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Socioeconomic impact of urban redevelopment in inner city of Ningbo*

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Abstract: Since market-oriented economy reform, China has experienced significant changes in urban landscapes and the internal structure of cities. Housing marketization provides an opportunity for households to choose their residences. However, not all households benefit equally from residential relocation. Residential relocation in urban China has relatively strong association with the household's position within the spectrum from state redistribution to market reward than with life cycles and consequent adjustment of housing demand, which are the primary reasons for residential mobility in a mature market. In this research we focused on social aspects, mainly relating to the impact of urban redevelopment in inner city of Ningbo and the resultant potential housing problem. This research is based on a questionnaire survey that was conducted in three neighborhoods redeveloped at different time periods in the past fifteen years. The findings suggest that new strategy of redevelopment of the integrated environment of the old city while still improving the living condition for its residents can be heard due to the efforts of many people at various positions. Yet, many things need to be done to change people's ideas: information and education through newspapers, academic discussions through academic journals, conferences, and reports to decision makers.

Key words: Urban redevelopment, Housing reform, Neighborhood, Urban structure, Socioeconomic, Social interaction
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INTRODUCTION

The housing system in urban China has experienced two unprecedented transformations over the last five decades. Since the late 1980s, reforms have been implemented to privatize the public housing system, and homeownership has been highly promoted. During these profound transformations, urban households have no option but to behave accordingly. Thus, a longitudinal study is needed to better understand housing behavior in a constantly changing context and its social impacts. The market-oriented reform has resulted in a social and spatial reorganization of cities and the widening of the gap between the poor and the rich leading to a higher level of social stratification in urban China (Wang and Murie, 2000; Wu, 2002). Redevelopment generally improves the housing conditions for relocated residents in physical terms, the socioeconomic impacts of redevelopment are not always optimistic. The negative socioeconomic impacts of urban redevelopment have long become a contentious issue all over the world. In the USA the urban renewal programs estimated that, by 1967 the federal bulldozer had razed 404000 housing units (most of which had been inhabited by low-income families) which were built over the course of nearly two decades (Friedland, 1983). Moreover, according to (Halpern, 1999), during the urban renewal period in the USA only half of all people displaced from their homes and neighborhoods received an average relocation payment of $69 per family. The damages brought by the "bulldozer redevelopment" on cities' historical cultural context and the thriving urban neighborhoods are even countless (Hartman, 1971; 1980; Jacobs, 1961).

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An increasingly fragmented social space is found coming along with the new social stratification in urban China. The work unit compounds integrating the work and residence are no longer the norm. Residential mobility has since been increasing significantly. According to China's 2000 Census, about 15% of all moves between 1995 and 2000 are residential moves or resettlement. These housing related moves are powerful forces (re)shaping the urban socio-spatial landscape in Chinese cities. Urban renewal programs in Chinese cities estimated that from 1990 to 1998, the city of Beijing demolished 4.2 million square meters of housing in the old city. Approximately 32000 families, comprising about 100000 people have not been relocated, although some have waited up to five years for moving into new houses (Fang, 2000). It is also suggested that there is a much larger residential displacement and relocation amount in rent in Shanghai than that in the urban renewal period in the USA cities (Zhang, 2002). Compared to the large body of literature on regional migration especially rural-to-urban migration in China (Fan, 1999; Fan and Huang, 1998; Liang and White, 1997; Chan, 1988; 1994), there are few studies on intra-city residential mobility. Only recently scholars begin to study residential mobility, but focus mainly on the reform era (Li and Siu, 2001). Due to the growing discontent from forced eviction, there is an urgent need for studies from the resident's perspective to inform future policy making processes. Nowadays, Ningbo's urban redevelopment which is largely grounded upon real estate development has been adopted as an effective strategy to re-image the city and promote urban and economy growth. Profound influence has been brought to the entire city, especially those old urban neighborhoods in the inner city. Clearance of old and dilapidated urban areas is carrying out to re-image the inner city. Meanwhile, to promote economy growth through developing tertiary industry, a number of old urban neighborhoods are reconstructed into various high-value-added properties. This paper aims to examine the socioeconomic outcomes of urban redevelopment in market transitional of inner city of Ningbo from two perspectives: the trend movement progress of neighborhood change and impacts on affected residents. It is in order to understand the factors affecting residents' evaluations and to inform the process of housing policy formulation.

RESEARCH FRAMEWORKS AND METHODOLOGY

This research rests upon a qualitative analysis based on observation and interpretation, rather than a quantitative one with a scientific approach. It is based on both primary and secondary sources. The methodology used in the research is divided into two parts: literature review and field study. The theoretical part of the research regarding urban redevelopment and housing reform in China is based on a literature review. The gathering of information regarding redevelopment projects in Ningbo required a field survey and took part of a professor's project in Ningbo during 2002~2003. The complete methodology used for the conduct of the field study is presented in detail in three case studies—Meiyuan, West Yuehu and Shijicheng—which experienced different levels of redevelopment. The main objective of the field survey was to collect information about specific redevelopment projects in the inner city of Ningbo. The survey focused on the physical aspects of the projects, such as site organization, building quality and layout, building styles, housing ownership, facilities, amenities, and security; the social aspects of the projects, including the residents' different uses of the space, age, residential time, household size, education, employment status, household monthly income, community life and the residential contentment prior to and after the redevelopment, and contentment level, among others, were collected in the survey. In this paper we focus on social aspects to assess the social impacts of the urban redevelopment. The information about the case studies was compiled and analyzed. The current approaches to neighborhood redevelopment in inner Ningbo as well as the main problems involved in the current process were identified. Emerging issues guided the formulation of recommendations regarding appropriate approaches to redevelopment for future project implementation.

DATA COLLECTION AND ANALYSIS

The case studies comprise three projects implemented in the inner city of Ningbo. All consist of residential projects built on sites previously occupied by old residential quarters, located in the inner city of

Ningbo. In the three neighborhoods, most of the residents have lived in the same place for a long time and have witnessed various changes, which help us to reconstruct changing neighborhood profiles. Based on 120 valid questionnaires collected in three neighborhoods (Meiyuan: 50, West Yuehu: 40, and Shijicheng: 30), Fig.1 shows the location of three redeveloping projects in the inner city of Ningbo. The samples were randomly drawn from the three neighborhoods based on the address list instead of the names list of the heads of residents. To secure the completion of the questionnaire, the interviewees are households. We transferred all data we collected to SPSS^{TM} (Statistical Analysis and Data Management System) to be ready for analysis. The comparisons among the three cases will first focus on their redevelopment background, and later on the differences in their socioeconomic composition after redevelopment.

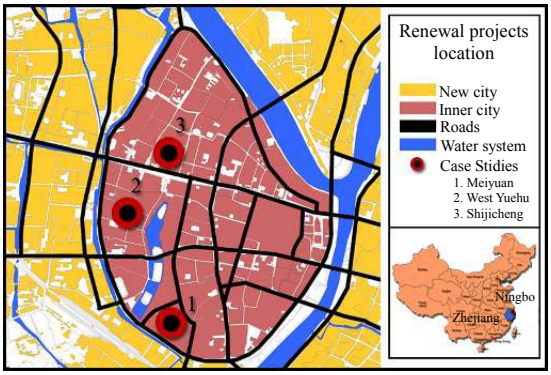

Fig.1 Renewal projects locations

STUDY AREAS BACKGROUND

The extensive large-scale urban redevelopment in China has produced tremendous new urban landscapes and large volume of residential relocation. Serving for the purposes of city re-imaging and economy growth, old neighborhoods in the inner city have been redeveloped into diverse land uses. Ningbo is a coastal city in Zhejiang Province of China with a long history of 10 dynasties. It covers an area of 9.365 square kilometers and has a population of 5.5 million (SSB, 2003). The city of Ningbo gradually upgraded itself within the existing framework and a large part of its layout like the street pattern, and the water system survived until today. Until the later part of the 1980's, most parts of the old city were still occupied by one-story courtyard houses of various qualities. Due to insufficient maintenance and improvements in the past decades, most of these houses do not have proper facilities. To improve living conditions in these areas, the Housing Renewal Program was initiated by the local government in 1990. Since investment from the municipal government is very limited, real estate redevelopment operated by the developers are taken as solution for raising money for carrying out the renewal program, and each renewal project should be self supporting. Today, it turned out that the program has grown into a profit-led rush to rebuild a much larger part of the inner city residential neighborhoods.

As a historic city, the old urban areas had concentrations of middle-to-low-income population, laid-off and unemployed, and occupied a comparatively high proportion of the city. The renewal program in the city has not only exerted a major impact on the old neighborhoods of Ningbo, but has also been a sensitive issue related to housing and social problems. Reduction of residential land and replacement of the residents are causing relocation of thousands of families to peripheral areas of the city. The policy is that all residents should pay the construction cost of the apartment if they want to move back. They also must find accommodation by themselves for 2~3 years during the construction (with an exception for some of the very first renewal areas started before 1992). Otherwise they are allocated a rental flat in newly developed housing areas in the suburbs. The aim of this study is to gain understanding of the physical and socioeconomic changes in these typical old urban areas and to assess the social impacts brought by urban redevelopment.

Meiyuan is located in the south of the inner City; the site was originally occupied by single-story courtyard houses. Most of the original houses on the site were built in Ming and Qing Dynasties and most were in very poor condition, overcrowded and lacking basic facilities. The project was built in three phases from 1985 to 1995. The designer created fifty residential apartment buildings arranged along small lanes, different units' designs to accommodate various household needs. Some of the original courtyard houses were preserved by the local urban planning bureau (Fig.2). Most new buildings consist of

walk-up apartment buildings ranging from four to seven stories with north-south exposure. Some east-west oriented buildings were built to increase land-use efficiency.

Fig.2 Old houses preserved by the local government

The West Yuehu Area is located in the heart of Ningbo City, boasts high cultural value. The total coverage of the area is 450000 square meters, with approximately 1097 buildings. In 2002, the local authority of Ningbo initiated the second phase of West Yuehu Area Revitalization Project. The aim of the project was to revitalize the high-value historic area and to upgrade living environment through detailed conservation and rehabilitation planning. The historical and cultural street blocks around the Lake, covering an area of 97 hectares, are the fascinating focuses of Ningbo's ancient and traditional resident buildings. The whole area can be divided into two parts—eastern and western areas at both sides of the Lake. The quarter has a long history and cultural significance, this area was the origin of Ningbo City and until 1949 this traditional architecture housed the wealthy and powerful people of Ningbo. Later, after liberation this housing area became the residents for common people. And the environment was rapidly worsened. Most existing traditional local-style dwelling houses in Yuehu Area were constructed in the Ming and Qing Dynasties, and are quite old and decayed, but they still can be regarded as representative of typical local-style dwelling houses. Here the traditional buildings nestle into a maze of narrow streets, alleyways, courtyards, and the more mundane and anonymous texture of gray tiled slope roof gives the area its physical character. All spaces and solid volumes in the historical urban fabric are characterized by the intimate knowledge of human scale. The qualities of the houses vary from good condition privately preserved houses to extremely dilapidated houses. This area has no central heating or modern sewage. Courtyards have running water, there were no private toilets and kitchens and people used the public lavatory, washed their laundry in the courtyards, and mostly cooked their food in the halls or simple added huts. To catch the pace of increasing population and alteration of function, the residents themselves according to their needs and economic ability are renovating the courtyards, which have ruined the original layout. Due to the problems of limited financial capacities and ownership, the residents cannot afford normal renovation and protection of the buildings and leave them with rich cultural values becoming shabby. Most of the residents in this traditional housing area have lower living condition than the minimum standard according to the general regulation for old areas. The density here is very high, with average floor space of each family being only 7~8 m^2 per person. The population of the area was largely indigenous; many families had lived there for generations. Moderately capable person, especially the young generations prefer to move to other places. Therefore, most of the residents living here are poor and aged. We observed that many house owners have a dualistic love-hate relationship with this area. As a result of long-time ignorance, most of the buildings have fallen out of use and are in a state of disrepair. Thus, vital parts of the townscape are in a state of decline.

Shijicheng, located in the inner city of Ningbo just north of West Yuehu area, Zhongshan West Road border the site from the south. The area is characterized by high population density and low-storey traditional courtyard buildings and represents the old urban areas with concentrations of middle-to-low-income workers. Before redevelopment, more than ten families shared one large house which had belonged to just one ancient wealthy family. These buildings lacked individual kitchens and sanitary facilities. Ningbo Yinyi Real-Estate Redevelopment Company launched the project in 2000, the traditional old resident buildings have been pulled down, and replaced by modern luxury multi-storey apartments with space floor from 120 to 330 square meters (Fig.3). All the original residents were relocated to the outskirts of the city and the luxury apartments were for sale to rich people. In 2002 the price was 4500 RMB per square

meter, nowadays it is 10000 RMB. However, because of the demolition of the traditionally built environment, social interaction among residents has decreased. Living in modern-style dwellings, people enjoy more privacy, but, at the same time, mutual help between neighbors is decreasing.

Fig.3 Layout of the Shijicheng redevelopment project

CHANGING SOCIOECONOMIC PROFILES IN REDEVELOPING AREAS

Socioeconomic condition of the families in renewal areas is the key issue to gain understanding of what kind of impact the renewal will bring to the residents. The aim of this analysis is to identify the pattern of socioeconomic condition, and determine the impact of urban change. Socioeconomic data in three cases is compared using descriptive statistics on the average residential time, household size, education, and income. The residents living in these neighborhoods consist of a relatively high proportion of elderly people (>60 years old). As descriptive statistics for 120 respondents in three neighborhoods, Table 1 shows that 31.7% neighborhood residents was over 60 years. And individual case studies in West Yuehu, Meiyuan, and Shijicheng showed that 37.50%, 34.00%, and 13.33% are over 60 years respectively (Fig.4). Most residents of West Yuehu and Meiyuan had lived in these neighborhoods for a long time: the average residential time in West Yuehu and Meiyuan are respectively 37.03, 20.02 years, but for Shijicheng the average residential time is very short (less than two years) because all the residents are new to the site as the project had just been implemented.

Table 1 Socioeconomic analysis in three cases

	West Yuehu	Meiyuan	Shijicheng
Distribution of the age of respondents (%)			
<25 years old	0.00	4.00	10.00
25~45 years old	45.00	40.00	56.67
45~60 years old	17.50	22.00	20.00
>60 years old	37.50	34.00	13.33
Household size[1]	3.03	2.88	3.13
Residential time (years)	37.02	20.02	1.57
Distribution of education (%)			
Illiteracy	7.50	2.00	0.00
Primary school	40.00	24.00	3.33
Secondary school	42.50	58.00	40.00
College/University	10.00	16.00	56.67
Distribution of household monthly income (%)			
<￥900	80.00	54.00	0.00
￥900~2000	20.00	26.00	0.00
￥2000~4000	0.00	16.00	73.33
>￥4000	0.00	4.00	26.67
Distribution of employment status (%)			
Manufacturing	27.50	24.00	33.33
Administrative	5.00	16.00	30.00
Private business	5.00	6.00	20.00
Unemployed	27.50	20.00	0.00
Retired	35.00	34.00	16.67

[1] Unit: number of persons per household

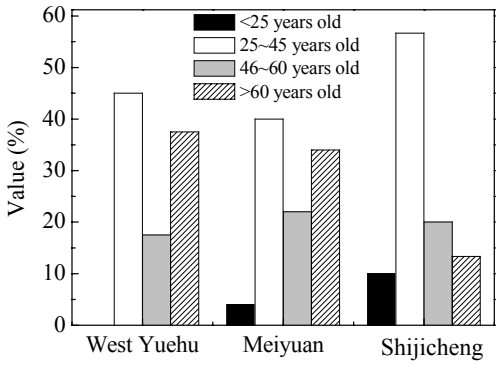

Fig.4 Age of respondents in the three neighborhoods—West Yuehu, Meiyuan and Shijicheng

Household size varies among the three neighborhoods, three person families dominate the sample, but the composition of these three persons is not necessarily a nuclear family. Shijicheng has the biggest average household, 3.13 persons per household

and Meiyuan has the smallest, only 2.88 persons. It is highly related to the relocation policy because bigger household could relocate at a lower cost. The difference between cases is affected by the change of the life cycle, the separation of large families, and the presence of private renting families. In all cases, most households have family members studying at school. Overall, the younger the household head, the higher the educational background. Cases Meiyuan and West Yuehu have lower than average household head education level, most residents have only primary or secondary school education. Case Shijicheng has higher education level. All those who have less than five years' education are over 60 years old (Table 1 and Fig.5).

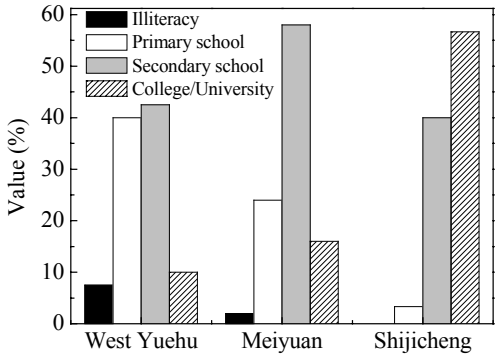

Fig.5 Education level in the three neighborhoods—West Yuehu, Meiyuan and Shijicheng

Income data is not very reliable since hidden income is an important component and respondents are likely to under-report their income. Depending on the data we collect, nearly half of the households interviewed reported that the monthly household income is below ￥900. Comparatively, Shijicheng has the highest income level in the three neighborhoods, with 73.33% households having an income of ￥2000~4000 and 26.67% having income of over ￥4000 (Table 1 and Fig.6). Fig.6 shows that Meiyuan neighborhood has the highest number of middleclass people, 26.00% has income of ￥900~2000, with West Yuehu being apparently the worst of the three neighborhoods—about 80.00% households reported their monthly income was below ￥900, 20.00% reported income of ￥900~2000, and no one reported income level higher than ￥2000. The poorer physical condition an area has, the poorer the average eco-social condition it contains. Yet, the social mix in West Yuehu and Meiyuan neighborhoods is remarkable.

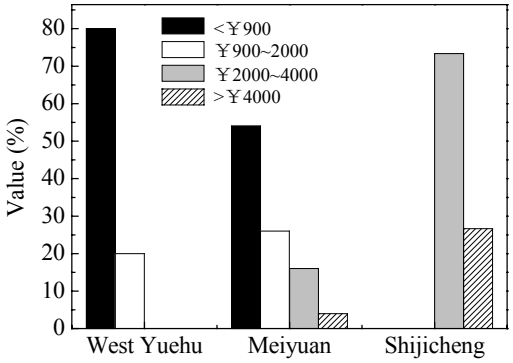

Fig.6 Household monthly income in the three neighborhoods—West Yuehu, Meiyuan and Shijicheng

Unemployed status is respectively 27.50% in West Yuehu, 20.00% in Meiyuan, 0.00% in Shijicheng. West Yuehu shows occupational structure similar to that of Meiyuan but has a higher rate of retired people. The good location of Shijicheng next to the business streets encourages more people to engage in business; 20.00% residents work in private business, while 16.67% were retired (Table 1 and Fig.7). To sum up, residents in the three neighborhoods show very different socioeconomic status, in West Yuehe and Meiyuan, elderly population, low-income and low-education level households are remarkable, but in Shijicheng, we found more young people with high-education level and high-income.

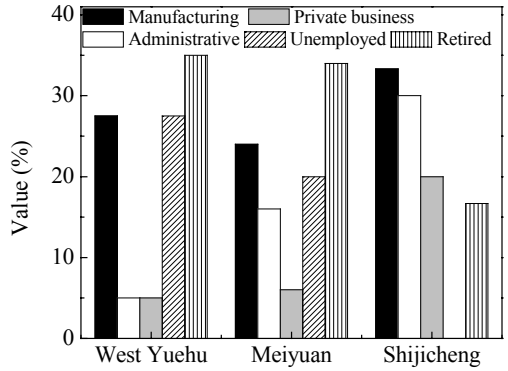

Fig.7 Occupation status in the three neighborhoods—West Yuehu, Meiyuan and Shijicheng

SOCIAL INTERACTION ANALYSIS

In general, when the people get older, they become more able to interact with neighbors, in case of intensity for social interaction in our case studies; we calculated interaction scores and standard deviation, by asking two questions: how do you understand the background of your neighbors? And, how frequently do you socialize with your neighbors? Our calculation of the interaction is shown in Table 2. First we assessed the intensity of social interaction in the three neighborhoods in general, and then we made a comparison between interaction and age of respondents to assess the relationship. The result of the general assessment is presented in Fig.8. The small circle in the middle shows the average score in the neighborhood, the two bars show the interval of 95% confidence level. This figure is effective in detecting variation of the data. So, it gives us confidence about the validity of the difference in the average scores across different neighborhoods. Fig.8a as a general analysis, shows that the scores of Shijicheng are very low compared with West Yuehu and Meiyuan. The combination of interaction and age of residents intervening in social ties are presented in Fig.8b, which shows that the number of people under 25 years old of the three neighborhoods is very samll, indicating that young people know little about their neighbors. In case of age 25~45 years old the score for Shijicheng is much lower than Meiyuan and West Yuehu. For the people with age 46~60 West Yuehu come in the top of knowing the neighbors' background, but for the old people (>60) all the three neighborhoods have very high score, so they interact more with neighbors and know more about their neighbors.

Regarding the frequency score of neighborhood interaction, Fig.9a shows that residents of West Yuehu socialized more with their neighbors compared with Meiyuan and Shijicheng residents. Yet Fig.9b shows that the young residents of Meiyuan are

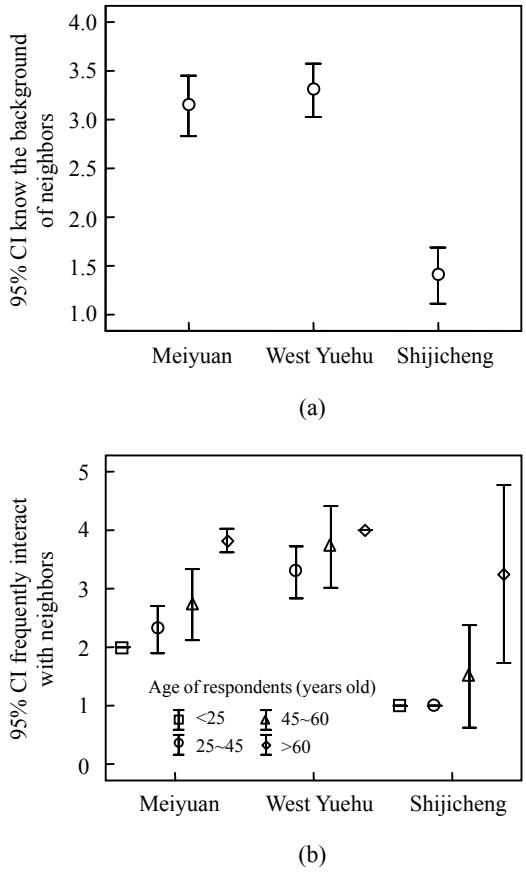

Fig.8 Mean score of understanding neighbors' background and 95% confidence intervals in the three neighborhoods. (a) General analysis; (b) Combination analysis

Table 2 Social interaction analysis

	Percentage of residents (%)		
	West Yuehu	Meiyuan	Shijicheng
Know the background of neighbors			
Knowing nothing	5.00	12.00	73.33
Very little	10.00	16.00	16.67
Having some knowledge	35.00	18.00	6.67
Very well	50.00	54.00	3.33
Frequently interact with neighbors			
Never	2.50	8.00	80.00
Rarely	7.50	30.00	6.67
Less than once a week	15.00	26.00	6.67
At least once a week	75.00	36.00	6.67

more socialized than in Shijicheng and West Yuehu, but the score is still very low compared with the old residents in the three neighborhoods.

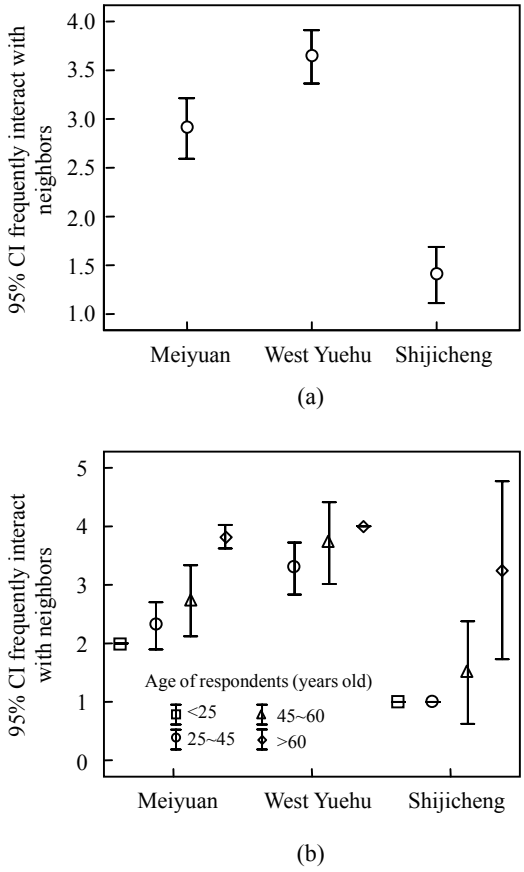

Fig.9 Mean score of frequency of intra-neighborhood interaction and 95% confidence intervals in the three neighborhoods. (a) General analysis; (b) Combination analysis

To understand the impacts of urban change in neighborhoods level, we compared the level of neighborhood-based social interactions and the degree of attachment and commitment to the neighborhoods. We calculated the percentage of residents who replied "yes" to a series of questions such as:

(1) Do you know the background of your neighbors?

(2) Do you socialize with your neighbors?

(3) Are your neighbors the major contacts in social activities?

(4) Did you ask your neighbors for help in the past six months?

(5) Did you offer any help to your neighbors in the past six months?

(6) How do you feel towards neighborhood relation, positive or negative?

To measure the attitude towards neighborhood relation, we computed the percentage of these residents, by using the following weights:

(1) Good understanding of background information of the neighbors (0.1);

(2) Frequently interact with neighbors (0.2);

(3) Neighbors as main social contacts (0.1);

(4) Request for help from neighbors within the last six months (0.2);

(5) Offer help to the neighbors within the last 6 weeks (0.2);

(6) Positive attitude to neighborhood relation (0.2).

The scores are, respectively, Meiyuan 46.80, West Yuehu 80.50 and Shijicheng 20.02. West Yuehu had the highest score, while Shijicheng ranked as the lowest (Table 3).

In the course of understanding the degree of attachment and commitment to the neighborhood, we asked a series of questions such as:

(1) Are you willing to participate in redevelopment activities?

(2) Do you have a positive or negative attitude toward developing a partnership with developers and government?

(3) Are you willing to act collectively with neighbors when the community faces a threat?

(4) Do you prefer to stay in the same neighborhood for a long time?

(5) Do you often support the environment construction?

Table 4 shows the degree of attachment and commitment to the neighborhood. The weights used for indicative questions are:

(1) Willingness to participate in redevelopment activities (0.2);

(2) Positive attitude towards developing partnership with developers and the government (0.1);

(3) Willingness to act collectively with neighbors when the community faces a threat (0.2);

(4) Stay in the neighborhood for a long time (0.3);

(5) Support environment construction (0.2).

The scores are 35.2 for Meiyuan, 56.25 for West Yuehu, and 40.66 for Shijicheng. The result shows that the degree of social cohesion in West Yuehu is the highest. At the same time the index shows that Shijicheng has good intensity of attachment, actually

Table 3 Intensity of neighborhood-based social interaction

	Weighting	Percentage of residents (%)		
		Meiyuan	West Yuehu	Shijicheng
Know the background of neighbors	0.1	56.00	87.50	26.67
Frequently interact with neighbors	0.2	36.00	90.00	16.67
Neighbors are major contacts	0.1	48.00	62.50	13.33
Ask neighbors for help	0.2	16.00	62.50	0.00
Offer help to neighbors	0.2	74.00	90.00	46.67
Have positive attitude to neighborhood relation	0.2	56.00	85.00	16.67
Intensity		46.80	80.50	20.02

Table 4 Intensity of attachment to neighborhood

	Weighting	Percentage of residents (%)		
		Meiyuan	West Yuehu	Shijicheng
Willing to participate in redevelopment activities	0.2	48.00	62.50	33.33
Have positive attitude toward developing partnership with developer	0.1	38.00	85.00	26.67
Collective action against threat	0.2	24.00	50.00	0.00
Prefer to stay in the same neighborhood for a long time	0.3	34.00	47.50	73.33
Support environment	0.2	34.00	55.00	46.67
Intensity		35.20	56.25	40.67

it is related to the high score we give for Question (4), and because the neighborhood has very good quality the respondents answered "yes". The two indexes suggest the different characteristics of these three neighborhoods. Comparison of the result of the two indexes showed that West Yuehu has the highest scores of both indexes, indicating strong neighborhood-based social interactions, resident's strong attachment and commitment to the neighborhood, which in turn indicates high degree of social cohesion. Meiyuan and Shijicheng present different characteristics, and slightly weaker neighborhood-based social interactions and social cohesion than West Yuehu.

These differences in social interactions and cohesion are partly attributable to the different policy of redevelopment that has taken place in the three neighborhoods. Meiyuan as a big pilot project involves long time development through three phases, in which different policies were used for redevelopment, all these factors have reduced residents' social interactions and their attachment to the neighborhood. Shijicheng had special development policy, which allowed the developing company to relocate all the original residents. Because of the comprehensive relocation the neighborhood had weak neighborhood-based social interactions and cohesion. West Yuehu was still untouched by developing companies, so the intensive neighborhood-based social interaction and social cohesion are supposed to be found in this place.

DISCUSSION AND CONCLUSION

This study suggests that different changes in traditional urban areas can be understood in terms of different levels of urban redevelopment. Our research study of some redevelopment projects in the inner city of Ningbo indicates that different changes have taken place in the traditional urban areas, and produced different impacts on their built environment and socioeconomic characteristics. Our case studies showed that most residents living in Meiyuan and West Yuehu neighborhoods are the original residents; that Shijicheng residents are from the inner city and did not belong there before the project development, but that all of them were among the group who could afford to move back to the inner city. However, in the case of Meiyuan, the better-off status of those in the redeveloped neighborhoods did not lead to better residential environment, social interactions and cohesion. Because when these residents moved in, they again experienced the poor design and construction of their apartment buildings, and poor maintenance and management of their neighborhood, which only led to

decreasing residential ties and satisfaction.

This study indicated the impacts on neighborhood changes brought by different levels of urban redevelopment. We determined that the overall residential environment, social interactions and cohesion in the three neighborhoods in the inner city of Ningbo are low. The social disturbances caused by redevelopment are different in the three neighborhoods. Meiyuan and Shijicheng have seen the highest level of impact because of the scale of redevelopment and reorganization of the social structure. West Yuehu has kept the social ties and the attachment between residents and neighborhood so it shows stronger neighborhood-based social interactions and social cohesion than Meiyuan and Shijicheng. This suggests that not only the intensity of redevelopment but also the method of relocation can cause different levels of social integration and cohesion in urban neighborhoods. Using assessment of the intensity of social interaction as a criterion to testify to the success of urban redevelopment policies, this research shows that Ningbo's redevelopment could not be sustainable against social disturbance; that Ningbo's inner city redevelopment achieved the goal of physical improvement, by following the pattern of "differentiating social groups" and has been a process of planned segregation of lower-income group residents in the inner city or suburbs. The increasing polarization in the society is likely to create conflicts among segregated groups. The increasing social conflicts in Ningbo's redevelopment processes have shown the broadening polarization and inequality among the society. It implies an increasing social, political and economic cost for the redevelopment processes. As China slowly realizes the risks of having a polarized and segregated society, it is critical for policy makers to rethink how redevelopment policies have promoted segregation, and consider how this might be avoided in the future. Caring for the disadvantaged residents in the redevelopment processes becomes an urgent social goal to pursue. Assessment of the intensity of social interaction in this research can possibly be used to become the base of public demand. Studies on the disadvantaged group have great potential in finding out the weakness and gaps in the housing market, in order to develop a more complete market. This study suggests the need for more than physical renovation in urban redevelopment. It is necessary to pay more attention to the interests of marginal groups and socially sustainable development during the urban redevelopment process. The Western countries' experiences of setting up positive social objectives for urban redevelopment should be seriously learned.

References

Chan, K.W., 1988. Rural-urban migration in China, 1950-1982: estimates and analysis. *Urban Geography*, **9**(1):53-84.

Chan, K.W., 1994. Urbanization and rural-urban migration in China since 1982: a new baseline. *Modern China*, **20**(3): 243-281.

Fan, C.C., 1999. Migration in a socialist transitional economy: heterogeneity, socioeconomic and spatial characteristics of migrants in China and Guangdong Province. *International Migration Review*, **33**(4):954-987. [doi:10.2307/2547359]

Fan, C.C., Huang, Y.Q., 1998. Waves of rural brides: female marriage migration in China. *Annals of the Association of American Geographers*, **88**(2):227-251. [doi:10.1111/1467-8306.00092]

Fang, K., 2000. Contemporary Redevelopment in the Inner City of Beijing: Survey, Analysis, and Investigation. China Construction Industry Publishing House, Beijing (in Chinese).

Friedland, R., 1983. Power and Crisis in the City: Corporations, Unions, and Urban Policy. Random House, New York.

Halpern, P., 1999. Rebuilding the Inner City: A History of Neighborhood Initiatives to Address Poverty in the United States. Columbia University Press, New York.

Hartman, C., 1971. Relocation: illusory promise and no relief. *Virginia Law Review*, **57**(5):745-817. [doi:10.2307/1072173]

Hartman, C., 1980. Displacement—a not so new problem. *Habitat International*, **5**:193-202. [doi:10.1016/0197-3975(80)90073-9]

Jacobs, J., 1961. The Death and Life of Great America Cities. Random House, New York.

Li, S., Siu, Y., 2001. Residents mobility and urban restructuring under market transition: a study of Guangzhou, China. *Professional Geographer*, **53**(2):219-229. [doi:10.1111/0033-0124.00281]

Liang, Z., White, M.J., 1997. Internal migration in China, 1950-1988. *Demography*, **33**(3):375-384.

SSB, 2003. China Statistical Yearbook 2002. China Statistics Press, Beijing (in Chinese).

Wang, Y.P., Murie, A., 2000. Social and spatial implications of housing reform in China. *International Journal of Urban and Regional Research*, **24**(2):397-417. [doi:10.1111/1468-2427.00254]

Wu, F.L., 2002. Socio-spatial differentiation in urban China: evidence from Shanghai's real estate markets. *Environment and Planning A*, **34**(9):1591-1615. [doi:10.1068/a34196]

Zhang, T.W., 2002. Urban development and a socialist pro-growth coalition in Shanghai. *Urban Affairs Review*, **37**(4):475-499. [doi:10.1177/10780870222185432]