TYPOLOGICAL STUDY ON AMERICAN ROW HOUSES (VOL. 1)
—Analysis on the plan configuration—

アメリカの連棟式都市型住居のタイポロジー研究（その１）
—平面形式の分析について—

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Early American row houses were built based on a reinterpretation of precedents in European countries. This typological study focuses on the following issues: First, to trace and overview the chronological change of the plan configuration of the row houses in Philadelphia, Boston, and New York, which had experienced explosive urban growths in the 18th to 20th century. Second, to clarify the factors, which induced the plan change of the row house, by referring to the related facts governing this transformation in each location. Third, to abstract the architectural autonomy as a building type of row house and its variable adaptability according to the built context, comparing the three different cities’ cases.

Keywords: Row House, Plan Configuration, Philadelphia, Boston, New York

1. INTRODUCTION

Before the Revolutionary War period, most colonial Americans lived in freestanding houses surrounded by gardens, or in small dwellings haphazardly built in lines along narrow winding roads. By the end of the 18th century, a new type of urban dwelling, in the form of Row Houses (groups of uniform attached houses), appeared in larger port cities such as Philadelphia, Boston, and New York. Until the explosive suburbanization in the early 20th century, row houses acquired great popularity among city residents throughout the United States. Now, in the so called post industrial period, the value of preserved row houses as livable urban dwellings is acquiring more appreciation as a social entity, and it is worth investigating the row houses’ historical typology as a precious reference for modern urban dwellings.

Early American row houses presumably had strong influences from the precedents in European countries, such as England and the Netherlands, but the houses in Philadelphia, Boston, and New York had especially strong ties to the Georgian town house model in London such as the Covent Garden by Inigo Jones (1638). However, they had a much more unique history than their European counterparts, and it can be clearly observed that the plan and facade configurations of the row houses in each American city went through their own distinct chronological changes. Though there are prior studies about row houses in specific cities by Bunting, Lockwood, Shivers, Moulton, Murtagh, and Muthesius, these studies lack the common basis to permit an overview of the row house to be undertaken as a broad cultural phenomenon in the United States. With such a disorganized scholarly context, a common viewpoint is now required to provide a basis for further discussion.

The purposes of this study are summarized as follows: First, to trace and overview the chronological change of the plan configuration of the row houses in Philadelphia, Boston, and New York, Second, to clarify the factors which induced the plan change of the row house by referring to the related facts governing this transformation in each location. Third, to abstract the architectural autonomy as a building type of row house and its variable adaptability to the built context, comparing the three different cities’ cases.

The reason for selecting the cities of Philadelphia, Boston and New York for this study was that they have unique urban characteristics respectively, though they had commonly experienced explosive urban growths from the 18th to 20th century. The analytical method was structured into four stages as follows:

1. Literature search.  2. Graphic Documentation.  3. Site Surveys.  4. Analysis.

2. HISTORICAL BACKGROUND

1) Urbanization process and Block structure

The evolutionary patterns of American cities from colonial towns to metropolitan cities were not necessarily consistent. The primitive social...
and physical structures of the town in the colonial period experienced several drastic changes, which transformed into the modern counterpart. Obviously, two major factors influenced the evolutionary process of the American colonial towns. One was the impact of the industrial revolution in the early 19th century and the other was the explosive suburbanization in the late 19th century. Both factors caused changes in city structures and city dwellers’ life styles. In this research, the historical period was divided into three sections according to the identical city structures influenced by the above two factors. The historical periods are defined as follows: ①

Phase I: Colonial Period (before 1820)  - Primitive urban structures:
Phase II: Rise of Urban Industrialization (1820-1870)  - Emergence of upper and lower classes:
Phase III: Emergence of Suburbanization (after 1870)  - Growth of the middle class.

Regarding the demographic data of the three cities, New York had experienced the most explosive growth in 18th and 19th century (up to 14 million people, 1890), and Philadelphia had grown as 70% of New York’s scale. Boston expanded in the lowest speed as 30% of the New York’s scale. From their founding, each city had different purposes and grew in different manners.

Philadelphia, founded by William Penn as a “holy experiment,” grew as a Quaker religious city. Its industry in the late 18th century was basically agriculture, shipbuilding, and trading with the West Indies. In this period, Philadelphia was the most prosperous city in the United States. Since then, Philadelphia has grown consistently as an industrial city. During the Civil War, Philadelphia was a major supplier of military goods. Later its industries became larger and included the production of heavy-duty goods. Generally the city grew very steadily and the society was quite stable. Because of its religious doctrines, Philadelphia was quite open to immigration.

Regardless of the block structure, though Penn’s vision was to establish a great town by dividing the land between the Delaware and Schuykill Rivers’ into super blocks (425-675 feet) with strong gridiron street patterns, the lots were subdivided by numerous alleys by the end of 1783. The houses for the upper class were built along the wider streets and the ones for the lower class along the narrow alleys. Both rich and poor lived in the same block and created a stable neighborhood. This hierarchical block structure is unique in Philadelphia. (Fig. 1) illustrates the typical block structure in the Society Hill district. Notable neighborhoods were the Society Hill district (late 17C.), the Washington Square district (late 18 C.), Rittenhouse Square (late 19 C.), and Spring Garden - Green Street (late 19 C.).

Boston, established under the leadership of John Winthrop, grew as a Puritan community. Once called the “hub” of the world in the early 18th century, it basically grew as a trading and industrial city. In the early 19th century, its industries included furniture making, machinery, musical instrument making, and chemical production. By 1850, it had become one of the largest industrial centers in the United States. Boston was the most compact city of the three, and relatively environmentally restrained and socially stable.

Regarding the block structure, Boston’s pattern of growth was more complicated than in Philadelphia. When John Winthrop settled the earliest colony in 1630, Boston was a mere peninsula with three prominent hills. The street pattern in the old town center in the 17th and 18th centuries was generally winding and complicated with a “medieval” configuration. The first attempt to adopt the grid pattern was made on the northern slope of Beacon Hill in 1743 and the development continued until the early 19th century. In this period, Louisburg Square was built as one of the earliest American residential square based on the London’s square mode. (Fig. 2) illustrates the block structure of Louisburg Square. Since the early 19th century, these old urban structures had been juxtaposed with the newly infilled residential areas near Back Bay and the South End, where the neighborhoods were rationally designed with grid patterns and open spaces. The house lots of the Back Bay were rather wide and the principal street of Commonwealth Avenue provided a park-like green mall in the center as a reference of French boulevard. The South End was planned at south of Boston and was constructed from 1851 to 1859. The juxtaposition of old and new urban contexts and the existence of segregated unique neighborhoods were the major characteristics of Boston’s block structure.

New York was established as a fortress town by the Dutch and was basically a mercantile city. With geographical advantages, it acquired

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Fig. 1 Block Structure of Philadelphia
Society Hill

Fig. 2 Block Structure of Boston
Beacon Hill

Fig. 3 Block Structure of New York
Lower Manhattan $=1/300$
great wealth and produced many "new rich" middle-class people. Between 1800 and 1830, the value of foreign goods passing through New York increased over 400 percent. Before the Civil War, it attracted banking and insurance companies and became the financial center. Presumably, the absence of religious restraints and the large amount of immigrants were large factors driving its explosive growth.6

Regarding the block structure, New York's process of land development was rather similar to Boston, but was more progressive and extreme. After the Dutch fortress town, the town had developed in an almost "medieval" pattern with irregular winding streets. This old structure is still visible in the financial district today. In the 19th century, extensions of the city began to be made on a more orderly plan, and finally the city adopted the by now famous gridiron street pattern in 1811 (Fig. 3). The shortage of open spaces of this block structure was finally balanced by Central Park designed by F.L. Olmsted in the 1850s. The juxtaposition of old and new urban contexts, vastly expanded homogeneous grid pattern, the presence of Central Park, and the less identifiable neighborhoods are the major characteristics of New York. The notable neighborhoods in the early 19th century were Greenwich Village, East Village, Chelsea, Brooklyn Heights, and Murray Hill. 8

3. Analysis of the evolution of the plan configuration

Major criteria for the analysis of the plan configurations includes: Block and site constraints (lot size, service operation, basic mass layout), and Spatial organization (location of stairway and specific rooms, Parlor arrangement, territorial public-private aspect).

(1) Philadelphia Row Houses

a. Phase I (before 1820) / Philadelphia

Block and site constraints: The house lots of Philadelphia were generally narrow throughout the 18th and 19th centuries. The average width was 15 to 20 feet, except for those in the earlier Society Hill area. Due to the block arrangements created after the foundation of the city, most of the houses had service alleys in the rear. Therefore, the houses did not require the so-called "Dutch stoop" for the front entrance, as was seen later in New York. This double-sided approach facilitated the horizontal arrangement of the major rooms in the house (Kitchen, Dining room and Parlor), and this was another unique feature of row houses in Philadelphia.

Spatial organization: There are three basic plan types in this period, which partly correspond to the Murtagh's typology.6 First is the D-K type, which shows the most primitive organization of the rooms. These row houses were generally two or three stories high with a stairway installed in the middle. The Kitchen and Dining rooms were on the first floor and other rooms on the 2nd and 3rd floors. The craftsmen and artisans of the city usually occupied them. The front room was not limited to use as a Parlor for the family, but was also used as a shop or working room in some cases. The rear wing attached to the main house generally formed "L" shape to take in natural light. The second type is P-DK, which is considered to be a transitional stage in the plan evolution. A new room in the form of a "Dining room" was added between the Kitchen and the stairway of the D-K type, and the front room was more parlor-like in nature. From a territorial aspect of the public-private domain, it seems to be a more advanced type with a clearer boundary, but the lack of an Entrance hall and corridor spoils the privacy of the front room. The third type is PD-K, which acquired great popularity as an elaborate town house. A new Dining room for family use was installed between the central stairway and the front Parlor of the D-K type. The newly installed corridor and Entrance hall helped to establish the privacy of the front Parlor and the Dining room in the rear (Fig. 4).

b. Phase II (1820-1870) / Philadelphia

Block and site constraints: There was almost no difference in the lot size arrangements in this period. It became even more difficult to purchase wider lots because of escalated land prices. Instead, the houses became taller, and the total volume of the house was larger than before. Nevertheless, all the major rooms continued to be located on the first floor similarly with the previous period.

Spatial organization: There are three basic types in this period. The first type is the PD-K, which is a more developed version of the same type in the previous period. The second type is P-DK, which is almost equivalent to the one in the previous period. In this period, some of the P-DK did not have a corridor, but generally this was rare. The territorial aspect remained unclear. The third type is P-KD, which first appeared in this period. This type allocates a Kitchen in the middle, sandwiched between the front Parlor and the Dining room. For the Kitchen, this change was disadvantageous because of decreased natural light and no views to the outside. It was advantageous for the Dining room as a contrast. The territorial issue between the public-private realms was still not resolved here (Fig. 4).

c. Phase III (after 1870) / Philadelphia

Block and site constraints: The lot size and the back yard remained largely unchanged. However, there were some new attempts in the building layout by architects. Some were symmetrical compositions and C-shaped configurations with a light court at the center.

Spatial organization: With the housing boom, many variants appeared in the plan configuration, though each turns out to be categorized into one of several limited types. With regard to the territorial aspect, the separation of the public-private domain was quite distinctive. Architects seemed to have been very conscious of this issue at this time. There are two basic types, with variants. The first type is the P-DK, which maintained its previous conventional character. This type is further split into those "with corridor" and those "without corridor." In both cases, the room for family members was separated from the front Parlor. The second type is the P-KD, of which there are numerous examples. Although its character is the same as the smaller examples in the previous period, it now appeared in both smaller and larger houses. Again, this type is split into those "with corridor" and those "without corridor." Two distinctive variants were derived from the P-DK type. The first variant was the PP-DK, which had both a front and a back Parlor and was quite rare in Philadelphia. The second variant is the P-LDK type, which established a private quarter with Kitchen, Dining room and Living room separate from the front Parlor. (Fig. 4)

d. Typology

The evolution of the plan configuration is illustrated in (Fig.4). The main characteristic of the Philadelphia row house is its horizontal
arrangement. Throughout these three periods, the Kitchen was installed in the “L”, and the front Parlor was located at the street front. The P-KD type, which located the Kitchen in the middle, was a new type. Along with the evolutionary process, there was a clear expansion of hierarchy in the territorial aspect of public–private domain. In Phase I, all the rooms seemed to belong to the private domain. In Phase II, the front Parlor seemed to change into the semi-public domain, but the boundary of public-private was still ambiguous. In Phase III, all the rooms between the stairway and the street seemed to belong to the semi-public domain, and the front room had more of a public character like the Entrance hall. Also, the major programmatic transformation occurred between Phase I and Phase II. Only minor transformations occurred in Phase III.

(2) Boston Row Houses

a. Phase I (before 1820) / Boston

Block and site constraints: The houses sit on the site modestly with recessed Entrance porches instead of protruding stoops. The average lot width of the Beacon Hill was less than 25 feet. Because there were sufficient service alleys in the back, these row houses did not require any service entrance in the front throughout the 18th and 19th centuries.

Spatial Organization: There is one basic type with some variants. This type of P-DK is the simplest one represented by the Tontine Crescent designed by Charles Bulfinch. It accommodated a one-sided stairway, a front Parlor and a rear Dining room on the first or second floor. The Kitchen was located in the basement or on the first floor. The major two rooms were not directly connected like the dual Parlers in New York. Generally these row houses were three or four stories high. The upper floors contained individual rooms for the family, with the servant's quarters on top. The territorial aspect of the private/public domain was ambiguous here. As fewer social interactions within the house took place in this period, the hierarchy of the rooms was smaller than later and the spatial organization was rather simple. (Fig.5)

b. Phase II (1820-1870) / Boston

Block and site Constraints: Regarding the lot size, the Back Bay lots averaged 25 to 35 feet in width, while the South End lots averaged less than 25 feet in width. Like Beacon Hill of the previous period, there were plenty of service alleys, therefore the houses did not need the functional device of the "Dutch stoop." Some of the South End row houses, however, had stoops and service entrances in front, probably because the inhabitants felt the front entrances were more convenient.

Spatial Organization: There are two different types of spatial organization. The earlier period was characterized by flexibility of room use, while the later period by standardization of the plan. In the earlier period prior to 1856, the exterior facade of the row houses was strongly identified with the use of bow windows. However, the room arrangement was not standardized except for some basic rules. Most of the houses installed a Kitchen in the basement and it was vertically connected by a stairway to the Dining room above. Both were generally located in the rear of the house facing the back yard, though the Dining room was sometimes located elsewhere. The other major rooms were interchangeable in each house. New categories of rooms such as “Library” and “Sitting Room” were added to the conventional “Dining Room” and “Parlor”, and the activities in the specific rooms were slightly varied. The changing of names and uses of the spaces reflects the changing social order and family structure in the period. Most typical houses used the front room on the first floor as a Parlor (Sitting room) and the first room on the second floor as a Living room. We define this type as L-P/DK. Other plans can be considered as the variants of this type.

In the later period after 1856, standardization developed in plan configurations, especially in the Back Bay. Bunting shows three basic types
according to the width of the lot. L/P/D/K is the narrowest width type (less than 20 to 23 feet), L/P-D/K or L/P-P-D/K is medium width type (23 to 30 feet), and L/P-P-S-D/K is the widest type (more than 30 feet). More than 60 percent of the houses built in this period were L/P-D/K, and these houses had a front Parlor and a rear Dining room. L/P-P-S-D/K contained more major rooms on the same floor. This type was quite well standardized even in later years.

With regard to the territorial aspect, stairways played an important role in Boston row houses during this period from 1820-1870. With the increase of the varied room uses, the physical volume of the major rooms had to be expanded to the second floor, and the boundary of the territory shifted to the stairway. The main stairway generally only connected the first and second floors, while the service stairway connected all floors. Thus, the two major floors were connected with an elegant stairway, which separated the lower semi-public from the upper private domains. (Fig.5)

c. Phase III (after 1870 / Boston)  
Block and site constraints: In this period, a few Back Bay houses had larger lots, but the great majority of houses still had narrow lots. The basic land division between the Public Garden and a line mid-point between Exeter and Fairfield Streets was standardized in size and sold by the Commonwealth of Massachusetts at public auctions. In other areas, however, the land was owned by two private corporations and was sold in rather arbitrary lot sizes in individual transactions. The service alley behind the house was the same as before. With the invention of electric light, the layout of the building mass did not have to consider natural light as much, therefore architects could compose rectangular plans without any "L".

Spatial organization: The components of the major floors were the same as those of previous periods. In narrow lots, row houses had a Parlor (Drawing room), a Dining room and a Study (Library) on the first floor, and a Living room upstairs. They were generally three or four stories high, but could sometimes be made much higher with the use of elevators. In wider lots, the row houses typically had two Parlors, a Dining room, and a Study on the first floor, and a Living room upstairs. Bunting notes that the plan configuration did not change drastically, but the arrangement of the stairway was altered in this period. The main stairway was enlarged and pushed into the middle third of the house. This enabled the front room to be wider than before. This change, which allowed for a grand display of the stairway, stemmed mainly from aesthetic rather than utilitarian reasons. Although it helped the convenience of the vertical circulation, the fundamental spatial organization (programmatic issue) never changed. We can identify two basic types in this period. The first type is the L/P-S-D/K. The second type is the L/P-P-S-D/K. As a territorial aspect, the stairway was still functioning as a boundary between public-private domain. The most distinctive trend in this period, however, was the enlargement of the Hall and its major role in the spatial organization. Though, in the previous period, a narrow corridor just connected the rooms, in this period, the Hall was located in the center and mediated between major rooms. This larger Hall created a significant difference in the hierarchy of territorial space and implies the increasing degree of semi-public space within the house. (Fig.5)
d. Typology
The evolution of the plan configuration is illustrated in (Fig.5). The main characteristic of the Boston row house is its vertical arrangement. Unlike New York and Philadelphia, Boston traditionally provided a service stairway, so it could manage the public-private issue within a narrow house. Therefore, the design of the main stairway was more elaborate and intricate than in Philadelphia. The second characteristic is the early emergence of new categories of room use or room specialization. Besides a Library or Drawing room, there was a billiard or playing room. This shows that family members spent much time in their houses. The major transformation occurred in Phase II, but was stabilized in Phase III.

(3) New York Row Houses

a. Phase I (before 1820) / New York
Block and site constraints: As in other cities, the house lots of New York Manhattan in this period were rather narrow. The average lot width was 20 to 25 feet. Since service alleys between houses were not provided in old New York City, almost all houses possessed the “Dutch stoop.” Even after the gridiron pattern of block layout was set in 1811, service alleys were not included. The basic layout of building mass was rectangular in form.
Spatial organization: Because of the strong standardization and also probably due to the mass-build speculative nature of the development process, New York had fewer variants than Philadelphia and Boston throughout the 19th century. There was only one basic type, the PP/DK, which had the front and back Parlor on the first floor, a rear Kitchen and a front Dining room in the basement, and a side stairway. The average ceiling height in the basement was low (7 to 7.5 feet) and it was never a comfortable space during the earlier period. Since social activities were few, these Parlor still seemed to belong to the private domain. After 1848, the increase of servants and the invention of dumbwaiters facilitated the back Parlor’s change into a formal Dining room. (Fig.6)

b. Phase II (1820-1870) / New York
Block and site constraints: In Phase II, there were two distinctive periods corresponding to the two different styles, the Greek revival and the Italianate. In the earlier Gothic Revival period, the house lot size remained the same, 20 to 25 feet on average, while it narrowed to 18 to 20 feet in the later Italianate period because of speculative modification. Service alleys were still not provided, therefore, the “Dutch stoop” and the service entrance remained indispensable features of the house. The basic layout of the building mass was rectangular.
Spatial organization: There were three basic types and their variants. The first type is the PP/DK, which were similar to that in Phase I, although slightly different in height. In this type, there were usually two Parlers. There was one variant with a Parlor attached to the back Parlor. Lockwood commented that this was a distinctive change in this period, but we consider it as a variant of the PP/DK. The second type is the PP/DK. This type is found in larger houses. The front Parlor, back Parlor and Dining room were connected in a linear fashion. With regard to the territorial aspect, the first floor belonged to the semi-public domain, and the basement and the upper floors belonged to the private domain. The largest disadvantage of this type was the lack of natural light in the back Parlor. Therefore, the back Parlor was combined with the front Parlor in later periods. The third type is the PP/PD/K, which was the typical Anglo-Italian style house plan. As the house lot was narrowed, due to speculation, the rooms had to be vertically divided. This type did not gain popularity because semi-public and private domains were mixed together and disorganized without any service stairway. (Fig.6)

c. Phase III (after 1870) / New York
Block and site constraints: The lot size remained the same, although some were widened to accommodate optional arrangements demanded by

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clients. Service alleys were not provided. The basic building layout was rectangular, but in some cases a small butler's Pantry was attached to the rear of the building.

Spatial organization: There is one basic type with several variants, the PDR. In this type, the dual Parlor of the previous period changed into one Parlor. The rear Dining room was sometimes accompanied by a butler's Pantry. According to Lockwood, this Dining room was used for formal dinners and there still was a family Dining room in the front room of the basement. The first floor belonged to the semi-public domain and the basement and upper floors belonged to the private domain. After the turn of the century, many variants emerged, especially in the larger houses. They are the PL/DRK type, a variant of the PD/K type. Commonly in these houses, the stairway worked as a significant element in the house, since a major room went to the second floor and the central hall connected and integrated the major floors. The first floor was acquiring a more public nature, because the semi-public domain was expanded to the second floor. (Fig.6)

d. Typology

The evolution of the plan configuration is illustrated in (Fig.6). The main characteristic of the New York row house is the simplicity of the dual-Parlor system, which was used for more than a century. These two rooms were the core of the row house for this entire period because the spacious connected rooms satisfied New Yorker's showy city lifestyle and the arrangement was adaptable to various uses. Men and women, or young and old, were sometimes segregated in these two rooms. The high "Dutch stoop" made the basement comfortable to live in. The territorial aspect was the same as the other cities. The expansion of hierarchy is particularly evident in the town houses during Phase III. These houses contained large Entrance halls, which were almost equivalent to the Halls in public buildings. These Halls clearly show the architect's consciousness of the ritual occasions when numerous people would meet at the same time.

4. Conclusion

1. Reviewing the evolutionary process of the plan configuration in each city, there were common tendencies as follows:

(1) Space specialization (The room's allocation to specific activities)

From Phase I to III, space specialization took place in all cities, but it was most outstanding in Phase III, and there was a stronger tendency in Boston than in the other two cities. In phase I, Philadelphia and Boston houses had only Parlor, Kitchen and Dining room, though New York houses had two Parlors and other rooms. In phase II, Philadelphia and New York houses were basically not changed, but Boston's larger houses already had a Drawing room and Library added to the existing rooms. In Phase III, some Philadelphia houses only added a Living room next to Parlor, but in Boston's larger houses, the rooms were sometimes converted to a Dance hall, small Theater, Library and Office. New York had a similar tendency but not more than Boston.

(2) Expansion of hierarchies. (Sequence from private to public space)

The space organization of the row houses had gradually acquired a more complex structure in each city. As the front street became more urbanized, the front room had more public character, and the house had to provide for several implicit boundaries between private and public domain. In Philadelphia, it was very slow and subtle in this change, but in Boston, the addition of the Entrance hall and the Drawing room was a quite distinctive change in Phase II and III, and the stairway played an important role as a boundary. Especially in Phase III, there were service stairways behind in larger houses, which shows the clear separation of public/private domain. In New York, the addition of the Entrance hall and Reception room on the first floor in Phase III was a quite distinctive change as well.

2. There were a number of factors which induced the plan change of the row house, and the major ones are as follows:

(1) Block and site constraints.

As we saw in the analysis, the largest factors, which fundamentally governed the plan configuration of the row house, are the landform and the existence of the back service alley. As usual in any city in the world, the land price of the inner city was relatively high and the width of the row houses was obliged to be narrow; this narrowness restricted the freedom in plan variation. Though, once it became wider, the organization of the plan became more varied. Regarding the existence of the back alleys, the Philadelphia and Boston houses, which had back alleys, did not require the front stairs (Dutch stoop) as an essential device, but the New York houses, which did not have them, could not do without the front stairs to provide for the access to the basement.

(2) Natural light and ventilation

In Phase I and II, for sanitary reasons, the rooms of row houses generally required natural light and ventilation, and most of the first floor of the row houses had "L" shape plan for this reason. While the house lengths were not so long, the front and rear rooms of the main house could acquire the front and the rear light. As the house became longer, however, the additional rear wing had to be narrow and make "L" shape in order to keep the rear rooms' window open. In Phase III, however, after the invention of electric light in 1879 by Edison, this tendency was not kept strictly.

(3) Technological improvements.

The invention of technical equipment, such as dumbwaiter, elevator, plumbing, etc., had a large impact on the spatial organization of the row house. Especially in Phase III, the factors relating to the vertical circulation were quite innovative and they enabled the public-private domain and hierarchy to be more clear.

(4) Social activities

Each city had its own specific mode of social intercourse based on its particular cultural and religious background. Generally, these modes were reflected well in the spatial organization of the row houses. Philadelphia row houses had less space specialization and less hierarchical orders throughout the 18th and 19th centuries. Apparently, residents entertained themselves more in public places like pubs or taverns, rather than in
Further, the Quakers’ preference for simplicity was quite influential in the spatial order of their urban dwellings. Even though there were places to entertain publicly, Boston fostered and formalized a tradition of entertaining their guests at home. From the earliest row houses, the vertical space organization was well organized and showed their inhabitants’ preferences in social activities. For well-to-do Bostonians, a house was not only a house, but also a school, an office and a space for entertainment. These needs strongly encouraged space specialization and the expansion of the hierarchy within the house.

As a mercantile society, New Yorkers, on the other hand, generally liked showiness and lavishness in their houses. Since the earliest period, they adhered to the dual Parlor system, which did not change for more than a century. Its later continuation was supported by the sense of value of the newly rich middle class, who tended to be socially pretentious and felt a strong need to maintain the orthodoxy of predecessors.

The architectural autonomy as a building type of row house and its variable adaptability to the built context are summarized as follows,

1. The building type of row houses had a basic common structure in plan configuration in any blocks of the cities.
   - The basic structures were:
     - Entrance shall face on the front street.
     - The first floor shall be used rather publicly, and as one goes to the higher floors, the private character became stronger.

2. The building type of row houses had flexible adaptability to the built context as well, and the factors, which enabled the plan configuration flexible in different location and period, were:
   - The wider width of the land created the plan’s variety.
   - The main stairways, which could work independently, enabled the change of room use easily.
   - The technological equipment such as electric light, dumbwaiter, and elevator, etc., could help the houses’ modernization.

Now in the modern period of 21st century, the preserved Row Houses can still accommodate modern people’s life with this adaptability, and we have to learn more about this durability and sustainability through the history of row houses’ architectural features.

Note
1) See Gorrin, ref. 1.
2) Many excellent studies have been made, such as Bunting’s on Boston’s Back Bay, Lockwood’s on New York, Shivers’ on San Francisco, Moudon’s on Philadelphia, and Murtagh’s on English Terraces House. However, these authors’ interests and topics generally rest on different levels.
3) In order to grasp the whole historical structure, many related historical documents and prior works were collected and examined thoroughly. Resources were acquired from available library collections. (Leob and Widner Libraries at Harvard University, Boston Public Library, New York Public Library, Avery Library at Columbia University, and Fine Arts Library at the University of Pennsylvania).
4) To make the research more complete, many drawings of row houses and historical maps were collected and fully examined. For Philadelphia, drawings were collected from Historic American Buildings Survey (HABS) collections and from research drawings made by the students of the University of Pennsylvania. For Boston, original drawings by the architects were primarily collected from available historical institution’s collections (Boston Athenaeum, Society for the Preservation of New England Antiquities, Bostonian Society, and Massachusetts Historical Society). For New York, drawings were mainly collected from HABS collections. Historical maps for each city were collected from Houghton Library collections in Harvard University and Sunborn Insurance Company and G.W. Bremly Company collections.
5) See Still, ref. 2.
6) During the 18th and 19th century, many tenements houses were built to accommodate poor immigrants from Ireland and Italy, but those, which were terribly planned and the sanitary conditions were bad, were considered as a different social entity from row houses. Therefore, this comparative study will not deal with this house type here.
7) Especially the Brooklyn Heights were developed in early 18th century out of Manhattan island, but the block structure and physical constraints are considerably same and the plan typology follows the Manhattan’s case.
8) Murtagh classified the row house type according to the house size, such as the Bandbox house, the London house, the City house, and the Town house. Murtagh, J. ‘The Philadelphia Row House, Journal of the society of Architectural Historians 126 (1857) pp.9.
9) In this study, names of types are carefully chosen to represent the spatial organizations directly. This symbol used are as follows: D=Dining room, K=Kitchen, F=Parlor, L=Living room, S=Study room, - means horizontal spatial articulation, and / means vertical spatial articulation
10) Sea Bunting, Ref. 3.
11) See Wright, Ref.4.
12) In this period, women did not have any social right yet and seemed to entertain themselves in their houses.

References
1. “However, the pattern had already been set in the older cities of New York, Philadelphia, and Boston to follow the model of the London town house as the example of the standard element of housing in the city” Gorrin, Alexander- The new American town house (Rizzoli International Publications, Inc 1999) pp.16
和文要約

1. はじめに

18世紀末期から20世紀初頭にかけて米国の東部の大都市で大量に建設された連棟式都市型住居（ロウハウス）は、ヨーロッパの先例を参照しつつ、各都市の状況に応じ、独自な発展および変形した。本研究では、米国東部の三大港都市、フィラデルフィア、ボストン、ニューヨークにおけるロウハウスを探り上げ、それぞれの都市の成立過程と住居の平面形式の発展過程およびその背景を調査することにより、近代都市史における都市型住居の位置づけを行い、現代の都市住居への応用可能性を探る。本論の目的は、(1)18世紀にかけて、各都市におけるロウハウスの平面形式の変形過程を軌跡し概観する。2. 地区における特殊な環境条件を把握し平面形式を変容させた要因について考察する。(3) 3都市における変形過程を比較研究し、ロウハウスという建物形式が有する建築的自律性と柔軟な対応性を抽出することである。

2. 歴史的背景

(1)都市化の過程と街区構造

米国の都市化の過程は、第一期（1820年）、第二期（1820～1870年）、第三期（1870年）の三期に分けることができるが、これらの各時期に当時の主要な都市である3都市は異なった発展と人口集中を行った。

フィラデルフィアは、ウィリアム・ペンにより「聖なる実験」として計画され、基本的にクェーカー教徒による宗教都市として成長した。18世紀後半の産業は基本的には農業を主体としたが、その後、米国で最も繁栄した都市として着実に成長を続けた。1687年にペンは大規模な農家を一軒つづけ築てた構想を持っていたが、小街路による街区の分割政策が取られ、上流階層と下流階層の住民が同一の街区内に居住するという特徴的な構造を示した。

ボストンはジョン・ウィンスロップの指導のもとに清教徒のコミュニティーとして計画された。18世紀初期に商業および工業都市として全盛を極め、米国中核の都市として成長する。これらには宗教的な制約が強く、社会的には比較的安定した成長をした。ショウマット半島とそれに付随した埋立地の確保という形で都市成長は進行し、有名な住宅地ビーノンヒルはロンドンモデルとして計画された。その後半島の南側、北側の埋立てという形で新住宅地が開発された。

ニューヨークは、オランダ人圏によりもとに要塞都市として計画され、その後は商業都市として成長する。地理的利点もあり、局域のない新しい新興商業階層を産み出し、その後一大金融都市として発展した。宗教的抑制が弱く大量の移民を受け入れたことが都市成長を助長した。特にマンハッタン島の街路パターンの変化によって都市成長が特徴づけられ、南端地域の中世的街路、その北部の大雑把なグリッド、1811年に施行された全島の均一グリッドなどにより、開発は南部から北部へ進行した。

3. ロウハウスの平面形式の変化

フィラデルフィアの街区には裏路地が存在したため、サークルは裏面から行われ、平面は基本的に坪方的に発展した。特に三段に通し、敷地奥のL状部分にキッチン、中にダイニングルームを配し、道路面にしたパーソーは徐々に公共的性格を強めていった。これらは全てP-D-Kの変形と見られ、公私空間のヒエラルキーは時代の変化に応じて多様化されたが、全体に控えめでダイナミックな変形を見せていない。

ボストンの街区にも必ず裏路地が備わっていたために、前面に階段を設ける必要はなかった。全ての平面構成が直線的に組織されている点が特徴で、特にキッチンは三段を通じて地下に、メインパーソーはイタリアのビアノノビーニの様に二層目に配置された。第二段以降の住宅は全てL/D-P/D-Kの変形と見ることが出来る。第三段には二階を繋ぐ階段は別のサービス階段が配置される住宅も登場し、公私空間のヒエラルキーが明確に意識された。また、邸宅の多様さは他都市にない特徴で住宅内での様々な社会行為が行われていたことが一般的に換手しないのが気付きを漂わせていた。

ニューヨークの街区では、裏路地が最初から計画に盛り込まれたため、必ず前面に「ダッチ・ストレープ」と呼ばれる階段を配置し、サービス入口を半地下に設けた。これがニューヨークの町並みの特徴を形成した。平面構成の特徴は、二階に二階連続のパーソーを設けた点で、当時、社交会主として住宅を舞台に行われていたことを示している。第一段はP-D/Kタイプを原型として発展したが、第三段にはシングルパーソーも登場し、変形が拡大した。

4. まとめ

本研究では、都市化が進行する過程において、ロウハウスの内部空間には共通に、空間利用の多様化、公私側のヒエラルキーの増大が見られ、敷地の制限、自然光と通風、設備機能の向上、住宅内の社会的活動などがロウハウスの平面形式の変形に重視的に作用することが認められた。ロウハウスが有する自律性としては、入口の形式、サービス方法、階段位置、一階の公共性が挙げられ、柔軟な対応性の条件としては、敷地の幅、独立性のある階段室、高度な設備機能などが挙げられる。ロウハウスが21世紀の現代社会においても、アパートやコンドミニアムとして保存・再生されながら使われている要因の一部はこれらの特徴にあると考えられる。今後の持続可能な都市環境の計画に与える示唆は大きい。

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