



The *hutong* urban development model compared with contemporary suburban development in Beijing



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ABSTRACT

This paper assesses the traditional *hutong* street system and *siheyuan* courtyard house as an urban development model in contemporary Beijing by comparing it with the practiced alternative. Official government standards are used as criteria for measuring the performance of the urban form types. Criteria derived from government documents emphasise the efficiency and low-carbon emission of the transportation system and efficiency in land use, via higher densities. Minimum site areas devoted to green space are also specified. We compared the use of land resources in a sample of 9 *hutong* areas with those of a sample of 22 newly built communities. We collected traffic data and interviewed residents in these areas. We also examined transportation as a user of urban land, as well as the implications for land resources if the 2002 conservation plan is fully implemented. It was found that the *hutong* development models underperform with regard to building density depending on form type, but achieve much higher population densities than suburban housing. Motor traffic infrastructure in contemporary development takes up 3 times as much of the development area as the *hutong* do in their development area. The *hutong* outperform the rest of the urban fabric with regard to sustainable transport with 0.17 of the car mode proportion for all of Beijing. There is heavy dependency on three-wheeled vehicles for goods transport and high levels of walking. Moving the remaining population of the *hutong* as planned would require about 1800 ha of new residential land more than 30 km from the city centre.

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1. Introduction

The dominant discourse in Beijing regarding the *hutong* as living habitat is that this urban form is outdated and inefficient. Official Beijing municipal policy favours the conservation of 17% of the existing urban area occupied by *hutong*, and for the rest, following existing practices, demolition, land adjustment and leasehold sale to developers. Although immune from real estate pressures, building conservation and environmental enhancement have attracted commercial investors to the designated conservation areas, intent on the burgeoning leisure and entertainment market. Nanluoguxiang, one of the 25 designated areas, is entirely commercialised with pedestrian flow volumes exceeding 5000 persons per hour. In this vision of the future, the *hutong* is no longer a living habitat. While development pressures are enormous on the

centrally located *hutong* territory, public discourse tends to focus on the poor state of public infrastructure and the sub-standard living conditions of the inhabitants.

The *hutong* are Beijing's traditional streets, planned in the Yuan dynasty (1271–1368 CE) and laid out in an orthogonal grid between the city's gates. A strict three-level hierarchy included the dominant east-west streets, varying in width from 3 to 5 m, with north-south streets 18 m wide at 500–700 m intervals, and wider east-west streets generally 40 m in width, placed between swathes of several *hutong*. These urban practices were maintained and elaborated during the Ming dynasty (1368–1644 CE), remaining virtually intact until the Communist era from 1949. The *siheyuan* refer to the courtyard buildings that made up the urban fabric between the *hutong*. A gate at the street led indirectly to a large, square open space around which were organized a series of buildings of various dimensions and assigned functions. Interspersed in this uniform urban fabric were temple complexes, large residences of court officials and administrative buildings. The *hutong* term itself, today referring to the whole of the built fabric,

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has murky origins, some claiming that it referred to the Mongolian term for water wells, *hottog* (Zhang, 1984) while others contend it is a Han Chinese term for the street itself (Wang, 2008).

About three-quarters of the *hutong* that blanketed Beijing in 1949 have been demolished to make way for contemporary building forms and wider streets. Nevertheless, there remain large swathes of *hutong* surrounding the Forbidden City and south of Chang'an Boulevard, comprising about 27 km². The *siheyuan* building type allied with the gridded form of the streets constitutes an urban built form system, just as new developments constitute the practiced alternative. They can be compared using as criteria Beijing's own stated objectives for urban development.

In the rapid build-up of Beijing, land use efficiency is an important criterion in how planning projects are assessed. New regulations for urban development for the whole country emphasise intensive use (Ministry of Land Resources, 2014), with Beijing aiming at 2.0 net floor-area-ratio (FAR) in redeveloped central areas. The *hutong* is said to under-use such centrally located urban land. It is also frequently claimed that *hutong* layout does not accommodate modern transport needs and so reduces the accessibility of much of this urban fabric. Others have decried the loss of historic integrity of ancient Beijing and the urban life that they believe depended upon it. With new environments now housing the majority of the population, it is possible to compare the traditional and contemporary models, using real cases.

1.1. Aims of the paper

The present article represents an attempt to evaluate the *hutong* form objectively according to the prevailing criteria advanced by local government, following Sorkin's (2008) suggestion that the *hutong* is a model for contemporary urban development. The clear and present alternative is the Beijing development model in extensions to the city over the past ten years.

The measures are the following.

- 1 Efficient use of land is a priority (Beijing Municipal Commission of Development and Reform, 2011). All else being equal, high plot ratio is preferred. We compare *hutong* densities and land requirements for infrastructure with the comparable measures for contemporary urban forms practiced by the government in contemporary Beijing. We also compare residential densities in traditional areas with those in suburban areas.
- 2 New development should favour non-motorised and public transport. We compare modal splits in the two development types and consider the externalities of the locally generated traffic.

1.2. Methods

In this particular analysis, we propose quantitative measures to evaluate the *hutong* model. Firstly, land use intensity is compared with that of contemporary, planned development in Beijing, using density and land use measures. A sample of 22 large residential communities built within the last seven years were selected from the 3 major extension areas of Beijing beyond the Fifth Ring Road, Huilongguan to the north, Daxing to the east, and Tongzhou to the south. Such developments are now very rare in the already built-up area inside the Fifth Ring Road. The larger population of such communities developed in that timeframe was ranked by average housing unit price since it was reasoned that the major characteristics of such housing—density, road provisions and layout—would relate closely to price. Communities were then randomly selected from three price ranks. Land area, road area and built form density

(FAR) were all measured using Google Earth, a Geographical Information System and site verification. A sample of 9 *hutong* areas was selected inside the Second Ring Road. Although this convenience sample was derived from a database of *hutong* areas in central-west Beijing, it will be seen later that layout and density characteristics vary little. Measurements were taken using the same methods as for the contemporary developments.

A detailed traffic and transportation study was conducted in nine *hutong* areas in central-west Beijing, which is typical of the 27 km² of *hutong* area of Beijing. A larger study of this area was conducted, including a semi-structured questionnaire with 361 participants, observation studies of traffic and a detailed study of non-motorised modes. The present study reports mainly on the traffic volumes and modal split. Traffic volume was measured by having observers walk the streets repeatedly every 2 h for 3 days, counting every person and vehicle encountered. Two trained interviewers conducted the questionnaire, referred to later in the paper. The transport results were then compared with figures for Beijing as a whole, available from the Beijing Transport Research Center.

In this way, we intend to contribute to objective analysis of urban development alternatives in the context of urban renewal, specifically treating the traditional fabric as an alternative development form.

1.3. Literature on the *hutong* and *siheyuan*

A brief review of the literature on the *hutong* is merited here to better situate the present evaluation effort. Firstly, much has been written on the architectural and urban historical values of the traditional urban fabric of Beijing, particularly in a time of rapid and continuing loss. Secondly, the social consequences of rehabilitation and re-investment in the remaining building stock have become the focus of recent investigations. Thirdly, debate continues inside China on the suitability of the *hutong* as urban habitat in the contemporary city.

The distinguished architectural researcher, Liang Sichen, advocated the conservation of the entire central city of Beijing within the fortification walls, a view rejected by Chairman Mao Zedong, who was more interested in Stalinist modernism as a model for the Chinese city (Wang, 2002). Little Stalinist city-building could be carried out for lack of resources, perpetuating the unprecedented century-long disinvestment in the *hutong*. To many, the existing *hutong* appeared irretrievable. Some scholars have argued that the rejection of traditions and historical artifact during the Cultural Revolution persisted into the Reform and Opening Up period. The headlong pursuit of modernity that emerged from the Cultural Revolution (Wang, 2003) included a clean sweep of vast urban areas thought to be obsolete and decrepit. That urban renewal effort involved a rejection of the traditional organisation of local life in the dense, gridded network of streets and low buildings that characterise the *hutong* fabric. The Old and Dilapidated Housing Redevelopment Programme (1990) set Beijing on a course of comprehensive redevelopment (Lü, 1997). However, official alarm at the prospect of complete loss of traditional urban fabric in Beijing, already reduced to half in the first fifty years of the People's Republic (Fu, 2010), led to the Beijing municipal plan to conserve 17% of the 2002 *hutong* urban fabric.

The remaining traditional built form of Beijing continues to provoke informal debate but the dominant view favours major transformation or replacement. Some hold that the urban fabric should be restructured to more easily accommodate motor vehicle traffic (Zhang, 2008). It is also argued that the *hutong* remain too densely occupied, even though densities fell over the 2000–2010 decade (Zhao, 2010). The existing traditional fabric fails to provide

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