

Better Half of Bangalore

Improving spatial conditions for women working in blue- and white-collar industry

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Abstract

Better half of Bangalore Improving spatial conditions for women working in blue- and white-collar industry

Nikita Baliga, Lidewij Tummers

Abstract

In the case of a relatively traditional society like India, on the one hand gender roles are strongly enforced, while on the other hand the continuous feminization of the workforce has been a result of the liberalization of global policies in the early 90's. The still present binary definition of gender is confining men to the productive space and relegating women to the domestic sphere. The entrance of women in the labor force implies the entrance of women in the public urban space. This paper challenges this spatial separation of industry from the urban life of the city in the current context, when the landscape of industries is changing from manufacturing to service. This relationship between urban morphology of the industry and the gendering of paid work will be



Bangalore, women & technology event (source www.panorama.it)

illustrated in the Indian context. A case study of two industries in Bangalore highlights the unique challenges of women participating in the workforce. The paper explores if another urban model is possible, responding better to women's needs.

KEY WORDS

Gender, Women, Industry, Urban model, Bangalore, spatial planning.

La metà migliore di Bangalore. Migliorare le condizioni spaziali per le donne che lavorano nell'industria come operaie e colletti bianchi

Nel caso di una società sostanzialmente tradizionale come l'India, da un lato, i ruoli di genere sono fortemente consolidati, mentre d'altra parte la crescente femminilizzazione della forza lavoro è stata una conseguenza della liberalizzazione delle politiche globali dei primi anni '90. L'attuale ed ancora presente definizione binaria dei ruoli di genere sta confinando gli uomini nello spazio produttivo e relegando le donne nella sfera domestica. L'ingresso delle donne nel mercato del lavoro comporta il loro ingresso nello spazio pubblico urbano. Questo articolo contesta la separazione spaziale dell'industria dalla vita urbana della città nell'attuale contesto, in cui il paesaggio industriale sta cambiando dalla produzione manifatturiera ai servizi.

Questa relazione tra morfologia urbana dell'industria e dimensione di genere del lavoro retribuito nel contesto indiano. Un caso di studio di due industrie a Bangalore, mette in evidenza le sfide uniche delle donne che partecipano alla forza lavoro. Il saggio esplora se è possibile pensare ad un altro modello urbano, che risponde meglio alle esigenze di genere o delle donne.

PAROLE CHIAVE

Genere, donne, industria, modello urbano, Bangalore, pianificazione spaziale

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1. Introduction

Globalization means the opening of the markets of the world. The availability of cheap labor has resulted in the industries from the global north finding their way into the Global South. With the entry of the service-oriented industries, the face of the Indian industrial sector is gradually transforming. Before globalization, industries were involved in manufacturing or heavy labor-intensive jobs. This resulted in the industry being male dominated until the end of the 1990s. But post industrialization, the change of job work, demanding less physical strength, challenged gender stereotypes, encouraging the entry of women into the workforce. Before only men went into the public sphere to work, and women were confined to the private sphere.

To question the spatial manifestation of this feminization of the labor force, this paper first outlines our understanding of the mutual impact of gender roles and spatial structure of cities. We particularly look at the concept of segregation of industrial work or production spaces and the spatial principles of organization of industry, which are investigated from the gender perspective. Consequently the paper presents the results of a survey, held in two upcoming branches: the production of garment and ICT-related work, in the city of Bangalore. The survey identified key-issues related to gender, revealed that these may differ between blue-collar and white-collar workers. We then look at best practices of gender mainstreaming in spatial planning, using examples both from the global north as well as global south, followed by a selection of spatial principles that are applied on the case study of Bangalore. Using the tools of urban design, proposals to improve spatial conditions have been developed which could benefit both the societal position of women and the sustainable development of urban industry. To conclude, we critically review the proposals to see in how far these are replicable in different planning systems.

2. Theoretical framework: gender perspectives

2.1 Planning

In the paper 'What would a non-sexist city look like?' Hayden argues that numerous principles in architecture and urban planning are derived from the 'woman's place is in the home' (Hayden, 1989). Although it is not mentioned explicitly in many texts, gen-

der has always been a consideration in the way cities are developed. The primary idea she highlights is the consideration of sharing care-work or valuing unpaid work while designing across scales. Hayden suggested that architects and urban designers must attempt to redefine this traditional definition of home, neighborhood and city and workplace in order to make challenge this sexual division of labor (Hayden, 1989). Hayden's ideas on housing, urban design and human work have been instrumental in relooking at space from a gender perspective. By elaborating different ways in spatial design she shows the influence it has on promoting women's economic independency.

Fainstein and Servon (2005), identify different aspects of the city as critically seen through the gender lens, such as the binary way of thinking of home in opposition to work, production to reproduction and personal to political. This formidable dichotomy was often regulated by public policy by relegating women to the private realm of the home and men to the public worlds of the workplace and community (Fainstein and Servon, 2005). These activities are further distanced with the geographical separation of work and home, which is a result of planning system, where planners work within their defined silos of transportation planning, housing, economic development and land use. The authors argue that in designing the workplace or the private domain, there has been little reflection on the variety of needs and aspirations to cater to the diverse demography and in this case women in specific. They state a clear need for a gender inclusive planning process where clear fields of spatial planning are identified to connect the home, community and workplace.

Moreover, besides production and reproduction, women have a third role to play in society. Moser emphasizes this triple role of women in the developing context, explaining how women in the global south, besides reproductive work of childbearing and rearing are often secondary income earners, as well as being involved in the community managing work at the local neighborhood level (Moser, 1989). This involves the responsibility of attaining the basic provisions and infrastructural services from the governmental authorities. Moser also suggests how there is a need to consider these different roles while making policies. Moser highlights another aspect of the gendered needs. The construction of gender is partly attributed to the cultural context in which it is framed, and the issues will not be the same from one culture to another (Moser, 1989). Therefore, she classifies these gender needs to be *practical*, basic or universal gender needs, and the *strategic* gender needs, that emerge from the cultural context. This research analyzes the spatial implications of the multiple roles, performed by women in Bangalore today.

2.2 Industrial planning

Looking through a gender lens at how cities were designed traditionally reveals a spatial mismatch. Planning of the cities in the past has been through the programmatic organization of spaces. To start with, the industrial revolution in the late nineteenth century especially in American cities, lead to the influx of migrants to cities in search for job opportunities, which further resulted in overcrowded and unhealthy living conditions of workers and their families. These conditions were not favorable for the workers

and in turn resulted in lower productivity. This was one of the main triggers in the shift towards separating the functions in the city. A large number of employers reconsidered their plant locations and resolved housing issues in search for industrial order. The functionalist view of the city was implemented with the aim of creating a large and smoothly operating machine to achieve maximum efficiency.

This 'functionalist' approach resulted in a spatial division, which reinforced the sexual division of labor (Tummers & Zibell, 2012). This type of planning or the "single use planning" came to be called the "Euclidean zoning principles" promoted the separation of uses and its comprehensive planning with dimensional standards (Wickersham, 2016). This zoning contributed immensely to achieve a higher profit for industries and the industrial clustering facilitated the owners to benefit from the agglomeration advantages. The long-term profits that were obtained with this type of segregated planning made industries economically viable and further reinforced the need for the detachment between home and work.

In the light of gender this separation is highly unfavorable, especially to the sexual division of labor. The distancing of home from work made it difficult for women to participate in the labor force, which also called for the prolonged presence of women in public space, when compared to their dominant presence in the private space.

2.3 Accessibility

Looking in retrospect, the spatial and functional division established over time has also been problematic for accessibility. Connectivity is now high on the planner's agenda, but this responds to large-scale industrial interests, rather than to every-day household needs (Tummers & Zibell, 2012). The term accessibility is a concept, which is defined differently in the fields of transport planning, urban planning and geography. But spatial accessibility is dependent on many spatial attributes, arrangements and distribution of programs in the city. It depends on safety, the mode of access, availability and economic affordability of the transportation system. The spatial factors that do affect the woman's right to the city and her ability to be an equal participant in the city are present across all scales. Geurs & Wee identifies four components of accessibility:

1. Land use - Amount and spatial distribution of opportunities, etc.
2. Transport - Travel speed, travel cost, travel time, etc.
3. Individual - Trip based stratification based on income, education, gender, etc.
4. Temporal – Travel time during Peak & non-peak hours, Day and night travel, etc.

(Geurs and van Wee, 2004).

Ideally, there is a close relationship between transport and land-use strategies in a city to enhance accessibility. From their study, it follows that the accessibility of a place for two different individuals can be different. Therefore, the four fundamental aspects of accessibility need to be scrutinized from the women's perspective for the chosen case studies. The organization of productive and reproductive spaces in cities is of primary concern in the way cities are planned and consequently how they are connected. But

apart from the functional and structural aspects of space, it is also essential to pay attention to the public space, which is produced as a result for women's needs (Viswanath and Basu, 2015).

Resuming earlier research on accessibility for women, four inequalities have been identified:

1. First: mobility of care, where the purpose of moving in the city is for care of a more dependent section, for example children or the elderly.
2. Second: time poverty, the lack of time for women due to their multiple roles.
3. Third: forced mobility, when women are forced to move in space for difference reasons. These could vary from the need for movement to access urban services, to displacement as a result of social or physical safety.
4. Finally the forced *immobility*, where women's movement is restricted in the city due to cultural or social restrictions. The perceived lack of safety especially during the night is one of the most common reasons for forced immobility (Shah, 2016). Safety in public space affects the freedom of movement, and this perception of safety is different for men and women.

On overlaying the aspects of industry, planning and space, it can be concluded that the traditional planning principles of cities with respect to work and home are not socially sustainable for all genders. There is a spatial mismatch at different scales, due to functional segregation, poor accessibility and quality of space, which are inter-related and restrict women's involvement in the labor market. There is an urgent need to examine space to promote easier accessibility and improved spatial quality, to make it gender inclusive. In different parts of the world, gender issues in space are addressed with a variety of tools and techniques. Then the question arises if similar spatial tools can be used in different contexts? Or do they need to be specific for the global north and global south? We reflect on best practices from both contexts.

3. Best Practices

In the global north, the relation between gender and space is looked at mainly from the convenience point of view. Central to Gender mainstreaming is reconciling job and home [<http://eige.europa.eu/gender-mainstreaming/what-is-gender-mainstreaming>]. The cultural context differs from that in the South, but there are overlaps in women's roles. The case studies explored here, guidelines from the cities of Vienna and Barcelona, are attempts to improve conditions for women in unique ways that follow from their respective planning context. The priorities in considering gender in space in the Indian context in particular have been different and these attempts to include women in public space are guided by the social position of women. One of the main issues addressed is that of safety of women in public space.

Vienna: Manual of Planning Department

The urban development authorities in Vienna have published a manual for *Gender mainstreaming in Urban Planning and Urban development* (Damyanovic et al, 2013). This document lays out the gender- sensitive principles to be considered in the process of planning. These principles are a result of a detailed study of the patterns of inhabitants of different genders and age groups in the specific context of Vienna. The main focal themes of this manual are a comprehensive planning strategy, public space and mobility as it identifies the clear differences of gender usage in cities. The main spatial objectives are polycentric urban structure, city of short distances, high quality public spaces, environmentally friendly transport, safe city and barrier-free city. A set of criteria is outlined to evaluate the development or a specific space in order to propose interventions with objective characteristics.

Vienna has incorporated gender-mainstreaming principles from the manual in the master plan Flugfeld (Airport) Aspern. A series of workshops with the experts and inhabitants were held to take all the needs of the diverse groups for a harmonious environment. One of the principles that was applied is the multi-functionality of the neighborhood consisting of residential, shopping, offices, educational institutions and flexible functions. This was done after noting that women have a pattern of trip chaining, which is a complex route in order to carry out multiple tasks including productive as well as care work. The functional organization was strategic in order to make them accessible with daily provisions around transport nodes or routes with a differentiated priority of motorized and non-motorized transport. To ensure safety & security, the functions along the preferred routes are treated, especially on the ground floor (Damyanovic et al., 2013).

Barcelona: Manual for grass root mobilization

In Barcelona, an NGO called Col.lectiu Punt 6 is the main steering body to contribute to gender equality in urban planning. Through their work, Punt 6 rethinks domestic, community and public spaces to promote social diversity without discrimination. Their approach involves activities, workshops and training sessions conducted with the help of community participation. This unique method of learning through sharing experiences of women who use the city has been published in an '*urban assessment guide from a gender perspective*' (Casanovas et al., 2013). The purpose of the guidebook is firstly to make women visible as the unique source of knowledge and agents of transformation. It provides various tools in the form of participatory processes, which actively involves women to analyze their neighborhood on the basis of their everyday experiences. They assess the existing conditions and identify the favorable and unfavorable aspects of the environment in which we live that benefit everyday life. This guide is used as a model for the survey in Bangalore.

India : Safety audits

In the Indian context, the aspect of safety is essential in defining the accessibility for

women, especially at night. Kalpana Viswanath, uses nine categories that are parameters to measure safety of public space, out of which eight are physical parameters and one is subjective. These parameters are based on intense research especially in the Indian context (Viswanath and Basu, 2015). With these parameters, Viswanath has devised a mobile phone application to perform safety audits called “SafetiPin”. The main intention of this safety audit that forms the core of SafetiPin, assesses different parameters linked to safer and more inclusive public spaces. They are categorized based on physical parameters like proximity to public transport, path, openness, visibility & lighting and social parameters like crowding, security & gendering usage.

The conclusions of this safety audit in 8 cities in India, with over 300 audits in each city, show the different degrees of importance of each of these parameters, which contribute to safety. It shows the balance of all genders, as present in public space is the ideal or most preferable. When there is no diversity or only women, then women have a higher tendency of feeling unsafe. The lack of lights on the street at night is a big point of concern, where as the perception of safety increases when the area is brightly lit. The toolbox describes high visibility as more than 10 windows or entrances overlooking the place. When there is no possibility for eyes to be on the street then, the level of safety is lesser. The other aspects that affect safety are walking path, crowdedness, transport, openness and security in decreasing order of preference (Viswanath and Basu, 2015). Therefore, it can be concluded that spatial parameters are as important as social parameters in contributing to safety in public space.

Many common conclusions can be drawn from the cases of the global north and south. The attempts to increase the functional diversity in space in order to make it convenient for work beyond productive or paid work are shared in most parts of the world. This also makes spaces safer and more inclusive. Though safety is an issue addressed in the global north and south, the urgency is higher in India due to the cultural context. This is reflected in the results of the safety audits and the reasons for spaces to be unsafe. Another aspect that cannot be ignored in the global south is the economic differences in society. These differences lead to spatial constraints for the low-income women, leaving them at a disadvantage in accessing the city. Therefore, while considering the global south a larger range of differences in the economic capacity of people needs to be accounted for.

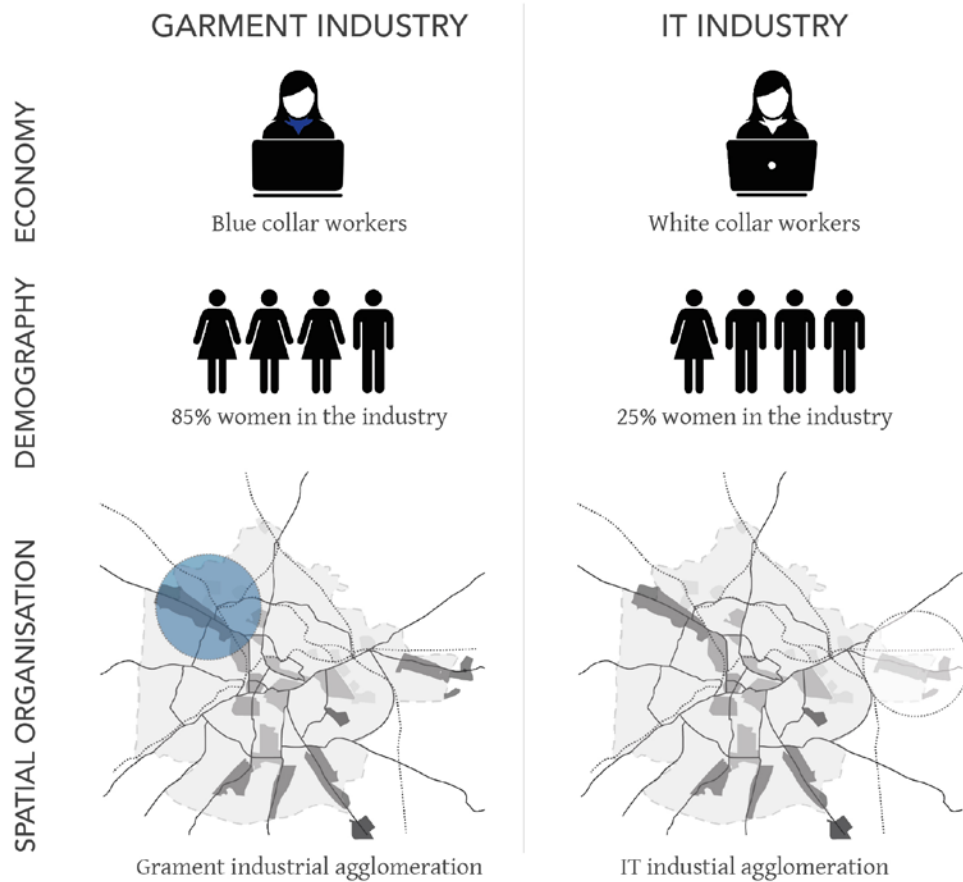
4. Test case: Bangalore

Saskia Sassen reflects on the critical role that women are playing in the international economic processes. As she illustrates, there have been many positive as well as negative outcomes of this feminization of the labor force. One problematic phenomenon is the ‘chain of care’ whereby migration of female domestic workers from Asia to US and Europe allows more women in the western world to develop a career (Sassen, 2002).

In the Indian context, the involvement of urban women can be seen as a sign of empowerment, a sign of granting independence and security to the urban women. Ban-

galore has seen one of the largest impacts of globalization. The study focuses on two industries in Bangalore, which are part of the global market and have seen a substantial increase in the workforce participation, namely the garment manufacturing and the ICT industry: see figure 1. As Sassen puts it, one symbolizes the feminization of the proletariat and the other is part of the global information economy (Sassen, 2002). Finally, the spatial distribution of both these industries is different in Bangalore and this is shown in figure 1.

Fig. 1 - Choice of industries [source: Drawn by N. Baliga]



The methodology followed for this research has two parts: first the field work, which was conducted in the form of interviews and group discussions. In order to understand the way women access work, their patterns of accessibility and their challenges during this accessibility, a survey was conducted amongst ± 50 women (Table 1). This survey was formulated following a format from the Collectiu.Punt6 urban assessment guide, primarily documenting the everyday lives of women. The survey enabled to document both the social background as well as the spatial patterns and deduce their mutual relationship (figure 2).

SURVEY COMPONENTS**General information**

This section comprises of the basic information of the workingwomen, which is important was analysing the patterns of different women. Information of the marital status and number of children of the women determines the roles and responsibilities they have to carry out in their daily routine, which further defines their movement in the city.

Itinerary

The itinerary contains the details of the when, what, with whom, how and where of the daily patterns of the women who were interviewed. The itinerary traces the activities of the women on a typical working day. It is a documentation of the place it is carried out, with or for whom it is carried out and how long the activity takes. In this way, the movement of these women was mapped with respect to their industry.

Evaluation of space

This is the subjective component, which is an individual evaluation of the city/ neighbourhood/ industry. The evaluation could be positive or negative, stating the spatial factors in the daily activities that these women encounter. With this individual evaluation, there were some common and uncommon trends that were mapped. This trend was then correlated to space by observations and mapping.

Industry wise	
Garment industry	IT Industry
11	11
Location wise	
Peenya	Whitefield
15	7
TOTAL	
26	18

Table 1: Interviewees [source: Drawn by N. Baliga]

Fig. 2 - Survey components [source: (Casanovas et al., 2013)]

The second part was an analysis of the spatial characteristics of the industry in terms of the archetype, morphology and aesthetic qualities of the built environment. The existing conditions were then examined based on the urban design principles proposed by Jan Gehl in reference to his book 'Cities for People' (Gehl, 2010). The morphological conditions are analyzed based on principles elaborated by Jane Jacobs in her book 'The Death and life of Great American cities' (Jacobs, 1992).

The third step is to overlap this analysis on the conclusions from the social patterns that women in these two industries have. On this basis, a set of spatial principles that could function is proposed for both the areas. As a conclusion, a method of evaluating and proposing interventions in space from the gender perspective is formulated so that it could be replicated in all contexts.

4.1 Results of the survey

Though there were universal factors that all women were observed to experience and practice, there were some specific patterns, which in this case differ due to the educational and economic background. Highlights include:

Trip chaining

This characteristic female travel pattern has been observed, documented and researched extensively. What makes this pattern unique in India is the social structure of the Indian society. The tradition of the joint family or the domestic support system changes the way women need to use public space. By mapping the itinerary of the women surveyed and co-relating it to their marital status, it could be clearly seen how women with different roles and family structures use public space differently. For example, women who live in nuclear families have higher trip chaining trends in comparison to women who have extended families.

Space negotiation for safety

Safety was a critical concern for all the women interviewees, no matter which industry they worked in, but the kind of space the women felt safe or the aspect of safety they mentioned varied. Women in the IT industry were more concerned about physical safety, such as road safety whereas women in the garment industry were mainly affected by social safety. The presence of women in public space was a definite attribute of safety for both women, but the garment industry workers were significantly affected by it. This was substantiated by empirical evidence that the presence of women in public space in the garment industrial area was scarce, which was not the case in IT industrial area. This was also the reason garment industry employees were always accompanied during their commute, in contrast to IT industrial employees. The dominant presence of men in the garment industrial area will be elaborated in the sections below.

Trip Mode & distance

Two main patterns observed were the choice of the transport mode and travel distance. The transport was governed mainly by the economic capacity of the working-women, affecting their choice of industry based on the distance the women were able to travel. For example, garment industry workers could only afford to walk to work. This meant that they had to either compromise their options to work in a particular industry or live in a particular locality. In the case of IT, women workers can afford public or private transport enabling them to choose to work in areas farther away from their home. This provided them with a larger range of possibilities and opportunities.

Planning goals

The conclusions of the fieldwork and the comparative study lead to a set of goals to improve inclusion, convenience and safety for women working in Bangalore:

- Where the transition between women being in the private sphere to public sphere is undergoing a gradual shift, the presence of women in public space becomes a critical concern.
- Convenience is relevant due to the multiple roles women have to play within the framework of gendering in societies, which makes it difficult to balance their professional and family responsibilities. Spatial attributes that make the daily patterns of women easy and short will be needed.
- Better accessibility to not only work or production but also the reproductive and community managing duties that women have to carry out.
- Safety has been one of the main reasons behind women's restricted freedom.

Though space is not the only factor that affects that safety, it is believed that space can be a trigger for social and economic change.

In addition the strategy also considers the logistics of the industry in order to not disturb the movement of goods and raw materials to retain the efficiency of the industry. Since the way the two types of women chose, use and move through the city, the inter-

ventions are accordingly organized, but the larger intention is to make accessibility in the city safe and convenient.

4.2 Spatial analysis

Garment industry

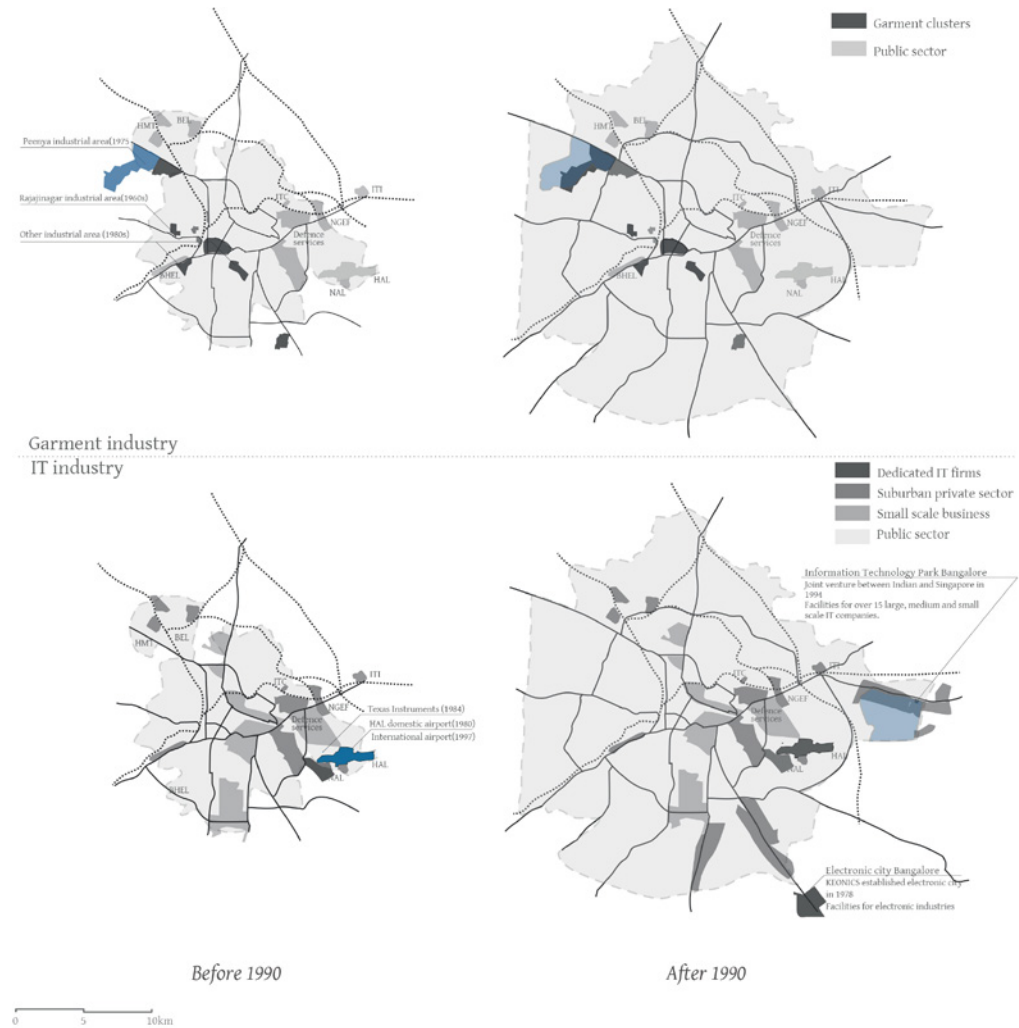
Bangalore has been a center for establishing garment-manufacturing industries since early 1990s. Before independence it was known for cottage industries for textiles. After the industrial revolution and the influence of the colonization, these industries developed into cotton mills, and later into dress making industries to meet the demand of the British colonized India. The already set up industries encouraged the large-scale international companies to find Bangalore as an appropriate location. In Peenya, a suburban industrial area, the existing industrial infrastructure, a dense road network, close proximity of the railway station and airport made this a feasible business location. Peenya was set up as an engineering industrial hub in the 1970's, when the availability of cheap labor around the industrial area was an added advantage for the establishment of the garment industry (Pani and Singh, 2012). The added incentives that the government gave the industries facilitated the growth of this industrial cluster (Figure 3).

IT Industry

The primary reason for Bangalore to be the hub for the IT sector was the government's incentives for foreign investments by the IT sector into the city. The established science and technology sector, which meant the presence of technical expertise, international connectivity, good weather and the English speaking population in Bangalore, were additional reasons. The presence of the IT sector in Whitefield, a suburb east of the city was due to the then presence of the airport in the 1990s. These IT companies mostly catered to the international companies in the US, which had high standards for the working environment of the office, drove the investors to build large multifunctional campus offices in Bangalore (Aranya, 2008). The availability of the vast agricultural land facilitated the establishing the large campuses in Whitefield. Hence, the IT sector expanded in a suburban location in the city (figure 3).

On analyzing the industry and the needs of the employees, the main issue in the Garment industry identified was the gendering in public space. The industrial area of Peenya had been dominated mainly by the engineering industries up until 1990 making it a gendered industry. The historical phenomenon of the male domination in public space still continues today in spite of the feminization in the industrial area post globalization. The industrial area had a surge of industries like the garment manufacturing, pharmaceutical and other industries, which preferred to employ women. But the social construction of space in the past by dominance of men means the area has been claimed. Through observation it could be seen that women are not seen in the recreational spaces that men are usually seen. Their discomfort in public space reflects also in the way they commute to work, always accompanied. One of the main reasons is the mono-functional nature of the area, which has resulted in the gendering of public space. This leads to

Figure 3: Spatial development of the industry [source: (Nair, 2005)]



inequality in job opportunities and needs to be addressed urgently.

The IT industrial employees confront a different set of problems. The suburbanization of jobs in Bangalore has caused a lot of pressure on the development in the city. The lack of relation between the global and the local economy has disconnected IT companies from the local structure of the city. Decisions taken to choose the industrial location did not consider any local factors. Since employees could afford their own private transport, there has been no initiative to develop public transport as well. Additionally, the high skilled migrants coming to the city every year has also caused an unregulated housing development and a steep real estate market. This has caused development around the IT industry to be exclusive and privatized, driven by the market and the increasing demand. This is further affecting the urban life and spatial quality of public space, encouraging women to choose the private realm of their car rather than using public transport.

4.3 Spatial interventions

Both industries each call for specific spatial strategies addressing different challenges

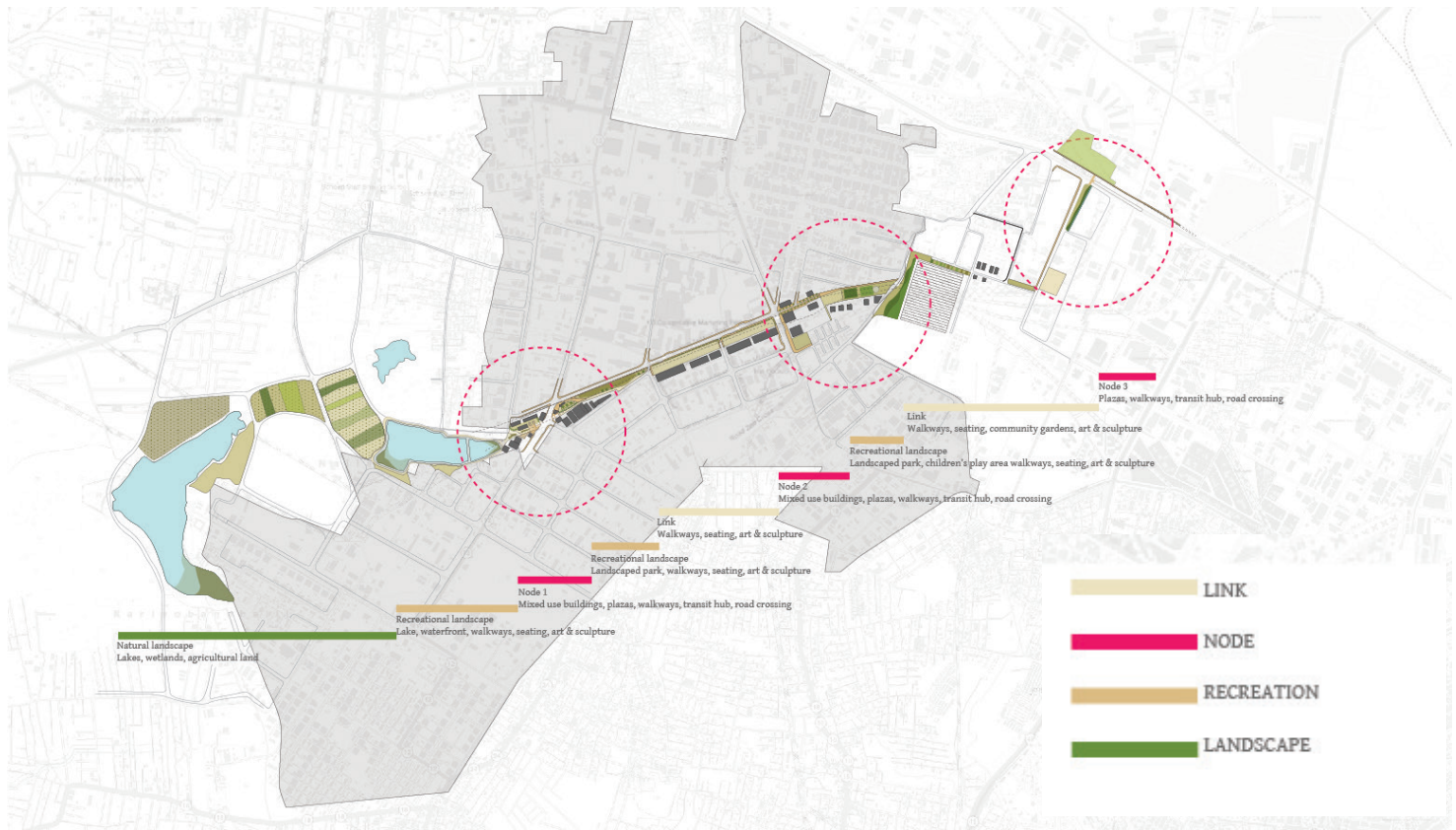


Fig. 4 - Inclusive spine in the garment

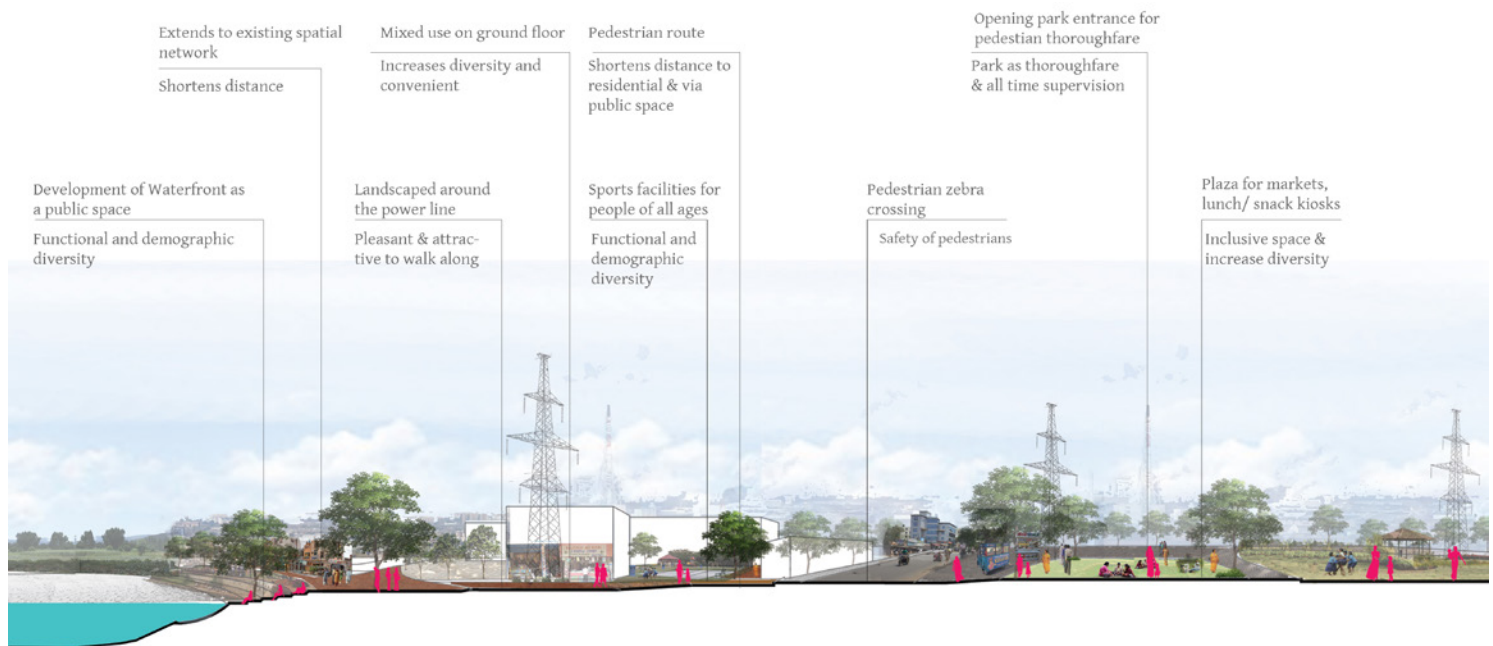
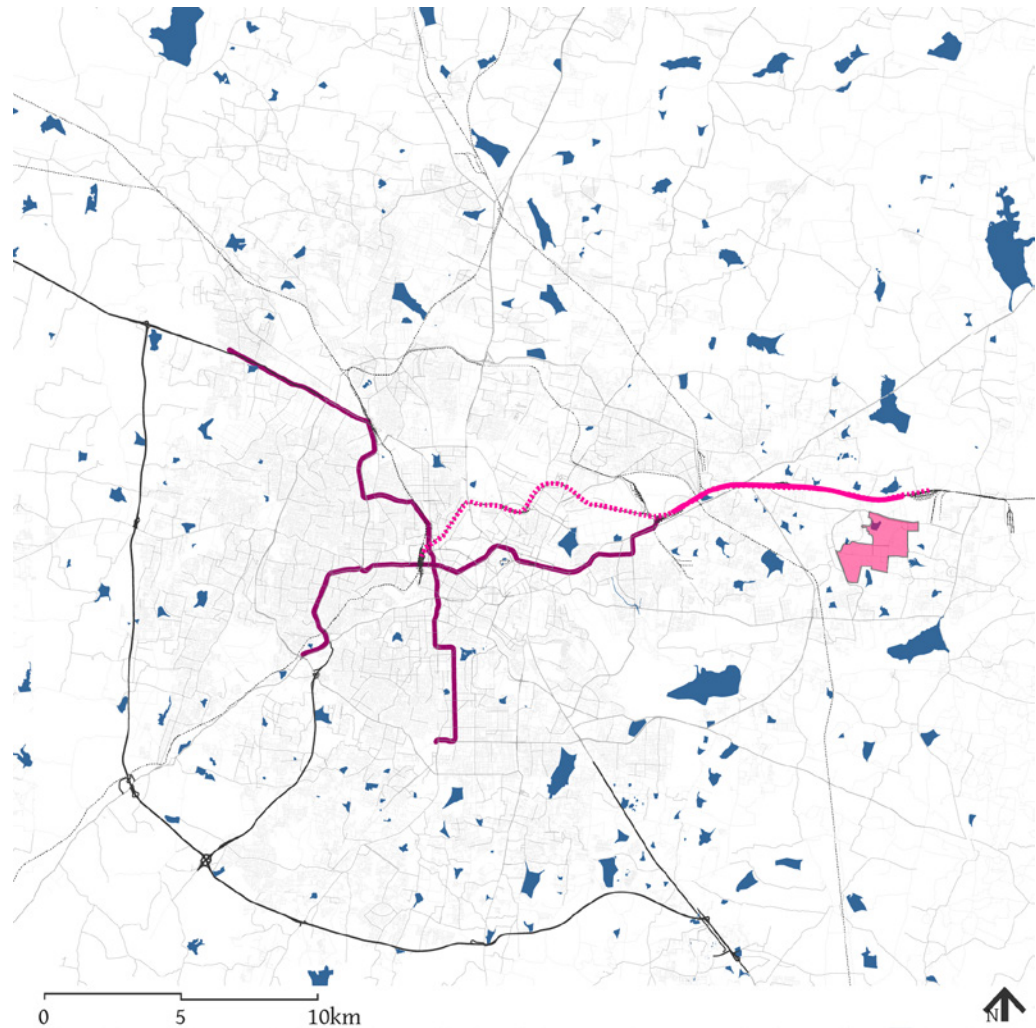


Fig. 5 - Sectional view of the Inclusive spine at Node 1 [source: Drawn by N.Baliga]

Figure 6: Proposed public transport to IT Industry [source: Drawn by N.Baliga]

- Existing rail line
- Existing metro line
- Proposed corridor



in the city. To address the issue of gendering in public space in the industrial area of Peenya, firstly the spatial segregation of industry is challenged. To increase the secondary diversity of the industrial area an inclusive spine is proposed, which diagonally spans the industrial neighborhood. The spine provides additional functions in the neighborhood to complement the primary industrial use and encourages the residents of the adjacent neighborhoods to visit the area. This also responds to the industry's time segregated functionality, promoting activity during working and non-working hours of the day. The complementary functions, shown in figure 4, include leisure activities in open air spaces like public waterfront, children's park & sports facilities and reproductive or care facilities like markets, childcare, etc. and community managing facilities like banks, community offices, etc.

The intervention for the IT industry mainly addresses the connectivity to the city. The proposal is to promote an alternative public transport mode to reduce the dependency on private transport. The abandoned railway line (figure 6), which connects the industry to the metro line in the city, is reactivated. The aspect of safety in using public transport

is addressed by making the transit hubs multifunctional with leisure, care and community facilities. The transit hubs are connected to each other through a pedestrian route, which maintains the walkability of the neighborhood, encouraging a more vibrant urban life in public space.

Multi-functionality and the structure of the spine in the garment industry can be replicated in the case of the IT Industry to make the transport hubs the nodes of activity and diversity. The spine attempts to reduce the perception of distance, provide high quality spaces for a diverse group of users and make everyday life convenient.

5. Conclusions

This research showed that there is a relation between gender roles and spatial organization in the city. Through literature reviews, the key points that affect women's participation in the labor force and the spatial attributes were identified. These spatial attributes were mainly functional distribution of industry, its connectivity to other functions and the spatial quality of the areas. Best Practices were studied in the global north and south, to understand the similarities and differences that arise from the cultural background. The participatory tools that Punt 6 has devised for Barcelona were tested in Bangalore, in the global south. The socio-spatial process in the daily life of the workingwomen was documented and evaluated, bringing to light these gaps specific to the two industries. On this basis different spatial interventions were proposed. In the conclusions we reflect on this research by design.

The first lesson concerns how spatial analysis should be carried out from the gender perspective. The aspect of gender is important to consider in creating inclusive cities. This was evident in the fieldwork, illustrating the characteristics of women's travel patterns and use of public space. The second lesson is the tools of urbanism that influence women's use of the city, namely accessibility, public space and governance. The first two were explored in detail in the two proposals of the IT and the garment industry respectively. The dimension of governance and the implementation of these proposals are yet to be investigated.

Through this research, it was understood that tools and techniques in urban planning that were used in the global north were applicable in the global south. But there were additional issues that needed more attention in the global south such as: safety and the economic differences in the population. Similarly, the same tools and techniques may not be implementable in more traditional contexts like Cairo, Egypt where only spatial interventions will not contribute in resolving the issues but larger transformations are required. Therefore, the solutions can be applicable but with further investigation on the cultural and social context that is being studied.

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