

# Urban Renewal of a Urban Fabric Approach: A Case Study of Nanjing, China

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## INTRODUCTION

Urban renewal in inner city areas often presents a great challenge to architects, city planners and policy makers. The challenge becomes much greater when it takes place in cities of developing countries. A lack of financial resources, high population density, and decades, if not centuries, of under-development in inner city areas are just some of the problems. The problems are often further compounded when historical cities are involved in urban renewal. The question of whether and how to carry on urban and architectural heritage of historical cities in the course of urban renewal has been the subject of public and intellectual debate ever since the end of World War II.

Since the 1980s, booming economic development has turned cities in China into centers of extensive reconstruction. Through the course of the reconstruction came massive urban renewal efforts in many of its historical cities. Most, if not all, of the historical cities in the country were substantially underdeveloped prior to the new wave of reconstruction due to decades of wars as well as other social and political factors. Unlike some historical cities in the west, inner city areas in most of the old, historical cities in China were largely occupied by residential neighborhoods. For many cities, to renew their inner-city areas means to construct new apartment buildings and neighborhoods.

Largely due to financial and business considerations, most inner-city renewal projects in China today are carried out through an approach that is often marked by a large-scale demolition of old houses, followed by construction of new apartments. For developers, this is the most profitable approach. While new apartments provide residents with much improved housing quality and upgraded infrastructure, the plans, spaces and forms of the new residential

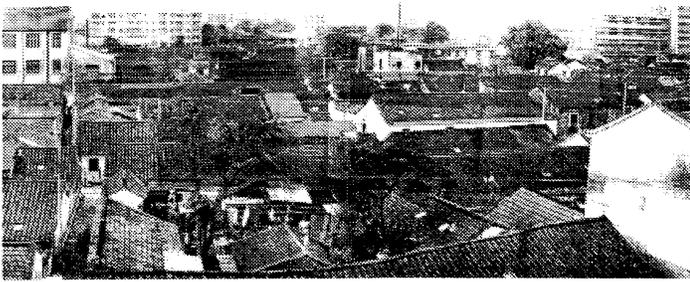
neighborhoods have had very little to do with the old they have replaced. Old houses and neighborhoods are demolished and super blocks of six- to seven- story apartment flats are constructed. New residential neighborhoods are developed with apartment buildings often laid out in a rigid linear or grid pattern, quite similar to urban construction and reconstruction in the west after World War II. Inevitably, gone with the demolition are characteristics of traditional house and neighborhood forms, as well as the original social fabric and cultural meanings that were associated with the old houses and neighborhoods.

Based on the experiences of an experimental urban renewal project for the Gao-Gang-Li neighborhood of Nanjing, China, and a subsequent study, this paper discusses a mini-scale approach of urban renewal that was used in the Gao-Gang-Li renewal development. The approach was adopted in light of the historical context of the neighborhood. The project was carried out in 1992 by the authors of this paper. The subsequent study to investigate its current conditions was conducted in 2000, eight years after completion of the project. The paper suggests that the mini-scale Gao-Gang-Li approach provided a valid alternative to common practices in urban renewal. It can be especially suitable when historical cities are the concern, as it could help better preserve and carry on the heritage and social structure of traditional residential neighborhoods in historical cities.

## THE CASE OF GAO-GANG-LI

The Gao-Gang-Li neighborhood is located in the southern part of the inner-city area of Nanjing. The city of Nanjing was one of the most historical cities in the country that flourished during the Ming

Dynasty in the seventeenth century. The Gao-Gang-Li neighborhood is part of the historic Nanjing. The renewal development covered a residential area of about 5,800 square meters (or approximately 13 acres). Virtually all of the houses in the area were traditional one-story courtyard houses. Other than a large courtyard compound, the Pang's house, built in the late Qing Dynasty around the end of the nineteenth century, most of the courtyard houses were built in the early 20<sup>th</sup> century. The Pang's house was on the city's list of registered historical sites, and therefore relatively well preserved. Due to a lack of up keeping and remodeling ever since they were constructed, the courtyard houses in the neighborhood were in extremely poor shape, and housing conditions were substantially below today's standards.



*Fig. 1. A birdseye view of the neighborhood before the renewal.*

In addition to the old courtyard houses, the history of the neighborhood was also evidenced by its pedestrian circulation system made up of small lanes, streets and outdoor yards that were organically interwoven with the courtyard houses they served. In fact, the layout of somewhat zigzag streets and lanes was the result of centuries of spontaneous construction and reconstruction of residents in the area. The layout and form of the streets and lanes were the residents' responses to natural conditions of the area such as climate and terrain. They also reflected the influences of social and cultural needs of societies throughout history. However, like the houses in the neighborhood, decades with little upgrading effort left streets and lanes in the neighborhood in very shabby conditions.

Like many other neighborhoods in inner city areas, the Gao-Gang-Li neighborhood had a high population density prior to the renewal project. It was as high as about 46 people per acre. There were about 120 households in the neighborhood with a population of about 576 before the renewal project took place. Most of the households in the neighborhood were low and low-middle income families. A large percentage of households in the neighborhood were multi-generation families. The multi-generation occupancy of households was partly due to a lack of other choices as most residents of the neighborhood were from low-income families. In addition, it was attributable to a Chinese cultural tradition that was for a long time in favor of a "large family", i.e., families of three, or even four, generations of direct kinship living together as one extended family. It was not until very recent times that the tradition fell out of favor.

The social, economic and historical context of the neighborhood challenged the renewal project on several fronts. On one hand, the old courtyard houses in the neighborhood represented characteristics of local vernacular architecture and urban form. They were developed through spontaneous creations of its residents over centuries and generations. Complete demolition of the neighborhood would certainly do the city of Nanjing a disservice in its preservation efforts. On the other hand, the conditions of houses, streets and infrastructure in the neighborhood were so poor that extensive upgrading and reconstruction were demanded, and in fact the only choice. In addition, lack of sufficient financial resources to re-develop the entire area was yet another problem.

In order to find an alternative way to tackle the issues stated above that were by no means unusual to the city of Nanjing as well as many historical cities in the country, the renewal development was set to achieve the following objectives. First, it intended to experiment with a new approach through which not only architectural characteristics, but also urban fabrics of the old traditional neighborhood were preserved and carried on in new construction. The urban fabrics included layout of the original streets and lanes and some common outdoor spaces that helped facilitate social activities of the neighborhood through its history. Second, it intended to develop a new housing form that reflected vernacular house styles and forms so that the renewed neighborhood would to certain extent carry on the original sense of home for the residents. The renewal project rejected a common approach at the outset that would have demolished every urban physical installation in the neighborhood, and then built six- to seven-story apartment flats in a linear or grid pattern.

Several unique steps were taken to help realize the objectives. First, it examined and investigated the neighborhood house by house, area by area, lane by lane, to determine what was the most appropriate renewal concepts for each of the sub-areas in the neighborhood. In other words, it took a much-individualized approach to find out what architectural and planning characteristics and systems could be preserved and/or carried on in new construction and what needed to be demolished and/or discarded.

Secondly, to increase the square footage of houses as a way to improve housing quality, three-story, courtyard type of houses were developed to replace the old traditional one-story courtyard houses. At the ground level, a courtyard and a bicycle storage space were provided. The courtyards were still a shared space among immediate neighbors as they were before the renewal. Since the traditional indoor and outdoor spatial relationship was preserved in the renewal project, residents were able to maintain their family lifestyle and culture that utilized the setting of courtyards as an extension of houses and homes. A roof terrace was provided on the third floor through setting back its indoor space. The terrace was to be used for pot landscape and birds cages that were part of local culture and a tradition of the city of Nanjing. Because neighboring terraces were within a talking distance and were connected through corridors, they were designed to become a place where casual talk among immediate neighbors could take place. Once again, it was a design

consideration that tried to help sustain some aspects of local cultural and social tradition.

Third, because the renewal project took an area-by-area and lane-by-lane approach, a large part of the previous layout of streets and lanes in and around the neighborhood were kept in their original forms with necessary upgrading to its infrastructure. Once again, it rejected a common approach that would have superimposed a modern grid system to the neighborhood. As a result, many residents were able to still take their familiar ways to leave their houses for work, to come home and to visit their neighbors in the renewed neighborhood.

The renewal project was financed jointly by subsidy of the municipal government of the city, payments of the residents and subsidy of the district government (a low-level government below city municipal government in Chinese government structure). The subsidy provided by the municipal and district governments was partly due to preservation consideration. It is fair to say that without the subsidy the project would perhaps never be materialized. In addition, the faculty of the Southeast University Department of Architecture and its students provided the in-kind design service that also helped financially to bring the project to reality.

The project took about two years to complete from 1992 till 1994. Research and design work took much of the first year and construction lasted during the second year of the project. It started with a household survey of each individual house in the neighborhood to obtain information about existing physical conditions of the houses and needs of their residents. The survey helped decide whether the house requires modeling or reconstruction depending on physical conditions and household needs. An area survey of streets and infrastructure was also conducted at the early stage of the project. Based on the surveys, a master plan was developed for upgrading and renovation of the street and infrastructure systems of electricity, tap water and sewage disposal. It was after all these steps that the design for preservation and renovation of each individual house in the neighborhood began. While the remodeling usually took a few months, new construction generally took about one year from design to completion.

Figure 2 presents a site/floor plan of a portion of the neighborhood after the reconstruction. Figure 3 and 4 show floor plans, sections and elevations of two types of the new courtyard houses. Figure 5 presents a view of the new construction with adjacent old houses still in the neighborhood.

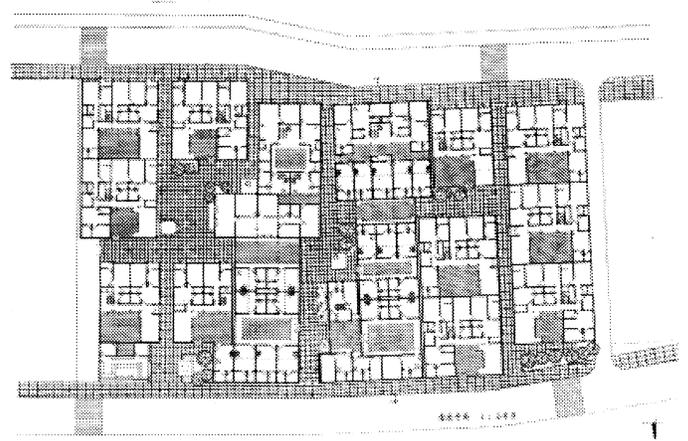


Fig. 2. Site/floor plan of part of the renewed neighborhood.

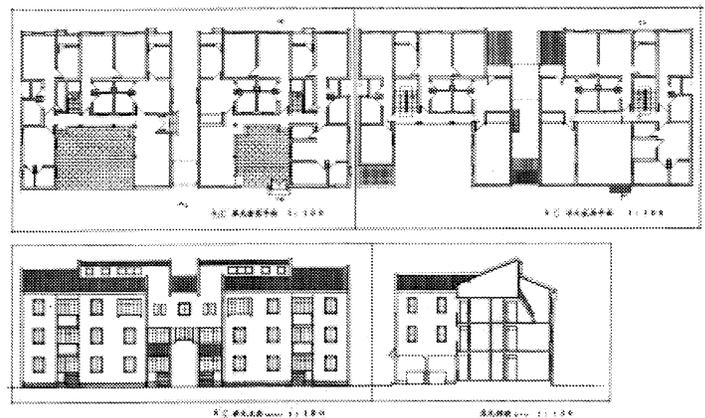


Fig. 3. Plans, section and elevation of type one new houses. (Clockwise from top left: first floor plan, second floor plan, section and elevation.)

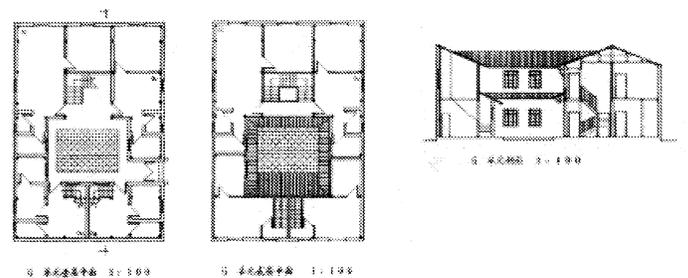


Fig. 4. Plans and sections of type two new houses. (Clockwise from left: first floor plan, second floor plan and section.)



Fig. 5. A view of the new houses amid adjacent old neighborhoods.

After the renewal project was completed, one hundred percent (100%) of its original residents opted for relocation back into the neighborhood where their families had lived for a long time. Among them, one-third (1/3) of the families were able to move back to live in their original but much improved houses. Table 1 presents a comparison of some aspects of housing conditions before and after the renewal.

Table 1 Comparison of Housing Conditions before and after the Renewal

	Population	Number of Households	Number of People/family	Size of Houses	Floor area/ House (m <sup>2</sup> )	Floor area/ Person (m <sup>2</sup> )
Before Renewal	576	120	4.8	1 bedroom	25	6.9
				2 bedroom	45	7.2
After Renewal	595	192	3.1	1 bedroom	25-28	13
				2 bedroom	32-42	12
				3 bedroom	52-55	15

As the table shows, the floor area per capita increased from 6.9 to 13 square meters for one-bedroom houses, and from 7.2 to 12 square meters for two-bedroom houses. For the new three bedroom houses, they had 15 square meters per person. The project also resulted in a slight increase in total population in the neighborhood from 576 to 595 people. The total number of households in the neighborhood also increased from 120 to 192. It should be interesting to note that the number of people per family dropped from 4.8 before the renewal project to 3.1 after the project. Apparently, some of the multi-generation families opted for multiple households when they moved back to the neighborhood. However, because the new housing was not like apartment flats that were more often than not completely separated from each other, it offered a courtyard-based residential setting in which some common space existed. Our investigation indicated that small families that were originally part of multi-generation families often live nearby so that they still share courtyard even though each has its own house now. The shared courtyard space allowed them to still feel a sense of togetherness, while maintaining individual family privacy. The subsequent survey also revealed that in general elderly residents were more satisfied with remodeled houses, while young residents were more with reconstructed new houses.

## DISCUSSION

The Gao-Gang-Li approach distinguishes itself from the most common urban renewal approach that often involves a large-scale demolition, followed by construction of new apartment flats. In this approach, no consideration is given to architectural and urban forms and characteristics of the old. It simply replaces the old with the new.

The mini-scale approach that the renewal of the Gao-Gang-Li neighborhood took was quite painstaking. What is the value of doing so? Was it only to satisfy nostalgic feelings of its original residents? The approach was based on a theoretical notion that architectural forms, space and characteristics are physical manifestations of historical, cultural, and philosophical meanings. Only when the old is physically preserved and the new physically inherits traditional principles, forms and characteristics, can cultural meanings embodied in the physical entities be better preserved. (Yan, 1996) As Vincent Scully stated, "There is no way to separate form from meaning; one can't exist without the other." (Venturi, 1977) Nor was house form only a response to climatic conditions or functional and utilitarian needs. House form is a manifestation of a culture of a family, a local neighborhood, a city and a region in which a particular house form is created and has evolved. As Rapoport concluded in his acclaimed book, *House Form and Culture*, "the house is an institution, not just a structure, created for a complex set of purposes." (Rapoport, 1969) According to him, "because building a house is a cultural phenomenon, its form and organization are greatly influenced by the cultural milieu to which it belongs." Almost from the very beginning, the house was more than just shelter for primitive man. House form never lacked cultural, social and religious meanings throughout the history of human civilization.

The Gao-Gang-Li approach also differs from a renewal approach that shares the same objective of carrying on the heritage of traditional architectural and planning principles and characteristics in new construction, though in a different way. The Ju-Er-Hu-Tong project of Beijing, China, which won the 1993 United Nation's World Habitat Award, exemplifies the approach. The Ju-Er-Hu-Tong project renewed a residential area in the inner city of Beijing that is known for its traditional courtyard houses and neighborhoods. The most unique aspect of the project is that it replaced the old courtyard houses with new quasi-courtyard houses. Articulating its context, the architect designed a few types of "quasi courtyard houses" that were three to four stories tall and significantly expanded in sizes (Wu, 1993). They are in fact "magnified" traditional courtyard houses. By doing so, it intended to preserve and carry on the architectural heritage of the old courtyard houses. Like the modernist approach, however, the project also involved a complete demolition of the old houses and neighborhoods in the area, and replaced them with new ones that may help remotely remind residents of the architectural identity and heritage of the area. While the project is a quite remarkable achievement in terms of its efforts to preserve and carry on the heritage, there are some limits. It did not help preserve urban fabrics of the old courtyard neighborhoods that were perhaps no less significant than the houses themselves. Nor was it able to escape the influence of the modern design and planning

practice. It, too, developed a few typical plans and forms that were laid out in a way that had little to do with the urban fabrics that existed there before. A lack of transitional space between the public and private space in the new courtyard houses, which was part of the old structure that facilitated some neighboring social behavior, is another limit of the approach. (Dong & Dong, 2000)

Unlike the Ju-Er-Hu-Tong project, the Gao-Gang-Li approach is more individualized, as opposed to demolishing the entire area and replacing it with a few “standardized” new courtyard types of houses. It was because of the approach that one-third (1/3) of its original families were able to live back in their “old,” but much improved houses. The approach facilitated a continuation of residents’ personal memories that were associated with old houses and homes. It helped forge a sense of continuation of the belonging and placeness of the area where their families lived for generations. It is this aspect that marked one of the significant differences between the Gao-Gang-Li and Ju-Er-Hu-Tong approaches.

The Gao-Gang-Li approach becomes more meaningful when considering a Chinese cultural phenomenon relevant to urban renewal. It is not unusual for temporarily relocated residents to move back to their old neighborhoods after renewal construction is completed in most cities in China. Part of the reasons is that inner-city areas offer advantages of proximity to city centers and various civic and municipal services and establishments, compared with new residential neighborhoods in suburbs. The Gao-Gang-Li approach certainly helped make the moving back a more desirable thing.

Using the terms of “tree” and “semi-lattice,” Christopher Alexander discussed the difference between “artificial” cities deliberately created by designers and planners and “natural” cities made by more or less spontaneous actions of citizens over many, many years. (Alexander, 1965) His discussion was made in the wake of massive post-War-World-II town and city reconstruction in many parts of the world. He went on to state that, “It is more and more widely recognized today that there is some essential ingredient missing from artificial cities.” He argued that modern design and planning concepts destroyed tangible and intangible urban fabrics of traditional cities that were the result of centuries of spontaneous actions of citizens. “When compared with ancient cities that have acquired the patina of life, our modern attempts to create cities artificially are, from a human point of view, entirely unsuccessful.” When the modernist urban renewal approach trades the richness of “natural” cities of the lattice structure for a conceptual simplicity that only benefits developers, designers, planners and administrators, the city takes one step further toward dissociation.

Alexander’s discussion, though made in the 1960s, is apparently quite relevant to common practice of urban renewal in China today in general, and to the Gao-Gang-Li project in particular. Instead of superimposing a new neighborhood of the “tree” structure to the area, the project adopted the mini-scale concept that helped preserve the tangible and intangible urban fabrics that existed there for centuries. The preserved pedestrian-friendly lanes and outdoor spaces, for instance, help facilitate the social and neighborhood life the residents were familiar with.

By virtue of the mini-scale design process, the Gao-Gang-Li project presented an urban renewal solution that facilitates an opportunity of great diversity. As Figure 2 shows, the renewed neighborhood does not have a superimposed “tree” structure. Instead, it has kept the original spatial configuration and structure. The mini-scale approach also allowed for more area or house specific designs, as opposed to a few standard layouts and forms. In doing so, it surely helped diversify layouts and forms of residences in the renewed neighborhood as illustrated in Figure 2.

The mini-scale approach, however, was quite design intensive. It required a careful house-by-house and area-by-area survey and design study. In the case of Gao-Gang-Li, because the project was carried out by academics at the Southeast University Department of Architecture in part as its community service, it was not a serious issue. For a commercial design firm, feasibility of the mini-scale approach would certainly become doubtful. But, the difficulty of the approach from a business point of view should not diminish the usefulness of the approach as an alternative.

It is not the intention of this paper to suggest that the “mini-scale” approach is better than the more common one of large-scale demolition and construction in every aspect. It has its own caveats. While it is a valid process for reconstruction of individual houses and small areas of neighborhoods, it often limits development of an overall comprehensive plan for renewal of infrastructure that penetrates houses and neighborhoods. Similarly, while preserving existing streets and alleys helps residents have a sense of continuity and tradition, the approach makes it harder upgrading the street and infrastructure systems to meet needs of contemporary society. Last, but not the least important point, is that there is a large percentage of areas in the inner cities of developing countries in which conditions are so poor that any renewal efforts without large-scale demolition becomes unfeasible. The case of Gao-Gang-Li neighborhood possesses two unique aspects that rendered the mini-scale approach a good alternative. First, it was a neighborhood of long history and manifested part of the local culture of the region. Secondly, many families affected by this renewal project had lived there for generations. There was a desire by the city authority and residents to preserve some architectural and planning characteristics of the neighborhood that they not only enjoyed, but also nostalgically liked.

## CONCLUSION

The mini-scale Gao-Gang-Li approach is in contrast to the modernist concept of city renewal often marked by large-scale demolition that completely discards every aspect of old urban fabric and building forms. The approach has a clear intent to carry on the heritage of both urban fabrics and house forms of traditional residential environment and neighborhoods.

The Gao-Gang-Li approach also presents an alternative to a common practice of architectural preservation that either literally, or symbolically, or abstractly resembles

characteristics of the tradition. It provides a way to preserve both characteristics of diverse building forms of the tradition and urban fabrics of historical areas and cities. It is the latter that makes the approach unique. The fact that one hundred percent (100%) of its original residents opted for moving back into the neighborhood speaks for the success of the approach.

The Gao-Gang-Li approach has some limits and limitations that one should not overlook. First, it is quite design intensive. It demands a careful survey of the existing and individualized design study of the new. Secondly, unless the mini-scale approach is preceded by an overall master plan for an entire area, it may result in problems in upgrading infrastructure and circulation system for the area as a whole. The mini-scale approach can become disastrous if it is not executed within an overall plan. The last, but not least, important issue is that in taking the approach one should never overlook the fact that the social and cultural context in which architecture takes shapes and forms is itself never a constant. It, too, changes with time. Any attempt to preserve and carry on architectural heritage has to acknowledge the fact that changing culture demands changes in architecture and city forms. Otherwise, it could suffocate the growth of culture that is no less important for architects, planners and policy makers than preservations.

## REFERENCES

- Alexander, C., "A City Is Not a Tree", *Architectural Forum* 122: 1 & 2 (1965).
- Dale, O. J., *Urban Planning in Singapore: the Transformation of a City*. New York: Oxford University Press, 1999.
- Dong, H. and S. Dong, "An Investigation about Usage Evaluation of Ju'er Hutong", in *Towards Human Environment: the Proceedings of the First International Symposium for Environment-Behavior Research*. Nanjing, China, 2000.
- Rapoport, A., *House Form and Culture*. New Jersey: Prentice-Hall, Inc., 1969.
- Scully V. "Introduction", in Robert Venturi, *Complexity and Contradiction in Architecture*, 2<sup>nd</sup> ed. New York: the Museum of Modern Art, 1977, p.11.
- Taylor, J. and D. Williams, *Urban Planning Practice in Developing Countries*. New York: Oxford University Press, 1982.
- Wu, L. Y. "Protection, Development and Creation of the New Building in the Sector of Historical Area", *Journal of Architecture* 2 (October, 1993).
- Yan, X. W. "Carrying Forward Heritage: A Review of Contextualism in New Construction in Beijing", *Journal of Architectural Education* 50:2, (1996).
- Zhong, D. and X. Cheng. "Continuity and Development of Neighborhood Structure in Urban Renewal: A Case Study for Gaogangli Neighborhood in Historical Area in Nanjing", in *Towards Human Environment: the Proceedings of the First International Symposium for Environment-Behavior Research*. Nanjing, China, 2000.