the purpose of this paper, reference to "Jetpur urban agglomeration" means including Jetpur out-growth (already identified at the 1981 census) and Navagadh.

[6] In our study in-migration is apprehended vis a vis the birth place. Therefore in this paper the term "in-migrant" means more exactly "life-time migrant" or still "non native" of the area under consideration.

However, the persons born at the native place of their mother (or of another relative) but whose both parents were already settled in Jetpur urban agglomeration at the time of the birth are considered as "natives".

[7] In particular Junagadh (120,416 inhabitants in 1981 and 32 kilometres away from Jetpur), Dhoraji (77,716 inhabitants in 1981 and 19 kilometres away), Gondal (66,818 inhabitants in 1981 and 32

kilometres away).

[8] The Chi-square test of independence between the variables "occupationnn" and "zone of residence" in the working population of the 10 per cent household survey conducted in January-April 1988 shows a relation of dependence significant at the 0.1 per cent level.

[9] The Gini's coefficients measure here the concentration of the workers/or industrialists/or any other population category according to the various zones of the urban agglomeration, as compared to the distribution of the total working population in these zones. Gini's coefficient varies between 0 (the population of the category under consideration is uniformly distributed) and 1 (all the population of the category under consideration is concentrated at a single place).

[10] A comprehensive review of urban studies dealing with social structure and spatial organization in Indian towns can be found in GANDHI (1983).

[11] The Chi-square test of independence between the variables "caste" and "occupation" in the working population surveyed in 1988 shows a relation of dependence significant at the 0.1 per cent level.

[12] The difference observed in the sample population between the percentages of the caste under consideration among the entrepreneurs and among the total working population is significant at the 0.1 per cent level for the Kanbis and the Khattris, and at the 1 per cent level for the Vaniyas (Chi-square tests).

[13] The difference observed in the sample population between the percentages of the caste group under consideration among the industrial production workers and among the total working population is significant at the 0.1 per cent level for the Hindu backward castes, the Muslims (other than backward classes) and the Muslim backward classes separately (Chi-square tests).

[14] The Chi-square test of independence between the variables "caste" and "zone of residence" in the sample population shows a relation of dependence significant at the 0.1 per cent level.

[15] The difference observed in the sample population between the proportions of in-migrants among the industrial production workers and in the total working population is significant at the 0.1 per cent level (Chi-square test).

[16] The Chi-square test of independence between the variables "in-migration" and "zone of residence" in the working population surveyed shows a relation of dependence significant at the 0.1 per cent level.

[17] The information about Ankleshwar was collected during a short field work conducted in October 1987, and more particularly from Ankleshwar Industries Association and the Gujarat Industrial Development Corporation.

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 Panel : N° 4 : CITIES AND THE USE OF SPACE

ABSTRACT

TITLE OF PAPER: THE EFFECT OF INDUSTRIALIZATION ON WORKING AND
 LIVING SPATIAL PATTERN IN AN INDIAN MIDDLE-SIZED TOWN

ABSTRACT:

This paper examines the effect of industrialization on the working and living spatial pattern in the context of an Indian middle-sized town, namely Jetpur in Gujarat (western India).

The case study is based on primary data collected through various surveys : a statistical survey on migration and employment covering 10 per cent of the households of the urban agglomeration and five nearby villages (namely 2400 households), a survey of 50 industrial establishments, and a collection of 64 workers' migration and occupation biographies.

The paper reveals how the development of the local industry (the printing of textile) has been accompanied by a trend towards residential and social segregation between the industrialists and the hired production workers. While the former are more concentrated in the core of the town, the latter tend to be rejected to the urban periphery, where the industrial establishments have been decentralized. This residential pattern has been strengthened by massive labour in-migration.

The attraction effect of the industrial labour market has also generated two extreme forms of combination between working and living spaces for the industrial workers : a total integration of both spaces in the case of the inter-state migrant labourers who live in the factory premises; and a total dissociation in the case of the commuters who maintain their rural residence - or have opted for it - while working in town.

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