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Change and continuity: A morphological investigation of the creation of gated communities in post-reform Beijing

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Abstract

Alongside the socio-economic restructuring from a central planning system to a free market system, Beijing is being transformed into a “gated city of tomorrow” by building massive gated communities as a new form of private neighborhood planning and design. Although certain scholarly attentions have been received through the international debate over gated communities, there is a lack of systematic research on how these private urban landscapes are actually created at the micro-level and how their creation is related with historical development and social process. Therefore, this paper aims to contribute to an understanding of the origin and nature of the creation of gated communities in the setting of Beijing through a careful morphological investigation. More exactly, a set of private gated community schemes and a set of public produced neighborhood schemes of the early socialist period will be cross compared according to the major neighborhood morphological components in order to reveal the differences and similarities in their morphology, or in another sense the change and continuity in their planning and design. Meanwhile, the ideas and logics underpinning the changes will be accounted. Finally, design origins and the links between the morphological changes and the broad social process will be discussed in light of the research findings.

1. Introduction

Since early 1990s, China has undergone a dramatic socio-economy restructuring from a socialist planned economy to a socialist market economy, which has changed the way of urban development and management through the ‘privatization of the city’ legitimated through the public and private partnership. As the results, the use right of previous state-owned urban land was transferred into the land market; developers and property management companies have taken over the main responsibility for providing neighborhood facility, infrastructure and service previously under the charge of the local government and the “work-units” or state enterprises; and since 1992 the market reform of the housing sector from a socialist welfare system into a market-provision system has stimulated the boom of real estate industry and produced massive commodity housing developments.

Commonly, these new commodity housing developments were produced with guarded gates, fences and certain facilities, and are often advertised as ‘communities’ in market rhetoric which response to the ethos of ‘community building’ initiated by government. Therefore they can be seen as the Chinese version of ‘gated communities’ which are originated in the USA as a form of private neighborhood and

now a global phenomenon. [1] In a political economy sense, a gated community can be seen as a kind of residential “proprietary community” which defines a “club realm” that “give[s] legal protection to the economic rights over shared neighborhood attributes”. [2]

In Beijing, unlike the separated archipelagos of fortified enclaves in the US, gated commodity housing developments are the basic components or units of the newly master planned residential districts. The agglomeration of these gated residential developments is shaping Beijing into a ‘gated city of tomorrow’ proposed by Webster [3], which is “made up entirely of privately supplied communal space and local infrastructure – a patchwork of spatial club realms to match the patchwork of non-spatial club realms that have always characterized cities”.

The rise of gated communities is often seen as a controversial alternative to conventional patterns of urban development, and has been received extensive debate from different perspectives. However, the current debate has mainly concentrated on the abstract social discourses with few on the overall morphology and design at the micro neighborhood level and its links with the historical development and the broad social process. In considering this deficiency, the specific setting of Beijing, and the important role of planning and design in shaping the new cityscape and the patterns of everyday life, this paper aims to contribute to an understanding of the origin and nature of the creation of gated communities in post-reform Beijing through a careful morphological investigation of the designs of a set of new gated community cases (hereafter GC cases) against the designs of a set of non-gated public produced neighborhood cases of early socialist period (1949-1992) as baseline or benchmark cases. The specific question is: how and in what way is the morphology of the new private gated communities similar to or different from the morphology of the old public produced neighborhoods?

The locations and general plans of all the cases are given in **Figures 1** and **2**. For the nine GC cases, they are all located along the green belt of the inner suburb, and they were created by nine different developers and nine different design teams after 1998 (the end year of the old welfare housing system) and sold on the market in or since 2003 for the upper-middle and middle income families. In a general sense, these cases represent a new type of gated living at the urban edge for the rising ‘middle class’ in post-housing reform Beijing. Furthermore, the cases selected are all piecemeal developments within one leased tract or ‘urban cell’, which has a site area at least above 9 hectares.

In respect of the set of old public produced non-gated neighborhood cases, they are usually called “Xiao Qu” or “small districts” (hereafter SDs) in literal translation, which has an origin in the Soviet idea: ‘micro-rayon’ or ‘micro district’, which in essence similar to the idea of ‘neighborhood unit’. [4] According to the major urban building cycle and socio-economy changes, these SD cases can be further divided

into two sub-sets. One sub-set represents the early small district planning experiments in Maoist period (1949-1978) of a socialist planned economy which emphasizes on production and constrains consumption, and a communist ideology which values an equalitarian society and communal living. These pre-1978 SD developments were

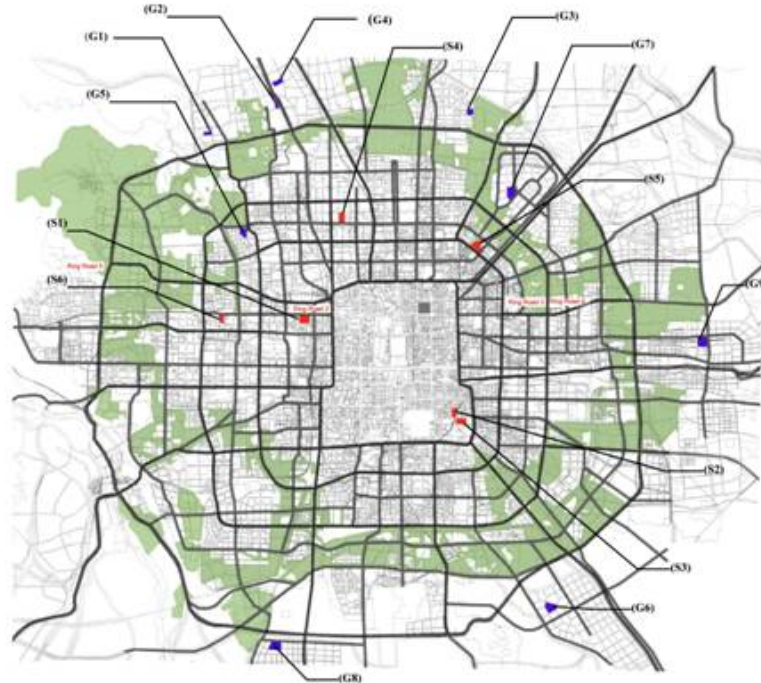


Figure 1 Beijing city map and scheme location (red areas= small district cases; blue areas= gated community cases).

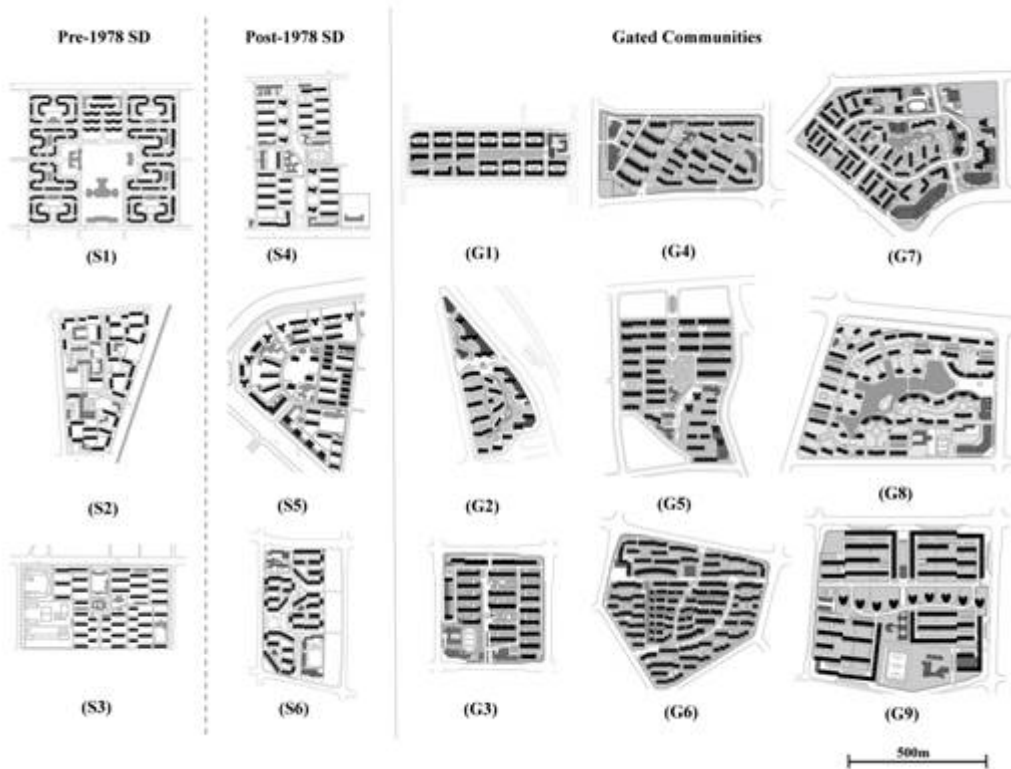


Figure 2 General plans presented at the same scale.

usually built together with workplaces and were developed by several work-units for their own needs. The second sub-set represents the further experiments after economic reform in 1978 and before the start of the housing reform in 1992. During this period, modernization became the priority of the socio-economic and cultural development. Meanwhile, with the government intervention, the project-specific planning of pre-1978 SD developments was replaced by comprehensive development carried out through more powerful city authority.

In the following five sections, the findings of the comparative morphological analyses based on the careful visual inspection of the figure-ground cartographic representations and the basic qualitative and quantitative examinations will be presented in respect of the major analytic elements or components of neighborhood form, i.e. size, density, boundary, residential buildings, facilities, street system and open space. Meanwhile, the ideas and logics behind the changes and continuities in design demonstrated by the findings will be accounted. In the final section, the origins of the new gated community designs and the links between the morphological changes and the broad social process will be discussed.

2. Size and density

According to the Code of Urban Residential Areas Planning and Design in China, which was first proposed in 1993 based on the earlier experience of SD planning and design, there are three levels of residential developments which were defined based on facility-catchment population. The first level is called 'residential district', which accommodates a population between 30,000 and 50,000 which is similar to the population of a Howard's garden city; the second level is called 'small district', which accommodates a school catchment-population between 7000 and 15,000 which is similar to the population of a neighborhood unit suggested by Perry; the third level is called 'cluster' which accommodates a population between 1000 and 3000 corresponding to the population-catchment of a residential committee.

With respect to this planning guidance, the majority of the SD cases can accommodate a population at the small district level; while for GC cases, the majority of them cannot accommodate a population at the small district level, and in one case it can only accommodate a population at the cluster level. In another sense, GC cases tend to not accommodate a school catchment population.

The drop in population size is linked to population density (i.e. persons per hectare or PPH). The comparison of average values shows a trend of an increase in population density from pre-1978 SD (498 PPH) to post-1978 SD cases (733 PPH), followed by a trend of a sharp drop in GC cases (324 PPH), which is similar to the value of an apartment unit proposed by Perry (326 PPH) and below the value of a typical London urban district (400 PPH).

Next in respect of another kind of density – Floor Area Ratio (FAR), it is a gross one which counts the floor areas of both residential buildings and non-residential buildings. The average value comparison shows a continuing increase of FAR from pre-1978 SD cases (0.71) to GC cases (1.57) through the leap in post-1978 SD (1.443). Further it is worth considering the slight continuing increase in FAR from post-1978 SD cases to GC cases with respect to the parallel trend of a sharp drop in population density. Two physical factors which contribute to this countermove between these two kinds of densities can be suggested: 1) the increasing living area for each dwelling unit coupled with shrinking household size; 2) the increasing floor areas for commercial facilities. Moreover, besides these physical factors, there exists an incentive of real estate developers to pursuit more profit by increasing FAR.

3. Boundaries

Commonly, the boundaries of all the GC cases and SD cases are defined by a hierarchical city thoroughfare network, which is like a deformed tartan grid. Therefore, the neighborhood unit principle of boundary definition by arterial roads was implemented in both SD cases and GC cases. However, the surrounding arterial roads in GC cases tend to be designed with more sufficient width on all sides. Meanwhile, in half of the SD cases, the boundaries were partially defined by the combination of boundary arterial roads and municipal green areas. While municipal green areas are also provided in three out of nine GC cases, it seems that there is a tendency to decrease the provision.



Figure 3 (a-j) Boundary frontage forms.

Having examined the boundary delimitation, the following will look at how the boundary frontage as the physical interface between the city and the neighborhood was shaped. First, in two pre-1978 SD cases which were designed under the Soviet influence in early 1950s (i.e. S1, S2), their boundary frontages were mainly shaped by outward facing residential building frontages (**Fig. 3a**) in combination with a small proportion of institutional office building frontages. However, this kind of frontage

was not survived in the following post-Soviet influence SD cases. In pre-1978 case S3 which was designed as a people's commune, its boundary frontage was transformed into an inactive one (**Fig. 3b**), which was formed by brick walls, the back and side of residential buildings, neighborhood entry demarcation and gates of institutional office and industry building compounds. In the following post-1978 SD cases, residential building back and side were still the major form of their boundary frontages, and the similar neighborhood entry demarcation continued to exist (**Fig. 3c**); while brick walls were transformed into simple wrought iron fences (**Fig. 3d**), and the gates of non-residential building compounds can not be found in any case. Meanwhile, accompanied by the economic reform, active commercial frontage recurred in all post-1978 cases after its absence in all pre-1978 cases (**Fig. 3e**).

For GC cases, the most obvious change is the transformation of the neighborhood entry demarcations into the guarded gates. Commonly, there is a guarded main entry gate formed by a gate house and other symbolic constructions (**Fig. 3f**), while the rest of the neighborhood entries are usually smaller in size as secondary entries, which, in some cases, are more like checkpoints controlled by simple vehicle barriers and gate-posts (**Fig. 3g**). In fact, the distinction between main and secondary neighborhood entry in terms of their sizes is also present in all post-Soviet influence SD cases.

In respect of the residential building back and side, they are not appeared in any GC case. Instead, residential buildings stand behind the wrought iron fence which are more varied in form and style and even installed with CCTV or infrared boundary detectors (**Fig. 3h**). Meanwhile, it is noteworthy that, in some cases, few residential buildings along the boundary are outward facing (**Fig. 3i**).

In respect of the commercial frontage, although it is present in the majority of the GC cases (**Fig. 3j**), it could be absent in certain cases which therefore have the similar inactive frontage of a people's commune. Finally, it is worth noting a new element of boundary frontage presented in two GC cases: an underground parking entrance which is open directly onto the surrounding boundary roads.

4. Residential buildings

In SD cases, in addition to the major private family housing, a small amount of social rental housing were provided at the periphery in the cases of the Soviet influence as 'bachelor halls' which were provided for single young people who worked in adjacent workplaces and in post-1978 SD case as 'youth apartment buildings' which were provided for the special housing need of young people. In GC cases, the old social rental housing forms have been replaced by a private rental housing form: 'condominiums', which are provided with more complete facilities and services, and their market target is not only on young people, but also on wider social spectrum, such as city migrants and commercial travelers.

In considering the architectural style of family housing, in SD cases, the traces of modern industrial design are obvious (**Fig. 4a**); while by imposing the Chinese traditional architectural elements, they become less obvious especially in the Soviet influence cases (**Fig. 4b**). For GC cases, the traces of both the monotonous modern industrial design and the decorative Chinese traditional elements can not be identified any more. Instead, their styles become much more varied even exotic, such as the European contemporary architectural style directly transplanted by European architects (**Fig. 4c**), the faked European classical architectural style (**Fig. 4d**), North American contemporary design and Mediterranean traditional style transplanted by North American architects (**Fig. 4e&f**), and the styles which can be identified in the housing design in Hong Kong, Taiwan or Singapore (**Fig. 4g**). Moreover, not just the overall variation, two different styles can coexist in the same development, such as Mediterranean tradition versus North American contemporary. To some extent, the creation of style differentiation can be seen as a means of increasing the marketability of the new phases of their developments or the whole development by creating distinctive images.



Figure 4 (a-j) Residential building forms.

Further, looking at the built form of family housing, multi-family apartment buildings with varied heights and shapes are the dominant form in both GC cases and SD cases. Meanwhile, a small proportion of single-family houses were built in one SD case of the Soviet influence in the form of row houses (Fig. 4h), and in one GC case in the form of row houses and detached houses (Fig. 4i) and a quasi single-family housing form in two GC cases (Fig. 4j), which basically is a four storey building structure with one two-storey maisonette over another one on the ground, which has its own accesses from outside. However, in SD case, single family houses were built as high standard welfare-housing for cadres who had high official positions within the work units; while in the GC case, they were built as high quality residence for who can afford them.

On closer examination of the built form of the multi-family apartment buildings, pre-1978 SD cases all take a mono-form: only low-rise apartment buildings (3 storeys) in the cases of Soviet influence, and only multi-storey apartment buildings (4-6 storeys) in the case of people's commune. For post-1978 SD cases, despite the continuing presence of the mono-form of multi-storey apartment buildings, the overall form tends to be diversified by mixing low-rise, middle-rise (8-16 storeys) and high-rise apartment buildings (18 storeys and over) with multi-storey ones.

In considering GC cases, first, the low-rise forms are not adopted. Second, the mono-form of multi-storey apartment buildings remains only in one case; while, there exists a new mono-form of middle-rise apartment buildings. Third, in the cases of a mixture of different types, the proportion of the mid-rise type tends to become the highest one not the lowest one, while the proportion of multi-storey type tends to become the lowest one not the highest one. Overall, in GC cases, the middle-rise form tends to become more favored than both high-rise and multi-storey forms.

Furthermore, in respect of the quality of the multi-family apartment buildings, some architectural means were used to raise the standard of apartment buildings in GC cases. The first one is to provide ground floor entry hall for each apartment unit; the second one is to equip the multi-storey apartment buildings with lifts; the third one is to reduce the number of dwelling units connected to lifts in middle-rise and high-rise apartment buildings; and the fourth one is to provide larger dwelling units or loft living.

On the whole, by using the distinction between single-family houses and multi-family apartment buildings, and the specific architectural means, a quality differentiation of family housing can be produced in the same development; and commonly the family housing of a higher quality are deployed in a central landscaped low density zone. The logic behind this commonality can be suggested as follows: 1) quality differentiation can broaden the scope of customers; 2) by bring customers of higher socio-economic status, the reputation of the developments can be raised and therefore the added value can be generated in the long run; 3) by building relatively higher quality housing close to the central natural amenities, there values will be further increased; 4) by concentrating the housing of different quality in a separated zone, the stage development and the provision of management or service at different level will be feasible.

Finally, looking at the layout form of residential buildings, an outward courtyard-type or street-block type arrangement is clearly present in SD cases of the Soviet influence. In the following case of people's commune, an overall linear row-type arrangement was generated due to the modernist functional considerations, such as light and ventilation. The linear row-type arrangement and the courtyard-type arrangement are continually present in post-1978 SD cases; however an new loose scatter form of

arrangement was generated in respect of the idea of ‘towers in a park’ [5], and the outward courtyard-type arrangement was transformed into inward looking courtyard-type arrangement or ‘clusters within clusters’ in respect of the principle of ‘defensible space’ [6]. In GC cases, the inward looking courtyard-type arrangement, the linear row-type arrangement, and the loose scatter type of arrangement are all present to a similar degree. However, the courtyard-type arrangement tends to take simpler forms, and in the cases of a loose scatter type of arrangement, the idea of the ‘towers in a park’ can be transformed into the idea of the ‘houses in a park’.

5. Facilities

Alongside residential buildings, five major facilities can be identified in both SD cases and GC cases: 1) community centre; 2) commercial facility; 3) neighborhood shop; 4) kindergarten 5) and primary school.

First, a community centre is usually called “club house” in GC cases and is the most present facility in comparison with other facilities (eight out of nine cases). Functionally, it provides spaces for meeting and recreation, such as meeting rooms, a gym and an indoor swimming pool. For the pre-1978 SD cases of the Soviet influence, the equivalence is called “dining hall”, which provides a space for welfare catering service and a large indoor multifunctional space for other social activities. For the Post-Soviet influence SD cases, the equivalence is called “youth activity station”, which provides indoor recreation facilities especially for young people. In SD cases, the equivalent community centers belong to the semi-public realm; while in GC cases, the community centers were all initially designed as a club realm facility behind the gates and fences. However, in reality, a clubhouse could be converted into the public realm since the exclusive use might not be economically viable. In respect of the position of the community centers, besides the middle position (between the periphery and the geometric centers of the sites) without direct visual link from boundary roads in all pre-1978 SD cases, the near periphery position without direct visual link from boundary roads and the near centre position with direct visual link from boundary roads in post-1978 SD cases, a new periphery position is present in half of the GC cases. More exactly, their clubhouses are commonly adjacent to neighborhood entries and visible from the boundary roads through the fences.

Second, in considering the commercial facility of the public realm, it was not provided in all pre-1978 SD cases due to the communist ideology and policy which valued production and constrained consumption; while it was provided in all post-1978 cases. In GC cases, although it was provided in seven out of nine cases, it may not be necessarily provided. Due to the periphery position of commercial facilities, in both post-1978 SD cases and GC cases, the boundary roads with the commercial frontages were shaped like shopping streets. In respect of the built form of commercial facilities, in post-1978 cases, the residential building annex is the most present form, the ground floor shop is the second one, and the separated commercial

building is the least; while in GC cases, the ground floor shop becomes the least presented form, the residential building annexes and the separated commercial buildings, which have much larger scale and more mixed functions, tend to become the equally most presented forms.

Third, in respect of neighborhood shops, they were provided in most SD cases as semi-public realm facilities; while in GC cases, they were provided in two third of the cases as club-realm facilities. In considering the forms and positions, the similar ground floor form and near entry position adopted in post-1978 SD cases were continually adopted in most GC cases; however the self-standing buildings situated near the centre in pre-1978 cases, which is not consistent with the neighborhood unit principle, and building annex form presented in both pre-1978 and post-1978 SD cases can not survive in GC cases.

Fourth, a kindergarten as a semi-public realm facility was provided in all SD cases, however it may not be provided in two GC cases, or not built in the real site in one case. Meanwhile, although in most GC cases a kindergarten is a club realm facility behind the gates, it could be transformed into a public realm facility with its compound entry opening directly onto the surrounding arterial roads. In respect of the forms and positions, the pre-1978 SD cases of the Soviet influence are common in having more than one kindergarten deployed separately near periphery in accordance with the sub-blocks divided by the neighborhood through roads. In post-Soviet influence SD cases, usually one kindergarten compound was provided near the centre with a direct visual link from the boundary road. In all the GC cases, one kindergarten compound was provided. In three out of seven cases, the compounds are also located in a near centre position but with a deeper and less direct visual link from the boundary road; while in another three GC cases, their kindergarten compounds are located exactly at the periphery.

Fifth, a primary school as semi-public facility was provided in all SD cases, while it was only provided in five out nine GC cases. In respect of their positions, only in the first case of the Soviet influence is the primary school located near the centre of its site, which is consistent with the neighborhood unit principle; for the rest of the SD cases and all the GC cases, primary school compounds were commonly located at the periphery. However, in respect of the sphere of service, the primary schools in SD cases are semi-public facilities which are accessed through the internal neighborhood roads; while for GC cases, their primary schools are treated as either club realm facilities set behind the gates or public realm facilities with direct accesses from the surrounding arterial roads. In general, in GC cases, a primary school tends to be not provided, and tends to be treated more as a public realm facility. One reason behind this trend is the insufficient population size for supporting a primary school; the other one is that, accompanying the increasing choice and mobility, today a primary school with a good reputation seems to be more important than that a school can be reached by walking safely; and one more explanation is that provision of a primary school is

not profitable and is difficult in its operation.

Finally, in addition to the five major facilities examined above, it is worth noting that in all pre-1978 SD cases, institutional office buildings were provided within the sites, while they can not be found in post-1978 SD cases, which indicates the separation between living and work after the launch of economic reform in 1978. However, in third of the GC cases, office space has been provided within the mid-rise or high-rise commercial complexes as the leased workplaces for commercial organizations.

6. Street systems and open spaces

In respect of the overall pattern of the street system (**Fig. 5**), GC cases are characterized by a miniaturization of the local grid, and are more complex and contain less order in comparison with SD cases which have much coarser patterns. Meanwhile, a clear road hierarchy of the internal street system commonly identified in SD cases seems to be disrupted by the mosaic-like enlarged pedestrian areas and the curving pedestrian paths. Yet, another marked change in GC cases is the unanimous provision of parking spaces either uncovered surface parking or underground parking spaces. Looking more carefully, in three GC cases, the dominant form of parking is underground parking, while a few temporary surface parking spaces were provided for visitors or guests. For the rest of the GC cases, it is a combination of underground and surface parking, and the surface parking spaces are usually deployed along the internal vehicular roads or in the form of concentrated parking plazas. In general, the dramatic increase in providing parking spaces is a response to the rising numbers of private car ownership, which can be indicated by the average parking coefficient at 1.021, which means each household is supposed to have at least one car.

In respect of the arrangement of vehicle access, a new logic of the vehicle access at the periphery is adopted in GC cases in addition to the internal vehicle access predominantly adopted in all SD cases. The result of this new logic is the creation of the periphery vehicle circulation or collector road along the boundary just behind the fences and the pedestrianized zones or blocks by separating the traffic from pedestrians. To some extent, this new logic is kin to the logic of the 'super-blocks' of the prototypical American suburban new town Radburn designed in 1920s, [7] which are characterized with cul-de-sac vehicle accesses from the surrounding arterial roads and with parks in the central area connected with the houses by a pedestrian network.

In addition to the means of the periphery vehicle access, there are two other ways to constrain vehicle access in GC cases. The first one which has been implemented in post-1978 SD cases is simply to reduce the number of neighborhood vehicle access points. In most GC cases, one side of the boundary is usually punctuated only by one vehicle entry in the middle, although it could be two, and in two third of the cases, they all have at least one side of their boundaries without any vehicle access points.

In contrast, in pre-1978 SD cases, one side the boundaries can be even punctuated by four or more vehicle access points. The second way to constrain vehicle access is traffic diversion achieved by using non-cross intersections (i.e. T, L or Y intersection) and curving or diagonal roads. These techniques can be identified in all GC cases and SD cases as well. However, it is notable that the first turns of the neighborhood access roads in SD cases generally happen at a deeper position (probably near the geometric centre) than in GC cases.

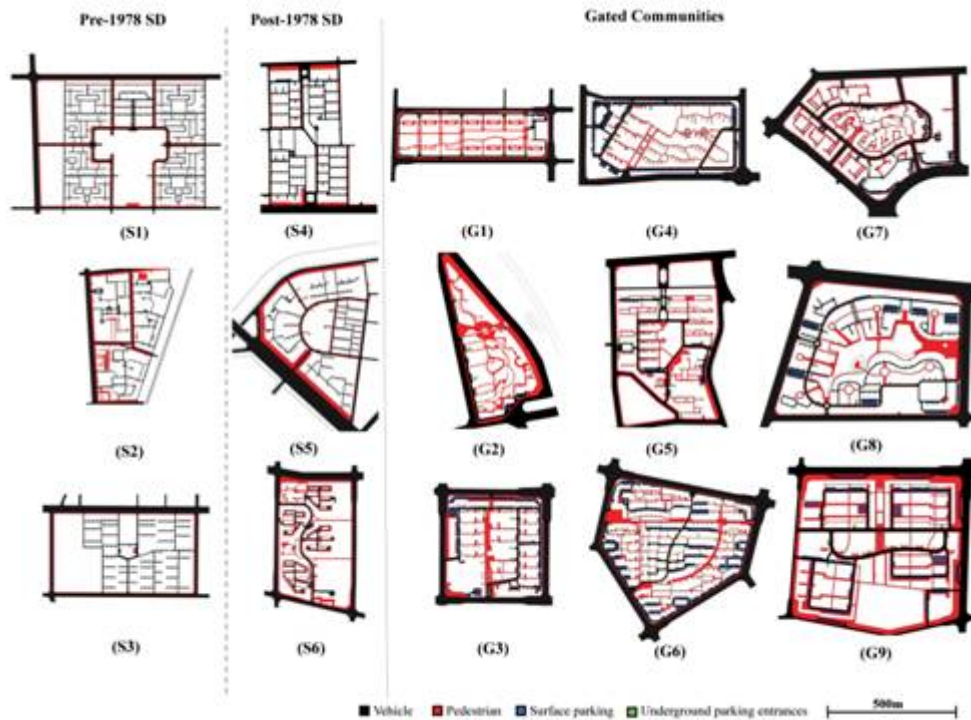


Figure 5 Street system maps presented at the same scale.

Besides the functional ideas underpinning the arrangement of the street system, it is worth noting the formal design or Baroque elements imposed on plans – ‘visual axes’. In six GC cases, there exists a long visual axis, which cannot be found in any SD cases, cutting through the site and linking two opposite neighborhood entries. Another kind of visual axis is the visual penetration started from a neighborhood entry and terminated somewhere inside. This kind of visual axis can be identified in both GC cases and SD cases. However, in GC cases, it is usually terminated softly into the landscaped areas (such as central park or artificial lake) not at communal buildings as in SD cases.

Having examined the street system as a network of continuous linear open spaces, what follows will further look at the other two types of open spaces: paved plazas and open green spaces. So far as the plazas are concerned, in pre-1978 SD cases, a few small plazas in front of the communal buildings can be identified; while in post-1978 SD cases, due to the provision of commercial facilities, the elongated shopping plazas

along the arterial roads were provided. In GC cases, a similar kind of elongated shopping plaza can also be found, however there exist a new form of corner shopping plaza. In addition to shopping plazas, two new kinds of plazas are present in GC cases: 1) neighborhood entry plaza, which are provided behind the gates; 2) 'community plazas', which are mostly situated near the centre of the sites in connection with their clubhouses.

Finally, in respect of the open green spaces, they can be generally classified into two kinds: parks and small open greens, which were provided in both SD cases and GC cases. However, the parks in GC cases tend to be large, linear in form, extensive in covering, and tend to be dissociated from buildings as separate islands defined by pedestrian routes, and not necessarily deployed in a central position. In considering small open green spaces, they tend to be more sufficiently provided in GC cases, and the popularity of courtyard-like small open green spaces tends to be increased in GC cases.

7. Discussion

As demonstrated by the morphological analyses in previous sections, new GC planning and design is not revolutionary. In other words, the imprints of the old SD planning and design are identifiable. However, at the same time, new trends or features of change are also evident to different degrees. In general, it is a mixed picture of change and continuity.

In respect of the origins of the new GC planning and design, first, an important legacy of the Soviet design influence is the implementation of the principles of the planning paradigm 'neighborhood unit' originated in the US, while the outward facing street-block arrangement and the provision of multiple children's caring facilities were not survived in both post-Soviet influence SD cases and GC cases. In comparison, the neighborhood unit principles of the size of a school catchment population and the central position of institutional buildings were much less rigidly implemented in GC cases; while the principles of the boundary definition, the provision of open recreation spaces, the position of shopping facilities and the arrangement of the internal street layout were more rigidly implemented in GC cases. Overall, the imprints of neighborhood unit principles in GC cases tend to be even more evident.

Second, GC planning and design has its origin in modernist architectural paradigm, which is especially evident in post-Soviet influence SD cases. However, the implementation of modernist's design principles of "enclosure, hierarchy, and repetition" tends to be attenuated in GC cases. This is shown in the tendency to create a simpler form of courtyard-type residential building arrangement and to disrupt internal road hierarchy. Meanwhile, the 'towers in a park' model implemented in post-1978 SD case tends to be less favored in GC cases.

Third, new GC planning and design also has origins in design ideas which are new to SD planning and design. One is the idea of Radburn super block; the other one is the New Urbanism originated in the US. [8] The imprints of the principles of the New Urbanism at the neighborhood level are evident in the creation of more pedestrianized and interconnected street system, imposing visual axes and the mix of different housing types. However, at the meantime, with an odd combination with gating, new GC planning and design tends to also against some principles of the New Urbanism, such as the promotion of the mixed-use and mixed-income neighborhood, and the open accessible street-block system with public transit stop at the centre.

While the morphological changes can be seen as the results of the change in planning and design ideas, they can also be linked to the broad process of the societal transition. In respect of economic globalization as one challenge to new Chinese cities, its impact at the micro-level of the creation of GCs in post-reform Beijing is via the foreign design cooperation and the wider western urban cultural influence, which has brought some new design vocabulary. More exactly, the impact is manifested in the direct architectural style transplantation by foreign architects, a marked increase of pedestrian areas, and the increasing provision of plazas of varied forms.

In parallel with globalization, ‘marketization’ as another challenge to new Chinese cities has profound social, cultural, economic impacts. In respect of the increasing social plurality and socio-economic stratification, they are reflected in the quality differentiation of family housing produced within the same development and across cases; while cultural diversity is manifested in more varied even exotic architectural styles. Meanwhile, the current economic prosperity has caused the increased wealth and consumption. Therefore, the increased residential space consumption combined with the shrinking household structure led to the trend of a decrease in population density in new gated developments. Yet as responses to the increasing private car consumption and use, the neighborhood unit principle of boundary definition by arterial roads tends to be fully followed in GC cases; there was a dramatic increase in providing parking spaces, specially the underground parking spaces; and the Radburn idea was adopted.

In respect of the impacts of the changes in the mechanism of urban development and management, first, the privatization of land use right provides the market the freedom to operate within leased tracts, therefore a perfect condition for the application of the Radburn idea, which however was not widely adopted in the US due to the constraints of the individual land ownership of a private lot. Meanwhile, it creates the condition for the tendency to create large freely formed and deployed community parks.

Second, the provision of urban service by private property management companies induces the intention to reduce the number of neighborhood access points and to

detach residential buildings from boundary frontage in order to ease the management and to reduce the cost of maintenance. Meanwhile, the consideration of the feasibility of the stage development and the provision of differentiated management or service contribute to the tendency of deploying the family housing of higher qualities in a separate central landscaped low density zone.

Third, due to the private provision of mass commodity housing in a leased tract, the market logic in general and the developer's logic in specific have clear effects on housing design. Therefore the profit-maximization logic of the developers has resulted in the trend of an increased FAR despite the parallel trend of a decreasing population density. In turn, like a kind 'market selection', middle rise apartment building form tends to become more favored than both high-rise and multi-storey forms due to its capacity to generate high FAR and to provide lifts which could be more efficiently used with lower cost. Furthermore, in order to increase the marketability of the different stages of the developments, there is a trend to create style and quality differentiation within the same development; and to increase the marketability of the whole developments, single-family houses and apartment houses as up-market products are produced in mix with other multi-family housing to yield mutual benefits, and to raise the neighborhood reputation and sales prices.

Fourth, the impact of the private provision of facilities is also via the logic of market or developers. Therefore, in order to produce economic exclusivity, the major facilities were mostly converted into the club realms; however they (such as primary school and kindergarten) could also be converted into public realms and may not be necessarily provided due to the concern of their economic viability in specific local conditions. Consequently, there is a rediscovery of the non-active boundary frontage of people's commune; the periphery position of facilities tends to become equally favored with near centre position. Moreover, in response to the market demand for large scale commercial facilities and driven by the principle of the economy of scale, separated large scale commercial building complexes with linear or corner shopping plazas are created as a new form of the commercial frontage, meanwhile there is a rediscovery of office spaces as workplace for commercial organizations.

Finally, in respect of the impact of the private provision of environmental infrastructure, the most obvious manifestation is the creation of large scale artificial landscapes, specially the artificial waterscape due to the financial capability, the concern of marketability, and the specialization in landscape design. Also in order to increase marketability, interior street vistas in varied forms of promenades or avenues were created to explore the views.

Besides the impacts of the privatization, there are also the influences from the new demands of the consumer or consumer preferences which have a wider connection with the rising consumerism and changing lifestyle. Therefore, the need for security provides a further rationalization for gating and the installation of all kinds of security

devices at the boundaries. Meanwhile, the desire for distinction was realized in the distinctive architectural styles and specially provided natural amenities in combination with marketing rhetoric; while the desire for prestige was realized in boundary demarcation and the provision of more luxury housing in the developments. Yet the demand for a better residential environment, which is associated with the image of the American dream, was realized in the decrease in population density, raised standard of multi-family apartment buildings by some architectural means, and the increasing provision of small open green spaces. Furthermore, the increasing mobility and choice combined with the concern of reputation makes it rational to not provide a community centre, a kindergarten or a primary school in a gated development.

Notes:

¹ Webster, C., G. Glasze, et al. "The global spread of gated communities", *Environment and Planning B* (2002), vol. 29, no. 3, pp.315-320.

² Webster, C. "Gated Cities of Tomorrow", *Town Planning Review* (2001) **72**, no. 2, p.149.

³ Webster, "Gated Cities of Tomorrow", p.165.

⁴ Lu, Duanfang, "Travelling urban form: the neighborhood unit in China", *Planning Perspectives* (2006), vol. 21, pp. 380-382; C. A. Perry, *The Neighborhood Unit: from the regional survey of New York and its environs*, (Routledge/Thoemmes Press, 2003).

⁵ Corbusier, Le, *The city of to-morrow and its planning*, (London, Architectural Press, 1947).

⁶ Newman, O., *Defensible space: people and design in the violent city*, (London, Architectural Press, 1972).

⁷ Stein, C. S., *Toward New Towns for America* (3rd ed. Cambridge: M.I.T, 1966).

⁸ Leccese, M. and K. McCormick, *Charter of the New Urbanism*, (London, McGraw Hill, 2000).